EAM

European Academy of Microbiology

Members Book

WE ARE MICROBIOLOGISTS

EAM

European Academy of Microbiology

Members Book

Federation of European Microbiological Societies

HIRI HELMHOLTZ Institute for RNA-based Infection Research

HZI HELMHOLTZ Centre for Infection Research

Foreword from the EAM President

Since its founding in 2009, the European Academy of Microbiology (EAM) has grown remarkably in both size and reputation thanks to the dedication and hard work of the Federation of European Microbiological Societies (FEMS), EAM Secretary General Eliora Z. Ron and Past Presidents Philippe Sansonetti and Jörg Hacker. Since assuming the position of EAM President in January 2021, it has been a great pleasure to work with the EAM Executive Board and the FEMS team as we continue to develop the academy.

Amongst our priorities, we have been dedicated to fostering a sense of togetherness within the academy, encouraging member engagement, promoting our showcase journal µLife and further developing the EAM website and identity.

Whilst we live in an increasingly digital world, I also feel that nothing beats the experience of turning the pages of a printed member directory. With this motivation in mind, I am proud to present the EAM's first Members Booklet. The purpose of the booklet is to display and commemorate the outstanding expertise of our academy that is comprised of leading experts from the numerous and diverse branches of microbiology.

As President of the EAM, I recognize the ever-increasing need for scientific cooperation, as well as the growing importance of social media in communicating our views. Whilst tackling these challenges, the EAM remains committed to promoting microbiology as a field of study and recognizing excellence within its practice throughout Europe and beyond. I hope this booklet will contribute towards fulfilling our mission, as its content also represents the basis for the new EAM website that will be coming soon. Moreover, I hope this booklet will bring us closer together as an academy, inspiring a sense of solidarity and a feeling of pride.

Jörg Vogel,
President, EAM

Foreword from the Secretary General

Having followed EAM from the start, it is exciting to see its growth and development in numbers, diversity and activities. All of this was possible because of the hard work of the two EAM presidents, Jörg Hacker and Philippe Sansonetti, who dedicated thought and time to their EAM activities. The members of two executive boards were always willing to help with advice, ideas and activities. Last, but certainly not least, is the support of FEMS led by the FEMS presidents Milton da Costa, Jean-Claude Piffaretti, Bauke Oudega and Hilary Lappin-Scott and the FEMS treasurers Roland Koerner and Colin Harwood.

In the name of EAM members I wish to thank EAM President Jörg Vogel for the initiative of putting together this informative booklet, as well as Sushila Pisano and Eleni Koursari for their assistance.

I hope you find this booklet interesting and am looking forward to the continued progress of EAM.

Eliora Z. Ron,
Secretary General, EAM

About the EAM

The European Academy of Microbiology (EAM) is a leadership group of eminent microbiology experts founded by the Federation of European Microbiological Societies (FEMS) to promote and recognize excellence in microbiology across Europe.

Mission

The mission of the EAM is to amplify the impact and visibility of microbiology and microbiologists, promoting excellence in the field across Europe and globally. It fulfils its mission through targeted programs and activities at the edges of the discipline, and communication to scientists, stakeholders and the public.

Key activities

- Hosting influential microbiology meetings, workshops and symposia independently and at FEMS congresses
- Developing papers to provide expert scientific opinions on critical issues involving microbiology
- Showcasing top-tier microbiology research in microLife
- Hosting a biennial retreat

History

The EAM was formally inaugurated in 2009, at the 3rd FEMS Congress in the Swedish city of Gothenburg, with about 100 founding members. Since then, the Academy's membership has grown to over 170 experts from over 25 different countries, representing the numerous and diverse branches of microbiology in Europe.

EAM
European Academy of
MICROBIOLOGY

Current EAM Board

President: Jörg Vogel

Secretary General: Eliora Z. Ron

FEMS President: Hilary Lappin-Scott

Executive Board Members: Maria Gabriella Campadelli, Victor de Lorenzo, Regine Hennge, Oscar Kupiers, Rino Rappuoli

Previous EAM Board

Previous EAM Presidents: Philippe Sansonetti (2012-2020), Jörg Hacker (2009-2012)

Previous EAM Executive Board Members: Milton Costa, Hans-Dieter Klenk, Hilary Lappin-Scott, Philippe Sansonetti, Tone Tonjum

Profile key

1. Country of residence
2. EAM member since
3. Email address
4. Institutional website
5. ORCID iD

Credits

This booklet was brought to you by EAM President Jörg Vogel, Director of the Helmholtz Institute for RNA-based Infection Research, a site of the Helmholtz Centre for Infection Research (HZI), Germany. The booklet is a work of Sushila Pisano (HIRI) and Eleni Koursari, Federation of European Microbiological Societies (FEMS). It was designed by Jonathan White (Garlic Agency) and supported by Matthew Harvey (FEMS). Special thanks are extended to the FEMS and HIRI team that contributed towards this booklet and to Eliora Z. Ron, EAM Secretary General.

WE ARE MICROBIOLOGISTS

EAM members recognized for excellence in the field of microbiology.

Chantal ABERGEL | France
Martin ACKERMANN | Switzerland
Ruedi AEBERSOLD | Switzerland
Sonja Verena ALBERS | Germany
Jeff ALMOND | England
Rudolf AMANN | Germany
Dan I. ANDERSSON | Sweden
Siv G. E. ANDERSSON | Sweden
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Bärbel FRIEDRICH | Germany
Geoff GADD | Scotland
Mikhail S. GELFAND | Russia
Kenn GERDES | Denmark
Jean-Marc GHIGO | France
Philippe GLASER | France
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Friedrich GÖTZ | Germany
Uri GOPHNA | Israel
Isabel GORDO | Portugal
Angelika GRÜNDLING | England
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Otto HALLER | Germany
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César NOMBELA | Spain
Staffan NORMARK | Sweden
Thomas NYSTRÖM | Sweden
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Ute RÖMLING | Sweden
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Chantal Abergel

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Environmental virology
- Structural biology
- Giant viruses
- Evolution

Research summary

Chantal Abergel is a structural biologist by training. The discovery of the first giant virus, *Mimivirus*, in 2004 marked a turning point in her scientific career. As the Head of the experimental group at Structural and Genomic Information (IGS), she decided to develop the tools and methodologies that would allow to penetrate this fascinating new world and first of all demonstrate that giant viruses were everywhere in the environment. That's how she developed cell biology and imaging techniques to complement the molecular studies involving biochemistry and structural biology that were already mastered in the lab. The discoveries are challenging the concept of viruses as well as their origin, their evolution and the role they could have played in the emergence of cellular life.

Education and work experience

Abergel received a PhD in material science at Aix Marseille University, France in 1990. Between 1990-1994 she was Fogarty Visiting Scientist in structural biology NIDDK, National Institute of Health, Bethesda, USA. In 1995 she was co-founder with Jean-Michel Claverie of the IGS Laboratory. In 1999 she received a Habilitation à Diriger des Recherches, the highest degree, mandatory for student supervision at Aix Marseille University, France. Between 2004-2012 she was Centre national de la recherche scientifique (CNRS) Research Director (2nd class), Information Génomique et Structurale, CNRS-AMU, France. From 2010-2017 she was Deputy Director and head of the experimental group Information Génomique et Structurale, UMR7286 CNRS-AMU, France. Since 2018 she has been Head of the Structural and Genomic Information Laboratory Information Génomique et Structurale, CNRS, France. Since 2019 she has been Research Director (Exceptional class), Information Génomique et Structurale, CNRS, France.

Selected awards and honours

2019	Awarded the French National Order of Merit (Officier dans l'Ordre National du Mérite)
2019	Awarded ERC Advanced Grant VIREVOL: Cells and giant viruses: a win-win co-evolution
2014	Silver Medal, French National Centre for Scientific Research (CNRS)
2014	Awarded Prix Coup d'élan pour la recherche Française, Fondation Bettencourt-Schueller
2014	Chevalier dans l'ordre national de la légion d'honneur (highest French order of merit)

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Martin Ackermann

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Evolution
- Quantitative biology
- Single-cell biology

Research summary

Martin Ackermann investigates the general principles of how bacteria interact with each other and with their environment, and strives to elucidate the strategies that bacteria evolved to cope with ever-changing environments. His group is interested in bacterial individuality, that is, differences in behavior and properties between genetically identical cells. They investigate how individual cells that specialize in different tasks can interact with each other and engage in the division of labor. In addition, they study how bacteria cope with dynamic environments, namely how cellular decisions of individual bacteria are influenced by past events as well as by stochastic processes. His group is also interested in microbial systems that are composed of several interacting genotypes; in particular, how new functionality arises at the level of microbial consortia based on the activities of individual cells and their interactions.

Education and work experience

Ackermann studied biology at the University of Basel, majoring in evolutionary biology. He started working with microorganisms during his PhD studies, which focused on aging processes in individual bacterial cells. He did his postdoctoral research at the University of California in San Diego, USA, where he worked on genetic and non-genetic mechanisms that control the production of phenotypic variation in microorganisms. Ackermann joined ETH Zürich in 2004 and started his own group there in 2006; he has been Full Professor of Microbial Systems Ecology there since 2015. Ackermann's group consists of about 16 Ph.D. students and postdocs with backgrounds in microbiology, evolutionary biology, physics and computer science.

Selected awards and honours

2016	Advisory Board member, Max Planck Institute for Terrestrial Microbiology, Marburg
2015	Golden Owl 2015, Association of Students at ETH Zurich (VSETH)
2014	Editorial Board member, 'Environmental Microbiology', Society for Applied Microbiology

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Ruedi Aebersold

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- Proteomics
- Systems biology

Research summary

Ruedi Aebersold's research focus is the proteome. His group has pioneered several widely used techniques and generated a range of open access/open source software and statistical tools that have contributed to making proteomic research results more transparent, reproducible and accurate. In his group, these techniques have been applied to a wide range of projects in basic and translational research.

Education and work experience

Aebersold earned a PhD from the Biozentrum, University of Basel, Switzerland, and completed his training as a postdoctoral fellow at Caltech, USA. He was an Assistant Professor at the University of British Columbia in Vancouver, Canada. Aebersold later joined the University of Washington in Seattle as an Associate Professor and was subsequently promoted to Full Professor. He co-founded, with Leroy Hood and Alan Aderem, the Institute for Systems Biology in Seattle and was then recruited to ETH as Professor of Molecular Systems Biology, where in 2005, his research group became the first integral part of the newly founded Institute of Molecular Systems Biology.

Selected awards and honours

2020	Marcel Benoist Swiss Science Prize
2018	Paracelsus Prize, Swiss Chemical Society
2012	Awarded the Thompson Medal, International Mass Spectrometry Society
2010	Otto Naegeli Prize, Switzerland
2006	Awarded the Büchner Medal, Federation of European Biochemical Societies

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Sonja-Verena Albers

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Archaea
- Sulfolobus
- Cell surface structures
- Cell division

Research summary

Sonja-Verena Albers studies the different aspects of the molecular biology of archaea. Her current work focusses on understanding the assembly and structure of the archaellum, the archaeal motility structure, and other archaeal surface structures, the development of genetic tools for archaea and studies on different aspects of cell division in archaea.

Education and work experience

Albers received her PhD in Molecular Microbiology from the University of Groningen, Netherlands, for her work on sugar transport systems in *Saccharolobus solfataricus* in 2001. She established her own group focusing on the molecular biology of archaea in 2008 at the Max Planck Institute for Terrestrial Microbiology, Marburg, Germany. She obtained a full professorship for Microbiology in 2014 at the University of Freiburg.

Selected awards and honours

2019	Elected Member of the European Molecular Biology Organization (EMBO)
2012	ERC Starting grant
2012	Research prize of the German Association of General and Applied Microbiology (VAAM)

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Jeffrey Almond

PRIMARY RESEARCH AREA
Virology

KEYWORDS
- Vaccinology
- Influenza
- Corona
- Rhino

Research summary

Jeffrey Almond's expertise lies within vaccine design and development. His scientific contributions include the first demonstration that a single gene can determine host range, a finding highly relevant to understanding evolution of new Influenza pandemic strains, as well as the completion of the genetic map of an avian influenza virus, and the first detailed description of the proteins of Influenza B virus. His research has also majorly contributed to the understanding of polio and how to eradicate the virus via vaccination. Almond is currently advisor to both Government and private sector.

Education and work experience

Almond obtained his BSc in Microbiology and Biochemistry at the University of Leeds, UK (1973), and PhD in Virology at the University of Cambridge, UK (1976). Over the years, he has worked as lecturer at the University of Leicester (1979-1985) and Professor of Microbiology and Head of the School of Animal and Microbial Sciences at the University of Reading (1985-1999). He was Vice President and Head of Research and External R&D at Sanofi Pasteur, the vaccine division of the Sanofi group in Lyon, France. Almond is Director and/or scientific advisor to several Biotech companies in Europe, the UK and the USA and a scientific advisor to the NIBSC and he is Chair of the Scientific Advisory Board of the Pirbright Institute in the UK. Furthermore, he is visiting Professor at both the Sir William Dunn School of Pathology, University of Oxford and at the Department of Microbiology, University of Reading, UK. Almond is also an Oxford Martin Fellow with the Oxford Martin Programme on Vaccines.

Selected awards and honours

2013	Winner of the Colworth Medal, Microbiology Society, UK
2006	Elected to a Fellowship of The Academy of Medical Sciences, UK
1999	Awarded the D.I. Ivanovsky Institute for Virology Medal, Russian Academy of Medical Sciences
1996	Elected Fellow of the American Academy of Microbiology
1985	Winner of the Fleming Award, Society General Microbiology, UK

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Rudolf Amann

PRIMARY RESEARCH AREA
Molecular ecology

KEYWORDS
- Microbial ecology
- Marine carbon cycle
- Phytoplankton-bacterioplankton interactions
- Microbial taxonomy

Research summary

Rudolf Amann studies the great diversity of marine microorganisms; his group employs molecular biology to discover new species and metabolic pathways. By using fluorescence in situ hybridisation, his group has developed a method for identifying, localising and quantifying individual cells. This method is used together with (meta-)genomics, transcriptomics and proteomics to predict the functions of bacteria and archaea not yet cultivated in the laboratory. The "new" species are then placed in phylogenetic trees. Ultimately, his group predicts ecological niches and tests their hypotheses by studying planktonic and benthic ecosystems, from coastal seas to the deep sea.

Education and work experience

Amann studied biology and chemistry (1986) and then obtained his PhD (1988) at the Technical University of Munich, Germany. Afterwards, he worked as a postdoc at the Department of Veterinary Pathobiology at the University of Illinois, USA (1988-1989). He was Assistant Professor of Microbiology at the Technical University of Munich from 1990 to 1996, and received his Habilitation at the same institution in 1995. Amann was Head of a Max Planck Research Group at the Max Planck Institute for Marine Microbiology in Bremen, Germany, from 1997 to 2001. He is currently Director at the Max Planck Institute for Marine Microbiology (MPIMM) in Bremen, and since 2001, Professor of Microbial Ecology at the University of Bremen.

Selected awards and honours

2007	Elected member of the German National Academy of Sciences Leopoldina
2004	Bergey's Award in Systematic Bacteriology
1998	Lecturer's Award of the Verband der Chemischen Industrie e.V.
1996	Award for Biology, Akademie der Wissenschaft zu Göttingen, Germany
1995	Koerber Award for European Sciences

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Dan I. Andersson

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial genetics
- Bacterial evolution
- Antibiotic resistance
- New genes

Research summary

Dan I. Andersson's research interests have been quite broad over the years, involving biochemistry, bacterial genetics, experimental evolution and mathematical modelling to address a number of different biological questions. The underlying theme has been to use bacterial genetics and experimental evolution to understand genetic adaptation and various evolutionary processes and mechanisms, with a present special focus on antibiotic resistance and evolution of new genes.

Education and work experience

Andersson obtained a PhD in Molecular Biology at Uppsala University, Sweden (1986). He then worked as a postdoc at the University of Utah, USA (1986-1989). Subsequently, he was associate professor in Microbiology at Uppsala University (1992) and chief microbiologist at the Swedish Institute for Infectious Disease Control, Solna (1995-2004). From 1998 to 2000, he was a visiting researcher at the University of Utah, and was section head of the Swedish Institute for Infectious Disease Control from 2001 to 2004. Andersson has been professor in Medical Bacteriology at Uppsala University since 2004, and Director of the Uppsala Antibiotic Center since 2016.

Selected awards and honours

2019	Wallenberg Scholar, Sweden
2015	Elected Fellow of the Royal Swedish Academy of Sciences
2014	Elected Fellow of the Royal Society of Sciences at Uppsala, Sweden
2012	Elected Fellow of the American Academy of Microbiology
1986	Five-year postdoctoral fellowship from The Wallenberg Foundation, Sweden

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Siv Andersson

PRIMARY RESEARCH AREA

Taxonomy, systematics and evolution

KEYWORDS

- Host-associated bacteria
- Planctomycetes
- Bioinformatics
- Genomics

Research summary

Siv Andersson's research is concerned with the evolution of bacterial genomes. Her group aims to understand host-adaptation and the origin and evolution of eukaryotic cells. Her group has previously studied the genomes of a variety of host-adapted bacteria, such as *Rickettsia*, *Wolbachia*, *Orientia*, *Buchnera* and *Bartonella*. Her current research includes comparative studies of *Apilactobacillus* sampled from the honeycrop of honeybees. These bacteria are important for food preservation and pathogen defence in the beehive. Another focus is on comparative studies of *Planctomycetes*, which display a multitude of cellular traits that are analogous to traits that are otherwise considered unique to the eukaryotes. The goal is to develop a model for the evolution of cellular complexity.

Education and work experience

Andersson received her PhD in molecular biology at Uppsala University, Sweden (1990). She obtained an EMBO fellowship for postdoctoral studies at the Laboratory of Molecular Biology in Cambridge, UK and at the Columbia Medical School in New York, USA. After the postdoc period, she returned to Uppsala and obtained a professorship in molecular evolution in 2000. Between 1999 and 2002, she was head of the Linnaeus Centre for Bioinformatics in Uppsala University and between 2003 and 2009 she was head of the department of Evolution, Genomics and Systematics.s In 2011, she became a Wallenberg Scholar and served as co-director of Science for Life Laboratory between 2017 and 2020.

Selected awards and honours

2017	The Linnaeus Medal in Gold from Uppsala University, Sweden
2014	Awarded the Gold Medal from the Royal Society of Sciences at Lund, Sweden
2005	Awarded the Göran Gustafssonpriset i Molekylärbiologi Prize, Swedish Royal Academy of Sciences
2004	Elected Member of the European Molecular Biology Organization (EMBO)
2002	Awarded the Letterstedt Prize, Swedish Royal Academy of Sciences

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Judy Armitage

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Motility
- Flagella
- Chemotaxis
- Behaviour

Research summary

Judith Armitage's work focuses on bacterial behaviour, particularly alphaproteobacteria. Her research uses interdisciplinary approaches to examine structure and function of flagella and the controlling chemosensory pathways. She also uses single cells and single protein live cell imaging to follow protein dynamics.

Education and work experience

Armitage obtained a BSC in Microbiology (1972) and PhD (1976) both at University College London, UK. She was later a Quain Fellow, and then awarded a Lister Fellowship. In 1985, Armitage was appointed University Lecturer in Biochemistry at the University of Oxford. She was then made full professor in 1996, and later became Head of the Systems Biology Centre (2006-2012). Armitage has been Emeritus Professor at Merton College since 2019.

Selected awards and honours

2018	Elected President of Microbiology Society, UK (2019-2021)
2013	Elected Fellow of the Royal Society, UK (2020 elected to Council)
2011	Elected Fellow of the American Academy of Microbiology
2010	Elected Member of the European Molecular Biology Organization (EMBO)

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Cecilia M. Arraiano

PRIMARY RESEARCH AREA

Molecular microbiology

KEYWORDS

- Control of Gene Expression
- RNA Biology
- Ribonucleases
- Synthetic Biology

Research summary

Cecilia M. Arraiano's group studies how RNA molecules and RNA binding proteins control the life of the cell. She has focused on the control of gene expression, mostly in microorganisms. Namely, she has characterized many ribonucleases, the enzymes that are essential for RNA metabolism and she has unravelled new mechanisms of RNA degradation. Other interests of her group are stress, microbial growth and survival. She has studied several pathogens, and she has also been applying her knowledge on RNA, RNases and functional small non-coding RNAs in Synthetic Biology to re-program bacteria for use in industrial applications. Therefore her work has been having many applications in Health and Biotechnology.

Education and work experience

Arraiano graduated in Biology from the University of Lisbon, Portugal. Later she was a Fulbright-Hays fellow in the USA and obtained her PhD in Genetics and she was a postdoctoral fellow in the University of Georgia, USA. She is currently Coordinating Investigator at the Instituto de Tecnologia Química e Biológica António Xavier (ITQB NOVA) of Universidade NOVA de Lisboa, Portugal, where she directs the Control of Gene Expression Laboratory.

Selected awards and honours

2014	Elected Fellow of the American Adacemy of Microbiology
2013	Elected Chair of Women in Science Workgroup of Federation of European Biochemical Societies (FEBS)
2009	Elected Member of the Portuguese Academy of Sciences
2008	Elected Member of the European Molecular Biology Organization (EMBO)
2008	Prize Câmara Pestana/Glaxo Smith-Klein

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Nathalie Q. Balaban

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- Self replicating matter
- Antibiotic resistance
- Persistence
- Tolerance

Research summary

Nathalie Balaban's research interests focus on the development of experimental and theoretical approaches to the study of single-cell heterogeneity, and the determination of its role in disease and evolution. She has pioneered the use of tools such as microfluidics and automated setups to study quantitatively the heterogeneous response of bacteria to antibiotics. Her results shed new light on how antibiotic treatment failure may evolve and lead to resistance, in experimental evolution in the lab as well as in patients.

Education and work experience

Balaban completed her studies in Israel with a BSc in Mathematics and Physics at the Hebrew University (1989-1991) and MSc (1991-1992) and PhD in Physics (1993-1999) at the Weizmann Institute. In 2000, she moved to the USA, where she was a Dicke fellow at the Physics Department at Princeton University. From 2001 to 2003, she was a postdoctoral fellow at the Center for Physics and Biology, Rockefeller University, USA. Nathalie moved back to Israel where she was appointed senior lecturer (2003-2009), associate professor (2009-2016) and since 2016 she holds the position of full professor in Biophysics at Hebrew University of Jerusalem.

Selected awards and honours

2018	Elected Fellow of the American Academy of Microbiology
2016	Klachky Prize for the Advancement of the Frontiers of Science, Israel
2015	ERC Consolidator Grant
2010	ERC Starting Grant
2009	Krill Prize for Excellence in Science from the Wolf Foundation, Israel

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Dennis H. Bamford

PRIMARY RESEARCH AREA

Genetics and molecular biology

KEYWORDS

- Virology
- Biotechnology

Research summary

Dennis Bamford's scientific interests are focused on the viral universe as a whole as well as how viruses operate as seen at atomic level. His research has elucidated, by discovering how viral molecular machines (polymerase and packaging enzyme complexes) work, what determines the size in certain icosahedral viruses and how to self-assemble a complex infectious viral particle from its purified structural constituents as well as how RNA dependent RNA polymerases operate. The accumulating information on virus structures has led to a surprising new hypothesis on virus evolution and origins.

Education and work experience

Bamford obtained his PhD in Genetics in 1980 at the University of Helsinki, Finland, and followed a postdoc EMBO fellowship at the Public Health Research Institute of the City of New York (1981-1982). He held a Senior Scientist position at the Academy of Finland (1983-1992) followed by a Research Directorship at the Institute of Biotechnology (1992-1997). He was nominated as Professor in General Microbiology in 1993. Between 2002-2007 as well as 2011-2016 Bamford had an Academy Professor position at the Academy of Finland. Since 1992, he has directed two Centres of Excellence in Virus Research at the University of Helsinki. Bamford is currently an Emeritus Professor at the University of Helsinki.

Selected awards and honours

2006	Elected Member of the European Molecular Biology Organization (EMBO)

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Fernando Baquero

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Antibiotic resistance
- Evolutionary biology
- Population biology
- Microbiome

Research summary

Fernando Baquero's research focuses on the biochemistry, genetics, population biology, epidemiology, ecology, and evolutionary biology of antibiotic resistance and virulence. He is particularly interested in the multi-level processes influencing selection of resistant microbes, and the possibilities of applying control interventions and therapies. He also studies the multi-level structure of bacterial populations and communities and their modelization.

Education and work experience

Baquero graduated in Medicine and Surgery at the Complutensis University in Madrid, Spain (1965), and received his Ph.D. in Medical Microbiology from the Autonomous University of Madrid (1973). He was trained at the National Hospital for Infectious Diseases in Madrid, at Max von Pettenkofer Institute in Munich (1970), Pasteur Institute in Paris (1974-75), and Emory University (1995). He was Scientific Director of the Ramón y Cajal Health Research Institute (IRYCIS) in Madrid (2008-2015) and Senior Scientist in Evolutionary Biology at the Center for Astrobiology (CAB, INTA-NASA associated). Since 2008, he has been Research Professor in Microbial Evolution and Director of the Division of Microbial Biology and Evolution of Microorganisms at IRYCIS.

Selected awards and honours

2017	Arima Award of the International Union of Microbiological Societies
2015	André Lwoff Award of the Federation of European Microbiological Societies (FEMS)
2011	Descartes Award for International Cooperative Research of the EU Commission
2010	Garrod Medal of the British Society for Antimicrobial Chemotherapy
2002	ICAAC Award from the American Society of Microbiology

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Frédéric Barras

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Stress adaptation
- Fe-S cluster biology
- Redox biology
- Enterobacteria metabolism

Research summary

Frédéric Barras researches the use of the *E. coli* model to investigate questions of general interest in biology such as Fe-S-based biology and protein homeostasis control, adaptation of *E coli* and enteric pathogens to redox and nutritional stress and the bioenergetic control of antibiotic stress.

Education and work experience

Barras obtained his PhD at Aix Marseille University, France (1984), and went on to hold postdoctoral positions at Kansas State University, USA (1985-86) and University Massachusetts Medical School, USA (1986-87). He was hired at the French National Centre for Scientific Research (CNRS) in 1988, and was subsequently nominated Professor at Aix Marseille University in 1997. He was invited as a visiting Professor at La Sapienza Roma, Italy (2016, 2020) and University of Wisconsin-Madison, USA (2012). Since 2017, Barras is Professor, Head of the Stress Adaptation unit and Head of the Department of Microbiology at Institut Pasteur in Paris.

Selected awards and honours

2021	Elected Fellow of the American Academy of Microbiology
2016	Awarded the Médaille Louis Pasteur-Fondation Romain Prévot, French Academy of Sciences
2015	Awarded Les Grandes Avancées en Biologie (with B. Ezraty), French Academy of Sciences
2009	Elected Member of the Institut Universitaire de France (IUF)

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Ralf Bartenschlager

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- Virus-host cell interaction
- Antiviral therapy

Research summary

Ralf Bartenschlager's doctoral and postdoctoral research laid the ground for his later study of the basic aspects of the HCV replication cycle and for the development of antiviral therapy. His field of research has subsequently expanded into the molecular and cell biology of HCV, HBV and flavivirus infection, more recently also coronaviruses. He currently studies virus-host cell interaction, and employs, amongst others, cutting-edge imaging technologies. A specific focus is the replication organelles formed by these viruses, as well as the race between virus replication and the innate immune response. Emphasis is placed on antiviral therapy and therapy resistance, as well as the mode-of-action of selected antiviral compounds.

Education and work experience

Bartenschlager studied molecular biology at Heidelberg University, Germany. After a postdoctoral phase at Hoffmann La Roche AG in Basel, Switzerland, where he set up a research project on hepatitis C virus, he joined the Institute for Virology at the University of Mainz, Germany, to set up his independent research group. He did his habilitation in 1999 and became professor for Molecular Virology at the same institute. In 2003, he moved to Heidelberg University where he received the Chica and Heinz Schaller endowed professorship for Molecular Virology. In 2014, he became head of the newly established Division Virus-Associated Carcinogenesis at the German Cancer Research Center (DKFZ).

Selected awards and honours

2020	Awarded the M.W. Beijerinck Virology Prize, Netherlands
2019	Prince Mahidol Award for Medicine, Thailand
2016	Lasker-DeBakey Clinical Medical Research Award (jointly with C. M. Rice und M. J. Sofia)
2015	Robert Koch Award, Germany (jointly with C. M. Rice)
2002	William Prusoff Young investigator award of the International Society for Antiviral Research

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Marek Basler

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Type VI secretion systems
- Live-cell imaging
- Structural biology

Research summary

Marek Basler studies a molecular nanomachine, the type VI secretion system. His lab is interested in the structure, dynamic localization and interactions of proteins that form this large system present in a variety of gram-negative bacteria. The lab also studies the importance of this secretion system in pathogenesis and inter-bacterial competitions.

Education and work experience

Basler conducted his master and doctoral research in the lab of Prof. Peter Šebo at the Institute of Microbiology, Prague, Czech Republic. From 2007 to 2013 he was a post-doctoral fellow in the lab of Prof. John Mekalanos at the Harvard Medical School, Boston, USA. Since 2013, Marek Basler has been a group leader at the Biozentrum of the University of Basel in Switzerland.

Selected awards and honours

2019	Sanofi-Institut Pasteur International Junior Award
2018	EMBO Gold medal
2018	Friedrich Miescher Award, Switzerland
2015	EMBO Young Investigator

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Edward Bayer

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- The multi-enzyme cellulosome complex
- Avidin-biotin technology
- Cellulases
- Hemicellulases

Research summary

Edward Bayer is co-inventor of avidin-biotin technology, co-discoverer of the multi-enzyme cellulosome concept and has pioneered the development of designer cellulosomes for research and biotechnological applications. His interests continue to focus on the structural and functional consequences of protein-protein, protein-carbohydrate and protein-ligand interactions, protein engineering, synthetic biology, nanobiotechnology, enzymology of cellulases and related enzymes, anaerobic cellulolytic bacteria, cellulosic biomass degradation and its conversion to biofuels.

Education and work experience

Bayer received his BSc Degree at the University of Michigan, USA, and his Master's Degree at Wayne State University, USA, before continuing for his PhD at the Weizmann Institute of Science in Rehovot, Israel. He performed postdoctoral research at Tel Aviv University before returning to the Weizmann Institute in 1982, where he has since remained. He is a Full Professor at the Weizmann Institute, a Guest Professor at the Beijing University of Chemical Technology in China, and an Adjunct Professor at Ben-Gurion University of the Negev in Israel.

Selected awards and honours

2006 The Ulitzky Prize, Israel Society for Microbiology

2002 Elected Member of the American Academy of Microbiology

1990 The Sarstedt Research Award, Germany

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Dörte Becher

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Microbial proteomics

Research summary

Dörte Becher's research addresses the development, establishment and optimization of mass spectrometry based proteomics methods with a focus on global characterization of microbial proteomes in a qualitative and quantitative manner. Her work also focuses on the application of newly established methods for the global analysis of protein expression profiles as well as the characterization of single proteins, post-translational modified proteins or protein complexes. In addition, her research tackles absolute protein quantification with targeted as well as global methods for determination of proteins on the level of copy number per cells especially in the context of systems biology. Becher's work also encompasses the elaboration and application of proteomics methods with particular consideration of technologically/industrial relevant questions, infection related conditions or meta-proteomics aspects.

Education and work experience

Becher received her Diploma in Chemistry at the Ernst-Moritz-Arndt University Greifswald, Germany, in 1992 during which she also participated in the ERASMUS Students Exchange Program at the University of Aberdeen, UK. She then returned to the Institute of Microbiology, University of Greifswald, to complete her PhD (1993-1998) and to work as a Scientific Assistant (1999-2013). Becher started her own research group "Microbial Proteomics and Mass Spectrometry" in 2003. Meanwhile in 2012 she received her Habilitation in Microbiology. In 2013 she became Professor for Microbial Proteomics at the Institute for Microbiology, University Greifswald where she was later appointed Managing Vice Director (2014) and Managing Director (2020).

Selected awards and honours

2011 Secretary-Treasurer of the Bacteriology and Applied Microbiology Division (BAM) of the International Union of Microbiological Societies (IUMS)

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Oded Beja

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Environmental genomics of marine microbes

Research summary

Oded Béjà investigates environmental genomics. To illuminate the role of microorganisms in the open seas, his lab is exploring the metabolism of planktonic microbes using novel molecular biology techniques, along with functional genomics and bioinformatics. Béjà's lab is currently focusing on photosynthesis genes found in viruses that infect cyanobacteria and on developing different functional metagenomic screens.

Education and work experience

Béjà graduated with a BSc degree from the Robert H SmithFaculty of Agriculture, at the Hebrew University of Jerusalem, Israel. He then obtained his MSc and PhD from the Weizmann Institute of Science, Israel (1998). From 1998 to 2001, he was a postdoctoral fellow at the Monterey Bay Aquarium Research Institute (MBARI) in the USA. He then returned to Israel where he was appointed an Assistant Professor (2001-2006) before becoming Associate Professor (2006-2010) at the Technion-Israel Institute of Technology. Since 2010, he has been Full Professor at the same institution.

