

W GENOME SCIENCES

December 2022 Newsletter



Genome Sciences members at our department retreat, September 2022

Notes from the Chair

As I write my final holiday newsletter to you – the members, alumni and friends of Genome Sciences – I reflect on the many delights of serving as the bookends to Bob Waterston’s long chairmanship. The time is fast approaching for me to put down for good my metaphorical gavel, with plans to have a new chair in place by next fall or not long after. A search committee assembled by the dean of medicine – including Maitreya Dunham, Mike MacCoss and Cole Trapnell from our department – is actively considering candidates to interview in the coming months. My hope is that the next chair will have a new vision for the department while also preserving the collegiality and traditions that make Genome Sciences such a wonderful place to work.

2022 has been a year of reconnecting the department, at last seeing each other regularly in person after two long and screen-lit years of meetings. Labs, classes, group meetings and presentations are largely again held in person; while a hybrid format is the norm for many events, nothing captures the fruitful spontaneity of science interactions so much as bumping into a colleague in person.

We have made numerous conscious efforts to foster reconnection – from social hours to coffee hours, from thesis committee meetings to post-thesis defense parties. We looked forward eagerly to our September retreat at Sleeping Lady, only to have to cancel at the last minute – not due to Covid but to a wildfire near the Leavenworth site that made the air too unhealthy to breathe. Our intrepid retreat organizers, including Alison Feder and a crew of second year grad students, quickly pivoted to put on the event in Foege. Staying in Seattle enabled us to include members of the department who wouldn't have been able to go to Leavenworth. We even enjoyed a trivia night planned for the retreat later in September. You can see the retreat photo of the department at the beginning of this newsletter.

Last month we held our much-anticipated symposium celebrating the 20th anniversary of Genome Sciences. Bob headed a group of GS faculty who invited a fantastic set of speakers. The event also featured our first alumni reunion symposium, held the following day. Francis Collins, former head of the NIH, opened the day with a Q&A session, and we enjoyed talks from former trainees who have gone on to varied careers in science. I was delighted to reconnect with trainees from all the generations of Genome Sciences as well as those from Genetics and Molecular Biotechnology – some going back to the 1970s for their stints at the UW.

As you can see from the list of News and Honors in this newsletter, the department continues to attract phenomenal scientists at all levels. Among many honors, Jay Shendure was elected to the National Academy of Sciences, giving the department ten faculty (active or emeritus) in the academy; Hanna Liao was awarded an NSF fellowship, Glennis Logsdon a K99/R00 award from the NIH, Syd Sattler the Bonita and David Brewer Fellowship, and Shawn Fayer a Cotterman Award from *The American Journal of Human Genetics*.

The saddest event of the last year occurred at the end of December 2021, when we learned that Debbie Nickerson had died soon after a diagnosis of cancer. Debbie was a vital presence in Genome Sciences from its inception, defining the culture of our department with her incredible science and her mentorship of many young colleagues, both locally and around the country. We miss her dearly. We will not be able to replace Debbie in our hearts, but Evan Eichler and Gail Jarvik have gamely pitched in to help keep the Northwest Genomics Center going and Debbie's lab together, and Jay is heading up a search to hire a senior level human geneticist.

As 2022 comes to a close, I thank all of you for your support of Genome Sciences, and I wish you and your families the best for the new year.

Stan Fields
Chair

20th Anniversary Symposium

Postponed one year due to the pandemic, our 20th-year anniversary symposium celebration was finally held on November 10–11, 2022. Attendance was stellar, bringing together hundreds of in-person attendees including former Genome Sciences postdocs and graduate students - as well as former members of Genetics and Molecular Biotechnology, and as many as 150 attendees joining via Zoom. Speakers included Erich Jarvis (Rockefeller), Emma Lundberg (Stanford), Magdalena Zernicka-Goetz (Caltech), Edward Marcotte (University of Texas), Nancy Cox (Vanderbilt) and George Church (Harvard). The symposium also featured an interview that former dean Paul Ramsey recorded with Bill Gates, a live Question & Answer session with Francis Collins moderated by Bob Waterston and plenty of opportunities for reconnecting. The deep history of genetics was reflected in the diverse group that joined to fête this major milestone for our Department.

Please consider supporting Genome Sciences with a gift to honor our founding chair, Bob Waterston at <https://together.uw.edu/Campaign/genome-sciences>. The faculty of Genome Sciences have contributed \$40,000 as a matching pool for donations to the Robert H. and Patricia M. Waterston Endowment for Genome Sciences, which supports grad students and postdocs in the department.

