

EMBL Grenoble Unit Review Summary and Response

The review of the EMBL Grenoble Unit took place in Grenoble, France, on 25 - 27 February 2025. The review panel consisted of 11 international experts, including three members of EMBL's Scientific Advisory Committee (SAC). The review was chaired by Brenda Schulman from Max Planck Institute of Biochemistry, Martinsried (DE). Additionally, several external and internal observers were present including Chair of EMBL Council Peter Becker, EMBL Director General Edith Heard, Deputy Director General and Interim Executive Director Designate Ewan Birney and the Director of EMBL Heidelberg, Interim Director General Elect Peer Bork.

Evaluation Summary

Kristina Djinovic-Carugo is Head of the EMBL Grenoble Unit since 2022, taking over from Stephen Cusack who has since retired. The unit currently comprises four research groups, (led by Djinovic-Carugo, Bhogaraju, Galej, and Kowalinski) and three technology-oriented teams (led by Marquez, McCarthy, and Papp). Since the last review in 2021, the unit has undergone significant changes. With the departure of Stephen Cusack and Marco Marcia, the research portfolio has shifted from a focus on RNA biology to a broader range of biological investigations along with a notable transition from X-ray crystallography to cryo-electron microscopy (cryo-EM), a direction that will intensify with expansion into cryo-electron tomography (cryo-ET). The instrumentation teams have achieved significant advances in automation, sample preparation and quality control, benefitting the local research groups as well as others across EMBL and beyond. The panel noted that the Group Leaders have rapidly embraced the changing landscape in structural biology and the advancements in AI including AlphaFold. The research at EMBL Grenoble was qualified of world-class and the committee highlighted several achievements in research, service and technology development including EasyGrid as well as automation of cryo-EM and cryo-ET sample preparation; and several scientific highlights in the areas of transcription, RNA metabolism and protein ubiquitination. The high-throughput crystallography with fragment screening, and time-resolved crystallography were also applauded. With its unique engineering capabilities both within the Unit and across the campus, EMBL Grenoble is very well placed to challenge current limitations and drive technological innovation. While FIB-milling remains a critical tool and must be maintained, it should not be seen as the sole solution. The Unit has the potential to pioneer entirely new, disruptive approaches to sample thinning that are faster, more efficient, and more effective.

The panel strongly endorsed the seamless integration of technology development into beamline activities at the ESRF. In particular, the committee unanimously recognised the new high-resolution imaging beamline (ID18) at the ESRF as a landmark opportunity. The integration of nano X-ray imaging and the advancement of cryogenic sample preparation – developed in collaboration with the ESRF and the Francis Crick Institute (UK) – were viewed as major assets. The panel recommends EMBL Grenoble to strongly influence shaping the development and design of ID18, ensuring that it becomes a world-class facility. With strong EMBL involvement, this beamline can redefine what is possible in biological imaging at the highest resolutions.

The panel also considered the quality of the services offered at EMBL Grenoble as well as the ones offered jointly with ESRF exceptional. At the same time, they noted the need to secure a more sustainable model for HTX fragment screening access, possibly in collaboration with ESRF. The panel recommends that the Unit continues to make major contributions in the current Service provision areas while adapting to changes in service demand accordingly. Despite its extensive use by the global research community, the panel questioned if the technology from EMBL Grenoble, when used elsewhere, is consistently acknowledged, and recommends establishing routine ways of crediting these contributions in publications.

The panel noted that the groups and teams are well integrated with many examples of collaboration amongst research, development and service-based groups within EMBL Grenoble and with other EMBL sites, especially EMBL Heidelberg. Given the small size of the site, the panel recommends that future hiring consider groups that can synergise well to make the most of equipment and expertise at EMBL Grenoble.

The review committee also considered the Training provision and mentorship excellent at all levels and encouraged to continue to support and develop Group Leaders towards their future careers. They noted that nearly half of post-docs departed during this review period without publications and encouraged the unit to look into the underlying reasons.

The panel stressed the urgency of the planned building refurbishments and renovation to meet modern standards, especially because ILL operations are currently planned to cease in 2030 or shortly thereafter. The panel also encouraged the Head of Site to address the need for childcare to create a more inclusive and equitable work environment.

