



THE  
PAUL G. ALLEN  
FRONTIERS GROUP

## ALLEN DISTINGUISHED INVESTIGATORS

The Allen Distinguished Investigator program supports early-stage research with the potential to reinvent entire fields. With grants between \$1 million and \$1.5 million to individuals and scientific teams, we provide these Distinguished Investigators with enough funds to produce momentum in their respective fields.

Allen Distinguished Investigators are passionate thought leaders, explorers and innovators who seek world-changing breakthroughs. Their ideas are transformative and their scientific insights are game-changing.

Allen Distinguished Investigators may range from senior investigators to junior scientists. What the Investigators share is a pioneering spirit, the ability to imagine possible futures of science, and the ability to create new ways of thinking to share with the world.

Talent is everywhere. The Allen Distinguished Investigators may come from small universities or large institutions, cities or towns across the world. We explore the landscape of bioscience to fund distinguished leaders who will make a difference.

### 2018

**Chenghua Gu, Ph.D.**, *Harvard Medical School*  
"Brain vasculature at the neuro-immune interface"

**Baljit S. Khakh, Ph.D.**, *University of California, Los Angeles*  
"Unmasking and Exploiting Astrocyte Biology"

**Marc Kirschner, Ph.D.**, *Harvard Medical School*  
"Reverse Engineering of Biological Circuits Underlying Aging and Development"

**Clodagh O'Shea, Ph.D.**, *Salk Institute for Biological Studies*  
"Assembling DNA into chromatin"

**Michael Rosen, Ph.D.**, *The University of Texas Southwestern Medical Center*  
"Nuclear Organization Through Phase Separation: Mechanisms, Functions and Disease"

**Christian Steidl, M.D.**, *BC Cancer Research Centre and the University of British Columbia*  
"The microenvironment architecture and ecosystem of Hodgkin lymphoma at single cell resolution"

**Matthias Stephan, M.D., Ph.D.**, *Fred Hutchinson Cancer Research Center and the University of Washington*  
Cutting across discipline boundaries: Bioengineering meets T-cell therapy

**Henrique Veiga-Fernandes, D.V.M., Ph.D.**, *Champalimaud Foundation*  
"Deciphering peripheral neuroimmune architecture by intercellular labelling"

**David Weinstock, M.D.**, *Dana-Farber Cancer Institute*, and  
**Scott Manalis, Ph.D.**, *Massachusetts Institute of Technology*  
"Defining Vulnerabilities of Minimal Residual Disease"

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## 2017

**Suneel Apte, M.B.B.S., D. Phil.,** *Cleveland Clinic Lerner Research Institute*

"Forward and reverse degradomics of cardiovascular extracellular matrix"

**Fei Chen, Ph.D.,** *Broad Institute,* and **Jason Buenrostro, Ph.D.,** *Broad Institute and Harvard University*

"Multi-modal Visualization of the Dynamic Epigenome"

**Jan Ellenberg, Ph.D.,** *European Molecular Biology Laboratory,* and **Ralf Jungmann, Ph.D.,** *Max Planck Institute of Biochemistry & LMU Munich*

"Systematic mapping of epigenetic marks to the 3D architecture of the human genome in single cells"

**Charles A. Gersbach, Ph.D.,** *Duke University*

"Epigenome Editing Technologies for Cell Programming"

**Jeffrey Holmes, M.D., Ph.D.,** *University of Virginia*

"Information Storage and Retrieval in the Cardiac Extracellular Matrix"

**Steve Horvath, Ph.D.,** *University of California, Los Angeles*

"Universal Epigenetic Aging Clock for Vertebrates"

**Rachel Whitaker, Ph.D.,** *University of Illinois Urbana-Champaign*

"Microbial Evolution Through Viral Gene Flow in Natural Populations"

## 2016

**Ethan Bier, Ph.D.,** *University of California, San Diego*

"Biological Innovation and Active Genetics"

**James J. Collins, Ph.D.,** *Massachusetts Institute of Technology*

"Synthetic biology approaches to antimicrobial resistance"

**Jennifer Doudna, Ph.D.,** *University of California, Berkeley*

"Anti-viral Machinery and Cell Editing Platforms"

**Bassem Hassan, Ph.D.,** *Institut du Cerveau et de la Moelle épinière (ICM)*

"How developmental noise in neural circuit development determines the unique behavior of individuals"

## 2015: Alzheimer's Disease

**Fred "Rusty" Gage, Ph.D.,** *Salk Institute for Biological Studies*

"Human age-equivalent directly induced neurons to study functional phenotypes of Alzheimer's disease"

**Jeffrey Iliff, Ph.D. and William Rooney, Ph.D.,** *Oregon Health and Science University*

"Mapping glymphatic pathway function in the human brain: Detecting glio-vascular changes that slow amyloid  $\beta$  clearance from the aging brain"

## 2015: Alzheimer's Disease (cont'd)

**Martin Kampmann, Ph.D., Michael Keiser, Ph.D. and David**

**Kokel, Ph.D.,** *University of California, San Francisco*

"Systematic elucidation of cellular networks controlling proteinopathy in Alzheimer's disease"