Selected awards and honours

2019	The Henry Taub Prize for Academic Excellence, Technion-Israel Institute of Technology
2014	Louis and Lyra Richmond Chair in Life Sciences
2005	The Moshe Shilo Prize, Israel Society for Microbiology
2003	EMBO Young Investigator Award (EMBO-YIP 2003)
2002	New Investigator Award, American Society for Photobiology

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Sigal Ben-Yehuda

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Social microbiology
- Bacterial sporulation
- Nanotube
- Bacteriophage

Research summary

Sigal Ben-Yehuda studies three major topics in bacterial biology by employing *Bacillus subtilis* as a main model organism. The first topic is bacterial nanotubes; her lab discovered and characterized intercellular membranous nanotubes formed among neighbouring bacterial cells. They provided evidence that via such junctions, bacteria exchange cytoplasmic molecules including antibiotic resistant proteins and DNA. The lab is now engaged in defining the molecular components and the molecular cargo of nanotubes. The second topic is strategies employed by bacteriophages to cross species barriers, exploring how bacteriophages spread in multicellular bacterial communities and how they overcome species barriers. The third topic is spore dormancy and awakening. Her lab studies how spore dormancy is maintained and how it is ceased, and what are the first molecular events occurring during spore revival.

Education and work experience

Ben-Yehuda graduated from Tel Aviv University with degrees in life sciences and microbiology. In her graduate work, she focused on studying cell cycle progression in the budding yeast Sacharomyces cerevisiae. She subsequently carried out postdoctoral training at Harvard University, USA, under the supervision of Prof. Richard Losick, investigating the process of sporulation in Bacillus. In 2004, she joined the Department of Microbiology and Molecular Genetics at the Hebrew University of Jerusalem to establish her own research laboratory.

Selected awards and honours

2018	ERC Synergy Grant
2013	ERC Independent Researcher Advanced Grant
2011	DGHM Lecture, Annual Meeting of the German Society for Hygiene and Microbiology (DGHM)
2011	The Sir Zelman Cowen Prize for discovery in medical research, Australia
2011	The Israel society for microbiology Shilo Award

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Mervyn Bibb

PRIMARY RESEARCH AREA

Biochemistry and molecular biology

KEYWORDS

- Antibiotic biosynthesis
- Actinobacteria
- Gene regulation

Research summary

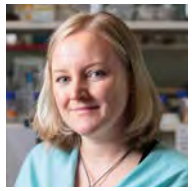
Mervyn Bibb is a molecular microbiologist who has made major contributions to our understanding of antibiotic production and its regulation in actinobacteria, the major source of clinically useful antibiotics. The resulting knowledge is used not only to understand how these complex molecules are made, but also to engineer the producing organisms to achieve increases in productivity and to make potentially improved derivatives. Genome sequencing has revealed that actinobacteria have the potential to produce many more natural products than previously thought, many of which may possess anti-microbial activity; his research included the activation of some of these silent biosynthetic gene clusters and the characterisation of their products. His group also developed a series of derivatives of *Streptomyces coelicolor*, the most genetically studied actinobacteria, specifically engineered for the expression of heterologous natural product gene clusters.

Education and work experience

Bibb completed his education at the University of East Anglia where he graduated with a First Class BSc in Biological Sciences and was awarded a PhD in 1978 for studies of plasmids in *Streptomyces coelicolor*. After postdoctoral studies at Stanford University, California, USA he accepted a faculty position at the John Innes Centre, Norwich, UK in 1982, where he is now an Emeritus Fellow. In 2015 he was bestowed as Docteur Honoris Causa, by the Université de Lorraine, Nancy, France for his scientific achievements. He is a Honorary Professor at the University of East Anglia, UK, the Institute of Microbiology, Chinese Academy of Sciences, Beijing, China, and Wuhan University, China.

Selected awards and honours

2017	David Gottlieb Medal
2013	Heatley Medal Prize, Biochemical Society, UK
2013	Elected Fellow of the Royal Society, UK
2001	Charles Thom Award, Society for Industrial Microbiology and Biotechnology, UK
1995	Colworth Prize



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Melanie Blokesch

PRIMARY RESEARCH AREA

Molecular infection biology

KEYWORDS

- Vibrio cholerae
- Horizontal gene transfer
- Pathoecology
- Antibiotic resistances

Research summary

Melanie Blokesch's work focuses on the different aspects of bacterial evolution and pathogen emergence. Broadly speaking, her research investigates how bacteria behave in their natural environment, how they exchange genetic information, and how the pathogens' different behaviours are interconnected through sophisticated regulatory networks. Her research group's interests are based on basic scientific curiosity and the endeavour to better understand complex biological processes; they strive to decipher the underlying mechanisms, which might allow to link these processes to human disease.

Education and work experience

Blokesch completed her Diploma in Microbiology (1995-2000) and PhD in Biology (2000-2004) at the Ludwig-Maximilians-University, Munich, Germany. She then became a Postdoctoral Fellow at the Division of Infectious Diseases and Geographic Medicine & Department of Microbiology & Immunology, Stanford University, USA (2005-2009). In 2009 she took a tenure-track Assistant Professor position at the Global Health Institute, School of Life Sciences, Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland where she was promoted to tenured Associate Professor in 2016 and Full Professor in 2021.

Selected awards and honours

2019	Elected Member of the European Molecular Biology Organization (EMBO)
2017	Howard Hughes Medical Institute International Research Scholarship
2016	ERC Consolidator Grant
2015	Research Award, German Association for General and Applied Microbiology (VAAM)
2015	Teaching Award "Polysphère" for best teacher within the School of Life Sciences, École Polytechnique Fédérale de Lausanne (EPFL)

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Antje Boetius

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Marine microbiology
- Biogeochemistry
- Deep sea research
- Microbial habitats

Research summary

Antje Boetius is a polar and deep-sea researcher and director of the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research. As Professor of Geomicrobiology and head of the Joint Research Group for Deep-sea Ecology and Technology at the Max Planck Institute for Marine Microbiology, she is also involved in the MARUM Cluster of Excellence at the University of Bremen. Boetius has participated in almost 50 expeditions on international research vessels. Her research focuses on the effects of climate change on microbial processes, especially in polar seas, and the microbial biodiversity and functioning of the deep sea and other extreme environments. Her group also researches the microbiology and biogeochemistry of anaerobic degradation of methane and other hydrocarbons.

Education and work experience

Boetius studied biological oceanography in Hamburg and San Diego (1986-1992) and in 1996, received her PhD in deep-sea microbiology. After stays at various marine research institutes, she established a research group for the study of microbial habitats in the ocean at the Max Planck Institute for Marine Microbiology (2003-2008). Since the end of 2008, she leads the Helmholtz-Max Planck Joint Research Group for Deep-Sea Ecology and Technology. In 2017 she became Director of the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research.

Selected awards and honours

2019	Awarded the First Class Order of Merit of the Federal Republic of Germany
2018	Awarded the Environment Prize of the German National Foundation for the Environment
2018	Awarded the Vernadsky Medal of the European Geosciences Union (EGU)
2009	Elected Member of the German National Academy of Sciences Leopoldina
2009	Gottfried-Wilhelm-Leibniz Prize of the German Research Foundation (DFG)

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Elizaveta Bonch-Osmolovskaya

PRIMARY RESEARCH AREA

Microbial diversity

KEYWORDS

- Extremophiles
- Extremozymes
- Extreme environments

Research summary

Elizaveta Bonch-Osmolovskaya works on the field of diversity of extremophilic microorganisms, their genomics, metabolism and ecology. Together with her colleagues, she described many new taxa of thermophilic prokaryotes including those of high level (orders, classes, phyla). She is especially interested in isolation and description of thermophilic prokaryotes with unusual types of catabolism – lithoautotrophs, anaerobes, and microorganisms using diverse inorganic electron acceptors. Together with her colleagues she studies the metabolism of new extremophilic isolates, their natural communities structure and their highly stable enzymes for biotechnology.

Education and work experience

Elizaveta Bonch-Osmolovskaya graduated from Lomonosov State University, Moscow, and attended PhD courses in Winogradsky Institute of Microbiology, Russian Academy of Sciences. Later she worked as a researcher in the same Institute. Since 1996 Bonch-Osmolovskaya became the head of the laboratory and since 2007 – a Deputy Director of the Winogradsky Institute of Microbiology. From 2015 to 2018 she was a Deputy Director of the Federal Research Center of Biotechnology, as the Winogradsky Institute of Microbiology became its part. At present Elizaveta Bonch-Osmolovskaya is still the head of Extremophiles Biology Department in FRC of Biotechnology. Since 2018 she is heading the Microbiology Department in Lomonosov State University, Moscow, Russia.

Selected awards and honours

2016	Bergey's Trust Award
2016	Elected Corresponding Member of the Russian Academy of Sciences
2012	Elected Member of the American Academy for Microbiology
2012	Winogradsky Award of the Russian Academy of Sciences
2004	ASM Morrison Rogosa Award

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Axel Brakhage

PRIMARY RESEARCH AREA

Fungal infection biology and antibiotics

KEYWORDS

- Infection biology of human pathogenic fungi
- Molecular biotechnology
- Functional microbiome research
- Eukaryotic gene regulation

Research summary

Axel Brakhage's research focuses on infection biology of human-pathogenic fungi, in particular of *Aspergillus fumigatus*, working towards the identification of immune evasion molecules. His group also works on extracellular vesicles of immune effector cells. In addition, his research encompasses functional microbiome analyses, exploring how natural products produced by microorganisms can serve as communication molecules that shape microbial communities. Analysis of functional interactions is essential for understanding the composition of microbiomes. Furthermore, several of the newly discovered natural products are being analysed for their potential as antibiotics and reproduced using synthetic biology.

Education and work experience

Brakhage completed his doctorate at the Institute of Microbiology at the University of Münster, Germany. He conducted postdoctoral research at the University of Sheffield, UK, and then became Assistant Professor at the University of Munich, Germany. In 1998, he became Associate Professor at Darmstadt University of Technology, then in 2001 Full Professor at the Leibniz University, Hannover. From 2004, he was Full Professor at the Friedrich Schiller University Jena, with simultaneous appointment to Head of Department and Director of the Leibniz Institute for Natural Product Research and Infection Biology (Leibniz-HKI) in Jena, Germany. Brakhage was recently elected vice president of the DFG and senator of the German National Academy of Sciences Leopoldina.

Selected awards and honours

2019	Society for Medical Mycology, UK
2017	Elected Fellow of the American Academy of Microbiology
2015	Elected Honorary Member of the German-speaking Society for Mycology (DMykG)
2014	Main research award, German Society for Hygiene and Microbiology (DGHM)
2006	Heinz Seeliger Award for Infection Biology, Germany

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Erhard Bremer

PRIMARY RESEARCH AREA

Molecular microbiology

KEYWORDS

- Gene expression control
- *Bacillus subtilis*
- Osmoregulation
- Transporters

Research summary

Erhard Bremer strives to comprehensively understand the cellular adjustment of microorganisms, primarily those of the Gram-positive bacterium *Bacillus subtilis*, to fluctuations in the environmental osmolarity. He studies the homeostasis of key players in this process with respect to the synthesis, import, and excretion of compatible solutes, physiologically compliant organic osmolytes that also serve as chemical chaperones. A particular focus of the work of Bremer's group is the analysis of osmoregulated transport systems for compatible solutes and the mechanism(s) of osmoregulated gene expression.

Education and work experience

Erhard Bremer studied microbiology and bacterial genetics at the Eberhard Karls University Tübingen, Germany, where he also received his Diploma in Biology (1980). He conducted graduate work at the Max-Planck-Institute for Biology in Tübingen and received a PhD from the University of Tübingen (1982). Subsequently, he worked as a postdoctoral fellow at the NCI Cancer Research Center, Frederick in Maryland, USA (1982-1984). From 1984 to 1992, he was a staff scientist at the University of Konstanz, Germany, where he set-up his own research group. He obtained his Habilitation in 1989. In 1992, he moved to Marburg to join the Max-Planck-Institute for Terrestrial Microbiology at the Department of Biochemistry with Prof Rolf Thauer, as an independent group leader. Bremer became Full Professor for Molecular Microbiology at the Philipps-University Marburg in 1995, where he worked until his retirement in 2020. Since then, he has been a Guest-Professor at the Center for Synthetic Microbiology (SYNMIKRO) of the Philipps-University Marburg. In 2013, he spent a sabbatical at Princeton University (USA) at the Department of Molecular Biology.

Selected awards and honours

2015	Elected Fellow of the American Academy of Microbiology
1991	Young Investigator Award from the German Association for Hygiene and Microbiology

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Roland Brosch

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Integrated mycobacterial pathogenomics
- *Mycobacterium tuberculosis*

Research summary

Roland Brosch is very interested in mycobacterial evolution and pathogenicity. These are key issues for the identification of new virulence mechanisms of *M. tuberculosis*, for elucidating the extraordinary evolutionary success of *M. tuberculosis*, and for gaining new insights and perspectives into host-pathogen interaction. They are also crucial for the development of new vaccine and treatment concepts.

Education and work experience

Brosch studied biology at the Universities of Graz and Salzburg, Austria. He obtained his PhD at the University of Salzburg and completed several years of postdoctoral training at the University of Wisconsin in Madison and the Institut Pasteur in Paris. He is now Professor and Head of the Integrated Mycobacterial Pathogenomics Unit at the Institut Pasteur. Brosch contributed on groundbreaking genome projects of *M. tuberculosis*, the etiological agent of TB, the BCG vaccine, and the ancestral gene pool of TB-causing mycobacteria (*Mycobacterium canettii*). He was also involved in pioneering work on the evolution of the *M. tuberculosis* complex and the discovery and functional characterization of the ESX / type VII secretion system of *M. tuberculosis*.

Selected awards and honours

2019	Elected Fellow of the American Academy of Microbiology
2013	Equipe French Foundation for Medical Research (FRM)
2007	"Georges, Jacques and Elias Canetti" Prize laureate, France

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Carmen Buchrieser

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Infection biology
- Evolution and horizontal gene transfer
- Pathogenicity
- Prokaryotic genetics

Research summary

Carmen Buchrieser heads a research group that studies bacterial pathogenesis. She is using *Legionella pneumophila* and *L. longbeachae*, environmental bacteria parasitizing within free-living protozoa and human pathogens that cause severe pneumonia, as tools to uncover host pathways that are manipulated during infection, mechanisms that a bacterial pathogen may apply to establish infection and cause disease and the evolution of a bacterium into an intracellular pathogen of amoeba and human macrophages. The biology to discover by studying *Legionella*-host interactions is fascinating, as this bacterium is one of the best cell biologists or perhaps "a hidden eukaryote" that allows us to understand not only bacterial pathogenesis strategies but also to decipher host pathways that need to be subverted by a pathogen to cause disease.

Education and work experience

Buchrieser obtained her PhD from the University of Salzburg in Austria. She conducted postdoctoral trainings at the University of Wisconsin, Madsion, USA and at the Instituit Pasteur, Paris, France. She is currently Professor at the Institut Pasteur, Paris France where she is heading since 2008 a research group studying bacterial pathogenesis.

Selected awards and honours

2018	Awarded the Memain Pelletier Prize, French Academy of Sciences
2013	Elected Member of the German National Academy of Sciences Leopoldina
2013	Elected Fellow of the American Academy of Microbiology
2013	Elected Member of the European Molecular Biology Organization (EMBO)
2012	HUMBOLDT Research Award, Humboldt Foundation, Germany

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Dirk Bumann

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Metabolism of bacterial pathogens
- Single-cell properties

Research summary

Dirk Bumann investigates the physiology of bacterial pathogens (*Salmonella*, *Pseudomonas*, and *Staphylococcus*) in infected tissues of rodents and human patients, focusing on single-cell behaviour, metabolism and potential applications for novel anti-infectives. His laboratory employs fluorescent reporters and flow cytometry to unravel heterogeneous single-cell properties and to purify subsets of pathogen cells from host tissues. Purified subsets are analysed by proteomics to gain comprehensive insights into heterogeneous in-vivo activities of pathogens. Fluorescence microscopy is used to reveal the host context of pathogen cells. Using these methods, the group unravelled the wide heterogeneity of *Salmonella* stress responses and replication rates in infected tissues, and their impact on antimicrobial susceptibility. They could also determine the main antimicrobial mechanisms of major host proteins myeloperoxidase and NRAMP1 (also called SLC11A). The group is currently extending such analyses to human infections in collaboration with clinical partners.

Education and work experience

Bumann studied biology and chemistry at the Free University in Berlin, Germany, from 1985 to 1989. In his PhD thesis, he studied the biochemistry and biophysics of photosystem II of a green algae at the Max-Planck-Institute for Biochemistry in Martinsried, Germany. After a post-doc in invertebrate gut biology at the Marine Biological Laboratory, Woods Hole, MA, USA, he became a team leader at the Max-Planck-Institute of Infection Biology in Berlin, studying pathogenesis of *Helicobacter pylori* and *Salmonella enterica*. In 2004, he became independent group leader at Hannover Medical School, Germany, where he continued to study *Salmonella* pathogenesis. Since 2007, he is professor for infection biology at the Biozentrum, University of Basel, Switzerland.

Selected awards and honours

2015 Elected Member of the European Molecular Biology Organization (EMBO)
2015 Pettenkofer Prize of the City of Munich, Germany
2007 "Go-Bio" Award, Germany
2006 EMBO Young Investigator Award
2006 BD Research Prize

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Stephen Busby

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Microbiology and infection
- Gene regulation
- Transcription
- Promoters

Research summary

Steve Busby's work focuses on the organisation of bacterial promoters and their interactions, biotechnology applications of promoters and gene regulatory circuits and the regulation of bacterial virulence determinants.

Education and work experience

Busby studied natural sciences at the University of Cambridge (1972) and completed his doctoral studies in biochemistry/biophysics at University of Oxford, UK. He subsequently worked as a Postdoc at Institut Pasteur and NIH, USA. He went on to hold a research position at Institut Pasteur and a faculty position at the University of Birmingham in the UK, where he is currently Professor of Biochemistry.

Selected awards and honours

2006 Elected Fellow of the American Academy of Microbiology
2005 Elected Fellow of the Royal Society, UK

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Gabriella Campadelli-Fiume

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- Herpes simplex virus
- Oncolytic herpes simplex virus
- Innate response to HSV infection
- Retargeted oncolytic virus

Research summary

Gabriella Campadelli-Fiume's research focuses on the molecular basis of herpes simplex virus (HSV) entry into the cell and exit out of the cell, in particular, the B-herpesviruses such as human herpesvirus-6 and human herpesvirus-7. She studies the design and preclinical efficacy of oncolytic HSVs retargeted to tumor-specific receptors, such as HER2, EGFR and the prostate specific membrane antigen.

Education and work experience

Campadelli-Fiume studied Biology and Virology at the University of Bologna, Italy. She carried out her training at the University of London, UK, and at the Max Planck Institute in Heidelberg, Germany. She then worked as a research assistant at University of Bologna, and was a Visiting Assistant Professor at University of Chicago, USA. She was Associate Professor at University of Bologna, before becoming Full Professor of Microbiology and Virology at the University of Milano and the University of Bologna. Campadelli-Fiume was later appointed Director of the Institute of Microbiology and Virology at the Medical School of the University of Bologna, where she is currently Professor Emeritus. Throughout her career, she was a founding member and member of Executive Board of Italian Society for Virology, European Society for Virology and European Academy of Microbiology.

Selected awards and honours

2016 Elected Ambassador to the American Academy of Microbiology

2001 Member of the Research Committee of Ministry of Health, Italy

2000 Athens Prize for outstanding research in Virology, Accademia Nazionale dei Lincei, Italy

1997 Prize from the Hellenic Pasteur Institute, Athens, Greece

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Josep Casadesús

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial genetics
- Bacterial epigenetics
- DNA methylation
- *Salmonella*

Research summary

Josep Casadesús' work focuses on the study of DNA methylation and other epigenetic mechanisms that generate phenotypic lineages in bacterial populations. Research at his laboratory deals with *Salmonella enterica*, a model organism in bacterial genetics and microbial pathogenesis.

Education and work experience

Casadesús obtained his PhD at the Estación Experimental del Zaidín, Spain. As a postdoc, Casadesús worked at the University of Sussex, UK, with Prof Ray Dixon and at the University of Utah, USA, with Prof John Roth. He is currently Professor of Genetics at the University of Seville, Spain. He has been visiting professor at the Universität Basel, Switzerland, working with Prof Werner Arber, and at the Università degli Studi di Sassari, Italy, collaborating with Salvatore Rubino and Guido Leori. He is currently editor of the Prokaryotic Genetics section of PLOS Genetics and member of the editorial boards of Plasmid and International Microbiology. From 2005 to 2010, Casadesús was Ambassador of the American Society for Microbiology (ASM) in Western Europe.

Selected awards and honours

2017 Elected Fellow of the American Academy of Microbiology

2016 Biomedal/Molecular Microbiology/SEM Best Publication Award

2014 Biomedal/Molecular Microbiology/SEM Best Publication Award

1997 Elected Fellow of the Barcelona Academy of Sciences, Spain

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Emmanuelle Charpentier

PRIMARY RESEARCH AREA

Molecular infection biology

KEYWORDS

- CRISPR-Cas
- Genome engineering technologies
- Gram-positive bacterial pathogens
- Regulatory RNAs and proteins

Research summary

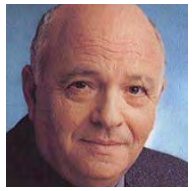
Emmanuelle Charpentier investigates regulatory mechanisms in infection and immune processes, focusing on Gram-positive bacterial pathogens. Her lab studies how RNAs and proteins coordinate to modulate gene expression at the transcriptional and post-translational levels. In particular, they study the biological pathways of regulatory RNAs and proteins, such as horizontal gene transfer, adaptation to stress, physiology, persistence, virulence, infection and immunity. They research interference systems in the defense against genetic elements (CRISPR-Cas), small regulatory RNAs that interfere with pathogenic processes, protein quality control that regulates bacterial adaptation, physiology and virulence, and recognition mechanisms between human immune cells and bacteria.

Education and work experience

Charpentier received her PhD in Microbiology from the Pasteur Institute, Paris, France. She held research positions at numerous institutes in the USA before establishing a research group as Assistant and Associate Professor at the Max F. Perutz Laboratories at the University of Vienna, Austria, where she habilitated in Microbiology. She was Associate Professor at The Laboratory for Molecular Infection Medicine Sweden at Umeå University in Sweden where she also habilitated in Medical Microbiology. Charpentier was Head of the Department of Regulation in Infection Biology at the Helmholtz Centre for Infection Research, Braunschweig and Professor at the Medical School of Hannover in Germany (2013-2015). She held an Alexander von Humboldt Professorship (2014-2015) and was Scientific Director and Head of the Department of Regulation in Infection Biology at the Max Planck Institute for Infection Biology in Berlin, Germany (2015-2018). Charpentier is Scientific and Managing Director of the Max Planck Unit for the Science of Pathogens and Honorary Professor at Humboldt University, Berlin.

Selected awards and honours

2016	Gottfried Wilhelm Leibniz-Preis der Deutschen Forschungsgemeinschaft (DFG)
2015	Elected Member of the German National Academy of Sciences Leopoldina
2015	Breakthrough Prize in Life Sciences
2014	Elected Member of the European Molecular Biology Organization (EMBO)



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Ilan Chet

PRIMARY RESEARCH AREA

Biochemistry and molecular biology

KEYWORDS

- Plant diseases
- Agricultural biotechnology

Research summary

Ilan Chet is recognised as a pioneer in the field of biological control of plant pathogens, which cause major crop losses. His research interests involve the biological control of soilborne plant diseases by using antagonistic organisms and biotechnology, as well as cloning of the chitinase gene to biocontrol agents.

Education and work experience

Chet completed his BSc, MSc and PhD in Microbiology at the Hebrew University of Jerusalem and started his academic career in 1978 as Professor of Microbiology at the same university. He was a visiting professor at the University of Göttingen, Netherlands, and at the Rutgers University, USA. Chet is currently an Emeritus Professor also at the Hebrew University of Jerusalem.

Selected awards and honours

2011	Solomon Bublick Award of the Hebrew University of Jerusalem, Israel
1998	Wolf Prize in Agriculture, Israel
1996	Japanese Arima Prize for Applied Microbiology
1994	Max-Planck Award for Distinguished Research, Germany
1990	Rothschild Prize in Agriculture, Israel

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Stewart Cole

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Tuberculosis
- Microbial pathogenesis

Research summary

Stewart Cole is active in drug discovery and drug development for Tuberculosis (TB) and the leader of ERA4TB (European Regimen Accelerator for Tuberculosis) a public-private initiative devoted to accelerate the development of new treatment regimens for tuberculosis. He has previously investigated many fields in microbiology: bacterial electron transport systems; the genomics and diagnostics of retroviruses (HIV) and oncogenic papillomaviruses (HPV); antibiotic resistance mechanisms; molecular microbiology of toxigenic clostridia. Cole is best known for his pioneering work on the genomics, evolution and virulence of pathogenic mycobacteria, especially those causing the human diseases TB and leprosy.

Education and work experience

Cole completed his BSc in Microbiology University of Wales, UK and PhD in Molecular genetics at the University of Sheffield, UK. He then moved to Sweden to become a postdoctoral fellow at University of Umea, and then to Germany at the Max-Planck-Institute, Tuebingen. Cole was a researcher and group leader at the Institut Pasteur, France, where he held various senior research management positions. From 2007 to 2017, he was full Professor and Director of the Global Health Institute at the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland. Since January 2018, he is the President of the Institut Pasteur.

Selected awards and honours

2014	Awarded the Emil von Behring Prize from the University of Marburg, Germany
2009	Awarded the Kochon Prize, WHO-Stop TB Partnership
2007	Elected Fellow of the Royal Society, UK
2002	Awarded the Marjory Stephenson Prize Lecture, Society for General Microbiology, UK
2002	Elected Member of the European Molecular Biology Organization (EMBO)

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Guy Cornelis

PRIMARY RESEARCH AREA

Molecular microbiology

KEYWORDS

- Microbial pathogenesis
- Yersinia
- Type III secretion
- Injectisome

Research summary

Guy Cornelis studied the pathogenesis of *Yersinia* Yersinia spp bacteria, which allowed him to pioneer the concept of type III secretion with Hans Wolf-Watz. He then concentrated on the structure and assembly of the injectisome. He also studied the pathogenesis of *Capnocytophaga canimorsus*, Gram-negative bacteria from the normal oral flora of dogs, which cause rare but severe infections in humans. His research especially focused on new kinds of feeding complexes, some of them specialized in deglycosylating glycoproteins from the host, allowing *C. canimorsus* to feed by grazing oligosaccharides at the surface of human cells.

Education and work experience

Cornelis graduated as a pharmacist from the University of Louvain, Belgium. He was a scholar at the W. Dunn School of Pathology in Oxford, UK, and received his doctoral degree from the Univ. of Louvain (1974). He then held research positions at the University of Bristol, UK, the University of Freiburg and the Max Planck Institute in Cologne, Germany. Cornelis was appointed Professor (1992) and Ordinary Professor (1997) of the University of Louvain where he chaired the Department of Microbiology-Immunology (1993-2000) and the Graduate School of Biochemistry, Cell Biology and Microbiology (1999-2000). Between 1991and 2002, he conducted research at the Christian de Duve Institute in Brussels. In 2000, he was appointed Ordinary Professor of the University of Basel in Switzerland, in 2001 he moved to the Biozentrum, where he chaired the Focal Area Infection Biology from 2004 until 2011. Cornelis has been Emeritus Professor at the Biozentrum since 2012. He then pursued his research with an advanced ERC grant at the University of Namur, Belgium until 2019. He served as the Chair of the Belgian Society for Microbiology from 2016 to 2019.

Selected awards and honours

2011	ERC Advanced Grant
2008	Elected Fellow of the American Academy for Microbiology
1998	Elected Member of the European Molecular Biology Organization (EMBO)

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Pascale Cossart

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- *Listeria monocytogenes*
- Cell biology

Research summary

Pascale Cossart has investigated how bacterial pathogens interact with mammalian cells during infection since 1986. She has pioneered and documented, in detail, how bacteria enter non-phagocytic cells and multiply therein, move intra-and intercellularly, and counteract the arsenal of host cell defences by using a series of strategies including posttranslational modifications, epigenetic modifications and innate immunity mechanisms. Her seminal investigations on the bacterial pathogen *Listeria monocytogenes*, that she has raised as a model and one of the best studied intracellular pathogens, have paved the way for laboratories studying bacterial infectious diseases throughout the world. Her contributions encompass infection biology, cell biology, functional genomics and fundamental microbiology, including RNA-mediated regulations.

Education and work experience

Cossart has held positions at the Pasteur Institute including Head of the Bacteria-Cell Interactions Unit (1991-2019), Professeur de Classe Exceptionnelle (2006-2019), Professor (1997-2005), Head of Laboratory (1988-1996), research leader (1980-1987) and assistant (1976-1979). She was also Professor in Biochemistry at the École Royale de Médecine, Vientiane, Laos (1974-1975), fellow at Georgetown University, USA (1970-1971) and research assistant at the Institut Universitaire de Technologie de Lille A (IUT A de Lille) (1969-1970). Cossart is currently an Emeritus Professor at the Pasteur Institute, France, and since 2016 a Secrétaire Perpétuel of the French Academy of Sciences.

Selected awards and honours

2021	Selman A. Waksman Award in Microbiology 2021, National Academy of Science, USA
2019	Lwoff Award, Federation of European Microbiological Societies (FEMS)
2018	Heinrich Wieland Prize, Germany
2010	Elected Foreign member of the Royal Society, UK
2009	Elected Foreign member of the National Academy of sciences, USA

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Patrice Courvalin

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Antibiotics and antimicrobial resistance

Research summary

Patrice Courvalin's research addresses the major public health problem of how bacteria pathogenic for humans become resistant to antibiotics. Basing his research on genetic and biochemical approaches, he pioneered the application of molecular biology techniques to the field of medical bacteriology and the use of such approaches on species other than *Escherichia coli*. Using contemporary state-of-the-art technology, he has described numerous new types of resistance, elucidated their genetic basis and biochemical mechanisms, and developed molecular tools for their detection. In addition, he investigated the origin, evolution, and dissemination of resistance genes, and these findings had significant implications for the understanding of the biology of bacteria and the evolution of their genomes.

Education and work experience

Courvalin, M.D. received a master's degree in Sciences and Human Biology from the University of Science in Paris, a Doctorate in Medical Sciences from the Medical School in Paris, and was a medical resident at the Hospital de l'Institut Pasteur. He was a Research Associate at the University of Wisconsin–Madison, (1974-1977) and was a Visiting Scholar in the Center for Molecular Genetics (1989-1990) and in the Department of Biology (1991-1994), University of California-San Diego (1989-1990). He has held many positions at the Institut Pasteur where he was head of the Antibacterial Agents Unit (1983-2015), director of the National Reference Center for Resistance to Antibiotics (1983-2011) and served as Chairman of the Department of Fundamental and Medical Microbiology (2002-2003). Courvalin is Doctor honoris causa of the University of El Bosque, Bogota, of the University of Mons, Hainaut, Belgium, of the Technical University of Denmark, and of the University of Zurich, Switzerland.

Selected awards and honours

2016	Sanofi-Institut Pasteur Award
2013	Awarded the Gold Medal of the International Union of Biochemistry and Molecular Biology
2012	BD Award for Research in Clinical Microbiology of the American Society for Microbiology
2007	Jean Valade Award of the Fondation de France
2004	Thomson-ISI Award, French Microbiologist Citation Laureate

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Antoine Danchin

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Synthetic biology
- Functional genomics
- Metabolic engineering
- Virology

Research summary

Antoine Danchin's work has focused on genomics and metabolism; among other things, he proposed and ensured the scientific coordination of the sequencing programme for the model bacterium Bacillus subtilis with the relevant infrastructure in bioinformatics (microbial specialized databases). He is currently working on the metabolic constraints driving evolution of the SARS-CoV-2 virus and on the forces driving evolution of cells when they are maintained in long term stationary phase (adaptive mutations). This is developed in a synthetic biology program focusing on the functional analysis of critical functions necessary to develop novel chassis for metabolic engineering.

Education and work experience

Danchin completed his education in Mathematics at the École Normale Supérieure in 1968 and obtained his PhD in Physical Sciences in 1971. He held several academic positions including Professor and Department Director at the Institut Pasteur in France and Founder and Scientific Director of the HKU-Pasteur Research Centre at the University of Hong Kong. Danchin is currently the co-founder of Stellate Therapeutics, a biotechnology company specialising in therapeutics derived from microbiota and member of the International Advisory Board of the International Nucleotide Sequence Database Collaboration. In addition, he is an Honorary Professor at the School of Biomedical Sciences, Faculty of Medicine, University of Hong Kong and the chief strategy officer of Kodikos Labs, a company working in Synthetic Biology.

Selected awards and honours

2013	Member of the Institut de France (Académie des Sciences)
2006	Grand Prix of the Atomic Energy Commission (CEA), French Academy of Sciences
1987	Prix du Rayonnement Français
1981	Elected Member of the European Molecular Biology Organization (EMBO)
1975	Prix Cahours de l'Académie des Sciences, French Academy of Sciences

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Victor De Lorenzo

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- Molecular environmental microbiology
- Environmental control of gene expression
- Metabolic engineering
- *Pseudomonas putida*

Research summary

Victor de Lorenzo specializes in Molecular Biology and Biotechnology of soil microorganisms (particularly *Pseudomonas putida*) as agents for the decontamination of sites damaged by industrial waste. At present, his work explores the interface between Synthetic Biology and Environmental Biotechnology, with an eye on large-scale bioremediation strategies and applications.

