IMPACT SUCCESS STORIES

HNN 3.0
HEALTH-NCP-NET

EvaMobs is taking a new approach in antiviral development, by using evolvable monobodies, or “Mobs” for short.

Mobs are small proteins that can be tailored to have a high affinity for any type of virus. In other words, by making specific changes to the framework of Mobs, this technology can be used to easily generate specific molecules that can “attack” and inactivate a particular virus.

EvaMobs

Prof. Claudio M. Soares
Project Coordinator, NOVA

1. Describe your project through key words/key phrases that identify it.

EvaMobs is a Horizon Europe project focused on pandemic preparedness and rapid-response biologics. It develops an AI- and physics-assisted platform to design, produce, and validate de novo designed proteins as adaptable antiviral candidates against emerging and re-emerging viral threats. Our focus is on SARS-CoV-2, RSV, influenza A, and Zika virus. The project aims to create a flexible antiviral pipeline that can be rapidly redirected toward new viruses or variants.

Keywords: de novo protein design, AI- and physics-assisted design, viral fusion proteins, SARS-CoV-2, RSV, influenza A, Zika virus, preclinical validation, clinical translation, and European pandemic preparedness.

2. In terms of impact, what will be the most tangible your project will achieve?

The most tangible result of EvaMobs will be the establishment of an integrated platform for the design, production, and testing of de novo antiviral proteins. This platform will connect computational protein design with experimental production, characterization, and biological validation, with a route towards clinical validation in humans. A second tangible result will be the generation of candidate proteins able to inhibit viral infection, initially against SARS-CoV-2, RSV, influenza A, and Zika virus. Together, these results will provide a practical pipeline for rapidly developing antiviral biologics against emerging or re-emerging viral threats.

3. Please describe your project’s overall impact, if applicable, at the European level.

At the European level, EvaMobs will contribute to strengthening preparedness and response capacity against emerging viral threats, pandemics, and infectious diseases more broadly. By developing an integrated platform for de novo protein design, production, and validation, the project will help build European technological capacity in a field that is strategically important for health security and biomedical innovation.

The project may also support more affordable and scalable production of biological therapeutics, which is essential if such treatments are to be used widely and rapidly during public health emergencies and in developing countries. Beyond antiviral applications, the technologies and expertise developed in EvaMobs are expected to have broader spillover effects in biomedical research and therapy development, including areas such as cancer, and other chronic conditions where designed proteins could become valuable therapeutic tools.

Overall, EvaMobs aims to reinforce Europe’s ability not only to respond to future infectious disease threats, but also to lead in advanced protein design technologies with wide medical and industrial relevance.

4. As an applicant, what advice would you have wanted in the Horizon project design process? What support did you receive from National Contact point (NCP) and your organisation, and what improvement of support would you benefit from?

In the Horizon project design process, we would have benefited from more proactive support in consortium building, identification of suitable partners, and early interpretation of the call objectives. In our case, most of the support came from my organisation, ITQB NOVA, and from a specialised company that helped with proposal drafting. This support was very important, particularly in structuring the proposal and aligning it with the expected impact of the call. However, the identification of partners and the construction of the consortium were largely done by us.

For future applicants, we believe National Contact Points could play a more active role in connecting research laboratories, clinical partners, companies, and other relevant organisations across Europe before the proposal is assembled. Since Horizon Europe projects are European-wide by nature, this type of support should also be coordinated across NCPs in different countries. A networked approach could help identify complementary partners, build stronger consortia, and ensure that proposals address European capacity-building needs rather than only national or local priorities.

It would also be valuable for NCPs to provide clearer explanations of call objectives, with input from the relevant European Commission officers where possible, so applicants can better understand the strategic expectations behind each topic. In addition, NCPs could organize practical workshops involving successful applicants, former evaluators, and relevant stakeholders, where concrete examples of funded projects and evaluation experiences are discussed. Such testimonies would be very useful for applicants, because they provide practical insight into what makes a proposal competitive.

Finally, practical support for drafting and finalising proposals would be very helpful. At present, this type of service is often provided by specialized companies at a cost, which may not be accessible to all applicants, especially smaller institutions or early-stage coordinators.

5. Please highlight aspects of your Horizon project's strengths that you consider important and that may constitute good practice for other applicants.

One of the main strengths of EvaMobs was the consortium itself. The project was built around a group of people and laboratories that were already collaborating successfully, initially through the La Caixa Foundation project "The BioPlaTTAR Platform for the Tailored and Rapid Development of Antiviral Biopharmaceuticals" (HR22-00722). This previous collaboration created trust, a shared scientific language, and a solid basis on which to build a more ambitious European project.

A second strength was the strategic expansion of the consortium. We brought in additional laboratories and organisations across Europe with complementary expertise that was essential to achieve the final objective. This ensured that the consortium was not only scientifically strong but also complete in terms of the project's development pathway. In addition to the scientists in the consortium, the project manager, the communication office, the innovation office, and the broader institutional support staff have been paramount for reaching our goals.

Another important element was the mindset of the team. We were a group of "dreamers" who believed in the potential of the idea and were not afraid of the scale and complexity of the work. At the same time, the project addressed a highly relevant and engaging societal problem: preparedness against pandemics and infectious diseases. This combination of ambition, trust between partners, complementary expertise, and a clear societal need may constitute good practice for other applicants.

Last but not least, we managed to assemble a motivated group of students who are driving the project forward, ensuring that the work gets done and that the objectives are achieved. They are also very important in building bridges between the teams. This highlights that ambitious projects of this kind are excellent platforms for training human resources in frontier areas.

HNN3.0 (The Cluster 1 Health consortium of NCPs for Horizon Europe) has received funding from the European Union's Horizon EUROPE research and innovation programme under Grant Agreement number 101057279