**Aimee Kao, Ph.D.,** *University of California, San Francisco*

"Dysregulation of pH dynamics in Alzheimer Disease Pathogenesis"

**Ragnhildur Thóra Káradóttir, Ph.D.,** *University of Cambridge*

"Resolving white matter dysfunction in Alzheimer's disease with novel biosensors"

## 2015: Neuronal Maturation

**Daniel Geschwind, Ph.D. and Steve Horvath, Ph.D.,** *University of California, Los Angeles*

"Transcriptomic and epigenetic acceleration of neuronal maturation and aging"

**William Lowry, Ph.D. and Kathrin Plath, Ph.D.,** *University of California, Los Angeles*

"Identifying and Inducing Hallmarks of Maturity in Human Neurons"

**Jeffrey Macklis, Ph.D.,** *Harvard University*

"'Flight Data' Recorder, Checkpoint Timing, Hodaptics, and Growth Cone Independence"

**Thomas Reh, Ph.D., Fred Rieke, Ph.D. and Rachel Wong, Ph.D.,** *University of Washington*

"Using miRNAs to Accelerate in vitro Circuit Maturation in 3D Neural Structures from ESCs"

**David Rowitch, Ph.D. and Erik Ullian, Ph.D.,** *University of California, San Francisco*

"Matching Regional Diversity with Function: Unique Astrocyte Signals Mature Regionally Matched Neurons"

**Feng Zhang, Ph.D.,** *Massachusetts Institute of Technology*

"Genome-Scale Technologies for Reverse-Engineering Transcriptional Logics Underlying Cell Fate Specification"

## 2014: Lineage Barcode

**Long Cai, Ph.D. and Michael Elowitz, Ph.D.,** *California Institute of Technology*

"Tracking cell fate decisions in single cells"

**Marshall Horwitz, Ph.D. and Jay Shendure, Ph.D.,** *University of Washington*

"Cell Lineage Defined by Mitotic Recombination"

**Neil Kelleher, Ph.D.,** *Northwestern University*

"Protein-Based Barcodes for Mapping B Cell Differentiation at High Resolution"

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## 2013: Cell Decision Making and Modeling

**Markus Covert, Ph.D.**, *Stanford University*  
"Towards Whole-Cell Models of Higher Organisms"

**Hana El-Samad, Ph.D.**, *University of California, San Francisco*  
"Untangling the Wires: an Integrated Framework for Probing Signal Encoding and Decoding in Cellular Circuits"

**Thierry Emonet, Ph.D.**, *Yale University*, **Tom Shimizu, Ph.D.**, *FOM Institute for Atomic and Molecular Physics (AMOLF)*, and **Steve Zucker, Ph.D.**, *Yale University*  
"Crowd Computing with Bacteria: Balancing Phenotypic Diversity and Coordinated Behavior"

**Jeff Gore, Ph.D.**, *Massachusetts Institute of Technology*  
"Microbial Studies of Cellular Decision-Making: Game Theory and the Evolutionary Origins of Cooperation"

**Suckjoon Jun, Ph.D.**, *University of California, San Diego*  
"Cell-Size Control and Its Evolution at the Single-Cell Level"

## 2013: Human Accelerated Regions

**Evan Eichler, Ph.D.**, *University of Washington*  
"Genetic Mutation of HARs and Human Neurocognition"

**Svante Pääbo, Ph.D.**, *Max Planck Institute for Evolutionary Anthropology*  
"Analysis of Positively Selected Genetic Changes Unique to Modern Humans"

**Christopher Walsh, Ph.D.**, *Boston Children's Hospital*  
"Molecular and Genetic Analysis of Human Brain Evolution"

## 2013: Medical Research

**Bruce Chabner, Ph.D.**, *Massachusetts General Hospital*  
"Redefining Lymphoma Characterization, Assessment, and Development of Protocols for Treatment"

**Adrienne Fairhall, Ph.D.**, **Chet Moritz, Ph.D.** and **Joshua Smith, Ph.D.**, *University of Washington*  
"Development of a Brain-Computer-Spinal Interface"

## 2010

**David Anderson, Ph.D.**, *California Institute of Technology*  
"Genetic Identification of Attack Neurons in the Mouse"

**Ed Boyden, Ph.D.**, *Massachusetts Institute of Technology*  
"Massively-Parallel, Three-Dimensional, Circuitwide Recording of Neural Activity"

**Michael Dickinson, Ph.D.**, *University of Washington*  
"Ethomics: A Technology-Driven Approach to Study the Genetic and Neural Basis of Behavior"

**Eric Klavins, Ph.D. and Jennifer Nemhauser, Ph.D.**, *University of Washington*  
"Reprogramming Cells with Plant-Derived Signaling Pathways"

**Christof Koch, Ph.D.**, *California Institute of Technology*  
"Evaluating Connectomes Using Measures of Complexity and Synergy"

**Mark Schnitzer, Ph.D.**, *Stanford University*  
"Massively Parallel Brain Imaging in Mouse Models of Human Brain Disease"

**Tony Zador, Ph.D.**, *Cold Spring Harbor Laboratory*  
"Sequencing the Connectome"