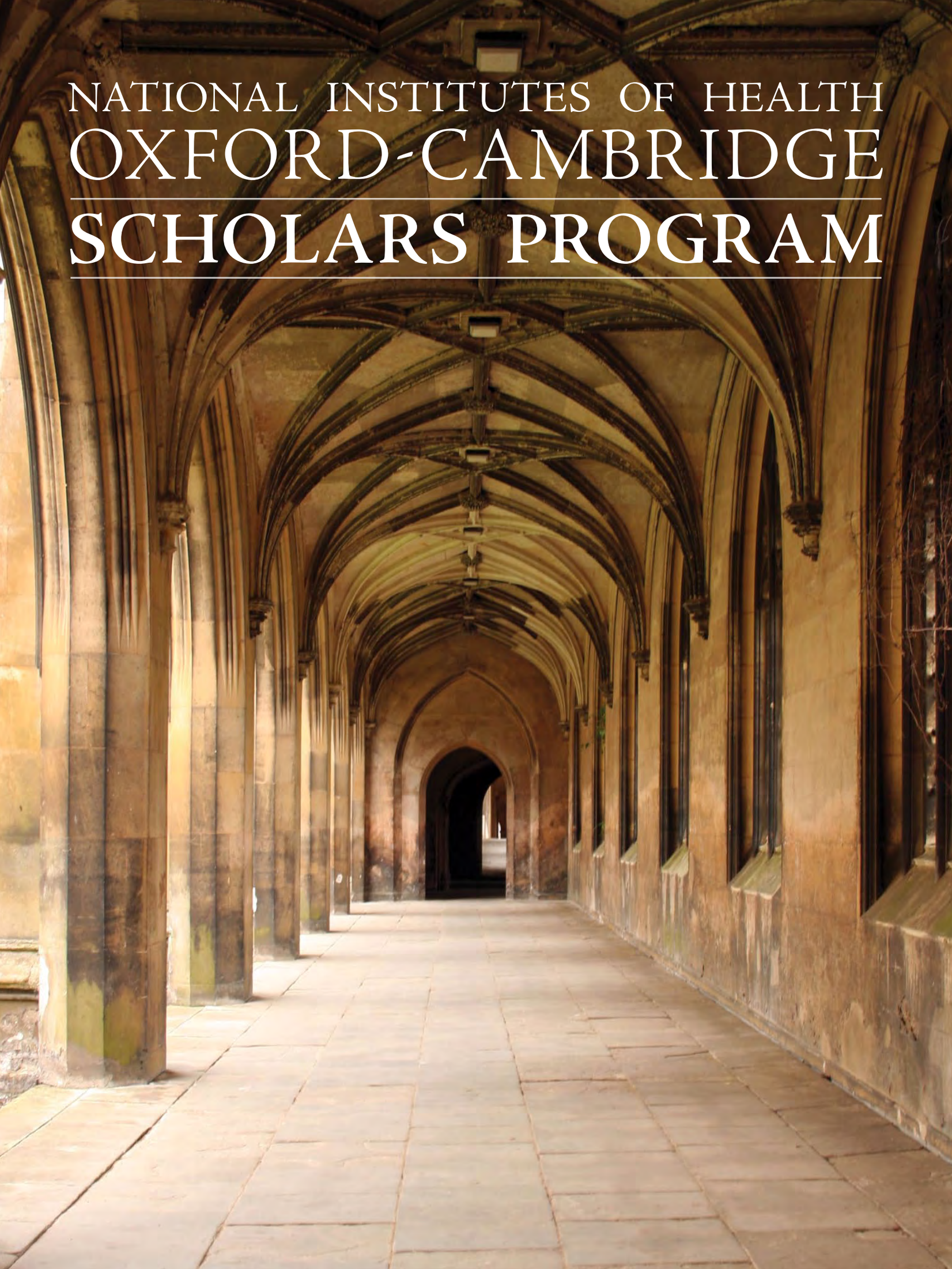
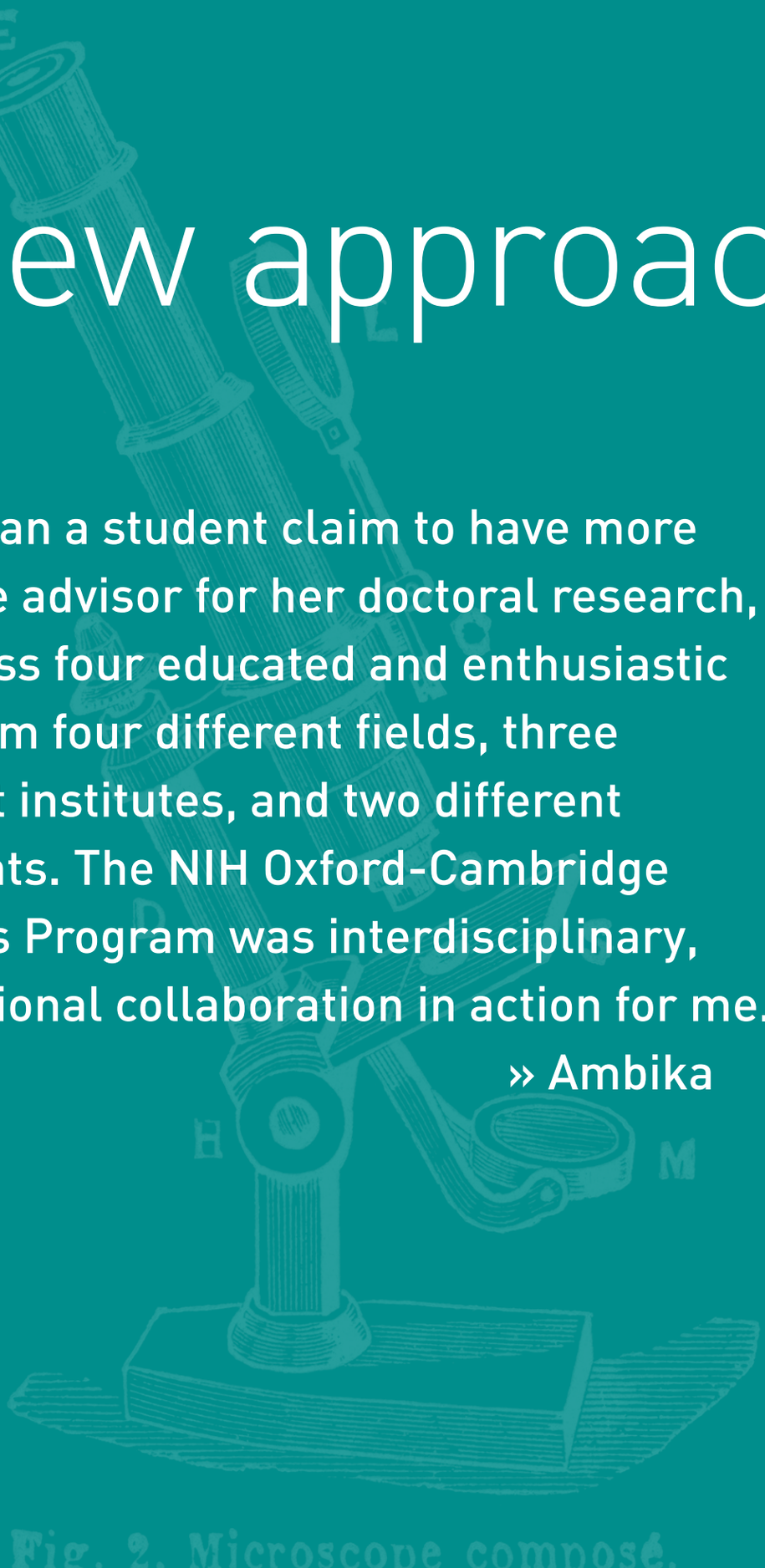


