CHURCHILL NEWS 2015

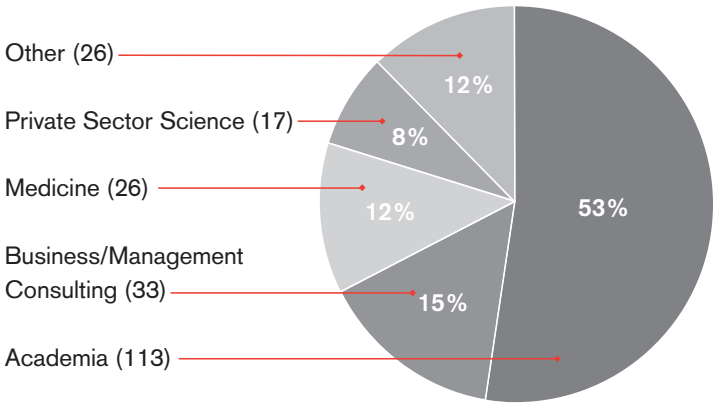
THE AUTUMN ISSUE

Newsletter of the
Winston Churchill Foundation
of the United States

THE RESULTS ARE IN!

Churchill Scholar Alumni Survey

CURRENT INDUSTRY OF CHURCHILL SCHOLAR ALUMNI



"Siri, what is the Churchill Scholarship?" I asked my phone.

"Here's what I found on the web for 'the Churchill scholarship':" it (she?) replied. What followed was a list of websites, first our own, then Honors Carolina (part of UNC-Chapel Hill's webpages), then our Wikipedia entry, and so on. What Siri did not tell me, but which emerged from the Foundation's recent alumni survey, is that a Churchill Scholar helped build the speech recognition software that makes Apple's Siri possible.

We are still working through the amazing information that has come out of the Foundation's most comprehensive survey ever conducted of its Scholarship recipients. Out of 447 surveys sent (either by mail or email) to all our known alumni, we received 216 responses. A near-50% response rate is far beyond our expectations and reflects a high level of dedication. We even received a number of emails, thanking the Foundation for conducting the survey and elaborating further on the impact that the Churchill Scholarship has had. Thank you to all those who participated. We always welcome further thoughts both from those who wrote a response and those who were not able to do it in time.

The survey was conducted by the Chicago-based firm Grenzebach, Glier and Associates (GG+A) and was funded through a generous grant from Board Member Warren B. Kanders. Our initial goal was to look at the career paths that people take

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INSIDE

CHURCHILL SCHOLARS 2015–2016

NAME:	HOMETOWN:	INSTITUTION:
James Eaglesham	Ithaca, New York	Cornell
Emily Erickson	Clarks Hill, Indiana	Purdue
Jesse Freeman	Bethesda, Maryland	Williams
Catherine Groschner	Corinth, Vermont	Carnegie Mellon
Daniel Kang	Fairfax, Virginia	MIT
Anne Marsden	Salt Lake City, Utah	University of Chicago
Sophie Miller	Greenwich, Connecticut	Stanford
Evan O'Dorney	Danville, California	Harvard
Edward Pang	Copley, Ohio	Northwestern
Maxwell Shinn	Chaska, Minnesota	University of Minnesota
Sandya Subramanian	Grand Rapids, Michigan	Johns Hopkins
Jonathan Timcheck	Pittsburgh, Pennsylvania	Ohio State
Hannah Wayment-Steele	Flagstaff, Arizona	Pomona
David Zoltowski	West Lafayette, Indiana	Michigan State

after receiving a Churchill Scholarship. We then broadened the survey and looked at the impact the Scholarship has had on our recipients, and the impact our recipients have had on our security and prosperity, which was Sir Winston Churchill's vision for the Foundation.

Siri has certainly added to our collective prosperity. We also learned that Churchill Scholars have literally rewritten medical textbooks to account for new discoveries and treatments. We learned that a Churchill Scholar helped patch the flaws in the healthcare.gov website. Other Scholars are working on global problems such as the energy supply and urban water supply. These are just some of the stories that GG+A has highlighted.

It is heartening to know that with such amazing achievements, 85% of our alumni say that the Churchill Scholarship was either important or extremely important for their career success.

What did we learn about the career paths of our alumni? Most of the respondents, 193 out of 216, have earned or are in the process of earning a doctorate of some kind (PhD, MD, JD). Just over half (113) remain in academia. This, in itself was a surprise, since it is commonly thought that the overwhelming majority of our alumni work in academia. We expected the number to be higher.

