Agilent

Our Future Leaders in Science & Technology

Agilent's Early Career Professor Award Program Celebrates 10 Years

10 YEARS
2009-2019

The Agilent Early Career Professor Award Program recognizes–and supports–promising research from professors who are in the early stages of their careers. With 2019 being the 10 Year Anniversary of the program, we caught up with several of the recipients, to see what they had to say about the program and how it has helped further their research.

Past Recipients

2018 **Christoph Thaiss**
University of Pennsylvania, Philadelphia, PA

2017 **Gary Patti**
Washington University in St. Louis, St. Louis, MO

2016 **Roeland Verhaak**
The Jackson Laboratory for Genomic Medicine, Farmington, CT

2015 **Mitchell Guttman**
California Institute of Technology, Pasadena, CA

2014 **Paul Blainey**
The Broad Institute of MIT & Harvard, Cambridge, MA

2013 **Jindan Yu**
Northwestern University, Chicago, IL

2012 **Anthony Mittermaier**
McGill University, Montreal, Quebec, Canada

2011 **Michael Jewett**
Northwestern University, Evanston, IL

2010 **Michelle Chang**
University of California at Berkeley, Berkeley, CA

2009 **Boris Murmann**
Stanford University, Stanford, CA

"We initiated the Agilent Early Career Professor Award in 2009 as a way to foster the outstanding research being done by professors who, early in their careers, were already enabling science and technology of importance, not only to Agilent, but to the world."

– Darlene Solomon, Ph.D.
Chief Technology Officer at Agilent

Christoph Thaiss 2018 Recipient

Assistant Professor of Microbiology, Perelman School of Medicine, University of Pennsylvania, Philadelphia

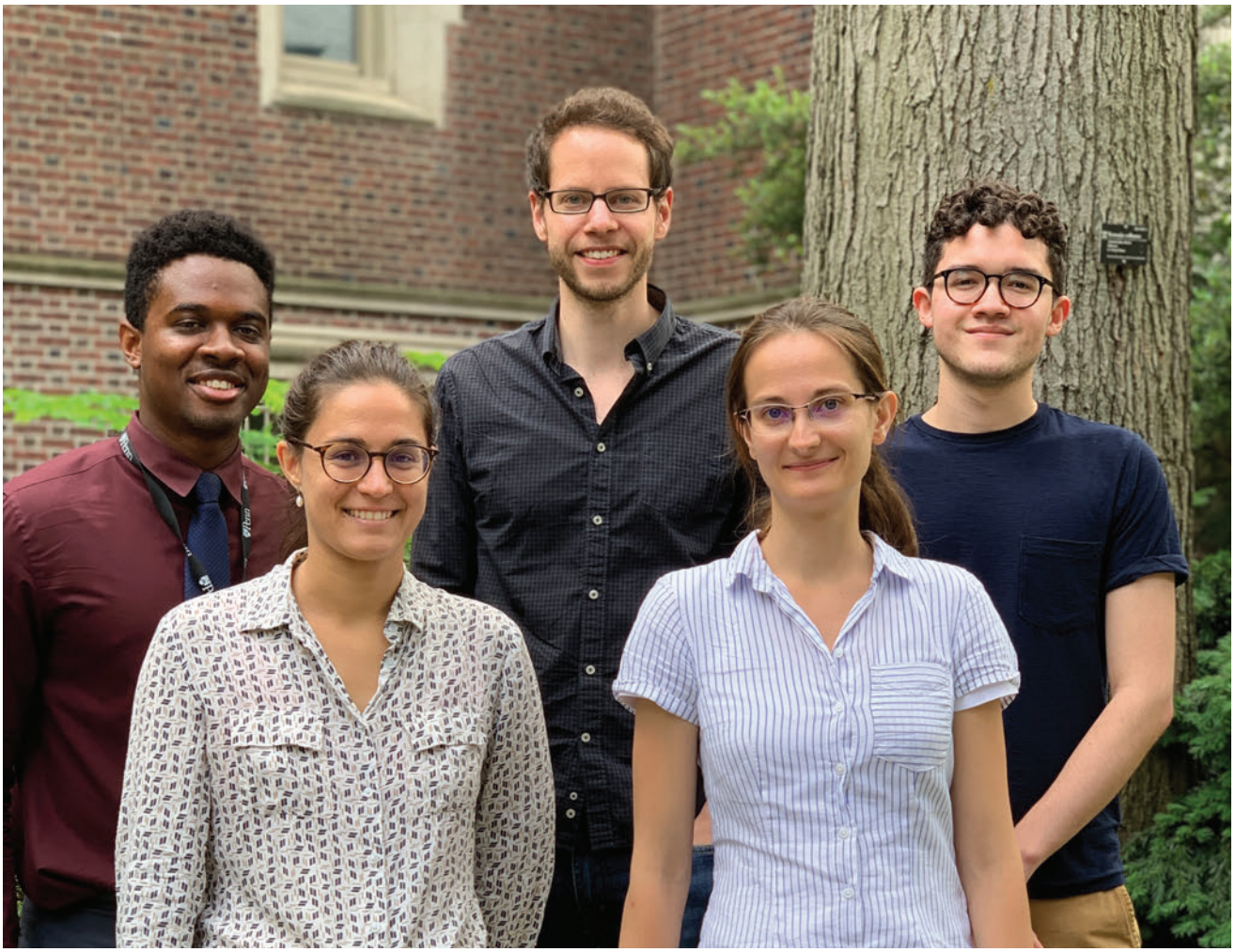
Research focus: Human microbiome, host-environment interactions in metabolic and infl ammatory diseases.

