



marshall forum
on innovation
stanford university
june 30 2018

Welcome

Welcome to the 2018 Marshall Forum on Innovation, exploring the pipeline of scientific invention in fields such as health, biomedicine, genetics, and physics, that are of particular interest to the United States and the United Kingdom. The program spotlights radical innovation, as well as emerging challenges and opportunities in these fields, as they intersect with rapid advances in machine learning, artificial intelligence, and data science.

Thank you for joining us, and thank you also to our speakers, our host committee, and our partners at the UK Consulate in San Francisco and our hosts at Stanford University.

HOST COMMITTEE

*Edward Stolper Carla Shatz
Andrew Whittaker Carlos Bustamante
Shalini Bhutani Michelle Mello*

PROGRAMMING & PRESENTATION

The Association of Marshall Scholars

is an alumni organization for recipients of the Marshall Scholarship, fostering personal and professional connections, and endeavoring to strengthen the enduring bond between the United States and the United Kingdom.

Stanford University Bechtel International Center

British Consulate General San Francisco

SCHEDULE OF EVENTS | JUNE 29

6:00 PM	RECEPTION
7:00 PM	OPENING REMARKS <i>Her Majesty's Consul General to San Francisco, Andrew Whittaker</i>
	DINNER
8:00 PM	FIRESIDE CHAT ON INNOVATION <i>Reid Hoffman CBE Nancy Lublin</i>
9:00 PM	REMARKS <i>Christopher Fisher</i> MARSHALL MEDAL AWARDED <i>Reid Hoffman CBE, medal recipient</i>

SCHEDULE OF EVENTS | JUNE 30

8:00 AM	BREAKFAST & REGISTRATION
9:00 AM	WELCOME <i>Shalini Bhutani</i> OPENING REMARKS <i>Her Majesty's Consul General to San Francisco, Andrew Whittaker</i> INTRODUCTORY REMARKS <i>Dr. Carla Shatz</i>
9:25 AM	THE FUTURE OF HEALTHCARE: THE ROLE OF GENETICS & DATA SCIENCE <i>Dr. Carlos Bustamante (Moderator); Prof. Joanne Hackett; Sir John Chisholm; Dr. Joyce Tung</i>
10:30 AM	BREAK

SCHEDULE OF EVENTS | JUNE 30

- 10:45 AM INTRODUCTORY REMARKS
Dr. Edward Stolper
- 10:55 AM LIGO & THE DETECTION OF GRAVITATIONAL WAVES: GLOBAL SCIENCE, GLOBAL COLLABORATION
Dr. David Reitz in conversation with Dr. Roger Blandford
- 12:00 PM LUNCH
- 12:45 PM ROUNDTABLE DISCUSSION BREAKOUTS
See following pages for a full list of breakout sessions
- 2:00 PM THE DIGITAL REVOLUTION & THE STATE: THE GREAT REVERSAL
*Andrew Klaber (Introduction);
Bill Janeway CBE in conversation with Richard Waters*
- 2:45 PM THANK YOU & FORWARD LOOK
Dr. Nell Breyer
- SPEAKING PROGRAM CONCLUSION
- 3:00 PM WOMEN'S NETWORKING COFFEE
MARSHALL / STANFORD MINI BOOK FAIR
AMS ANNUAL MEETING
- 4:00 PM OPTIONAL TOUR
Steven Quake Laboratory
- 5:30 PM RECEPTION & MUSICAL PERFORMANCE
*Stanford Cantor Arts Center
Michael Poll, Madalyn Parnas*