NATIONAL INSTITUTES OF HEALTH
OXFORD-CAMBRIDGE
SCHOLARS PROGRAM

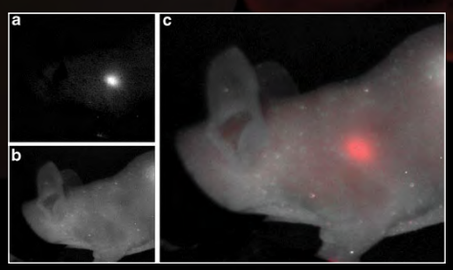
a new approach

"Rarely can a student claim to have more than one advisor for her doctoral research, much less four educated and enthusiastic ones from four different fields, three different institutes, and two different continents. The NIH Oxford-Cambridge Scholars Program was interdisciplinary, international collaboration in action for me."

» Ambika



Microscope, Dictionnaire encyclopédique Trousset, 1886.



Fluorescent nanoparticles localized in a sentinel node in an experimental mouse demonstrate the potential for cancer localization and treatment.[1]

Ambika Bumb

Ambika Bumb joined the NIH Oxford-Cambridge Scholars Program in 2005 through a prestigious Marshall Scholarship after graduating with high honors from the Georgia Institute of Technology. She utilized the expertise of four mentors at both Oxford and NIH to carry out groundbreaking research in the design and synthesis of novel nanoparticles for targeted drug delivery. She is on track to establish her own independent laboratory in bioengineering and nanotechnology before the age of 30.

accelerated

The NIH Oxford-Cambridge Scholars Program enables exceptional students to pursue doctoral research with individualized coursework and no rotations.

To begin their studies, Scholars write explicit project proposals in a facilitated process and initiate their thesis research on the first day of graduate school.

The Scholars' projects are closely monitored to ensure progress. This approach addresses a major problem in graduate education— excessive time to Ph.D. completion leading to delayed career independence. Currently in the United States, most young scientists do not become Principal Investigators until the age of 35 or later and, on average, receive their first major NIH R01 grant at 42 years old.[2]

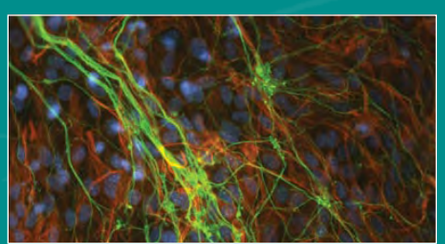
This worsening trend begins with lengthy graduate training. According to the National Research Council, the average time to completion for a biomedical Ph.D. in the United States is 7.8 years.[3] With over 75 Scholar graduates, we have shown that exceptional quality graduate training can be completed in 4 years with a focused, individualized approach. Over 350 papers have been published by Scholar graduates despite the shorter graduate training.[4]

Accelerated Training Vector[4]

Plate XX Vol. I.P.222, Principia Mathematica, Newton, 1686.

"The Scholars Program afforded me the independence to bring together the unique knowledge and skill of two preeminent laboratories. This was essential for me to successfully pursue my ideas from a novel perspective."

» Paul



Photomicrographs of differentiated outgrowths from epiblast stem cells discovered by Paul. Shown are markers indicative of neurons (green) and astrocytes (red).[6]

Paul Tesar

After graduating magna cum laude from Case Western Reserve University, Paul earned his D.Phil. from Oxford in under four years through the Scholars Program. Paul's research, under the tutelage of Professor Sir Richard Gardner and Dr. Ron McKay, has advanced our understanding of pluripotent stem cells. Paul published a sole author paper in The Proceedings of the National Academies of Science after only two years into his graduate work and went on to publish a landmark paper in Nature defining epiblast stem cells.[5, 6]

Paul has received prestigious awards for his work including the Harold M. Weintraub Award and the Beddington Medal of the British Society for Developmental Biology. At the age of 29, Paul began leading an independent research group as an Assistant Professor of Genetics at Case Western Reserve University School of Medicine. Paul was recently selected as a Robertson Investigator, an honor that recognizes scientists leading their generation in stem cell research.

innovative

“Being able to see something no one else has ever been able to observe opens up an infinite number of questions to be answered.” » Jamie

The Scholars Program strongly emphasizes innovation and offers students a degree of intellectual freedom to develop independent projects not generally found in traditional doctoral programs. Mentors accept these Scholars knowing that they may choose to investigate ideas outside of the Mentors’ present areas of interest. This provides both the Scholar and Mentors unlimited opportunity to expand their scientific horizons into novel areas of inquiry.