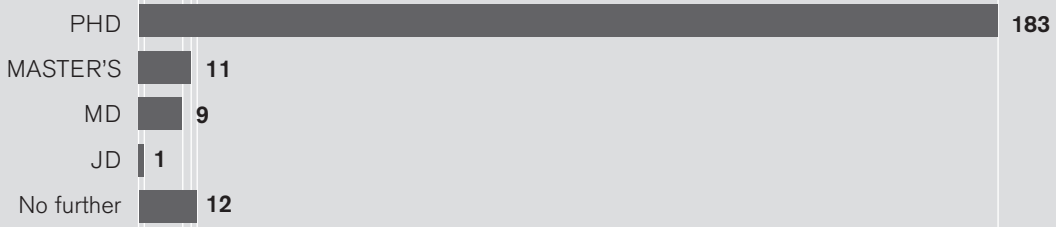
The next most common industries are business or management consulting, medicine, private-sector science, government, finance, and journalism. According to the survey report, "These categories, however, bely the complex careers of former scholars which often include starting companies, break-through medical and physical sciences research, negotiating two career households (the 'two body problem' in academia) and the fluid movement by scientists between academic research, government, and the private sector throughout their careers."

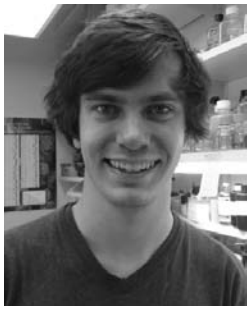
Despite these impacts, two-thirds of respondents felt that the Churchill Scholarship is under-rated in terms of its public perception. Raising the profile of the Churchill Scholarship, which can also serve as a powerful motivator for future applicants to start pursuing independent research early in their undergraduate years, is certainly a major focus of the Foundation moving forward.

We asked how former Churchill Scholars would like to become involved in the Foundation, and the most popular answer was to serve on the Selection Committee. Nearly 80% of respondents have not served on the Committee before, so it is safe to assume that we will have little problem finding six volunteers every year. The Selection Committee is comprised entirely of former Churchill Scholars and typically includes one mathematician, one engineer, one physicist, one chemist, and two life scientists. Former Scholars reading this, who have finished their PhD's and would like to serve, should contact the Foundation.

The second-most popular answer on engaging with the Foundation was occasional scholar retreats or reunions. We are looking to create regular reunions, so please look out for events, and let us know if you have an idea for a scholarly gathering. For those who wish to network with other Scholars, we invite you to join our LinkedIn group, Churchill Scholar Alumni.

HIGHEST DEGREE OBTAINED AFTER THE CHURCHILL SCHOLARSHIP





James Eaglesham
HOMETOWN
Ithaca, New York
INSTITUTION
Cornell (BS, Biological Sciences)
TO STUDY
MPhil, Virology, Department of Pathology

JAMES EAGLESHAM

The human norovirus is a leading cause of viral gastroenteritis, which poses significant global health challenges. James, this year's Gerschel Churchill Scholar, will work in the lab of Professor Ian Goodfellow to test antiviral drugs and develop antiviral therapies targeting this pathogen. Professor Goodfellow's lab has recently shown that the drug favipiravir can be effective against forms of the norovirus on mouse models. James looks forward to exploring ways that favipiravir, in combination with other therapies, might inhibit the spread of the human disease.

James became interested in viruses when he read *The Hot Zone* (1995), on the origins of Ebola. He took full advantage of growing up in a university town and gained his first lab experience the summer after his freshman year in high school. He worked in the Boyce Thompson Institute for Plant Research at Cornell, where he learned polymerase chain reactions (PCR). This work with DNA helped prepare him for when he arrived at Cornell as an undergraduate. Working in the Microbiology Department on viruses associated with plankton, his lab supervisor gave him two days to write up results for publication, and this soon found a home in the Marine Ecology Progress Series. This was the first of four scientific papers for which he is a co-author. James went on to work over the course of two summers on the bacterial causes of Legionnaires' Disease and whooping cough at the NIH.

James is the recipient of the Hunter R. Rawlins III Presidential Scholarship. He graduated *magna cum laude* with a Distinction in Research and won an award from the Cornell Microbiology Department for undergraduate research. He was co-principal cellist in the Cornell Chamber Orchestra, with which he has toured Ireland and Puerto Rico. He plans to return to the US for a PhD and to pursue a career in molecular virology.

Emily Erickson
HOMETOWN
Clarks Hill, Indiana
INSTITUTION
Purdue (BS, Biochemistry)
TO STUDY
MPhil, Breast Cancer, Department of Pathology

EMILY ERICKSON

Breast cancer is the most common form of cancer affecting women. Emily will work with Professor Christine Watson to study the roots of the disease in mammary stem cells and progenitor cells. By understanding the cell signaling pathways that lead to breast cancer, Emily hopes that her research will eventually contribute to the development of therapies.