Education and work experience

De Lorenzo is a Chemist by training. After his PhD at the UAM Madrid, Spain (1983), he worked at the Pasteur Institute, France (1984), UC Berkeley, USA (1985-1987), the University of Geneva, Switzerland (1988) and the Federal Centre for Biotechnology in Braunschweig, Germany until 1991, the year in which he joined the Spanish National Research Council (CSIC) in Spain. He currently holds a position of Research Professor at the CSIC, where he heads the Laboratory of Environmental Molecular Microbiology at the National Centre for Biotechnology.

Selected awards and honours

2008	GlaxoSmithKline Award, International member of the year, American Society of Microbiology
2008	Awarded the Grand Prix of the Academy of Sciences of the French Institute of Petroleum
2001	Awarded the "Rey Jaime I" Prize in Environmental Protection research, Spain
2001	Dolman Lecturer Award, Department of Microbiology, University of British Columbia, Canada
1999	Elected Member of the European Molecular Biology Organization (EMBO)

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Willem M. de Vos

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Microbial population
- Biochemistry

Research summary

Willem M. de Vos's work aims to understand and exploit microbes using molecular, (meta) genomics and systems approaches. His current research interests are focused on the human intestinal tract microbiome and its relation with health and disease. His top achievements include the development and application of food-grade inducible expression systems for lactic acid and other bacteria; the discovery of how bacteria use peptides to communicate with friends and fight together their enemies, as well as the development of high efficiency metabolic engineering of lactic acid bacteria. He contributed in the discovery of *Akkermansia* and its development into a next generation therapeutic microbe. Furthermore, he also contributed in the identification of enterotypes in the intestinal tract microbiota and the discovery of the microbial basis for successful faecal microbiota transplantation (FMT) in CDI patients & strain tracking in FMT.

Education and work experience

De Vos studied Biochemistry and obtained a PhD at Groningen University, Netherlands and the Max Planck Institute for Molecular Genetics in Berlin, Germany. He was Professor of Bacterial Genetics and Microbiology at Wageningen University, Netherlands, for over 30 years, and was Chair of Microbiology for 25 years, where he served as Wageningen Distinguished Professor. He also served over 12 years at the University of Helsinki as Finland Distinguished Professor and later as Finland Academy Professor. M. de Vos is currently Professor of Human Microbiomics and Director of the Human Microbiome Research Program at the Faculty of Medicine at the same institution. In addition, he advises a variety of multinational companies, and has founded several start-ups in the area of microbial diagnostics and microbiome-targeting products.

Selected awards and honours

2017	Knighthood in the Order of the Netherlands Lion
2014	Honorary Doctorate Medical Faculty Orebro University, Sweden
2011	Most Entrepreneurial Scientist Award in the Netherlands
2008	Spinoza Award, the highest award of the Netherlands Organization for Scientific Research
1997	Miles Marschall Rhone-Poulenc International Dairy Science Award, USA

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Christoph Dehio

PRIMARY RESEARCH AREA

Bacterial pathogenesis

KEYWORDS

- Antibiotic resilience
- Type IV secretion systems
- Bartonella and Brucella
- Uropathogenic Escherichia coli

Research summary

Christoph Dehio has a long-standing interest in studying the role of bacterial type IV secretion systems and their host cell-translocated effector proteins in subverting cellular functions in the course of establishing chronic infection by the related zoonotic pathogens Bartonella and Brucella. In a new line of research, his lab strives to understand the molecular basis of resilience to antibiotic action in Brucella and uropathogenic Escherichia coli. Related research activities center around a better understanding of pathogen physiology in patients and developing axenic and tissue-based model systems mimicking patient environments for studying molecular mechanisms underlying antibiotic resilience.

Education and work experience

Dehio studied Biology (1989) and received a PhD in Genetics (1992) at the University of Cologne, Germany. Afterwards, he was a postdoctoral researcher with Prof. Philippe Sansonetti at the Institute Pasteur in Paris, France (1993-1995). From 1995 to 2000, he was a research group leader at the Max Planck Institute for Biology, Dept. Prof. Thomas F. Meyer, in Tübingen, Germany. He was later appointed assistant professor (2000), tenured associate professor (2004) and full professor (2011) at Biozentrum, University of Basel in Switzerland, where he is currently based. Since 2020, Dehio has been director of the National Center of Competence in Research (NCCR) Antiresist: New approaches to combat antibiotic resistant bacteria (2020-2032).

Selected awards and honours

2013	Elected Member of the European Molecular Biology Organization (EMBO)
2010	Elected Member of the German Academy of Sciences Leopoldina
2006	Senior Scientist Award of the German Society for Hygiene and Microbiology (DGHM)
2006	Awarded the Pfizer Research Prize in Infectiology
2005	International Research Scholar of the Howard Hughes Medical Institute

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Petra Dersch

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Bacterial pathogenesis
- Virulence regulation
- Cellular microbiology
- Pathogen-induced immune responses

Research summary

Petra Dersch's work addresses how enteric pathogens differ from the harmless colonizers of our intestine and how they promote intestinal infections and cause disease. Her team's research focuses on virulence regulation and functions, specifically how bacterial virulence factors are induced or repressed during infection processes, and which pathogenicity factors are responsible for certain virulence-relevant processes and how can they be exploited for therapeutic strategies. They also focus on host-pathogen interactions and immune defence, particularly how pathogenic bacteria adhere to and invade host cells and how they disseminate into deeper tissues, as well as how hosts react to the invading pathogen and how bacteria prevent or evade the attacks.

Education and work experience

Dersch studied Biology at the University Ulm and Konstanz, Germany (1984-1991). She did her PhD in Microbiology at the Max Planck Institute for Terrestrial Microbiology and the University Konstanz in the lab of Erhard Bremer (1995) and her Postdoc in the lab of Ralph Isberg at the Tufts Medical School, Boston, USA (1995-1998). Back in Germany, she established her own research group at the Free University Berlin (1998-2002) and became an independent junior group leader at the Robert Koch Institute in Berlin (2003-2005). In 2005, she habilitated in Microbiology and was appointed as Associate Professor (W2) at the Institute of Microbiology at the Technische Universität Carolo-Wilhelmina in Braunschweig and in 2008 as Department Head for Molecular Infection Biology at the Helmholtz Centre for Infection Research and as Full Professor (W3) at the Technical University in Braunschweig. Since 2019, she is Director of the Institute of Infectiology (W3) at the Center for Molecular Biology of Inflammation (ZMBE) at the Medical Faculty of the University Münster.

Selected awards and honours

2020	Member of the Scientific Advisory Board of the Pasteur Institute, Department of Microbiology, France
2019	Member of the 'Kuratorium' of the Leibniz-Hans-Knöll-Institut, Germany
2018	Member and Head (since 2019) of the Scientific Advisory Board of the Max Planck-Institute for Terrestrial Microbiology, Germany
2018	Member of the Senate of the German Research Foundation (DFG)

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Ulrich Dobrindt

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Pathogenicity
- Gene regulation
- Evolution and adaptation
- Genomics

Research summary

Ulrich Dobrindt's main research focus is the geno- and phenotypic variability of bacterial pathogens, employing functional and comparative genomics to study pathogenic and commensal *E. coli*. His research addresses the pathogenesis, epidemiology and diagnostics of pathogenic *E. coli*. To correlate genomic plasticity with bacterial fitness or virulence, his team investigates the bacterium-host interaction at cellular barriers as well as bacterial gene regulation and adaptation. The group also focuses on the impact of microbial genome plasticity on the evolution and spread of antibiotic resistances as well as on novel strategies to combat bacterial infection.

Education and work experience

Dobrindt studied biology at the University of Göttingen and received his Doctorate at the Institute for Molecular Infection Biology at the University of Würzburg in Germany (1999). At the same institute, he became research associate (1999-2000) and then a research group leader (2001 -2010). In 2006, he received his Habilitation in Microbiology at the University of Würzburg. From 2010 to 2011, he received a Heisenberg professorship for Microbial Genome Plasticity - Molecular Infection Biology at the Institute of Hygiene at the University of Münster, Germany. Since 2011, he has been Director of the Section of Microbial Genome Plasticity at the Institute of Hygiene at the University of Münster.

Selected awards and honours

2015	Research Award Heinz-P.-R.-Seeliger Foundation, Germany
2013	Honorary Membership, Hungarian Society for Microbiology
2007	Postdoctoral Award in Microbiology, Robert Koch Foundation, Germany
2004	Promotional Award of the German Society for Hygiene and Microbiology, Germany

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Charles J. Dorman

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial gene regulation
- Bacterial nucleoid associated proteins
- DNA topology
- Transcription

Research summary

Charles Dorman studies the influences of DNA topology and nucleoid-associated proteins on gene expression in Gram-negative bacteria of medical importance. His work investigates the mechanisms by which these globally acting influences combine with conventional transcription factors to produce regulatory networks with spatiotemporal diversity and unpredictability. This work elucidates the means by which regulatory networks create physiological variety in populations of genetically identical bacteria. Work in the Dorman laboratory has explored the capacity of bacterial genomes to withstand regulatory rewiring brought about by deliberate regulatory gene relocations on the chromosome, horizontal gene transfer, mutation and experimental evolution.

Education and work experience

Dorman was awarded a BSc degree (Honours, First Class) by University College Dublin, Ireland, in 1981, a PhD by Trinity College Dublin in 1985, and an ScD by Trinity College Dublin in 2005. He held a predoctoral EMBO fellowship at Leicester University, UK (1983-1984) and was a postdoctoral research fellow at Dundee University, UK (1984-1988). Dorman held a Royal Society University Research Fellowship at Dundee University from 1988 to 1994 and was appointed to a permanent academic post there in 1992. In 1994, he was appointed to the Chair of Microbiology at Trinity College Dublin, Ireland.

Selected awards and honours

2010	Elected Fellow of the American Academy of Microbiology
2010	American Society for Microbiology ambassador to Western Europe and Israel
2009	Elected Fellow of the Royal Society of Biology, UK
2005	Elected Member of the Royal Irish Academy
2005	Editor-in-chief of "Microbiology" (published by the Microbiology Society, London, UK)

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Nicole Dubilier

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Microbial symbioses
- Microbial ecology

Research summary

Nicole Dubilier's research has fuelled a major change in our understanding of the importance, diversity and function of symbioses between bacteria and animals. Her research has revealed the remarkable diversity of marine symbioses, and shown that beneficial associations between bacteria and marine invertebrates have evolved independently and multiple times in convergent evolution. Her research has provided a critical contribution to marine biology by showing how widespread symbioses between marine invertebrates and bacteria are in terms of geography, animal and bacterial diversity, and habitats ranging from coastal sediments to the deep-sea. She has led numerous research cruises and expeditions worldwide, and uses a wide array of methods to study marine symbioses that include the 'omics' (metagenomics, metatranscriptomics, metaproteomics and metabolomics), correlative imaging analyses from whole animals to the subcellular level, and in situ experiments in shallow-water and deep-sea environments.

Education and work experience

Dubilier grew up in the USA (NYC) and moved to Germany as a teenager. She studied zoology, microbiology and biochemistry at the University of Hamburg, and gained her PhD in 1992. From 1992 to 1994, she was a postdoctoral fellow at Harvard University, in the laboratory of Colleen Cavanaugh, where she first began her research on symbioses between marine invertebrates and bacteria. After a second postdoctoral position at the University of Hamburg, Dubilier joined the Max Planck Institute for Marine Microbiology (MPI-MM), Bremen, in 1997, where she became a W2 Research Group Leader at the MPI-MM in 2007. Dubilier was named a Full Professor at the University of Bremen in 2012, and was appointed Director at the MPI-MM in 2013, where she heads the Department of Symbiosis.

Selected awards and honours

2020	President of the International Society of Microbial Ecology
2018	Elected Member of the European Molecular Biology Organization (EMBO)
2014	Leibniz Prize of the German Research Foundation (DFG)
2013	Investigator Award of the Gordon and Betty Moore Foundation Marine Microbiology Initiative
2013	Elected Fellow of the American Academy of Microbiology

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Leo Eberl

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Quorum sensing
- Biofilms
- Bacterial membrane vesicle
- Plant-microbe interaction

Research summary

Leo Eberl's research aims to understand the molecular basis and ecological importance of cell-to-cell signalling, referred to as quorum sensing (QS), between bacteria, particularly in multicellular aggregates, and to elucidate its role in virulence. His group investigates QS systems in various strains of the genera *Pseudomonas* and *Burkholderia*, which utilize structurally diverse signal molecules. His group has unravelled a novel mechanism for bacterial membrane vesicle (MV) biogenesis that is based on the enzymatic action of phage-derived endolysins. Ongoing research investigates how MV formation routes determine the structures and compositions of MVs and whether certain vesicle types serve particular biological functions.

Education and work experience

Eberl studied Chemistry at the TU Graz, Austria. He earned his PhD in Prof. H. Schwab's group (1992), analysing the partitioning locus of broad host-range plasmid RP4. He investigated the response of bacteria to nutrient limitation as a postdoc in the group of Prof. S. Molin at the TU Denmark (1997-1998). From 1997 to 1998 he was a postdoc within the framework of the EU Biotechnology RTD Programme at the TU Munich, Germany (Prof. K.H. Schleifer) and subsequently independent group leader at the same Institute. In 2001 he received his Habilitation in Microbiology. He was appointed as Assistant Professor at the University of Zurich in 2003 and promoted to Full Professor in 2006.

Selected awards and honours

2010 Federation of European Biochemical Societies (FEBS) National Lecture, Vienna, Austria

1996 European Environmental Research Organization (EERO) long term fellowship

1990 Award of the Plasmid Foundation, Benzon Pharma A/S, Denmark

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Stanislav Dusko Ehrlich

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Human microbiome

Research summary

Stanislav Dusko Ehrlich's research interests over the past 15 years have been within the human microbiome field. He is the PI of the French government Investissement d'Avenir funded Metagenopolis project. Furthermore, he coordinated the first large European Commission Human microbiome project MetaHIT, which laid foundations for the current day microbiome characterisation and co-founded the first human microbiome-based start-up company, Enterome.

Education and work experience

Ehrlich graduated as an Engineer in Organic Chemistry and Biochemistry at the Faculty of Natural Sciences and Mathematics, University of Zagreb, Croatia (1967). In 1972, he obtained a PhD in Biochemistry at the University Paris VII, France. He worked as Research associate at the Centre National de la Recherche Scientifique, France from 1970 to 1976, and later at the Department of Genetics at Stanford University Medical School, California, USA (1973-1977). Ehrlich became Senior researcher at the Institut National de la Recherche Médicale (INSERM), France where he stayed from 1977 to 1986. He was appointed Research Director at the Institut National de la Recherche Agronomique (INRAE) from 1986 to 2011, and has been Research Director Emeritus, at the same institution since 2011. Ehrlich was also Professor and Director of the Centre for Host Microbe Interactions at the Dental Institute, King's College London, UK from 2014 to 2018.

Selected awards and honours

2014 Laureate of the Grand Prix Scientifique Simone & Cino Del Duca, Fondation de France

2013 Chevalier de l'Ordre National du Mérite Chevalier de la Légion d'Honneur

2010 Member of the French Academy of Agriculture

2008 Laureate of the INRA Excellence in Agricultural Research Career Award

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Martin Embley

PRIMARY RESEARCH AREA

Taxonomy, systematics and evolution

KEYWORDS

- Evolutionary molecular biology
- Eukaryotic origins and the tree of life
- Mitochondrial evolution and functions
- Phylogenetics

Research summary

Martin Embley works on the early evolution of eukaryotic cells, their genomes and their organelles related to mitochondria, and is interested in resolving the position of eukaryotes in the tree of life using sophisticated phylogenetics. An additional focus of his work is to identify the essential functions of mitochondria (beyond energy production) for eukaryotes. His research group has used the tiny minimal mitochondria (mitosomes) of Microsporidia as a model system in this work. More recently, he has become interested in how Microsporidia, which are obligate intracellular parasites of most animal groups including humans, use surface-located transport proteins to steal energy and other resources from infected host cells.

Education and work experience

Embley received a Degree in Biological Sciences from Manchester Polytechnic in 1979 and a PhD in Microbiology from Newcastle University, UK, in 1983. He then taught undergraduates for 8 years at the University of East London as director of the degree program in Industrial Microbiology. During this time he also served as a consultant for natural product discovery for a major Pharmaceutical Company. In 1991, he moved to the Natural History Museum in London to help establish a DNA lab and to begin a research program on early eukaryotic evolution. In 2004, he moved to Newcastle University as Professor of Molecular Evolution.

Selected awards and honours

2019	Elected Fellow of the Royal Society, UK
2011	Elected Fellow of the UK Academy for Medical Sciences
2009	Elected Member of the European Molecular Biology Organization (EMBO)
2008	Elected Fellow of the American Academy of Microbiology

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Tobias Erb

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- CO2 fixation
- Enzyme discovery and engineering
- Photosynthesis
- Artificial cells

Research summary

Tobias Erb's works at the interface of biology and chemistry. His lab's research focuses on the discovery, function and engineering of novel CO2 converting enzymes and their use in engineered and artificial photosynthesis, as well as the bottom-up design of synthetic chloroplasts and artificial cells.

Education and work experience

Erb studied Chemistry and Biology at the University of Freiburg, Germany and the Ohio State University, USA. After obtaining his PhD in 2009, Erb was a postdoc at the University of Illinois, US, before heading a junior group at the ETH Zürich, Switzerland, from 2011 to 2014. In 2014, he became an independent Max Planck Research Group Leader at the Max Planck Institute for Terrestrial Microbiology in Marburg, Germany where he was promoted to Director in 2017. Erb is currently a synthetic (micro)biologist and Director at the Max-Planck-Institute for Terrestrial Microbiology in Marburg, Germany.

Selected awards and honours

2018	Otto Bayer Award, Bayer Foundations
2017	VAAM-Research Award, Germany Association of General and Applied Microbiology
2016	Heinz Maier-Leibnitz-Prize, German Research Foundation (DFG)
2015	C&EN "Talented 12" Up-and-coming chemists of 2015, American Chemical Society
2013	SGM-Encouragement award, Swiss Society of Microbiology

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Jeffery Errington

PRIMARY RESEARCH AREA

Cell and molecular biology

KEYWORDS

- Cell cycle
- Cell morphogenesis in bacteria
- *Bacillus subtilis*
- L-form bacteria

Research summary

Jeff Errington's laboratory uses an array of biochemical, genetic and microscopic methods to study some of the most fundamental problems in biology: particularly, cell division, chromosome segregation, and the control of cell shape. Errington is especially well known for the discovery that MreB, a molecule similar to actin, is directly responsible for determining cell shape in most rod-shaped bacteria. In recent years, Errington's lab has pioneered molecular and cellular studies of cell wall deficient "L-form" bacteria and shown how these cells could have an important role in persistent or recurrent infection.

Education and work experience

Errington studied Genetics and Zoology at Newcastle University, UK (1977) and went on to obtain a PhD in Microbial Genetics at Thames Polytechnic in London, UK. He held a postdoctoral position at Oxford (1981) before becoming an independent group leader and Royal Society Research Fellow in 1985. After a spell as Professor of Microbiology at the Sir William Dunn School of Pathology in Oxford, he moved to Newcastle (2006) where he founded the Centre for Bacterial Cell Biology. He has also founded and sold two biotechnology companies acting in the antibiotic discovery and natural product therapeutics fields.

Selected awards and honours

2017	FEMS-Lwoff Award and Medal, Federation of European Microbiological Societies
2015	Leeuwenhoek Lecture, Prize and Medal of the Royal Society, UK
2014	20th Anniversary Medal and Prize, Biotechnology and Biological Sciences Research Council, UK
2014	Novartis Medal and Prize, UK Biochemical Society

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Alain Filloux

PRIMARY RESEARCH AREA

Molecular microbiology

KEYWORDS

- Bacterial pathogenesis
- *Pseudomonas aeruginosa*
- Type VI secretion system
- c-di-GMP signalling and biofilm

Research summary

Alain Filloux's research focuses on bacterial pathogenesis, molecular mechanisms of protein secretion, biofilm formation and regulation of gene expression. The system model he used is the Gram-negative bacterial pathogen *Pseudomonas aeruginosa*. In recent years, his research has focussed on the type VI secretion system (T6SS), a molecular weapon that fires antibacterial toxins into competitors. He has also developed research in the understanding of the complex regulatory network that involves the universal second messenger c-di-GMP, and how this triggers the lifestyle transition between planktonic and biofilm development.

Education and work experience

Filloux completed his Master in Cellular and Molecular Biology (1984), and PhD in Cellular and Molecular Biology and Microbiology (1998) at Aix-Marseille University, France. He obtained his Habilitation at the Université de la Méditerranée, France (1997). Since 2007, he is Professor and Chair in Molecular Microbiology at Imperial College London, UK. Filloux is visiting Professor at the Nanyang Technical University, Singapore, since 2017. Previously, he was Assistant Professor at Utrecht University, Netherlands (1990-1994) and researcher at the National Centre for Scientific Research (CNRS), France (1994-2007). Filloux was appointed Director of the CNRS Research Unit 9027, Université de la Méditerranée, France (2004-2007), Chairman of the Centre for Molecular Microbiology and Infection, Imperial College London, UK (2007-2011), Deputy Director of the MRC Centre for Molecular Bacteriology and Infection (2011-2019) and recently Interim director of the MRC CMBI (2019-2020).

Selected awards and honours

2019	Elected Fellow of the Royal Society of Biology, UK
2017	Elected Fellow of the American Academy of Microbiology
2007	Wolfson Research Merit Award, the Royal Society, UK
2004	Elected member of the European Molecular Biology Organization (EMBO)
2004	Award "Coup d'élan 2003" from the Bettencourt-Schueller foundation, France

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Patrick Forterre

PRIMARY RESEARCH AREA

Taxonomy, systematics and evolution

KEYWORDS

- Molecular biology of gene in extremophiles
- DNA topology and DNA topoisomerases
- DNA replication
- Virus origin and evolution

Research summary

Patrick Forterre is currently working on the topology of the universal tree of life and the origin, role and nature of viruses in life evolution. His work focuses in particular on the possible role of giant viruses in eukaryogenesis. He is also involved in collaborations to study DNA topology and DNA topoisomerases in archaea as well as the production of vesicles and nanotubes by hyperthermophilic archaea. Furthermore, Forterre is involved in the ERC project of a physicist colleague to apply new optical methods for the visualisation of the growth of archaea and bacteria at various temperatures with the final objective to determine the upper temperature limit of life on our planet.

Education and work experience

Forterre obtained his Habilitation at the University Paris VII, France, in 1985. He was Professor at the University of Paris-XI (South-Paris) from 1989 to 2014 and Professor at the Institut Pasteur from 2014 to 2019. He is now Honorary Professor at the Institut Pasteur and Emeritus Professor at the University Paris-Saclay. Forterre led a research team at the Université d'Orsay from 1989 to 2014 and Head of a Unit at the Institut Pasteur from 2003 to 2019. He was Director of the Department of Microbiology at the Institut Pasteur from 2003 to 2010.

Selected awards and honours

2014 ERC Advanced Grant, Evornobill project

2004 Senior Member of the Academic Institute of France (IUF)

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Kevin Foster

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Microbiome
- Competition
- Cooperation
- Community ecology

Research summary

Kevin Foster's work applies ecological and evolutionary approaches to break down the complexity of microbial communities that contain many evolving and interacting species, which make them difficult to understand and predict. Using a combination of theory and experiment, his research investigates how bacteria cooperate and compete in order to succeed in their communities. His lab also studies the ecological networks formed by interacting bacteria, with the goal of predicting and manipulating gut communities for better health.

Education and work experience

Foster obtained his M.A. in Natural Sciences, Zoology at the University of Cambridge, UK (1997) and completed his PhD at the University of Sheffield (2000). He was a Huxley Research Fellow at the Rice University, Houston, Texas (2001-2004), and was later a fellow at the Institute for Advanced Study, Berlin (2004-2005) and at the University of Helsinki, Finland (2005-2006). He became a Bauer Fellow and started his own group between 2006-2010 at Harvard University, USA. He was then appointed Professor of Evolutionary Biology and Tutorial Fellow of Magdalen College at the University of Oxford, UK (2010-2018). Since 2018 he has been a Professor of Evolutionary Biology and Research Chair at the University of Oxford, UK.

Selected awards and honours

2018 ERC Advanced Grant

2016 Scientific Medal of the Zoological Society of London, UK

2010 ERC Starting Grant

2006 Awarded the Bauer Fellowship, Harvard University, USA

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Bärbel Friedrich

PRIMARY RESEARCH AREA

Microbiology and molecular biology

KEYWORDS

- Hydrogenase enzymes
- Metal co-factors
- Biological hydrogen production
- Lithoautotrophic bacteria

Research summary

Bärbel Friedrich's research is focused on the genetic and molecular design of bacterial metabolism, particularly hydrogen conversion and autotrophic carbon dioxide fixation. Most of her work has concentrated on protein-assisted synthesis and incorporation of metal-cofactors that confer oxygen tolerance to the key enzymes of hydrogen metabolism.

Education and work experience

Friedrich studied Biology at the University of Göttingen, had a postdoctoral position at the Massachusetts Institute of Technology, USA, and started her academic career in 1977 as research associate at the microbiology department of the University of Göttingen. She was then appointed full professor of microbiology at the free University of Berlin in 1985. After reunification of Germany in 1994, she moved to the Humboldt University of Berlin. She has established the "Krupp Kolleg", an institute for advanced studies at the university of Greifswald, Germany, where she was the scientific director from 2008-2018. She was a member of an ethic panel at the Federal Parliament (2003-2005), served as vice president of the German Science Foundation, DFG (1997-2003) and was vice president of the German National Academy of Sciences Leopoldina (2005-2015). Friedrich is currently a Professor Emeritus for microbiology at the Humboldt University, Berlin, Germany.

Selected awards and honours

2019	Honorary Member of the Association for General and Applied Microbiology (VAAM), Germany
2016	Medal of Merit from the Leopoldina
2013	Arthur Burkhardt Prize, Germany
2013	Order of Merit on Ribbon of the Federal Republic of Germany
1994	Member of the German National Academy of Sciences Leopoldina

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Geoffrey Gadd

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Geomicrobiology
- Geomycology
- Bioremediation

Research summary

Geoffrey Gadd's research is in the field of geomicrobiology, particularly the roles of fungi and other microorganisms, in metal-mineral interactions and transformations, and their relevance to environmental processes, element cycling, mineral formation or dissolution, and bioremediation and element biorecovery. Most research has concentrated on fungi, and has ranged from cellular and biochemical aspects to the environment and biotechnology, with other previous research on sulfate-reducing bacterial systems for metal bioremediation. Original contributions relate to establishing the field of geomycology within geomicrobiology, and the multidisciplinary research outputs at the interface of microbiology, mineralogy and geochemistry have furthered understanding of the processes underlying metal and radionuclide accumulation, detoxification and tolerance, mechanisms affecting metal mobility in the environment, mineral dissolution, and the formation of biogenic minerals. The environmental and biotechnological significance of these phenomena is a consistent focus.

Education and work experience

Gadd gained a B.Sc. (1975) and Ph.D. (1978) in Microbiology, University College Cardiff, Wales, UK. After an AFRC Postdoctoral Research Fellowship (1978) at the University of Dundee, UK, he was appointed to a Lectureship in Microbiology (1979), awarded a Personal Chair in Microbiology in 1995 and became Head of the Department of Biological Sciences (1999). He currently holds the Boyd Baxter Chair of Biology and heads the Geomicrobiology Group, School of Life Sciences, University of Dundee, Scotland. He is a former Deputy Research Director of the School, Head of the Division of Environmental and Applied Biology, founding Head of the Division of Molecular Microbiology and former President of the British Mycological Society (2004-2007). He has published over 300 refereed papers, a co-authored textbook, many co-edited books, invited chapters and reviews, and contributed to 6 patents.

Selected awards and honours

2020	Schlumberger Award, Mineralogical Society
2020	John Webster Fungal Biology Research award, British Mycological Society
2014	Elected Fellow of the Learned Society of Wales, UK
2012	Sir James Black Senior Medal for Life Sciences, Royal Society of Edinburgh
2007	Elected Fellow of the Royal Society of Edinburgh, UK

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Mikhail S. Gelfand

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Evolution
- Comparative genomics
- Systems biology
- Regulation of transcription

Research summary

Mikhail Gelfand's research focuses on the evolution of bacterial genomes and regulatory systems and on metagenomics.

Education and work experience

Gelfand completed his education in Russia where he obtained an MSc in Mathematics, Moscow State University (1985), a PhD in Mathematics and Biophysics, Institute of Theoretical and Experimental Biophysics (1993), and a DSc in Biology and Molecular Biology, Research Institute for Genetics and Selection of Industrial Microorganisms (GosNIIGenetika). Gelfand held research positions in Russia at the Institute of Protein Research (1985-1998), GosNIIGenetika (1999-2001), and the position of Director of Science at Integrated Genomics (2001-2003). He was appointed Professor at several institutions including Lomonosov Moscow State University, Faculty of Biotechnology and Bioinformatics (2003-2020), Higher School of Economics, Faculty of Computer Science (2016-2020) and Skoltech Center of Life Sciences (2016-current). Since 2004, he has been a lab head at the Institute for Information Transmission Problems (IITP), RAS, where he was also Deputy Director for Science (2016-2020). Also since 2020 Gelfand is Vice-Presidient for Biomedical Research of Skoltech.

Selected awards and honours

2010	Elected Member of the Academia Europaea
2008	A.A.Baev Prize, Russian Academy of Sciences

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Kenn Gerdes

PRIMARY RESEARCH AREA

Bacterial stress response and bioinformatics

KEYWORDS

- ppGpp
- Bacterial persistence
- Toxin-antitoxin
- RNA biology

Research summary

Kenn Gerdes' work focuses on stress responses, ppGpp, translation, toxin–antitoxins (TAs) and bioinformatics.. His lab has shown that TA genes are required for bacterial persistence and analyse how the stochastic ON/OFF switching of TA activity is regulated. His research currently focuses on understanding how bacteria control their ppGpp levels during growth and stress and also in parallel carries out work to understand persistence of bacterial model organisms and pathogens.

Education and work experience

Gerdes was Professor at the University of Southern Denmark until 2006 and then moved to the UK to take the position of Professor at the Institute for Cell and Molecular Bioscience at Newcastle upon Tyne (2006-2014). From 2013 to 2019 Gerdes was Professor at the Centre for Bacterial Stress Response and Persistence, Section for Functional Genomics, University of Copenhagen in Denmark. Currently, Gerdes is working as an independent researcher.

Selected awards and honours

2014	Grant from the Danish National Research Foundation
2013	Novo Nordisk Foundation grant
2012	ERC Advanced Grant
2008	Elected member of the American Academy of Microbiology 2013
2005	Elected Member of the European Molecular Biology Organization (EMBO)

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Jean-Marc Ghigo

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Biofilms
- Bacterial genetics

Research summary

Jean-Marc Ghigo's work focuses on bacterial biofilms. Bacterial biofilms are widespread mixed-species communities, in which reduced diffusion and heterogeneous structure induce novel behaviours as compared to individual microorganisms. Research undertaken in his laboratory aims to explore the biofilm lifestyle by addressing how bacteria form biofilms, properties that emerge from bacterial communities and how this information can be used to control biofilm formation. These studies are often developed via fruitful national and international collaborations and aim at revealing new or under-explored aspects of bacterial communities by uncovering unsuspected biological resources used by commensal and pathogenic bacteria in biofilms.

Education and work experience

Ghigo obtained his PhD in 1994 at the Institut Pasteur, France, where he studied type 1 protein secretion in gram-negative bacteria with Cécile Wandersman. He then joined the laboratory of Jon Beckwith at Harvard Medical School, US, where he studied cell division in *Escherichia coli*. Returning to the Institut Pasteur, France, in 1999, he developed an independent project investigating bacterial biofilm lifestyle at the genetic and molecular level. He created a five-year group in 2002, which transformed into a full research laboratory (2007-present). He is currently Professor at Institut Pasteur, France, and Head of the Genetics of Biofilms Unit in the Department of Microbiology.

Selected awards and honours

2016	Elected Fellow of the American Academy of Microbiology
2012	French National Library Foundation Pasteur-Valérie Radot Award
2008	French Foundation Georges Zermati Award
1993	Jacques Monod Award, France

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Philippe Glaser

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Antibiotics resistance
- Genome dynamics
- Bacterial evolution

Research summary

Philippe Glaser's work focuses on the functional and genetic bases of the emergence and global dissemination of Enterobacterales clones expressing extended spectrum ß-lactamases and/or carbapenemases. In collaboration with the team headed by Thierry Naas (Bicêtre Hospital), he developed a bed to bench research combining genetic, genomic and evolutionary analysis approaches with molecular microbiology and experimental evolution methods. He recently deciphered the evolutionary trajectories of carbapenemase producing *E. coli*.