BREAKOUT DISCUSSION SECTIONS

TABLE 1	Why are the Alzheimer's trials failing? <i>Dr. Carla Shatz</i>
TABLE 2	Innovation in Precision Trials, <i>Sir John Chisholm & Professor Joanne Hackett</i>
TABLE 3	Incubating a Biotech Startup: Lessons from Autophagy and Epigenetics, <i>Keith Dionne & Elizabeth Harmer Dionne</i>
TABLE 4	Reverse Innovation: Technology Making the World a Better Place, <i>Tom Lupfer & Dr. Geoff Tabin</i>
TABLE 5	Why Biotech VC is Different, <i>Bill Janeway</i>
TABLE 6	Legal & Ethical Considerations in Today's Digital Age, <i>The Honorable Elizabeth Laporte</i>
TABLE 7	The Future of Work: Data and Consumer Privacy, <i>Laura Lafave</i>
TABLE 8	Cyber Security & Crypto Ecosystem, <i>Roderick Jones</i>
TABLE 9	Accelerating Science with AI & the Internet of Things, <i>Sridhar Iyengar</i>
TABLE 10	Technology as Infrastructure: IOT Today & Beyond, <i>Corey Metzman & Luke Schoenfelder</i>
TABLE 11	Data Collection Doesn't Have to Be Creepy, <i>Mark Otuteye</i>
TABLE 12	Powering the Future of Learning with Cognitive Science & Artificial Intelligence, <i>Charles Seely</i>
TABLE 13	The Business of Medicine: Learning from Today's Biotech Startups, <i>Ambika Bumb</i>
TABLE 14	What Will Drug Development Look Like in 20 Years' Time? <i>Ross Breckenridge</i>
TABLE 15	Disruptive Innovation in Enterprise, <i>Julian Gay</i>
TABLE 16	A Vision for the Future: Human-Centered Leadership, <i>Mark M. Whelan</i>

FORUM SPEAKERS & FACILITATORS



Andrew Whittaker, *Her Majesty's Consul General to San Francisco* is responsible for the Northwestern United States. Since his arrival in 2016, he has worked to promote closer political, economic, trade, and cultural ties between this region and UK, in particular strengthening the business relationships among technology, cyber security, and aerospace. Prior to his current role, Andrew spent three years at CERT-UK (the UK's national cyber security team) as Deputy Director. He has also served in the Crisis Management Department and a variety of Foreign Office postings around the world.



Reid Hoffman CBE (1990), *Co-founder LinkedIn; Partner, Greylock* co-founded LinkedIn, the world's largest professional networking service. In 2009 he joined Greylock Partners. He serves on the boards of AirBnB, Coda, Convoy, Edmodo, Entrepreneur First, Gixo, Microsoft, and on not-for-profit boards, including Kiva, Endeavor, DoSomething. He hosts "Masters of Scale," an original podcast series, and is co-author of two New York Times best-selling books. His next book, focused on "blitzscaling", is based on his Stanford course of the same name.



Nancy Lublin (1993), *CEO, Crisis Text Line* is a social entrepreneur. At 23, Lublin turned a \$5,000 inheritance into Dress for Success, a global nonprofit. She took over as CEO of DoSomething.org in 2003, bringing the organization back from 250k debt in less than five months, and attracted more than 3.5 million members. During her 2013 TED Talk, Lublin launched Crisis Text Line, the world's first 24/7, free, text message-based support service for people facing a range of issues, from depression and substance abuse to eating disorders and physical abuse.



Christopher Fisher, *Chair, Marshall Aid Commemoration Commission* spent most of his career at Lazard, the City bank, latterly as a managing director. He subsequently worked at KPMG as vice chairman, corporate finance, and at Penfida, the corporate finance adviser to pension fund trustees, as a senior partner. On public bodies he has served as President of the Council of the University of Reading and as a member of the Trustee Board of the Imperial War Museum. In addition to his role with the Marshall Commission, he also oversees other UK government funding schemes.



Shalini Bhutani, *Executive Director, Bechtel Center, Stanford* is Executive Director of the Bechtel International Center, and Vice Provost of Student Affairs at Stanford University. She has a Ph.D. in Education from the University of Pennsylvania, and has worked in international education for over two decades. Her primary research focus has been immigration and its impact on women in the US. She is a founding member of SEWAA, an organization providing support services of women affected by domestic violence.



