

How the RAS robber was trapped

By Chara Sarafoglou

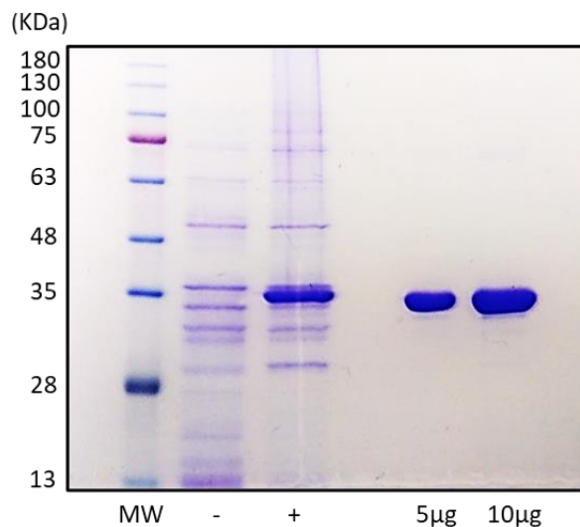
“It was a Friday morning. I was sitting with my hands crossed at my bench feeling completely frustrated. It had been around three months that I had been trying to do the same thing. It felt like I was going to fail once again.

My well defined research project involved a specific protein called Ras coming from a bacterial cell and implicated in cancer diseases.

Together with my supervisor we had come up with a thorough plan about how we were going to study it. We were going to isolate Ras and then use modern sophisticated microscopes and computational methods to investigate it. But, how can you study something that you don’t even have?

Ras somehow managed to escape all my attempts to catch it. It felt like I was chasing a robber who kept outsmarting me. I was sure I was still missing something.

The week was almost over again and still no protein to work on. I decided to have a last go at it. The process of producing the protein had become a routine by then. I went on auto-pilot and performed the experiment. My colleague and friend Alice was



assisting me that day, so we were going back and forth with ideas as to what would be the problem, trying to come up with a plan to catch this Ras robber. The day was over and all experiments were done; I looked at the results absentminded and saw no protein there. But, as I was going to pack my things and go, I heard Alice scream with excitement! At last, Ras had been trapped in the gel we had used to “catch” it! It turned out I was so sure of my failure, that I somehow missed it.

That was the Friday that we finally outsmarted Ras, and the journey of its study was about to begin”.



Chara Sarafoglou began her work with proteins during her undergraduate thesis in the lab of the crystallographer Michalis Kokkinidis. At that point, she decided to follow this field of research. Since then, all her career steps have aimed at reinforcing her knowledge on techniques for studying proteins.

During her master thesis, she worked in the lab of molecular entomology under the supervision of Prof. John Vontas. Her project entailed the characterization of protein targets for insecticide design. She learned how the knowledge for a protein target could be a powerful tool for drug design.

Despite her interest in pharmacology, she decided to focus on deciphering broad molecular protein mechanisms, since there is a gap of knowledge in this scientific field. After a short trip to Barcelona where she received training in computational models and protein simulations in the lab of Jean Didier Marechal, she returned to IMBB for her PhD.

The past two years, in the lab of dynamic protein biology of George Gouridis, their research is focused on delineating the close bond between structure and function of biomolecules. For this purpose, they decode their structural dynamics at molecular level. Protein structural dynamics are constantly happening within living cells, allowing each protein to perform its tasks and be accurately regulated by interactions with its partners or its substrates. Altered protein dynamics lead to cell dysfunction, disease or death. By monitoring protein dynamics, they are able to extract the molecular pathology of human diseases. Protein dynamics also shape how proteins evolve to perform several functions.