**Letter from Chair**

Welcome to the Stanford Genetics Newsletter! Developments in the Department move very quickly and the goal of this forum is to keep our members, alumni and friends abreast of the latest activities.

With its outstanding faculty, students postdoctoral fellows and staff, the Genetics department aims to lead in research, train innovative leaders in science and medicine, and educate the public as well as other scientists about cutting edge advances in this fast moving area.

We develop new methods, make new discoveries and run wonderful educational programs, give public lectures, run scientific symposiums, and publish leading articles and books both for experts and the public. Members of our department regularly receive awards for their contributions.

This newsletter will keep you abreast of these efforts, and how you can contribute to their success. We also hope to provide a forum for Genetics alumni to stay in touch with a dedicated website. So, please read on to enjoy the latest developments and accomplishments in the Department of Genetics!

Michael Snyder, Ph.D.
Stanford W. Ascherman Professor and Chair, Department of Genetics
Director, Center for Genomics and Personalized Medicine

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**Upcoming Events:**

**Winter Closure**
- Wednesday 12/21/16 through Tuesday 1/3/17

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**Genetics by numbers in 2016:**

- **PhD Graduate Students** - 81 (10 over 2015)
- **Postdoctoral Fellows** - 104
- **Research Associates** - 37
- **Faculty** - 47
- **Staff** - 149

**PhD Students Graduated**
- Zoe Assaf, Lisl Esherick, Jason Buenrostro, Biff Mann, Shaila Musharoff, Gokul Ramaswami, Katie Sharp, Justin Smith

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**Meet New Faculty**

**Amy Bhatt** was born and raised in San Jose, California and is the first person in her family to become a biologist or physician. She was an undergraduate student at UCLA, went to medical school and graduate school at UCSF, and did all of her post-graduate medical and post-doctoral training at Harvard before returning to California in 2014 to start her lab at Stanford.

She is an avid dancer and she especially enjoys hiking and climbing at Yosemite. Besides drinking fancy coffee, In her free time she helps to run a nonprofit organization she co-founded in 2012, called Global Oncology.

**Polly Fordyce** majored in physics and biology as an undergraduate at CU Boulder, and then came here to Stanford for her graduate studies, earning her Ph.D. in physics for work in Steve Block's laboratory. For her postdoctoral research, she joined Joe DeRisi's laboratory at UCSF. In 2014, she launched her independent laboratory at Stanford University.

Outside of work, she spends her time trail running, climbing, and trying unsuccessfully to convince her feral 4-year-old twins to follow the conventions of polite society.

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**HR News**

Greeting from your HR team! As winter closure approaches us here are a few important reminders:

Winter closure dates are Wednesday 12/21/16 through Tuesday 1/3/17, returning back to work on 1/4/17.

For the vacation/PTO/unpaid dates that fall in December, staff can either use their accrued vacation, PTO or floating holiday. As a reminder, if you have PTO or floating holiday hours still available in December, you should use those hours during this time or you will lose them, but the good news is a new set of hours will be provided on 1/1/17 which can be used for the January 3rd date.

As in past years, there will be some staff that may need to work for part of the winter closure. If this is the case, please request approval from your PI/Manager and from our DFA, Randy Soares via email. Please copy HR as well so we can keep track of who will be working and are aware when reviewing your time cards during that period.

We hope everyone enjoys their time off and remains safe! - Anita and Khoa
Stanford Geneticist Explains Why Son Does Not Have Father’s DNA

A huge genetic mystery cleared up for a family with a story grabbing attention across the globe.

Geneticist Barry Starr, who works at Stanford and runs the Ask A Geneticist website for San Jose’s Tech Museum, used technology to solve the international mystery -- a father was told his son had “none” of his DNA.

After giving the parents a genetic test from Silicon Valley’s 23andMe, Starr found the child’s DNA was that of the father’s twin brother, who was never actually born. “It’s really no different than two brothers at a very early stage before the immune system is set up,” Starr said. “The two fuse together and become a single person.”

The man is in genetic terms a chimera, like the hybrid monster of Greek mythology. But in this case a person born with two sets of DNA, one of which his one-time twin’s DNA was passed on to his son.

Source: www.nbcbayarea.com

Polly and Anshul receive NIH grants for ‘high-risk’ work

Polly Fordyce, PhD, assistant professor of genetics and of bioengineering, specializes in developing new instrumentation and assays for making quantitative, systems-scale biophysical measurements of molecular interactions. She will use the funds from her award to build upon a method her lab recently developed for producing small beads with unique color characteristics.