Emily traces her interest in medicine to her work on her family goat farm when she saved the life of a goat suffering anaphylactic shock. She found it hard to leave the animals behind when she matriculated at Purdue, so she founded the Purdue Goat Club, which manages a herd of goats and has an emphasis on outreach and education. During her undergraduate years, she won a Goldwater Scholarship, two Astronaut Scholarships, and several other awards and scholarships for agricultural science, including awards for top student in the College of Agriculture (out of 600 peers) and Department of Biochemistry for each of her first three years. During an NIH NCI Undergraduate Research Internship, she turned her attention to human disease, specifically breast cancer. Her transcript includes eight A+ grades. Emily has already had two peer-reviewed publications with one as first author. She won the Outstanding Student Poster at the ADSA-ASAS Joint Annual Meeting, the premier meeting for animal and dairy science.

Emily was principal violist in the Purdue Philharmonic Orchestra. She is also interested in Irish music, an interest which she cultivated during a semester abroad at University College-Dublin. After Cambridge she intends to get a PhD and to continue working on breast cancer research.

Letter from the Executive Director

Mike Morse

"The empires of the future are the empires of the mind." Sir Winston Churchill said these words after receiving an honorary degree from Harvard in September, 1943. In the middle of the Second World War and nine months before D-Day, what was the British Prime Minister doing in America talking about the post-war future?

I used a bit of modern science and technology known as YouTube to listen to the whole 15-minute speech, titled Anglo-American Unity. The speech can be framed as Churchill's view of the war and its aftermath. According to Churchill, "It must be world anarchy or world order."

For Churchill, World War II was a battle against chaos. To win, he said, the US and Britain did what no two countries had ever done before. They combined their armies and fought as a single unit without regard to the nationality of the generals. Recognizing that the most difficult stage of the war was yet to come, Churchill was already thinking about the importance of keeping this trans-Atlantic partnership in the post-war world.

Today, this Foundation sends the very best graduating American scientists, mathematicians, and engineers, to Britain, to fulfill Churchill's vision of a unified battle against chaos and disorder. We accomplish this by advancing the scientific enterprise and promoting US-UK scientific exchange. At the same time, we are also having a profound effect on our Scholarship recipients.

In this newsletter you can read about a survey we conducted of our alumni. The survey confirmed our anecdotal impressions that the Churchill Scholarship is life-altering. One alumnus put it to me like this: "The year in Cambridge was the best year of my life, and I've had some pretty good years."

Where do we go from here?

"THE YEAR IN CAMBRIDGE WAS THE BEST YEAR OF MY LIFE, AND I'VE HAD SOME PRETTY GOOD YEARS."

As I embark on my tenure, I have two clear ambitions. The first is to complete, in a sense, the founding of the Churchill Scholarship. As of this writing, we are on a path to send 15 Churchill Scholars to Cambridge in 2016. Our founders hoped we could build the number to 20, and this is a goal shared by our Board and by Churchill College. This can only be achieved through a combination of donations and careful investment management. We are well on the way.

I have been extremely impressed by how the Finance Committee and Board of Trustees handle our investments. While other organizations took years to recover from the shock of 2008, (and some have still not recovered) this Foundation not only recovered but surpassed its 2007 high by the end of 2009. Since then, we have grown while steadily increasing the number of Scholarships.

The best way to ensure the financial future of the Churchill Scholarship is through annual and major gifts. Our Churchill Scholar alumni have been extremely generous every year, and that has really boosted our position. Thank you for your support!

We are still a young organization, and the Foundation has not yet benefited from legacy giving. I would ask our supporters to consider the Foundation in their wills. While our Scholars have done great work in extending life through medical breakthroughs, sadly none of us will live forever. The Foundation, however, will continue its work for as long as we have the funding to do it, and legacy giving is a great way to ensure that the Churchill

Scholarship thrives for many years.

My second ambition is to increase our alumni activities and presence. We have nearly 500 and counting of the best STEM graduates ever to come out of US universities over more than 50 years. The only question is what we can do together, as a group. It might be conferences on contemporary issues in science or education. It might be policy statements. Or it might just be social gatherings. Please get in touch with your ideas.

Regular readers of this newsletter will notice that there is no list of donors this year. We have decided to move that into a separate publication called a "Report to Donors" which will be out in the spring and which will contain the full results of our 2015 annual fund.

It is the opportunity of a lifetime for me to serve as Executive Director of this Foundation, and I look forward to working with all of our alumni and supporters to continue the legacy of excellence established by my two formidable predecessors, Peter Patrikis and Harold Epstein.

