Sometimes it just feels good to say it out loud: being a postdoc is hard! We often have to juggle multiple projects, deal with unrealistic deadlines, continuously write grants, and try to publish in prestigious journals, all the while teaching and training graduate students on top of our experiments. The pressure to deliver can be overwhelming and very stressful as we anxiously await that next job. We worry about so many things that we often forget to take care of ourselves, which is why many postdocs run the risk of developing serious health issues due to stress, such as depression, poor immunity, cardiovascular diseases, and memory or cognitive impairment. Without undermining other issues, memory and cognitive impairment is particularly troubling because, to be able to achieve everything that is expected of us, our cognitive abilities need to be functioning at full capacity. Separate studies have reported much higher levels of anxiety in postdocs and a 3-4 times higher rate of medical illness in academics compared to the general population.

So, how do we stop this from happening to us? “Move it baby!” says Professor Markus Gerber from University of Basel, whose group examined what activities are best for fighting stress. They compared dancing, ball sports, weightlifting, and aerobics. Interestingly, they found that only ball games and dancing had a strong stress-buffering effect, possibly due to the underlying effect of social interaction. More specifically, they found that the social interaction in these sports may produce positive emotions which, in turn, may broaden one’s adaptive coping skills and fuel resilience during times of stress. “There is this golden rule of 30 minutes of physical activity per day. This, however, does not mean you have to play football or go running; any form of physical activity that gets you at least a bit out of breath counts”, says Prof. Gerber in a recent interview with Martina Hestericova for Medium.com.

When we are so preoccupied with our work, it can be easy to forget that there is a huge world outside the lab. It may seem counterintuitive, but getting away from our projects periodically, and doing what makes us happy, can make us less stressed out and more productive in the long run. “So if you love to dance… make time to dance every day. It will keep you sane when everything else gets crazy” according to 2014 article published in Science.

Finally, I leave you with a quote from Martina Hesticova, “Dear students and postdocs, the ‘take-home message’ is quite clear: find an activity that makes you happy and do it on a regular basis. Your body and mind, and perhaps even your projects will benefit from it.” I couldn’t agree more!

References:
Dear fellow postdocs,

We hope you had a nice, relaxing holiday break and wish you all a very happy and successful New Year. All the best for 2018!

Before the end of 2017, the Postdoc Executive Committee (PEC) co-organized the Graduate School Christmas party together with the graduate students, which was a fantastic way to strengthen the bonds between our groups in the Graduate School. We are looking very much forward to plan further joined events as one united Gradschool. During the event, attendees had the opportunity to join PlumX, which is a database to keep track of your publication record and scores (e.g., H-index) and to showcase your scientific impact to the MSSM community and beyond. If you missed it, you still can sign up here.

The annual MSMM Canned Food Drive, organized by the PEC community group, was completed successfully in December. Thanks to everyone who contributed! The collected goods were donated to the Little Sisters of the Assumption charity.

This month, the second cohort of the “Project Management for Academia and Industry” short course will begin. The course was designed by Project Managers from Genetics and Genomic Sciences and the PEC with the aim of teaching project management, budgeting and relationship management skills to postdocs. Last year, the course received excellent reviews and applications for the 2018 class were outstanding and highly competitive. In fact, application numbers nearly tripled from 2017. Big congratulations to everyone who submitted a successful application!

Lastly, we’re always looking for new motivated postdocs to join the Postdoc Executive Committee! If you are interested in joining our team, come to one of our monthly meetings to get more information. PEC meetings are held the second Tuesday of each month at noon in the Hess Building room 10-101. Our next postdoc social will be on the last Friday of the month (January 26th) in the MC level of the Icahn building. All postdocs are invited!

Best wishes for 2018,

Agata

Agata Kurowski and Nicholas Barbieri are your PEC co-chairs

Criminal culpability laws: Contributions of neuroscience
By Erik de Water

Teens differ in important ways from adults. Developmental scientists have shown consistently that the brains of teens are still maturing, and that teens are more impulsive, prone to risk-taking, and susceptible to negative peer influences than adults\(^1\). Yet, a decade ago, it was legal in several US states to give death sentences to teens who had committed a homicide, even when they were as young as 14 years old. Further, it was legal to sentence teens to life in prison without the possibility of parole, for crimes they had committed prior to turning 18 years old. Fortunately, in the past decade, insights from developmental neuroscience research have contributed to multiple Supreme Court decisions that changed laws regarding criminal punishment of teens. In 2005, the Roper vs. Simmons decision\(^2\) banned the death sentence for teens who committed crimes when they were under the age of 18. The Graham vs. Florida (2010) decision\(^3\) banned life without parole sentences for teens who committed non-homicide offenses, and the Miller vs. Alabama decision\(^4\) banned life without parole sentences for teens, even if they had committed a homicide. These Supreme Court decisions were influenced by recent developmental neuroscience findings, showing that decision-making and self-control skills (e.g., inhibition and planning) are not yet fully mature in teens\(^5\), and the brain areas serving these functions (i.e., the prefrontal cortex and parietal cortex) are still developing in teens\(^5\).

However, defining an exact age of majority, or the age at which an individual is legally considered an adult, remains challenging - even when neuroscience is used to determine the age at which brains are typically mature. This is evidenced by the fact that different ages of majority already exist for different behaviors: 16-year-olds are allowed to drive a car in the US, but one has to be 18 to vote, buy cigarettes or to be tried as an adult in court, while the legal drinking age is 21 years. Brain maturity is typically defined as having a brain that is similar to an adult reference group\(^6\). However, large individual differences in brain development exist: some 12-year-olds have brains comparable to 25-year-olds, while the reverse can be true as well. Additionally, multiple brain maturities seem to exist, depending on whether one focuses on brain morphology, functional activity, functional connectivity, or structural connectivity of the brain. Brain morphology (i.e., the volume and thickness of brain regions), functional activity and functional connectivity (temporal correlations between activity of different brain regions at rest) mature in the early 20s, while the structural connectivity (i.e., integrity of white matter tracts) of brain areas involved in behavioral regulation (i.e., prefrontal cortex and parietal cortex) does not reach maturity until the early 30s\(^6\). Overall, these neuroscience studies indicate that the brain is still developing well after the current age(s) of majority, consistent with a recent study showing that young adults’ (18-21 years) cognitive control capacities in...
emotionally arousing contexts were more similar to teens (13-17 years) than to older adults (21-25 years)\textsuperscript{7}. Thus, policies and laws may need to be updated as our knowledge of brain maturation continues to increase.

In order to optimally inform future policies and regulations regarding criminal culpability, future developmental neuroscience studies should:

1) Include measurements of multiple aspects of brain development, including brain morphology, functional activity and connectivity, and structural connectivity.
2) Include a large number of individuals spanning a wide age range, ideally including adults over the age of 30, given that younger adults seem similar to teens and are therefore not an ideal reference group.
3) Include behavioral measures of behavioral control and decision-making, and link these measures to measures of brain development. Most prior neuroscience studies did not examine or report associations between brain development and behavioral control or decision-making, but in order to demonstrate that immature brains contribute to poor behavioral control/decision-making, it is critical to assess both brain development and behavioral control/decision-making in the same individuals.

Encouragingly, several large-scale developmental neuroscience studies that include all these measurements are currently ongoing, including the Adolescent Brain Cognitive Development (ABCD) study and the Human Connectome Project in Development\textsuperscript{6}.

References: