Human Biology's illustrious founders came together from a range of academic disciplines that included sociology, psychology, biology, and genetics, and created a program with the intention of equipping students with knowledge of the complex relationships between humans and nature.

The mission statement then and now.

In 1971, the original mission in the words of HumBio's founders read, "The main objective is to develop persons whose knowledge of biology is linked with knowledge of the behavioral sciences. The aim is to prepare them to influence public policy as truly informed citizens, and for advanced training in biology, the behavioral sciences, or the study of public policy on issues related to biological processes."

The mission has been fine-tuned over 45 years and now reads, "The mission is to provide an interdisciplinary approach to understanding the human being from biological, behavioral, social, and cultural perspectives. The curriculum provides a broad and rigorous introduction to the biological and behavioral sciences and their interrelationships, and explores how this knowledge, in conjunction with studies in other fields, can be applied to formulate and evaluate health, environmental, and other public policies that influence human welfare."

Enjoy then and now numbers of note on HumBio's Index on page 2.
Students, alumni and faculty have endeavored for over four decades to fulfill the mission envisioned by our founders.
Each alumnus is making the world a better place, in one of 7,464 unique ways.

**HumBio’s Index**

In 1971 there were 350 Human Biology majors out of 6431 undergraduates at Stanford
In 2016 there are 385 Human Biology majors out of 6994 undergraduates at Stanford
Human Biology’s very first class, HumBio 1: Man and Nature, was attended by 685 students
Herant Katchadourian’s Human Sexuality class drew 1035 students in 1971, and by 2002 he had taught over 20,000 students
The Human Biology Alumni Majors LinkedIn group has over 930 members ([join us!](https://humanbiology.stanford.edu/founding-faculty)
Bill Durham has taught in the Human Biology Core for 38 consecutive years
In a 1988 lecture on CO₂’s warming effect on the earth, Don Kennedy predicted that the theme of conflict resolution between nations in the 21st century would have to do with the population, resources, and environment

76% of Human Biology students are women
Rhodes Scholarships have been awarded to 9 Human Biology students and alumni
Human Biology alumni live in at least 36 different countries
About half of Human Biology students plan to go to medical school or into the health sciences
Human Biology has 8 founders, and has had 10 directors
Total number of students who have graduated with a major degree in Human Biology is 7,464
6 student advisors serve their fellow students each year
11% of Human Biology students graduate with Phi Beta Kappa, and 10% with University Distinction
Since 2010 HumBio has had 26 Rhodes, Marshall, Fulbright, Luce, and Gates Scholars
In 2016 HumBio offers 6 statistics classes (see page 8)

Can you name all 8 of HumBio’s Founders and their academic disciplines?

Answers found on [https://humanbiology.stanford.edu/founding-faculty](https://humanbiology.stanford.edu/founding-faculty)
CONGRATULATIONS OLYMPIANS

Congratulations to Six HumBio Olympians!
Of Stanford’s 39 athletes at this year’s Olympics in Rio, Brazil, six were HumBio alumni.

Photos courtesy of Getty Images and Stanford Athletics
Students learn statistical concepts as well as STATA, a statistical analysis software that requires coding. Although her students get frustrated now and then, Kurina observes them overcoming hurdles of self-doubt that they will “never be able to code.” Kurina said, “When students receive their first coding assignment, some get super nervous. Then as time goes on, and we are a few weeks in, they just get busy typing away.” As soon as students learn to execute straight-forward commands, it all gets better and the students relax.

Students use data sets that are relevant to them, as twenty-somethings. For instance the National Survey of Family Growth, which focuses on people from 15-40 years of age, is used by the Center for Disease Control to make statements in the news about health and well-being, including reproductive health, sexual practices, and pregnancies. Another data set they use is the Behavioral Risk Factor Surveillance System (BRFSS) which covers age, smoking, and U.S. obesity trends.

Examining BRFSS data opens up conversations about what to do with body mass index (BMI) data points that are way too high or way too low. Most people are in the middle. Kurina and her students delve into these data, thinking about what to do with values at the extreme ends of the curve. “You have to ask yourself whether or not these particular data points actually represent real people, or did someone make a mistake when entering the data!” Kurina said. The answer to this question has consequences for your findings - for example, including or excluding these values can affect the average. Thinking about how to answer this question therefore feeds into discussions about how researchers make decisions on which values they believe are true. This in turn leads nicely into talking about error, where it creeps in, and what effect it has on results downstream.

By the end of the quarter most of her students are relieved of the misgivings they carried into their class on day one. Thinking about the shift in students’ attitudes over the quarter, Kurina said, “It is really rewarding to see students who are nervous and full of self-doubt at the beginning of the course gain facility with these critical statistical concepts and become so competent at coding.”