The essential formula for biomedical graduate training in the U.S. has not changed since the 1940s and has fundamental problems. Most programs do not formally prepare students to engage in global interdisciplinary collaborative science and all students take the same classes regardless of their prior training. The Scholars program breaks this mold by offering an individualized curriculum for each Scholar and requiring all projects to be co-equal collaborations in which students spend half their time in the laboratory of a Mentor at Oxford or Cambridge and half their time with a Mentor in an NIH intramural research laboratory. The time blocks in each location are flexibly determined according to the experiments.

The purpose of the NIH Oxford-Cambridge Scholars Program is to fundamentally change biomedical research education by giving exceptional students the most innovative, outcomes-oriented training in global interdisciplinary collaborative science. The aim is to produce a new generation of scientific leaders to accelerate basic biological discoveries as well as to empower students to participate in the development of new treatments, cures, and preventative measures for human disease.

Optical motion compensation microscope designed by Jamie Schroeder.

Jamie Schroeder

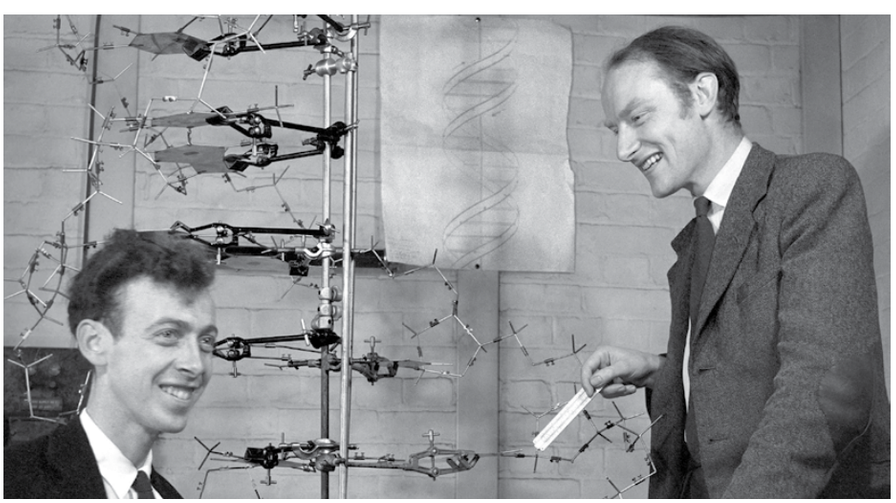
Jamie Schroeder graduated from Stanford University with degrees in Biology and Bioengineering. In the Scholars' program, Jamie has been developing new technologies for observing biochemical interactions as they happened in live subjects in real time. This was a high-risk project involving both technological and biochemical challenges. In the end, Jamie's project was worth the risk. He developed a patented microscopic technology with his mentors called "dynamic optical motion compensation with real-time prospective tracking and retrospective image correction." This technology allows investigators to sensitively measure mitochondrial metabolites in the leg muscle of a live mouse.[7] Jamie credits the Scholars program for allowing him to pursue risky concepts that can lead to important scientific innovations. A talented athlete, Jamie rowed for the U.S. Olympic team in Beijing, China during his time in the program.

collaborative

A key to success in science in the 21st century is collaboration. Each student chooses two mentors, one from NIH and one from either Oxford or Cambridge who collaborate on a unified thesis project. This structure not only affords the Scholar the opportunity to work with leading scientists on two continents but also teaches the Scholar to manage a scientific collaboration on an international scale.

The Scholars program introduces a new prototype for future doctoral training programs by requiring a collaborative thesis project for each student that is co-supervised by at least two mentors. The unique feature of co-supervised theses is designed to equip top students with skills and experience to succeed as independent investigators in global collaborative research.

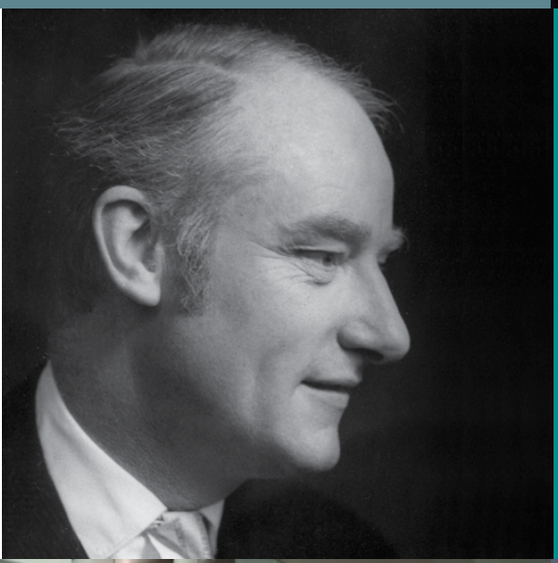
As two of the most distinguished Universities in occidental civilization, Oxford and Cambridge offer special features in their long academic traditions, outstanding biomedical science and clinical schools, lack of a language barrier, as well as an exciting and interesting cultural experience for American students. Combined with the National Institutes of Health, the largest biomedical research campus in the world, the students have an unparalleled opportunity for advanced scientific training. Each Scholar's thesis project incorporates conceptual components from the Mentors' laboratories at Oxford or Cambridge and the NIH and involves actual laboratory research at both locations.



The discoverers of the structure of DNA, James Watson (left) and Francis Crick (right), are perhaps one of the best examples of U.S./U.K. collaboration. Crick, a British postdoctoral fellow & Watson, an American doctoral student, worked together at the Cavendish Laboratory, University of Cambridge, and proposed a model for the structure of DNA in 1953.[8] Their collaborative work was further based on a knowledge of Chargaff's ratios of the bases in DNA and the X-ray crystallography of Maurice Wilkins and Rosalind Franklin at King's College London. Combining all of this work led to the deduction that DNA exists as a double helix.[9] Crick, Watson and Wilkins shared the 1962 Nobel Prize for Physiology or Medicine, Franklin having died of cancer in 1958.