Education and work experience

Glaser defended his thesis on the Adenylate Cyclase of *Bordetella pertussis* at the University Pierre et Marie Curie in 1988 and was recruited as a researcher at the Institut Pasteur in 1989. From 1995 to 1996, he was a postdoc in Prof. Jeff Errington's laboratory at Oxford, UK, deciphering chromosome partitioning. He defended his habilitation to direct research at the University of Orsay, France, in 1998. Glaser is currently head of the Ecology and Evolution of Antibiotic Resistance unit at the Institut Pasteur, France.

Selected awards and honours

2019	Awarded the Louis Pasteur Medal, French Academy of Sciences
2008	Awarded the René Descartes Price, coordinated by Prof Pascale Cossart
2003	Awarded the Thérèse Lebrasseur Price, Fondation de France (with Dr. F. Kunst)
1995	European Molecular Biology Organization (EMBO) Fellow Award

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Anne Glover

PRIMARY RESEARCH AREA

Molecular microbiology

KEYWORDS

- Molecular biology
- Microbes in soil
- Environmental pollution
- Stress response

Research summary

Anne Glover's research studied the diversity and function of microbes in soil, the development of sensors to detect environmental pollution and how we respond to stress at the molecular level which has particular relevance to how we age.

Education and work experience

Glover has a BSc in Biochemistry from the University of Edinburgh and a PhD in Molecular Microbiology from The University of Cambridge, UK. She pursued a research career primarily at Aberdeen University interrupted by various sabbaticals. She is currently a Special Advisor to the Principal at the University of Strathclyde and was the first Chief Scientific Adviser to the President of the European Commission (2012-2015) and the first Chief Scientific Adviser for Scotland (2006-2011). She is the immediate past President of the Royal Society of Edinburgh, UK.

Selected awards and honours

2016	Elected Fellow of the Royal Society, UK
2015	Dame Commander of the Order of the British Empire (DBE)
2009	Commander of the Order of the British Empire (CBE) by Queen Elizabeth II
2008	Woman of Outstanding Achievement in Science, Engineering and Technology (SET)

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Werner Goebel

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial pathogen virulence mechanisms
- Regulation of virulence genes
- Host-pathogen interactions
- Type I secretion system of Gram-negative bacteria

Research summary

Werner Goebel has been a highly influential figure in the field of medical microbiology since the late 1970s. He was one of the first scientists in the world who succeeded in identifying disease-causing factors in bacteria and cloning their genes. Furthermore, he was involved in a great deal of work on the development of new vaccines and the establishment of gene therapy methods.

Education and work experience

Goebel studied Organic and Inorganic Chemistry at the University of Tübingen and obtained his Diploma in Chemistry in 1963. After his PhD on the biosynthesis of aromatic amino acids in Saccharomyces cerevisiae also at University of Tübingen, he became a postdoc at the University of California. He also spent time at the University of Hohenheim, Germany as a research assistant at the Institute of Microbiology for his Habilitationin 1971 in Microbiology and Biochemistry. Between 1972 and 1975 he was appointed Head of the Department of Genetics at the "Gesellschaft für Molekularbiologische Forschung" (GBF), Braunschweig and later Chair of Microbiology at the Institute of Genetics and Microbiology, University of Würzburg (1975-2007). Goebel did two Sabbaticals, one at the University of California (1980-1981) and at the Scripps Research Institute in 1989. From 2007 to 2020, he was a Guest Scientist at the Max-von-Pettenkofer Institute of the LMU München and since 2007 Goebel is an Emeritus Professor at Julius-Maximilians-Universität of Würzburg.

Selected awards and honours

2009	Medal of the German Academy of Science Leopoldina
2006	Emil-von-Behring Prize
1998	Elected Fellow of the American Academy of Microbiology
1984	American Society of Microbiology Lecture Award
1983	Robert-Koch Prize, Germany

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Friedrich Götz

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Microbial genetics
- Immune signalling
- Physiology
- Infection biology

Research summary

Friedrich Götz is a leading scientist in microbiology and infection biology with a general focus on Microbe-Host Interaction. His current research focuses include the physiology of staphylococci, lipoproteins as key players in immune response and virulence, analysis of new antimicrobial compounds and bacterial-derived effector molecules and their interaction with the host. Götz is currently studying how commensal bacteria on the skin (skin microbiome) overcome immune barriers, how they can survive in the host, and how they control human cell's proliferation, motility and immune response. He recently discovered that members of the skin microbiota secrete neurotransmitters that interact with adrenergic receptors of host cells thus contributing to wound healing.

Education and work experience

Götz studied Biology and Chemistry at the University München, Germany, and received a PhD in Microbiology in 1978. He then habilitated in 1985. From 1979 to 1981, he received an EMBO long-term fellowship for postdoctoral work at the Biomedical Center in Uppsala, Sweden. In 1987, he was appointed professor and chair of "Microbial Genetics" at the University of Tübingen, Germany. Götz was Dean of the Faculty of Biology and in 2009 co-founded the Interfaculty Institute for Microbiology and Infection-medicine Tübingen (IMIT). Since 2015, he has been Senior Professor at the same institution.

Selected awards and honours

2020	Visiting Professor at Shiraz University of Medical Sciences (SUMS), Iran
2018	Member of the Cluster of Excellence (CMFI), Tübingen, Germany
2003	President & Vice president of the German Association for General and Applied Microbiology (VAAM)
1994	Offered Chair in Microbiology at University Göttingen, Germany
1991	Award for scientific work in microbial genetics, German Society for Hygiene and Microbiology (DGHM)

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Uri Gophna

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Host-microbe interactions and microbiome
- Horizontal gene transfer
- CRISPR-Cas
- Archaea

Research summary

Uri Gophna's research focuses on understanding the evolutionary processes behind microbial adaptation, contributing to both the medical community and to evolutionary theory. His research group's interests revolve around two related topics: the role of lateral gene transfer (LGT) and selfish DNA in the evolution of microorganisms and the study of host-microbe interactions, with a particular focus on the human gut microbiome in health and disease. His research spans the whole spectrum of evolutionary biology from environmental and comparative population genomics all the way to the testing of the specific hypothesis by engineering strains and performing competition experiments under ecologically relevant conditions. Genetic manipulation allows the dissection of the contribution of specific genetic components, such as defence systems (CRISPR-Cas and additional recently discovered systems), the recombination machinery, and selfish mobile DNA, to genome diversity within microbial populations.

Education and work experience

Gophna obtained his PhD in microbiology with distinction from Tel Aviv University in 2003, where he studied molecular virulence factors of *E. coli*, under the supervision of Prof. Eliora Z. Ron. Following postdoctoral training in microbial ecology and evolution with Prof. W. Ford Doolittle at Dalhousie University, USA, Gophna returned to Tel Aviv University in 2005. After further postdoctoral training with Prof. Moshe Mevarech, Gohpna established an independent research group in 2006 at Tel Aviv University, where he is now a Professor.

Selected awards and honours

2020	Elected Fellow of the American Academy of Microbiology
2018	ERC advanced grant recipient
2019	Sarov Prize for basic research, Israeli Society for Microbiology
2008	The Nili Rubinovich-Grossman memorial award, Israeli Society for Microbiology

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Isabel Gordo

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Adaptation
- Microbiome

Research summary

Isabel Gordo's research focuses on evolution in microbiomes. Her group studies the evolutionary mechanisms that shape bacterial genetic variation, using experimental evolution and theoretical modelling, using *Escherichia coli* as a model organism. They have showed that the spontaneous rate at which bacteria generate mutations that increase their competitive fitness is extremely high. The consequence of this remarkable result was simple: within a small colony of bacteria, with only one tenth of a million cells and almost invisible to the human eye, a new adaptive variant can be generated. Gordo's team has also demonstrated the generality of this result across genetic backgrounds and environments, for which they have developed in vitro and in vivo models to understand the consequences of such rapid bacterial evolution at both the genomic and phenotypic levels.

Education and work experience

Gordo completed her undergraduate studies in Physics at the Technical University of Lisbon, Portugal, followed by a PhD in the Gulbenkian PhD Program for Biology and Medicine. She obtained a PhD in evolutionary genetics at the University of Edinburgh, UK, under the supervision of Prof Brian Charlesworth. She has been leading the Evolutionary Biology Group at the Instituto Gulbenkian de Ciência, Portugal, since 2004.

Selected awards and honours

2017	Elected Member of the European Molecular Biology Organization (EMBO)
2017	Council Member of the International Society for Evolution, Medicine & Public Health
2016	Non-North American Vice-President of the Society for the Study of Evolution
2014	Founder and President of the Portuguese Society for Evolutionary Biology
2007	Council member of the European Society for Evolutionary Biology

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Angelika Gründling

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Nucleotide signalling
- Bacterial cell wall
- Gram-positive bacteria
- Staphylococcus aureus

Research summary

Angelika Gründling's research focuses on the investigation of fundamental processes that are essential for the growth of Gram-positive bacterial pathogens. She combines genetic, biochemical and in collaborations structural approaches to provide mechanistic insight into cell wall synthesis and nucleotide signalling pathways in *Staphylococcus aureus* and *Listeria monocytogenes*.

Education and work experience

Gründling obtained her Ph.D. in Microbiology from the University of Vienna, Austria, in 2000. However, she performed her actual PhD research in Prof. Ry Young's laboratory at Texas A&M, USA. Subsequently, she undertook postdoctoral training in Prof. Darren Higgin's laboratory at Harvard Medical School, USA. There she investigated flagellar-based motility in the bacterial pathogen *Listeria monocytogenes*. Gründling performed a second postdoctoral training at the University of Chicago under the mentorship of Prof. Olaf Schneewind. There she initiated her studies on the cell wall of *Staphylococcus aureus*. Gründling started her independent research career at Imperial College London, UK in 2007 where she has been a Professor in Molecular Microbiology, since 2015.

Selected awards and honours

2014	Elected Fellow of the Royal Society of Biology, UK
2009	ICAAC Young Investigator Award, American Society for Microbiology
2001	Erwin Schrödinger postdoctoral fellowship, Austrian Science Foundation (FWF)

Photo by David Ausserhofer for the Leopoldina

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Jörg Hacker

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Virulence factors of pathogenic enterobacteria
- Pathogenicity islands
- Virulence genes

Research summary

Jörg Hacker's specialisation field is Microbiology. His main research interests lie in the areas of pathogenicity factors of pathogenic enterobacteria, characterisation of pathogenicity islands of pathogenic germs, regulation of microbial virulence genes, epidemiology and variability of virulence characteristics of *Staphylococcus* and pathogenicity of human pathogenic fungi.

Education and work experience

Hacker completed his studies in Biology (1970-1974) and received his PhD in Biology (1979) at Martin-Luther-University of Halle, Germany. He then moved to the University of Würzburg, Germany, where he worked as a research assistant at the Department of Microbiology (1980-1988). He was later appointed Associate Professor (C3) for Microbiology (1988-1993) and Full Professor (C4) and Head of the Institute for Molecular Infection Biology (1993-2008). In 2000 and 2005, he made research visits at the Institut Pasteur, Paris and in 2006 he was a Visiting Professor at the Sackler Institute for Advanced Studies, Tel Aviv University, Israel. In 2008, Hacker became the President of the Robert Koch-Institute, Berlin, Germany, until 2010. From 2010 until 2020, he was the President of the German Academy of Science Leopoldina.

Selected awards and honours

2019	Röntgen-Medal of the University of Würzburg, Germany
2017	Stuart Mudd Award for Studies in Basic Microbiology
2012	Honorary Doctorate (Dr. phil. h.c.) awarded by the University of Tel Aviv, Israel
2009	Order of Merit of the Federal Republic of Germany
2008	Gay-Lussac-Humboldt-Science Award

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Otto Haller

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- Innate immunity
- Antiviral Mx GTPases
- Interferons
- Influenza virus

Research summary

Otto Haller is an expert in virus-host cell interactions and innate immunity. His research includes antiviral Mx GTPases, interferons and the influenza virus.

Education and work experience

Haller worked as a medical student in the laboratory of Jean Lindenmann (co-discoverer of interferon with Alick Isaacs) and received his M.D. degree of the University of Zürich in 1972. He spent his postdoctoral years with Lindenmann (1972-1975) and with Hans Wigzell at Uppsala University (1975-1977) where he did early work on Natural Killer (NK) cells in close collaboration with Rolf Kiessling at the Karolinska Institute in Stockholm, Sweden. He was a visiting Assistant Professor in Virology at the Rockefeller University in New York with Purnell Choppin (1982-1983) and later Associate Professor of Virology at the University of Zürich. He became Full Professor and Director of the Institute of Virology at the University of Freiburg, Germany (1989-2012). He is now a Guest Professor at the Department of Molecular Life Sciences, University of Zürich, Switzerland.

Selected awards and honours

2018	Loeffler-Frosch Medal of the Society for Virology (GfV)
2013	Honorary Lifetime Member of the International Cytokine and Interferon Society
2009	Founding President, European Society for Virology (ESV)
1998	Elected Member of the German National Academy of Sciences Leopoldina
1998	Milstein Award of the International Society for Interferon and Cytokine Research

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Wolf-Dietrich Hardt

PRIMARY RESEARCH AREA

Microbiology/ immunology/evolution

KEYWORDS

- Microbiota gene transfer
- *Salmonella* pathogenesis
- Bacterial physiology

Research summary

Wolf-Dietrich Hardt's work focuses on *Salmonella* Typhimurium as a model pathogen to study aspects of bacterial physiology, horizontal gene transfer as well as pathogen interactions with the microbiota and the host. Recent work has discovered a key role of the NLRC4 inflammasome in mucosal defence against infection, as well as the role of bistable expression of virulence factors and cooperation in gut luminal pathogen growth and transmission. Other projects are deciphering the role of the pathogen in the spread of antibiotic resistance plasmids and the role of gut inflammation in phage transfer.

Education and work experience

Hardt studied biochemistry at the Freie Universität Berlin, Germany, where he also did his diploma and PhD theses (1992-1995) in Prof. Volker A. Erdmann's group at the Institute of Biochemistry. There, he investigated the molecular function of catalytic RNA. From 1995 to 1997 Hardt joined the group of Prof. Jorge E. Galan at Stony Brook, New York, USA. During this time he began his work on the molecular mechanisms of *Salmonella* infections. Subsequently, he moved to the Max von Pettenkofer Institute at the Ludwig Maximilians University in Munich, Germany. There, he continued his work on *Salmonella* pathogenesis and established his own research group (1998-2001). In October 2001 his research group moved to the Institute of Microbiology at the ETH Zürich, Switzerland where he is now a Full Professor.

Selected awards and honours

2018	Elected to the German Academy of Sciences Leopoldina
2013	Goldene Eule best academic teacher Award, D-BIOL, ETH Zürich, Switzerland
2012	Main Award, German Society for Hygiene and Microbiology (DGHM)
1999	Postdoc Award, Robert-Koch-Foundation, Germany

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Ian Head

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Geomicrobiology
- Biogeochemistry
- Bioelectrochemical systems
- Wastewater

Research summary

Ian Head is an environmental microbiologist with over 30 years of experience leading diverse multidisciplinary projects. A hallmark of his research is collaboration at the interfaces between microbiology, engineering, Earth and environmental sciences. His has elucidated the large scale microbial processes driving the formation of the world's heavy oil reservoirs, factors limiting petroleum biodegradation in the environment, microbial processes driving carbon, nitrogen and sulfur cycling in a range of natural and engineered environments and how they respond to environmental perturbation. More recently his group has been developing a range of novel environmental applications for microbial fuel cells and other bioelectrochemical systems.

Education and work experience

Head studied Applied Microbiology at the University of Strathclyde, UK (1982-1986), and then obtained a PhD in Microbial Ecology from Newcastle University, UK (1989). He was a Post-doctoral Research Associate at University of Liverpool, UK (1989-1992), and went on to become Lecturer (1992-2000) and Reader in Environmental Microbiology (2000-2005) at Newcastle University. In 2008, he was Visiting Professor of Geobiology, Geological and Planetary Sciences at Caltech, USA. Since 2005, Head has been Chair in Environmental Microbiology at Newcastle University, and Dean of Research and Innovation at the same institution since 2018.

Selected awards and honours

2016	Elected Fellow of the American Academy of Microbiology
2014	Elected Fellow of the Royal Society of Biology, UK
2014	Editor in Chief, The ISME Journal
2009	Best Paper Award in Organic Geochemistry (Jones et al., 2008), Geochemical Society, UK
2004	Young Investigators Award, International Society for Microbial Ecology

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Michael Hecker

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Proteomics
- Microbial physiology
- Stress physiology
- Pathoproteomics

Research summary

Michael Hecker's work focuses on the physiological proteomics and stress response of *Bacillus subtilis*, the proteomics of industrial bacteria and the proteomic view of pathogenicity of bacteria including *S. aureus*. In *B. subtilis* the alternative sigma factor SigB is the main global regulator controlling the expression of more than 300 genes whose proteins provide the non-growing cell with a multiple, non-specific and pre-emptive stress resistance. In contrast to this general stress response specific responses against protein, heat and oxidative stress have been analysed. Furthermore, the gene expression pattern (measured by proteomics) has been studied in *Staphylococcus aureus* to understand its pathophysiology under infection-related conditions.

Education and work experience

Hecker studied biology in Greifswald University, Germany (1965-1970) and received his PhD in Plant Physiology in 1973 at the same university. In 1985, he was appointed Professor for Microbiology in Greifswald University. He was President and then Vice President of the German Association for General and Applied Microbiology (VAAM) from 1995-2001, as well as Vice Chair and Chairman of the Bacteriology Applied Microbiology Division of the International Union of Microbiological Societies (IUMS) from 2005-2011.

Selected awards and honours

2017	Honorary Member of the German Association for General and Applied Microbiology (VAAM)
2006	Research Technology Award, Henkel KGaA
2000	Elected Member of the Berlin-Brandenburgische Academy of Sciences (BBAW)
1999	Elected Member of the German National Academy of Sciences Leopoldina

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Jürgen Heesemann

PRIMARY RESEARCH AREA

Medical Microbiology

KEYWORDS

- Infection epidemiology
- Modulation of immune responses
- *Yersinia*

Research summary

Jürgen Heesemann is a specialist in Microbiology and Infection Epidemiology and studies modulation of the immune response by *Yersinia* LcrV and oligonucleotides in the mouse infection model. More specifically, he investigates the immunomodulatory effect of TLR, NALP and RIG-I agonists, (PAMPs) and *Salmonella* live vaccines using mouse infection and mouse tumour models with regard to the effect on the growth or reduction of pathogens or tumour cells. In addition, he is interested in the effect of YOPs on PAMP-dependent signalling pathways will be clarified. Ultimately, he aims to contribute to a better understanding of the pathogenicity strategy of *Yersinia* and to the targeted production of effective live vaccines.

Education and work experience

Heesemann studied chemistry and medicine, and holds PhD degrees in physical chemistry (1976) and electrophysiology (1983) both from the University of Göttingen, Germany. As a medical doctor, he carried out specialist training to become a Physician for microbiology and infectious disease epidemiology at the University of Hamburg, Germany (1980-1984). He received his Habilitation in Medical Microbiology, Immunology and Hygiene in 1984 from the University of Hamburg. From 1986 to 1988, he was professor and senior consultant at the University Hospital Hamburg-Eppendorf and from 1989 to 1995 he was professor and director of the Institute for Hygiene and Microbiology at the University of Würzburg. From 1996 to 2014, he has been Professor of Bacteriology and Director at the Max von Pettenkofer Institute for Hygiene and Medical Microbiology at the University of Munich. Heesemann has also been President of the German Society for Hygiene and Microbiology (DGHM) from 1994 to 1996 and from 2006 to 2010.

Selected awards and honours

2000	Elected Member of the German Academy of Sciences Leopoldina
1998	Aronson Prize of the City of Berlin, Germany
1997	Main Prize of the DGHM Foundation, Germany
1985	Robert Koch Foundation Award, Germany
1984	Dr Martini Price of the Unversity of Hamburg, Germany

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Franz X. Heinz

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- Flaviviruses
- Viral vaccines
- Viral glycoproteins
- Antigenic structure

Research summary

Franz X. Heinz's research focuses on flaviviruses, with a major emphasis on tick-borne encephalitis virus. The topics he studies include the structural biology of flavivirus envelope glycoproteins, virus entry, virus assembly and maturation, antigenic structure, vaccine development, immune responses upon natural infection and vaccination, viral epidemiology, and virus diagnostics.

Education and work experience

Heinz obtained his PhD at the University of Vienna, Austria in 1976. He was Guest Professor of Virology at the University of Graz, Austria (1989-1996), and became Full Professor of Virology, University of Vienna in 1999. He became the director of the Department of Virology, Medical University of Vienna (2004-2016). Heinz was a member of the editorial boards of several international scientific journals, the WHO steering committee for the development of dengue and Japanese encephalitis vaccines, the scientific advisory boards of the Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany, and the Robert Koch-Institute, Berlin, Germany, and Vice-president of the Society for Virology, Germany. He also served on the Scientific Advisory Boards of Intercell and Hookipa, both Vienna-based biopharmaceutical companies.

Selected awards and honours

2019	Loeffler-Frosch Medal of the Society for Virology, Germany, Switzerland and Austria
2019	"Inventor of the year" for 2018, awarded by the Medical University of Vienna, Austria
2017	Loeffler Lecture Award of the Alfried Krupp Wissenschaftskolleg, Greifswald, Germany
2005	Behring Lecture Award of the University of Marburg, Germany
1983	Merck-Sharpe and Dohme Vaccine Award for the development and standardization of vaccines

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Regine Hengge

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Signal transduction
- Nucleotide second messenger
- Biofilms
- Stress response

Research summary

Regine Hengge's scientific research deals with signal transduction mechanisms and regulatory networks in bacterial biofilm formation and stress responses. Following her interdisciplinary interests, she is also a PI in the Excellence Cluster 'Matters of Activity' at Humboldt University Berlin.

Education and work experience

Hengge studied biology and obtained her doctorate at the Universität Konstanz, Germany. After carrying out post-doctoral research at Princeton University, USA, she completed her Habilitation in Microbiology & Molecular Genetics at the Universität Konstanz. As a Full Professor she headed the microbiology unit of the Freie Universität Berlin (1998-2013), and since 2013 has been in a similar position at Humboldt University in Berlin.

Selected awards and honours

2012	Elected Fellow of the American Academy of Microbiology
2009	ERC Advanced Researcher Grant (ERC AdG 249780)
2004	Elected Member of the European Molecular Biology Organization (EMBO)
2001	Elected Member of the German Academy of Sciences Leopoldina
1998	Gottfried-Wilhelm-Leibniz-Award of the German Research Foundation (DFG)

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Birgitta Henriques-Normark

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Host-pathogen interactions
- Bacterial infections
- *Streptococcus pneumoniae*
- Immune system

Research summary

Birgitta Henriques-Normark's work focuses on host-bacterial interactions and pathogenesis with a special emphasis on respiratory tract infections and pneumococcal infections, as well as on co-infections, especially between bacteria and viruses. Her group's research includes projects ranging from clinical studies and collections of patient samples, epidemiological, and molecular epidemiological investigations, to studies of bacterial regulatory systems, virulence properties, and interactions between bacteria and the host and its immune responses. A major research area is also antibiotic resistance, drug and vaccine development, and omics approaches to study the microbiota in the respiratory tract. She has many collaborations with research groups globally.

Education and work experience

Henriques-Normark was physician and Department head at the Swedish Institute for Infectious Disease control. In 2008, she became Professor in Medical Microbial Pathogenesis, and in 2011 Professor in Clinical Microbiology combined with a Head physician position at the Karolinska University hospital, at the Department of Microbiology, Tumour and Cell Biology (MTC), Karolinska Institutet, Stockholm, Sweden. She has evaluated research on numerous occasions such as for the European Research Council (ERC), and the EU commission, and was a member of the steering board for Medicine and Health at the Swedish Research Council. She was the Vice Dean for recruitment and responsible for recruitment of professors and lecturers for about 6 years, and currently she is the Academic vice president for research at Karolinska Institutet.

Selected awards and honours

2019	Elected Member of the Nobel assembly at Karolinska Institutet, awarding the Nobel Prize in Physiology or Medicine
2019	Elected member of European Molecular Biology Organization (EMBO)
2019	Appointed Torsten Söderbergs Academy-Professorship in Medicine
2018	Elected Member of the Royal Swedish Academy of Sciences
2015	Elected Fellow of the American Academy of Microbiology

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Jay Hinton

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Functional genomics
- Infection biology
- Transcriptional regulation
- *Salmonella*

Research summary

Jay Hinton's group pioneered an approach that revealed a "snapshot" of bacterial gene expression during the process of infection of mammalian cells. They discovered a key mechanism for silencing gene expression in bacteria in 2006. At Trinity College Dublin, his team employed RNA-seq-based approaches to understand the transcriptome of *Salmonella* Typhimurium and to identify 280 non-coding sRNAs. At the University of Liverpool, Hinton's research group is using functional genomics to understand how new *Salmonella* pathovariants are causing endemic bloodstream infections across sub-Saharan Africa. This disease, iNTS, has killed around 500,000 people over the past decade.

Education and work experience

Hinton did his first degree in Microbiology at the University of Kent at Canterbury, UK, where he was inspired to think genetically by Prof. George Salmond. After his PhD, Hinton moved to the University of Oxford's Weatherall Institute of Molecular Medicine, to work with Prof. Chris Higgins on bacterial pathogens that attack humans. Hinton became Head of Molecular Microbiology at the Institute of Food Research in Norwich, UK in 1999, and relocated to Trinity College Dublin in 2009. Hinton moved his research group to the University of Liverpool in 2012, where he is currently the Professor of Microbial Pathogenesis.

Selected awards and honours

2016	Wellcome Trust Senior Investigator Award
2010	Elected Fellow of Trinity College Dublin (FTCD)
2009	Stokes Professorial Fellowship, Science Foundation Ireland
2006	McMaster Professorial fellowship (CSIRO, Australia)

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Niels Høiby

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- *Pseudomonas*
- Biofilm infection
- Cystic fibrosis
- Antimicrobial chemotherapy

Research summary

Niels Høiby's research focuses on various aspects including chronic biofilm infection caused by *Pseudomonas aeruginosa*, antimicrobial chemotherapy, immune response to chronic infection, immune response to mucosal infection, *M. abscessus* lung infection - diagnosis and treatment in cystic fibrosis patients and bacteriophage therapy of biofilm infection.

Education and work experience

Høiby received his MD in 1968, DMSc in 1977 and became a Specialist in Clinical Microbiology in 1979 at University of Copenhagen, Denmark. He was subsequently Chairman at the Department of Clinical Microbiology (1980-2012) and Consultant Rigshospitalet, Denmark. He has been Professor of Medical Microbiology at the University of Copenhagen since 1988.

Selected awards and honours

2017	Elected Fellow of the European Society of Clinical Microbiology and Infectious Diseases
2012	Knight 1st Class, The Dannebrog Order, Denmark
2012	European Cystic Fibrosis Society Award
2011	Professor Honoris causa, West China School of Stomatology, Sichuan University, China
2006	GlaxoSmithKline International Member of the Year Award, ASM & AAM

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David Holden

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Bacteriology and Infection
- Virulence
- *Salmonella*
- Immunity

Research summary

David Holden invented signature-tagged mutagenesis (DNA barcoding) for genome-wide mutant screens. His group used this approach to discover the SPI-2 type III secretion system required for *Salmonella* pathogenesis, and continues to study the functions of many of its associated proteins, including effectors that are delivered into host cells and which mediate virulence processes.

Education and work experience

Holden graduated (BSc) from Durham University in 1977 and University College London (PhD) in 1982. He held postdoctoral positions in Canada, the USA and the National Institute for Medical Research, London. In 1990 he was appointed Lecturer at the Royal Postgraduate Medical School, London, becoming full Professor in 1995. Holden was Director of the UK Medical Research Council (MRC) Centre for Molecular Bacteriology at Imperial College London between 2012 and 2019. He is currently Regius Professor of Infectious Disease at Imperial College London.

Selected awards and honours

2016	Regius Professorship in Infectious Disease, Imperial College London, UK
2011	Elected Member of the European Molecular Biology Organization (EMBO)
2009	Elected Fellow of American Academy of Microbiology
2004	Elected Fellow of the Royal Society, UK

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David Hopwood

PRIMARY RESEARCH AREA

Biochemistry and molecular biology

KEYWORDS

- *Streptomyces*
- Sequencing
- Antibiotic production
- Antibiotic resistance

Research summary

David Hopwood is a microbiologist and geneticist, and a leading authority in microbial genetics. He developed original systems of genetic (or linkage) mapping and his work has formed the basis for the genetic engineering of bacteria to produce 'designer' antibiotics that promise to overcome antibiotic resistance. Hopwood pioneered research into a group of antibiotic-producing bacteria called *Streptomyces*, sequencing an entire genome for one strain. He was the first to clone both a gene involved in antibiotic production and a complete set of genes for an antibiotic. He later discovered that the group of soil-dwelling bacteria called *Actinomycetales* (to which *Streptomyces* belongs) have 'sleeping' genes that, if switched on, could form the basis of drugs to fight antibiotic-resistant bacteria.

Education and work experience

Hopwood graduated with a degree in botany at Cambridge University and a PhD in microbial genetics. He joined the John Innes Centre, UK, in 1967 as the first Professor of Genetics in the University of East Anglia and is now Professor Emeritus.

Selected awards and honours

2014	Fifth in the Royal Society of Biology's poll of people who have changed the world with biology
1995	Gabor Medal, Royal Society Leeuwenhoek Medal and Lecture, UK
1994	Knight of the Realm, UK
1979	Elected Fellow of the Royal Society, UK

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Urs Jenal

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Signalling in bacterial infection
- Chronic infections
- Antibiotics
- Microbial behaviour

Research summary

Urs Jenal investigates how small signalling molecules control the growth, behaviour and survival of bacteria on a global scale. Research in the Jenal lab strives to understand how these signalling compounds are produced and degraded and how they interact with each other to control physiology, virulence and antibiotic tolerance of gram-negative pathogens. Research activities focus on important human pathogens like *Escherichia coli* and *Pseudomonas aeruginosa* and how specific signalling networks promote their chronic behaviour in the human host. Interference with global regulatory networks promoting bacterial persistence offers attractive opportunities to develop targeted approaches to counter chronic infections in humans.

Education and work experience

Jenal obtained both his MSc. in Experimental Biology (1983-1987) and PhD in Microbiology (1987-1991) at ETH Zürich, Switzerland. In 1992-1995 he worked as a Postdoctoral fellow at Stanford University, USA. He then worked at the Biozentrum, University of Basel, Switzerland, as Assistant Professor (1996-2001), Associate Professor (2002-2008) and has been Full Professor since 2008.

Selected awards and honours

2013	ERC Advanced Investigator Award
2012	Elected Member of the European Molecular Biology Organization (EMBO)
2011	Elected Fellow of the American Academy of Microbiology

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Mike Jetten

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Nitrogen
- Methane
- Anaerobic
- Chemolithoautotrophy

Research summary

Mike Jetten's research focuses on the discovery and metabolism of anaerobic chemolithoautotrophs involved in nitrogen and methane cycles. Examples involve anammox and comammox bacteria, methanogens and methanotrophs.

Education and work experience

Jetten did his PhD in Anaerobic Microbiology at Wageningen University, The Netherlands (1987-1991) followed by a postdoc at Massachusetts Institute of Technology (MIT), USA (1991-1994). In 1994, he returned to The Netherlands and was appointed Assistant professor in Environmental Microbiology at TU Delft. Since 2000 Jetten is a Full Professor in Microbiology at Radboud University.

Selected awards and honours

2019	ERC Synergy MARIX
2014	Gravitation Grant SIAM, Netherlands
2013	ERC AG Ecomom
2012	Spinozapremie, Netherlands
2008	ERC AG anammox

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Stipan Jonjic

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- Viral immunology
- Cytomegalovirus
- Congenital infections
- Immunoevasion

Research summary

Stipan Jonjic has published over 200 papers in virology and immunology, and made several seminal discoveries in understanding viral pathogenesis and virus control by innate and adaptive immune response mechanisms. He also made remarkable contributions in understanding the pathogenesis of congenital cytomegalovirus infection. His work in viral immunology is probably most recognized through the characterization of viral immunoevasion mechanisms and their role in the regulation of innate and adaptive immune response. His work recently shifted toward translational immunology and the design of new vaccine vectors based on recombinant cytomegalovirus lacking different immunoevasins and/or expressing cellular ligands for activating immune receptors, like NKG2D. His group is known for an extensive collection of monoclonal antibodies against cellular and viral antigens, some of which are extensively used by the scientific community.

Education and work experience

Jonjic received his PhD in 1985 at the University of Rijeka, Faculty of Medicine, Croatia, and in 1996, became Chair of the Department of Histology and Embryology at the same institution. In 2006, he established the Center for Proteomics, which focuses on the characterization of viral and cellular proteins. He served as Dean of the Faculty of Medicine in Rijeka (1999-2003) and vice Rector of the University of Rijeka (1993-1994). Since 2010, he has been a member of the Board of Directors of the Croatian Science Foundation. In 2017, he co-founded an academic company, Nectin Therapeutics, which is developing novel antibody-based cancer immunotherapeutics. Jonjic is currently Professor and Chair, Department of Histology and Embryology and Center for Proteomics, University of Rijeka.

