Dr. Sara Buhrlage, Ph.D.

Where are you from?
I was born and raised in Cincinnati, OH. I come from a large family. The tally is 85 including parents, grandparents, siblings, nieces, and nephews, aunts and uncles, cousins and cousins’ kids. Only two of the 85 have moved away from Cincinnati. I make three.

What are your research interests?
Generally, I am interested in chemical biology and drug discovery. More specifically, my lab is focused on development of small molecule inhibitors of deubiquitinating enzymes (DUBs) that can be used by us and others, to study the role of the ubiquitin system and protein homeostasis in normal and disease biology.

What made you pursue a career in science?
Science and math were always my favorite subjects and I had a particularly good chemistry teacher in high school. After completing my undergraduate degree in chemistry, I decided to work as a medicinal chemist at Proctor and Gamble Pharmaceuticals. After working there for 6 months, I knew I wanted to go to graduate school and pursue a career in drug discovery. I figured I'd complete a PhD in organic chemistry and go back to Proctor and Gamble in Cincinnati. You never know where you will end up.

Do you have any interesting hobbies?
I started playing soccer when I was 6 and played up until about two years ago. I now have a one year old daughter so my free time is primarily spent with her and my husband. When I can, I also like to cook. I have found that as the amount of time I spend in lab decreased over the years the amount of time I spend cooking has increased. And making and drinking cocktails, if that counts.

Do you have any pets?
I have two cats, an orange and white male and a tortoise shell calico.

Favorite piece of laboratory equipment?
UPLC-MS. I wish I had one when I was graduate student.
Where are you from?
I was born in Heidelberg and raised in Hamburg.

What are your research interests?
I am fascinated by the diverse roles that ubiquitin plays in cellular processes and the complexity of the ubiquitin code. Ubiquitin E3 ligases are involved in the regulation of virtually any cellular process and are frequently implicated in human disease and cancer. My lab is interested in understanding the molecular mechanisms that underlie ubiquitin E3 ligase function, targeting and regulation. We combine structural biology, cell biology and biochemical reconstitutions to address the molecular workings of multi-component ubiquitin ligases. In particular, we are interested in protein complexes and pathways that contribute to the control of gene expression and are frequently associated with human disease and cancer. Another major research interest is the use of small molecules to rewire cellular processes. Small molecules can be devised to stabilize weak protein-protein interactions or induce novel protein-protein interactions between proteins that otherwise do not interact. Applied to enzymes, such as ubiquitin E3 ligases, enzymatic activity is redirected to novel substrates (neo-substrates). We have successfully used this strategy to redirect ubiquitin E3 ligase activity to notoriously hard to drug cancer drivers, which results in ubiquitination and degradation of these neo-substrates. We seek to create a large repertoire of such ‘degrader’ molecules, which provide strict temporal control over protein abundance not achievable with common RNAi or gene editing techniques.

What made you pursue a career in science?
While I have always been interested in science, pursuing a scientific career was less of a conscious decision and more something that just happened. During my undergraduate days I ended up co-founding a tech company and I find it rewarding to turn ideas into a product but apparently I was not attracted enough to drop my scientific career. I was then fortunate enough to join a lab for my graduate work that not only provided me with an excellent training and scientific environment but also allowed me to pursue my own ideas. Being able to translate my visions and ideas into scientific research and hopefully valuable discoveries is what attracts me to science every day.

Do you have any interesting hobbies?
I am passionate about going out for backcountry snowboarding and to catch a few waves on my surfboard.

Do you have any pets?
No

Favorite piece of laboratory equipment?
Any kind of robot.
We spoke with Alexandra Cantley, a former graduate student in the BCMP department, about how her responsibilities and hobbies have shifted since leaving HMS. Below, she gives us valuable insight into what it's like to pursue an industrial post-doc.

Please describe your current position.
I am currently doing a one year fellowship at Vertex, which is essentially a super efficient tour of what it's like to work in biotech. We are fully immersed in the ongoing projects within the company, and given the same responsibilities as permanent employees - which is kind of daunting, but definitely much more educational!

What do you like most about your fellowship?
The research approach here is, not surprisingly, very team-based - which is a lot of fun. People here are very into their research and motivated to help patients. Also, there's this home-made veggie cream cheese in the cafeteria that is outstanding.

Do you have any advice for people considering an industrial postdoc or a position similar to yours?
I think this Vertex fellowship is different from other similar programs because they actually put you on a main project area in the company. This basically means that while one might be acquiring unique insight into what it's actually like to work here, the opportunity to publish is diminished. So I guess that's something to think about when applying to these types of programs.
How do the pizza options near your current job stack up to Penguin?
Sadly my pizza intake has dramatically declined since leaving BCMP.

