Mount Sinai

The Mount Sinai Postdoc Periodical

Monthly newsletter, May 2017

In this issue:

Interview with Mount Sinai Postdoc Alumnus: Dr. Genevieve Galarneau, PhD

By Agata Kurowski

Dr. Galarneau is a statistical genetics lead for Cematix, a company with over 80 employees that is still growing. She was a postdoctoral fellow at Mount Sinai from 2014-2017 and she sat with us to tell us a little about her new position.

What graduate degree(s) have you received?
PhD in Bioinformatics

What city and state do you work in?
New York, NY

Did you have any jobs between this one and your postdoc?
No

Can you give us a brief (2-3 sentence) description of your current position?
As a statistical genetics lead at Celmatix, I work on genetics of women's health and fertility. My responsibilities include leading genetic association studies, writing abstracts and manuscripts, and providing genetics training sessions for new employees. The projects I work on are very collaborative so I have more project meetings than I used to as a postdoc.

What do you wish you had known before accepting your current position?
I wish I had been more knowledgeable about immigration paths/requirements and was more proactive about it during my postdoc – this would have been useful for my transition into industry.

What, if anything, do you miss about being a postdoc?
I think I will miss the thrill of organizing events and conferences like the SINAInnovation trainee event and the Postdoc Symposium networking reception. Maybe I will find an equivalent!

What did you learn during your PhD/postdoc that is most helpful to you in your current position?
I don't work on the same diseases, but everything else (genetics, coding and statistics) remains very relevant to my job.

What was the most important event or factor that contributed to your transition into an alternative career outside academia?
Although I was also considering academia, I have always had strong interests in entrepreneurship and startups, which led to my involvement in the SINAInnovation trainee forum. Ultimately, the decisive event was an email about, what I viewed as, an outstanding opportunity.

How many hours a week do you spend in meetings?
At least five, sometimes up to eight.

Approximately how many hours do you work per week?
So far I would say 45-50.

How frequently do you work in the evenings and/or on the weekends?
Rarely.

On a scale of 1-10 (1=low, 10=high), how much autonomy do you have in your current position?
6

Dr. Genevieve Galarneau, PhD

Does your position require that you travel? If/when you travel, how long is your trip?
Yes. I will be attending scientific conferences (2-5 days).

Do you work with other people and/or in a team? If so, please describe the circumstances and structure of your group work.
So far, the projects I have been involved in are typically led by one or two people with input from a team of bioinformaticians, biologists, statisticians, and/or data scientists.

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How did you learn to do your job? (e.g., structured training program, mentor, studied materials on my own time, learned on the fly)
Through my PhD mostly.

What is the average salary range for your position?
If you read The Scientist "2016 Life Sciences Salary Survey", you will find that the estimated 2016 average US salary in Genetics was $113,043.

Is a PhD necessary to apply for this type of position?
Yes

Was your publication record important towards getting this position?
Yes, because it validated I had the required expertise.

Is it valued to have a PhD in your current position?
Yes

Is it valued to have completed a postdoc in your current position?
The job description didn't require postdoc experience in particular but did require 3+ years of experience. I think my postdoc was valued because of the type of data I was working on. It also helped me to develop and demonstrate the independence and leadership necessary for my position.

Did your PhD/postdoc research focus matter to get this position?
The diseases I worked on did not matter but the methods that I used most definitely did.

Co-Chair Corner

Greetings fellow postdocs,

As the summer approaches, we reach the end of a very busy period that will filled with plenty of events and news for postdocs at ISMMS.

For the first time this spring, the Graduate School of Biomedical Sciences (GSBS) gave out three awards specifically created to recognize the contribution of postdoctoral fellows at the Spring Awards Ceremony, which was held on April 24th. Ka Lung (William) Cheung, PhD, received the 'Best Publication by a Postdoc' award, Ajit Magadum, PhD, was the recipient of the 'Outstanding Research Innovation by a Postdoc' award, and Delaine Ceholski, PhD, was awarded for 'Outstanding Leadership by a Postdoc'. Moreover, in a separate set of awards given by The Mount Sinai Alumni Association, postdoctoral fellow Alison Sanders, PhD, was awarded The Mount Sinai Alumni Student Leadership Award. Way to go, postdocs!

Last month also marked the return of the Graduate School Town Hall for postdoctoral fellows, hosted by members of ISMMS leadership team. After a welcome presentation by Dr. Marta Filizola, Dean of the GSBS, postdocs shared their questions and concerns about issues such as academic training, immigration, housing, career development, and well-being. As the largest trainee group in the GSBS, postdoctoral fellows had the opportunity to voice their concerns and hear them be addressed by Dean Filizola, Dr. Basil Hanss (Senior Associate Dean for Student Affairs and Career Development), Dr. Matthew O'Connell (Senior Associate Dean for Curriculum, Accreditation, and Outreach), Phyllis Schnepf (Senior Associate Dean for Education and Research Administration), Dr. Guy Montgomery (Faculty Director of the Office of Postdoctoral Affairs) and Caryn Tiger (Associate Dean for Faculty and Staff Relations). Since not all the questions could be addressed during the event, the Office of Postdoctoral Affairs will distribute the complete list of questions and answers by email, so keep your eyes open.

There was also positive news on the career front, as the school's Office of Career Services and Strategy announced the new Advisory Board to mentor graduate students and postdocs, composed of successful professionals with different specialties and backgrounds in and out of academia. Looking forward, a scientific writing workshop is coming up on June 15th by Dr. Judy Swan, Associate Director for Writing in Science and Engineering, Princeton University. You can help choose the topic in this short survey and stay tuned for the announcement as attendance will be limited!