"Almost two decades after the completion of the Human Genome Project, we have come to the realization that many of the major human diseases are strongly shaped by environmental exposure, but the mechanisms are in most cases unknown.

"My lab studies how environmental factors shape our individual propensity for disease. In particular, we focus on the community of microbes, collectively called the microbiome, that colonize the human organism.

"The technology platforms we were able to assemble with the help of the award from Agilent now serve as catalyzers for numerous projects in the lab that explore the interface between the outside and the inside the human body.

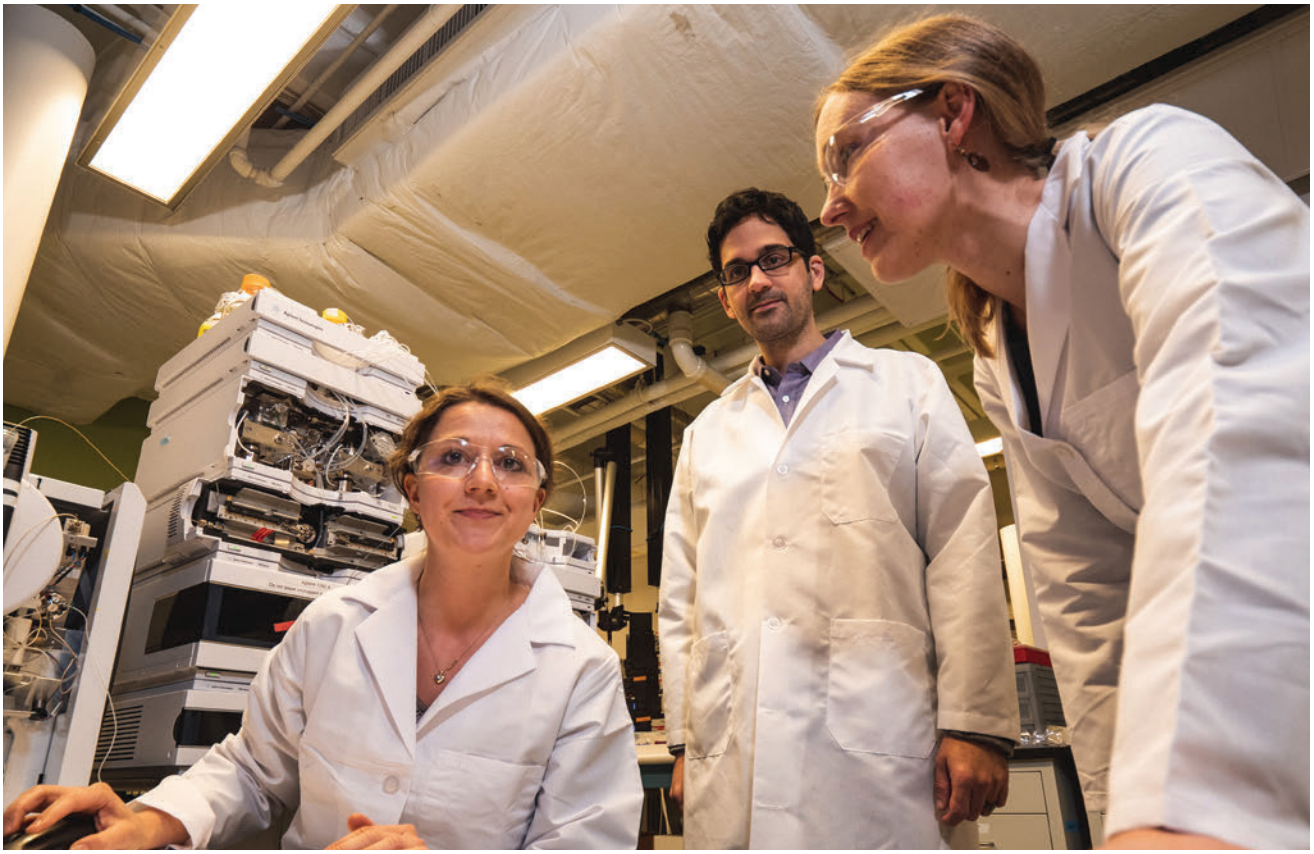
"A particular aspect of host/environment interactions we are fascinated by involves the circadian rhythms of the human organism. Disruption of the circadian clock, a hallmark of modern life, has been linked to many diseases, including obesity, neurodegeneration, and inflammation. We are especially interested in circadian rhythms of the microbiome, and how these serve as a mediator between environmental and host circadian rhythms."



