

EMBL Rome Unit Review Summary and Response

The review of the EMBL Rome Unit took place in Rome in a hybrid format on 20 - 22 February 2024. The review panel consisted of 10 international experts (9 were present in person), including three members of EMBL's Scientific Advisory Committee (SAC). The review was chaired by James Briscoe from The Francis Crick Institute, London (UK). Additionally, several external and internal observers were present: Chair of EMBL Council Peter Becker, UK Delegate and Vice Chair of EMBL Council Amanda Collis, EMBL Director General Edith Heard, Deputy Director General Ewan Birney, Chief Operating Officer Matti Tiirakari, Head of International Relations Plamena Markova and Head of Strategy Jessica Vamathevan.

Evaluation Summary

EMBL Rome comprises six research groups, three focused on Epigenetics (Hackett, Boulard, Boskovic) and three on Neurobiology (Asari, Rompani, Gross). Additionally, Robert Prevedel is affiliated with EMBL Rome but based at the Cell Biology & Biophysics (CBB) Unit in EMBL Heidelberg. All groups were present at the previous review except for Ana Boskovic's group, which started in 2021. The panel found that EMBL Rome group leaders who had arrived in the previous review period have since matured and consolidated their research, despite the immense challenges that the site has faced (see below). Since March 2020 Cornelius Gross has served as Interim Head of the Site. The panel highly appreciated his dedication and leadership skills, which have been essential to navigate various challenges during this period, his development of an impressive scientific vision for the unit, his well-received training and mentoring opportunities and his collaborative approach crucial to achieve scientific excellence and a harmonious working environment. Furthermore, under his leadership, many of the group leaders have now secured external funding with prestigious grants over the period under review.

The panel noted that the quality of the scientific research conducted at EMBL Rome continued to be of a very high standard. Among the scientific achievements of this review period, they highlighted the groundbreaking finding on how the father's microbiome affects the health of offspring in mice and the impactful study that demonstrated substantial differences in the output of the mouse retina between awake mice, anaesthetised mice, and dissected tissue. Many of the EMBL Rome group leaders are contributing to EMBL's "Molecules to Ecosystems" scientific programme with projects that explore how environmental factors impact epigenetically on physiology across generations.

The panel also positively valued the significant increase in the number of collaborations within the unit as well as with external partners, with strong engagements with a number of Italian research institutes and international research communities. The joint postdoctoral scheme with the Italian Institute of Technology (IIT) to develop early-career scientists and the partnership with Sapienza University to allow PhD students to earn joint degrees were noted as key examples. The strengthening of scientific and strategic connections between EMBL Rome and Italian

science through the amendment of the Host Site Agreement between EMBL and the Italian Republic was also considered by the panel a significant and important development.

The panel noted that the major challenge at EMBL Rome remains the severe structural deficiencies in the current infrastructure (also noted in the 2020 SAC unit review). The 2022-2026 EMBL programme included plans for a series of building refurbishments, laboratory upgrades and an increase in the number of research groups from six to eight. Although construction began in 2023 and some of the laboratories had to move to temporary space, the refurbishments have been severely delayed and have recently stalled completely, with the timeline for completion being unclear. This results in significant uncertainty about the future of the site and raises questions about the long-term sustainability of EMBL Rome's operations. Completing the build is crucial for the viability of the unit. Until this renovation is completed, growth plans, the recruitment of new group leaders and a Head of Unit are not feasible. Given the uncertainties, the panel's recommendation is to agree on a clear timetable with the host for the restart and completion of the refurbishments, which should be presented to Council in June, and to monitor the delivery of milestones closely. At the same time, the panel advises EMBL to develop contingency plans for the eventuality that refurbishment is abandoned, or delays extend indefinitely.

Another longstanding challenge at EMBL Rome is the lack of critical mass (both of the EMBL Rome Unit, and of the Consiglio Nazionale delle Ricerche (CNR) Monterotondo campus), which is necessary to maintain a flourishing culture of scientific dialogue, intellectual and technical exchange, and professional development opportunities. When the ongoing building refurbishment is completed, there will be increased capacity, which will go some way to addressing the lack of critical mass. However, this alone is not sufficient. Other EMBL host sites benefit from vibrant local scientific environments created with co-located institutes. As an approach to address this issue, the panel encouraged EMBL's continued efforts to connect to the local CNR institute but also advised that the help of CNR is needed to create an attractive scientific environment that could bring on site other institutes. The panel considers the recent appointment of the new local CNR director and her plans for site investment a timely opportunity. In developing this collaborative vision for the site, the panel noted that EMBL Rome's expertise would be valuable in establishing and operating new initiatives on the site, while EMBL's international reputation could help promote its activities.

