

New BioTechMed-Graz Young Researcher Group

Biotechnologist Jelena Spasic will be setting up her own research group in the field of enzyme engineering at TU Graz in the coming years thanks to the Young Researcher Group funding from BioTechMed-Graz. The aim of the research is to establish a methodology for the in vitro investigation of membrane-bound enzymes.

Birgit Baustädter

Enzymes can be either soluble or membrane-bound. If they are membrane-bound, they are often firmly integrated into a carrier membrane. These enzymes should be analysed together with the membrane, but this often means characterizing them in cells, influencing measurement results. An example: Both enzymes and cells need oxygen. If the oxygen consumption of the enzymes is to be determined, it is difficult to distinguish whether the enzymes or the cells are responsible for the consumption.

The Young Researcher Groups of the BioTechMed-Graz university cooperation enable young, promising scientists to set up their own working groups around their research areas.

Jelena Spasic wants to change this with a new measurement method. "I want to use a so-called nanodisc as a carrier medium to stabilise the enzyme outside the cell. That's why I'm working together with Sandro Keller from the University of Graz."

MUTATIONS

Once this process has been established, the researcher not only wants to study the "wildtype" enzyme found, but also scrutinise selected mutations that have already been mentioned in earlier studies. These enzymes can be used biotechnologically to produce polymers or polymer precursors, for example. However, they also have biomedical relevance, as they play a role in neurodegenerative diseases.

An additional task is finding a new option for screening the relevant mutations. "When I engineer an enzyme, I vary the amino acids. But I have loads of different variants of each enzyme. I can't screen them all. So we have to find the most promising options. We would like to develop new platforms for screening in cooperation with Georg Krainer from the University of Graz." This will also be done with the help of AI.

HER PATH TO GRAZ

Jelena Spasic is originally from Serbia, where she completed her bachelor's and master's degrees in molecular biology. She then started a PhD in Serbia, but then moved to Portugal and Austria via a Marie Curie Double Degree Programme – always in close collaboration with cooperation partners from industry. The Covid-19 pandemic also occurred during this time, from which she learnt a lot, as she says with a smile today:

"After these years, I now say to myself in stressful situations, at least we can work normally in the lab and meet up with colleagues!"