Lianne Kurina, Associate Professor (Teaching), embraces the challenge of introducing her HumBio students to the world of data, a critically important part of their lives. If anyone can give students a fresh outlook on statistics, Kurina is the one to do it.

Students’ attitudes can vary dramatically on the first day of a required course compared to an elective course. This is often the case for a required statistics class where a subset of students have avoided taking math, computer, and statistics classes either out of fear, or because they think that the classes might be boring.

What a delight it is then when apprehensive students are greeted by Kurina’s enthusiasm. Passionate about bringing her research to her students, she aims to teach the material so that it is meaningful and understandable. She wants it to stick with them. Kurina assumes no prior knowledge of math, and guides them assuringly. “Some students are worried about all of the things I am going to ask them to do, they feel concerned that it is not going to work out. And then it does, of course it does,” said the ever upbeat Kurina.

Read how her recent study challenges the view that sickle cell increases mortality risk in the Stanford Medicine News Center.
45th BIRTHDAY CELEBRATION

Over 300 of the Human Biology tribe came together on a sunny afternoon during Reunion Homecoming Weekend to celebrate HumBio’s 45th! The party served up a festschrift for HumBio’s consummate citizen, Bill Durham, Bing Professor of Human Biology, Emeritus, and Professor of Anthropology, Emeritus.

The festivities opened with a glowing report of Human Biology’s accomplishments by Dean Richard Saller, Vernon R. and Lysbeth Warren Anderson Dean of the School of Humanities and Sciences. Then Human Biology’s Bing Director, Paul Fisher, M.D., revealed his talent as an expert M.C. as he kept laughter and presentations rolling throughout the afternoon program. Alumni shared amusing stories and gratitude for Durham’s professorial influence on their lives and careers. They also gave glimpses into their four impressively distinct careers including Ari Bernstein, M.D., as a pediatric hospitalist, and instructor who examines the human health effects of environmental changes, Wende Sawyer Hutton, M.B.A., as a venture capitalist who invests in medical wearables, Curt Langlotz, M.D., as a professor of radiology and bioinformatics who develops novel machine learning and natural language processing algorithms, and Flora Lu, Ph.D., as a professor in environmental studies who specializes in ecological anthropology.

Intermission was an energizing and educational treat prof ered by alumna Begoña Echeverria, Ph.D. along with her animated musical Basque trio NOKA.

The afternoon presentations culminated in Durham’s colorful recounting of his nearly 40 year HumBio history.

Cheers Durham! Cheers HumBio!

Enjoy excerpts from Durham’s talk:

Two score and five years ago our founders brought forth on this campus a new major, conceived in liberal arts, and dedicated to the proposition that the social and natural sciences should be treated as equal...The world will little note, nor long remember what we say here, but it can never forget what they did here. It is for us - the active supporters - rather, to be dedicated here to the unfinished work which they, who began the major, have thus far so nobly advanced.

It all began with lactose, but you already knew that! Many good things begin with lactose, not just the Human Biology Core, but the life of almost every human infant, and the life of almost every young mammal, except the pinnipeds.

But did you know that the Program in Human Biology itself in a very real sense began with lactose? Yes, Human Biology’s first director, Professor Norm Kretchmer, is really the one to credit-or-blame continued on page 9

IT GLOWS....

Best HumBio swag ever! You will be the life of your next HumBio slumber party, with the new glow-in-the-dark lactose molecule lapel pin. Made in honor of Bill Durham’s memorable lactose lectures, this nifty pin was the hot swag give away at HumBio’s 45th reunion party. If you didn’t get one, please send your favorite HumBio memories and photo to Robyn Duby at rduby@stanford.edu for our alumni stories section and we’ll send you a pin (while supplies last). Be sure to charge up your glow-ink first with a bright light before trying to impress your pals.
Human Biology now offers a B.S. degree option for its majors, in addition to the current B.A. degree. The B.S. option was approved to begin in the 2016-2017 academic year by the University Faculty Senate on April 28, 2016.

The B.S. degree option allows interested students to focus their studies in a slightly more scientific or technical direction. The requirements are to complete coursework and specialization in the biological sciences, physical sciences, mathematics, and/or computer science and engineering. Students will still take classes in the social sciences or humanities, though slightly fewer.

In today’s science-heavy economy and society, some industries, such as genomics, biopharma, biotechnology, and health sciences, and even some non-profits, non-governmental organizations, and government organizations, are especially well-suited for graduates with a B.S. degree.