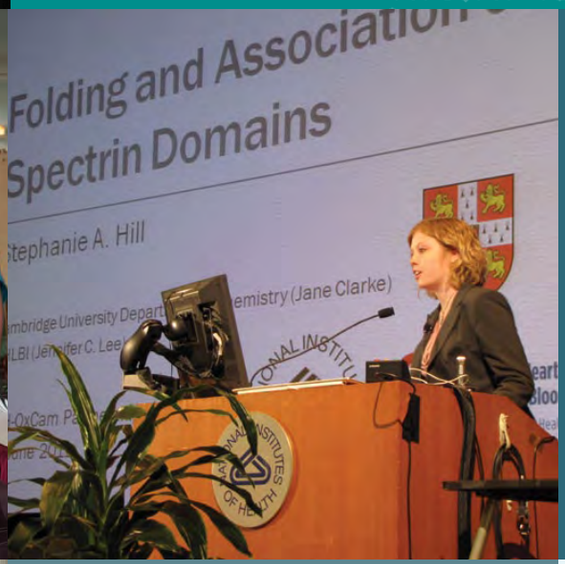
L: Two Scholars at NIH comparing notes on their projects on mammalian gene regulation.

R: M.D. / Ph.D. Scholar discussing data with NIH Mentor.



"Nothing new that is really interesting comes without collaboration."

» Francis Crick



L: Scholar discussing results with her Cambridge mentor during a colloquium poster session.

R: Scholar presenting her findings at the 2011 Scholars-Mentors colloquium at the Natcher Center at NIH.

L: Frontiers in Bioscience meeting where Scholars present their work to each other at the NIH Oxford-Cambridge cottage at NIH.

R: Students celebrate a giant 2009 snowfall at Oxford.

interdisciplinary

"I feel grateful to be part of a program that allowed me to tackle a new scientific problem by fusing the *in vitro* biochemistry and imaging techniques of an NIH laboratory with the purely *in vivo* work of a cell biology laboratory at Cambridge – over the course of my doctoral work, I have grown in my knowledge of these diverse fields and have watched my British and American mentors learn from each other!" » Lisa

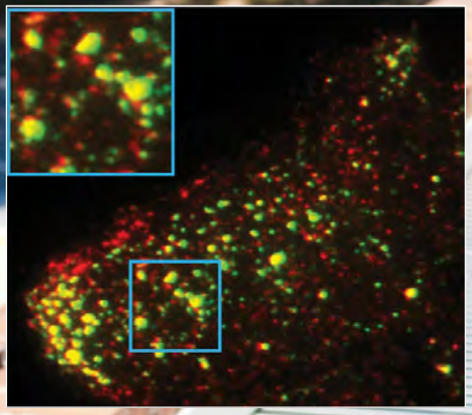
Health research has traditionally been organized by grouping researchers into specialty areas, where their efforts remain disconnected from each other by artificial technical and language barriers between disciplines and departmentally-based specialties. However, it is increasingly recognized that biology is interconnected at many levels and the traditional divisions within health research may actually impede the pace of scientific discovery.

The open architecture of the Scholars Program encourages Scholars to utilize the vast scientific talent and resources at NIH, Oxford, and Cambridge to creatively address their chosen research question. Scholars are encouraged to think "outside the box" and surmount the traditional divisions within biomedical research by working with faculty in different research areas and bringing different technologies to bear on the research question. By doing so, the projects dissolve conventional academic boundaries and increase cooperation between different disciplines and departments which leads to cross-fertilization of thinking between different areas of science.

The broad goal for the NIH Oxford-Cambridge Scholars program is to create a new academic research culture such that interdisciplinary approaches are facilitated and team science becomes a prevailing mode of conducting research.

The Scholars' projects bring together two or more Mentors who often come from different disciplines and scientific backgrounds thereby creating new scientific dialogue across research specialties which catalyzes new perspectives on experimental questions.

This also generates collaborative links between investigators who might not have worked together without the Scholar's project that in some instances persist after the Scholar has graduated.



Photomicrograph of the molecular motor protein myosin VI (red) with secretory vesicles (green) and their colocalization (producing yellow) in the final stages of their transport from the cell.[10]

Lisa Bond

Lisa Bond graduated summa cum laude from the University of North Carolina at Chapel Hill in 2008 with a Bachelor of Science in Biology. She began her PhD studies in 2008 under the dual funding of a fellowship from the Winston Churchill Foundation of the United States and the NIH Oxford-Cambridge Scholarship program. Over the course of her Ph.D. research, she has discovered a novel role for the molecular motor myosin VI in the cellular secretory pathway that controls fundamental movement of proteins to the surface or outside of the cell.[10] For her work, she has been invited to give many conference talks and won several prizes for her thesis work. Lisa will graduate after a total of just three years of Ph.D. research, and will pursue an independent research career based on international collaboration.

Map of Europe in 1792. The Cambridge Modern History Atlas, 1912.

"I combined my interests in clinical medicine with investigations in the lab and in the field... I carried out research while living in Africa where HIV is prevalent, yet access to medications and healthcare is limited. This brought to light the disparity between the developed world and the undeveloped world. This program provided these unique experiences that have shaped my orientation to research and my world view."

» Melody

Melody Duvall

Melody Duvall was a medical student at Washington University-St. Louis who had extensive prior experience in virology at the NIH and the Jackson Laboratories in Bar Harbor, Maine. After her second year of medical school she entered the Scholars program to study HIV transmission in immune responses in infected women in West Africa. The project involved research at the NIH Vaccine Research Ctr., Oxford University, and fieldwork at the Medical Research Council research unit in the Gambia. Using polychromatic flow cytometry and functional assays, Melody carried out detailed investigations of immune cell phenotype in West Africans infected with HIV-2. Her studies led to new insights into the immunological response to the HIV-2 strain which is prevalent in West Africa but not seen in United States.[11] Melody is currently in the Department of Pediatrics, Boston Children's Hospital, Harvard Medical School.

international

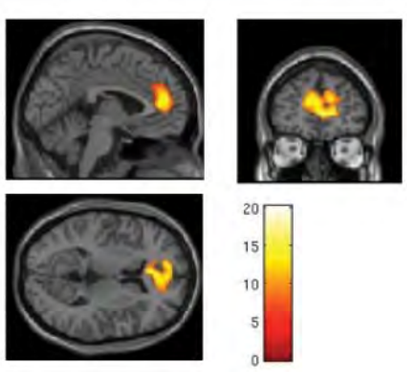
The Scholars program introduces students to global research at a formative stage in their career in ways that are not possible in a traditional American graduate program. Each Scholar is enrolled as a full time student in either Oxford or Cambridge which offers a remarkable vantage point for exploring the United Kingdom and Europe. Both universities are leading global academic centers which attract a diverse international student body. While based in the UK universities, the student has ready access to scientists and scientific meetings all over Europe.