Anshul Kundaje, PhD, assistant professor of genomics and of computer science, will use his New Innovator Award to harness the power of vast biological data sets to understand how gene expression is regulated in healthy and diseased cells. In particular, he is working to develop new machine-learning approaches based on deep neural networks to decode the noncoding portion of the human genome and identify disease-associated genetic variation.


Faculty Awards

Ron Davis: Personalized Medicine World Luminary Award (2015)
Anne Brunet: Michele and Timothy Barakett Professorship
Michele Calos: Elected Vice President of the American Society of Gene and Cell Therapy
Anne Villeneuve: American Cancer Society Research Professor
American Academy of Arts and Sciences
Jim Ford: Founding Editor-in-Chief, JCO Precision Oncology
Christina Curtis: 1) 2016 Kavli Fellow of the National Academy of Sciences (NAS) 2) AACR Career Development Award
Hiro Nakauchi: Japanese Society of Hematology Award
Ami Bhatt: 1) Damon Runyon Clinical Investigator award; 2) McCormick and Gabilan fellowship; 3) Rosenkranz Prize
Alex Urban: Tasha and John Morgridge Faculty Scholar
Mike Snyder: Elected President of Human Proteome Organization
Maria Barna: 1) New York Stem Cell Foundation (NYSCF) Robertson Stem Cell Investigator Award; 2) McCormick and Gabilan fellowship; 3) American Society of Cell Biology Emerging Leader Prize
Polly Fordyce: New Innovator Award
Anshul Kundaje: New Innovator Award
Laura Attardi & Julien Sage: co-directors of the Cancer Bio program
Lars Steinmetz: Ira Herskowitz Award, Genetics Society of America
Judith Frydman: ASBMB-Merck Award
Mike Cherry and Mike Snyder: Most cited scientists

Are fitbands the future of genetic research?

Stephen Montgomery and his team are using the latest DNA-reading technology and sophisticated algorithms to work out how tiny variations across our genomes affect when and where genes are turned on.

Stephen says seemingly minor variations in our DNA code can have a big impact on our health and well-being. “For instance, someone might be able to fight off an infection slightly better than someone else. Or someone responds to a drug better than someone else,” he explains.

“We want to be able to describe those benefits so that they might be able to help us understand what makes each of us unique, but also to understand how we might use that to tailor any particular treatments for any individual.”

To do this properly, we need more data - not just about each person’s individual genetic makeup, but information about how their body is changing over time and responding to their environment, diet and lifestyle.

Department Books:

“Genomics & personalized medicine” by Mike Snyder
“When will broccoli taste like chocolate?” by Dale L Bodian and Barry Starr.
Both books available on Amazon
BUSTAMANTE LAB
Y chromosome genes from Neanderthals likely extinct in modern men

The Neanderthal counterpart of the human Y chromosome, or male sex chromosome, appears to have died out. Why this happened is up for debate.

Although it’s widely known that modern humans carry traces of Neanderthal DNA, a new international study led by researchers at the Stanford University School of Medicine suggests that Neanderthal Y-chromosome genes disappeared from the human genome long ago.

The study was published April 7 in The American Journal of Human Genetics, in English and in Spanish, and will be available to view for free. The senior author is Carlos Bustamante, PhD, professor of biomedical data science and of genetics at the School of Medicine, and the lead author is author is Fernando Mendez, PhD, a postdoctoral

BASSIK LAB
Stanford scientists resurrect an abandoned drug and find it effective against two human viruses in a lab dish, with potential to fight many more

Viruses have proven to be wily foes. Attempts to fend off viruses causing even the common cold or flu have failed, and new viral outbreaks such as dengue, Ebola or Zika continue to elude drugs.

Given these challenges, a group at Stanford is tackling the problem from a different angle: boosting the human body’s ability to resist the virus rather than taking on the virus directly. This approach has paid off with a drug that, in cells in a lab dish at least, helps fight two disease-causing viruses and potentially many more. The work was published March 28 in Nature Chemical Biology.

DAVIS LAB
Wearable device detects, analyzes real-time changes in chemical composition of sweat

A team of researchers has combined two separate technologies to create a health-monitoring device that is noninvasive, doesn’t interfere with strenuous outdoor activities and can continuously track a user’s health at the molecular level.

The two-part system of flexible sensors and a flexible circuit board sticks to the skin and then detects and analyzes a profile of chemicals in sweat.

The project, led by senior author Ali Javey, PhD, professor of electrical engineering and computer sciences at the University of California-Berkeley, is a collaboration with researchers at the Stanford University School of Medicine.