Selected awards and honours

2017	Lifetime Achievement Award in Science of the City of Rijeka, Croatia
2013	Lifetime Achievement Award in Science of the Republic of Croatia
2012	Elected Member of the German National Academy of Science Leopoldina
2009	The Croatian Academy of Medical Sciences Award
1993	Croatian National Prize for Science "Rudjer Boskovic''

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Bo Barker Jørgensen

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Marine microbiology
- Biogeochemistry
- Geomicrobiology

Research summary

Bo Barker Jørgensen's research interests are: marine biogeochemistry and geomicrobiology; marine carbon, sulfur and iron cycling; methane cycling; arctic microbiology and biogeochemistry; deep sub-seafloor biosphere; microbial life under extreme energy limitation.

Education and work experience

Jørgensen obtained his MSc (1973), PhD (1977) and DSc (1979) in Biology at Aarhus University, Denmark. At the same institution, he worked as associate Professor in the department of Ecology and Genetics (1977-1987), then research Professor for the Danish Science Research Council (1987-1992). Subsequently, Jørgensen was Director of the Max Planck Institute for Marine Microbiology in Bremen, Germany (1992-2011), and Professor in department of Geology at the University of Bremen, Germany (1993-2011). Since 2011, he has been a Professor in the Department of Biology at Aarhus University.

Selected awards and honours

2020	Member of the National Academy of Sciences, USA
2010	Jim Tiedje Award, International Society for Microbial Ecology
2009	German Environmental Prize
2006	Doctor of Honor, University of Southern Denmark
1986	Fellow of Danish Royal Academy of Sciences and Letters

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Regine Kahmann

PRIMARY RESEARCH AREA

Mycology/Fungal biology

KEYWORDS

- Molecular phytopathology
- Plant-microbe interactions
- Secreted effectors

Research summary

Regine Kahmann's work is dedicated to the question how fungi colonize plants and cause disease. Her group has developed the biotrophic fungus *Ustilago maydis* as a model to obtain molecular insights into how this fungus suppresses host immune responses and modulates plant processes to benefit the pathogen. Since the 2006 publication of the *U. maydis* genome sequence and detecting clustered genes encoding novel secreted protein effectors, her group has focused on the challenging functional analysis of such novel effectors and how a subset of them are taken up by cells of the host plant.

Education and work experience

Kahmann studied Microbiology at the University of Göttingen, Germany, and received her Diploma in Biology in 1972. She was a PhD student at the Max-Planck Institute for Molecular Genetics and received her PhD from the Free University of Berlin in 1974. Until 1980 she was Postdoc and Junior Staff Member at the Cold Spring Harbor Laboratory, followed by a position as Research Associate at the Max Planck Institute for Biochemistry in Martinsried. In 1982 she became Leader of an independent Research Group in the Otto-Warburg Laboratory at the Max-Planck-Institute for Molecular Genetics in Berlin, followed by becoming Leader of an independent Research Group at the IGF Berlin GmbH in 1987. In 1992 she became full professor for Genetics at the Institute for Genetics and Microbiology of the Ludwigs-Maximilians-University in Munich. From 2000 to 2019 she was Director and Head of the Department of Organismic Interactions at the Max Planck Institute for Terrestrial Microbiology in Marburg and full professor for Genetics at the Philipps-Universität in Marburg between 2001 and 2019. Since then she has Emeritus status.

Selected awards and honours

2011	Mendel Medal of the German National Academy of Sciences Leopoldina
2011	Honorary doctorate of the Hebrew University, Jerusalem
1998	Medal of Merit of the Federal Republic of Germany
1993	Leibniz Prize awarded by the German Research Fundation (DFG)

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Roy Kishony

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- Big data
- Antibiotic resistance
- Machine learning

Research summary

Roy Kishony is a pioneer in developing and applying mathematical, computational, and experimental tools at the frontiers of biomedicine with a specific focus on antimicrobial multi-drug therapy. His research combines novel quantitative experimental techniques and clinical studies with mathematical modeling and advanced data analysis, to study microbial evolution with a specific focus on antibiotic resistance. His lab aims to understand how bacterial pathogens evolve resistance to antibiotics within the human body during infection and how combinations of drugs can be used to slow down and perhaps even reverse this process. They have made a series of ground-breaking discoveries, showing how some drug interactions can select against resistance, unraveling mechanisms that keep resistance in check-in natural ecological environments, and pioneered unique experimental and theoretical methodologies for tracking the whole-genome evolution of pathogenic bacteria.

Education and work experience

Kishony received his B.A. in Physics and Mathematics from the Hebrew University and his Ph.D. in Physics from Tel-Aviv University (1999). He moved to Biology as a postdoc at Princeton and Rockefeller Universities and continued as a Bauer Fellow at Harvard University. In 2005, he joined the newly established Department of Systems Biology at Harvard Medical School, where he was rapidly promoted to a Full Professor (2011). He later joined the Technion Israel Institute of Technology in 2014 to lead interdisciplinary research at the interface of quantitative biology and biomedicine. Kishony is currently the Marilyn and Henry Taub Professor of Life Sciences at the Faculty of Biology and Faculty of Computer Science (secondary) at the Technion-Israel Institute of Technology.

Selected awards and honours

2020	Diane Sherman Prize for Medical Innovations for a Better World
2017	Elected Member, European Molecular Biology Organization (EMBO)
2016	Michael Bruno Memorial Award
2013	Sanofi – Institut Pasteur Award
2009	Outstanding Achievement in Biomedical Science Award, Genzyme

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Maia Kivisaar

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Mutagenic processes in bacteria
- Bacterial stress response
- DNA repair in *Pseudomonas*
- Biodegradation

Research summary

Maia Kivisaar investigates the molecular, genetic and physiological aspects of phenolic compound degrading soil bacterium *Pseudomonas putida*. The ongoing research is mostly centred on studies of molecular mechanisms of genetic adaptation of *Pseudomonas* under conditions of environmental stress such as cell starvation and oxidative stress caused by various toxic chemicals. A role of various DNA polymerases and DNA repair pathways in DNA damage tolerance and mutagenesis mechanisms is investigated. Furthermore, a part of her research is focused on identification of a network underlying the mutagenesis and evolvability of microbial populations under environmental stress.

Education and work experience

Kivisaar obtained her PhD in molecular biology in 1992 at the University of Tartu, Estonia. In 1994, she received postdoctoral training at the Biomedical Centre (BMC), Uppsala University, Sweden. From 1993 to 2007, she has been working as Associate Professor at the Institute of Molecular and Cell Biology (IMCB), University of Tartu. Since 2008, she has held a position as Professor of Microbial Genetics at the same institution.

Selected awards and honours

2005	National Science Prize, Estonia
1992	National Science Prize, Estonia

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Éva Kondorosi

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Symbiotic nitrogen fixation
- Molecular ecology
- Nodule-specific cysteine-rich NCR peptides
- Antimicrobial peptides

Research summary

Eva Kondorosi has made major contributions to the *Rhizobium*-legume symbiosis and understanding the molecular communication between the partners. She identified the first *Rhizobium* nodulation genes, responsible for the synthesis of Nod factors and the root nodule organogenesis. She demonstrated that bacteria inside the plant cells undergo a plant directed terminal differentiation leading to the formation of huge, polyploid non-cultivable bacteroids. The plant effectors are nodule specific NCR and GRP peptides acting in successive waves and representing ~700 peptides. Her recent work aims to elucidate the role of peptides in symbiosis and to explore their antimicrobial activities against pathogenic bacteria and fungi.

Education and work experience

Kondorosi completed her education in Hungary with an MSc in Biology (1971) and PhD in Genetics and Biochemistry at Eötvös Loránd University (1973) followed by a Candidate of Sciences degree in Molecular Biology (1987) and doctorate (1996) at the Hungarian Academy of Sciences. She held positions as Project leader at the Max Planck Institut für Züchtungsforschung Köln, Germany (1987-1989) and scientific director and group leader positions at the Institut des Sciences du Végétal, Centre National de la Recherche Scientifique, France (1989-2013). Kondorosi moved back to Hungary, where she was appointed Director of the the Institute for Plant Genomics, Human Biotechnology and Bioenergy (BAYGEN) at Bay Zoltán Foundation for Applied Research (2007-2011) and since 2012 she has been a Research Professor and Head of Symbiosis Unit, Biological Research Centre.

Selected awards and honours

2020	Member of the Group of Chief Scientific Advisors of the European Commission
2018	Balzan prize
2017	Vice President, European Research Council
2013	UN Secretary General's Scientific Advisory Board
2012	Széchenyi prize, Hungary

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Hans-Georg Kräusslich

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- Viral replication and spread
- Virus assembly
- Capsid uncoating
- Proteolysis

Research summary

Hans-Georg Kräusslich's research focuses on the replication and spread of HIV-1 in cellular systems of different complexities. This involves studies of intracellular trafficking of viral components, assembly of the immature virus and virion maturation by controlled proteolysis. In addition, his group studies the HIV-1 entry and early infection pathway up to the stage of viral integration and including host responses. The main techniques they employ are molecular virology and biochemistry with a focus on structural biology and high resolution and correlative microscopy.

Education and work experience

Kräusslich studied Medicine in Munich, Germany (1977-1984), and served compulsory military service as ship´s physician from 1985 to 1986. He then worked as a postdoc at Stony Brook University, USA (1986-1989) and went on to become Group leader at the German Cancer Research Center in Heidelberg (1989-1995). From 1995 to 1999, he was Professor and Director of the Heinrich-Pette-Institute in Hamburg, Germany. Since 2000, Kräusslich has been Professor and Chairman of the Department of Infectious Diseases at Heidelberg University.

Selected awards and honours

2018	Johann Gregor Mendel medal of the Czech Academy of Sciences
2017	Elected Fellow of the American Academy of Microbiology
2008	HMLS Research Award, Heidelberg
2007	Faculty Medal of Heidelberg University Medical Faculty
2006	Elected Member of the German Academy of Sciences Leopoldina

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Oscar P. Kuipers

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Synthetic biology
- Molecular engineering
- Physiology and gene regulation
- Development of novel antibiotics

Research summary

Oscar Kuipers researches new antimicrobials, focusing on the biosynthesis, function, engineering and regulation of modified antimicrobial peptides produced by bacteria (known as 'lantibiotics'). His work also addresses bacterial population heterogeneity and bistability at the single cell level, as well as bacterial gene regulation and genomics. He has carried out pioneering research into single cell biology, unravelling the mechanisms leading to phenotypic heterogeneity in bacterial populations. His key realization was that differentiation and heterogeneity in bacterial cultures, hitherto commonly treated as homogeneous, is omnipresent and has important implications for bacterial behaviour. These insights into differentiation and heterogeneity are now being used to develop novel strategies to fight unwanted bacteria, either for human health or in industrial settings, studying persisters and heteroresisters. Since 2000, the Kuipers' group has used transcriptomics and bioinformatics to study gene regulation and gene regulatory networks in Gram-positive bacteria. They have developed more than 20 frequently used novel bioinformatics tools, including BAGEL, a web-based bactericin genome-mining tool.

Education and work experience

Kuipers studied Biology at the University of Utrecht and earned his PhD in Chemistry and Molecular Biology at the same University (1990). He was further trained in bacterial physiology and moved to the direction of molecular genetics and synthetic biology after his PhD. He was postdoc and group leader at the Netherlands Institute for Dairy Research from 1990-1999. Kuipers is Professor in Molecular Genetics and heads the Dept. of Molecular Genetics at the University of Groningen since 1999.

Selected awards and honours

2019	Awarded the Ridder in de Orde van de Nederlandse Leeuw by King Willem Alexander, Netherlands
2011	Elected Member of the Royal Netherlands Academy of Arts and Sciences
2011	Awarded the Simon Stevin Meester Prize for technological life sciences research, Netherlands
2007	Chairman of the Dutch Biotechnological Society

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Marcel Kuypers

PRIMARY RESEARCH AREA

Marine microbiology

KEYWORDS

- Microbial nitrogen cycle
- Marine carbon cycle
- Biogeochemistry
- Environmental microbiology

Research summary

Marcel Kuypers' work focuses on understanding the pathways, interactions and environmental regulation of microbial processes that control oceanic nutrient cycling in the water column and sediments. To achieve these objectives, his lab uses a combination of chemical, molecular, microbiological and mathematical modelling techniques. His lab also uses NanoSIMS technology, which enables to link the identity of microbial cells in a complex microbial community to cellular uptake rates and determine nutrient fluxes.

Education and work experience

Kuypers studied chemistry with specialisation in organic chemistry. He completed his MSc in Chemistry at the University of Nijmegen (1995) and PhD in Geosciences at the University of Utrecht (2000) in the Netherlands. He was a Postdoctoral fellow (2001-2003), Senior Scientist (2003-2005) and Head of the Max Planck Research Group Nutrient at the Max Planck Institute for Marine Microbiology (2005-2009). Kuypers was appointed Professor of Biochemistry at University Bremen in 2001. Since 2009, he has been Director of the Biogeochemistry Department at the Max Planck Institute for Marine Microbiology and Head of Research Group of Biogeochemistry since 2016.

Selected awards and honours

2011	Elected Member of the European Academy of Sciences
2009	VAAM Research Prize, German Association for General and Applied Microbiology
2007	Scheneck Award, European Association of Organic Geochemistry
2007	IRPE Prize in Marine Ecology

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Hilary Lappin-Scott

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Microbial biofilms
- Biodegradation

Research summary

Hilary Lappin-Scott has several decades of experience in researching the formation and control of biofilms and the role of the microbiome in microbial degradation of environmental pollutants.

Education and work experience

Lappin-Scott completed her BSc and PhD at the University of Warwick, UK, and went on to hold several postdoctoral fellowships in the UK and Canada. From 1990 to 2009 she was Lecturer, Reader and Professor at the University of Exeter, UK. Between 2010 and 2019 she was senior Pro-Vice Chancellor at Swansea University, UK and currently holds the position of Honorary Distinguished Professor at Cardiff University, UK. Alongside her work Lappin-Scott was President at several societies, including President of the International Society for Microbial Ecology (2006-2010), President of the Microbiology Society (2009-2012) and since 2019, President of the Federation of European Microbiological Societies (FEMS). She has also been an active ambassador for science and microbiology and is an avid supporter of advancing science for people of all identities and backgrounds.

Selected awards and honours

2018	Order of the British Empire (OBE)
2017	Chwarae Teg award, Womenspire Awards 'STEM Pioneer', UK
2016	WISE HERO award, WISE awards, UK

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Iñigo Lasa Uzcudun

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Microbial pathogenesis
- Signal transduction
- Antisense regulation
- Biofilms

Research summary

Iñigo Lasa's work is dedicated to deciphering the regulatory networks involved in bacterial two-component sensorial systems, new transcriptional arrangements in bacterial operon structure and genetics of biofilm development. The more relevant findings of his laboratory have been: the identification of a family of proteins (Bap) able to build a proteinaceous biofilm matrix in the absence of exopolysaccharides; the characterization of the complete Two-component sensorial network in bacteria; the existence of a genome-wide process of overlapping sense/antisense RNA transcription that is processed by the activity of double stranded endoribonuclease, RNase III; and identification of the existence of a new transcriptional arrangement in bacteria, named "non-contiguous operon".

Education and work experience

Lasa studied biology at the Universidad de Navarra, Spain, and did his PhD with Prof. J. Berenguer at Universidad Autónoma de Madrid (1992). After postdoctoral work (1995-1997) in the laboratory of Professor Pascale Cossart at the Institut Pasteur, he was appointed assistant professor of Microbiology at the Universidad Pública de Navarra and started his own laboratory focused on the genetics of bacterial biofilm formation process (1998). Since 2008, he is Professor of Microbiology and he currently serves as the director of the Navarrabiomed, a biomedical research centre.

Selected awards and honours

2015	Research Award to the best scientific contribution, Public University of Navarra, Spain
2008	ERANET Pathogenomics prize to the best thesis: Cristina Latasa Osta (2007-2008)
2006	Research award on Basic Science from Universidad Publica de Navarra in 2006
2005	"Jaime Ferran" award by the Spanish Society of Microbiology

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Bruno Lemaître

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Insect immunity
- Insect endosymbionts
- Antimicrobial peptides
- Entomopathogens

Research summary

Bruno Lemaitre's research focuses on understanding the mechanisms of microbial infection and the corresponding host defence responses in Drosophila, using genetic and genomic approaches. Insects possess efficient mechanisms for detecting and neutralising microbial infection. The application of Drosophila genetics to deciphering these mechanisms has generated insights into insect immunity and uncovered similarities with mammalian innate immune responses.

Education and work experience

Lemaitre obtained a PhD at the Department of Molecular Evolution, Institut Jacques Monod, Paris (1992). He became research associate at the Institut de Biologie Moléculaire et Cellulaire (IBMC), Strasbourg, France, and worked with Dr Jules Hoffmann on the Genetic dissection of the immune response in Drosophila (1992-1998). In 1998 he was group leader at the Centre de Génétique Moléculaire (CNRS), Gif-sur Yvette, France, researching host/pathogen interactions and innate immunity in Drosophila, and then became Chairman of the Department "Development" (2003-2007). In 2007, he became Full Professor at the Global Health Institute of École polytechnique fédérale de Lausanne (EPFL), Switzerland where he continues his work on Drosophila host/pathogen interactions and innate immunity. Since 2019, he has been the Director of the Global Health Institute at EPFL.

Selected awards and honours

2010	Liliane Bettencourt Prize for life sciences
2007	Elected Member of the European Molecular Biology Organization (EMBO)
2003	William B. Coley Award for distinguished research in basic and tumour immunology (shared with J.A. Hoffmann, R. Medzitov et C. Janeway)
2002	Awarded First Prize of the Schlumberger Foundation
2000	Young Investigator Program, European Molecular Biology Organization (EMBO)

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Ruth Ley

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Human microbiome
- Microbial ecology
- Innate immunity

Research summary

Ruth Ley's research asks fundamental questions about the evolutionary origins of the human gut microbiome and how it influences host physiology and evolution. She has three main areas of research including the evolution of the human gut microbiome and interplay with host genetics, lipids in host-microbiome symbiosis, and microbiota-innate immune interactions.

Education and work experience

Ley received a BA in Integrative Biology from the University of California at Berkeley, USA, in 1992 and a PhD from the University of Colorado, Boulder, USA. She received a NRC-NASA Fellowship for postdoctoral work with Dr. Norman Pace at CU Boulder. In 2004, she moved to Washington University School of Medicine to work with Dr Jeffrey Gordon on the human microbiome. She was named an Instructor in 2005 and became a Research Assistant Professor at Washington University School of Medicine in 2007. In July 2008, Ley joined the Department of Microbiology at Cornell University as an Assistant Professor, and in 2013 became an Associate Professor with tenure in the Department of Molecular Biology and Genetics. Currently, Ley is the Director of the Department of Microbiome Science at the Max Planck Institute for Developmental Biology in Germany.

Selected awards and honours

2020	Otto Bayer Award, Bayer Foundations
2020	Elected Member of the German National Academy of Sciences Leopoldina
2019	Elected Member of the European Molecular Biology Organization (EMBO)
2019	Elected Fellow of the American Academy of Microbiology
2018	Ernst Young Prize for Medicine

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Daniel Lopez

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- *Staphylococcus aureus*
- Antibiotic resistance
- Bacterial infections
- Bacterial membrane organisation

Research summary

Daniel López is specialised in molecular microbiology and runs a leading lab in the field of membrane organisation in bacteria. He uses the human pathogen methicillin-resistant *Staphylococcus aureus* (MRSA) as a model to investigate how bacterial cell organisation contributes to the development of infections and antibiotic resistance. His group explores the existence of functional membrane microdomains in bacteria where protein complexes related to infections and resistance to antibiotics are organised. The group has developed techniques and protocols that are used to explore the complexity of cell organisation in bacteria.

Education and work experience

López completed his doctoral thesis at the University of Murcia, Spain, in 2005 under the supervision of Prof. Antonio Sánchez-Amat. Afterwards, he was a postdoctoral fellow at Harvard University, USA, in the laboratory of Prof. Roberto Kolter. He later started his own research as junior PI at the Research Centre for Infectious Diseases (ZINF) at the University of Würzburg, Germany (2010-2015). Since 2015, López has been a Tenured Scientist at the Spanish National Centre for Biotechnology CNB-CSIC.

Selected awards and honours

2018	Banco Sabadell Foundation National Award for Biomedicine, Spain
2018	Caja Rural Granada Foundation Health Sciences National Award, Spain
2018	Member of the Spanish Selection of best Scientists (QUO magazine and CSIC)
2016	Young Researcher Award of the Spanish Society of Biotechnology (SEBIOT)

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Julius Lukeš

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Parasitology
- Molecular biology of protists
- Evolution

Research summary

Julius Lukeš is interested in cell and molecular biology of various protist lineages, mostly parasitic, with the focus at trypanosomes and leishmanias, as well as diplonemids and apicomplexans. He mostly studies their evolution and diversity, as well as various functions of their mitochondria, such as RNA editing, heme synthesis and Fe-S cluster pathway. His lab turned various protists into genetically tractable organism, and in the recent years became interested in bacterial endosymbionts of protists.

Education and work experience

Lukeš completed his Master studies (1981-1986) at Charles University, Prague, and his PhD at the Czechoslovak Academy of Sciences, title awarded in 1991. He was then a postdoctoral fellow at the University of Amsterdam (1993), University of California, Riverside (1997-1998) and UCLA (1998-1999). Lukeš was a Fellow of the Canadian Institute for Advanced Research between 2009 and 2017. From 2003 to 2012, he was Chair of the Department of Molecular Biology at the University of South Bohemia, Czech Republic and since 2006 has been Professor of the Faculty of Sciences at the same university. Since 2012, he has been Director of the Institute of Parasitology at the Biology Center of the Czech Academy of Sciences, and since 2021 he has been Vice-head of the Scientific board of the Czech Academy of Sciences.

Selected awards and honours

2020	Awarded Prize of the President of the Czech Academy of Sciences for research excellence
2018	Elected Fellow of the American Association for the Advancement of Science
2014	Elected Fellow of the American Academy for Microbiology
2006	President of the International Society for Evolutionary Protistology
2004	Elected Member of the Learned Society of the Czech Republic

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Didier Mazel

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial genome plasticity
- Recombination
- Antibiotic resistance
- Synthetic biology

Research summary

Didier Mazel studies the mechanisms responsible for the bacterial genome variability, with a special interest for those involved in exogenous gene acquisition – the horizontal gene transfer. Their model system is the integron, a natural genetic engineering system involved in the development and dissemination of antibiotic resistance genes among Gram-negative species. He also studies the effects of subinhibitory concentrations of antibiotics as general stress inducers, using genetics and postgenomics approaches. His team also investigates the factors playing a role in the repair and maintenance of the two chromosomes of *Vibrio cholerae*, aiming to understand both the selective benefit of this organization as well as the specific machinery in charge of their maintenance. Furthermore, he recently developed a new antimicrobial technology based on the expression and delivery of specific toxin-intein modules which are only activated in the targeted pathogenic bacteria.

Education and work experience

Mazel obtained a PhD in Molecular and Cellular Genetics in Paris, France. He has been working at the Institut Pasteur, France, since 1984, with a 2-year break as a visiting scientist with Julian Davies lab at UBC in Vancouver, Canada.

Selected awards and honours

2021	Elected Member of the Academia Europaea
2016	Laureate of a Louis Pasteur Chair of Excellence, France
2014	Elected Fellow of the American Academy of Microbiology
2010	Laureate of the Pasteur Vallery-Radot Award of the Bibliothèque Nationale de France
2006	Laureate of the 2006 Jean Pierre Lecocq Prize of the French Academy of Sciences

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Thomas Meyer

PRIMARY RESEARCH AREA

Molecular microbiology

KEYWORDS

- Infection mechanisms
- Vaccine and drug development
- Chronic infections
- Inflammatory processes and carcinogenesis

Research summary

Thomas F. Meyer's current research focus addresses the role of chronic bacterial infections in human cancer development and the underlying mechanisms including the modulation of tissue regeneration and inflammation in the mucosal microenvironment by pathogens. Most recently, his group identified a specific signature and characteristic gene re-organisations in human colon cancer, pointing to a profound role of colibactin producing bacteria in human carcinogenesis. Meyer's other research includes development and application of innovative human organoid models to study the outcome of chronic infections, elucidation of virulence mechanisms, work on viral pathogens such as influenza viruses and also development of vaccine and drugs against SARS-CoV-2.

Education and work experience

Meyer studied Biology at Ruprecht Karls University, Germany (1977) where he also obtained a doctorate in natural sciences (1979). He conducted research at Cold Spring Harbor Laboratory New York and at the Public Health Research Institute of New York City, USA. He then returned to the Max Planck Institute (MPI) for Medical Research in Heidelberg. In 1983, he became group leader at the Centre for Molecular Biology at the University of Heidelberg (ZMBH) and later group leader at the MPI for Biology in Tübingen (1985). In 1990, he was appointed director of the Department of Infection Biology at the MPI for Biology in Tübingen, which he headed until 2000. In 1994, Meyer moved to Berlin, where he participated in the founding of the MPI for Infection Biology as Director of the Department of Molecular Biology. Besides further affiliations, he is now heading an ERC funded group as Senior Professor at the Christian Albrecht's University of Kiel.

Selected awards and honours

2020	Awarded the Robert Koch Gold Medal, Germany
2001	Elected Member of the German National Academy of Sciences Leopoldina
1989	Awarded the Main Prize, German Society for Hygiene and Microbiology (DGHM)
1989	Elected Member of the European Molecular Biology Organization (EMBO)
1986	Awarded the Heinz Maier Leibnitz Prize of the Federal Ministry of Science and Education, Germany

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Tâm Mignot

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial cell biology
- Development
- Motility
- Signaling

Research summary

Tâm Mignot has been studying the mechanism by which bacteria move on surfaces and direct their movement to adopt social behaviors, similar to schools of fish that are able to reorganize very rapidly according to environmental conditions. This research is part of the general study of the propagation mechanisms of cellular interactions allowing multicellular coordination on large scales. Over the past decade, the team has used "single cell" approaches to study the molecular mechanisms of motility and its regulation. Recently, the team has developed new tools to integrate these mechanisms at the multicellular scale and model the emergence of social behaviors.

Education and work experience

Mignot obtained his PhD in 2002 from the University of Paris for his work on gene regulation during anthrax infection in Michèle Mock's laboratory at the Pasteur Institute in Paris. He then started a post-doc in David Zusman's laboratory at the University of California at Berkeley where he developed the first single cell approaches to study bacterial motility on surfaces and its regulation. In 2006, he obtained a CNRS scientist (CR) position to start his own group at the Laboratoire de Chimie Bactérienne (LCB) and follow up on his post-doctoral work, aiming to identify the molecular machineries driving bacterial gliding motility. He was later promoted Director of Research in 2014 and became a Director of Unit for the LCB in 2018. Tam Mignot is now both involved in conducting research and promoting new approaches for Microbiology.

Selected awards and honours

2019	ERC Advanced Grant
2013	French National Science Academy - D'Aumale Prize
2011	Loréal - Bettencourt-Schueller «coup d'élan pour la recherche française» Prize
2011	CNRS Bronze Medal
2010	ERC Starting Grant

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Francisco J.M. Mojica

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- CRISPR
- Cas

Research summary

Francisco J.M. Mojica studies CRISPR-Cas systems' biology, particularly the immunization process and the diversity of CRISPR-Cas variants in nature.

Education and work experience

Mojica studied Biology at the University of Valencia, Spain. In 1993, he obtained his PhD in Biology, at the University of Alicante, Spain, for research on the response of halophilic microorganisms to stress factors. During the stage of his thesis elaboration, he visited the laboratory of Dr Patrick Forterre at the University Paris XI (Orsay, France (1991-1992) where he began his analyses of DNA structure. He conducted postdoctoral research in bacterial motility at the University of Utah, USA (1993) with Dr John S. Parkinson and on gene regulation and DNA topology at Dr Christopher F. Higgins' lab, University of Oxford, UK (1995-1996). In 1997, he returned to the University of Alicante as Professor of Microbiology and founded the Molecular Microbiology group. He discovered the acquired immunity system of prokaryotes (bacteria and archaea) known as CRISPR, one of the greatest recent advances in Biology and Medicine.

Selected awards and honours

2018	"V" de vida Award, Spanish Association Against Cancer
2017	BBVA Foundation Frontiers of Knowledge Award in Biomedicine, IX Edition
2017	PLuS Alliance Prize for Global Innovation
2017	Albany Medical Center Prize in Medicine and Biomedical Research, Albany Medical Center, USA
2016	"Rey Jaime I" Prize in Basic Research, King Jaime I Foundation, Spain

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Søren Molin

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial infections
- Microbial evolution
- Antibiotics and resistance

Research summary

Molin's current research activities are based on the assumption that fundamental studies of bacterial physiology and ecology are essential if we wish to understand and eventually interfere with such microbial infections. During the last 10 years he has been actively engaged in translational studies of long-term bacterial infections in human airways focused on the adaptive processes driving bacteria towards chronic infections states, and the transfer of biological knowledge and methods to clinical microbiology applications.

Education and work experience

Molin completed his Master's Degree in Microbiology at the University of Copenhagenat (1972) and PhD in Microbiology at the University of Copenhagen (1977). He later was appointed Assistant Professor (1976-1977) and Associate Professor (1977-1983) at the Department of Molecular Biology, University of Southern Denmark. Between 1983 and 2016 he was Professor of Microbiology at the Technical University of Denmark and Professor and Scientific Section Director, Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark between 2011 and 2015. Molin has been Professor and Group Leader at the Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark since 2016.

Selected awards and honours

2014	The Novo Nordisk Prize: Researcher of the Year
2006	Award as the Most Cited Danish Microbiologist (included in ISIHighlyCited.com)
2004	Julius Thomsen Gold Medal for Scientific Merits, DTU, Denmark
2000	Dannin-fondets legat, Denmark
1993	Højgaard & Schultz's Special Prize, Denmark

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Cesare Montecucco

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Bacterial neurotoxins
- Evolution of bacterial toxins
- Nerve paralysis
- Neuroregeneration

Research summary

Cesare Montecucco's research focuses on the molecular and cellular pathogenesis of tetanus and botulism and of the neurotoxins involved. He investigates drugs that will prevent tetanus and botulism, and studies the intercellular signalling among Schwann cells, muscle and neurons during peripheral nerve regeneration, as well as drugs that promote regeneration. Montecucco notably discovered the molecular mechanism of action of tetanus neurotoxin, botulinum neurotoxins, anthrax lethal factor, and of the VacA and HP-NAP of *Helicobacter pylori*. Moreover, he discovered the mechanism of action of the PLA2 snake neurotoxins.

Education and work experience

Montecucco holds MS degrees in both Chemistry and Biology, and was trained as a Postdoc at the University of Cambridge, UK (1975-1978). From 1979 to 2018, he worked as Assistant Professor and then Full Professor of General Pathology at the University of Padova, Italy. In 1984, he worked at Institut Pasteur with Changeux and in 2002 with Mock. In 1990, he worked at University of Utrecht with de Kruijff, and in 1997, he did a sabbatical at EMBL in Heidelberg with Zerial. From 2007 to 2008, he was visiting scientist at the Istituto Picado, Universidad de Costa Rica. Montecucco is currently Emeritus Professor and CNR Scientist at the University of Padova and a research scientist at the National Research Council institute of Neuroscience in Italy.

Selected awards and honours

2019	Lifetime Achievement Award of the International Neurotoxin Association
2011	Awarded the Ehrlich Prize for Medicine, Germany
2009	Redi Award of the International Society for Toxinology
2004	Awarded the Feltrinelli Prize for Medicine of the Accademia dei Lincei, Italy
1993	Harvard Medical School Shipley Prize for Medicine, USA

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Colin Murrell

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Trace gas microbiology
- Microbiology of C1 compounds
- Methane and isoprene

Research summary

Colin Murrell's research focuses on the microbiology of atmospheric trace gases, methanotrophy, C1 metabolism and microbial ecology.

Education and work experience

Murrell has been a Professor in Microbiology at the University of East Anglia, UK, since 2011. He completed his PhD in 1981 at the University of Warwick, UK. He was a Postdoc at the University of Washington, USA (1981-1983) and then returned to the University of Warwick (1983-20110).

Selected awards and honours

2016	President of the International Society for Microbial Ecology
2016	ERC Advanced Grant Awardee
2015	Elected Member of the European Molecular Biology Organization (EMBO)

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Franz Narberhaus

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Regulatory RNAs
- Gene regulation in bacteria
- Proteolysis
- Membrane lipids

Research summary

Franz Narberhaus is interested in various aspects of gene regulation and microbial physiology. He studies temperature-controlled regulation of heat shock and virulence genes by RNA thermometers. Small regulatory RNAs and small proteins in the plant pathogen *Agrobacterium tumefaciens* are other areas of research. His group also works on the biosynthesis of bacterial membranes.

Education and work experience

Narberhaus studied biology in Göttingen, Germany, and received his doctorate in 1992 under Gerhard Gottschalk and Hubert Bahl. After two years as a postdoctoral researcher at UC Berkeley, USA, with Sydney Kustu, he joined Hauke Hennecke at ETH Zurich, Switzerland, in 1995, where he habilitated in 1999. Since 2004 he has been the Chair of Biology of Microorganisms at Ruhr University Bochum, Germany.

Selected awards and honours

2021	President of the German Society of Microbiology (VAAM)
2020	Scientific Advisory Board of the Max Planck-Institute for Terrestrial Microbiology, Germany
2012	Member Elect of the review board 204 Microbiology, Virology and Immunology, DFG

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César Nombela

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Yeast
- Signal transduction
- Microbial pathogenicity
- Cell wall

Research summary

César Nombela's research focuses on Eukaryotic Microbiology with emphasis on the molecular basis of the pathogenesis and the identification of novel antimicrobial targets, yeast cell biology, signal transduction, production of recombinant proteins end genomics and proteomics. His research is funded by several national and international funding agencies including CICYT, FIS, the European Commission (several Framework programs), as well as different pharmaceutical companies.

Education and work experience

Nombela holds degrees in Pharmacy and Chemistry from Complutense University, Spain (1969), and a Doctorate in Microbiology from the University of Salamanca, Spain (1972). He carried out postdoctoral research at New York University (1972-74) and the Roche Institute of Molecular Biology, New Jersey (1974-75) both in the USA. From 1975 to 1979, he was a research scientist at the Spanish Council for Scientific Research (CSIC) and was then appointed full Professor of Microbiology at Complutense University (1979-2017), where is is currently also Head of the corresponding department. In addition, Nombela has been President of Spanish Society for Microbiology (1982-90), President of FEMS (1995-98), President of the CSIC (1996-2000) and Rector of Menendez Pelayo International University (2012-2017).

Selected awards and honours

2018	Honorary Rector of Menéndez Pelayo International University, Spain
2015	Distinguished son of his birthplace (Carriches, Toledo, Spain)
2013	Great Cross of the Order of Alphonse Xth the Wiseman, Awarded by the Spanish Crown
2002	Invention Medal, Foundation García-Cabrerizo, Spain
1995	Award in Science, Spanish Confederation of companies organizations (CEOE)

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Staffan Normark

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Cell biology
- Immunology
- Inflammation

Research summary

Staffan Normark has studied mechanisms by which diverse bacteria are able to colonize host tissues and resist beta-lactam antibiotics. He discovered that beta-lactam antibiotics induce beta-lactamase expression, by increasing production of cell wall fragments (muropeptides). Moreover, he was the first to dissect in detail the genetic basis of bacterial adhesion. His discoveries led to understanding the biogenesis, structure, and role of P-pili of uropathogenic *E. coli* providing a model and blueprint for receptor-ligand interactions in a number of pathogenic organisms. He discovered that the pilus was a multi-component structure consisting of a stalk and a specialized pilus tip adhesin, and identified key functions of the assembly proteins. Normark also studied the mechanisms for *Helicobacter pylori* colonization and identified fucosylated blood group antigens as gastric receptors for *H. pylori*. In addition, he discovered a novel class of adhesive surface organelles on gram-negative bacteria termed curli, which are biofilm promoting bacterial amyloids, determining aspects of their regulation and nucleation dependent assembly. More recently, he has together with Birgitta Henriques-Normark, forged new frontiers in pneumococcal pathogenesis.

Education and work experience

Normark holds a Bachelor of Medicine (1966) and obtained his MD at the Umeå University in Sweden (1971). He was later appointed Professor at the Department of Microbiology, Umeå University (1980-1989); Professor and Department Head at the Department of Molecular Microbiology, Washington University School of Medicine, USA (1989-1993) and Professor at the Karolinska Institutet, Sweden (1993-2012). From 2010 to 2015, he was permanent secretary of the Royal Swedish Academy of Sciences. Currently, he is Senior Professor, Karolinska Institutet.

Selected awards and honours

2019	Elected International Member National Academy of Sciences (NAS), USA
2018	Robert Koch Gold medal
2010	Pasteur medal
1998	Fernström Nordic Prize in Medicine
1987	Elected Member of the Royal Swedish Academy of Sciences, Sweden

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Thomas Nyström

PRIMARY RESEARCH AREA

Aging and protein quality control

KEYWORDS

- Aging
- Protein aggregation
- *Saccharomyces cerevisiae*
- Huntington's disease

Research summary

Thomas Nyström's work is focused on aging and protein quality control. His lab uses *Saccharomyces cerevisiae* to study how protein aggregates form in a cell during stress and aging. Using in vivo microscopy methods and genome-wide approaches along with biochemical assays his lab tries to elucidate how protein aggregates are recognized and managed by the protein quality control system. Questions asked include, how protein aggregates are sorted into distinct quality control sites to relieve aggregate toxicity, and how this relates to cellular longevity. Nyström's lab also studies the process of damage retention, where damaged and aggregated proteins are retained in the aged mother cell during cell division, and aims at identifying the molecular mechanisms behind this rejuvenation process. Furthermore, they investigate the aggregation and toxicity of mutant Huntingtin, a protein that is related to neuronal cell death in Huntington's disease.

Education and work experience

Nyström obtained his PhD in Microbiology at the University of Gothenburg, Sweden in 1989 and carried out his postdoc at the University of Michigan, USA. He later returned to Sweden as an Assistant Professor at Lund University and he is currently a Professor and Principal Investigator at the University of Gothenburg.

Selected awards and honours

2015	The Emil Christian Hansen Gold Medal, Denmark
2009	Wallenberg Scholar Award, Wallenberg Foundation, Sweden
2003	Göran Gustavsson Award in Molecular Biology, Royal Swedish Academy of Sciences

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Fergal O'Gara

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Microbiome-host interactions
- Microbial pathogens
- Bile acid signalling
- Molecular microbial ecology

Research summary

Fergal O'Gara's biomedical research programme investigates microbiome-host interactions in health and disease using Molecular Microbiology and Genomic approaches. *Pseudomonas* is being used as a model organism to dissect the molecular basis of pathogen-host interactomes. His work is focussed on the impact of (micro)aspirated bile acids as trigger signal molecules modulating Microbiome ecology and inflammation responses in the Cystic Fibrosis lung, the nature of signalling cascades in pathogen-host interactions and exploiting metagenomic based technologies for the bio-discovery of new antimicrobial therapeutics. His research programmes have attracted significant funding from both national and international agencies and industry.

Education and work experience

O'Gara completed his undergraduate and postgraduate education the National University of Ireland Galway (NUIG). His postdoctoral training was conducted at the University of California San Diego (UCSD) and Davis (UCD), USA. O'Gara is currently a Research Professor and Director of the Biomerit Research Programme at National University of Ireland, Cork (UCC), and the Human Microbiome Programme at the Telethon Kids Institute in Perth, Australia.

Selected awards and honours

2018	Invited Member of College of Experts, European Science Foundation (ESF)
2010	Appointed to the Irish Food Board (An Bord Bia)
2008	Elected Member of the European Research Council and Research Evaluation Panels
2003	Elected Member of Royal Irish Academy, Council (2007) and VP (2008-2011)
2000	Appointed Chairperson of EU Scientific Committee on Genetically modified organisms

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Juan Ortín

PRIMARY RESEARCH AREA
Virology

KEYWORDS
- Influenza
- Replication
- Gene expression
- Host-pathogen interactions

Research summary

Juan Ortín is a pioneer in the structural and functional analysis of replication and gene expression in influenza virus. His research lines have been central to understanding this virus. His contributions to knowledge of the influenza virus include structural studies of the viral polymerase and the ribonucleoprotein (RNP) complex, which make up the viral transcription and replication machinery. His laboratory's study of RNP led to the first detailed images of the viral genome expression machinery and its three-dimensional reconstruction. Ortín has also garnered success in his career with his research on the mechanisms of interaction between the virus and the infected cell, and the adaptation of the viral genome to the host's innate cellular response to infection. These studies have made his group a leader in the field of flu research.

Education and work experience

Ortín studied in the School of Chemistry at the Universidad Complutense in Madrid. He later joined Margarita Salas and Eladio Viñuela's group at the Center for Biological Research (CIB), with whom he carried out his doctoral thesis work. Ortín was a postdoctoral fellow in Walter Doerfler's laboratory at the University of Cologne Institute of Genetics (Germany) and later returned to Spain, for research. He worked again with Viñuela and Salas in the newly formed Severo Ochoa Centre for Molecular Biology (CBMSO) in Spain, where he set up his own group with Esteban Domingo. He moved to the new CNB-CSIC when it began to take shape in the 1980s. Ortín is currently retired and named as "one of the CNB's most beloved scientists".

Selected awards and honours

1985	Jaime Ferrán Prize

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Albert Osterhaus

PRIMARY RESEARCH AREA
Virology and immunology

KEYWORDS
- Influenza

Research summary

Albert Osterhaus is a leading virologist. The major achievements of his work include the discovery of more than 70 human and animal viruses (e.g. human metapneumovirus, coronaviruses, and influenza viruses), the elucidation of the pathogenesis of major human and animal virus infections, and the development of novel intervention strategies. This has enabled health authorities like WHO, to effectively combat disease outbreaks like SARS and avian influenza. The spin-offs, Viroclinics-DDL Vironovative and CR2O, are among his societally relevant successes, allowing effective testing and refining of diagnostic tools and other intervention strategies.

Education and work experience

Osterhaus completed his undergraduate and postgraduate training at the Utrecht University, Netherlands were he became a registered veterinary microbiologist. He took several academic and research posts including, Head Laboratory of Immunobiology, RIVM, Professor of Virology and Head of the Department of Viroscience, Erasmus MC, Netherlands. Between 1993 and 2015 he was the Director National Influenza Center (NIC), Rotterdam and Director WHO Global Reference Laboratory for Measles, Rotterdam (1995-2000). From 2011 to 2019 Osterhaus was professor of Wildlife Virology and Virus Discovery at University Utrecht in the Netherlands, and since 2013 has been professor at the University of Veterinary Medicine Hannover (TiHo) in Germany. In addition, he became the Founding Director RIZ-TiHo in Hannover from 2014 onward.

Selected awards and honours

2018	ACVM Distinguished Microbiologist Award
2016	Robert C. Gallo Award for Scientific Excellence 2018 ACVM Distinguished Microbiologist Award
2015	Chanchiani Global Health Research Award (McMaster, USA)
2010	ESCMID Award for Excellence in Clinical Microbiology and Infectious Diseases
2007	Prix scientifique Louis D - Académie des sciences de l'Institut de France

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Jörg Overmann

PRIMARY RESEARCH AREA

Taxonomy, systematics and evolution

KEYWORDS

- Microbial ecology and diversity
- Microbial physiology
- Microbial systematics and evolution

Research summary

Jörg Overmann's research focuses on bacterial genome evolution and speciation, diversity, biogeochemical functions and environmental controls of bacterial communities in natural environments, and the molecular mechanisms of bacterial interactions, also in microbiomes. By using innovative cultivation methodology he isolated and described numerous new bacterial species that had previously escaped cultivation. Profound field experience was gained in Namibia, Angola, Botswana, Ethiopia and Senegal. To date, over 200 bacterial and fungal genomes were sequenced and analysed. He has conceived and developed the bacterial metadatabase BacDive.

Education and work experience

Overmann studied Biology at the Universities of Bochum and Freiburg, Germany (1987). He obtained a PhD in Microbiology (1991) under the guidance of Norbert Pfennig at the University of Konstanz, Germany. After a postdoctoral stay at the University of British Colombia, Canada, he joined the Carl von Ossietzky Universität in Oldenburg, Germany, where he obtained his Habilitation in 1999. From 2000 until 2010, he was professor of microbiology at the Ludwig-Maximilians-Universität München where he also served as Director of the Department Biology I from 2003 until 2009. In 2010, he became Director of the Leibniz-Institut DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen in Braunschweig and full professor of microbiology at the Braunschweig University of Technology, Germany.

Selected awards and honours

2020	2020 Council of Scientists Member, Human Frontier Science Program Organization, France
2017	Appointed Member of the Permanent Senate Commission on Fundamental Issues of Biological Diversity, German Science Foundation (DFG)
2012	Member Elect of the review board 204 Microbiology, Virology and Immunology, DFG
2003	Inaugural Douglas Leigh Lecturer Award of the Waksman Foundation for Microbiology, USA
1992	PhD Award of the German Association for General and Applied Microbiology (VAAM)

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Csaba Pal

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- Antibiotic resistance
- Genome engineering
- Evolution
- Systems biology

Research summary

Csaba Pal's research focuses on antibiotic resistance and genome engineering. His group recently developed a novel genome engineering technology (termed DIvERGE) that allows testing the evolution of resistance in the laboratory at unprecedented speed, accuracy and scale. This technology offers a unique opportunity for pharmaceutical companies to identify new antibiotics with limited resistance from a large set of compounds at very early stage of the antibacterial drug-discovery process.

Education and work experience

Pal received his doctoral degree at Eötvös Loránd University, Hungary, in 2002 and spent several years on scholarships in Oxford and Heidelberg. Since 2008, he has been a researcher at the Szeged Biological Research Centre of the Eötvös Loránd Research Network, a senior researcher at the Institute of Biochemistry, and one of the heads of the Synthetic and Systems Biology Unit. He is also a member of the editorial boards of Molecular Biology and Evolution, PLOS Biology and Biology Direct. In the course of his career, he was awarded European Research Council's Starting (2008-2013), Consolidator (2015-2020) and Proof of Concept (2019–) grants.

Selected awards and honours

2019	ERC Proof of Concept Grant
2017	Elected Member of the European Molecular Biology Organization (EMBO)
2015	Awarded the Bolyai Prize of the Hungarian Academy of Sciences
2014	Szent-Györgyi Talents Award, Hungary
2009	Awarded the Ignaz Lieben Prize of the Austrian Academy of Sciences

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Tracy Palmer

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Protein secretion
- Membrane protein assembly

Research summary

Tracy Palmer is well known for her work on bacterial protein secretion systems. She was one of the first scientists to work on the bacterial twin-arginine protein translocation (Tat) pathway. The Tat system is highly unusual because it transports folded proteins, including a range of virulence factors, across the envelopes of bacteria. Discovery of the Tat pathway revolutionized understanding of protein assembly and export and catalysed a completely new research field within microbiology. She also works on the Type VII secretion system in the human pathogen *Staphylococcus aureus*. Her group demonstrated an unexpected and critical role for this pathway in interbacterial competition, with important implications for shaping the microbiota.

Education and work experience

Palmer graduated with a first class honours degree in Biochemistry from the University of Birmingham, UK, in 1998. Following a PhD in Bioenergetics in the lab of Professor Baz Jackson (also University of Birmingham), she moved to the University of Dundee in 1992 to carry out a postdoc in Professor David Boxer's lab. In 1993 Tracy was promoted to University Research Fellow at Dundee University. In 1996, Tracy was awarded a Royal Society University Research Fellowship (URF) to start her independent career, which she held jointly at the John Innes Centre and University of East Anglia (Norwich, UK). After gaining tenure in 2000, and finishing her Royal Society URF in 2004, Tracy was subsequently awarded a Senior Fellowship from the UK Medical Research Council, which she held until 2009. She moved back to the University of Dundee in 2007, becoming Head of the Division of Molecular Microbiology there in 2009. In 2018, Tracy relocated to Newcastle University, where she currently works.

Selected awards and honours

2018	Elected Fellow of the Royal Society, UK
2017	Elected Member of the European Molecular Biology Organization (EMBO)
2015	Elected Fellow of the American Academy of Microbiology
2009	Elected Fellow of the Royal Society of Edinburgh

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Julian Parkhill

PRIMARY RESEARCH AREA

Microbial genomics

KEYWORDS

- Infection genomics
- Bacterial evolution
- Molecular biology
- Host-pathogen interactions

Research summary

Julian Parkhill focusses on the evolution of bacterial pathogens; their origin, transmission and adaptation to selective pressure. He and his group employ genomic and phylogenetic approaches to address these, and over the last few years they have used large-scale population genomics to identify the global origin and routes of spread of many human and animal pathogens. They look for signatures of adaptation to the host, to antibiotics and to vaccine pressure, most recently developing bacterial genome-wide association approaches to identify genetic determinants responsible for this adaptation. In addition to informatics approaches, his group develops and applies genome-wide experimental tools, studying interaction with the host and antimicrobial resistance mechanisms. They are interested in metagenomics, currently studying the microbiota in the gut, the lung, the nasopharynx and the placenta.

Education and work experience

Parkhill received his BSc in 1986 at the University of Birmingham, UK, and his PhD in 1991 at the University of Bristol, UK. In 1997, he joined the Sanger Centre, UK, and the following year went on to publish the *Mycobacterium tuberculosis* genome. He became a Sanger Institute Faculty member in 2001, and was later Head of Infection Genomics and Senior Group Leader at the same institute. He is currently a Professor in the Department of Veterinary Medicine at the University of Cambridge, UK.

Selected awards and honours

2014	Elected Fellow of the Royal Society, UK
2014	Elected Member of the European Molecular Biology Organization (EMBO)
2012	Elected Fellow of the American Academy of Microbiology
2009	Elected Fellow of the Academy of Medical Sciences, UK

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Jean-Claude Piffaretti

PRIMARY RESEARCH AREA
Medical microbiology

KEYWORDS
- Antibiotic resistance

Research summary

Jean-Claude Piffaretti is an expert in antibiotic resistance. His key research specialisms include medical microbiology, bacterial genetics, antibiotic resistance, biosafety and biosecurity, as well as influenza.

Education and work experience

Piffaretti obtained a PhD in biological science in 1974 from the Geneva University, Switzerland. From 1981 to 2006, he was deputy director of the Cantonal Institute of Microbiology of the Canton Ticino, Switzerland, where he supervised the clinical laboratory. In 1993, he was appointed associate professor at the Faculty of Medicine of the University of Geneva, where he taught microbiology to the pharmacy and biology students until 2011. From 2009 to 2013 he also taught microbiology to the medicine students of the University of Fribourg. Over the years, Piffaretti received several mandates from the Swiss Federal Office of Public Health, and served as an expert to the Swiss Accreditation Service for the medical microbiology laboratories. Currently, he is an Honorary member of the Swiss Society for Microbiology.

Selected awards and honours

2013-2016	Elected President of FEMS
2012-2015	President of the Swiss Federal Committee for pandemics' preparedness (EKP)
2010-2013	Elected Vice President of FEMS
2008-2011	President of the Swiss Federal Committee "Influenza Work Group"

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Mariana Gomes de Pinho

PRIMARY RESEARCH AREA
Cell and molecular biology

KEYWORDS
- Bacterial cell biology
- *Staphylococcus aureus*
- Antibiotic resistance
- Microscopy

Research summary

Mariana Pinho's research focuses on understanding the complex organization of bacterial cells using as a model organism the bacterial pathogen *Staphylococcus aureus*. Her group aims to use knowledge gained on fundamental aspects of cell biology of this pathogen to understand the mechanisms of resistance to antibiotics and the modes of action of new antimicrobial compounds.

Education and work experience

Pinho studied Applied Chemistry at Faculdade de Ciência e Tecnologia, Universidade Nova de Lisboa, Portugal. In 2001 she was awarded a PhD in Biology, by the same university, based on work on antibiotic resistance done at the Rockefeller University, New York. She then moved to Oxford, UK for a post-doc, where she entered the field of bacterial cell biology. In 2006 she became group leader at the Instituto de Tecnologia Química e Biológica, Universidade Nova de Lisboa and in 2013 became Associate Professor at this institution.

Selected awards and honours

2020	Elected Member of the European Molecular Biology Organization (EMBO)
2018	Pfizer Award for basic research in biomedical sciences
2018	ERC Consolidator Grant
2013	ERC Starting Grant

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Mariagrazia Pizza

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Bacterial vaccines
- Infectious diseases
- Bacterial pathogenesis

Research summary

Mariagrazia Pizza's research is focused on the discovery and development of bacterial vaccines. She also works to study the role played by the newly identified antigens in virulence, pathogenesis and immunity.

Education and work experience

Pizza has a degree in Chemistry and Pharmaceutical Technologies. During her career, she has led many vaccine projects and contributed to the discovery of a Pertussis vaccine based on a genetically detoxified toxin, and a Meningococcal B vaccine, discovered by reverse vaccinology, which is licensed in more than 40 countries worldwide. She was a fellow in the European Molecular Biology Laboratory (EMBL), Heidelberg, Germany (1985-1986), and worked and led vaccine projects in Italy including at the Sclavo Vaccines Research Center, Novartis Vaccines and Diagnostics, and GSK Vaccines. In 2014, she became Vice President at the Institut für Ubiquitäre Mobilitätssysteme (IUMS), Germany (Intern. Union of Microbiol. Societies). Pizza is a fellow of the American Academy of Microbiology since 2015 and the Academia Europaea since 2018. Since 2017, she has been the Senior Scientific Direction Bacterial Vaccines at GSK Vaccines, Italy.

Selected awards and honours

2020	Global women inventors and innovators Award
2018	Honorary Visiting Professor at Leicester University, UK
2005	Galeno Award for Carrier achievements in the vaccine field, Italy
1999	Biotech Award for the research on mucosal adjuvants
1992	European Federation of Pharmaceutical Industries and Associations Award for the Pertussis

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György Posfai

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- Microbial genome engineering

Research summary

György Posfai's research focused on microbial genome engineering, reducing the *E. coli* genome, evolution and architecture of bacterial genomes.

Education and work experience

Posfai obtained a PhD at the University of Szeged, Hungary, in 1989, and worked as a Postdoc at the McArdle Laboratory of Cancer Research, University of Wisconsin, USA, from 1987 to 1989. He was a visiting Scientist at Saclay, France, (1991), at the McArdle Laboratory of Cancer Research, University of Wisconsin (1992-1994) and at the Department of Genetics at University of Wisconsin (1997). Posfai has been group leader of the Genome Engineering Group, BRC, Szeged in 1996. In 2004, he was appointed DSc. Of the Hungarian Academy of Sciences and was Director at the Institute of Biochemistry, BRC, Szeged from 2004 to 2018. He has been retired since 2021.

Selected awards and honours

2018	Széchenyi Award of the Hungarian State

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David Prangishvili

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- Viruses of archaea
- Viral diversity
- Viral evolution
- Life in extreme thermal environments

Research summary

David Prangishvili has affected the field of prokaryotic virology by the discovery and description of many new species and families of DNA viruses which infect hyperthermophilic Archaea. His studies revealed that DNA viruses of Archaea constitute a distinctive part of the viral world, with unique genome contents and a variety of unusual morphologies which have not been observed among viruses from the other two domains of life, Bacteria and Eukarya, and provided new perspectives on the diversity and evolution of viruses and virus-host interactions.

Education and work experience

Prangishvili gained a Master of Science degree in 1971 at Tbilisi State University, Georgia, and a PhD (1977) and Habilitation (1989) from Institute of Molecular Biology of the USSR Academy of Sciences, Moscow. He pioneered research on Archaea, the third domain of life, in the USSR and in 1986-1991 was a head of the department of Molecular Biology of Archaea at the Georgian Academy of Sciences, Tbilisi. From 1991 to 2004, he worked in Germany at the Max-Planck Institute for Biochemistry and at Regensburg University, and from 2004 to 2020 in France, at the Pasteur Institute of Paris, where he is now Honorary Professor.

Selected awards and honours

2018	Member of the Academia Europaea
2015	Visiting professor of Chinese Academy of Sciences
2011	Foreign Member of the Georgian National Academy of Sciences
1979	Excellence in Science and Technology Prize, Council of Ministers of the USSR

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Anthony Pugsley

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Bacterial transcription factors
- Bacterial protein traffic

Research summary

Pugsley's work focused on bacterial transcription factors and protein traffic. He investigated how proteins find their correct location in bacteria, how bacterial surface structures are assembled, how proteins insert into or cross the bacterial outer membrane, and posttranslational modification of exported proteins.

Education and work experience

Pugsley completed his studies in the UK and worked as a postdoctoral researcher in Australia, the Unites States of America, Switzerland and France. He was recruited into the Institut Pasteur, France, as junior scientist, where he later become a Professor, Head of Research Unit and vice-president for Research before retiring. Pugsley was a special features editor of the journal Molecular Microbiology. He is currently a retired Professor.

Selected awards and honours

2009	Elected Fellow of the American Academy of Microbiology
2000	Elected Member of the German National Academy of Sciences Leopoldina
2000	Elected Member of the European Molecular Biology Organization (EMBO)

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Miroslav Radman

PRIMARY RESEARCH AREA

Biochemistry and molecular biology

KEYWORDS

- DNA repair
- SOS response
- Horizontal gene transfer
- Physical chemistry

Research summary

Miroslav Radman is a geneticist and molecular biologist recognized for some of his ground-breaking work on DNA repair, recombination and mutation and their impact on biological evolution and human health. He is known for the discovery (with Dr. Evelyn Witkin) of the SOS response to DNA damage, particularly in relation to the genesis of mutations. In addition, his work has resulted in the discovery of DNA mismatch repair (together with Drs. Matthew Meselson and Robert Wagner) – the key genetic editing system assuring the fidelity of DNA replication and recombination that generates genetic barriers between closely related species (speciation). Recently, he has also established the role of oxidative damage to proteins in cellular resistance to radiation and desiccation, as well as in aging and age-related diseases.

Education and work experience

Radman graduated with a BSc at the University of Zagreb (1966) and PhD at University of Brussels. After his Post-doc at the French CNRS and then at Harvard (1970-73) he became associate professor of molecular genetics at the Free University of Brussels (1973-83). He moved to Paris in 1983 as Research Director in French CNRS until 1998 to found the Laboratory of Mutagenesis at the institute J. Monod. In 1998 Radman became professor of cell biology at the Medical School of the University of Paris-5. Radman retired in 2013 and moved to Split, Croatia where he founded in 2004 the Mediterranean Institute for Life Sciences (MedILS). He is also Founding member of four start-up biotech companies in USA and France, and the initiator and co-founder of the EITP (European Institute of Technology in Paris) project. He was knighted by the Presidents of Croatia and France and served (2004-2008) as special science advisor to the Prime Minister of Croatia.

Selected awards and honours

2008	Exceptional Class Professor of Cell Biology at the R. Descartes-Paris-5 School of Medicine, France
2004	Leonardo Award for creativity in scientific research
2002	Elected Member of the French Academy of Science
1990	"Golden Eureka of Innovation"

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Paul Rainey

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Microbial population biology
- Experimental evolution

Research summary

Paul Rainey 's research activities centre upon microbial populations, particularly of *Pseudomonas fluorescens*, that he uses as experimental tools to tackle questions concerning the mechanistic basis of ecological and evolutionary processes. He is also interested in the function and ecological significance of microbial phenotypes and behaviours. Research themes include the emergence of individuality during major evolutionary transitions, the evolutionary organisation of cells, the production, regulation and ecological significance of extracellular products, the biophysics of mat-formation, selfish genetic elements and their evolutionary impacts on genomes, populations, communities, and even meta-organisms, the emergence and maintenance of diversity, the evolution of contingency and elucidation of rules underpinning adaptive evolution. As to tools and approaches, his research uses a range of technologies and strategies, with much depending on experimental evolution and the tool-box of analytical genetics, complemented by genome sequencing (and re-sequencing), meta-genomics, RNA-Seq and Tn-Seq.

Education and work experience

Rainey completed his BSc, MSc and PhD at the University of Canterbury, New Zealand. From 1989 to 2005 he was based in the UK where he held positions as researcher and then Professor at the University of Oxford. He transitioned back to New Zealand between 2003 and 2005, firstly as Chair of Ecology and Evolution at the University of Auckland and then (from 2007) as one of the founding professors at the New Zealand Institute for Advanced Study. Paul is currently (since 2017) Director of the Department of Microbial Population Biology at the Max Planck Institute for Evolutionary Biology in Plön (Germany) and (since 2016) Professor at ESPCI in Paris.

Selected awards and honours

2014	Blaise Pascal International Research Chair, Paris, France
2014	Einstein Professor, Chinese Academy of Sciences
2014	Massey University Research Medal, New Zealand
2007	Elected Fellow of the Academy of the Royal Society of New Zealand

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Juan Luis Ramos

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Pseudomonas
- Gene regulation
- Biotransformations
- Synthetic biology

Research summary

Juan Luis Ramos's research mainly focuses on the physiology, genetics and molecular ecology of bacteria to understand their biodegradative properties and to exploit them in the removal of pollutants.

Education and work experience

Ramos obtained a BSc from the University of Seville, Spain, in 1978. He was awarded his PhD from the same University in 1981. He spent almost two years as a post-doctoral researcher at the Unit of Nitrogen Fixation in Brighton, UK, and over two years at the Department of Medical Biochemistry in Geneva, Switzerland, where he started working on the metabolism of aromatic hydrocarbons in *Pseudomonas*. In 1987 he returned to Spain and was appointed Research Scientist at the CSIC-Estación Experimental del Zaidín (EEZ). From 1990 to 1995 he was the Head of the Department of Plant Biochemistry and from 1997 to 2008 he was appointed Director of the CSIC-EEZ. He is also an elected member of the American Academy of Microbiology and of the Academy of sciences of Granada. Ramos is founding partner of Bio-Iliberis R&D, a CSIC spin-off enterprise that focuses on microbes of agricultural and environmental interest. Currently, Ramos is a Full Professor at the Spanish National Research Council (CSIC) and is heading the "Commission Area" on Agri-food sciences of the Spanish National Funding Agency.

Selected awards and honours

2013	Awarded the André Lwoff Medal of FEMS
2012	Rey Jaime I Award for Environmental Protection, Spain
2004	Andalusia Prize for Environmental Achievements by the Regional Government of Huelva, Spain

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Rino Rappuoli

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Vaccinology
- Infectious diseases

Research summary

Rino Rappuoli is currently Chief Scientist and Head External R&D at GSK Vaccines, based in Siena, Italy. His work focuses on the development of monoclonal antibodies for SARS-CoV-2 infection.

Education and work experience

Rappuoli earned his PhD in Biological Sciences at the University of Siena, Italy, and was visiting scientist at Rockefeller University and Harvard Medical School, USA. Rappuoli then worked as head of Vaccine R&D at Novartis, CSO of Chiron Corporation, head for R&D at Sclavo. He is currently Chief Scientist and Head External R&D at GSK Vaccines, based in Siena, Italy. Rappuoli is Honorary Professor of Vaccinology at Imperial College, London, UK, and Extraordinary Professor of Molecular Biology at the University of Siena. Rappuoli was nominated third most influential person worldwide in the field of vaccines (Terrapin), has published 736 works in peer-reviewed journals and has contributed towards several patents. Rappuoli was elected to the European Molecular Biology Organization (EMBO) in 1990, the US National Academy of Sciences (NAS) in 2005 and the Royal Society of London in 2016.

Selected awards and honours

2019	Robert Koch Award, Germany
2017	Canada Gairdner International Award
2017	Awarded the European Inventor Award for Lifetime Achievement
2009	Awarded the Albert B Sabin Gold Medal
1991	Awarded the Paul Ehrlich and Ludwig Darmstaedter Prize, Germany

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Félix A. Rey

PRIMARY RESEARCH AREA

Structural virology

KEYWORDS

- Macromolecular assemblies
- Mechanistic biology
- Membrane fusion

Research summary

Félix A. Rey's research focuses on viruses of global public health and/or of veterinary concern. This knowledge can be used for translational structure-based design of preventive or curative antiviral agents. Additionally, these structural studies often provide crucial information about evolutionary relations between apparently unrelated viruses. Rey's unit aims to provide a structural basis for understanding the molecular mechanisms of membrane fusion used by enveloped viruses to enter a target cell. The envelope proteins are also the main target of neutralizing antibodies, and the Rey unit seeks to identify the epitopes recognized by the most potent ones. These sites often reveal viral vulnerabilities that can be targeted in an epitope-focused immunogen design approach to devise next-generation vaccines. The unit aims to combine the crystallographic data on isolated proteins with the structure of entire viruses obtained by cryo-microscopy to acquire insight about their function.

Education and work experience

Rey holds a Master's degree in Theoretical Physics from the Instituto Balseiro in Bariloche, Argentina (1981) and a Master's degree in Biochemistry from l'Université de Paris XI in Orsay, France (1984), where he also obtained his PhD in Biochemistry (1988). He held positions as Pre-doctoral Fellow at University of Paris-Sud in France (1983-1988) and then as a Post-doctoral Fellow at Harvard University in Boston in the USA (1988-1995). He was a Group Leader at the French National Centre for Scientific Research (CNRS) "Laboratoire d'Enzymologie et Biochimie Structurales" in Gif-sur-Yvette, France (1995-1999), before being appointed Director of the Structural Molecular Virology Laboratory, CNRS/INRA (1999-2004). Rey has held several position as Director at Institut Pasteur in Paris, including Director of the Structural Virology Unit since 2005, and Director of the CNRS URA 3015 since 2007. He is currently Head of the Unité de Virologie Structurale at the same institute.

Selected awards and honours

2010	Elected Member of the French Academy of Sciences
2008	Awarded the Prix Duquesne scientific prize, France
2008	Elected Member of the Academia Europaea
2006	Chaire Professorale Serono, France

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Giovanna Riccardi

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Tuberculosis research
- Cystic fibrosis pathogens

Research summary

Giovanna Riccardi's research focuses on two topics. The first is the resistance mechanisms and target identification of new drugs for *Mycobacterium tuberculosis*. Within the EC-VI framework cluster "New Medicines for Tuberculosis" her lab identified the target of a new drug, belonging to the class of benzothiazinones, whose antitubercular activity was demonstrated in vitro, ex vivo, mouse models, and is now in clinical-trials. The second research focus is the identification of new drugs and targets for *Burkholderia cenocepacia*. In studying new molecules effective against *B. cenocepacia*, her lab recently found a benzothiadiazol compound (10126109) that is very active and identified a mechanism of resistance. The Riccardi's lab has also recently identified its mechanism of action, which relies on the inhibition of the activity of FtsZ cell division.

