

# Academic Appointments

## SULSA aims to advance Scotland's global position in the Life Sciences by:

- » Recruiting international research leaders
- » Supporting world-class research facilities
- » Funding collaborative PhD studentships
- » Linking researchers across Scotland through workshops and research symposia

SULSA's activities are defined by the three broad research themes of cell biology, systems biology and translational biology.

To strengthen these core themes, SULSA has recruited across its six member Universities (Aberdeen, Dundee, Edinburgh, Glasgow, St Andrews and Strathclyde):

- » 9 Research Professors
- » 6 Research Readers
- » 7 Research Lecturers



**Professor Manfred Auer**  
University of Edinburgh

» Manfred Auer's research is focused on the development and application of miniaturised, ultra-high throughput screening platforms for the identification and validation of lead compounds for drug discovery and tool compounds for basic research. His "Integrated Chemical Biophysics" platforms (ICB) include in-silico design and screening, tagged one-bead one compound library production and screening on the surface of beads and chips, in solution, in cells and in model organisms. ICB platforms combine chemical, biological, and physical approaches

to overcome many of the limitations of the current industrial early drug-discovery process. Using the flexible post-synthesis – post screening tagging technologies developed in the Auer group, both label free and single molecule fluorescence detection technologies are combined into seamless processes. Manfred Auer was previously Executive Director of the Innovative Screening Technologies Unit at the Novartis Institutes of Biomedical Research. He has 20 years experience leading research in the pharmaceutical industry. In 2002, he received the Society for Biomolecular Screening Achievement Award for his pioneering work in confocal fluorescence technologies and their application to high throughput screening platforms.



**Dr Maria Romano Blasco**  
University of Aberdeen

» Maria is a physicist by training, who has developed new mathematical methods to analyse fundamental phenomena arising in complex systems due to interactions, such as the synchronisation and transfer of information. She became interested in systems biology because she was fascinated by the variety of dynamical phenomena present in fundamental biological mechanisms, and how nonlinear dynamics can help unravel them. Maria is currently involved in several Systems Biology projects, such as a SABR (BBSRC) funded project called CRISP (Combinatorial Responses in Stress Pathways in Yeast) in collaboration with scientists at the University of Aberdeen and Imperial College, and a project about the stochastic modelling of translation in yeast, in collaboration with Dr Ian Stansfield, from the University of Aberdeen, and Dr Rosalind Allen, from the University of Edinburgh. Maria has previously worked at the University of Potsdam.



**Dr Marie Boyd**  
University of Strathclyde

» Marie Boyd's research interests are in the more effective use of radiation in cancer treatment. This includes targeted radionuclide-therapy, where the selective irradiation of tumours by radionuclides conjugated to tumour-seeking molecules exploits metabolic characteristics of malignant cells, enabling the deposition of radiation decay energy in tumour cells while sparing normal tissue. Marie's research aims are: to rigorously assess novel modes of gene manipulation and radiosensitisation to enhance radionuclide targeting of cancer; to broaden the range of tumours amenable to targeted radionuclide therapy, via transfer of genes encoding radiopharmaceutical transporters and identification of new tumour specific targets and targeting agents; and to optimise the tumour specificity of radiation-mediated bystander cytotoxicity.



**Dr Mikael Bjorklund**  
University of Dundee

» Mikael's primary research interest is cell growth and proliferation in multicellular organisms. These are complex processes that must be carefully coordinated with the other cellular functions to prevent diseases such as cancer. Mikael uses high-throughput screens and other genome-scale methods in Drosophila and mammalian cell culture models to generate useful information about gene and protein function in a genome-scale context. This information can be used as a starting point for more detailed biochemical and molecular analyses or computer modeling. Mikael received his PhD from the University of Helsinki, Finland, and was a postdoctoral fellow there before taking up his SULSA post.



**Professor Rainer Breitling**  
University of Glasgow

» Rainer Breitling is a systems biologist with a special interest in the interpretation of large post-genomic datasets in a mechanistic context. Work in his group is based on datasets from a broad variety of model organisms. Current projects include the dynamic modeling of metabolism in protozoan parasites, the synthetic biology of antibiotic production in actinomycetes, and the development of computational tools for the analysis of high-accuracy metabolomics data. Rainer obtained his PhD in Munich, Germany, and was a postdoctoral fellow in San Diego, USA and Glasgow, and an assistant professor in Groningen, The Netherlands. He came to Glasgow in 2010 as a SULSA Chair in Systems Biology.