The Human Biology B.A. degree will continue to give students the same great foundation in biology, while allowing students slightly more flexibility and breadth in the social sciences and humanities. Students are advised that while the B.S. and B.A. have slightly different benefits, both academic credentials will enhance their career opportunities and employers will seek the skills of graduates with both degrees. For instance, medical schools will not be partial to the B.A. or B.S. degree. No matter which degree majors choose, students are, as always, best served by excelling in their course of study.

Human Biology students have long sought a B.S. degree option for academic paths with a more science-focused course of study, including natural sciences and even mathematics and engineering. Other interdepartmental programs, such as Science, Technology and Society, have already set that precedent.

Paul Fisher, M.D., Bing Director of Human Biology

Introducing some of HumBio’s First Bachelors of Science Candidates
Students shared comments on what the B.S. means to them and on some of the classes they will take to count toward their B.S.

Aheli Chattopadhyay: I am so excited about the new B.S. option for HumBio! As a Human Biology major, I have definitely had the opportunity to take a broad range of courses that focus on the intersection between liberal arts and the sciences, and that has been tremendously valuable to my college experience. But since my area of emphasis is Human Systems and Disease, the B.S. highlights my in-depth natural science classes. In the future, I am thinking of pursuing an MD-PhD. Some of the B.S.-related courses I’m particularly excited about are: The Biology of Stem Cells and The Human Genome and Disease. It is wonderful that the HumBio program is constantly growing and making deliberate changes in order to provide students with even more opportunities!

Elise Cranny: My area of emphasis is Developmental Neurobiology and Disease. I am pursuing a career in neuroscience or medicine more broadly, and research. This incredible opportunity allows students to major in and experience the freedom of HumBio, while also pursuing a B.S. degree with a heavily science-based course load. I love the Human Biology major here at Stanford! I loved taking the core! This quarter I took Cellular Neuroscience and Developmental Neurobiology, and I have really enjoyed these classes.

Nira Krasnow: My area of emphasis is Molecular Biology and Human Disease. I hope to go to medical school and eventually be a practicing physician. I believe that the B.S. degree is a better representation of my undergraduate education and for that reason I am very happy to have this option as a HumBio major. I am very excited to take Advanced Molecular Bio and Cancer Biology as part of my course of study.

Michael Rector: I aspire to be a cardiothoracic surgeon. My area of emphasis is health, nutrition, and human performance. Earning any HumBio degree is a huge blessing, but having the option to choose between a B.A. and B.S. allows students to make an even more personalized path here at Stanford. I feel that breaking new ground in this new degree option is something we should all be proud of. When I think of HumBio, I think science, science, science.

HumBio Evolves!
STUDENT NEWS

The Firestone Medal for Excellence in Undergraduate Research

Firestone Medals are awarded to the top 10 percent of undergraduate honors theses completed in a given year. Congratulations Jordyn and Emily!

Jordyn Irwin’s ('16) thesis, “Understanding Emergency Department Patient Perceptions of the Social Determinants of Health Through the Stanford Help Desk,” was advised by Jennifer Newberry (Emergency Medicine) and Donald Barr (General Pediatrics).

Emily Taing’s ('16) thesis, “Syp, the Drosophila Homolog of Mammalian hnRNP Q, Functions in the Regulation of Meiotic Progression in Male Germ Cells,” was advised by Margaret Fuller and Catherine Baker (Developmental Biology), Mary Kristy Red-Horse (Biology).

Runner’s melanoma story encourages athletes to protect their skin

Erik Olson’s ('15) close call with the deadly melanoma was highlighted in the Stanford Medicine. In an effort to prevent skin cancer, Stanford’s SUNSPORT teams up with Stanford Athletics to provide annual skin screening and educational presentations for athletes. Olson, a long distance runner who regularly applied sunscreen to his face, neglected to cover his back. Fortunately, when the small pink melanoma lesion on his back was discovered, it had not yet metastasized.

ALUMNI NEWS

Voted “Best Doctor” for 7 consecutive years in Santa Cruz

BodyWise: Discovering your Body is the newest of 5 books

Rachel Carlton Abrams, M.D. (HB ’89) has been describing her HumBio education to her daughters as they apply to college and continues to be amazed at how perfect the curriculum has been for her life work. A physician and author in the areas of relationship, intimacy and holistic healing, her newest book is coming out in January from Rodale Press. BodyWise: Discovering your Body’s Intelligence for Lifelong Health and Healing, a cross between biology, physiology, sociology, psychology and anthropology, is what Rachel feels is a perfect expression of her Hum Bio degree. Enjoy her Ted talk!

