

New Christian Doppler Laboratory at the University of Vienna €3.3 million for the life sciences at the University of Vienna to elucidate protein structures.

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Led by highly qualified scientists, the research groups in Christian Doppler (CD) Laboratories work on application-oriented basic research. They search for innovative answers to current research questions in close coordination with industrial partners. As a consequence, the Christian Doppler Research Association is internationally considered as best practice example. The new laboratory, which is supported by funding from the Federal Ministry of Science, Research and Economy (BMWF), is concerned with knowledge-based structural biology and biotechnology and will develop foundations that might lead to new therapeutic methods for diseases like Alzheimer's and cancer.

The budget of the CD-Laboratory for knowledge-based structural biology and biotechnology will amount to approximately €3.3 million for seven years of research. Around €1.8 million will come from the public purse. Kristina Djinović-Carugo and Robert Konrat from the Department of Structural Biology and Computational Biology at the Max F. Perutz Laboratories (MFPL) will run the new laboratory.

BMWF promotes life sciences location Austria

“With our life sciences strategy, we strive to further establish Austria as an internationally leading life sciences and pharma location”, says the federal minister of science and economy Harald Mahrer. “CD-Laboratories make a valuable contribution to this by creating optimal conditions for the collaboration of science and industry. New fundamental knowledge about protein structure can be used for the development of new therapies and medicine by business partners. This will be of benefit to all partners: our universities, companies and, in the long run, the affected patients.”

New therapeutic methods through insights into protein structure

The scientists will primarily investigate protein structure, which is crucial for the development of new therapeutic methods for a great variety of diseases ranging from Alzheimer's and infectious diseases to cancer. This renders it a most valuable tool in biomedical research. In order to gain new insights into protein structure, function and interactions that could potentially be translated into new therapies, the researchers will employ a combination of bioinformatics, protein production and high-end biophysical and structural biology techniques. The collected information will ultimately be combined in an information pipeline for both research and biotechnology.

Collaborations with Boehringer Ingelheim, Arsanis Biosciences and Biomin

The research projects carried out by the CD-Laboratory will be organised in three modules, each of which will be carried out in collaboration with a different business partner.

Together with Boehringer Ingelheim, the CD-Laboratory will provide new insights into intrinsically disordered proteins (IDPs) as potential drug targets. These IDPs have challenged the field of structural biology, as they do not fit the commonly accepted view of proteins that fold into unique 3D structures. Instead, IDPs are dynamic ensembles that are important for physiological and pathological processes. The

main focus of interest for this project will be the proto-oncogene c-Myc, which is, when misregulated, a key player in most human cancers.

The collaboration with the Vienna-based biotech company Arsanis Biosciences GmbH aims at elucidating the mechanisms of action of antibodies on a molecular level. Arsanis will put this new knowledge to use by developing improved medicines against pathogens to counteract severe infectious diseases. These medicines are anti-infective human antibodies that should serve as precision medicines effective against bacteria such as *Staphylococcus aureus* and drug-resistant forms of *Escherichia coli* and *Klebsiella pneumoniae*.

Mycotoxins are a major natural contamination source in feed for agricultural animals that compromise animal health. To detoxify them, the Lower-Austria based company Biomin produces recombinant enzymes provided to the animals as feed additives. The CD-Laboratory sets out to improve the design of these enzymes by determining their crystal structures.

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About the Christian Doppler Laboratories

“Christian Doppler Laboratories pursue excellent application-oriented basic research. For that purpose, expert scientists cooperate with innovative businesses. The principles of the Christian Doppler Research Association are internationally considered as best practice for supporting cooperative research. Christian Doppler Laboratories are financed by both the public purse and the companies involved. The most important public funding sponsor is the Federal Ministry of Science, Research and Economy (BMWFV).”

The Max F. Perutz Laboratories are a joint venture of

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About the MFPL

The Max F. Perutz Laboratories (MFPL) are a center established by the University of Vienna and the Medical University of Vienna to provide an environment for excellent, internationally recognized research and education in the field of Molecular Biology. The MFPL are located at the Vienna Biocenter, one of the largest Life Sciences clusters in Austria, and host on average 60 independent research groups, involving more than 500 people from 40 nations.

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