What do you miss most about BCMP?
See above.

Current favorite procrastination activities?
I like to cook or bake when I'm bored or procrastinating - which then leads into eating - another good way to procrastinate. Additionally, I'm psyched about Plant Earth II. Obviously, I watch mind-numbing quantities of Netflix et al.

Any happy hour concepts that didn't happen while you were here but you want to pitch for the department?
This isn't really a theme, but I think happy hour should always be stocked with activities: board games, cards, bocce, croquet, etc. The happy hours where people from different labs actually interacted with each other were always the most fun (and seemingly the rarest).
Who are you and where are you from?

I'm Gonzo, and I was born in Miami. My dad is Mexican and my mom is Cuban. I lived in Mexico until I was 12 and then moved back to the US; I've been in this country ever since.

Briefly describe your research interests

I'm interested in lots and lots of things! The main focus of my interest currently is understanding how proteins translate and relay signals. By further understanding how a single node in a signaling network, you can predict upward to how that network will behave. That's really cool to me.

What is your secret talent?

I've been known to speak, read and write in French from time to time.

Favorite lunch/brunch spot?

Longwood area: Pat's
Brunch spot: Temple Bar in Cambridge

What do you do when you procrastinate in lab or in your free time?

Recently I've been glued to my smartphone or computer screen, horrified by each new news headline. In my free time I listen to audiobooks, play video games, and bike when it's not too cold out (Miami boy).

What are your summer plans?

A couple short trips this summer: I'm going to South Carolina to see the eclipse in August and hopefully I'll have time to visit my family in Miami for a weekend. Most of the summer I'll be involved in mentoring a summer student and coordinating a research internship for undergrads from underrepresented backgrounds.

In Friday's Data club, how many slices of pizza do you take and what are your favorite toppings?

I take 0 slices of pizza topped with my tears, since I'm lactose intolerant :('.

Anything else?
Given the current political situation, I've been curious about careers in science policy and advocacy.
“What do you wish you had known when you were a trainee considering different career options?”

“Explore your options earlier rather than later and modify your personal training accordingly”- Rita Strack, Editor, Nature Methods

“Don't underestimate the importance of earnest hard work and creativity”- Johanna Gutlerner, Interim Assistant Dean, HMS

“Advocate for what you want once you have found it. Everything is negotiable.”- Inn Chen, Consultant, McKinsey & Co.

“There is an expanding universe of biological data that we need innovative ways to share and explore”- Jonathan Dry, Principal Scientist, Astra Zeneca

“Network as much as possible and establish contacts at places you would like to work”- Jess Williamson, Group Leader, Beryllium Discovery

“Science is a key that opens doors to multiple career paths. Don't wait to explore!”- Jason Boehm, Program Director, NIST
Adelman Lab
The Adelman Lab is happy to welcome a new post-doc, Hanneke Vlaming, who recently received her PhD from the lab of Dr. Fred van Leeuwen at the Netherlands Cancer Institute in Amsterdam and PhD rotation student, Brendan Smalec, from Connecticut.

Devlin Lab
A big welcome to Sarah Seaton who joined the lab in August 2016 as a research associate! Sarah was previously an assistant professor at the University of North Carolina Asheville, where she explored research topics ranging from analysis of microbial communities associated with carnivorous pitcher plants to antibiotic production by soil bacteria.

DNA Resource Core
The DNA Core is happy to announce that one of its senior staff members, Yili Li, is approaching his 15 year anniversary of working at Harvard Medical School in the Department of BCMP. Yili celebrated his 80th birthday in September and is currently working with us on DNA Sanger Sequencing.

Gray Lab
The Gray lab welcomes Zhixiang He, a new research technician, from Fujian, China; David Remillard, a graduate student, from Hanover, New Hampshire; Chunshan Quan, a visiting scholar, from Dalian Nationalities University, China; and Lincoln Ombelets, a co-op student, from Northeastern University.

Congratulations to Quan Cai, who welcomed his baby boy, Zhixing Cai, born February 18th, 2017.

Additionally, congratulations to Liv Johannessen, who successfully defended her PhD thesis on April 12th, 2017, and Michael Erb, who successfully defended his PhD thesis on April 19th, 2017!
Hur Lab

The Hur lab extends a big welcome to Fangwei Leng, who comes to join us from China.

Furthermore, Sadeem Ahmad, was awarded the Medal for Young Scientists by the Indian National Science Academy (2016) and also received post-doctoral fellowship from Cancer Research Institute (2016).

