MSCA-NET

Widening Country Inspiration Story

"One should not give up, despite the low success rate."

Organisation name: ELTE Eötvös Loránd University
Organisation type: Higher education organisation
Country: Hungary
Project Acronym: PHYMOL
Project start and end date: 1.02.2023 - 31.01.2027
Type of MSC action, Horizon Europe: Doctoral Networks
Is your organisation a coordinator? No

What is your project about?

The PHYMOL network is formed by 12 academic institutes, national laboratories, and four industrial entities. PHYMOL provides an ambitious programme of research and training, helping to produce a new generation of researchers in the broad field of molecular modelling. PHYMOL combines the most advanced physical understanding of molecular interactions with machine learning and state-of-the-art computational methods in a symbiotic manner that will lead to a new generation of researchers capable of advancing solutions to problems of importance in healthcare, energy, and the environment, as well as basic science. The private sector is integral to PHYMOL and participates in management, training and research. With this union of forces from academia and industry from the EU and the US, we seek to keep molecular simulation techniques at the forefront of industry and science within the EU.

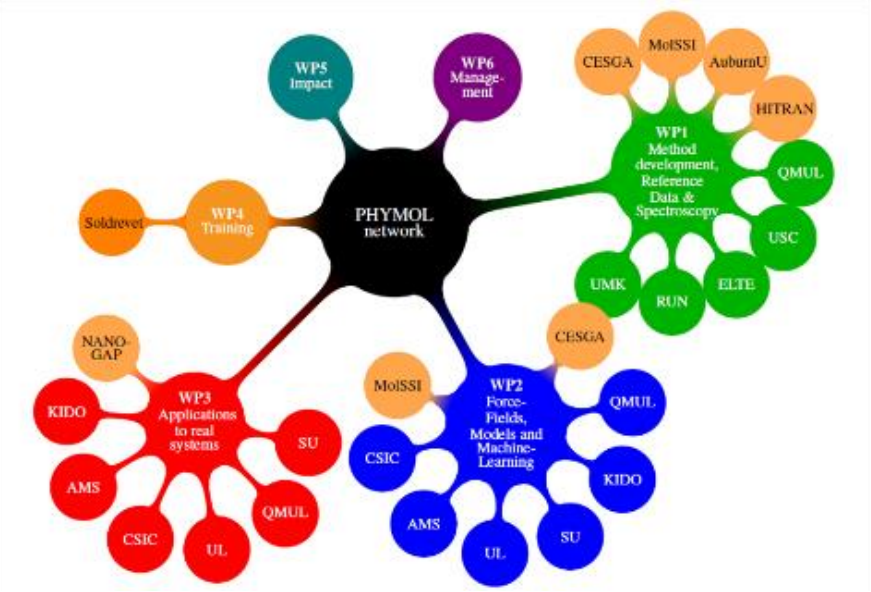
Why is the research important?

PHYMOL is both a research and training network. In our modern society, we need researchers equipped with a deeper physical understanding of molecular interactions as well as profound expertise in computer-aided learning: a single focus on just one of these skills will not get us to where we wish to be. Furthermore, machine learning (ML) needs accurate data. While we have some of the most advanced and accurate first-principles (ab initio) methods available (in fact, many were developed by members of the PHYMOL consortium), we know their limitations and shortcomings particularly well. Therefore, in PHYMOL, we have set up a research and training programme that spans all areas of importance in the field of intermolecular interactions: the development of methods and algorithms, generation and testing of reference data, development of models using physical ideas and machine learning, and the application of these models in, for example, high-accuracy spectroscopic calculations and large-scale molecular dynamics computer simulations of complex systems of relevance in chemistry, physics, and biology.

What kind of support did you get?

Members of the PHYMOL consortium have been involved in a large number of

national and international research projects. Therefore, the collective technical knowledge of the consortium comes from many sources. It should also be added that before the successful application, the project was submitted twice, and the evaluators' comments helped shape the application.



Do you have other successful projects under Horizon 2020/ Horizon Europe?

Yes. Several members of the consortium participated in the COST action COSY, which started in 2022.

How did you find the partners in your consortium?

The network was initially formed by smaller subgroups who collaborated with each other extensively. Overlapping members of these subgroups helped to establish the consortium of 10 participating institutions and our industrial partner.

What tips can you give other organisations that would like to apply for MSCA?

At present, the advice is that one should not give up, despite the low success rate, but should spend extra time and effort on improving those areas of the proposal which were criticised the most by the evaluators. For example, the science part of our applications was never questioned, but many organisational details had to be worked out and improved before the project got funded.

More information on the project:

The Marie Sklodowska-Curie Actions (MSCA) support researchers at all stage of their career across all disciplines. The MSCA also support cooperation between industry and academia and provide innovative trainings and career developments.

The MSCA Doctoral Networks (DN) offer doctoral programmes implemented by partnerships of organisations from different sectors across Europe and beyond to train highly skilled doctoral candidates, stimulate their creativity, enhance their innovation capacities and boost their employability in the long-term.

The MSCA-NET project is the MSCA NCP project to facilitate the transnational cooperation to achieve a consistent and harmonised level of NCP support. The scientific community can also profit from our project to support their MSCA application.