

Report: EMBO Workshop “Developmental Circuits in Aging”

Date of Event: 8th – 12th of April, 2024

Location: Nice, France

The 3rd Annual EMBO Workshop, “Developmental Circuits in Aging”, aimed to provide discourse on linking development and aging. The event consisted of around 35 seminars held by established experts in the field, 11 short talks, two poster sessions, a lively discussion between the experts on the evolution of aging, and the award presentation for “Best Poster”. Many talks focused on modelling features of aging in various organisms, such as killifish, nematodes, flies, stem cells, and even coral. Certain animals, such as bats, flatworms, and salamanders, provide unique perspectives on aging through their ability to overcome many consequences of aging through regeneration and even rejuvenation.

This was my first time attending such an event on my own, and I was quite nervous. It was going to be three days of full-immersion into the latest science in aging research. As a Master’s student, I came with a clear goal in mind: to find promising labs through networking, where I could apply to do my PhD. This workshop was a rare opportunity to approach experts and hear about their work, in person.

The event started off with a fascinating seminar by Dr. Helen Blau of Stanford University. She showed decades of work accomplished within her lab, in pursuit of increasing healthspan by targeting muscular rejuvenation. Her lab identified the aging-regulating enzyme 15-PGDH, a “gerozyme”, which is involved in PGE2 signaling and whose inhibition restores youthful phenotypes in muscle fibers. Dr. Blau is a fantastic speaker and held the audience’s attention firmly throughout her entire talk.

Dr. Maximina Yun detailed her extensive work with salamanders, particularly axolotl, which appear to follow a completely different aging process as well as a remarkable ability to regenerate limbs. Axolotls can live up to 30 years, which is extremely long for a species of their size. Although their first four years are marked by measurable changes and correlate (to a certain extent) to known aging markers, the following 2+ decades show an incredible absence of aging. Not even their natural death is well understood. As of now, it seems that they simply stop eating and pass away soon after, but the trigger has not yet been described. Dr. Coleen Murphy presented her approach to measuring and training memory in *Caenorhabditis elegans*, an established bioassay she created which helps characterize aging in *C. elegans* throughout the nematode’s lifespan. I found this talk particularly exciting, because I’d worked with *C. elegans* in the past and meeting the creator of this bioassay felt a bit like meeting a celebrity. And it seemed like I was not the only fan of Dr. Murphy. In his talk, Dr. Longhua Gao (who presented incredible work on flatworms and their ability to regenerate *and* rejuvenate) referenced Dr. Murphy’s recently published book as a great insight into current theories on aging and a must-read.

However, this workshop was not attended only by researchers in aging. Dr. Jan Philipp Junker presented his work on single cell RNA sequencing and how his lab is able to use CRISPR to trace cell lineage within zebrafish. Developmental biologist Dr. Theresa Rayon

talked about pivoting her research on proteostasis in development to reach further down an organism's life and observe how proteostasis changes through aging. And Dr. Dario G. Lupianez explained the importance of CTCF-binding sites to the chromatin architecture in mammals and how replacing vertebrate CTCF proteins with invertebrate CTCF proteins can destroy the chromatin landscape. Such talks as these help one consider the current state of aging research and in which direction it could continue its growth.

During the coffee breaks and meals, I made sure to strike up conversations with as many people as possible. It was important to me to make the most of this opportunity and really start my path into aging research. Ultimately, I managed to talk to most attendees and received a lot of advice regarding starting a PhD as well as finding the right research group. Some even recommended specific PI's, whose research interests aligned with mine, for which I was very thankful.

Additionally, the poster session provided another opportunity to network! Many people who approached my poster were friends I had made over the course of the workshop, but there were also a few PostDocs and PIs I had not yet managed to talk to. It was exciting to show them my past project and hear their input! This was also the first time I created a poster all on my own and also had to present it alone, but I did my best to quiet my nerves and enjoy the experience. Even though the 3-hour long session was exhausting, I had a great time and found a lot of joy in talking about my experiments.

I'm truly grateful to the GSCN for the travel grant! Without it, I would not have been able to attend and I can now see just how much I would have missed out on. The workshop was fantastic, the attendees very friendly, and the presented research fascinating. I made a lot of great connections, as well as some friends, and cannot wait to attend another workshop/conference in the future.