

Young Scientists

Quantum information



Gerardo Adesso is Associate Professor at the University of Nottingham, where he focuses on the identification and quantification of quantum resources for efficient quantum information technology. He has also contributed significantly to the development of quantum information theory with Gaussian states of continuous variable systems.

Artificial vision models



Elissa Aminoff is Research Scientist at the Center for the Neural Basis of Cognition at Carnegie Mellon University. She uses neuroimaging methods to examine how high-level vision is resolved in the human mind and brain. She has applied artificial vision models to help explain the code used by the brain to process and represent the rich visual world in which we live.

Advanced materials



Osman M. Bakr is Associate Professor of Material Science and Engineering at the King Abdullah University of Science and Technology, Saudi Arabia, where he aims to fabricate advanced materials that promise to become building blocks for solar cells, batteries, photonic and opto-electronic devices.

Central nervous system drugs



Michael Bowen is Biomedical Research Fellow at the University of Sydney, where he applies cutting-edge cellular and pre-clinical research techniques to central nervous system drug discovery and drug development. Some of his most important work to date has been co-inventing a novel drug treatment for alcohol-use disorders and a novel series of compounds targeting social deficits in psychiatric and neurological disorders, such as autism.

New microscopy techniques



Julie Cairney is Professor of Materials Characterisation at the University of Sydney. She focuses on the relationship between the atomic scale structure and properties of materials, with an emphasis on the application and development of new microscopy techniques.

Malignant and immune cells



Kellie Charles is Senior Lecturer and Research Group Leader of the Cancer Therapeutics Research Group of the University of Sydney. She investigates the interactions between malignant and immune cells that regulate tumour progression in order to design and evaluate new cancer therapeutic agents.

Microbiome predictive models



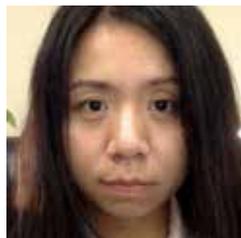
Cynthia Collins is Associate Professor at the Rensselaer Polytechnic Institute, where her research focuses on microbiome dynamics and behaviour and increasing the ability to understand and manipulate microbial communities in different environments, from the human body to bioreactors to the built environment. Her key insights into microbiomes are essential for addressing key societal issues, from obesity to early childhood development.

Bioenergetics



Karen Davies is Staff Scientist at the Lawrence Berkeley National Laboratory, where she focuses on the transformation of energy in living organisms. Davies is trying to understand the structure of cellular structures engaged in bioenergetic activities to gain insight into their functions. Her lab studies the biogenesis of bioenergetic compartments and how the structure of these specific areas changes in response to environmental conditions.

Genome editing



Ding Qiurong is Professor of Human Genetics and Metabolic Diseases at the Institute for Nutritional Sciences of the Chinese Academy of Sciences. Ding uses novel genetic findings and genome editing tools to develop new therapies for human metabolic diseases.

Emotional disorders



Amit Etkin is Assistant Professor of Psychiatry and Behavioral Science at Stanford University. His lab aims to understand the neural basis of emotional disorders and their treatment, and to leverage this knowledge to develop novel treatment interventions. Etkin also directs NeuroCircuit, an initiative that brings together various scientific fields to establish a new intellectual, scientific and clinical paradigm for understanding human brain circuits and treat psychiatric disease.

Medical image computing



Ben Glocker is Lecturer in Medical Image Computing at Imperial College London. His research is in biomedical image computing and medical computer vision, with a focus on semantic understanding of images using machine learning.

Chemical engineering



Gong Jinlong is Professor and Deputy Dean of the School of Chemical Engineering of Tianjin University, where he focuses on green synthesis. His research interests span catalysis and kinetics, surface science, materials science, micro and nanotechnology, and environmental engineering.

Optimized energy production



Gabriela Hug is Associate Professor of Information Technology and Electrical Engineering at ETH Zurich. She focuses on control and optimized operation of electric power systems, the variability and intermittency of renewable energy generation, and how to optimally integrate and use storage devices in the power system.

Cross-source information extraction



Ji Heng is Associate Professor at Rensselaer Polytechnic Institute. Her research focuses on cross-source information extraction on a massive scale. She aims to create the next generation of information access in which humans can communicate with computers in natural languages, beyond keyword search, and computers can discover accurate, concise and trustable information from these heterogeneous data sources.

