



PUBLIC HEALTH GENETICS

SPH Institute bridges science and social implications of genetic discoveries

When the leads dried up in the rape and murder of a young woman in Idaho Falls, police turned to Ancestry.com, hoping to find someone related to the killer. Their search led them to a New Orleans filmmaker, whose father's DNA had appeared on the popular website.

The initial genetic match was strong, and the filmmaker was under suspicion for a month before additional DNA testing exonerated him. It is the first known case where police conducted a forensic familial search using a commercial DNA database — and it raised all kinds of ethical questions.

It was, in short, a perfect case study for the UW School of Public Health's Institute for Public Health Genetics — the only graduate program of its kind that bridges the science with the ethical, legal and social implications of genetic discoveries. "What

people contribute to these databases could be used negatively against them and their family members," says alumna Taryn Hall (PhD '16), who studied the case as part of her dissertation on the Y-chromosome in forensics. "It's a violation of privacy and may be risking unlawful searches."

Revolutionary advances over the past decade have also helped us understand the genetic influences on diseases. "We have the complete genetic picture," says Bruce Weir, Institute director and a pioneer in statistical genetics. "It's a blessing that we have all this information, all this data. The curse is we have to interpret it, to tease out bits of the genetic information that are important and affect our health."

Most recently, scientists successfully used a gene-editing technique called CRISPR to fix a mutation in a human embryo that causes heart disease.

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Public Health Genetics

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Such discoveries also highlight a need to educate professionals on the implications of translating genetic advances to clinical and public health practice.

In the case of direct-to-consumer genetic testing, says PhD student Sarah Nelson, “public health professionals and geneticists should be aware of both the harms and benefits.” Non-traditional tests are available for less than \$50, and a discounted 23andMe kit was a top-selling item on Amazon Prime Day 2017.

“Knowledge of genetic risk may empower people to make preventive health decisions, or it could confuse and mislead people,” says Nelson, who, as part of her dissertation, is surveying people who have accessed their genetic data. She cites ongoing debate about how tests will affect the cost of health care.

Nelson is also interested in understanding how people are using third-party tools to learn about their genetic data. For example, Athletigen, a Canadian company, uses a person’s DNA to recommend ideal exercises and GeneKnot connects people with similar genetic risk. She hopes to finish her project in 2018.

The Institute, housed in the Department of Biostatistics, exposes students to more than 50 faculty in public health, medicine, law, ethics and other fields. Deborah Bowen, professor of bioethics and humanities, and Anna Mastroianni, professor of law, are assistant directors. The program’s expert faculty include Timothy Thornton, who studies genetic risk factors of African-Americans and other groups with multiple ancestries; Nanibaa’ Garrison, who works closely with Native American populations; and Gail Jarvik, UW’s medical genetics division head, who is leading the coordinating center for a national effort to understand genome sequencing in patient care.

More than 100 students have graduated from the Institute since it was founded by former SPH Dean Gilbert S. Omenn in 2002. Many now work for federal and state agencies, including the National Institutes

of Health and the Washington State Department of Health. Some work for the National Human Genome Research Institute, and others are at Google and Seattle Genetics.

William Gordon, a master’s student in genetic epidemiology, is excited by “the sheer power” of public health genetics. “I don’t think I can study anything else that still keeps me up at night,” he says.

Gordon is working with Sara Lindstroem, assistant professor of epidemiology, to understand the genetic variants associated with “cancer in the broadest sense.” The project aims to quantify and map the shared genetic contribution to cancers ranging from skin, breast, colorectal, lung, ovarian and prostate. It presents “a real statistical challenge,” he adds, “and often leads to ethical and legal dilemmas due to unexpected results and lurking variables.”

*“It’s a blessing that we have all this information.
The curse is we have to interpret it.”*

—Bruce Weir

*Director, Institute for
Public Health Genetics*

The Institute offers four interdisciplinary graduate degrees, including a PhD, MPH, MS and concurrent JD/MPH. The Institute is also assisting with planning for a master’s in genetic counseling. A degree in the burgeoning field will be offered through SPH in 2018.