Education and work experience

Riccardi completed her Master's Degree cum laude in Biology at the University of Pavia, Italy, and remained there as a researcher at the Department of Genetics and Microbiology (1984-1998). She was then an Associate Professor of Microbiology at the Department of Experimental, Environmental and Applied Biology at the University of Genoa, Italy (1999-2002). Since 2002 she returned to the Department of Genetics and Microbiology, University of Pavia to become a Full Professor of Microbiology, where she was also Member of the University Board (2016-2018).

Selected awards and honours

2016	Elected Member of the Academic Commission for the ASN 05/I2 Microbiology Italian National License
2010	Elected President of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM)

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Ute Maria Römling

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Cyclic di-GMP signaling
- Biofilms
- *Pseudomonas aeruginosa* clone C
- *Salmonella* typhimurium

Research summary

Ute Maria Römling has long-standing research interests are biofilm formation, including its impact on host interaction, with a focus on cyclic dinucleotide second messenger signaling and extracellular matrix; and survival mechanisms of clone C of *Pseudomonas aeruginosa* world-wide predominant in patients and aquatic habitats. Among major achievements are the (re) discovery of cyclic di-GMP and its identification as a second messenger involved in the single cell sessility/motility life style transition, systematic genetic characterisation of Gram-negative biofilm formation in *Salmonella* typhimurium including identification of the exopolysaccharide cellulose as a major extracellular matrix component and novel protein homeostasis modules mediating persistence of *P. aeruginosa* clone C.

Education and work experience

Römling is a self-educated microbiologist and educated biochemist. She completed her PhD in 1993 in Biochemistry at the Technical University of Hannover, Germany with a stipend from the German Merit Foundation. Between 1993 and 1995 she held a postdoctoral position at the Medical School of Hannover and from 1995 to 1998 at the Karolinska Institutet, Stockholm, Sweden. She became a junior research group leader at the Helmholtz Center for Infection Research, Braunschweig, Germany working on clonal variability (1998-2001). Römling relocated to Sweden where she was appointed Associate Professor and research group leader at Karolinska Institutet, Department of Microbiology, Tumor and Cell Biology (2002-2012) and since 2021 she is a Professor at the same Institute.

Selected awards and honours

2013	Nobel conference on 'Biofilm formation, its clinical impact and potential treatment'
2000	Young Investigator Award from the European Society of Clinical Microbiology and Infectious Diseases
1997	Sir Hans Krebs-Preis of the Society Freunde der Medizinischen Hochschule, Germany

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Eliora Z. Ron

PRIMARY RESEARCH AREA

Biotechnology

KEYWORDS

- Molecular pathogenesis
- Stress response
- ExtExraintestinal pathogenic *E. coli* (ExPEC)

Research summary

Eliora Z. Ron's research focuses on bacterial virulence, specifically the genetic factors that determine the virulence of *E. coli* strains, in particular, factors that determine the host specificity of the pathogens. Her work also addresses the molecular basis of bacterial gene expression. Currently, Ron's research group studies the regulation of microbial response to environmental stress including a shift in temperature or exposure to organic pollutants and heavy metals.

Education and work experience

Ron obtained an MSc in Microbiology and Genetics at the Hebrew University, and a PhD in Microbiology at Harvard University, USA. She has subsequently held several prestigious positions, including President of the Israeli Society of Microbiology (1995-1999), Dean of the Faculty of Life Sciences at Tel-Aviv University (2000-2004) and President of the Federation of European Microbiological Societies (2004-2007). In addition, she was President of the Bacteriology and Applied Microbiology section of IUMS (2011-2014) and Scientific director of MIGAL, Galil Technology Center (2010-2016). Ron is currently in the Department of Molecular Microbiology and Biotechnology at Tel Aviv University, where she became full professor in 1984.

Selected awards and honours

2017	President of the International Union of Microbiological Societies (IUMS)
2010	Honorary Doctorate from Ben Gurion University, Israel
2009	Member and Secretary General of the European Academy of Microbiology
2007	Awarded the EMET Prize for Excellence in Arts, Science and Culture, Israel
2002	Elected Fellow of the American Academy of Microbiology

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Eugene Rosenberg

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Microbiome
- Hologenome
- Coral disease
- Hydrocarbon degradation

Research summary

Eugene Rosenberg posited the hologenome concept of evolution, which considers the holobiont with its hologenome a level of selection in evolution, together with Dr Ilana Zilber-Rosenberg. They have published reviews on the roles of microbiota in holobiont adaptation, behaviour, development, genetic variation and evolution, and transmission of microbiota between generations.

Education and work experience

Rosenberg received his BSc in Chemistry at University of California, Los Angeles (UCLA), USA, in 1957 and PhD in Biochemistry at Columbia University, USA, in 1961. After postdoctoral training in organic chemistry at Cambridge University, UK, he was appointed Assistant Professor in Bacteriology at UCLA in 1963 and was promoted to Associate Professor in 1967. Rosenberg became Professor of Microbiology at Tel Aviv University, Israel, in 1970 and has been Emeritus Professor at the same institution since 2013.

Selected awards and honours

2018	Karl August Möbius Prize, Germany, for lifetime achievements in symbiosis (with I. Zilber Rosenberg)
2003	Proctor & Gamble Award of the American Society of Microbiology in Applied and Environmental Microbiology
1993	Fogarty International Scholar, National Institutes of Health, Bethesda, Maryland, USA
1992	Pan Lab Award, Society of Industrial Microbiology, USA
1982	Guggenheim Fellow

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Ramon Rosselló-Móra

PRIMARY RESEARCH AREA

Taxonomy, systematics and evolution

KEYWORDS

- Extremophiles
- Molecular taxonomy
- Molecular ecology
- Metagenomics

Research summary

Ramon Rosselló-Móra works on microbial molecular ecology of extremely saline environments and marine sediments, developing theoretical and practical approaches applied to microbial taxonomy. His research focuses on revealing the extent of diversity of single species in natural environments by means of culture dependent and independent approaches that range from genomics and metagenomics to metabolomics, and how this diversity modulates due to deterministic and stochastic environmental factors. In addition, he works on the development of a universal system of nomenclature for prokaryotes that unifies the classification of cultured and uncultured species.

Education and work experience

Rosselló-Móra obtained his PhD at the University of the Balearic Islands, Spain (1992). He was a postdoctoral researcher at the Technical University of Berlin (1992), at the Technical University of Munich (1993-1995), at the Mediterranean Institute for Advanced Studies (IMEDEA) (1995-1997), and at the Max Planck Institute for Marine Microbiology in Bremen (1997-1999). He became Professor at the University the Balearic Islands, Spain (2000) and a Tenured Scientists at the Spanish National Research Council (CSIC) (2001-2009). Rosselló-Móra is currently a Scientific Researcher at the CSIC, and PI of the Marine Microbiology Group at IMEDEA, executive editor of the Journal Systematic and Applied Microbiology and Vice-Chair of the Judicial Commission of the International Committee for Systematics of Prokaryotes.

Selected awards and honours

2020	Highly Cited Researcher by Clarivate Analytics
2018	Highly Cited Researcher by Clarivate Analytics
2017	Bergey's Award

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Philippe Sansonetti

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Molecular and cellular microbial pathogenesis
- *Shigella* and *Shigella* vaccines
- Gut microbiota

Research summary

Philippe Sansonetti strives to decipher the logics of ecological successions that support the assembly of a fully mature gut microbiota from birth to 2-3 years of life and their subversion that may imprint on child's development and health. He is also interested in deciphering the cross-talks between the microbiota and intestinal stem cells, with a particular interest in their possible impact on oncogenesis. This program is strongly oriented towards experimental approaches in vitro and in vivo to develop a cellular microbiology of symbiosis. He also seeks to identify and experimentally validate the major mechanisms supporting the colonization barrier effect of the gut microbiota. He specifically uses enteropathogenic bacteria as probes to decipher the mechanistic bases of microbiota-conferred barrier to colonization by pathogens and the strategies used by these pathogens to subvert this colonization barrier.

Education and work experience

Sansonetti trained as a medical doctor at the Université Paris VI, France. In 1989, he founded and became the director of the Institut Pasteur's Molecular Microbial Pathogenesis Unit. He has acted as Medical Director of the Institut Pasteur, and held administrative positions at INSERM, the French Ministry of Research and Technology and the World Health Organization. He is currently Chief-editor of EMBO Molecular Medicine. His work has been recognized by numerous awards and he is an elected member of several national and international organizations, including EMBO and the French Academy of Sciences. Until 2020, he was EAM President. Currently, Sansonetti is Director of the Institut Pasteur and Professor of Microbiology and Infectious Diseases at the Collège de France.

Selected awards and honours

2014	Elected Foreign Member of the Royal Society, UK
2012	Elected Senior Foreign Scholar of the Howard Hughes Medical Institute
2012	Awarded the Grand Prix of the French National Institute of Health and Medical Research (INSERM)
2012	Elected Foreign Member of the United States National Academy of Sciences
2002	Elected Member of the German Academy of Sciences Leopoldina

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Bernhard Schink

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Environmental microbiology
- Microbial ecology
- Physiology of anaerobic bacteria
- Redox processes in the sediment

Research summary

Bernhard Schink's work focuses on several areas including Physiology, Biochemistry and Ecology of Anaerobic Microorganisms, especially on fermenting bacteria and syntrophic methanogenic associations.

Education and work experience

Schink studied Biology in Marburg, Germany (1968-1971), Microbiology and Biochemistry in Göttingen, Germany (1971-1974) and completed his doctoral degree in Göttingen (1977). He held several postdoc positions in Göttingen (1977-1979), Madison, Wisconsin, USA (1979-1980), University of Konstanz, Germany (1981-1986) and received his Habilitation in 1985. Bernhard Schink was appointed Professor of Microbiology Marburg in 1986, Professor of Biotechnology Tübingen in 1987 and Professor of Limnology and Microbial Ecology, University of Konstanz in 1991.

Selected awards and honours

1985	Awarded the German Society for Hygiene and Microbiology (DGHM) Prize
1985	Awarded the Heinz Maier-Leibnitz Prize, Germany

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Karl-Heinz Schleifer

PRIMARY RESEARCH AREA

Taxonomy, systematics and evolution

KEYWORDS

- Molecular taxonomy and ecology

Research summary

Karl-Heinz Schleifer's research focused on the identification and classification of bacteria and was the first academic in Germany to develop the foundation of microbial hybridization probe analysis. Thanks to his work, it is now possible to detect and identify bacteria in wastewater, food and other environmental samples without first cultivating them in a laboratory. His ideas and visions have heavily influenced not only the results of numerous German Research Foundation (DFG) Collaborative Research Centers (SFB) and EU research projects, but also the work of his students.

Education and work experience

Schleifer studied biology, chemistry and geography at the former TH München, Germany, where he also received his doctorate in biology in 1967. He was full professor and Head of the Department of Microbiology at the Technical University of Munich (TUM) starting 1974. He has held several prestigious posts, including Dean of the Faculty of Chemistry, Biology and Geology from (1986-1988), President of the German Society for Hygiene and Microbiology (1989-1992), Secretary General of FEMS (1986-1994) and President of the International Union of Microbiological Societies (2005-2008). He was a member of the Management Board of the German Collection of Microorganisms and Cell Cultures (Braunschweig), of the Scientific Advisory Board of the Max-Planck-Institute of Marine Microbiology (Bremen) and of the advisory panel "Biodiversity" of the German Ministry of Education, Research and Technology (BMBF). He is a corresponding member of the Royal Academy of Veterinary Sciences in Madrid since 1984 and of the Academy of Sciences in Göttingen since 1987. Schleifer has been a TUM Emeritus of Excellence since 2007.

Selected awards and honours

2020	Life Member of the International Committee for Systematic of Prokaryoes
2013	Honorary Member of the German Association for General and Applied Microbiology
2009	Bergey Medal
2008	TUM Emeritus of Excellence
2006	Awarded the German Federal Cross of Merit

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Christa Schleper

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Archaea biology
- Nitrogen cycle
- Archaea evolution

Research summary

Christa Schleper is interested in the natural diversity and environmental impact of archaea as well as in their viruses and virus defence systems. Current specific projects include: Genomic, proteomic and physiological studies of ammonia oxidizing thaumarchaeota from soils, marine sediments and hot springs; cultivation of novel lineages of Lokiarchaea and their evolution and physiology; CRISPR-mediated virus defence and RNA degradation in the hyperthermophilic archaeon *Sulfolobus solfataricus*.

Education and work experience

Schleper was awarded a PhD at the Max-Planck-Institute for Biochemistry, Germany in 1993. She worked as a post doctoral fellow in the labs of Wolfram Zillig at the Max-Planck-Institute, Germany, with Melvin Simon at the Californian Institute of Technology, USA and with Edward DeLong at the University of California Santa Barbara, USA. In 2002 she received the venia legendi in microbiology and genetics from the University of Darmstadt, Germany, where she was assistant professor with focus on archaea biology and metagenomics of soil. She became university professor in Bergen, Norway in 2004. Since 2007 she has been university professor and unit head at the University of Vienna.

Selected awards and honours

2019	Highly cited researcher, Web of Science Group
2018	Elected Member of the European Molecular Biology Organization (EMBO)
2017	Elected Member of the Austrian Academy of Sciences (ÖAW)
2016	ERC Advanced Grant
2001	EMBO Young Investigator Award (EMBO - YIP)

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Peter Sebo

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Molecular biology of bacterial pathogens
- Protein toxins
- Vaccines
- Pertussis

Research summary

Peter Sebo's research interests focus on bacterial virulence and on molecular mechanisms of bacterial protein toxin action. His studies embrace molecular and cellular microbiology and immunology, vaccine development and postgenomic and omics approaches to understanding host-pathogen interactions and infection biology. Sebo's work focuses mostly on *Bordetella pertussis*, the agent of whooping cough and on the molecular mechanism of action and structure-function relationships underlying the capacity of the adenylate cyclase toxin to subvert the bactericidal functions and signalling pathways of host immune cells.

Education and work experience

Sebo graduated in 1984 from the University of Chemistry and Technology in Prague with an MSc in Bioengineering and a PhD from the Institute of Microbiology of the Czechoslovak Academy of Sciences in 1990 in Prague, Czech Republic. He trained as postdoc at the Centre national de la recherche scientifique (CNRS) in Gif-sur-Yvette (1989-1990) with Jekisiel Szulmajster, and at the Institut Pasteur in Paris (1990-1995) with Agnes Ullmann. In 1995, Peter founded the Laboratory of Molecular Biology of Bacterial Pathogens at the Institute of Microbiology of the Czech Academy of Sciences (CAS) in Prague. In 2008 he founded the Institute of Biotechnology of the CAS and designed the BIOCEV research centre.

Selected awards and honours

2013	Elected Member of the European Molecular Biology Organization (EMBO)
2005	Chevalier de l`Ordre des Palmes Academiques, awarded by Prime Minister of France
2001	Howard Hughes Medical Institute International Research Scholar, USA
1993	Jacques Monod Prize awarded by Fondation de France

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Victoria Shingler

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Bacterial signal-sensing and integration
- Physiology
- Biochemistry
- Metabolism

Research summary

Victoria Shingler's research focusses on the underlying molecular mechanism by which bacteria perceive their surroundings through regulatory signals – and how they integrate multiple signals to effect appropriate changes in their gene expression. Her goal is ultimately to determine bacterial lifestyle and behaviour. One of her research group's major emphasis is on signal transduction cascades that control degradation of toxic environmental pollutants by soil bacteria such as Pseudomonas putida, and those that control production of the type VI nano-machine deployed by *Vibrio cholerae* during inter-bacterial competition.

Education and work experience

Shingler graduated with a BSc in Biological Sciences from Leicester University, UK in 1980 and obtained a PhD in Molecular Genetics at the University of Birmingham, UK in 1984. She performed post-doctoral research within the laboratory of Michael Bagdasarian (1985-1987), at what is now the Department of Molecular Biology at Umeå University. Shingler has remained in Sweden at the same institution ever since, first as a group leader (1987-1989) and then as a lecturer (docent, 1990-1995). In 1995, she was awarded a 'Särskild forskartjänst' – a special six year researcher position sponsored by the Swedish Natural Science Foundation (NFR). During the period of this NFR position (1995-2002), she was appointed to her current position as a Professor in Microbial Physiology in 1996.

Selected awards and honours

1997	Swedish Foundation for Strategic Research - Senior Individual Award
1997	Awarded Kungliga Skytteanska Samfundets pris
1995	Awarded Särskild forskartjänst, Swedish Natural Science Foundation

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Andriy Sibirny

PRIMARY RESEARCH AREA

Biotechnology, synthetic and systems biology

KEYWORDS

- Fermentation
- Glutathione
- Riboflavin
- Autophagy

Research summary

Andriy Sibirny studies yeast organisms, mostly non-conventional yeasts like *Ogataea polymorpha*, *Komagataella phaffii* and flavinogenic yeast *Candida famata*. He mostly works in the fields of yeast autophagy and biotechnology. In *K. phaffii*, he discovered the new autophagy-related genes ATG26, ATG28 and ATG35. He constructed strains of the thermotolerant yeast *O. polymorpha* with 50 times elevated ethanol production from xylose and glycerol, overproducers of glutathione and producers of recombinant proteins like hepatitis B surface antigen. In *S. cerevisiae*, he constructed anaerobic overproducers of glycerol and in flavinogenic yeast *C. Fatmata*, he constructed stable riboflavin and flavin nucleotide (FMN, FAD) overproducers.

Education and work experience

Sibirny graduated from the Department of Microbiology, Lviv University, Ukraine (1970). In 1973, he defended his PhD thesis at the Institute of Biochemistry, Kyiv, and subsequently his Dr Sc thesis in Petersburg University (1986). Since 2000, he works as Director and Head, Institute of Cell Biology, NAS of Ukraine, in Lviv and since 1996, works in Poland, currently at University of Rzeszow. In 2012 he was elected a full member of NAS of Ukraine and in 2017, as FEMS Director for education and public engagement. He did sabbaticals in Switzerland, the USA, Italy and Belgium. Sibirny is a member of Editorial Boards of FEMS Yeast Research, Yeast and Cell Biology International.

Selected awards and honours

2020	Elected Foreign Member of Latvian Academy of Sciences
2019	Keynote speaker at International Specialized Symposium on Yeasts
2017	FEMS Director for Education and Public Engagement
2012	Elected Member of the National Academy of Sciences of Ukraine

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Virginijus Šikšnys

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Antiviral defense
- CRISPR-Cas
- Restriction enzymes

Research summary

Virginijus Šikšnys has made a major and sustained contribution to the understanding of the structure and function of restriction enzymes. His research on the CRISPR-Cas has had a major impact on the field. Šikšnys together with co-workers discovered the cyclic oligonucleotide signalling pathway. His studies of the Cas9 protein paved the way for development of novel tools for genome editing applications.

Education and work experience

Šikšnys studied chemistry at Vilnius University, Lithuania and obtained his PhD from Moscow State University, Russia before returning to Vilnius where he moved through different research ranks at the Institute of Applied Enzymology/Institute of Biotechnology. Since 2002 he has held the position of Professor of Vilnius University and has been seating as Chief scientist at the Institute of Biotechnology.

Selected awards and honours

2018	Kavli Prize in Nanoscience, Norway
2017	Novozymes Prize, Denmark
2016	Warren Alpert Prize, USA

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John J. Skehel

PRIMARY RESEARCH AREA
Virology

KEYWORDS
- Influenza viruses

Research summary

John Skehel's research focuses on the influenza virus haemagglutinin and neuraminidase membrane glycoprotein, and the mechanisms of their receptor binding, membrane fusion and enzymic activities.

Education and work experience

Skehel is a graduate of the University College of Wales, Aberystwyth (1962) and gained his PhD from the University of Manchester (1966). He did research at the University of Aberdeen (1965-1968) and was a Helen Hay Whitney Foundation fellow at Duke University and at the MRC National Institute for Medical Research (NIMR) Mill Hill(1968- 1971). He was MRC staff scientist at NIMR from 1971 to 2006, Director of the WHO World Influenza Centre from 1975 to 1993, Head of Infections and Immunity from 1985 to 2006 and Director of the NIMR from 1987 to 2006. Currently, he is an emeritus scientist at the Francis Crick Institute.

Selected awards and honours

2000	Elected International Member of American Philosophical Society
2014	Elected International Member of National Academy of Sciences, USA
1998	Elected Member of the Academy of Medical Sciences, UK
1984	Elected Fellow of the Royal Society, UK
1983	Elected Member of the European Molecular Biology Organization (EMBO)

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Geoffrey L. Smith

PRIMARY RESEARCH AREA
Virology

KEYWORDS
- Poxviruses
- Vaccinia virus
- Virus-host interactions
- Virus immune evasion

Research summary

Geoffrey Smith's research team studies vaccinia virus, the vaccine used to eradicate smallpox, and the interactions between this virus and the host cell and immune system. Areas of research include investigation of how vaccinia virus suppresses the innate immune response to infection, how individual virus proteins contribute to virus virulence and immunogenicity, how safer and more immunogenic vaccines can be designed, and how vaccinia virus exploits microtubule- and actin-based transport to enable transport of virions within and between cells. In addition, vaccinia virus is being exploited as a tool to study the function of cell proteins and how these restrict the replication or spread of viruses, or how they activate the immune response to infection.

Education and work experience

Smith completed a BSc in Biochemistry and Microbiology at the University of Leeds, UK, in 1977. He received a PhD in Virology, London / CNAA in 1981 and subsequently worked as a Postdoc at NIH, USA (1981-1984). Smith was Lecturer in Virology at the University of Cambridge (1985-1989) and Reader in Bacteriology at the University of Oxford (1989-1996). He was Professor of Virology at the University of Oxford (1996-2000) and Imperial College London (2000-2011) and has been Professor of Pathology at the University of Cambridge since 2011.

Selected awards and honours

2020	Leeuwenhoek Medal and Lecture, the Royal Society, UK
2018	Marjory Stephenson Prize, Microbiology Society, UK
2011	Elected Member of the German National Academy of Sciences Leopoldina
2011	President of the International Union of Microbiological Societies
2003	Elected Fellow of the Royal Society, UK

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Lotte Sogaard-Andersen

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial development and differentiation
- Cell cycle & division
- Bacterial motility

Research summary

Lotte Sogaard-Andersen's work seeks to unravel the mechanisms that allow bacteria to adapt and differentiate in response to changes in the environment. Bacteria have evolved several strategies that allow them to cope with such changes in a short time-scale. One strategy centres on changes in gene expression ranging from changes in the expression of relatively few genes to changes in the expression of large numbers of genes culminating in cell differentiation. A second strategy centres on changes in the motility behaviour of cells. A third strategy relies on regulation of the cell cycle. Sogaard-Andersen uses *Myxococcus xanthus* as a model system to study these three adaptation strategies and how they are coordinated. Ultimately, she aims to understand the molecular mechanisms that allow *M. xanthus* cells to respond to starvation with the fruiting body morphogenesis and cell differentiation. To this end, she focuses on understanding: motility & its regulation; intracellular signalling by the nucleotide-based second messengers (p)ppGpp & c-di-GMP; intercellular signalling and regulation of cell cycle progression.

Education and work experience

Sogaard-Andersen received her training in medicine and obtained her PhD in molecular microbiology from the University of Odense, Denmark (1991). Subsequently, she became interested in how bacteria integrate different adaptive responses to changes in their environment. To that end, she switched to work on *Myxococcus xanthus* with the aim to understand how this species adapt to starvation with the formation of spore-filled fruiting bodies. Since 2004, she has been at the Max Planck Institute in Marburg and her current research is focused on how *M. xanthus* regulates motility, its cell cycle as well as signalling by second messengers and intercellular signals.

Selected awards and honours

2014	Elected Fellow of the American Academy of Microbiology
2008	Elected Member of the German Academy of Sciences Leopoldina
1999	Research grant, Board of the Danish Research Councils, Female Researchers in Joint Action program

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Dominique Soldati-Favre

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Biology of obligate intracellular parasites
- Apicomplexa
- *Toxoplasma gondii*
- Invasion

Research summary

Dominique Soldati-Favre's work focuses on deciphering the molecular mechanisms underlining gliding motility and host cell invasion in the obligate intracellular parasites *Toxoplasma gondii* and *Plasmodium* spp. Subsequently, she worked on the molecular dissection of myosin motors, actin dynamics, adhesins, proteases and more recently lipid signalling mediators. In the recent years, she has become increasingly engaged in malaria research and initiated some studies on the metabolic pathways hosted by two endosymbiotic organelles: the mitochondrion and the relic of a plastid called the apicoplast. With European funding, she received the Cloëtta Foundation Award in 2015. The award was notably for his work on the dissection of the biology of *Toxoplasma* encystation, a fundamental and experimentally challenging process that leads to parasite persistence and transmission.

Education and work experience

Soldati-Favre obtained a Master's degree in Biochemistry at the University of Geneva, Switzerland (1986) and a PhD in Molecular biology at the University of Zurich, Switzerland (1987-1990). From 1991-1995, she was a Post-doctoral fellow at the University of Stanford, Medical School, USA. Subsequently, she was Assistant Professor at ZMBH University of Heidelberg, Germany (1995-2001), then Senior Lecturer and Reader at Imperial College London, UK (2001-2004). Soldati-Favre was appointed Associate Professor in 2004, then full Professor in 2010 at the Faculty of Medicine, University of Geneva, Switzerland. She has been Vice-Dean of the Faculty since 2011.

Selected awards and honours

2019	Alice and CC Wang Award, American Society for Biochemistry and Molecular Biology, USA
2015	Cloëtta Foundation Award, Switzerland
2012	Senior International Research Scholar, Howard Hughes Medical Institute, USA
2011	Elected Member of the European Molecualr Biology Organization (EMBO)
2001	Awarded the Rodolfi Medal, German Society for Parasitology (DGP)

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Rotem Sorek

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Phage
- Phage resistance
- CRISPR
- Arbitrium

Research summary

Sorek is most well-known for his ground-breaking discoveries of new bacterial defence mechanisms against viruses (the so called "immune system" of bacteria). Research from his lab pioneered, and then shaped, the notion of the bacterial pan-immune system, leading to the realization that beyond restriction enzymes and CRISPR systems, bacteria encode a complex network of anti-phage immune systems. His studies showed that key components of the human innate immune system have originated from bacterial defence against phages, explaining how the cell-autonomous innate immune system has evolved. Sorek's research also revealed that viruses can use small-molecule communication to coordinate their infection dynamics.

Education and work experience

Prof. Rotem Sorek received his BSc in Life Sciences from Tel Aviv University on 2000, and his PhD in Human Genetics, also from Tel Aviv University in 2006. Between the years 2006-2008 he conducted post-doctoral studies at the Lawrence Berkeley National Laboratories in Berkeley, CA. Since 2008 Sorek has led the microbial genomics and immunology lab at the Weizmann Institute of Science. Technologies invented in the Sorek lab were the basis for the establishment of several start-up companies, with multiple drug candidates currently under clinical trials.

Selected awards and honours

2021	Rappaport Prize for Excellence in Biomedical Research
2019	Beutler Research Program Award for Excellence in Genomic Medicine
2018	Elected Member of the European Molecular Biology Organization (EMBO)
2016	Scientific Council Prize
2014	Federation of European Biochemical Societies Anniversary Prize

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Victor Sourjik

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Microbial networks
- Motility
- Signal transduction
- Systems biology

Research summary

Victor Sourjik works on a broad range of topics in quantitative microbiology, using bacteria and budding yeast as model systems. The main focus of his research is on quantitative understanding of molecular and physiological functions of microbial singling networks that control motility and chemotaxis, stress response and biofilm development in bacteria and mating in yeast. This includes studies of how these networks sense and integrate multiple environmental and internal stimuli, reliably function in a noisy cellular environment, and adjust their function to changing environmental conditions. His work combines experiments with theoretical analysis and computational modelling, and it further uses synthetic biology and experimental evolution approaches to re-engineer or directionally evolve novel functionalities of cellular networks.

Education and work experience

Sourjik received his MSc in physics and molecular biology from Moscow Institute of Physics and Technology, Russia, his PhD in bacterial genetics from University of Regensburg, Germany, and his postdoctoral training in biophysics at Harvard University, USA. He was group leader and professor at the Center for Molecular Biology (ZMBH), University of Heidelberg, Germany. Since 2014 he has been director and head of the Department of Systems and Synthetic Microbiology at the Max Planck Institute for Terrestrial Microbiology and adjunct professor at the Philipps-Universität Marburg, Germany.

Selected awards and honours

2011	ERC Advanced Grant
2007	Chica und Heinz Schaller Research Award
2006	EMBO Young Investigator Award

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Nicola Stanley-Wall

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Bacterial biofilms
- *Bacillus subtilis*
- Biophysics

Research summary

Nicola Stanley-Wall's research focuses on using molecular biology and biochemistry to understand how bacteria build multicellular communities called biofilms. In particular, her group is interested in the way the molecules in the biofilm matrix provide support and protection to biofilms formed by the Gram-positive bacterium *Bacillus subtilis*. They work closely with Prof Cait MacPhee, a biophysicist from the University of Edinburgh, and Profs Fordyce Davidson, Michael Ferguson and Jason Swedlow from the University of Dundee.

Education and work experience

Stanley-Wall completed a B.Sc. in Cell Biology with first class honours (1997) and a Ph.D. in Microbiology (2001) under the supervision of Prof. Tracy Palmer and Prof. Ben Berks at the University of East Anglia, UK. Between 2001-2005 she became an EMBO long term Fellow and a Postdoctoral Associate at University of California Los Angeles. Since 2005 she has been Professor of Microbiology and Head of the Division of Molecular Microbiology at the University of Dundee.

Selected awards and honours

2015	W.H. Pierce Prize from the Society for Applied Microbiology, UK
2012	Elected Fellow of the Royal Society of Biology, UK
2011	Elected Fellow of the Royal Society of Edinburgh

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Marc Strous

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Alkaline soda lakes
- CO2 bioconversion
- Groundwater
- Multi-omics

Research summary

Marc Strous's current research addresses ecophysiology of photosynthesis and carbon turnover in microbial mats of Canadian alkaline soda lakes. New insights are guiding development of cost-effective and net-negative carbon capture biotechnology, which has been scaled up to pilot plant scale. Current research also addresses groundwater microbiology, element cycling, subsurface productivity and ecological role of Candidate Phyla Radiation bacteria. Research is driven by experiments and multi-omics approaches including stable-isotope-probing proteomics.

Education and work experience

Strous obtained his MSc and PhD from Delft University of Technology, Netherlands, and graduated summa cum laude (2000). He then joined Dr Staffan Kjelleberg at the University of New South Wales, Sydney, Australia, as a postdoctoral fellow. He obtained tenure at Radboud University Nijmegen, Netherlands (2001-2008). He was an independent Max Planck group leader at the Max Planck Institute for Marine Microbiology, Bremen, Germany (2009-2013) and Professor of Sustainable Energy Production at the University of Bielefeld (2009-2013). He joined the University of Calgary, Canada, in 2013, where he still is a professor of Geomicrobiology.

Selected awards and honours

2020	Elected Fellow of the Royal Society of Canada
2017	University of Calgary PEAK scholar
2017	UmakeADifference Award, University of Calgary
2016	Established Career Research Excellence Award, Faculty of Science, University of Calgary
2010	Young Investigators Award of the International Society for Microbial Ecology (ISME)

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Sebastian Suerbaum

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Medical microbiology
- Gastrointestinal infections
- *Helicobacter pylori*
- Pathogen genomics and evolution

Research summary

Sebastian Suerbaum's work focuses on the carcinogenic bacterium *Helicobacter pylori*, related pathogens of the gastrointestinal tract, and more recently also the commensal intestinal microbiota. An area of his work that has attracted particular attention in recent years is the genetic variation in *Helicobacter pylori* and its relationship with human migrations as well as host adaptation.

Education and work experience

Suerbaum studied Medicine in Bochum, Austria, and Boston, USA. He obtained specialty training in Microbiology, Virology and Infection Epidemiology in Bochum and Paris, France (Certification As Specialist Physician in 1995). Subsequently, he was a postdoc with Agnès Labigne at Institut Pasteur in Paris (1991-1993). Suerbaum obtained a Habilitation in Medical Microbiology in 1994, and became assistant Professor at Ruhr University Bochum. He was associate Professor at the University of Würzburg, Germany (1999-2003), and full Professor and Director of the Institute of Medical Microbiology and Hospital Epidemiology of Hannover Medical School, Germany (2003-2016). Since 2016, Suerbaum has been full Professor and Director at the Max von Pettenkofer Institute, LMU Munich, Germany.