Quantum-integrated photonics



Jin Xianmin is Professor and Founder of the Laboratory of Quantum Integrated Photonics at Shanghai Jiao Tong University. He is developing quantum-integrated photonics, an elegant way to find a solution to the limitation of the computational power of human beings. He is also leading a project on developing an on-chip quantum terminal, which, for the first time, would facilitate quantum communication that ensures the unconditional security of private communication.

Immunology



Nicole Joller is Assistant Professor at the Institute for Experimental Immunology at the University of Zurich, where she studies the mechanisms that lead the immune system's decision to initiate a harmful or beneficial response.

Digital interactions



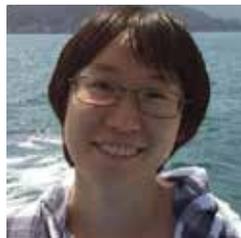
Yasuaki Kakehi is Associate Professor in the Faculty of Environment and Information Studies at Keio University, where he explores the interaction between new media, the environment and human beings. He is trying to bridge the physical world in which we exist with the digital world that is constructed by computers, developing interactive media and tools that affect the properties of physical materials.

Immunology



Sander Kasteren is Assistant Professor in the Faculty of Science at Leiden University, where he focuses on developing new chemical tricks to study and manipulate the immune system. His research may well contribute to the development of more effective vaccines against cancer as he researches whether some sugar patterns activate the immune system against cancer better than others.

Robot automated navigation



Kim Ayoung is Assistant Professor of Robotics at the Korea Advanced Institute of Science and Technology (KAIST), where she researches robot perception and automated navigation. To achieve robots' full autonomous mobility, she focuses on localization and mapping.

Human microbiome



Rob Knight is Associate Professor of Chemistry, Biochemistry and Computer Science at the University of Colorado, Boulder, where he focuses on genomics, molecular evolution and the microbiome. He researches how the human microbiome develops and how variation in the microbiome affects health and disease. His research combines computational and experimental techniques to ask questions about the evolution of the composition of biomolecules, genomes and communities.

Brain circuits



Lee Seung-Hee is Assistant Professor of Neuroscience at the Korea Advanced Institute of Science and Technology, where she leads a research group to unravel brain circuits that are critical for dynamic modulation and processing of sensory information in the brain. She also focuses on molecular, cellular and behavioural neuroscience.

Nano-engineering



Darren Lipomi is Assistant Professor of Nano-Engineering at the University of California, San Diego. He researches the mechanical properties of semiconducting polymers, the design and synthesis of stretchable semiconductors, green nanofabrication, green chemistry and organic photovoltaics. Lipomi has also conducted work on electronic skin.

Ocean preservation



Kristen Marhaver is Marine Biologist at the Caribbean Research and Management of Biodiversity Research Station, where she is developing assisted reproduction methods for threatened coral species. Marhaver strives to raise awareness on marine biology and research needs for ocean preservation.

Tuberculosis



Jackson Mohlopheni Marakalala is Senior Lecturer and Group Leader at the University of Cape Town. His research focuses on molecules that can inhibit growth of tuberculosis-causing bacteria by targeting particular genes of the bacteria.

Sugar assembly



Jenny Mortimer is Director of Plant Systems Biology at the Joint BioEnergy Institute of the Lawrence Berkeley National Laboratory. Her research focuses on the mechanisms that drive sugar assembly, which is one of the fundamental building blocks of life that can cause serious pathologies when the process goes wrong in an organism. Mortimer studies how these processes are regulated, which is also essential to engineer biomass and produce the fuels and materials that we will require in the future.

Ocean conservation



Mei Lin Neo is a Research Fellow at the Tropical Marine Science Institute of the National University of Singapore, where she studies a group of critically endangered marine species, the giant clams, which play a significant role in the coral reef ecosystems as providers of food, shelter and calcium. Her study provides key information to support a giant clam restocking programme, as well as help designate conservation priorities for local populations.

Epidemiology



Tolu Oni is Senior Lecturer in the Division of Public Health Medicine of the School of Public Health at the University of Cape Town. Her research focuses on epidemiology, tuberculosis diagnostics, treatment, co-infections and associated diseases, as well as changing patterns of disease in Africa.

Large-scale applications



Amanda Randles is Assistant Professor in Biomedical Engineering at Duke University. Her work focuses on the design of large-scale parallel applications targeting problems in areas like physics, medicine or communication. Her research goals are to investigate fundamental questions related to fluid dynamics and to extend the multiscale models developed in her thesis to study cancer metastasis.