Jesse Freeman
HOMETOWN
Bethesda, Maryland
INSTITUTION
Williams (BA, Mathematics)
TO STUDY
MASt, Pure Mathematics

JESSE FREEMAN

Jesse is drawn to Part III pure mathematics because of his interest in algebraic topology and its connection to representation theory. It is also an opportunity to explore topics such as category theory, analytic and birational geometry, and complex manifolds.

Jesse came to mathematics from his experience in high school debating tournaments. It was not the content of debate but the methods that turned his attention to the beauty of a mathematical proof. A semester abroad in Oxford gave him the chance to delve more deeply into math and it confirmed his passion. Jesse has won a Goldwater Scholarship, an NSF grant for a SMALL Undergraduate Research Project, and was inducted into Phi Beta Kappa. He has earned five A+ grades, graduated *summa cum laude* and won the Rosenberg Prize for top math senior at Williams.

Jesse was the co-principal trumpet in the Berkshire Symphony Orchestra (a semi-professional orchestra), a competitive squash player, and he has represented Williams at the World Debate Championships. He has already won an NSF graduate fellowship and plans to earn a PhD and pursue a career in mathematics.

Catherine Groschner
HOMETOWN
Corinth, Vermont
INSTITUTION
Carnegie Mellon (BS, Materials Science and Engineering)
TO STUDY
MPhil, Energy Technology, Department of Materials Science

CATHERINE GROSCHNER

Kate is a Gabelli Churchill Scholar. She will study with Professor Judith Driscoll, working on functional oxides for solar cells. Her previous study of titanomagnetites (minerals found on Mars) has prepared her for this work. Her goal is to develop a less energy-intensive way to manufacture solar cell technology, helping make solar energy economically viable.

Kate came to her interest in photovoltaics from a childhood interest in climate change, combined with an inspirational chemistry class that taught her that science can help solve seemingly intractable problems. At Carnegie Mellon, her work on Martian minerals led to her first conference presentation and academic publication. She has participated in two NSF REUs (one at MIT and the other at the University of Vermont), was inducted into Tau Beta Pi as a junior, and graduated with an entirely unblemished 4.0 GPA. She is a Boeing Scholar, an award that recognizes her combination of academic achievement and leadership ability.

For two years, Kate has been photo editor of The Tartan, the student newspaper, as well as a Contributing Editor and a member of the Executive Committee and Editorial Board. After her PhD, which she plans to pursue at Berkeley, she looks forward to a career that turns scientific discoveries into marketable technologies.

Daniel Kang
HOMETOWN:
Fairfax, Virginia
INSTITUTION:
MIT (BSc, Computer Science and Mathematics; MEng, Computer Science)
TO STUDY:
MASt, Mathematical Statistics

Anne Marsden
HOMETOWN
Salt Lake City, Utah
INSTITUTION
University of Chicago (BS, Mathematics and Chemistry)
TO STUDY
MPhil, Scientific Computing, Department of Physics

DANIEL KANG

Daniel is drawn to the Part III course because of the enormous impact that data analysis can have on issues such as fMRI and high-throughput DNA sequencing and its application to identifying genetic diseases. He finds the broad range of courses in Part III vital to his future career in computational biology and machine learning.

Daniel's talents as a computer programmer came to prominence when he worked on open-source video processing projects (x264 and FFmpeg). Google took note and invited him to two internships, where he outperformed many experienced Google employees while still in high school. In 2011, he was Grand Prize Winner of the Google Code-In contest. Back at MIT, he helped organize a 36-hour programming challenge (HackMIT). Daniel's work on statistical modeling of cellular function has already been published in Nature Biotechnology, and more recent results have been submitted to Nature. Daniel won a Goldwater Scholarship and finished a Master's degree in addition to his Bachelor's in four years. While still an undergraduate, Daniel's work was central to a major NIH funding proposal.

Daniel is an avid runner and is fluent in Japanese. He plans to do a PhD in machine learning and computational biology.

ANNE MARSDEN

Annie is fascinated by the size boundary where classical thermodynamic principles shift from the micro to the macro. She has already spent eight weeks in the Cambridge lab of Professor David Wales, where she will work to refine the Modified Embedded Atom Method (MEAM) to help her explore the attributes of smaller systems. She has been researching Gallium atoms in a size range of between 13 and a few thousand atoms. For such small systems, it is not possible to assume statistical averages under classical physical chemistry laws, while at the same time it is not small enough to compute behavior using quantum mechanics.