News & Honors



Dr. Alison Feder has received an NIH Director’s New Innovator Award, as well as a Cystic Fibrosis Foundation Pilot Award. Dr. Feder has also been selected as an award recipient for the Gilead Research Scholars program in HIV.



Elena Romero has received the award for best graduate student poster at GSA PEQG 2022.



Hunter Colegrove has received the award for second place graduate oral presentation at AISES 2022.



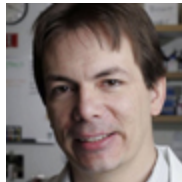
Shawn Fayer has received the ASHG Cotterman Award.



Robin Aguilar has been featured on the cover for *ACS Chemical Biology*.



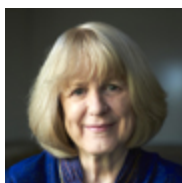
Drs. David Baker (adjunct), Jay Shendure, Cole Trapnell, Riza Daza, Bill Noble and Evan Eichler have been named 2022 Highly Cited Researchers by Clarivate.



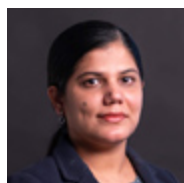
Dr. Jay Shendure has been named the 2022 UW Medicine Inventor of the Year, and has been elected to the National Academy of Sciences, as well as the National Academy of Inventors. Dr. Shendure has also received the Mendel Lecture prize from the European Society of Human Genetics.



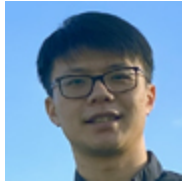
Syd Sattler has been awarded the Bonita and David Brewer Fellowship.



Dr. Mary-Claire King has been named a Citation Laureate by Clarivate. Dr. King has also received the Canada Gairdner International Award.



Maddy Duran and Dr. Anupama Jha have been awarded the Parker Travel Award for best poster at the 2022 department retreat.



Dr. Gang Li has received the SCBA-SinoBiological Young Investigator Award from the Seattle Chinese Biomedical Association.

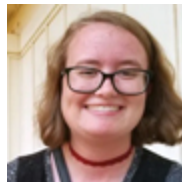
Dunham Lab undergraduates Annamarie Steed and Naomi Moresi have been awarded travel awards from the Genetics Society of America. Naomi has also been awarded the first place undergraduate poster at the GSA Yeast Genetics Meeting.



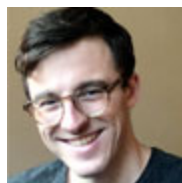
Dr. Glennis Logsdon has been awarded a K99/R00: Pathway to Independence Award.



Dr. Evan Eichler has been named one of *Time's* 100 Most Influential People of 2022.



Berg Lab undergraduate researchers Haley Parrett and Andrea Rauschmayer have been named one of UW Chemistry's Top Scholars, and received the Grand Prize for Best Undergraduate Oral Presentation at the Northwest Developmental Biology meeting, respectively.



Hanna Liao has been awarded an NSF fellowship. Lincoln Harris and Chris Hsu have received honorable mention.



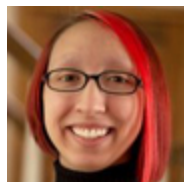
Alberto Rivera has received an NIH Loan Repayment Program award.



Deanna Plubell has received an MSACL Trainee Grant.



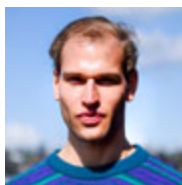
Dr. Matt Berg has received the best poster award at the Mutational Scanning Symposium 2022 in the Technology and Tools category.



Drs. Ryan Carlson, Ashley Hall and Jackson Tonnie have completed their Ph.D.s in Genome Sciences, Molecular & Cellular Biology, and Biology, respectively.



Drs. Renee Geck and Cole Mueth have received the Mistletoe Research Fellowship Unfettered Research Grant.



Dr. Michael Goldberg has received the award for the best student paper of the year in *Genome Biology and Evolution*.



Dr. Eva Nichols has received the Washington Research Foundation Postdoctoral Fellowship.



Dr. Brook Nunn has received the Joint Genome Institute Community Science Program Award. Dr. Nunn has also been named Co-Lead for NASA's Network for Life Detection (NFoLD).



Dr. Christine Queitsch has been asked to serve as a panel member to review the four Life Sciences institutes at Utrecht University.

In Memoriam

Genome Sciences mourns the loss of our colleague, Dr. Deborah Nickerson. Debbie died Christmas eve 2021, less than a week after a diagnosis of aggressive metastatic abdominal cancer leading to multiorgan failure.