Dr. Carla Shatz (1969), *Director, Stanford Bio-X* is the Sapp Family Provostial Professor, Biology and Neurobiology. Her research examines how early developing brain circuits transform into adult connections during critical developmental periods. She has received numerous awards, including both the Gerard and the Gruber Prizes in Neuroscience. In 2016, she won the Champalimaud Vision Prize, and in 2018, the Harvey Prize in Science and Technology. She is a member of the American Academy of Arts and Sciences, and a Foreign Member of the Royal Society of London.



Dr. Carlos Bustamante (2001), *Stanford University* is an internationally recognized leader in the application of data science and genomics technology to problems in medicine, agriculture, and biology, and was named a MacArthur Fellow in 2010. He is currently Professor of Biomedical Data Science, Genetics, and (by courtesy) Biology at Stanford University. He is the Owner and President of CDB Consulting, LTD., and also a Director at Eden Roc Biotech. He is also the founder of Arc-Bio (formerly IdentifyGenomics and BigData Bio).

FORUM SPEAKERS & FACILITATORS


Professor Joanne Hackett, COO, Genomics England

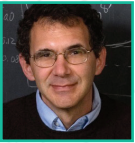
is the Chief Commercial Officer at Genomics England and lead member of the Business and Investment Committee. Training initially as a clinical academic in regenerative medicine, she has gone on to create and sell two companies to major multinationals, and has worked for organizations such as UCLPartners and Cambridge University Health Partners, where she has been able to translate academic research into medical and commercial returns.


Sir John Chisholm, Chairman, Genomics England

is a Cambridge graduate who started work in the automobile industry. His career took flight when he founded CAP Scientific Ltd, which grew rapidly. He was then asked by the government to take on the transformation of its defense research laboratories into a commercial organization. In due course these became an internationally successful technology services company and were floated on the LSE as QinetiQ Group plc of which Sir John became Chairman in 2006. He was knighted in 1999 and retired in 2010.


Dr. Joyce Tung, VP of Research, 23andme.com

joined 23andMe in 2007 and leads its research team, responsible for consumer health and ancestry research and development, academic and industry collaborations, computational analyses for therapeutics, and new research methods and tools development. While a postdoctoral fellow at Stanford University, Joyce studied the genetics of mouse and human pigmentation. She earned her Ph.D. in Genetics from the University of California, San Francisco, where she was a National Science Foundation graduate research fellow.


Dr. Edward Stolper (1974), Professor, California Institute of Technology

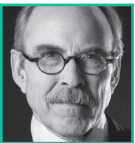
is an expert on igneous rocks (those formed when magma and lava cool and solidify) found on the Earth, Moon, Mars, and asteroids. He discovered several key relationships between the chemical composition of igneous rocks and how much they had melted. As a researcher with the Mars Curiosity Rover, Edward is providing fascinating insights into Mars's geology. His many awards include the Geochemical Society's 2012 V. M. Goldschmidt Medal, and he is often consulted by NASA.


Professor David Reitze, Executive Director, LIGO Laboratory

holds positions as the Executive Director of the LIGO Laboratory at Caltech and as a Professor of Physics at the University of Florida. He was jointly awarded the 2017 National Academy of Sciences Award for Scientific Discovery for his leadership role in LIGO. He is a member of the international LIGO Scientific Collaboration that received numerous awards for the detection of gravitational waves in 2015. Before joining Caltech in 2011, he served as the elected Spokesperson of the LIGO Scientific Collaboration from 2007-2011.


Roger Blandford, Director, Kavli Institute, Stanford University

took his BA, MA and PhD degrees at Cambridge University. Following postdoctoral research at Cambridge, Princeton and Berkeley he took up a faculty position at Caltech in 1976. In 2003, he moved to Stanford University to become the first Director of the Kavli Institute for Particle Astrophysics and Cosmology. His research interests include black hole astrophysics, cosmology, gravitational lensing, cosmic ray physics and compact stars. He is a Fellow of the Royal Society, and shared the 2016 Crafoord Prize for Astronomy.