Overall, the panel recognises the significant progress that EMBL Grenoble has made in the past four years. The unit has successfully navigated major changes while expanding into new research areas and developing transformative technologies. With the integration of AI and further automation, coupled with the exceptional talent at the site, the outlook will be bright for EMBL Grenoble.

Response to the Panel's Recommendations

We would like to express our most sincere thanks to the chair, Brenda Schulman, and to the whole panel for reviewing the EMBL Grenoble Unit. We would also like to congratulate everyone from EMBL Grenoble for this outstanding review. Our most sincere thanks go to the Head of Site Kristina Djinoovic-Carugo for her leadership and exceptional dedication to the Unit. She has also been instrumental for the further development of essential connections with local partners. We would also like to thank the rest of the group and team leaders and everyone involved in preparing this review.

We join the panel in praising the remarkable scientific contributions of researchers in the unit. They have rapidly adapted to changes in the structural biology field while expanding into new research areas, RNA biology, ubiquitin signalling and infection biology, thereby also aligning with the current EMBL Programme. The research of the EMBL Grenoble groups over this review period have contributed to the elucidation of molecular mechanisms of fundamental processes and at the same time have developed new revolutionary methods to enable further discovery. In resonance with the panel, we would like to highlight the significant technology developments that the unit has made over the past four years. The unit will continue the transition towards cryo-EM and cryo-ET, further automation and integration of AI.

EMBL greatly appreciates the panel's recognition of the strong integration between EMBL Grenoble and ESRF in advancing technologies for structural biology beamlines, which support users from across Europe and beyond. The latest technology developments have been key to upgrading the offerings and capacities of the services offered by the unit. We share the panel's enthusiasm for the new high-resolution X-ray imaging beamline (ID18) and fully agree on its transformative potential for biological imaging. EMBL Grenoble will continue its close collaboration with the ESRF to ensure that the infrastructure is optimally suited to molecular biology research. This includes active involvement in the development of nano X-ray imaging capabilities on ID18, as well as the adaptation of ID30B for X-ray imaging at cellular resolution. EMBL Grenoble is also committed to contributing to scientific leadership, not only through design input but also by developing innovative technologies that will enable the full potential of this unique resource. To address the limited credit given to EMBL service groups by users, we will encourage explicit acknowledgement and will make a concerted effort to monitor that to the best of our possibilities.

Integration and collaboration within groups and teams from EMBL Grenoble and other EMBL sites is, as noted by the panel, remarkably strong and fruitful. To ensure the continuation and effectively leverage the equipment and infrastructure available at the site, we will ensure that future recruitments synergize with the site and its direction.

We agree with the panel that the outdated and old infrastructure is a major challenge for EMBL Grenoble, especially in light of ILL planning to move to decommissioning in the 2030s.

Importantly ILL will not immediately cease operations. Even at the earliest decommissioning rate, this will be a lengthy process. EMBL leadership will explore possible solutions with campus partners and local authorities to ensure the continuation of EMBL activity on the site.

We are very pleased that the training and mentorship offered to predoctoral and postdoctoral fellows is considered excellent by the panel. We will closely monitor the careers of the Unit's alumni to assess if the lack of publications when some post-docs leave EMBL Grenoble is having an impact on them. We would like to stress that all fellows have access to EMBL Career Services to prepare for their next career step and maximize their professional success. Given the Engineering profiles, EMBL is also developing special programmes for that group to also ensure their professional development. Furthermore, we will reinvigorate seminars and encourage participation to leverage the local scientific ecosystem and thereby increase fellow's networking opportunities. We expect these measures to have a positive impact on fellows' professional careers.

To conclude, we would like to once again congratulate and thank Kristina for her dedicated leadership since she arrived, and warmly congratulate everyone at EMBL Grenoble for a very successful review. Despite the recent major changes at the site, EMBL is extremely proud of what the EMBL Grenoble staff and its leadership have achieved over this review period. We would also like to acknowledge and congratulate Stephen Cusack for all he had achieved as the previous head of site and as an eminent scientist and colleague who retired during this review period. Finally, our utmost thanks to Brenda Schulman and everyone on the review panel for their expert advice and great contributions, which will be crucial to the future success of EMBL Grenoble.



Prof. Dr. Mult. Peer Bork
Interim Director General



Prof. Ewan Birney, CBE, FMedSci, FRS
Interim Executive Director



Prof. Edith Heard, FRS
Former Director General (Director General at the time of the Review)

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