Christoph Thaiss (third from left) and his team

Gary Patti 2017 Recipient

Michael and Tana Powell Professor of Chemistry, Arts and Sciences, Washington University in St. Louis, St. Louis, Missouri



Gary Patti (middle) and his team

Research focus: Detection of nucleic acids, proteins, or other biomolecules in the context of Liquid Biopsy and its utilization for early detection, characterization, and surveillance of cancer and other diseases and conditions.

"In metabolomics, we measure small molecules at a comprehensive scale from biological samples. When performed with mass spectrometry, metabolomics enables metabolism to be assessed with unprecedented chemical resolution from exceedingly small amounts of material. Our goal is to apply metabolomics to better understand cancer, hopefully leading to the development of better diagnostic markers and drug targets.

"My laboratory is interested in how cancer cells reprogram their metabolism to support rapid cell growth.

"The award from Agilent has helped us transition to human metabolomic studies of cancer. Although these data sets are much more complex to interpret, in collaboration with Agilent, we have been developing innovative strategies to address the associated experimental challenges.

"We have a long way to go before we understand the metabolic complexities of cancer. Not only is cancer metabolism unique, but there is compelling evidence that it changes depending on environmental factors such as diet. An exciting challenge will be comprehensively assessing the influence of the environment on cancer."

Roeland Verhaak 2016 Recipient

Professor and Associate Director of Computational Biology, The Jackson Laboratory for Genomic Medicine, Farmington, Connecticut

Research focus: Advancing Big Data technologies aimed at making breakthroughs in life science research and imaging for clinical diagnostics.

"By generating and analyzing large sequencing datasets from glioma tumors, we have gained a better understanding of how to optimally classify patients with a glioma. We have also made substantial new contributions through longitudinal profiling of gliomas that have helped us understand the evolutionary patterns of this disease.

"The award from Agilent enabled us to perform whole-genome sequencing of many glioma samples, both from human as well as canine patient tumors.

"More recently, our lab has shown that the presence of oncogene carrying extrachromosomal elements drives rapid intratumoral heterogeneity development. We are now exploring the mechanisms that create and replicate extrachromosomal DNA, in order to understand whether depleting extrachromosomal DNA could slow cancer cell growth.

"Eventually we would love to perform genome-wide loss of function, and gain of function screens across a large panel of cancer cell lines, with the readout being the frequency and distribution of extrachromosomal DNA elements."

Mitchell Guttman 2015 Recipient

Assistant Professor, Division of Biology and Biological Engineering, California Institute of Technology, Pasadena, California

Research focus: CRISPR/Cas or other RNA-based technologies for genome editing, control, and other applications.

"My research is a quest to understand RNA-based genetic engineering and control of gene regulation. The award from Agilent enabled us to take bigger risks—and yield bigger returns.

"The award also provided a collaborative opportunity to engage with Agilent Labs, learn about their cutting-edge technologies, and engage with their scientists to utilize their tools within our research. Because of this support, we were able to get access to new tools to start to characterize where in the genome various RNAs can localize and what proteins they bind to.

"Our research led to key discoveries that demonstrated the critical role for noncoding RNAs in shaping higher-order 3-D structure and spatial organization of RNA, DNA, and protein within the nucleus.

"Because of these discoveries, we have started several new projects to try to understand how RNA can establish such nuclear structures and what role these nuclear bodies play in controlling gene regulation.

"We are trying to understand how RNA dynamically remodels nuclear architecture and the unique roles that these structural changes play in kinetic control of various aspects of transcriptional and posttranscriptional control."