Bill Janeway CBE (1965), Managing Director, Warburg Pincus

joined Warburg Pincus in 1988 and was responsible for building its information technology investment practice. He is co-founder of the Institute for New Economics Thinking and on the board of directors of the Social Science Research Council and the Fields Institute for Research in the Mathematical Sciences. He is an affiliate faculty member in Economics at Cambridge, and the author of *Doing Capitalism in the Innovation Economy: Reconfiguring the Three-Player Game between Markets, Speculators and the State*.

FORUM SPEAKERS & FACILITATORS

**Richard Waters, *West Coast Editor, Financial Times***

is the *Financial Times'* West Coast editor, based in San Francisco. He leads a team of writers focused on tech in Silicon Valley. He also writes widely about the tech industry, and the uses - and impact - of technology. Current areas of interest include artificial intelligence, and the growing power of the leading US tech platforms. His previous positions at the FT include various finance beats in London, New York bureau chief, and technology media and telecoms editor, also based in New York.

**Keith Dionne, *CEO, Casma Therapeutics***

is Founder and CEO of Casma Therapeutics, a bio-technology company which focuses on autophagy, the process by which cells break down and recycle proteins. Most recently, he was president and CEO of Constellation Pharmaceuticals, an oncology focused epigenetics company. Keith received both his Ph.D. in chemical engineering and his M.S. in the program for technology policy from the Massachusetts Institute of Technology.

**Elizabeth Harmer Dionne (1992), *Attorney, MA Advocates for Children***

currently works as a pro bono attorney at Massachusetts Advocates for Children, where she represents low-income children with special needs. She was previously an associate in the real estate practice group of Goodwin Procter, LLP, and the business practice group of Testa, Hurwitz & Thibault, LLP. She has taught political science at both Boston College and Wellesley College and previously sat on the Governor's Advisory Committee for Women's Issues.

**Tom Lupfer (1979), *President & Founder, Clarity Design***

was a 1979 Marshall Scholar at St. Catherine's College, Oxford, where he obtained his MA in Engineering and Economics. Tom is the founder and president of Clarity Design, a product development and manufacturing firm. Clarity Design provides engineering resources to the Himalayan Cataract Project and the Clear Blue Sea organization. Tom is also a Professor of Practice at the University of San Diego. Tom holds seven patents with several more applications filed.

**Dr. Geoff Tabin (1978), *Founding Chair, Himalayan Cataract Project***

is an ophthalmologist who has been working to overcome global blindness. Geoff earned an MA in Philosophy at Oxford as a Marshall Scholar (1978-80) and was focused on the morality of global health care delivery when he then matriculated at Harvard Medical School. The Himalayan Cataract Project has since expanded beyond the Himalayas to encompass Sub-Saharan Africa as well. Dr. Tabin spends a considerable part of the year working abroad throughout the Himalayas and Sub-Saharan Africa.

**The Hon. Elizabeth Laporte (1975), *Magistrate, US District Court***

is a United States Magistrate Judge in the US District Court. Judge Laporte has served on the federal court for the Northern District of CA, which includes Silicon Valley, since 1998. She has presided over a variety of cases (including many involving high tech, as well as patent, trademark and copyright with the parties' consent), as well as settlement conferences and discovery disputes, and reviewed search warrants and other law enforcement tools to obtain digital information.

**Laura Lafave (1993), *Co-Founder & CTO, OnCorps***

was a 1993 Marshall Scholar at the University of Bristol, where she obtained her PhD in Computer Science. Formerly with Accenture and TransUnion, she is now the Chief Technology Officer and a co-founder of OnCorps, which helps companies drive employee performance improvement using adaptive digital guidance. She is a specialist in systems transformation and optimisation, including the replacement of large legacy IT systems.