“One in every two positions for genetic counseling in the U.S. is empty,” says Weir. “The increase in interest in genetic knowledge has given rise to an increase in need for genetic counselors, and there are no training programs in this part of the country.”

On top of that, Weir envisions further growth spurred by the federal government’s Precision Medicine Initiative and the UW-based Genetic Analysis Center. New hires, he says, will bring innovative recruitment tactics and help boost undergraduate programming in public health genetics.



AWARDS & SCHOLARSHIPS



Farhiyo Ahmed, Senior, Public Health Major

Former Refugee Now a Champion for Community Health

Tenacious learner, engaged community leader, loving mother. These words describe this year's Double Eagle II Endowed Scholar, Farhiyo Ahmed, a senior in the Public Health Major.

Originally from Kenya, Ahmed is the first person in her family to go to college. She grew up in the world's largest refugee camp, called Dadaab, where her family depended on humanitarian aid agencies for food, water, healthcare and education. "They were doing their best job to improve the quality of life for some of the world's most vulnerable people," Ahmed says.

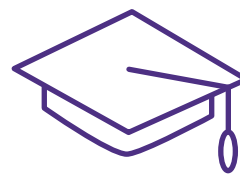
She saw the aid workers as change makers, and was inspired to improve the health of communities, especially of refugees and immigrants. "Public health allows me to follow a life path that I genuinely admire," Ahmed says, "working for the dignity and equality of everyone regardless of their race, gender, socioeconomic status and sexual orientation."

A mother of six who works part-time as a Somali interpreter in South Seattle, Ahmed is often forced to make difficult choices when it comes to school, work and family. If she can't afford books, she relies on YouTube to learn specific topics. Or she asks classmates if she can photocopy their pages. This scholarship will not only ensure Ahmed has the books

she needs to thrive in class, but it will also cover a portion of her tuition.

"I'm eager to complete my education so I can change my life and become a role model for my children," Ahmed says. She plans to continue working with diverse communities to help them achieve their goals for health equity, and she hopes to return to school to complete a master's degree in maternal and child health.

Retired U.S. Navy Captains Frances M. Frazier, Nurse Corps, and Margit M. Loser established the Double Eagle II Endowed Scholarship in 2006. Their collective 57 years of active duty took them around the world, where they observed firsthand how effective public health systems impact community health and well-being. By creating a scholarship for undergraduates, Frazier and Loser hope to help students like Ahmed gain a global perspective for their lives and work.



In the 2016-17 school year, **107** SPH students recieved support from donors like you.

To support our next generation of public health leaders, please contact the SPH advancement office at sphadv@uw.edu or 206.543.4047



Photo: © Tracey Salazar Photography

Former US Rep. McDermott Endows Global Health Fellowship

Select graduate students in the School of Public Health will be able to travel around the world to engage communities in health promotion, thanks to a new fellowship established by former U.S. Rep. Jim McDermott, the long-time Seattle Congressman.

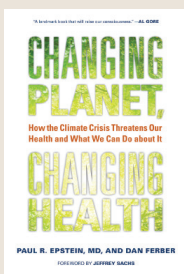
The James A. McDermott, M.D., Endowed Global Health Fellowship is for students proficient in a language other than English and who are “internationalists.” Funds are anticipated to be available in Fall 2018.

Rep. McDermott credits his interest in healthy communities around the world to a trip he took in college with friends to a remote part of Africa, made possible by the father of a friend. The fellowship, he says, is his way of paying it forward.

After earning his medical degree, McDermott served in the Navy Medical Corps as a psychiatrist

during the Vietnam War. After returning to the U.S., he realized he could do more to improve the lives of others as an elected official. He went on to get elected to the Washington State Legislature in 1972, and for the next 30 years, he advocated for legislation that aids society’s most vulnerable populations — foster children, low-income families, unemployed Americans, and those confronting major illness or disability.