Second, in addition to time spent in the UK at either Oxford or Cambridge, it is not uncommon for some Scholars to pursue scientific experiences or fieldwork in places such as Africa, Australia, and China, to name a few of the international locations where our Scholars carry out doctoral research. Support is provided for training in these international locations because it is the mission of the NIH Oxford-Cambridge Scholars program to foster collaborative research around the globe.

L: Scholars group on a hilltop during an Outward Bound expedition in the British lake district.

C: Scholar Eric Freundt reviews microscopic specimens during SARS research in a lab in Beijing, China.

R: Scholars visit Uluru/Ayers Rock during genetic research in Australia.



Scholar Judah Weathers can detect abnormalities in children and adults with bipolar disorders in the anterior cingulate cortex which is involved in rational cognitive functions (shown in yellow).

Judah Weathers

Judah Weathers graduated with honors from Northeastern University with a B.S. in behavioral neuroscience and then attended Yale University Medical School where he carried out research on brain malformations. Three years into his M.D. program, Judah's passion for a deeper understanding about the science behind the medicine led him to the NIH Oxford-Cambridge Scholars Program. Judah is using neural imaging to study psychiatric disorders, focusing on bipolar illnesses.

the experience

Once selected for the NIH Oxford-Cambridge Scholars Program, students become fully-funded pre-doctoral fellows at Oxford or Cambridge. These institutions offer a very different academic style – perhaps more contemplative - than the frenetic pace of American laboratories. One common feature is that they are both comprised of over two dozen independent and historic academic colleges.

Every Scholar is enrolled as a full-time student in one of the colleges at Oxford or Cambridge such as Magdalen, St. Johns, Trinity, Christ Church, among others, which will serve as a home while in England and a vibrant source of intellectual and social interaction with students from around the world. Being part of collegiate life ensures that the Scholars have the full experience of studying at these remarkable universities.

The colleges also provide an intellectual home base for the students, residential quarters, and a host of social events including concerts, plays, sporting activities including basketball, informal parties and dinners, etc. While in residence at Oxford or Cambridge, the students have ready access to London which is an hour's train ride away as well as to the rest of Europe by train or air travel. In addition to associations as a historic part of British society and being powerful forces in Occidental civilization, the two universities and the colleges that comprise them have a long history of major advances in science. Affiliates of the two Universities have been awarded over 100 scientific Nobel Prizes, more than those of any other pair of institutions in the world.

While in residence in the UK, the students will have an excellent opportunity to explore the rest of Europe and become acquainted with international science. With modern laboratory facilities and extensive medical centers, Oxford and Cambridge provide an ideal training environment to complement the student experience at the NIH.

Students in the NIH Oxford-Cambridge Scholars Program also become members of one of the 27 scientific institutes and centers at the National Institutes of Health. Nestled in Bethesda, a verdant suburb of Washington DC, the NIH is the largest biomedical research complex in the world and a site where numerous prominent scientists including dozens of Nobel laureates have trained or worked. While in residence at NIH, the students can experience the cultural and historical vitality of Washington DC and its environs as well as other major cities on the eastern seaboard including Philadelphia, New York, and Boston.

L: Scholar Andy Johnson setting up a polymerase chain reaction experiment on a new gene regulating thymic development.[12]

R: Dining Hall in one of the colleges at Oxford and Cambridge.

The University of Oxford

Oxford was the first University in the English-speaking world. The University's aim is to remain at the forefront of centers of learning, teaching and research. Students from more than 140 countries and territories make up a student population of over 20,000. But it is not just longevity and global reach that make Oxford University stand out and give the University its special character. There is also the distinctive college and tutorial system which underpins a culture of close academic supervision and careful personal support for Oxford's outstanding students. The colleges and halls also help to foster the interdisciplinary approach that inspires much of the outstanding research achievement of the University and makes Oxford a leader in so many fields. It is an approach especially suited to confronting many of the hugely complex challenges that face us all.

Embedded within the historic University are state-of-the-art laboratories in all major areas of contemporary scientific research together with a modern medical center and biomedical research complex. This has fostered increasing focus on excellence in research endeavors that span scientific disciplines including the physical sciences, mathematics, engineering, chemistry, as well as fundamental biology and medicine.

UNIVERSITY OF OXFORD

For more information, please visit the University of Oxford's Facts and Figures page: http://www.ox.ac.uk/about_the_university/facts_and_figures/

The University of Cambridge

The University of Cambridge is rich in history - its famous Colleges and University buildings attract visitors from all over the world. The University is one of the world's oldest leading academic centres. Cambridge comprises 31 Colleges and over 150 departments, faculties, schools and other institutions. But the University's museums and collections also hold many treasures, which give an exciting insight into some of the scholarly activities, both past and present, of the University's academics and students. Its reputation for outstanding academic achievement is known world-wide and reflects the intellectual achievement of its students, as well as the world-class original research carried out by the staff of the University and the Colleges. The University of Cambridge is in the middle of the greatest expansion in its history.

Through the generosity of benefactors, the University has been able to create a new science and technology campus to the west of the city centre, and is now looking to expand further to the north west of Cambridge.

UNIVERSITY OF CAMBRIDGE

For more information, please visit the University of Cambridge's History and Future page at: http://www.cam.ac.uk/univ/history/future.html

National Institutes of Health

"The Scholars Program has provided a stunning new opportunity for some of the brightest and most motivated students. I have every confidence that the students trained in this remarkable program will become future leaders in the development of diagnostics, preventive medicine strategies, and new treatments for diseases with global health implications." [14]

Francis Collins, M.D.
Director of the National Institutes of Health

The Marine Hospital Service was established in 1798 and gave rise to a one room laboratory to study infectious diseases in 1887 which marks the birth of the National Institutes of Health. Today, NIH provides the largest source of support for medical research in the world by funding thousands of scientists in universities and research institutions in every state across America and around the globe.