**Professor Neil Bulleid**  
University of Glasgow

» Neil Bulleid's research interests are in the maturation of proteins within the endoplasmic reticulum of mammalian cells and in particular the processes of protein folding, disulphide bond formation and glycosylation. Neil previously completed his PhD in Glasgow, and carried out his post-doctoral studies at the University of Kent and HHMI in Dallas, USA. He was awarded a Royal Society University Research Fellowship to join the University of Manchester where he became a Professor in Biochemistry.



**Dr Ramon Grima**  
University of Edinburgh

» Ramon's research involves constructing spatial models of intracellular kinetics that try to capture the stochastic nature of reactions together with a simplified description of intracellular architecture. This involves creating a model cytoplasm from experimental distributions of macromolecular sizes and their copy numbers, and allowing for both passive and

active modes of transport. His current projects include investigating the effects of intracellular compartmentation on the algal and plant circadian clocks, but also in modelling pattern formation on a much larger spatial scale, the multicellular scale. Ramon has worked in Virginia, Arizona and Indiana USA, and was at Imperial College London before moving to Edinburgh.



**Dr Luke Chamberlain**  
University of Strathclyde

» Luke Chamberlain's research focuses on the regulation of protein function by S-acylation, the post-translational attachment of acyl groups (predominantly palmitate) onto cysteine residues. Emerging evidence from diverse systems has highlighted key roles for S-acylation in regulating protein sorting, protein-protein interactions, and precise membrane micro-localisation of proteins. Research in this area was recently bolstered by the identification of a family of 24 'DHHHC' proteins that are responsible for the bulk of cellular S-acylation. Current work in his group aims to delineate how the activity, substrate specificity, and intracellular targeting of the DHHHC protein family is regulated. He is also investigating how S-acylation regulates the function of SNARE membrane fusion proteins. Luke Chamberlain received his PhD from the University of Liverpool. He held an independent fellowship from the Diabetes Research & Wellness Foundation and subsequently a Wellcome Trust Research Career Development fellowship at the University of Glasgow. Following this, he moved to the University of Edinburgh as an MRC senior fellow, and then to the University of Strathclyde in April 2010 as a SULSA reader in Life Sciences.



**Professor Tibor Harkany**  
University of Aberdeen

» Tibor Harkany is SULSA Chair in Cell Biology at the University of Aberdeen. His group studies the developmental organization and functions of the endocannabinoid system using a combination of molecular genetics, neuroimaging, neuroanatomy and

electrophysiology approaches. His group is also investigating the neuronal basis of cannabis-induced developmental deficits in the central nervous system. Tibor Harkany received his PhD from the Semmelweis Medical School in Hungary and before coming to Aberdeen was at the Karolinska Institute, Sweden. He was recently recognised as an EMBO Young Investigator.



**Dr Oliver Ebenhoeh**  
University of Aberdeen

» The goal of Oliver's research is to link physical sciences to biology to derive a theoretical understanding of living systems. Focused on understanding cellular interaction networks using theoretical approaches, his group has developed novel theoretical concepts to study large-scale metabolic networks, by which it has become possible to relate structural to functional properties. By identifying characteristic features that cannot be expected to have appeared by chance, important clues about the evolutionary history of such networks can be obtained. His group also applies traditional, differential equation-based modelling techniques to study metabolic, signalling and regulatory systems. This leads to the understanding of their underlying design principles. Oliver received his PhD from the Humboldt University Berlin. Before coming to Aberdeen, he led the research group "Systems Biology and Mathematical Modelling" at the Max Planck Institute of Molecular Plant Physiology in Potsdam, Germany.



**Dr Heidrun Interthal**  
University of Edinburgh

» Heidrun Interthal's research is focused on the processes of DNA repair. She is particularly interested in the DNA damage caused when DNA-processing enzymes become bound and covalently trapped on a broken strand of DNA, and the pathways by which this damage is repaired. She is currently investigating the DNA repair protein and cancer drug target Tdp1. She has also become interested in the possibility that Tdp1 could also be a useful drug target for

rapidly dividing parasites, such as *Trypanosoma brucei* which cause African sleeping sickness. Heidrun received her PhD from the University of Bern, Switzerland and was a postdoctoral fellow, and then research assistant professor, at the University of Washington, Seattle, USA. She arrived in Edinburgh in 2008.



**Professor Andrew Hopkins**  
University of Dundee

» Andrew Hopkins' research is focused on developing novel methods to improve drug discovery, such as automating drug design. His group at the University of Dundee College of Life Sciences consists of an informatics team and biosensor lab. After completing his doctoral research in structural biology and drug design at the University of Oxford in 1998, Andrew Hopkins joined Pfizer where he designed major informatics systems to aid drug discovery and developed several important concepts that have been widely adopted by the medicinal chemistry community, including the druggable genome, ligand efficiency and polypharmacology.