Kim Lab

A welcome to Sheldon Cheung (PhD, CalTech) and Emel Adaligil (PhD, Tufts University) as new post-docs in the Kim lab!

Loparo Lab

A huge congratulations to Linda Song (Biophysics) and Thomas Graham (Systems Biology & shared Lab Member with the Walter Lab) for a successful PhD defense! Linda has already begun her post-doc in James Spundich’s lab at Stanford University, and Thomas will be starting his post-doc in Vanessa Ruta’s lab at Rockefeller University within the upcoming month.

Furthermore, Post-doc Andrew Moreno and his wife Alison Ringel (Haigis Lab) welcomed a son, Theodore Nicholas Moreno, on January 19!

Roberts Lab

The Roberts Lab announces the addition of two new lab members: Zhenying Cai and Hyeyoun Chang!

Arun Pores Fernando has also made his departure from BCMP and is now taking on a position as a consultant. In addition, Onur Cizmeciouglu left in late September as is now a professor in Turkey.

Walter Lab

Welcome to Olga Kochenova, a post-doc, from University of Nebraska Medical Center, and Tycho Mevissen, a post-doc, from University of Cambridge, UK.

Tycho Mevissen was also married in March. Best Wishes!!

Congratulations to Krish Karunatilaka, a post-doc, and Kyle Vrtis (post-doc in Walter Lab) for having a baby! Welcome Kaden Vritis!!
Lab Publications

Buratowski Lab

Modulation of mRNA and lncRNA expression dynamics by the Set2-Rpd3S pathway.

Clardy Lab


Devlin Lab

Gray Lab

Structure-guided development of covalent TAK1 inhibitors.

Studies of TAK1-centered polypharmacology with novel covalent TAK1 inhibitors.

Covalent Guanosine Mimetic Inhibitors of G12C KRAS.

Hogle Lab


Sliz Lab publications

Struhl Lab


Walter Lab


Announcements!

Support the Departmental Core:

DNA RESOURCE CORE

Plasmids – over 300,000 constructs
Sanger Sequencing – cheapest reaction cost!
DNAseq.hms.harvard.edu

Join the BCMP/Cell Bio/DMS Weekly JOURNAL CLUB!

EVERY TUESDAY | 12:00 - 1:00 pm | FOLIN WU ROOM
LUNCH IS PROVIDED!

Besides the free food, this is a great venue to meet other talented students and learn from the collective experience of discussing science, science policy, science politics, and general social issues. This is a relaxed, fun, and curious group.

Members volunteer to present a paper - there are no restrictions on paper topics, though we encourage ourselves to present work we would rarely read because it’s wacky, esoteric, or very important but cursory to our field.

Contact for more info:
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Our Mission Statement: The Biological Chemistry and Molecular Pharmacology Trainee Committee is responsible for addressing the needs of the graduate students and postdoctoral fellows in the department. This committee is charged with identifying ways to create a sense of community for students and fellows and to increase interactions between trainees and the faculty. The Committee meets regularly with faculty and departmental administration to suggest and implement improvements for students and fellows. If you have any concerns or suggestions please contact a committee member. New members are welcome! https://bcmp.med.harvard.edu/trainee-committee

Current Members: Assaf Alon (Kruse lab), Ravindra Amunugama (Walter lab), Alexander Baier (Kruse lab) *Co-Chair, Elizabeth Boehm (Walter lab), Mabel Duyao (Administration), Daniela Fera (Harrison lab), Jason Heustis (Curriculum Fellow), Krishanthi Karunatilaka (Hogle lab), Hyeongjun Kim (Loparo lab), Olga Kochenova (Walter lab), Phong Lee (Harrison lab), Emily Low (Walter lab) *Co-Chair, Kristen Parker (Administration), Elizabeth Ransey (Sliz lab), Ben Richards (Walter lab), Nathan Schauer (Buhrlage lab), Monika Stamberg (DNA core), Ethan Van Arnam (Clardy lab), Madhvi Venkatesh (Curriculum Fellow), Kyle Vrtis (Walter lab)

BCMP Quarterly is a publication of the Trainee Committee.

Wanted!
The Quarterly needs writers and layout managers. We are looking for regular or one-time articles to feature in the newsletter. Topics include (but not limited to): trainee profiles, interviews with departmental or visiting scientists, departmental news, local events, and work and life interest. If you are looking to learn or sharpen Adobe Photoshop, Illustrator, or InDesign skills, we are looking for help with putting the newsletter together. If you have an idea for an article, want to get involved with production of the newsletter, or have suggestions, please contact us at bcmpnews@gmail.com.