



EXCURSIONS AND OTHER NEWS

Small insights in BioS points of view, field trips, and other stuff we do.

From Around the World to Kollm - The Fifth BioS Intro Week

Damla Çiçek Karadağ

When I received my Master's approval, the thing I was most excited about was the Intro Week. Now that the week has ended, I can truly say that the excursion is a brilliant idea. It was a wonderful way for us to begin this new journey: With a shared mindset and by growing together as a team, which perfectly aligns with our university's collaborative principle.



On Monday, we met at the main train station in Dresden and travelled for about two hours to reach Kollm, where we stayed for the following days. It's a calm village surrounded by beautiful nature and a small lake right next to it. Our accommodation was a cozy three stage dormitory. We were the only group staying there: 16 students, two professors and two lovely people preparing our meals. The classes started straight away on day one. Although quite intense, they were extremely valuable and well-structured. Topics like Good Scientific Practice, Bioethics, and Currency of Science were presented in a way that truly reflected the professors' dedication to "real science" and "teamwork", which made me genuinely happy. Each night after dinner, we participated in several scientific talks with guest speakers. It was very inspiring to see that these scientists travelled all the way to tiny Kollm to help us strengthen our scientific spirit. After the scientific discussions, we usually played social games together as a group.

Next to getting to know our peers, we also explored the surrounding area. On the first day, we only took a short walk, but on day three, we went on a four-hour nature hike, during which we observed nearly 20 different mushroom species and all the vivid colors of autumn. On the last evening, Prof. Zierau hosted a pub quiz for us – which was both fun and surprisingly educational.

All in all, it was a week full of motivation, learning, and joy. What touched me the most, was how the professors treated us not just as students, but as true scientific colleagues. I'm deeply grateful to everyone who made this experience possible.

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A Night With a Nobel Prize Winner

Patience Blossfeld Dodgson

On October 21st, BioS students were extra lucky to have a cozy meet and greet with Nobel Laureate Dr. Venki Ramakrishnan before his public lecture.



During the get-together, Dr. Ramakrishnan recapped his career path and how the Nobel Prize both did and did not impact his life after. He spoke about starting his academic life as a theoretical physicist, but research made him realize he did not understand its purpose and found it boring. Calling it his "first mistake", he ended up going back to graduate school for biology before getting a post-doctorate in Yale to use neutron scattering to study ribosomes. Later, when he was on the tenured track, he mentioned getting stuck and deciding to take a sabbatical at Cambridge to study a different technique there. He realized that Cambridge was the right place for him to continue his research on ribosomes and it paid off - years later, in 2009, his work received the Nobel Prize for Chemistry.

Later that night, Dr. Ramakrishnan held a public talk at the TUD audimax. This time not on ribosomes but on the science of aging and longevity. He informed the audience about the relationship between size, metabolism, and longevity - explaining why a Greenland Shark can live up to 400 years. He also talked about interesting drug trials and potential research on the horizon, relating to how rapamycin and GLP-1 inhibitors are thought to be able to help, but lacking the long term trials to confirm their ability. In the end, he concluded that the best way to live long with healthy science - besides being rich - is to take care of your body and your mental health.

Finally, he answered several questions from the audience. The last one was from a student asking how to follow his path to becoming a Nobel Prize winner. Reflecting on it, he repeated a theme that was also present in the meet and greet: Dr. Ramakrishnan wouldn't recommend following his path, but for students to give themselves second chances and to stay open to new opportunities.

ANIMALS AND MONEY

This part of BioS Reports unravels relationships between animals and the economy.

How a Small South American Wasp Saved Millions of Lives And Dollars

Alyssa Wagner

Biological control has an estimated global value at US\$400 billion per year [1]. Biological control is the process of using naturally occurring organisms to control pests, fungi, or other pathogens. One of the most successful cases is the control of the cassava mealybug by the parasitoid wasp *Anagyrus lopezi* in Africa. *A. lopezi* lays its eggs in the cassava mealybug. When they hatch, the larva feeds on the cassava mealybug's insides, eventually killing it. *A. lopezi* single-handedly saved the cassava industry from collapse in just a few years [2]. Cassava, also known as yuca or manioc, is used not only as food for humans, but also for animal feed, starch, medicine, and industrial purposes [2]. It is a staple crop for hundreds of millions of people in Africa, South America, and Southeast Asia. A crash in the cassava market causes a ripple of negative effects including deforestation, huge economic loss, inflation, and food insecurity [2; 3].

Cassava mealybugs became a problem in Africa in the 1970s, reducing crop yield by 58 to 84% [4]. *A. lopezi* was released in Nigeria in 1981, and quickly spread to 26 other African countries [5]. After a few years, *A. lopezi* had greatly increased cassava yield, and by the 1990s, cassava mealybug infestations were under control in 95% of fields throughout Africa [6]. It is estimated that in 40 years, *A. lopezi* saved the African cassava industry anywhere from US\$9 - US\$20 billion [7]. For my calculations, I will be conservative and use the average of US\$14 billion. Because we know the total benefit and the costs of the program and the number of wasps released, we can calculate the value of each 'founding wasp.' From 1981 to 1988, the International Institute of Tropical Agriculture released about 493,005 wasps in 127 different sites [7].

A. lopezi quickly established itself. The overall cost of the program from 1979 to 2013 was US\$46.9 million. If we subtract the costs from the benefits, we still get a net benefit of US\$13.95 billion. This number divided by the total number of released wasps gives an estimated value of US\$28,295 per wasp.

Complete economic and social collapse could have ensued across Africa without *A. lopezi*. 40% of all insects are at risk of extinction in the next few decades, with *A. lopezi*'s order, *Hymenoptera*, being one of the most affected [7]. Considering how one single species can save a continent from famine and economic collapse, it is crucial to see insects as absolutely fundamental to society and to do everything in our power to protect them and their environment.



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New Member in the House - Welcome Hana!

Hana is a BioS student with a passion for science communication and creativity. Originally Moroccan but raised in Abu Dhabi, she has always been curious about how culture and science intersect. After earning her degree in Biotechnology from South Dakota State University (USA) and working in administration for a few years, she decided it was time to return to her scientific roots—leading her to the BioS program at TU Dresden.

Hana is especially passionate about the BioS Reports podcast and looks forward to adding a fun, engaging touch to the Instagram page. In her free time, she loves reading, playing games on her Nintendo Switch, and helping out with animal rescue groups.