**Dr Markus Meissner**  
University of Glasgow

» Markus Meissner's research focuses on the mechanisms involved in the invasion of the host cell by apicomplexan parasites. In order to invade the parasite has evolved a whole set of unique secretory organelles that are formed during the intracellular development of the parasite. Using *Toxoplasma gondii* as a model system his group investigates the biogenesis, maintenance and regulation of these organelles. The research goals include identification and analysis of essential genes linked to invasion and modulation of the host cell using forward genetic screens. The group is also investigating host cell factors required for the growth of the parasite to understand the interdependence between the parasite and its host. Markus received his PhD from the Centre for Molecular Biology (ZMBH) in Heidelberg, Germany. Before coming to Glasgow he won the BioFuture award from the German ministry for Education and

Science to establish a research program in Heidelberg, Germany. He recently received a Wellcome Trust Senior Fellowship to continue his research at the Wellcome Trust Centre for Molecular Parasitology in Glasgow.



**Dr Stuart MacNeill**  
University of St Andrews

» Stuart MacNeill's research is focused on gaining a detailed understanding of the fundamental molecular mechanisms that our cells use to copy DNA. He uses two very different, simple model systems for these studies – a fission yeast first isolated from East African millet beer in the 1890's and a salt-loving archaeal organism discovered in the Dead Sea in the 1970's. Both these organisms are easy to grow in the lab and both are particularly well suited to the type of molecular genetic analysis that has provided many key insights into how our cells copy DNA with the fidelity necessary to ensure that our genetic material is passed down faithfully through the generations. Prior to moving to St Andrews, Stuart MacNeill had been an Associate Professor in the Department of Biology at the University of Copenhagen from 2005-2009 and a Wellcome Trust Senior Research Fellow in Basic Biomedical Science at the University of Edinburgh from 2000-2005.



**Dr John Mitchell**  
University of St Andrews

» John is interested in anything computational and related to molecules. After a PhD in theoretical chemistry, his first postdoc was in Biochemistry at UCL. He has been a lecturer at Birkbeck and at Cambridge, before coming to St Andrews in 2009. Since then, he has done lots of cheminformatics, quite a lot of bioinformatics and only a little real theoretical chemistry. His scientific interests include computing the binding affinities between proteins and ligands, side-effects and toxicities of pharmaceuticals, and how much of a compound will dissolve in water. His group have worked extensively on the prediction of molecular properties such as melting point and solubility from chemical

structure. They also use computational methods to study enzyme reaction mechanisms. They continue to develop the MACiE database of enzyme reaction mechanisms in collaboration with Prof. Janet Thornton at the EMBL-EBI.



**Dr Adele Marston**  
University of Edinburgh

» Adele Marston studies the segregation of chromosomes during cell division. Errors in chromosome segregation generate daughter cells with the wrong number of chromosomes and this is associated with cancer, birth defects and infertility. Using yeast as a model system, Adele is employing a combination of directed genetics, cell biology and biochemistry together with genomic and proteomic approaches to understand the conserved molecular mechanisms in chromosome segregation. Adele received her D. Phil. from the University of Oxford and did her postdoctoral work at Harvard University and the Massachusetts Institute of Technology. In 2005 she was awarded a Wellcome Trust Research Career Development Fellowship and became a group leader in the Wellcome Trust Centre for Cell Biology at the University of Edinburgh. She received her SULSA award in 2009 and was accepted into the EMBO Young Investigator Programme in 2010. In 2011, Adele was awarded a Senior Research Fellowship from the Wellcome Trust.



**Professor Ferenc Nagy**  
University of Edinburgh

» Ferenc Nagy's lab researches the signal transduction pathways and molecular mechanisms by which light and the circadian clock regulates gene expression in plants. He received his Ph.D. in genetics from József Attila University, Hungary, and his D.Sc. from the Hungarian Academy of Sciences. He was a postdoctoral fellow, then an assistant professor in the Laboratory of Plant Biology at the Rockefeller University, USA. Later he worked as group leader in the Friedrich Miescher Institute in Basel, Switzerland and then as General Director of the Agricultural Biotechnology Center in Godollo, Hungary.

Ferenc Nagy currently has a joint appointment between the Biological Research Center of the Hungarian Academy of Sciences in Szeged and the University of Edinburgh, where he is SULSA Chair in Cell and Systems Biology.



