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EMBL Barcelona Unit Review Report Summary and Response

The review of the European Molecular Biology Laboratory's Barcelona Unit took place in Barcelona in hybrid format on 14 - 16 April 2026. The review panel consisted of 11 international experts, including six members of EMBL's Scientific Advisory Committee (SAC). The chair was Caroline Relton, from London School of Hygiene and Tropical Medicine, University of London, London (UK). Several observers were present, Virginijus Šikšnys, Chair of EMBL Council and Lithuanian Delegate to EMBL Council, Ewan Birney, former EMBL Interim Director General (deputy DG at the time of the review), and Jessica Vamathevan, Chief Strategy Officer.

Evaluation Summary

EMBL Barcelona, the newest EMBL site with a unique focus at the interface of tissue biology, bioengineering, and theory, is recognised as a leader in engineering multicellular tissues, particularly through organoid and vascular models. The founding vision "to build tissues in order to understand them" remains clear, ambitious, and well-executed. The panel encouraged the perpetuation of the strategic approach of the unit and suggested extending it to each of the individual groupings to encourage more focus rather than breadth. The panel considered the incorporation of modelling and theory possibly the most forward-looking elements of the unit and praised the Barcelona Collaboratorium, a joint initiative with CRG.

The panel commended James's strong leadership shaping the unit vision scientifically as well as culturally. The unit's identity is cohesive, reflected in a strong collaborative culture both within and beyond the unit. Given his numerous responsibilities, the panel noted that it may be beneficial to have another group leader with an open-ended contract who could share some of this workload for the unit.

The unit is housed in the PRBB building (Biomedical Research Park of Barcelona), which also houses the Centre for Genomic Regulation (CRG) and four other institutes. The panel identified the lack of space as the most significant issue being faced by the unit and recommended urgent action with relevant stakeholders to resolve this challenge. While the panel noted that the unit is very well integrated within the local ecosystem as well as EMBL-wide, they recommended deepening its collaboration with hospitals to build integrated clinical pipelines.

Among the numerous excellent research outputs from the unit, the panel highlighted the blood brain barrier model developed by the Bernabeu Group and its use in elucidating transcriptional perturbation in endothelial cells in cerebral malaria. They also highlighted the elegant work the Trivedi Group conducted on symmetry breaking and self-organisation of multi-cellular systems

using gastruloid models as well as the tech-transfer agreement to develop a spin-off company, Model-MI, based on the Haase lab's placenta-on-a-chip mode.

EMBL Barcelona also includes the Mesoscopic Imaging Facility (MIF) with commercial and in-house-developed technologies that capture dynamic tissue organisation and function, and the newly designed microfabrication workshop (the µFabLab), which provides engineering tools for technology design, open to all PRBB. Both were considered by the review panel major strategic assets and differentiators for the unit. The panel also welcomed the AI applications presented by the unit and encouraged the groups to further explore new opportunities in that area, potentially in conjunction with the new AI Centre at EMBL Heidelberg.

The unit has reached steady state with seven research groups, which have successfully secured major competitive external funding. The unit also stands out for its innovative entrepreneurial activities; four of the seven groups have successfully applied for and been granted patents through EMBLEM. While the panel fully recognised and endorsed the value and innovation in technology development, they also recommended establishing tighter links to fundamental biology or mechanistic expertise to ensure that the novel models are applied to answer the most important and relevant questions.

The panel was positively impressed by the engaged spirit from predoc and postdoc fellows and the collaborative and supportive environment despite their concerns about limited space. In order to better support staff and manage the turnover in the unit, the panel encouraged adopting the EMBL-wide policy to undertake annual performance development reviews.

The strong foundation developed over the last years provides unique opportunities for the future, such as the integration of vascular biology into tissue design and organoid development. Sustained success will require addressing current space limitations, defining key conceptual goals by multi-scale integration of mechanistic, imaging, and modelling approaches, and deepening hospital collaborations to build robust clinical and translational pipelines.

Response to the Panel's Recommendations

I would like to express my most sincere thanks to all the review panel, and particularly the Chair Caroline Relton for contributing their time and expertise in reviewing EMBL Barcelona. This was the second review for the Unit, and it has taken place after reaching full capacity and the first group departed. I believe the constructive input received from the panel will have a positive impact on the evolution of the Unit.

I would also like to congratulate everyone at EMBL Barcelona for this positive review. My most sincere thanks go to James Sharpe for his outstanding leadership and vision, which have been crucial for the successful development of this Unit. I agree with the panel that he has succeeded in establishing and consolidating a highly collaborative unit performing exceptionally impactful

research. At the same time, I acknowledge his numerous responsibilities, which EMBL leadership will consider carefully in the coming period.

I would like to join the panel in congratulating the unit for its great integration in the local environment as well as within EMBL, which resulted in numerous fruitful collaborations. I understand that the question of space is an important concern for many teams. I take that concern seriously and will continue efforts to work with stakeholders, in particular the host country Spain to look for a resolution that can work for EMBL and all stakeholders in a timely manner.

I agree with the panel on the MIF and µFabLab being major assets of EMBL Barcelona, which will continue their development. In the area of AI, the unit will also tap into new opportunities and collaborations, including with the pan-EMBL AI Centre, especially in light of the unit's focus on modelling and theory.

I would also like to join the panel in celebrating the entrepreneurial spirit of the unit and recognising the value of translational activities, which EMBL will continue supporting and encouraging. At the same time, EMBL will encourage enhancing collaborations on relevant basic research areas.

Lastly, I am very pleased that the community of predoc and postdoc fellows is very collaborative. To further support them with their professional and career development, we will ensure that EMBL Barcelona is involved in the uptake of the EMBL-wide policy for annual performance development reviews when it is deployed.

I would like to conclude by repeating my thanks to Caroline Relton and all the review panel for their fruitful discussions, advice and expert contributions, which will be crucial to the future success of EMBL Barcelona. I would also like to once again congratulate James Sharpe and everyone at EMBL Barcelona for this very successful review. EMBL is very proud of what this Unit has achieved over its first decade and I am sure that EMBL Barcelona will continue to be a vibrant and productive part of EMBL.

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