Elected Phi Beta Kappa as a junior, Annie has won a Goldwater Scholarship. As a double-major, Annie was the highest ranking student in chemistry (she won the Norman H. Nachtrieb Memorial Award, the highest honor given to chemistry students at the University of Chicago) and the second-highest ranking student in mathematics. She has won a number of academic awards and research scholarships.

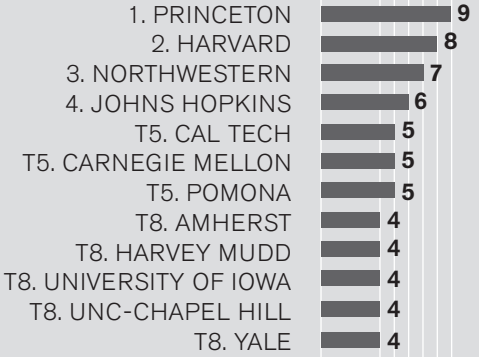
Annie ran for the cross-country and track and field teams at Chicago. She enjoys teaching and tutoring youngsters in science and mathematics, which she has done since high school. Her work involves chemistry, physics, mathematics, and scientific computing, and she plans to pursue a PhD in chemistry.

WHERE DO CHURCHILL SCHOLARS COME FROM?

There are now **108** Participating Institutions that can nominate up to two candidates each year. Of these, **75** have at some point produced at least one Churchill Scholar and **52** have won in the past **10** years. While the students win the award through their achievements, there is a friendly competition among colleges and universities. Here are the top **10** institutions that have produced the most Churchill Scholars since 1963 and the "hot" top **10**, that have produced the most in the past **10** years:

THE "HOT" TOP 10

Most Churchill Scholars (Last 10 Years)



Sophie Miller
HOMETOWN
Greenwich, Connecticut
INSTITUTION
Stanford (BS, Chemical Engineering)
TO STUDY
MPhil, Biochemical Engineering, Department of Chemical Engineering and Biotechnology

Evan O'Dorney
HOMETOWN
Danville, California
INSTITUTION
Harvard (BS, Mathematics and Music)
TO STUDY
MASt, Pure Mathematics

SOPHIE MILLER

Novel drug delivery systems are going to be crucial to addressing key global health challenges such as cancer. Sophie will work with Dr. David Fairen-Jimenez on metal-organic frameworks (MOFs), a promising new drug delivery agent that can be tuned for biocompatibility and localized release.

Sophie first worked with nanoparticles at the Weizmann Institute in Israel before her matriculation at Stanford. At Stanford, she worked on semiconducting polymers and won internal funding for an honors thesis on optimizing capacitive pressure sensors. She won a Goldwater Scholarship, was admitted to a Summer Undergraduate Research Fellowship at CalTech, and became a member of Tau Beta Pi as a junior. She earned 22 A+ grades and is considered the top student in her class. She won first prize among undergraduate poster presentations at the American Institute of Chemical Engineers National Meeting.

Sophie played baritone and alto saxophone for the Stanford Jazz Orchestra, of which she had been president since the start of her sophomore year. She also enjoys tutoring children in math and science, and she is a long-distance runner. Sophie has won an NSF graduate fellowship and looks forward to a PhD in chemical engineering and a career either in industry or academia.

EVAN O'DORNEY

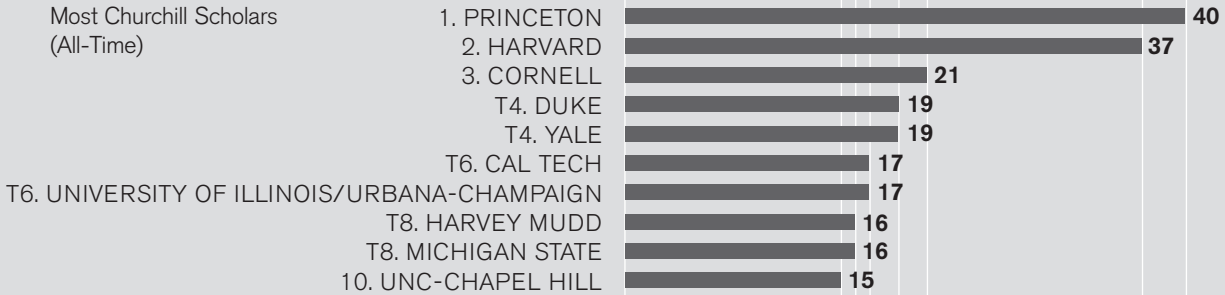
Evan, a Gabelli Churchill Scholar, will use the Part III mathematics course to solidify his foundations before pursuing a PhD in arithmetic geometry. He is particularly interested in representation theory and analysis.