FORUM SPEAKERS & FACILITATORS

**Roderick Jones, GBX & CEO, Rubica**

Roderick's background spans Scotland Yard, briefings for the White House, Downing Street and the Pentagon on a variety of national security topics. He founded the private security company Concentric Advisors, and served as CEO for seven years; it was the largest privately held security firm on the west coast of the US. He is also recognized as a leading expert in the field of family and executive security, and is widely consulted on next-generation security projects.

**Sridhar Iyengar (1995), CEO & Founder, Elemental Machines**

is the founder and CEO of Elemental Machines, makers of smart IoT products for the life sciences industry. He previously was a founder of Misfit, developing elegant wearable products (acquired by Fossil in 2015 for \$260M). Sridhar also founded AgaMatrix, a blood glucose monitoring company that made the world's first medical device connecting directly to the iPhone and shipped over six million glucose meters, in partnership with Apple, Sanofi, and Walgreens. Sridhar holds over 30 US and international patents.

**Corey Metzman (2012), Director of Partnerships & Business, Latch**

leads Latch's work with logistics companies and service partners as Latch grows the value of its infrastructure. Latch makes access easier for everyone at a modern building, combining decades of experience building the world's most trusted locks with decades of experience designing iconic technology products. Corey received his BS at the Wharton School at the University of Pennsylvania, as well as both an MSc at the London School of Economics and an Msc at Oxford University.

**Luke Schoenfelder (2012), Founder & CEO, Latch**

first pioneered Latch with co-founder Brian Jones following the 2010 earthquake in Haiti, where they were aiding rural electrification efforts. Teaming up with designer Thomas Meyerhoffer, Luke created Latch. After two years in stealth, the company debuted to great fanfare, with partnerships already in place with Apple and Walmart. This New York City based startup has \$26 million for its smart locks, used in high-end apartment buildings.

**Mark Otuteye (2006), CEO & Chief Product Officer, Leadboost**

is Founder and CEO at LeadBoost (leadboost.com), which provides powerful B2B lead generation services. Prior to running LeadBoost, Mark ran AES Connect, a consulting firm that provided social media consulting to major brands including Sephora, Harper Collins, and 2K Play. Mark began his career as an associate product manager intern at Google who launched a system for improving aspects of Google AdWords and Google Finance. He is a data guy and poet (and recovering Googler).

**Charles Seely, GBX, CEO, & Founder, Pensar**

is the CEO/Co-founder of Pensar, which powers the future of learning. He led investments and/or invested in 45+ early stage companies. Charles is a venture partner at Real Ventures, which is Canada's leading early stage venture capital firm. It was named Canadian Venture Capital Firm of the Year in both 2015 and again in 2016. He is also a Partner at SGH Capital, leading all US-based early stage investments at that firm.

**Dr. Ambika Bumb (2005), CEO & Founder, Bikanta**

is an expert in nanomedicine, the application of nanotechnology for medical diagnostics and treatment. Her endeavors in the areas of nanomedicine and diagnostics have led to multiple patents, publications, and the spin out of the biotech company Bikanta that is using nanodiamonds to allow academics and doctors to study and address disease at the cellular level. She has received much recognition for excellence in engineering and was profiled early in her career in *Nature* as a successful young scientist on the fast-track.

FORUM SPEAKERS & FACILITATORS



Ross Breckenridge, GBX & CMO, Silver Creek Pharmaceuticals

studied Medical Sciences at Cambridge University, then qualified in clinical medicine from Oxford University Medical School. He completed a PhD in cardiac development at the Wellcome/CRUK Institute at Cambridge and trained in Clinical Pharmacology at UCL, where he was previously a consultant physician and Director of the London Clinical Pharmacology Training Programme. Ross has 15 years experience as a consultant to investment funds. He also sits on the Board of Directors of REVA Medical Inc., San Diego.