Taking a brief leave from politics in 1987, McDermott also spent a year as a regional medical officer based in Kinshasa, Democratic Republic of the Congo, during the early days of the AIDS epidemic. He later served as a U.S. Foreign Service Medical Officer providing psychiatric services to State Department employees, USAID staff and Peace Corps personnel throughout sub-Saharan Africa.



Common Book

This year’s Common Book for UW Health Science students is *Changing Planet, Changing Health: How the Climate Crisis Threatens Our Health and What We Can Do about It*. Read along with our students, staff, faculty and members of the Grayston Society to explore how climate change is altering patterns of cholera, malaria, asthma and other diseases. Follow Common Book events through the year on Facebook: www.facebook.com/uwhscommonbook

John A. H. Lee's Legacy Lives on Through Endowed Fellowship

Not long before he died in late August, John A. H. Lee, professor emeritus of epidemiology, and his wife, Anne, established an endowed fellowship in honor of his family's passions for higher education, teaching and scientific research around public health. Dr. Lee retired in 1993 after a 27-year tenure at the UW and Fred Hutchinson Cancer Research Center. He authored numerous studies on various forms of cancer, from melanoma to breast cancer. This endowment will support graduate students in epidemiology. Memorial donations to The John A. H. and Anne Lee Endowed Fellowship are welcome. Please contact Liz Van Hoy at vanhoye@uw.edu or 206.221.6395.



John A. H. and Anne Lee



Photo: © Paul Brown

New Gift to Bring Global Maternal & Child Health Experts to UW

This spring, an anonymous donor couple established the DDD Endowed Visiting Lectureship in Global Health of Women, Adolescents and Children. Distinguished scholars who are researching, implementing or developing programs that benefit the health and well-being of women, adolescents and children will be invited to the UW to conduct a public lecture and multi-day faculty exchange.

Possible speakers could include ministers of health, foreign university academics and experts from non-governmental organizations and US government agencies. The donors hope this exchange will help

the Department of Global Health to develop and deepen relationships with in-country partners who can enhance work already happening on the ground.

The donors were inspired to establish this endowment from their work in healthcare professions overseas, their family's deep history in healthcare and caregiving, and their interest in improving the lives of families in low- and middle-income settings. The School of Public Health is deeply grateful for the support of this new fund. Stay tuned for details about the inaugural lecture.

ALUMNI Q&A

Mike Krause

Senior Industrial Hygienist at Veritox
(MPH '83), Industrial Hygiene, Department of
Environmental and Occupational Health Sciences

Why environmental and occupational health sciences?

It was completely by chance. I was studying for a bachelor's in zoology at the UW and selling shoes part-time at Sears. I worked with someone who was in the department, and he said the courses were interesting and fun, so I checked it out. The next thing you know, I'm enrolling in the program.

What interested you about industrial hygiene?

I liked the idea of getting involved in a variety of industrial workplaces and processes. Here in the Northwest in the '70s and '80s, we had lots of sawmills, pulp mills and aluminum companies. There were also metal foundries and plants making boats and RVs.

What motivates you today?

There is always a new problem to tackle, particularly in litigation work, from mold exposure to indoor air quality to industrial toxics.

What is an emerging issue in industrial hygiene?

Nanotechnology – new manufactured products that are tiny in size, including carbon fibers. People are worried about the health hazards.

Do you still conduct research?

Most cases I work on require research into the latest literature, unique sampling and analysis methods, or exposure modeling. Believe it or not, at Veritox, we studied how fast mold grows. People always ask about this, so we hung sheetrock in troughs of water, then left them for weeks and watched how long it took.

What was one of your favorite post-SPH experiences?

Monitoring waste anesthetic gases in hospitals in Oregon. I was an industrial hygienist for the State Accident Insurance Fund, the state's main worker's



As a Certified Industrial Hygienist (CIH) at Veritox, Krause recognizes health hazards in workplaces, homes and the environment, evaluates and monitors exposures, and recommends control measures. Veritox supports the Department through funding quarterly socials and currently employs seven other DEOHS alumni.

compensation insurer at the time. The big issue was leaking anesthetic gas exposure and how it was affecting nurses and doctors. I would gown up and go into operating rooms. While the doctor was cutting someone open, I would be right there holding the meter and taking samples to let them know the levels and where the leaks were.