A mathematical prodigy, he read books on number theory by the fourth grade. He proved a conjecture in the seventh grade and solved an open conjecture in the tenth grade. He achieved a clean sweep of ten A+ grades in mathematics at Berkeley starting when he was in the eighth grade and in high school. He is most proud of the work he did on square roots that earned him first prize in the Intel Science Talent Search in 2011. He has since expanded that work for publication. He is a member of Phi Beta Kappa, has done two NSF REUs, won numerous academic prizes at Harvard, won the Putnam Mathematical Competition three years in a row, and is a four-time medalist in the International Math Olympiad. He first came to national prominence in 2007 when he won the Scripps National Spelling Bee.

Evan enjoys composing and performing music as a pianist and singer. At Harvard, he was part of a choir that specializes in Renaissance music. Many times a champion, he now grades the USA Mathematical Olympiad and trains young mathematicians for competition. He looks forward to a career teaching and researching mathematics.

THE TOP 10

Most Churchill Scholars (All-Time)



Edward Pang
HOMETOWN
Copley, Ohio
INSTITUTION
Northwestern (BS, Materials Science and Engineering)
TO STUDY
MPhil, Department of Materials Science and Metallurgy

Maxwell Shinn
HOMETOWN
Chaska, Minnesota
INSTITUTION
University of Minnesota (BS, Mathematics and Neuroscience)
TO STUDY
MPhil, Department of Psychiatry

EDWARD PANG

Edward will work with Dr. Howard Stone to study a novel class of shape-memory alloys (SMAs) that show promise for efficiency improvements in aviation. The applicability of SMAs is related to their transformation temperatures. Edward will look at how to increase temperature thresholds, which could lead to new applications of SMAs, for example in gas turbine engines.

Airplanes have been an obsession for Edward since he made a detailed sketch of a Boeing 747 at age six. His childhood dream was realized when he spent a summer at Boeing, certifying components of the 787 Dreamliner, which is by far the most fuel efficient commercial aircraft. His interest in energy-efficient materials drew him to the lab of Professor David Dunand at Northwestern, and Edward became one of the first employees of Professor Dunand's startup company, NanoAl. Edward won the Goldwater Scholarship, is a member of Tau Beta Pi, and has won numerous awards and competitions at Northwestern including the Outstanding Sophomore and Junior MAtSci Award, which is based on leadership, scholarship, service, and research. He graduated *summa cum laude* and won the Ovid W. Eshbach award, given to the graduating senior who best exemplifies the "ideal" engineering student.

Edward plays classical piano and clarinet. He was first clarinet in the Northwestern Concert Band. He was also part of the college formula racing team, where he was in charge of all structural composite research, design, and fabrication. In the future, Edward plans to do a PhD and hopes for a career creating technology that improves energy efficiency for a more sustainable future.

MAXWELL SHINN

Max seeks to understand mental illness. An estimated one in six people worldwide suffers from some type of psychiatric disorder, making this one of the world's most pressing medical challenges. At Cambridge, he will work with Professor Ed Bullmore, who has pioneered a graph-theoretical method for interpreting fMRI data. The U-Change project at Cambridge has produced an enormous amount of fMRI data, and Max will see if he can use it to identify developmental correlates of different psychiatric disorders.

By the time he finished high school, Max had taught himself computer programming (using textbooks he bought at garage sales), started a programming company, written one of the most popular chat scripts on the Internet, and wrote software to help children with learning disabilities (a project that won him an AXA Scholarship). It was then that he turned his interest to the brain. He started working in psychology labs even before he matriculated at Minnesota. He has participated in two NSF REUs, and a DAAD RISE summer lab experience in Chemnitz, Germany. He has won numerous academic awards at Minnesota, a Goldwater Scholarship, and an Astronaut Scholarship.

Max is also a composer. He has composed three musicals and various works for band, orchestra, choir, and chamber ensembles. His works have been performed by some of the top ensembles in Minneapolis-St. Paul. Max practices mindfulness and was president of his university's meditation student group. He will pursue a PhD and looks forward to a research career understanding mental illness.

CHURCHILL SCHOLAR NEWS, ACCOLADES, AND NEW POSITIONS

Frank Doyle III became Dean of the John A. Paulson School of Engineering and Applied Sciences at Harvard University.

Adam Durst was appointed Associate Professor in Physics and Astronomy at Hofstra University.

Bradley Allen was named a New York State Master Teacher by Governor Andrew Cuomo.

