

## **Policy paper: The benefits of the “EMBL group leader model”**

How can we organize cutting-edge research and training whilst tackling the most difficult scientific questions and global challenges? Clearly, the most brilliant minds and researchers are required, but who are they and how do we compete with some of the world’s most prestigious and resourceful research centers to attract them to the Nordic countries? Furthermore, how do we ensure the investment required to bring these talented researchers to the Nordics results in the best possible outcomes?

We argue that the logical answer is through an attractive brand for the recruitment of talented young group leaders. Young group leaders who are then provided with the resources, opportunities, and freedom to develop bold and original research ideas in a thriving and intellectually stimulating environment. Dissemination and support should be ensured by local and international interactions in basic and translational research through universities as hosts. The [Nordic EMBL Partnership for Molecular Medicine](#) is the exact example of this approach.

This Partnership is based on nodes in four of the Nordic countries - Finland, Norway, Sweden, and Denmark - hosted by the universities of Helsinki (FIMM), Oslo (NCMM), Umeå (MIMS), and Aarhus (DANDRITE), respectively. The research activities are conducted mainly by internationally recruited group leaders, similar to the EMBL sites in Heidelberg, Grenoble, Hamburg, Hinxton, Barcelona, and Rome. EMBL supports the nodes in implementing various operational principles and offers access to ample scientific expertise, technologies, and networks.

With EMBL-style contracts based on a 5+4 years’ model with a mid-term review, the group leaders have the time to prove the feasibility and impact of their bold research proposals. The long perspective and contract offered by the model comes at an important stage of their professional careers and when personal obligations, such as raising a family, require stability.

Target candidates are also at a career stage where the motivation to develop an original and independent research program whilst building their own international network is the priority, rather than securing a lifelong tenure. By not committing to open-ended tenures, but to a specific research program, the universities can justify offering positions that are associated with unique conditions and resources. They can therefore recruit at the highest international level and explore new directions of high risk/high gain research. This is extremely important for the innovation and development of our academic system, and society in general. In addition, the non-tenure model allows universities to bring in expert researchers who can then re-shape research programs in times of crisis to react to societal challenges when needed most. This flexibility to change research direction is not so simple when researchers have been recruited to more traditional, longer tenure posts.

A core element of the EMBL model is the recruitment of young, highly ambitious and promising group leaders, who build up research programs through the recruitment of strong PhDs and postdoctoral candidates from an international pool of talent. EMBL’s reputation as one of the world’s best life science institutes, its substantial core-funding and overall administrative and technological support, make the recruitment of excellent international candidates possible. The EMBL model also instigates integral feedback, mentoring, and evaluation at all levels throughout the group leader program. Furthermore, the model prepares students, postdocs, and group leaders for their next career steps and helps to further the development of excellence in life science. Group leaders will typically transfer on to a professorship, research leadership or directorship in academia, research institution, start-up or industry.

In general, the advantages of implementing the non-tenured group leader programs in partnership with EMBL can be summarized as follows:

- Strong visibility (for the host universities within the Nordic countries), outreach and credibility; the EMBL association provides a ‘stamp of quality’.
- Attracting highly successful and internationally competitive talent, as a direct consequence of the visibility created through EMBL’s brand.
- Core-funded EMBL partnership programs attract large amounts of external competitive funding (4-5 fold amplification).
- Fast development of new “high risk, high gain” research directions that provide large returns, with the flexibility to shut down outdated areas of research and technology and, for example, re-shape research to react to societal challenges. As opposed to recruiting a few “top star” senior researchers focusing on limited projects.
- Strong integration into the local research environment as young group leaders grow in their role and expand their network of collaborations.
- The synergies of bottom-up, excellence-based mechanisms of science collaborations develop, plus coherent research programs of a strategic nature at the highest level.
- Excellence through the EMBL model for science evaluation and outreach is also disseminated into the local research communities.
- In-built turn-over cycles maintain and push flexibility, dynamism and agility to meet new opportunities in the future, and provide the host with control on future commitments.

For the host university, one disadvantage of non-tenure track group leaders can be that there is a less formal association of group leaders with teaching. It is our clear experience, however, that group leaders engage voluntarily in teaching at a comparable level to tenured researchers to expose their research to students and to gain valuable qualifications for future career moves.

Implementation of the EMBL model for group leader recruitment and science evaluation have shown overwhelmingly positive results at the Nordic EMBL Partnership nodes. Each of the four nodes have recruited highly skilled and competitive group leaders who have brought in original research programs, and who have progressed groundbreaking research and defined new frontiers.

In the respective Partnership countries, the EMBL nodes have also introduced new research topics and methods in a cost-efficient way. The group leaders are engaged in many different communities and networks across the world, which in turn introduces them directly to the Nordic countries. As examples, CRISPR-Cas9 technology emerged from MIMS in Umeå through group leader Emmanuelle Charpentier, and group leaders Keisuke Yonehara and Duda Kvitsiani at DANDRITE introduced machine learning in the processing of electrophysiological and 2-photon imaging data on sensory and cognitive functions.

In summary, the non-tenure system allows for the recruitment of some of the brightest and the best international research talent, who conduct excellent and cutting-edge research, bringing enormous benefits to their host institutions and the Nordics as a whole.