Paul Blainey 2014 Recipient

Associate Professor, Department of Biological Engineering, Massachusetts Institute of Technology; Core Member, Broad Institute of MIT and Harvard; Extramural Affiliate, The Koch Institute for Integrative Cancer Research at MIT, Cambridge, Massachusetts

Research focus: Advancing single-cell measurement technologies for investigating molecular properties and dynamics in populations of cells.

"We have developed, applied, and reported a number of innovative single-cell analysis methods. The award from Agilent provided equipment that supported many projects in the lab.

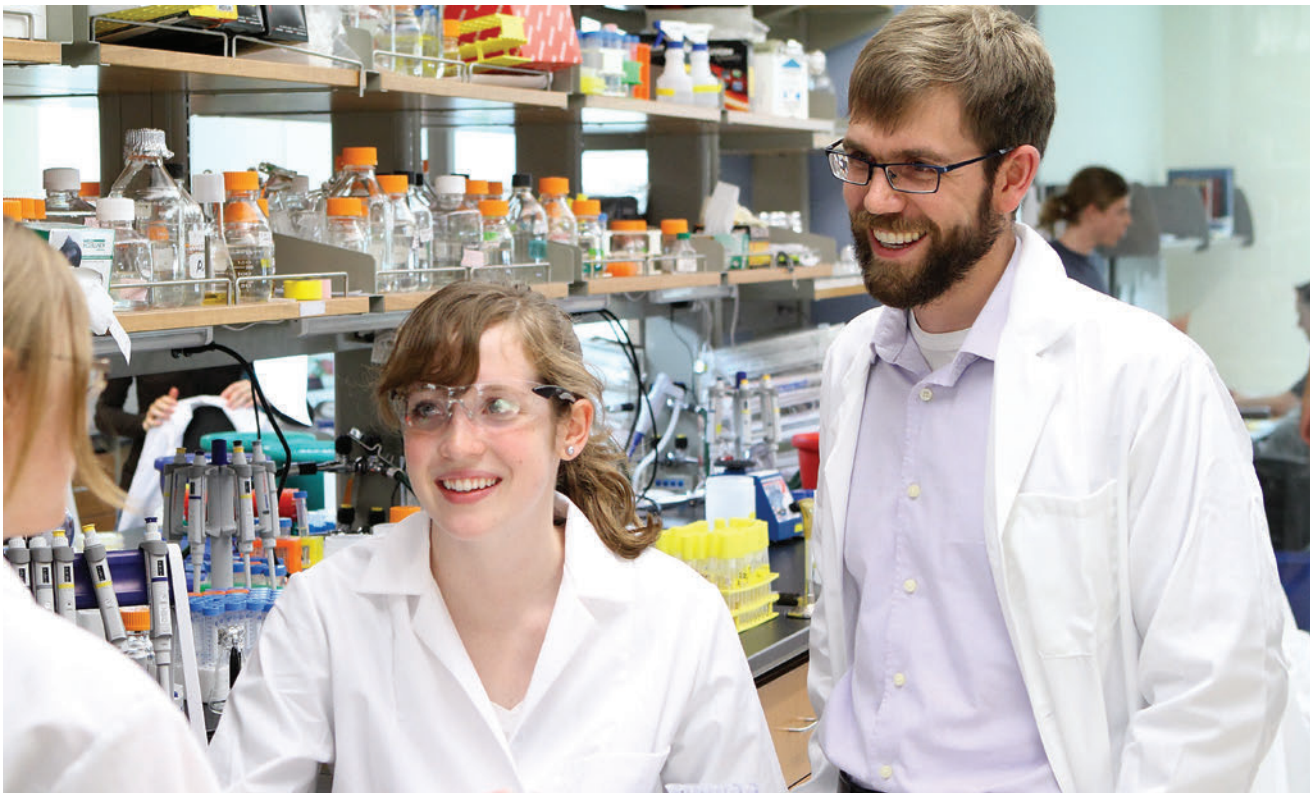
"Next, we want to translate the technologies that we have developed for application in the life sciences and biomedicine. We are also starting to invest effort in the next major technology advances.

"We would also like to amplify our impact by turning the laboratory technologies we have developed into tools that any researcher can use."

Paul Blainey (front row, fifth from the left) and his team

Michael Jewett 2011 Recipient

Charles Deering McCormick Professor of Teaching Excellence, Professor of Chemical and Biological Engineering, and co-director of the Center for Synthetic Biology, Northwestern University, Evanston, Illinois



Michael Jewett and his team

Research focus: Integrated biology, including the individual 'omics (genomics, proteomics, metabolomics, etc.).