1985 1986 1987 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002

Sandya Subramanian
HOMETOWN
Grand Rapids, Michigan
INSTITUTION
Johns Hopkins
(BS, Biomedical Engineering, Applied Mathematics and Statistics)
TO STUDY
MPhil, Department of Clinical Neurosciences

Jonathan Timcheck
HOMETOWN
Pittsburgh, Pennsylvania
INSTITUTION
Ohio State
(BS, Engineering Physics)
TO STUDY
MASt, Applied Mathematics

SANDYA SUBRAMANIAN

Sandya's interest is in extracting meaningful information from large neuroscience datasets for direct application in a clinical setting for a diagnostic or therapeutic purpose. In Clinical Neurosciences at Cambridge, students must choose two possible research projects. Sandya will either work with Dr. Emmanuel Stamatakis in looking at fMRI data to study the default-mode network (DMN) or she will work with Dr. Peter Smielewski on using multimodal data from critically ill patients to assist in real-time decision-making.

In high school, Sandya worked on a Science Olympiad team on a project to provide safe drinking water in rural Ghana. When she matriculated at Johns Hopkins, she was immediately drawn to computational neuroscience. A member of Tau Beta Pi, she has won a Goldwater Scholarship and won first place in the Collegiate Inventor's Competition (for the best undergraduate invention in the country). She has worked in research labs at Hopkins, MIT, and NIH. Her transcript includes 22 A+ grades. As an undergraduate, she once gave a lecture to 130 students when the professor was unable do it.

Sandya sang in a South Asian fusion a cappella group and has served in various leadership roles including co-president. She is a certified Emergency Medical Responder and had a weekly shift on campus. She looks forward to pursuing a PhD in computational neuroscience and has already won an NSF graduate fellowship, and a presidential fellowship at MIT.

JONATHAN TIMCHECK

Jon's career goal is to apply state-of-the-art machine learning techniques to experimental high energy physics. In Part III Applied Mathematics, he hopes to deepen his understanding of high energy theory. He will take courses in quantum field theory, symmetries, fields and particles, and the Standard Model. He also looks forward to classes in statistics and quantum information theory.

Jon's interest in the smallest building blocks of the universe led him to the search for top quarks from high energy proton-proton collisions at the Large Hadron Collider (LHC). This work, in turn, led to his first scientific publication and a Goldwater Scholarship. Work from his freshman and sophomore years was published in the Journal of High Energy Physics. He earned a DAAD RISE research internship at Forschungszentrum Jülich in Germany, where he helped design the Anti-Proton Annihilation at Darmstadt Experiment (known as PANDA). Jon is one of a just handful of people who has ever been an author on a publication on the Compact Muon Solenoid (a Higgs detector at CERN) while still an undergraduate. He has won several academic achievement and research awards at Ohio State, including top student in his department each year, and his GPA was a perfect 4.0.

Jon has been engaged in tutoring and encouraging youngsters, particularly underserved communities and girls, to study science and engineering. Among his hobbies is calligraphy. He looks forward to a PhD in experimental physics at Stanford, for which he has won an NSF graduate fellowship, and seeks to use machine learning to help high energy physics experiments.

Vivek Narsimhan finished his PhD at Stanford and started a post-doc in Chemical Engineering at MIT.

Emily Russell joined Google as a software engineer.

Hannah Joo and **Ben Nachman** announced their engagement and will be married in the summer of 2016.

2003 2004 2005 2006 **2007** **2008** **2009** 2010 2011 **2012** **2013** 2014 2015 2016 2017 2018 2019 2020 2021 2022

Hannah Wayment-Steele
HOMETOWN
Flagstaff, Arizona
INSTITUTION
Pomona (BA, Chemistry and Applied Mathematics)
TO STUDY
MPhil, Theoretical Chemistry, Department of Chemistry

David Zoltowski
HOMETOWN
West Lafayette, Indiana
INSTITUTION
Michigan State (BS, Electrical Engineering)
TO STUDY
MPhil, Information Engineering, Department of Engineering

HANNAH WAYMENT-STEELE

Hannah will work with Dr. Daan Frenkel to create computer simulations in order to understand better the self-assembly process in novel DNA nanostructures. This technology has tremendous potential for targeted drug delivery, nanoscale measurements, and scaffolds for nanoelectronics.

In Hannah's first year at Pomona College, she researched sensitized solar cells that imitate natural pathways, which can contribute to the development of cleaner solar technology. Her interests then led her to write to a research team in Gothenburg, Sweden, that promptly invited her to join them. A Goldwater Scholar and a Beckman Scholar, Hannah has won awards for her performance in physics and chemistry, for her poster at the American Chemical Society National Meeting, and was a member of Sigma Xi as a junior. She graduated *magna cum laude*.