What are you most proud of in your career?

Building a company (HAZCON) and bringing along new hygienists. We had a direct pipeline from UW and SPH. I hired many graduates as they came out and put them right to work supporting industrial clients.

What makes UW students stand out?

I got good training, good hands-on experience at SPH. We took field trips to the Tacoma smelter and Bayliner boats. We did air and noise sampling, ventilation studies and even our own lab analysis. We got to see how things worked and how to control exposures. I knew that UW graduates had the skillset we needed.

Kaufman, Frumkin Elected to WA State Academy of Sciences

SPH's Interim Dean Joel Kaufman (MPH '90) and Professor Howard Frumkin were elected in August to the Washington State Academy of Sciences for their outstanding record of scientific achievement. They are among 13 new members, including six from the UW, who were inducted Sept. 14 in Seattle.

The academy described Kaufman, a professor of environmental and occupational health sciences, medicine and epidemiology, as a public health leader whose "research illustrates the impact of air pollution as a major contributor to cardiovascular disease." Frumkin, of environmental and occupational health sciences, "is one of the nation's leading environmental public health thinkers," the academy wrote.

Senior Associate Dean Shirley A.A. Beresford, professor of epidemiology and adjunct professor of health services, was elected to the academy's board by current members. She was inducted into the academy in 2015.



Interim Dean Joel Kaufman



Professor & Former Dean Howard Frumkin

SCHOOL CELEBRATIONS



- 1 *Epi Reunion (L to R, top row first) Diane Setterholm, Margaret Madeleine ('96), Margaret Karagas ('90), Judith Malmgren ('85, '95), Janet Daling ('76), Kathi Malone ('93)*
- 2 *Epi Reunion (L to R) Judith Malmgren ('85, '95), Victoria Holt ('87, '90), Wendy Barrington ('12)*
- 3 *58th Annual American Industrial Hygiene Conference & Exposition (L to R) Russ Snyder, Guy Silvey ('92, '94), Sarah Wolz ('94)*

Reunion Dates

Don't miss these upcoming opportunities to connect with fellow alumni! Visit department websites for more information.

October 5, 2017

70th Anniversary - Department of Environmental and Occupational Health Sciences

October 27, 2017

45th Anniversary - Masters of Health Administration

January 12, 2018

Department of Health Services

Homecoming

W Day - October 27, 2017

Celebrate the UW's birthday and Homecoming and keep the purple and gold tradition alive. Join your fellow Huskies on campus, online and in the community for W Day!

Visit www.washington.edu/wday/ for information.



ANNOUNCEMENTS

New Faculty



In order, pictured left to right.

Alison Fohner (PhD, Public Health Genetics '15), *affiliate assistant professor, Epidemiology*, combines electronic medical record informatics with genetic data to predict treatment outcomes and drug response, with the goal of improving the equitable and effective use of personalized medicine in healthcare delivery.

Amy Willis, *assistant professor, Biostatistics*, develops statistical methods for analyzing biodiversity. She is especially interested in high-diversity microbiomes and uncertainty in phylogenetic trees.

Carolyn Spice, *senior lecturer, Health Services*, specializes in health informatics and analysis, comparative clinical effectiveness, and design of pragmatic trials.

Carrie Cordero (MHA '13), *senior lecturer, Health Informatics and Health Information Management (HIHIM)*, teaches about healthcare delivery systems, ethics in healthcare, process and quality improvement, and policy impacting access, cost and quality of healthcare in the U.S.

Christine McGrath (PhD, Epidemiology '11), *assistant professor, Global Health*, focuses on HIV-related epidemiology and pediatric growth and nutrition. She is involved in studies to identify interventions to reduce childhood mortality, growth faltering and malnutrition, and perinatal HIV transmission in Kenya.

Mauricio Sadinle, *assistant professor, Biostatistics*, researches a variety of data-driven problems, including the combination of information from multiple data sources using record linkage techniques, and the handling of nonignorable missing data in statistical analyses.