Julian Gay, GBX, Founder, & CEO, Xendo, AppDirect

is a serial entrepreneur and angel investor focused on the enterprise sector and the future of work. He is a pragmatic technology and product strategist with international experience spanning startups and Global 100 companies. Formerly Founder and CTO of Filobite, Julian started out building Derivatives Trading Systems at Deutsche Bank; at HBS startup, ZEFER, he led key strategy and implementation projects for clients such as Charles Schwab.



Mark M. Whelan, CEO, Human-Centered Leaders

is the founder of Human Centered Leaders and Rapid Reasoning, LLC, where he employs a blend of data science and human-centered design to purposefully inspire leaders to thrive. Mark graduated with a Master's degree from the University of Nottingham, before attending Stanford's d.School. He is a fellow of the Royal Society of Arts, Manufacture, and Commerce, a member of GBx (a British Ambassador endorsed initiative) and a TED-ed trainer and an Amazon 5 star author of Social Media Bootcamp.

AMS LEADERSHIP



Andrew Klaber, President, Association of Marshall Scholars

is a partner at Paulson & Company, an investment management firm in New York. He graduated summa cum laude from Yale, received master's degrees in economic history and in financial economics from Oxford University in England, where he was a Marshall Scholar, and received both a law degree and an M.B.A. from Harvard. Mr. Klaber is a member of the Harvard Law School Visiting Committee, and is the president of the Association of Marshall Scholars.



Dr. Nell Breyer, Executive Director, Association of Marshall Scholars

has served as the Executive Director of the AMS since February of 2016. During that time, she has worked to raise the public profile of the AMS and has developed the fundraising and sustainable giving capacity of the organization substantially. Her efforts involve a growth in annual programming, in total giving, in public profile, and in fiscal and structural stability throughout the organization as a whole. Previously, she served as the Director of Education and Programming for the Edward M. Kennedy Institute of the United States Senate.

HONORARY PATRON



His Royal Highness, the Prince of Wales

has, since 1989, been the honorary patron of the Association of Marshall Scholars. Through the years, His Royal Highness developed a wide range of interests which are today reflected in The Prince of Wales's Charities, a group of not-for-profit organizations of which The Prince of Wales is Patron or President. These interests are also reflected in the list of more than 400 organizations of which His Royal Highness is Patron or President (of which the AMS is honored to be one).

PERFORMERS



Madalyn Parnas Moller (2012), violinist

has performed throughout the U.S., Europe, and Asia; recently with the L'Orchestre National des Pays de la Loire, the London Philharmonic Orchestra, the Albany Symphony, and the New York String Alumni Orchestra. She will be featured in the upcoming world premiere of composer Don Byrd's Violin Concerto. This season, she will appear as guest soloist in performances of the Sibelius Violin Concerto, and her current solo recording project with Aqua, an Argentinian/Latin American label, will be distributed by Naxos.



Michael Poll (2012), classical guitarist and conductor

is a classical guitarist and conductor who has performed across North America, South America, and Europe, including in Barbican Hall, Wigmore Hall, and the National Theatre of Panama. Poll's 2017-2018 season includes concerts for the Wilderness Festival with Yijia Zhang, the Bloomsbury festival, six engagements conducting the Goodensemble orchestra in London including a Gala Performance in honor of Queen Elizabeth II, and recitals in Boston, Washington, San Francisco, London, Philadelphia, and New York.

ACKNOWLEDGEMENTS

Anonymous Marshall Scholar

Joan Heckler Gillings

is the Foundation Director of the Transatlantic Forum for Education and Diplomacy, and is deeply committed to strengthening ties between the United States and the United Kingdom.



The Applied Humanities

is a creative consulting, design, and marketing/PR firm headquartered in Los Angeles. Established in 2014 by founder and CEO, Dr. Katie E. Clark (2005), they are pleased to create pro bono materials (including this program) on behalf of the AMS every year.



Association of
MARSHALL
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