NIH is made up of 27 Institutes and Centers, each with a specific research agenda, often focusing on particular diseases or body systems. More than 6,000 scientists work in NIH's own laboratories, most of which are on the NIH main campus in Bethesda, Maryland. The main campus is also home to the NIH Clinical Center, the largest hospital in the world entirely dedicated to clinical research.

For more information, please visit the National Institutes of Health homepage at: http://www.nih.gov/about/index.html

L: The founders of the NIH Oxford-Cambridge Scholars program and the NIH-M.D. / Ph.D. Partnership program, Richard Siegel M.D. Ph.D. (left) and Michael Lenardo M.D. (right), have been dedicated to international biomedical research collaboration by opening the enormous facilities of the NIH intramural campuses to exceptional students in partnership with leading universities and medical schools.

R: Group picture from the Scholars-Mentors colloquium, Pembroke College, Cambridge, 2007.

The International Biomedical Research Alliance

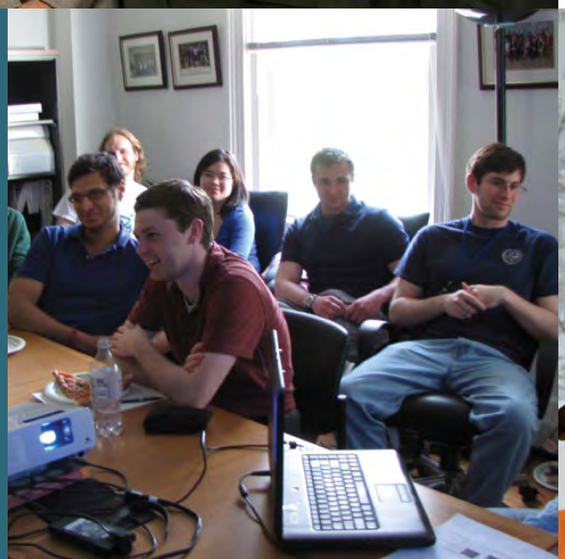
The Alliance sponsors activities that give Scholars an edge both inside and outside the lab. Activities focus on leadership, entrepreneurship, and motivation, while maintaining an emphasis on emerging careers in biomedical research.

UL: Scholars participating in a private breakfast in New York City with the 2009 Lasker award winners.

UR: Scholar Eugene Oteng discusses research with Lasker award recipient Nicholas Lydon.

LL: Students discuss research findings across different scientific disciplines at the "OxCam" cottage at NIH.

LR: Participant presenting research at the M.D./Ph.D. colloquium.



leadership

Since 2005, the Scholars Program has received generous support from the International Biomedical Research Alliance, a private sector non-profit organization created to enhance the financial stability of the program in support of continuous innovation and the acceleration of diagnostics, treatments and cures.

In addition to its commitment to ensuring the sustainability of the program, "The Alliance" supports enrichment activities that prepare Scholars to secure outstanding opportunities in academia, industry, and alternative allied areas such as public health, administration, and business upon graduation from the program.

The following list provides a representative example of the types of Alliance-supported activities that dramatically enhance the Scholars training experience.

» The **Annual Scholars-Mentor Colloquium**, provides an invaluable opportunity for Scholars and Mentors to come together to discuss their research. Keynote speakers have included Professor Sir John Gurdon and Nobel Laureates Dr. John Walker and Dr. Harold Varmus. These events have included visits to Representatives and Senators and receptions on Capitol Hill.

» Student attendance at the annual **Albert and Mary Lasker Foundation Awards Breakfasts**, which recognize the contributions of scientists, physicians, and public servants who have made major advances in the understanding, diagnosis, treatment, cure or prevention of human disease.

» **Induction Dinner**, Dr. Betsy Nabel, NHLBI director, served as keynote speaker for the 2009 Scholars induction dinner, impressing upon the new class the vital importance of our Scholars' —"the scientists of tomorrow"—exceptional contributions to biomedical research.

» Scholars participated in the **56th Lindau Meeting of Nobel Laureates** thanks to the efforts of Marshall Nirenberg, Chief of the NHLBI Laboratory of Biochemical Genetics and recipient of the 1968 Nobel Prize in physiology or medicine for his work on interpreting the genetic code.

» Every third week, we convene our **Frontiers in Bioscience** event which provides all Scholars currently present at NIH an opportunity to discuss their research in the context of important discoveries and themes in their particular fields. Frontiers in Bioscience provides an excellent opportunity for Scholars to practice their presentation skills, as well as to learn about new scientific advancements beyond their particular fields of research, and provides an enjoyable and interesting platform to expand upon the collaborative and interdisciplinary focus of our program.

» **Lasker Lessons in Leadership—Scientists Leading Change**
Following the close of the 2007 Research Colloquium in Cambridge, Scholars visited Down House, home of Charles Darwin and site of his work for more than 40 years.

During the Lasker Lessons program, Scholars had a unique opportunity to meet extraordinary leaders whose work has an enormous impact on the current and future course of science. They engaged in discussions with the UK's top leaders of science, technology and innovation efforts. Briefings and activities included:

» Private visit to Parliament
» Meeting with Sir Martin Rees, President of the Royal Society.
» Discussion with Sir David King, Chief Scientific Adviser to the UK Government.
» Meeting with the scientific leadership of the **Wellcome Trust**

results

The program is student-centered and designed to optimize the learning experience of each individual Scholar. We take great pride in our ability to provide learning experiences inside and outside the laboratory for NIH Oxford-Cambridge program participants. Our principal focus is to ensure that the students have an enriching and productive scientific training experience that will lead to a career in creative biomedical research.

Students in the program have completed their Ph.D. in an average of 4.2 years, with 67 percent defending their thesis within 4 years of matriculation.[4] Only 9.4 percent of the national U.S. life sciences students complete doctoral degrees in this amount of time.