National Academies of Sciences, Engineering, and Medicine committee on gene drives research

Jason (Dell) Delborne, Ph.D. (HB ’93), Associate Professor of Science, Policy and Society at North Carolina State University, served on the committee that released a report entitled, Gene Drives on the Horizon: Advancing Science, Navigating Uncertainty, and Aligning Research with Public Values. Including briefings at NIH, the White House, Capitol Hill, as well as media interviews with Science magazine, The New York Times, the Associated Press, and his university’s news service, work on this interdisciplinary report was an incredibly intense, exciting and the most meaningful thing he has done as an academic. Grateful to Professor Bill Durham for the flame he lit that drove him onto the tenure track, Jason said, “HumBio imprinted an interdisciplinary identity on me that has never left!”
Stanford’s Associate Vice Provost and Dean of Community Engagement and Diversity reflects on election during ‘What Matters to Me and Why’

Nicole Taylor (HB ’90, MA ’91) drew over 100 Stanford students, faculty and staff to reflect on the presidential election. She believes that empathy and understanding are key in creating a path forward after a divisive campaign. Nicole describes herself as a “person of action” and sees her job as making connections that move people toward resolving issues of inequity. Returning to serve in the public sector, Nicole has recently accepted the position of Deputy Vice President and Dean of Students at Arizona State University.

HumBio’s fearless leader appointed Dunlevie Family University Fellow in Undergraduate Education

Congratulations Paul Fisher!

Paul Fisher, M.D. (HB ’84) was appointed the Dunlevie Family University Fellow as part of Stanford’s Bass University Fellows Program, which is designed to honor faculty who have demonstrated a sustained commitment, at the highest levels, to undergraduate education. Paul has been director at HumBio since 2011, and has been teaching HumBio 154C: Cancer Epidemiology since 2004.

FACULTY STUDY SMORGASBORD

Select the hot-links below for a sampling of a variety of HumBio faculty research discoveries.


Rudolfo Dirzo, Bing Professor in Environmental Science, and Senior Fellow, by courtesy at the Woods Institute for the Environment, on big animal extinction.

Grant Miller, Associate Professor of Medicine (PCOR), Senior Fellow at the Freeman Spogli Institute and at the Stanford Institute for Economic Policy Research, and Associate Professor, by courtesy, of Economics and of Health Research and Policy, on Iran’s health care expansion.

Allan Reiss, Howard C. Robbins Professor of Psychiatry and Behavioral Sciences and Professor of Radiology, on cycling and kids with ADHD.

Tom Robinson, The Irving Schulman, M.D. Endowed Professor in Child Health and Professor of Medicine (Stanford Prevention Research Center), on grants and environmental solutions.

Randall Stafford, Professor of Medicine (Stanford Center for Research in Disease Prevention), on a plant based diet.

Marcia Stefanick, Professor (Research) of Medicine (Stanford Prevention Research Center) and of Obstetrics and Gynecology, on middle-aged weight challenges.

William Talbot, Senior Associate Dean, Graduate Education & Postdoctoral Affairs and Professor of Developmental Biology, co-author on coaxing stem cells to generate bone, heart muscle.

HumBio’s Six Great Statistics Courses

Qualitative Research Methodology
Students develop knowledge/skills for designing and conducting qualitative research studies.

Essential Statistics for Human Biology
Students are introduced to statistical concepts and methods essential to the study of questions in biology, environment, health and related areas.

Introduction to Statistics for the Health Sciences
Students learn the statistical tools used to describe and analyze data in the fields of medicine and epidemiology. An applied course.

Advanced Data Analysis in Qualitative Research
For students writing up their own qualitative research.

Engineering Better Health Systems: modeling for public health
Students learn disease detection and control strategies from a “systems science” perspective using engineering, operations research, and modeling techniques.

Statistics in Health Sciences
Students learn how to read, interpret, and critically evaluate probability and statistics in medical and biological sciences.
Durham 45th Excerpts
continued from page 5

for lactose, not me! Kretchmer, in Pediatrics in the Stanford Medical Center, was truly a hero in the study of lactose absorption, long before I ever heard of the term. So we can honestly say that HumBio was founded on lactose...even as many of us prefer to avoid fresh milk.

Thinking back to HumBio’s beginning, I can still remember the day when Biology Professor Donald Kennedy spotted me in the hallway of Herrin building, and said, “Durham are you busy for the next hour?” I said, “No, not really,” and he said, “Come with me to a meeting.”

In the room sat most of the founders, and another undergrad who was invited to meet with the group. The faculty outlined their idea for a new interdisciplinary major that would integrate social and natural sciences, building on a strong base of biology, in the hopes of training students to work on the big problems of our era: things like poverty, racism, deforestation, emerging diseases, species extinction, even war! “Wow,” I thought, “this is exciting stuff!”

There was a lot of interest among students in changing things for the better, and HumBio was intended to help make change possible. How grateful we were then for the vision of the founders, and how grateful we remain today for that vision, and for the dedication that pulled it off.