Mount Sinai

The Mount Sinai Postdoc Periodical

Monthly newsletter, October 2017

In this issue:

Academic Culture and its Impact on Creative Thought

By Annalena La Porte

One day I was returning from a coffee run and ended up in a packed elevator headed back up to the lab. Once the doors closed behind us, two of the men in the elevator started talking about a woman they had just wished a good night. Both men were convinced that the woman could not adequately perform her job as a scientist if she was leaving at four o'clock. They declared this loudly, in public, on a packed elevator. Why did they think it was okay to openly berate a colleague in front of strangers? Is this notion of having to constantly "be visible in lab" so ingrained in our academic culture? If so, does this part of academic culture come at a cost?

I couldn't help but wonder if being in lab for longer hours actually translates into more and better data. If we break down the percentage of the time we are "visible in lab", how much of that time is actually spent working at the bench or thinking actively about our research project? I would wager that more than a few people stay longer at the end of the day just so no one takes note of their departure, even if it means time wasted perusing Facebook. Almost as if on cue, BBC News ran a story about quirky behavior of famous scientists that may have contributed to their creativity and ultimately to their greatest inspirations[1]. Among the strange stories of Tesla's "toe exercises", which he performed 100 times on each foot every night, and Newton's celibacy, there was a common thread among influential scientists where they allowed themselves isolated time to think. While at Princeton, Einstein would walk the mile and a half to and from work, and Darwin went for three forty-five minute walks a day, something unimaginable in the life of today's postdoc. The act of walking itself was implicated as the stimulant for great thought, but going for a walk outside also forces you to cut yourself off from everyone and to be alone with your thoughts.

http://palikariendaksi.blogspot.com

In a recent "Hidden Brain" podcast, creativity was tied to this idea of cutting yourself off from time to time. The idea is that by devoting time to think in an isolated space separate from the distractions and noise in your daily life, you can think more deeply and have more creative thoughts[2]. In the episode, Shankar Vedantam interviews Cal Newport, an assistant professor at Georgetown University, about a term he coined - "deep work" - and his book with the same name[3]. Much like the scientists in the BBC article, the book describes some of the most influential thinkers retreating to an isolated location. Carl Yung built himself a stone tower in the countryside to where he escaped from his busy practice in the city. Mark Twain camped out in a cabin at the edge of his property and his family would have to sound a horn to let him know that it was time for dinner. When J.K. Rowling was having trouble completing Deathly Hallows, she rented a luxury suite in downtown Edinburgh to isolate herself and think "Harry Potter-y" thoughts. Bill Gates famously takes "think weeks" twice a year, where he just reads and thinks big thoughts[3]. Of course, for many of us taking a week off to "have a think", renting a luxury suite on a postdoc's salary simply isn't practical.

But even without "think weeks" and luxury suites, we could reap the benefits of better thought-out scientific arguments if we made it an acceptable part of academic culture to schedule isolated time, away from the lab, just to think. The detriment to creativity tied to "being visible in lab" comes from the lack of uninterrupted time to concentrate on just your thoughts. In addition to what Newport refers to as "shallow work" often faced by office workers, which includes such things as constantly answering emails and attending meetings, the concentration of scientists is disrupted at the end of every incubation, whenever a timer sounds, or when you're bombarded with an endless stream of emails for lectures that all seem worth attending. A study by Leroy et. al. tested how easy it was for for people to focus on solving a puzzle, get distracted, and then return to the puzzle

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without missing a beat4. They found that participant performance post-interruption dropped drastically and that it took some time to settle back into a puzzle-solving mentality. They also found that this happens when you don't complete a task, as if the uncompleted task haunts you as you try to move on to the next one3.

Allowing academics to schedule time to concentrate and let their minds wander hardly seems like it would have any drawbacks. Concentrating deeply is something scientists should be able, if not encouraged, to do as much as possible. Making it an acceptable part of academic culture would likely increase efficiency and maybe even spur inspiration that can then be brought back to the bench. It's possible those people who stop caring about what people might say - the Einsteins, Teslas, Gates, and the women on elevators at four o'clock everywhere - have the kinds of ideas that forever change the way we view the world.