Finally, let's not forget that there's more to life than work! Being a postdoc can be isolating and it is important to reach out and meet colleagues. An initiative by the Trainee Health and Wellness group, comprised of students and postdocs, is establishing a buddy system that you can sign up for at https://goo.gl/forms/MoUIhP9EBCzaMhG12. As usual, the Monthly Postdoc Social awaits you this Friday, May 26th at 5PM for some relaxing time with food and refreshments!

Best,
Catarina

Nicholas Barbieri, PhD and Catarina Saiote, PhD are your PEC co-chairs

Ways to keep in touch

- Our website: **http://icahn.mssm.edu/education/postdoctoral-training**
- Follow our Twitter account: **@MtSinaiPostdocs**
- Join our Facebook page: **"Mount Sinai Postdocs"**
- Follow us on LinkedIn: **Mount Sinai Postdocs and Postdoc Alumni**
- Trainee Mistreatment Resource Panel: **http://webcommons.mssm.edu/mistreatmentresourcepanel/**

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Chief editor: Delaine Ceholski Contributing editors: Przemek Gorski, Natasha Eliyahu-Shtraizent, Laura Lecce, Elena Sanchez-Rodriguez, Agata Kurowski, Ben Shackleton, Ishaan Gupta

Internet of things for your body: Towards digital immunity

By Ishaan Gupta

We have come a long way from associating heat with a live body to being guinea pigs for testing devices that promise a future where continuous monitoring of our physical parameters could save us from a potential anaphylactic shock. Multiple lines of scientific evidence suggest that parameters such as heart rate, body temperature, blood pressure, and peripheral capillary oxygen indicate physical health status. Moreover, these parameters have different baseline values between people depending on their birth-gender, life stage, and physical training, among other characteristics. Further, these parameters vary during daily activities and with ambient environment changes. Variability in these parameters warrants continuous measurement for accurate medical assessment unlike the "sparse" clinical measurements of an individual that are then compared to the average "sparse" measurements of a population. This is of particular importance when values of many parameters may display aberrations before a disease such as Type-2 Diabetes or Lyme disease clinically manifest or come to notice on a regular physician visit. Besides, monitoring these parameters also gives us the opportunity to provide better care for our young and the rapidly increasing numbers of our aging populace.

Rapid advances in the field of sensor technology coupled with microfluidics and molecular diagnostics has fuelled the emergence of over 500 different health-care wearable devices, 34.3 million of which were sold by July 2015. First-generation commercial products range from heart rate monitors, step counters, and thermal monitors. Heart rate monitors first hit the market in 1982 from Polar Electro; they measured electrocardiograms and were worn as a chest belt. Years later, these chest belts tend to still be the most accurate for measuring heart rate with an error of about 5 beats per minute during rest and moderate activity. The new generation of heart rate monitors come as smart watches or armbands and measure the photoplethysmogram (change in volume of an organ such as a blood vessel). However, the gain in portability is offset by an error in measurement of about 10 beats per minute and may fail during heavy exercise. The latest heart rate monitors use piezoelectric in-ear sensors that measure amplified heart rate pulses much like the amplification of sound on an acoustic guitar. These devices are more accurate due to stable positioning of the device inside the ear canal and also act as thermometers. Besides heart rate, most devices also come with a pedometer that measures physical activity based on movement. Once a fringe trend, wearble technology has caught the attention of tech giants like Apple and Samsung who come equipped with legions of software and hardware developers to make rapid prototyping and initiate a new race amongst the developers of wearable technology.

In 2014, another tech giant quietly entered this race with a patent for the next-generation of wearable devices that intend to continuously sample body fluids. Google patented the smart contact lens that would monitor blood glucose levels from tears. If the idea works, it would obviate pin-pricks for monitoring glucose levels in diabetes patients. Constant monitoring may also indicate if the user is on track to develop diabetes, as shown by the Snyder group at Stanford who continuously monitored Dr. Mike Snyder's own metabolic/molecular parameters [1]. In another technological leap, researchers at UC Berkley and Stanford demonstrated a sweat sensor capable of simultaneously detecting glucose, lactate, temperature, sodium and po-tassium (pictured) in their study published in Nature [2]. The device is a flexible silicon strip that wraps around the wrist or the head and can communicate with a smart phone in real-time. Yet to be demonstrated for its diagnostic potential and accuracy, the device surely opens up the possibility of acting as a platform to integrate several physical measurements.

Besides the hardware side of developments, several cloud propriety-computing solutions are being proposed such as Apple Health or Human API. These platforms allow integration of health data from different sources and allow developers to write software that could integrate all the data and then communicate the results to your smart phone. More players and competition in this space would encourage faster development of easy-to-use software that would speed up the technological growth and encourage quicker adoption by both manufacturers and users. In addition, with the advent of molecular diagnostic technology, such as the Sherlock system that uses CRISPR-Cas13a/C2c2 to detect nucleic acids [3], a future where an infection could be detected by the synthetic immune system before the native immune system of a person is not very far away.

References:

1. Chen R, et al. (2012) Personal Omics Profiling Reveals Dynamic Molecular and Medical Phenotypes. Cell 148 (6): 1293–1307. http://www.cell.com/abstract/S0092-8674%2812%2900166-3?utm_source=ECE001&utm_campaign=&utm_content=&utm_medium=email&bid=P-5SP63F:5PCQ4

2. Gao W, et al. (2016) Fully integrated wearable sensor arrays for multiplexed in situ perspiration analysis. Nature 529: 509–514. https://www.nature.com/nature/journal/v529/n7587/full/nature16521.html

3. http://www.sciencemag.org/news/2017/04/new-crispr-tool-can-detect-tiny-amounts-viruses

Wearable sweat sensor developed by researchers at UC Berkeley and Stanford.
http://news.berkeley.edu/2016/01/27/wearable-sweat-sensors/