With a minor in music, Hannah has performed on the piano in the United States and in Europe. She won the Philip Goldberg Memorial Prize, awarded annually to one Pomona College student for outstanding instrumental performance. In addition, she played on the volleyball team and was co-president of the Food Science Club. Hannah intends to pursue a PhD in theoretical chemistry or chemical physics and would like to be on the forefront of research in computational biological nanomaterials.

DAVID ZOLTOWSKI

Many of this year's Churchill Scholars have interests in machine learning, but David is the only one who will join the Machine Learning Group. His main interest is the brain, and he will look at EEG and fMRI data using machine learning tools in order to gain insight into brain organization and function. He hopes to apply this analytical technique to better understand autism, and he looks forward to working with specialists in neuroscience and autism from other departments in Cambridge through the Autism Research Centre.

David finds machine learning to be a promising tool to explore dynamic functional connectivity networks in typical brains and autistic brains. He is a Goldwater Scholar and was elected Tau Beta Pi as a junior. He took part in an NSF REU in the Department of Computer and Electrical Engineering at the University of Minnesota and has a number of first-author scientific publications. As a sophomore, he was selected to be a course grader for a senior-level course. He graduated with a perfect 4.0 GPA.

David was the captain of the Michigan State Swimming and Diving Team, twice named an Academic All-Big Ten, was a Big Ten Distinguished Scholar, and a Capital One Academic All-American (2nd team). He served as a youth mentor and volunteers for local charities and for children with disabilities. Winner of an NSF graduate fellowship, he intends to pursue a PhD in engineering while continuing his focus on the brain.

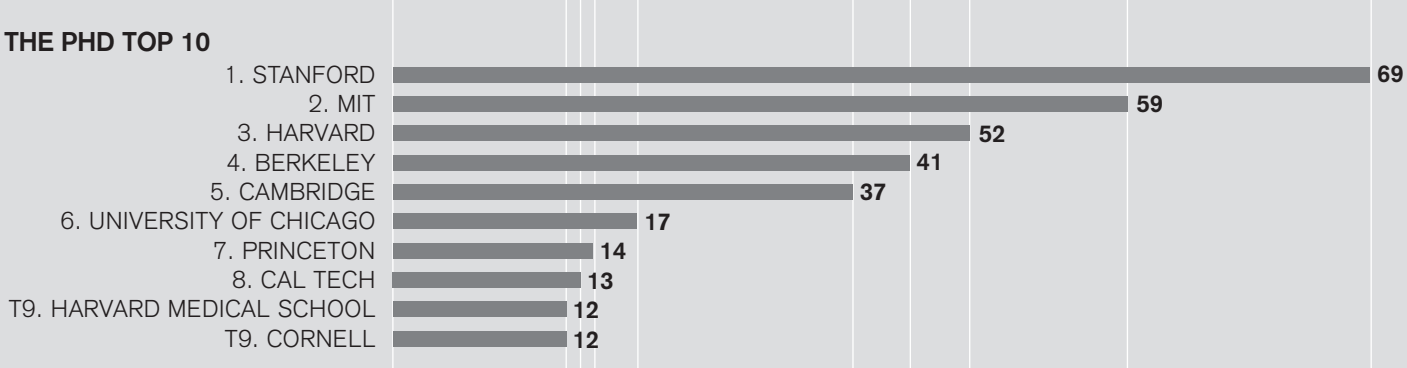
› WHERE DO THEY GO NEXT?

After Cambridge, most Churchill Scholars go on to a PhD. What are their favorite graduate school destinations?

2015–2016 Churchill Scholars

Edward Pang (left), David Zoltowski (center), and Sophie Miller (right) at the Statue of Sir Winston Churchill, Parliament Square, London.

THE PHD TOP 10



CHURCHILL SCHOLARSHIP
SCIENCE/MATHEMATICS/ENGINEERING
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CHURCHILL NEWS

MATCHED GIVING YEAR

A former Churchill Scholar has generously pledged to match the first $30,000 of alumni giving in 2015. If this target is reached, the total of $60,000 will enable the Foundation to select 15 Churchill Scholars for the 2016–17 class. The Board of Trustees will match any alumni giving over that threshold, making 2015 a fully matched giving year.

As of this writing, alumni have already given more than $25,000. We are close! See our website (http://www.churchillscholarship.org/howtogive.html) for details on how to give. You can donate by credit card online or send a check to the Winston Churchill Foundation of the United States, 600 Madison Avenue, Suite 1601, New York, NY 10022.

5-year reunion of the 2010–2011 Churchill Scholars: Back row (left-to-right): Kelsey Stoerzinger, Daniel Lecoanet, Steve Linderman, Sameer Gupta. Front row (left-to-right): Maria Drout, Yi Sun, Swati Varshney, Martin Blood-Forsythe, Anna Lieb

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