References:

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2. Hidden Brain. 2017. You 2.0: The Value Of 'Deep Work' In An Age Of Distraction. NPR. http://www.npr.org/2017/07/25/539092670/you-2-0-the-value-of-deep-work-in-an-age-of-distraction.

3. Newport, C. 2016. Deep Work. Grand Central Publishing. ISBN 978-4555-8669-1.

4. Leroy, S. 2009. Why is it so hard to do my work? The challenge of attention residue when switching between work tasks. Organizational Behavior and Human Decision Processes. Volume 109, Issue 2, p.168-181.

Ways to keep in touch

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

Co-Chair Corner

Greetings fellow postdocs,

This past month, the Postdoc Executive Committee (PEC) was focused on preparing and organizing our 8th Annual Postdoc Day - "Moving academia forward". Thank you to all committee members for their help in organizing Postdoc Day and thank you to all postdocs for attending. It was great seeing so many of you during Postdoc Day and the Postdoc Appreciation week which followed. We hope you gained new insights from the career talks and the publishing panel discussion, and that the networking reception helped you build some useful career connections. If you want to give us any feedback or suggestions for future Postdoc Days, please feel free to email Nick or myself, your PEC co-chairs.

We were very happy to see how many postdocs are willing to help others in difficult situations. Our last social was dedicated to help Puerto Rico which has been devastated by two category 5 hurricanes. Thank you all for your donations – we were able to raise a total of $274! In addition, the Puerto Rico Donation Drive has just closed after two weeks and was a huge success. Many thanks for all your good will to help!

On Friday, November 3rd, the PEC is planning a big fundraising social event for Puerto Rico and Mexico. Mexico has been critically affected by three major earthquakes in September, leaving over 6000 people injured and almost 500 people dead. Puerto Rico has also been devastated by several hurricanes and citizens are still being affected by the lack of power, potable water, and basic necessities. With your help, we hope that we will be able to collect and donate a significant sum to make an impact on these countries and help their people. The event is open to postdocs, graduate students and medical students and is sponsored by the Dean of the Graduate School of Biomedical Sciences and the Dean for Medical Education at the Icahn School of Medicine. It will take place in the Annenberg student lounge (main floor of Annenberg, behind the elevator bay) - food and beverages will be served. Further details will follow soon!

All the best and I hope to see many of you at our next Postdoc Social on Friday, October 27!

Sincerely,

Agata

Agata Kurowski and Nicholas Barbieri are your PEC co-chairs

The Mount Sinai Postdoc Periodical

Chief editor: Delaine Ceholski Contributing editors: Przemek Gorski, Laura Lecce, Agata Kurowski, Ben Shackleton, Ishaan Gupta, Chandrani Mondal, Madeline Pfau, Erik De Water, Annalena La Porte, Rewatee Gokhale.