**Professor Timothy Newman**  
University of Dundee

» Timothy Newman's group employ analytic and computational tools to understand the emergent properties of biological systems at many different scales, from molecular interactions all the way to population biology. A common theme in all their work is quantifying the central role of stochasticity in living systems. Timothy's group also has a major effort in large-scale computational modelling of embryonic development. Timothy was recruited by the University of Dundee in 2011 as Professor of Biophysics and SULSA Chair of Systems Biology. He relocated from Arizona State University where he was Professor of Physics and Director of the ASU Center for Biological Physics. His early training was in theoretical physics of non-equilibrium systems, and he has been active in biological research since 2000. Timothy is currently Editor-in-Chief of the interdisciplinary journal *Physical Biology*, published by the Institute of Physics.

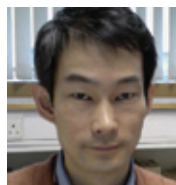


**Professor Mike Tyers**  
University of Edinburgh

» Mike's research focuses on the means by which cells communicate with their environment and the processes that implement changes of cellular state, in particular the pathways and networks that control cell division. His studies have contributed to the understanding of phosphorylation and ubiquitin-dependent proteolysis in cell cycle regulation, specificity in signal transduction pathways and switch-like decision in complex cellular systems. Mike has applied a battery of functional genomic technologies to important biological problems, including the mapping of protein, genetic and chemical interactions on a global scale. In conjunction with these experimental approaches, he has

developed open source informatics tools for interrogating the general properties of biological networks. These efforts to chart protein and genetic interactions have accelerated discovery in many fields. He now plans to combine a variety of technologies to develop synthetic biological systems with novel applications in fundamental and applied research. Mike was appointed the C.H. Waddington Professor of Systems Biology at the University of Edinburgh. He was previously a Senior Investigator at the Samuel Lunenfeld Research Institute of Mount Sinai Hospital and a Professor in the Department of Medical Genetics and Microbiology at the University of Toronto in Canada.

Mike has won a number of awards for his research including the Merck-Frosst Award from the Canadian Society of Biochemistry and Molecular Biology (1999), the Michael Smith Award for Research Excellence (1999), a Canada Research Chair in Bioinformatics and Functional Genomics (2000), the Royal Society of Canada McLaughlin Medal (2006), a Howard Hughes Medical Institute International Scholar Award (2007) and a Royal Society Wolfson Research Merit Award (2007). In 2002, Professor Tyers was elected a Fellow of the Royal Society of Canada.



**Dr Yasushi Saka**  
University of Aberdeen

» Yasu's research focuses on pattern formation in animal development. Embryogenesis is a self-organising process without any instructions from outside of the embryo. How does this happen? How do cells self-organize into tissues and organs during embryogenesis? He aims to answer these questions and provide a new perspective to the mechanism of animal development. His research adopts a novel approach, combining mathematical modelling and engineered synthetic multi-cellular system of the yeast *S.cerevisiae*.

Yasu did his post-graduate work on the cell cycle in Mitsuhiro Yanagida's lab in Kyoto University, Japan. He joined Jim Smith's lab in UK as a post-doc, working on *Xenopus* embryogenesis. He was a group leader at the Interdisciplinary Research Institute CNRS in Lille, France before moving to Aberdeen in 2010.



**Professor Peter Swain**  
University of Edinburgh

» Since November 2008, Peter Swain has been SULSA Chair in Systems Biology at the University of Edinburgh. His research group combines mathematical, computational and experimental approaches to study the biochemical networks involved in cellular decision-making. Peter Swain received his PhD in mathematics from Imperial College London, and completed postdoctoral positions at the Max Planck Institute for Colloids and Interfaces, Germany, and the Rockefeller University, USA. Before coming to Edinburgh, he was an Associate Professor in Physiology at McGill University, Canada, and a Canada Research Chair in Systems Biology.



**Dr Ekkehard Ullner**  
University of Aberdeen

» Ekkehard's research involves applying physical methods to understand the role of 'noise' in biological systems. He investigates cell-to-cell communication in synthetic genetic networks and deduces numerical simulations of repressor models with repressive cell-to-cell communication. He is interested in phenomena where noise plays a constructive role in the signal response or signal transmission and his focus is on the appearance of artificial differentiation in the assembly of identical cells, and the roles of multi-stability and multi-rhythmicity in the robustness of a system. Ekkehard is interested in the influence of noise on the functions of the circadian rhythm and his models use the collective dynamics of numerous coupled genetic oscillators in the central pacemaker area of the brain. Ekkehard received his Ph.D. from the University of Potsdam in 2004 and his first post-doc position was at the Max Planck Institute for the Physics of Complex Systems Dresden. He gained a fellowship of the Alexander von Humboldt Foundation with a two-year research stay at the Universitat Politècnica de Catalunya, and since March 2009 has held a SULSA lectureship in Systems Biology at the University of Aberdeen.