A founding member of Genome Sciences, Debbie was among the first to recognize the power of single nucleotide polymorphisms and devised increasingly efficient methods for their detection. Genomic technology was her passion and she was both an early adopter as well as developer of new methods to discover genetic variation. With these methods, she characterized variation in multiple genes, with particular emphasis on apolipoprotein and genes involved in drug metabolism. She uncovered variants associated with differential patient responses to warfarin and evaluated their utility in the clinic. In addition to pharmacogenomics, she explored with her colleagues the implications of single nucleotide polymorphisms for population genetics and complex diseases including hypertension, cardiovascular disease, autism and numerous Mendelian disorders.

Debbie was a recognized leader both nationally and internationally. She led a major center for the National Institutes of Health (NIH) Trans-Omics for Precision Medicine program as it sought to understand the implications of genome sequence and other large-scale data sets for cardiovascular and pulmonary disease. She led one of four centers to investigate the genomic basis of Mendelian diseases, determining the molecular basis of countless diseases that had mystified investigators for decades. With the team that she developed and their expertise, her lab has become a principal contributor to the NIH's All of Us Research Program which seeks to determine the genome sequences of more than 1,000,000 diverse individuals in the context of their lifestyles and health. Her Center is leading the way in developing methods to return the DNA sequence findings to patients in a way that will improve their healthcare. Her work, reflected in more than 417 original research publications, transformed our views of how human DNA sequence variation can affect humanity.

Throughout her career, Debbie was a strong advocate for increasing the presence of women in science. Her generosity to those who worked with her was unmatched. Debbie knew that she lived a great life; did everything she wanted to do; and was proud that she had touched so many people including students, colleagues, employees, and her family.

Research Updates

Beliveau Lab: [An open source 16-channel fluidics system for automating sequential fluorescent *in situ* hybridization \(FISH\)-based imaging](#)

Berg Lab: [Imaginal disc growth factors are *Drosophila* Chitinase-like Proteins with roles in morphogenesis and CO₂ response \[in press\]](#)

Dunham Lab: [yEvo: experimental evolution in high school classrooms selects for novel mutations that impact clotrimazole resistance in *Saccharomyces cerevisiae*](#)

Eichler Lab: [Segmental duplications and their variation in a complete human genome](#)

Feder Lab: [State-dependent evolutionary models reveal modes of solid tumor growth](#)

Fields Lab: [Mapping functional regions of essential bacterial proteins with dominant-negative protein fragments](#)

Fowler Lab: [A versatile, chemically-controlled DNA binding switch enables temporal modulation of Cas9-based effectors](#)

Furlong Lab: [Rapid reduction of *Paraoxonase* expression followed by inactivation across semiaquatic mammals suggests adaptive benefit of gene loss \[preprint\]](#)

Harris Lab: [A natural mutator allele shapes mutation spectrum variation in mice](#)

Hawkins Lab: [Lysine-Specific Demethylase 1 \(LSD1\) epigenetically controls osteoblast differentiation](#)

Jarvik Lab: [2021 ASHG presidential address-Imagination and daring: Past, present, and future](#)

King Lab: [Molecular diagnosis of childhood immune dysregulation, polyendocrinopathy, and enteropathy, and implications for clinical management](#)

MacCoss Lab: [Putting Humpty Dumpty back together again: what does protein quantification mean in bottom-up proteomics?](#)

Manoil Lab and Bruce Lab: [CsrA-controlled proteins reveal new dimensions of *Acinetobacter baumannii* desiccation tolerance](#)

Monnat Lab: [A functional module states framework reveals transcriptional states for drug and target prediction](#)

Noble Lab: [A learned embedding for efficient joint analysis of millions of mass spectra](#)

Nunn Lab: [Transitioning global change experiments on Southern Ocean phytoplankton from lab to field settings: insights and challenges](#)

Pallanck Lab: [Tissue-restricted inhibition of mTOR using chemical genetics](#)

Queitsch/Cuperus Lab and Brewer/Raghuraman Lab: [Coordination of genome replication and anaphase entry by rDNA copy number in *S. cerevisiae*](#)

Schweppe Lab: [Conditional fragment ion probabilities improve database searching for nonmonoisotopic precursors](#)

Shendure Lab and Trapnell Lab: [The continuum of *Drosophila* embryonic development at single-cell resolution](#)

Starita Lab and Shendure Lab: [The Seattle Flu Study: when regulations hinder pandemic surveillance](#)

Swanson Lab: [Domain expansion and functional diversification in vertebrate reproductive proteins](#)

Villén Lab: [Coisolation of peptide pairs for peptide identification and MS/MS-based quantification](#)