A recent study of publication activity reveals that during their Ph.D training, our students produced an average of 2.75 first author peer-reviewed papers (range 0-13) and an average of 4.17 coauthored papers (range 1-19).[4]

Many of these papers have been published in top science journals including Nature, PNAS, Nature Immunology, Journal of Experimental Medicine, Lancet, Circulation, Blood and others.

To achieve our educational goals, we have implemented an advising structure that assigns each new class of Scholars a "Class Dean" to provide academic support throughout their graduate study. Students use an advanced electronic portfolio to track their progress and to allow their Class Dean to provide individualized guidance. Small class sizes and frequent tutorials on important topics such as grant writing also support the Scholars' educational goals.

Jean K. Lee M.D., D.Phil., the very first NIH Oxford-Cambridge Scholar inducted in 2001 celebrating the granting of her Oxford degree with her parents. Dr. Lee is pursuing a career in medical oncology at Sloan-Kettering Memorial Cancer Center.

With over 75 graduates and 100 Scholars actively enrolled, the NIH Oxford-Cambridge Scholars Program has quickly assumed a premier position in American science education. Students have enjoyed the benefit of an international collaboration and unparalleled scientific resources at their fingertips.

NIH Oxford-Cambridge Scholars Ph.D. Completion Rates [4]

New doctorates in their academic robes follow their degree-granting ceremony with a traditional mortarboard hat toss, one of the many historic student traditions of Oxford and Cambridge.

affiliated scholarships

"As a Goldwater Scholar and a winner of a National Science Foundation Fellowship, I had my pick of top graduate programs, but no other program in the world offers the kind of interdisciplinary, international, student-led opportunities for research that this program provides."

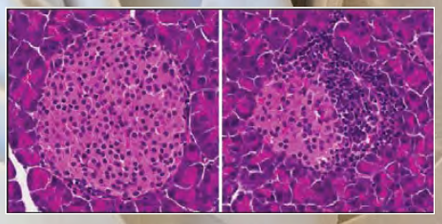
» Austin

The NIH Oxford-Cambridge Scholars Program has formal affiliations with The Rhodes Trust, the Marshall Scholarship, the Churchill Scholarship, and the Gates Cambridge Scholarship to provide doctoral training opportunities for the recipients of these prestigious scholarships. Many scholarship recipients are only guaranteed funding for two years; the OxCam program fills in the gap by providing financial support for scholarship recipients to pursue Ph.D. and M.D./Ph.D. degrees with the added benefit of the unique international collaborative format of the program. Additionally, the program attracts more Goldwater Scholars than any other program in the country.

In 2007, the NIH-Wellcome Trust program was established. Much like the NIH Oxford-Cambridge Scholars Program, the NIH-WT program provides support for overseas students from the United Kingdom and European Union to complete joint Ph.D. training between the NIH and any science doctoral training institution in the United Kingdom and Ireland. Wellcome Trust students are invited to attend activities sponsored by the NIH Oxford-Cambridge Scholars Program.

Scholarship Partners:

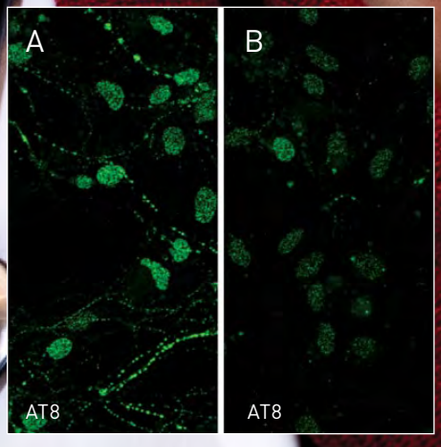
- The Wellcome Trust
- The Winston Churchill Foundation of the United States
- The Rhodes Scholarship
- Marshall Scholarship
- Gates-Cambridge Scholarship
- Barry M. Goldwater Scholarship
- Fulbright Scholar Program
- National Science Foundation



Photomicrographs of healthy (L) and diabetic (R) pancreatic islets that contain insulin-secreting b-cells (pale pink cells)that show the infiltration of the islet with autoreactive T lymphocytes (dark purple cells). A therapeutic to specifically eliminate these autoreactive T lymphocytes may protect the insulin-secreting b-cells and prevent type I diabetes.

Austin Swafford & Matthew Biancalana

Austin Swafford (L), winner of both McDermott and Goldwater scholarships, graduated summa cum laude from the University of Texas at Dallas with a major in Molecular Biology and a minor in Nanotechnology. As an NSF graduate fellow, he is combining research in a leading diabetes laboratory at Cambridge with an immunology laboratory at NIH to develop new, highly sensitive, diagnostic procedures as well as a novel therapeutic strategy to destroy the autoreactive T lymphocytes that cause diabetes. In his first year in the program, he discovered a gene that confers protection against type I diabetes.[15] Matthew Biancalana (R) graduated with honors in biochemistry and chemistry from the University of Chicago where he was awarded a Goldwater scholarship, and participated in NIH's program in Physical and Chemical Biology. Matt was a Churchill Scholar at Cambridge and works in the same NIH immunology laboratory as Austin where he is studying the biophysics of several proteins critically involved in immune responses and HIV infection in collaboration with the laboratory of Sir Alan Fersht at the Laboratory of Molecular Biology at Cambridge.



In this mouse neuron culture, Jenny finds that phopshorylation of the tau protein (A) is suppressed by addition of fractalkine (B), which might regulate neurotoxicity in neurodegenerative disorders such as Alzheimer's disease.[16]

Jenny Dworzak

When Jenny was admitted to the program as a M.D. / Ph.D. student she was already on an accelerated track; Jenny graduated with honors from the University of Washington at 19. Jenny is pursuing her M.D. at Mt. Sinai School of Medicine and will receive her Ph.D. from Cambridge. Jenny's research interests revolve around the intersection of neuroscience and immunology. Her Ph.D. project focuses on immune system-mediated pathogenic mechanisms of Alzheimer's disease.

M.D. / Ph.D.