Using baby teeth to predict autism in children

By Erik De Water

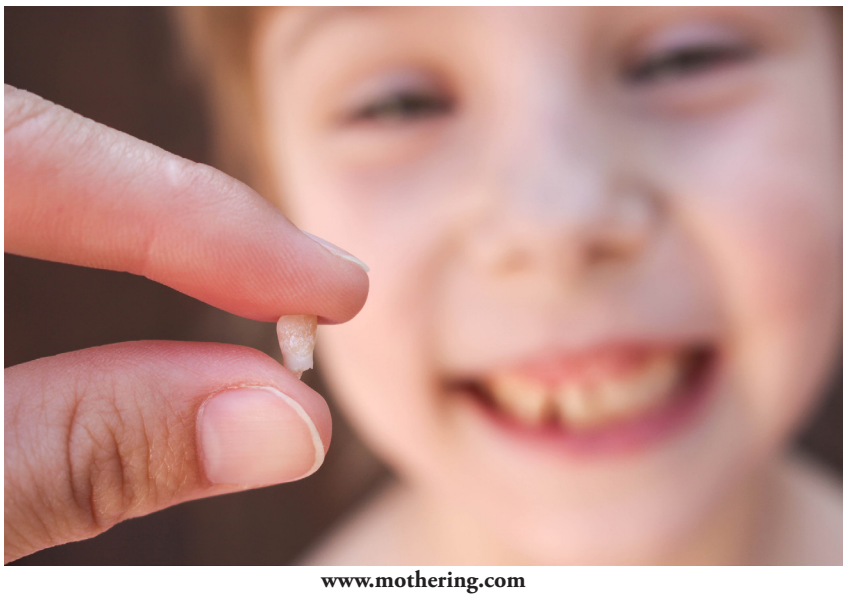
Autism spectrum disorder (ASD) affects 1-2% of children. It is characterized by difficulty communicating and interacting with others and restrictive and repetitive behaviors and interests. Up to 50% of the variation in ASD can be attributed to genetic factors, which means that environmental factors play a substantial role as well. Prenatal and early-life exposure to environmental toxicants, such as metals, is associated with behaviors and brain abnormalities that are frequently observed in children with ASD. Therefore, researchers from the Icahn School of Medicine, the Karolinska Institute and University of Gothenberg examined whether prenatal and early-life exposure to metals is associated with ASD[1]. They focused on lead and two essential nutrients: manganese and zinc.

Metal exposure in baby teeth was an innovative biomarker for ASD that was developed and validated by the first author of the study, Dr. Arora. Metals accumulate preferentially in bone, such as teeth, and baby teeth have unique growth properties that can be used to retrospectively determine metal exposure from the 2nd trimester of pregnancy until the tooth is shed (between 6-13 years) with high temporal specificity (i.e. weeks). Teeth start to develop in the 2nd trimester of pregnancy, and dentine and enamel are deposited in a rhythmic manner akin to "growth rings" in trees. At birth, a histological landmark called the neonatal line is formed, which clearly distinguishes prenatally and postnally formed parts of the tooth. The neonatal line and "growth rings" can be used to determine windows of vulnerability during which exposure to metals is particularly harmful.

In order to examine whether prenatal and early-life exposure to metals predicts ASD in children aged 8-12 years, Arora and colleagues measured metal concentrations in baby teeth of twin pairs that were either discordant for ASD (i.e. one twin had ASD and one twin did not) or non-ASD controls (neither twin had ASD). The authors determined teeth metal concentrations that reflected exposure from 20 weeks before birth until 30 weeks after birth by using a laser to section dentine and by assigning time points of exposure based on the neonatal line and "growth rings".

When discordant twins were compared to twin pairs without ASD, children with ASD had higher lead concentrations during postnatal weeks 10-20 than their co-twins without ASD. Essential nutrient concentrations were lower in children with ASD than in their twins without ASD. Specifically, manganese concentrations were lower in children with ASD during two time windows: 1) from 10 weeks before birth until birth; and 2) during postnatal weeks 5-20. Zinc concentrations were lower in children with ASD compared to their co-twins without ASD from 10 weeks before birth until 5 weeks after birth. Additionally, higher lead and lower manganese concentrations were associated with greater severity of ASD symptoms.

Together, these findings indicate that excessive exposure to lead and deficiency of essential nutrients during pregnancy and the first months of life is associated with ASD in childhood. Metals may disrupt the development and function of brain areas involved in social interaction and communication, and they may also influence the expression of genes, particularly those involved in metal transport and uptake.



www.mothering.com

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1 Arora, M. et al. Fetal and postnatal metal dysregulation in autism. Nat. Commun. 8, 15493 doi: 10.1038/ncomms15493 (2017)