"One of the amazing aspects of the award from Agilent was the ability to explore new directions of research that might be considered too risky by some government funding agencies. As a result, our research has enabled key advances in cell-free biotechnology that have brought this approach to the forefront of synthetic biology.

"The award jump-started our efforts to repurpose ribosomes to expand the range of genetically encoded chemistry into proteins and polymers. Moreover, we began an area of research that uses crude extract-based cell-free systems, instead of purified enzymes, to expand the traditional model of metabolic engineering. This work is beginning to accelerate design-build-test cycles for industrial biotechnology.

"We are now focused on developing cell-free synthetic biology approaches for portable, on-demand biomanufacturing, molecular sensing, and education.

"Some areas that currently have my attention are addressing rising antibiotic resistance, enabling new paradigms to make medicines in resource limited settings, facilitating a sustainable future, and educating and inspiring the next generation of biological engineers."

Michelle Chang 2010 Recipient

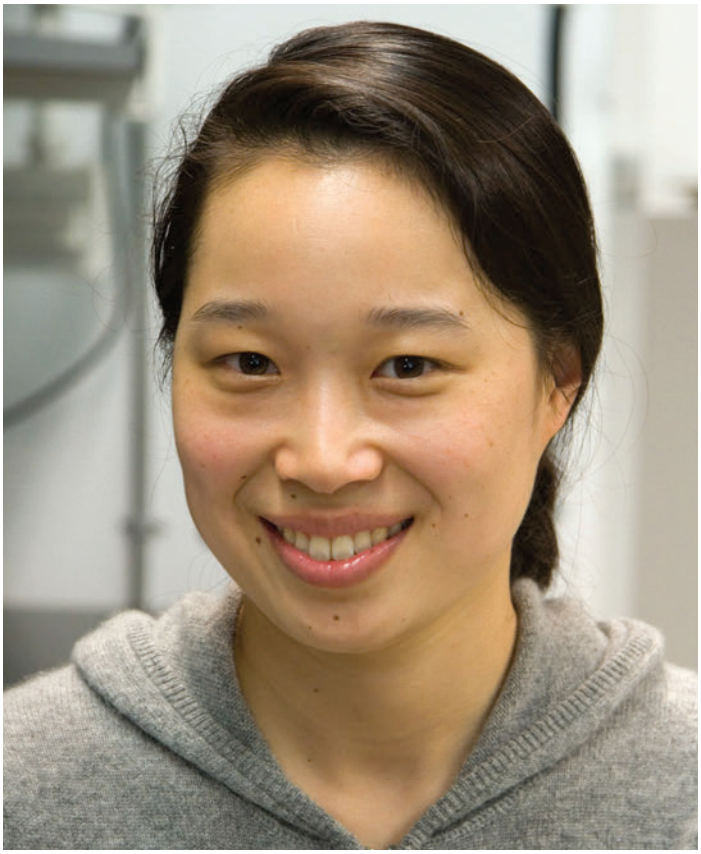
Professor of Chemistry, University of California at Berkeley, Berkeley, California

Research focus: Integrated biology, including the individual 'omics (genomics, proteomics, metabolomics).

"The focus of our research is synthetic biology and engineering microbes for the production of biofuels, and we are studying their metabolism to understand how carbon flow is controlled.

"Receiving the award from Agilent was transformative as it really helped us get this project off the ground. We have since developed methods to use genetic selections to evolve carbon flux and achieve near quantitative yields of our product targets.

"Right now, we are still focused on gaining a molecular picture of how to control carbon flow. We are also really excited about using metabolomics for the discovery of new enzymes and pathways."



Agilent is committed to actively supporting higher education and research around the world. The AECPA program enables us to engage with amazing young scientists early in their careers, and help them move forward with their innovative and original research. Since their selection, we are proud to have seen program awardees receive additional significant recognitions, major grants, and be promoted in their academic careers.

"The substantial, original contributions of these young scientists so early in their careers is inspiring and humbling. We look with admiration and appreciation at the high achievement and rapid advancement of the recipients of the AECPA, and hope that our technical staff, products, and the award have helped them along the way."

– Jack Wenstrand, Ph.D.
Director of University Relations and External Research at Agilent

"This is a very exciting program, as the award focus is changed every year to address important nascent research fields. We are privileged to review forward-looking and impactful proposals from top young professors, and proud to help advance their careers as well as to build long-lasting relations with them."

– Leo Brizuela, Ph.D.
Associate Director, University Relations and External Research at Agilent, Agilent Early Career Professor Award Program Manager

To learn more about the Agilent Early Career Professor Award program visit:
www.agilent.com/univ_relation/profaward