The accelerated nature of the NIH Oxford-Cambridge Scholars program is a natural fit with combined M.D. / Ph.D. training for students preparing for careers as physician-scientists.

Since 2005, more than 50 NIH OxCam scholars have chosen to pursue combined M.D. / Ph.D training in the NIH M.D. / Ph.D. partnership training program which provides tuition and stipend funding for medical school through special additional partnership funding from the Medical Scientist Training Program (MSTP).

The program offers three pathways for admission to M.D. / Ph.D. Training. Students not already enrolled in medical school can apply to the program in parallel to traditional M.D. / Ph.D. programs. Applications are also accepted from current medical students or medical students engaged in 'year-out' research programs such as the Howard Hughes Medical Institutes-NIH Scholars Program or the Clinical Research Training Program. Exceptionally qualified Ph.D. students at NIH committed to careers as physician-scientists can also apply for MSTP partnership funding to attend medical school after completion of the Ph.D.

While at NIH, students take advantage of the extraordinary resources of the NIH Clinical Center, the nation's largest hospital devoted completely to clinical research. Through participation in clinical rounds and individual preceptorships, NIH M.D. / Ph.D. students experience cutting-edge, research-driven medicine in action. Clinical activities at Oxford and Cambridge can also be arranged, allowing students to observe medical practice in the British system. Advising is provided to help guide combined-degree students in these activities and career choices, and the program provides travel opportunities to scientific meetings and national physician-scientist training events as well.

For more about the NIH M.D. / Ph.D. Partnership including a list of participating medical schools and information about how to apply, please visit the program website http://mdphd.gpp.nih.gov.

NIH MD | PHD
Partnership Training Program

National Institutes of Health
Intramural Research Program

Dr. Anthony Fauci examining an AIDS patient at the NIH clinical Center in the 1980s. Pioneering studies were carried out at the NIH Clinical Center on the diagnosis, pathogenesis, and treatment of AIDS caused by HIV, which were vital to ensuring the safety of the worldwide transfusion blood supply.

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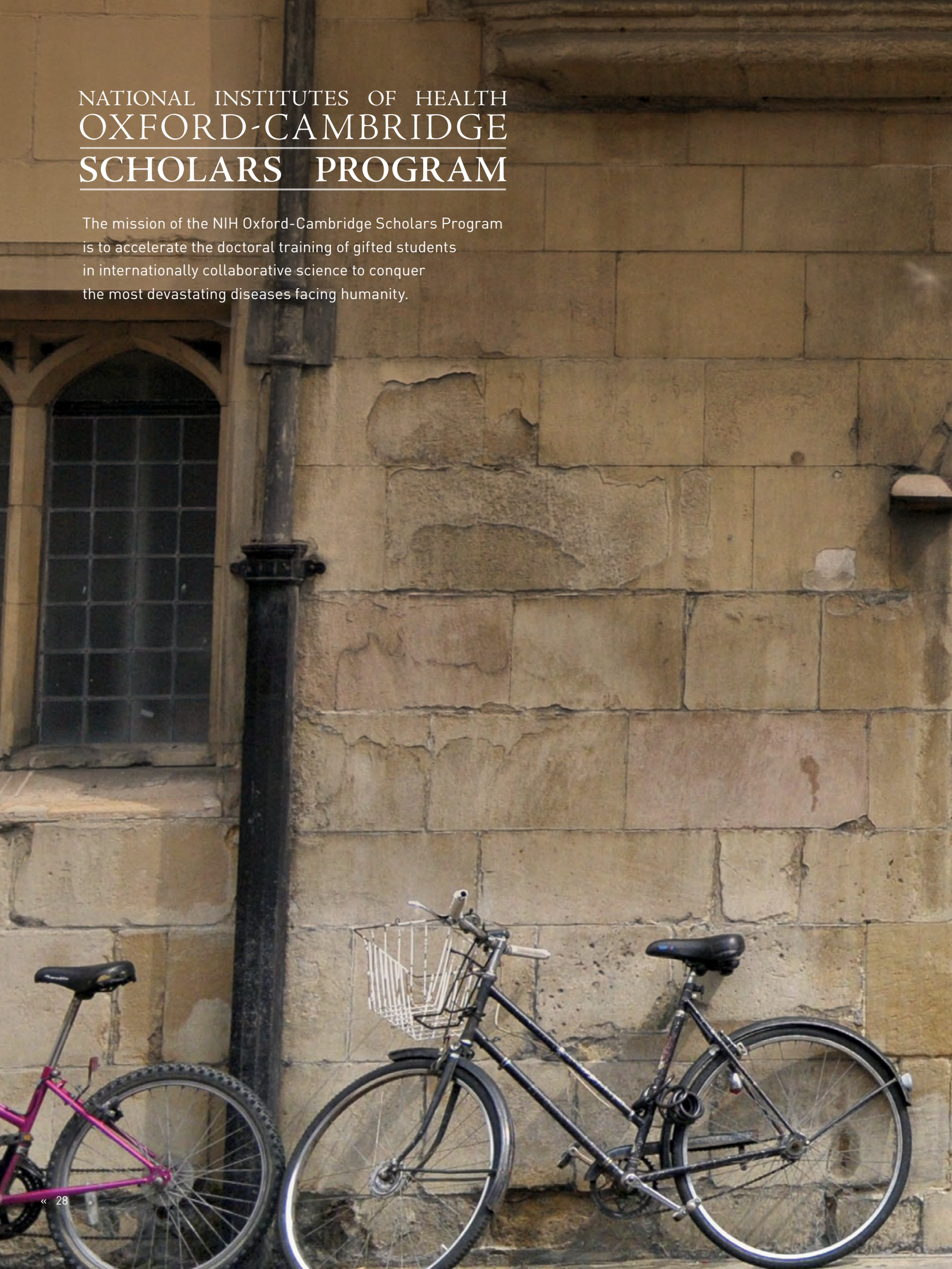

NATIONAL INSTITUTES OF HEALTH OXFORD-CAMBRIDGE SCHOLARS PROGRAM

The mission of the NIH Oxford-Cambridge Scholars Program is to accelerate the doctoral training of gifted students in internationally collaborative science to conquer the most devastating diseases facing humanity.