SNYDER LAB
Stunning diversity of gut bacteria uncovered by new approach to gene sequencing

A collaboration between computer scientists and geneticists at Stanford University has produced a novel technique for mapping the diversity of bacteria living in the human gut.

The new approach revealed a far more diverse community than the researchers had anticipated. “The bacteria are genetically much more heterogeneous than we thought,” said Michael Snyder.

“Any two humans typically differ by about 1 in 1,000 DNA bases, whereas bacteria of the same species may differ by as many as 250 in 1,000. I don’t think people realized just how much diversity there is, even with the same bacterial species.” Snyder said.

Genetics and Genomics Certificate

• New professional certificate - 100% online
• Taught by 23 faculty
• Target audience - Educated non-scientists interested in learning genetics and genomics

Enrollees: 789 (as of August 2016)
http://geneticscertificate.stanford.edu

Education highlights
14 New Entering Students Continue Jt Training with NIST
• Ranked #1 in Genetics, Genomics and Bioinformatics fifth year in a row!
Meet our Staff

Wendy Christiansen has been Genetics’ Student Services Officer since 2002. She oversees the administrative side of PhD admissions and assists students navigate the administrative challenges of grad school. She also keeps track of our large postdoc population and makes sure their appointments and visas are up to date. She also manages the 2 NIH training grants and much, much more...

She graduated from California College of Arts with a BA in Graphic Design. In the late 90’s she joined the US Peace Corps and volunteered in Russia for 2 years. She has worked for several non-profits including the Red Cross and helped passed Reduce, Reuse, and Recycle for America Act.

Outside of work she enjoys taking photographs, painting, hiking, swimming, cooking and watching movies.

Postdoc Story

Itamar Harel is a postdoc in Brunet Lab and received his PhD from Weizmann Institute of Science.

His lab is researching rapid exploration of aging and diseases in a naturally short-lived vertebrate. They approached this challenge from a novel perspective by using the African turquoise killifish, a naturally short-lived vertebrate, with a lifespan of 6 months. They have established a complete genome-to-phenotype platform and comprehensive genome engineering approaches using a combination of genomic tools and CRISPR/Cas9 genome-editing.

Currently Itamar is applying for faculty position, and intends to continue exploring the genetics aging, and what separates healthy aging from pathology. Good Luck!

Where are they now?

Jared Wenger  Ph.D. 2011 Sherlock Lab

Jared Wenger graduated from Sherlock lab in 2011 and now works as Scientist III at Zymergen, Inc. in Emeryville, California.

What was the most challenging aspect of transitioning from graduate student life into “the real world”?
The pace of industry science is very fast. There’s often no time to re-do experiments, so you have to practice doing the right controls the first time around and be satisfied with non-publication-quality results.

What do you wish you would have known before leaving grad school?
I sort of knew this, but knowing more the importance of networking and building relationships (both in and out of academic science) would have been useful.

What attributes helped you the most in getting a new job?
Being able to speak clearly about my work (aka give a good job talk!) Clear and effective communication about yourself and your work, backed up by concrete/practical examples is very helpful when interviewing for jobs.

What was your most memorable rookie mistake as a first-year grad student?
Not signing up for enough Frontiers lunches! Best way to meet people and get a great free lunch.

What do you enjoy most about what you do now?
I’ve had the chance to work on problems I care a lot about, and it’s great to work on something you think is impactful. But also, the people I get to work with come from all over and bring different backgrounds and expertise, are super interesting, very smart, and hard working. It’s the people and the collaboration on the science that really makes going to work each day the most fun.

Do you have a favorite web site?
I still use SGD almost every week, if not every day, when working on yeast-related projects!

What is the hidden gem of the Stanford campus?
$11 twilight golf at the Stanford golf course. Great deal!

Moving On...

Anita Blanco will be leaving Genetics and Stanford on Friday, December 9th after serving as the Genetics Diversity Director for 8 years since July 1, 2008. She will be joining Gilead to serve as their inaugural Chief Diversity Strategist, starting on Monday, December 12th. In this role, she’ll lead their recruitment strategies and develop partnerships that increase the recruitment and hiring of diversity. It is a pretty exciting opportunity and offer that Anita could not refuse.

Anita was recently named as the Top 40 under 40 in Silicon Valley for Tech Diversity. Congratulations Anita!

Do you know of a story that we should publish at Genetics NewsLetter? If you have a tip or story you would like to share with us, please contact “News Desk” kinnamaa@stanford.edu