Selected awards and honours

2014	Elected Fellow of the American Academy of Microbiology
2011	Elected Member of the German National Academy of Sciences Leopoldina
2007	Eva and Klaus Grohe Award, Berlin Brandenburg Academy of Sciences, Germany
2004	Main Award, German Society for Hygiene and Microbiology (DGHM)
1996	Gerhard Hess Award, German Research Foundation (DFG)

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Rudolf K. Thauer

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Methanogenic archaea
- Methanotrophic archaea
- Acetogenic bacteria
- Sulfate-reducing bacteria

Research summary

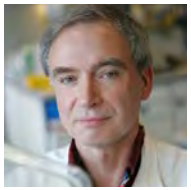
Rudolf K. Thauer conducted research in the fields of biochemistry, physiology and ecology of anaerobic bacteria and archaea. His work focused on the enzymes and coenzymes involved in the energy metabolism of Clostridia, of acetogenic bacteria, of sulfate-reducing bacteria and archaea, of methanogenic and methanotrophic archaea, and of aerobic methanotrophic bacteria.

Education and work experience

Thauer studied Medicine at the University of Frankfurt in 1961. He obtained a Diploma at the University of Tübingen (1966) and PhD at the University of Freiburg both in Biochemistry. Thauer was Founding Director of the Max Planck Institute for Terrestrial Microbiology and headed it's Department of Biochemistry until 2007. In parallel, he was Professor of Microbiology at the University of Marburg from 1976 to 2005. From 2007-2014, he headed an emeritus working group at the Max Planck Institute for Terrestrial Microbiology. During his scientific career, he was invited as a visiting scientist or visiting professor at Goethe University of Frankfurt, Stanford University and Case Western Reserve University, among others.

Selected awards and honours

2015	FEMS-Lwoff Award, Federation of European Microbiological Societies (FEMS)
2013	Medal of Merit of the German Academy of Sciences Leopoldina
2012	Elected Fellow of the American Academy of Microbiology
2009	Honorary Member of the German Association for General and Applied Microbiology (VAAM)



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Kenneth N. Timmis

PRIMARY RESEARCH AREA

Biotechnology and molecular microbiology

KEYWORDS

- Environmental microbiology
- Microbial pathogenesis
- Vaccine development
- Microbial biotechnology

Research summary

Kenneth Timmis' research focus has been environmental microbiology, microbial pathogenesis and vaccine development, and microbial biotechnology, mostly involving genetic approaches. He has designed and engineer bacterial strategies to remove environmental pollutants from contaminated soil and water. His early studies of microbial molecular genetics clarified how bacteria reproduce their genetic material in the form of plasmids. He went on to demonstrate the 'minimal replicon', the minimum set of genes needed for a plasmid to reproduce, a concept central to cloning genetically altered bacteria for sequencing or biotechnology, and to clone entire metabolic pathways. Furthermore, he has made detailed studies of microbial ecology, especially in relation to soils and hydrocarbons, enabling him to design novel biochemical pathways for bioremediation.

Education and work experience

Timmis studied microbiology at Bristol University, undertook postdoctoral research training at the Ruhr University, Yale and Stanford, and headed research groups at the Max Planck Institute for Molecular Genetics, the University of Geneva Medical Centre, the German National Research Centre for Biotechnology (later, the Helmholtz Centre for Infection Research) and the Technische Universität Berlin. Timmis is the Founder Editor and Editor-in-Chief of three primary research journals, namely Environmental Microbiology, Environmental Microbiology Reports and Microbial Biotechnology. He is currently Professor at the Technical University of Braunschweig in Germany. He also actively engages in commercial and societal debates and will thus provide a link to key scientific, commercial, social and policy maker stakeholders.

Selected awards and honours

2008 Elected Fellow of the Royal Society, UK

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Tone Tønjum

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Genome dynamics
- Drug discovery
- Microbial pathogenesis
- Precision medicine

Research summary

Tone Tønjum's work focuses on Genome Dynamics (GD). Her group is studying the mechanisms involved in genomic instability and maintenance, in health and disease, in microbes and in man. This involves the study of DNA repair and horizontal gene transfer, also in relation to bioenergetics. These mechanisms are essential for evolution and the development of antimicrobial drug resistance (AMR). Their current interests are primarily AMR and microbiome and drug discovery in tuberculosis. At present, the group addressing these challenges in molecular and cellular biology and medicine includes 10 people with a multidisciplinary background, with strong international networks.

Education and work experience

Tønjum completed her MD education (1983) and defended her PhD on natural transformation in bacteria (1993) at the University of Oslo (UiO), Norway. She then completed five years of training to become a specialist of medical microbiology in 1991. Her postdoctoral training took place in 1994-1998 at the University of Michigan and at the Rocky Mountain Laboratory in Montana, USA. Since 1998, she has lead her own research group, the Unit for Genome Dynamics at UiO, recruiting multidisciplinary scientists in molecular biology. In 2000, Tønjum became full professor at UiO and chief physician, head of the mycobacterial lab and head of her research team at Oslo University Hospital Unit. In 2006-2012, she was the director of the centre of excellence Centre for Molecular Biology and Neuroscience. She was also head of medical student teaching in microbiology at UiO from 2015 to 2019, and is currently the co-director of the research network Turning the Tide of Antimicrobial resistance (TTA).

Selected awards and honours

2016 Co-Director of Turning the Tide of Antimicrobial resistance research network

2008 Elected Member of the Norwegian Academy of Science and Letters (DNVA)

2006 Director of the Centre for Molecular Biology and neuroscience (CMBN), Norway

1998 Elected board head of the Norwegian Pasteur Legacy

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Athanassios Tsakris

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Antimicrobial resistance
- Infection control
- Clinical virology

Research summary

Athanasios Tsakiris's research interests include mechanisms of antimicrobial resistance, antimicrobial stewardship activities, development of phenotypic and molecular diagnostic methods, epidemiology of viral infections, activity of antiviral agents and investigation of microbial and viral outbreaks.

Education and work experience

Tsakris graduated as an MD from the Medical School of University of Athens, Greece and completed his training in Medical Microbiology at North Middlesex Hospital and the Central Public Health Laboratory, London. He received his PhD degree in Clinical Microbiology from the London School of Hygiene and Tropical Medicine, University of London. He is a Fellow in Medical Microbiology and Virology at the Royal College of Pathologists, London. He has spent sabbatical leaves and served as visiting Professor in the Division of Infectious Diseases, Department of Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA. He is currently professor and head of the Department of Microbiology at the Medical School, University of Athens, Greece.

Selected awards and honours

2014	Member of the Scientific Advisory Board to Joint Programming Initiative on Antimicrobial Resistance (JPIAMR), EU
2006	Professor of Microbiology, Medical School University of Athens, Greece

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Athanasios Typas

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Systems microbiology
- Microbiome
- Antibiotics
- Cell envelope

Research summary

Nassos Typas's work focuses on developing systems-based quantitative approaches and combines this with molecular mechanisms to study how bacteria interact with the environment, the host and with each other. The overarching goal of his research is to identify new principles and mechanisms that govern such interfaces, and to shed light into the vast dark matter of bacterial genomes (i.e. discover the function and role of poorly characterized genes). Key focal areas of his lab are on antibiotics, the bacterial cell envelope, host-pathogen interactions and the human gut microbiome.

Education and work experience

Typas studied Chemistry and Biochemistry in the Aristotle University of Thessaloniki, Greece. He moved in 2001 to do his PhD in the group of Regine Hengge at the Free University in Berlin, Germany, working on the stationary phase bacterial RNA polymerase. He defended in 2006 and moved to USCF, to do a postdoc at the group of Carol Gross. There he pioneered powerful high-throughput genetic approaches in bacteria to unravel the function of uncharacterized genes. Since 2011, he has been running his own group at the Genome Biology Unit of EMBL in Heidelberg and in 2020, he was promoted to Senior Scientist.

Selected awards and honours

2021	German Association for General and Applied Microbiology (VAAM) Yearly Research Award
2018	ERC Consolidator grant
2012	Sofja Kovalevskaja Award, Humboldt Foundation, Germany
2010	NIH K99-R00 Award, USA
2007	European Molecular Biology Organization long-term fellowship

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Bernt Eric Uhlin

PRIMARY RESEARCH AREA

Medical microbiology

KEYWORDS

- Molecular infection medicine
- Bacterial genetics
- Bacterial host interactions
- Prokaryot molecular biology

Research summary

Bernt Eric Uhlin strives to increase our understanding of the fitness properties and virulence mechanisms of the versatile pathogenic variants of *Escherichia coli* and the emerging nosocomial pathogenic bacterium *Acinetobacter baumannii*. His research combines molecular epidemiology with state-of-the-art molecular biology approaches in studies of its genetic determinants of virulence and antibiotic resistance, environmental host interactions and persistence, morphotype switching, biofilm formation, and key regulatory signalling networks.

Education and work experience

Uhlin studied chemistry and microbiology at Umeå University in Sweden and at Odense University in Denmark. He received his PhD in microbiology from Umeå University in 1978 with a thesis on studies of replication, copy number control and incompatibility of plasmid R1 in *Escherichia coli*. He was an EMBO long-term postdoctoral fellow at University of California Berkeley (1978-1981), before he became assistant and tenured associate professor in Microbiology at Umeå University. He became Professor in medical molecular biology in 1992 and since 1995 is Professor in medical microbiology at the same institution. In addition, he was scientific coordinator and founding Director of the Umeå Centre for Microbial Research (UCMR) from 2005 to 2019 and of The Laboratory from Molecular Infection Medicine Sweden (MIMS) from 2007 to 2018.

Selected awards and honours

2015	Medal of Honour, Umeå University, Sweden
2012	Elected Member of The Royal Swedish Academy of Sciences
2008	Axel Hirsch Prize in Bacteriology, Karolinska Institutet, Sweden
2002	Elected Member of the European Molecular Biology Organization (EMBO)
1995	The Göran Gustafsson Prize in Molecular Biology, The Royal Swedish Academy of Sciences

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Gisou F. van Der Goot

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- Palmitoylation
- S-acylation
- Anthrax toxin

Research summary

Gisou van Der Goot's lab studies various aspects of cell and membrane biology. These include membrane properties of the endoplasmic reticulum and plasma membrane particularly focussing on the dynamics of S-palmitoylated proteins, membrane contact sites, host cell pathways that are hijacked by toxins, and endogenous and pathological roles of anthrax toxin receptors.

Education and work experience

van der Goot studied engineering at the Ecole Centrale de Paris, then did a PhD in Molecular Biophysics at the Nuclear Energy Research Center, Saclay, France, followed by a postdoc at the European Molecular Biology Laboratory (EMBL) in Heidelberg. Before joining Ecole Polytechnique Fédérale de Lausanne (EPFL), she was Group Leader at the Faculty of Sciences of the University of Geneva (UNIGE) and subsequently Associate Professor at the Faculty of Medicine of the same university. From 2014 to 2020, she was Dean of the School of Life Sciences at EPFL. She is currently Vice President for Responsible Transformation, in charge of reinforcing values such as inclusion and sustainability throughout the School's campus. Gisou van der Goot is also the Head of the Laboratory of Cell and Membrane Biology, and founding member of the Global Health Institute (GHI), School of Life Sciences, at the Swiss Federal Institute of Technology Lausanne/EPFL.

Selected awards and honours

2020	Suffrage Science award
2009	Leenaards Foundation Research Prize
2009	Marcel Benoist Prize
2005	Howard Hughes International Scholar award
2001	European Molecular Biology Organization (EMBO) Young Investigator award

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Jan Roelof van Der Meer

PRIMARY RESEARCH AREA

Environmental microbiology

KEYWORDS

- Environmental microbiology
- Bacterial genetics
- Microbial evolution
- Microbial ecology

Research summary

Jan Roelof van der Meer's primary research interests are the environment, the quality of our living resources and the ways that bacteria can help to manage and degrade human wastes and restore environmental health. His research focuses on the genetic adaptation processes in bacteria, the mechanisms by which they deal with toxic substances, how they react to pollution in general and how microbial processes can be applied in a useful way. His group was one of the pioneers in design and applications of bacterial bioreporters, and in discovering the life-style of integrative and conjugative elements in individual cells. His current research focuses on engineering of microbial communities.

Education and work experience

Van der Meer holds a PhD from the Agricultural University of Wageningen, The Netherlands (1992). After working as a postdoc at the Dutch National Dairy Institute, he moved to the Swiss Federal Institute for Aquatic Sciences (Eawag) as a Junior Group Leader in 1992. In 2003, he moved to the University of Lausanne. Van der Meer is Co-Editor in Chief of Current Opinion in Biotechnology, Editor of FEMS Microbiology Reviews and of microLife, and on the Editorial Boards of Environmental Microbiology, Applied and Environmental Microbiology, Microbial Biotechnology and Microbial Ecology. Since 2020, he directs the Swiss National Centre of Competence Research in Microbiomes. Van der Meer is currently full Professor in Environmental Microbiology and former Head of the Department of Fundamental Microbiology of the University of Lausanne, Switzerland.

Selected awards and honours

2012	Excellence in Teaching for Biology Award, Faculty of Biology and Medicine, University of Lausanne, Switzerland
2010	Erwin Schrödinger Prize of the Helmholtz Foundation (Co-awardees: H. Harms, M. Wells)
1993	SNS Bank University Award for best PhD thesis, Netherlands

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Antonio Ventosa

PRIMARY RESEARCH AREA

Taxonomy, systematics and evolution

KEYWORDS

- Extremophilic microorganisms
- Haloarchaea
- Halophiles
- Taxogenomics

Research summary

Antonio Ventosa investigates extremophilic microorganisms, mainly halophilic archaea and bacteria, their biodiversity, taxonomy, comparative genomics and metagenomics as well as biotechnological applications. Currently, his research focuses on the molecular taxonomy, phylogenomic and metabolic biodiversity based on metagenomic analyses of hypersaline environments (saline soils and salterns) and the isolation and description of new (relevant) groups of archaea and bacteria, using new culturomics methods based on a metagenomics approach.

Education and work experience

Ventosa graduated in Pharmacy at the University of Granada, Spain (1977) and obtained a PhD in Microbiology at the same institution (1981). He subsequently carried out postdoctoral studies at Rothamsted Experimental Station, Harpenden, UK (1979), Czechoslovak Collection of Microorganisms, Brno, Check Republic (1981), Marine Biological Laboratory, Woods Hole, Massachusetts, USA (1982) and National Collection of Type Cultures, Colindale, London, UK (1985). He was Vice–Dean (1993-1997) and Dean (1997-2001) of the Faculty of Pharmacy, Vice-Director of Postgraduate Studies (2003-2006) of the University of Seville, Spain, and Head of the Department of Microbiology and Parasitology (2008-2016) of the University of Seville, Spain. He has been the President of the Spanish Society for Microbiology (SEM) since 2012 and has been President of the International Society of Extremophiles (ISE) (2015-2018). Ventosa is currently is Professor at the University of Seville, Spain.

Selected awards and honours

1998	Jaime Ferran Prize from the Spanish Society of Microbiology (SEM)
2008	FAMA Prize for Research from the University of Seville, Spain
2010	Bergey's Award on Systematics of Prokaryotes, Bergey's Manual Trust
2011	Top Ten New Species of the year Award, The International Institute for Species Exploration, Arizona State University, USA,
2004	Elected Fellow of the American Academy of Microbiology

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Miguel Vicente

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Bacterial division
- *Escherichia coli*
- Divisome
- dcw cluster

Research summary

Miguel Vicente's research is on synthetic biology of bacterial division focused on the assembly of the divisome. The process begins with the positioning in the middle of the cell length of a proto-ring in which ZipA contributes, together with FtsA, to place FtsZ, a protein that forms a contractile division ring, in the right place. Vicente investigates the regulation of expression of the genes coding for the proto-ring components in relation to their role in the physiology of the bacterium.

Education and work experience

Vicente completed his graduate studies at the Spanish Instituto de Biología Celular (CSIC) (1969-1972) and his postdoc at the University of Utah, USA (1973-1974). He was a research fellow (1975-1977) and a senior research fellow (1980) at the Department of Molecular Biology, University of Edinburgh, UK. Vicente also held positions as a Scientific Collaborator at the CSIC (1974-1986) and a Scientific Researcher at the Centro de Investigaciones Biológicas (CIB-CSIC). Vicente discovered *bolA,* a global control gene present from bacteria to humans, and described the phylogenetic conservation of the dcw cluster that contains many of the cell division and wall synthesis genes in rod-shaped bacteria. He has often worked to teach and promote Microbiology to the general public by writing in newspapers, coordinating a blog and designing exhibitions. He has addressed lectures to diverse audiences, including judges and prison inmates. Currently, Vicente is Honorary Research Professor at the Spanish National Center of Biotechnology (CSIC).

Selected awards and honours

2018	Recognition by the Spanish Society of Microbiology (SEM) for disseminating Microbiology
2017	Member at Large of the International Union of Microbiological Societies (IUMS)
2014	President of the Bacteriology and Applied Microbiology Division (IUMS).
2011	Vice President of the acteriology and Applied Microbiology Division (IUMS)
2003	Elected Member of the American Academy of Microbiology

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Jörg Vogel

PRIMARY RESEARCH AREA

Molecular microbiology and "-omics"

KEYWORDS

- Bacterial pathogens
- Non-coding RNA & RNA-binding proteins
- Single-cell RNA-seq
- Microbiome research

Research summary

Jörg Vogel strives to understand the full spectrum of noncoding RNA and RNA-binding proteins in bacterial pathogens and in members of the human microbiome. He develops new RNA-seq based techniques to rapidly capture the RNA world of any microbe, ideally at the level of single cells, and understand how and why bacteria use RNA as a regulator as they infect humans. He asks basic mechanistic questions of RNA Biology but also works on RNA-centric manipulations of the microbiota.

Education and work experience

Vogel studied biochemistry at Humboldt University, Berlin, Germany, and at Imperial College, London, UK. In 1999, he received his PhD from Humboldt University with a thesis on Group II intron splicing. He spent his postdoctoral years at Uppsala University, Sweden (2000-2001) and as an EMBO fellow at the Hebrew University, Jerusalem, Israel (2002-2003) before he started an Independent Junior Research Group at the Max Planck Institute for Infection Biology in Berlin, Germany (2004-2010). He became Full Professor and Director of the Institute for Molecular Infection Biology at the University of Würzburg in 2009. As of 2017, he is also the Founding Director of the Helmholtz Institute for RNA-based Infection Research (HIRI) in Würzburg.

Selected awards and honours

2021	Elected President of the European Academy of Microbiology
2017	Leibniz Award, German Research Foundation (DFG)
2013	Elected Fellow of the American Academy of Microbiology
2013	Elected Member of the German National Academy of Sciences Leopoldina
2011	Elected Member of the European Molecular Biology Organization (EMBO)

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Waldemar Vollmer

PRIMARY RESEARCH AREA

Molecular microbiology

KEYWORDS

- Bacterial cell wall
- Cell division
- Antibiotics

Research summary

Waldemar Vollmer's work focuses on the structure and biogenesis of the cell wall in model bacteria and pathogens. His group studies how bacteria build and consume their cell wall peptidoglycan when they are growing and dividing, how antibiotics inhibit cell wall synthesis and how the cell wall is targeted by lytic enzymes and components of the immune system, and how bacteria become resistant against antibacterial compounds. This research does not only reveal the fundamental mechanisms of bacterial cell wall growth and inhibition but also leads to the development of novel assays and identification of targets for antibacterial drug discovery.

Education and work experience

Vollmer studied Chemistry at the Universities of Reutlingen, Germany, and Basel, Switzerland. He obtained his PhD in 1998 from the University of Tübingen, Germany, for his PhD project at the Max-Planck-Institute (MPI) for Developmental Biology, Tübingen. After postdoctoral research associate positions at the Rockefeller University, New York, USA, and the MPI Tübingen from 1998-2002, he was Assistant Professor in the Department of Microbial Genetics, University of Tübingen. From 2007 he was Reader and from 2009 Professor at the Centre for Bacterial Cell Biology, Biosciences Institute, Newcastle University, UK.

Selected awards and honours

2015	Visiting Professorship at the University of Cagliari, Italy
2014	Elected Fellow of the American Academy of Microbiology
2014	Academic Distinction Award, Newcastle University, UK
2012	Visiting Scholarship at the Ben-Gurion University of the Negev, Israel

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Julia Vorholt

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Plant microbiomes
- Microbial biochemistry
- Single cell analysis

Research summary

Julia Vorholt investigates how the environment shapes bacterial physiology, with an emphasis on metabolism, novel protein function and microbial interactions. With her group, she applies meta-omics analyses to bacterial communities and uses synthetic microbial communities to study plant microbiome interactions. In addition, she develops Fluidic Force Microscopy for single cell manipulation and analyses.

Education and work experience

Julia Vorholt studied biology at the Universities of Bonn and Marburg, Germany. During her PhD thesis she focused on the biochemistry of methanogenesis under the supervision of Prof Dr R. K. Thauer at the Max-Planck-Institute for terrestrial Microbiology. Thereafter, she initiated work on the metabolism of methylotrophic bacteria as a postdoc in Seattle, USA and the MPI Marburg. From 2001 to 2006 she headed a research group at the Laboratoire des Interactions Plantes Micro-organismes (CNRS) in Toulouse. Julia Vorholt was appointed Associate Professor at ETH Zurich, Switzerland in 2006. In 2012 she became Full Professor at the Institute of Microbiology of ETH Zurich.

Selected awards and honours

2020	ERC Advanced Grant
2019	Elected Member of the European Molecular Biology Organization (EMBO)
2015	ERC Advanced Grant
2012	Elected Member of the German National Academy of Sciences Leopoldina
1998	Otto-Hahn Medal of the Max-Planck Society, Germany

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Michael Wagner

PRIMARY RESEARCH AREA

Microbial ecology

KEYWORDS

- Biogeochemical nitrogen cycle
- Ecophysiology
- Host-microbe interaction
- Single cell microbiology

Research summary

Michael Wagner investigates microbes in their natural environment. His team is particularly interested in all aspects of nitrification with a focus on the biology of ammonia-oxidizing archaea and bacteria as well as on complete nitrifiers of the genus *Nitrospira* (Comammox). Furthermore, they continuously develop innovative single cell tools for investigating the identity and function of individual microbial cells within their natural habitats and apply these tools not only to study environmental systems, but also to investigate host-microbe interactions in sponges and gut microbiomes.

Education and work experience

Wagner studied Biology at the Technische Universität München, Germany, where he also obtained his PhD (1995). He was a Postdoctoral fellow at the Northwestern University, Evanston, USA from (1995-1996), before becoming Assistant Professor at the Technische Universität München (1996-2000). In 2000, he received his Habilitation in Microbiology at the Faculty of Chemistry of the Technische of the Universität München, where he went on to become Associate Professor (2001-2003). Since 2003, he has been Full professor for Microbial Ecology at the University of Vienna in Austria, where he was then appointed Head of the Department of Microbiology and Ecosystem Science (2003-2018). At the same university, he has been Head of the Large Instrument Facility of Advanced Isotope Research since 2010, Head of the Research Network "Chemistry meets Microbiology" since 2015 and Head of the Centre for Microbiology and Environmental Systems Science since 2019. In addition, he has been appointed Distinguished professor at Aalborg University, Denmark (2019) and is a Guest Professor at Oxford University, UK (2019).

Selected awards and honours

2019	Wittgenstein award of the Austrian Science Fund (FWF), Austrian Ministry of Science
2018	Jim Tiedje Award of the International Society for Microbial Ecology (ISME)
2017	Elected Member of the European Molecular Biology Organization (EMBO)
2011	ERC Advanced Grant Nitricare
2009	Elected member of the German National Academy of Sciences, Leopoldina

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Robin A. Weiss

PRIMARY RESEARCH AREA

Virology

KEYWORDS

- HIV
- Tumor viruses
- Emerging infections

Research summary

Robin Weiss is retired but still does a little teaching, writes occasional commentaries, and is interested in the history of microbiology.

Education and work experience

Weiss studied zoology at University College London, UK, and later a obtained a doctorate on Rous sarcoma virus. He was a postdoctoral scientist with Jan Svoboda in Czechoslovakia in 1969 and with Peter Vogt in the USA (1970-1972). He then joined the Imperial Research Fund Laboratories in London and in 1980 became Director of the Institute of Cancer Research in London, returning to UCL in 1999. He has been involved in HIV/AIDS and AIDS related malignancies since 1984, viral pseudotypes, vaccines and antibody immunity.

Selected awards and honours

2017	Elected Member of the American Philosophical Society
2013	Elected Foreign Member US National Academy of Sciences
2003	Honorary Doctor of Medicine Uppsala University, Sweden
1977	Elected Member of the European Molecular Biology Organization (EMBO)
1977	Elected Fellow of the Royal Society, UK

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Friedrich Widdel

PRIMARY RESEARCH AREA

Marine microbiology

KEYWORDS

- Anaerobic aquatic bacteria
- Microbial iron corrosion
- Degradation of natural compounds

Research summary

Friedrich Widdel's research before retiring focused on three main areas, physiology and metabolic capacities of anaerobic aquatic bacteria, anaerobic degradation of long-lived natural compounds such as oil or gas hydrocarbons, and anaerobic microbial growth with redox-active inorganic species. He is also interested in microbial iron corrosion.

Education and work experience

Widdel before retiring was Director at the Max Planck Institute for Marine Microbiology. Together with Prof. Dr. Bo Barker Jørgensen, he founded the Bremen Max Planck Institute in 1992. Widdel was also Professor of Microbiology in the Biology/Chemistry Faculty at the University of Bremen.

Selected awards and honours

1996 Elected Member of the German National Academy of Sciences Leopoldina

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Paul Williams

PRIMARY RESEARCH AREA

Molecular microbiology, "-omics" and bioinformatics

KEYWORDS

- Quorum sensing
- Gene regulation
- Biofilms
- Chemical biology

Research summary

Paul Williams's research interests focus on the molecular and chemical biology of cell-cell communication (quorum sensing) and global gene regulation in bacterial pathogens including *Pseudomonas aeruginosa, Yersinia* and *Staphylococcus aureus* primarily in the context of virulence, biofilms and the development of novel antibacterial agents. His group also exploits high throughput methodology for the discovery and clinical application of biofilm-resistant biomaterials for implanted medical devices.

Education and work experience

Williams graduated in Pharmacy prior to a PhD in Microbiology at the University of Aston, UK, in 1984. From 1996-2008 he was Director of the Institute of Infection & Immunity and from 2008-2013, Head of the School of Molecular Medical Sciences, Faculty of Medicine and Health Sciences. He has served on the Biotechnology and Biological Sciences Research Council (Plants and Microbes Committee), the Medical Research Council (MRC) Infection & Immunology Board, the Infection Group of the Microbiology Society and the EU Joint Programming Initiative on Antimicrobial Resistance. Williams is currently Professor of Molecular Microbiology in the Biodiscovery Institute and School of Life Sciences, University of Nottingham, UK.

Selected awards and honours

2007 Colworth Prize Lecture, Society for General Microbiology, UK

1994 Pfizer Prize in Pharmaceutical Sciences

1992 Awarded the Royal Pharmaceutical Society of Great Britain Conference Science Medal

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Karina Xavier

PRIMARY RESEARCH AREA

Physiology, biochemistry and metabolism

KEYWORDS

- Bacterial signalling
- Quorum sensing
- Microbe-host interactions
- Gut microbiota

Research summary

Karina Xavier's work focuses on deciphering the molecular basis of how bacterial communication regulates bacterial behaviours. Her research seeks to understand the role of quorum sensing in assembly, maintenance and recovery of bacterial consortia and the consequences of these processes in the beneficial and hostile interactions that these communities establish with their hosts. Xavier's group uses biochemical and genetic approaches to study the molecular mechanisms underlying quorum sensing signalling in multi-species bacterial consortia. Their recent work shows how bacterial chemical interactions shape multi-species bacterial communities and highlights the importance of inter-species interactions in modulating metabolic networks in bacterial communities such as the gut microbiota. Their aim is to take advantage of recent findings to manipulate inter-species interactions in the mammalian gut towards strategies that counter microbiota imbalances and ameliorate host physiology.

Education and work experience

Xavier received her BS in Biochemistry from the Universidade de Lisboa, Portugal (1994) and her PhD in Biochemistry from Instituto de Tecnologia Química e Biológica, Universidade Nova de Lisboa (1999) on metabolism of carbohydrates in hyperthermophilic Archaea with Professor Helena Santos. She did a postdoc at Princeton University, USA, with Professor Bonnie Bassler to study bacterial signal transduction and quorum sensing (2000-2006). In 2012 she was awarded an HHMI International Early Career Award to study the role of quorum sensing in the gut microbiota. Since 2006, she is a Principal Investigator at the Instituto Gulbenkian de Ciência to head the Bacterial Signalling group.

Selected awards and honours

2021	Elected Member of the European Molecular Biology Organization (EMBO)
2019	Joined eLife's Board of Reviewing Editors
2017	Portuguese Foundation for Science and Technology (FCT) Investigator Programme Consolidator Award
2014	Panel Member European Research Council in Infection and Immunity panel CoG Calls
2012	Howard Hughes Early Career International Award, USA

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Arturo Zychlinsky

PRIMARY RESEARCH AREA

Cellular microbiology

KEYWORDS

- NETs
- Neutrophils
- Chromatin

Research summary

Arturo Zychlinsky and his lab discovered NETs (Neutrophil Extracellular Traps) which are made of chromatin and specific neutrophil proteins. Currently, his lab is working on the mechanisms of NET formation as well as the function of NET components, especially histones, in order to understand the function of chromatin in immunity.

Education and work experience

Zychlinsky studied biology at the Instituto Politécnico Nacional, Mexico D. F., Mexico (1980-1985). In 1991, he received his Ph.D. in Immunology from the Rockefeller University, New York, USA. Afterwards, he spent two years as a postdoctoral fellow at the Institut Pasteur, Paris, France. From 1993 to 2001, he was professor at the Skirball Institute and Department of Microbiology at the New York University School of Medicine. Zychlinsky has been director of the Department of Cellular Microbiology at the Max Planck Institute for Infection Biology, Berlin, Germany, since 2001.

Selected awards and honours

2005	Awarded the Eva und Klaus Grohe Prize, Berlin-Brandenburgischen Akademie der Wissenschaften, Germany
1998	Irma T. Hirschl Career Scientist Award

Agnès Ullmann
(1927-2019)

Ullmann was an eminent EAM member, elected and involved from the onset of our Academy. She received her PhD in Microbiology in Budapest and in 1958 moved to Paris to work with Jacques Monod, François Jacob and Elie Wollman at Institut Pasteur. Agnès was CNRS 'Directeur de Recherche', head of the Unit 'Biochimie des interactions cellulaires' and was at a time Director of Research applications of Institut Pasteur.

Agnès made several pioneering discoveries in deciphering key properties of the promoter of the lactose operon, in elucidating the allosteric properties of muscle-specific proteins and the role of cAMP in bacteria. She also worked on model microorganisms like *Escherichia coli* to the world of bacterial pathogens and became a world leader in the *Bordetella pertussis* adenylate-cyclase toxin.

Margarita Salas
(1938-2019)

Salas did a PhD on yeast metabolism in Madrid, Spain and her Postdoc at the New York University, USA. Returning to Spain in 1967, Salas and her husband Viñuela set up a lab at the CSIC's Centre for Biological Research in Madrid. In 1977, Salas made her last academic move to the recently founded Severo Ochoa Centre for Molecular Biology (CBMSO).

Salas is known for her studies of molecular genetics and discovery of the bacterial virus Φ29 DNA polymerase. She received several recognitions, including first woman ever to receive the Echegaray medal, first scientific woman ever to be elected to the Royal Spanish Academy and she also received the European Inventor Award (2019). She was an outspoken advocate of women and feminism in science.

In memoriam

Milton S. da Costa
(1948-2020)

Da Costa was Treasurer (1981-1988, 1991-1997) and later President (1996-2002) of the Sociedade Portuguesa de Bioquímica (SPM). He also stood for the position of FEMS President from 2004-2010 and was a key contributor to the formation of the European Academy of Microbiology. He completed his PhD at Indiana University, USA in 1977. and was Professor at the University of Coimbra, Portugal.

His interest lay in extremophiles, but he was a microbiologist who loved diversity and had almost limitless interests. He recognised the beauty of studying microbes, whatever they may be and enjoyed both teaching and research. His work continued until recently, including a Horizon 2020 project working with industrial and international partners to working together to accelerate the identification of proteins with biotechnological potential from metagenomes.

Hans-Dieter Klenk
(1938-2021)

Hans-Dieter Klenk was an internationally renowned expert in virus research, and from 1985 until his retirement in 2007, he was head of the Marburg Virology Institute. He had a decisive influence on Marburg University Institute for Virology and established its international orientation and visibility.

Klenk studied medicine and biochemistry in Tübingen, Vienna and Cologne. He was a visiting scientist at Rockefeller University in New York, professor at Justus Liebig University in Gießen, Chair for virology at the Philipps University in Marburg and President of the German Society for Virology for 6 years.

Among other things, Klenk devoted himself to research into viruses that are transmitted from animals to humans and can cause serious diseases. His research focused on the structure and function of enveloped viruses, such as influenza viruses, paramyxoviruses, and filoviruses, with a special emphasis on the role of viral glycoproteins and RNA polymerase in the infection process, pathogenesis, and interspecies transmission. His research also formed the basis for the development of vaccines and antiviral drugs against the Ebola virus and other important pathogens. He was also a key driver in the then emerging field of RNA virology in Germany and recognized the importance of zoonotic viruses from very early on.

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