New Report Highlights Challenges Faced by Postdoc Parents

By Rewatee Gokhale

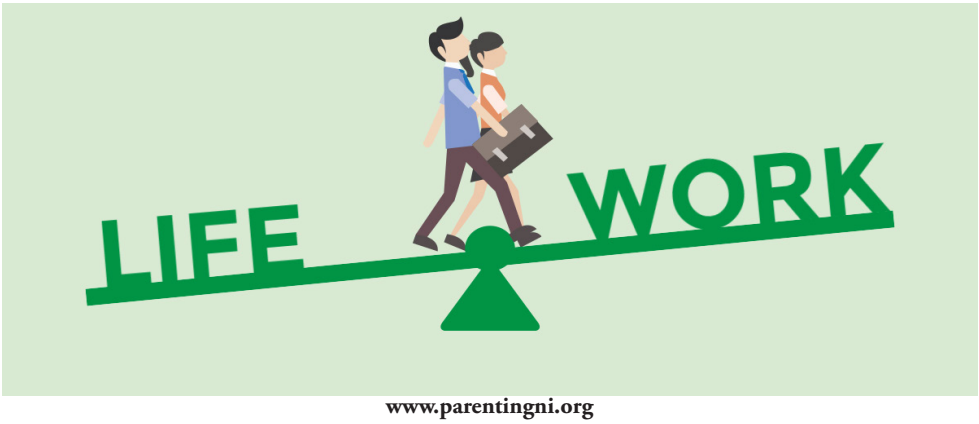
A new report, titled "Parents in the Pipeline: Retaining Postdoctoral Researchers with Families", is based on a nation-wide survey of postdocs with children and provides the first comprehensive look at the breadth of problems faced by postdoc parents while pursuing careers in academia. The report, prepared by the Center for WorkLife Law out of the University of California Hastings College of Law in association with the National Postdoctoral Association, also makes recommendations for implementing institutional policies that would include parental benefits such as maternity leave, sick days and access to on-campus childcare.

One of the major findings of the survey was that a major determinant of the overall experience of being a postdoc parent was the response and support received from the postdoc's Principle Investigator (PI). Postdoctoral scholars fall into a grey area of being both institutional employees and externally funded researchers. Consequently, there is often a lack of clarity on which institutional benefits, such as pregnancy accommodations or parental leave, are applicable to postdocs. In this situation, postdocs reported relying on informal arrangements with their PI to grant time off. Absent any uniform, formalized policy regarding parental leave, such an arrangement was often a double-edged sword. Some postdocs reported that their PI went above and beyond the typical university policy and allowed extended flexible work arrangements, while others reported a lack of support and pressure to return to work as soon as possible. On the whole, however, a majority of survey respondents reported that their PIs encouraged them to take maternity leave and had a positive impact on their postdoc experience.

A major motivation behind this survey was to gather information regarding the experiences of postdoc parents in order to understand what factors contribute to attrition of women from STEM fields. One of the chief concerns raised by more than half of survey respondents was the lack of paid maternity or paternity leave. Many mothers reported facing hostility from their PI regarding their new parent status or their need for time off. On the other hand, fathers reported facing gender biases and outdated beliefs about family in their efforts to obtain leave. Postdocs of color reported facing more hostility from PIs, with over one-in-four reporting their PIs response negatively affected their postdoc experience, compared to just 14% of white postdocs. Lastly, postdoc parents overwhelming reported a need for access to on-campus childcare facilities and flexibility scheduling their work hours as two accommodations that would improve their postdoc experience.

Surprisingly, one of key findings of the report is that reducing the likelihood that postdoc parents quit their research career is easier that it sounds. One of the most important recommendations for institutions is to establish a formal parental leave policy. This is equally applicable to funding agencies - in fact, many postdoc parents reported leaving labs as a result of discrimination, with grantors likely unaware of the situation. The report also recommends that institutions establish postdoc offices to help coordinate university efforts and policies for postdocs and ensure the quality of postdoc training. Moreover, postdoc offices can serve as a mouthpiece to air the concerns of postdocs and can also help them navigate university and HR policies with regard to parental leave and benefits. A concerted effort from administrators, postdocs and PIs is needed to ensure that postdoc parents are able to meet the demands of a research career and family life and continue to pursue careers as independent scientists. As the report eloquently points out: "…the postdocs surveyed for this report each represent the dedication of decades of study and the investment of roughly $500,000 or more of education - losing them doesn't make sense."

The full report can be accessed **here**. For more information on the parental leave policy and other parental benefits at Sinai, please refer to the **Postdoc handbook**.



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