Biological systems



Ozgur Sahin is Associate Professor in the Department of Biological Sciences and Department of Physics at Columbia University. His research investigates biological systems that function under physical extremes like short timescales, confinement to nanoscale regions of space and high mechanical forces. He encounters interesting phenomena in these biological systems that he applies to medical, environmental and energy-related problems.

Advanced material systems



Johnson Samuel is Assistant Professor of Mechanical Aerospace and Nuclear Engineering at the Rensselaer Polytechnic Institute. His research aims to achieve a fundamental understanding of the manufacturability of advanced material systems, with an eye towards the design and realization of products for societal needs. Samuel has a decade of research experience in areas spanning advanced composites, additive manufacturing, and materials and manufacturing for healthcare.

Speech-processing technology



Björn Schuller is Reader at Imperial College London, where he focuses on speech-processing technology. He uses novel techniques for multitask and semi-supervised learning to deliver intelligent, holistic and evolving analysis in real-life conditions of universal speaker characteristics.

Sensory computation



Gregory Schwartz is Principal Investigator at Northwestern University, where he focuses on the circuit mechanisms underlying sensory computation. He uses mouse retina to uncover new circuits and discover their role in visual processing. Schwartz's method includes electrophysiology, computational modelling and circuit tracing.

Quantum information protocols



Fabio Sciarrino is Associate Professor in the Physics Department at Sapienza University, Rome. His research has been devoted mainly to the experimental realization of quantum information protocols by exploiting the methods of quantum optics. He has developed innovative experimental techniques based on non-linear optics, ultra-fast lasers and detection methods, as well as on new theoretical insights.

Psycholinguistics



Mahesh Srinivasan is Assistant Professor in the Department of Psychology at the University of California, Berkeley. Using empirical methods from developmental psychology and psycholinguistics, his lab's research explores how linguistic, cognitive and social abilities arise and interact with one another during human development and across different cultures.

Protein profiling



Shi Qihui is Professor at the Shanghai Center for Systems Biomedicine and School of Biomedical Engineering of Shanghai Jiao Tong University. He has developed automatic, microfluidic-based, single-cell proteomic chips (SCPCs) for quantitatively profiling tens of proteins associated with multiple signal transduction pathways in a single tumour or immune cells.

Planetary spectrometry



Gabrielle Thomas is Research Associate at Imperial College London, where she works on lab-based spectrometry technique to understand the chemical composition and structure of matter. She is applying spectrometry to a planetary scale for remote monitoring and better land management, and to support government and humanitarian efforts to manage and conserve resources across the globe.

Embryonic development



Maria Elena Torres Padilla is Group Leader and Director at the University of Strasbourg, where she is devoted to understanding how the structure of the chromatin is established at the beginning of embryonic development and how it supports totipotency. Her work will provide new insight into the biology of the pluripotent stem cells, in particular their origin and development.

Computational medicine



Kirill Veselkov is Lecturer in Computational Medicine at Imperial College London. He is an expert in computational medicine and is committed to developing and validating translational computational solutions for application in human disease personalization. The techniques developed by Veselkov and his team could have major implications for next-generation cancer diagnostic, prognostic and therapeutic approaches.

Epigenetics



Wang Yan is Professor of the School of Basic Medicine at Tianjin Medical University. Her research interests range from breast cancer cells to neurodegeneration to epigenetic control. She is an awardee of the Tianjin Innovation Program.

Technology education



Komminist Weldermariam is Manager and Research Scientist at IBM Research Africa. He is an expert in software systems, security and education technologies and focuses on creating innovative solutions that impact lives. He is developing evidence-based solutions that aim to transform education in Africa by individualizing its delivery to each child.

Biomass waste transformation



Ning Yan is Assistant Professor and Leader of the Green Catalysis Lab at the National University of Singapore. He works on the development of efficient and atom-economic processes converting various biomass wastes into platform chemicals and fuels in environmentally benign solvents such as water.

Brain-machine interfaces



Byron Yu is an Associate Professor of Electrical and Computer Engineering and Biomedical Engineering at Carnegie Mellon University. He is a leader in the field of brain-machine interfaces (BMI), designed to help paralysed patients and amputees regain movement. He uses BMI to study how the brain changes during learning and how learning can be accelerated.

Opto-electronics



Yu Kyoungsik is Associate Professor at the School of Electrical Engineering of the Korea Advanced Institute of Science and Technology (KAIST). He focuses on integrated opto-electronic devices and systems for generation, manipulation and acquisition of optical and electromagnetic signals. His research is meant to enable innovations in many aspects of information technologies.