Despite the challenges with the poor infrastructure, the unit has seen excellent scientific progress and impact and has also attracted substantial competitive funding since the last review. In the next period, the unit aims to enhance the research scope and address questions on how environmental risk factors impact on physiology through interdisciplinary research, including human cohort studies, while building on the existing epigenetics and neurobiology strengths. The panel acknowledged the scientific and collaborative potential of this renewed strategic focus but also expressed concerns about its viability if it could not be supported by

completion of the renovations, the recruitment of new groups and a new Head of Site and clarity on host country investments for the site.

The core facilities at the site were positively reviewed in March 2023 by an independent panel and as recommended, the facilities have undergone a major restructuring, merging the previously six existing facilities into four. The panel welcomed these successful developments which allow for increasing user capacity and technology development capabilities and more outward facing services. The EMBL Rome Unit review panel also highlighted the commendable progress of a new joint service with EMBL Hamburg to implement synchrotron-based X-ray tomography for sequential tissue ultrastructure and spatial transcriptomics.

Despite the challenging situation and the uncertainty around refurbishments, the morale of unit members remained high at the time of the review, and feedback from predoctoral and postdoctoral fellows was overall positive. The cooperative and interactive atmosphere as well as the supportive environment for training and mentoring at EMBL Rome could also be sensed by the panel during the review. The main concern voiced by predoctoral and postdoctoral fellows was the lack of dedicated support for bioinformatics. To address this the panel advised to recruit an on-site staff scientist with links to the new Data Science Centre to provide the required consultative expertise and support at the site. Concerns were also shared about the lack of connectivity and it was raised that access to other academic experiences and insights would be valued.

Overall, the panel recognises the significant progress that EMBL Rome has made in the past four years. The unit has focused its collaborative research at the interface of epigenetics and neurobiology and has aligned with EMBL's broader scientific program of studying life in context. Looking ahead, the unit has set out an ambitious vision that takes advantage of existing interdisciplinary approaches, technology innovation, and translational opportunities. However, CNR's prioritisation of the site, both in terms of operational sustainability and its scientific mission, is a prerequisite for the successful future of the EMBL Unit. If major strategic and infrastructure goals are met and the expansion plans realised, the outlook will be bright for EMBL Rome to enhance its international standing and scientific impact.

Response to the Panel's Recommendations

I would like to express my most sincere thanks to the chair, James Briscoe, and to the whole panel for reviewing the EMBL Rome Unit. I would also like to congratulate everyone from EMBL Rome for this excellent review. My most sincere thanks go to the Interim Head of Site Cornelius Gross for his outstanding leadership during this challenging and difficult period. I would like to echo the praise of the panel for his dedication to ensure a collaborative and harmonious research and work environment at EMBL Rome. I would also like to thank the rest of group leaders and everyone involved in preparing the review.

I would like to join the panel in praising the remarkable scientific contributions of researchers in the unit as well as their success in attracting external funding. I strongly believe that the highly collaborative spirit of the unit, interactions with other EMBL units as well as with national and international scientific communities, will continue facilitating the overall success of the unit. Many members of EMBL Rome have been strongly involved and engaged in the implementation of EMBL's Scientific Programme 'Molecules to Ecosystems' and it is fantastic to see the innovative projects that are developing in these directions. There is a real enthusiasm for transversal themes and the unit is especially involved in the Transversal Theme Human Ecosystems, which has stimulated and strengthened several interdisciplinary connections across EMBL.

I agree with the panel that the major challenge for EMBL Rome right now and for some time, concerns the poor infrastructure. I acknowledge the severe structural deficiencies in the current building are introducing significant risks about the viability of the site. Despite the high morale of unit members at the moment, I agree with the panel that this cannot be guaranteed if the delays and uncertainty continue and the future of both the staff and the science at EMBL Rome are at serious risk. I would like to echo the panel's statements about the need for refurbishment and investment on the site by the host government. As recommended by the panel, EMBL is fully committed to agreeing with the CNR and the Italian Ministry for Research on a clear timetable for the restart and completion of the refurbishments. If this is realised, this timetable will be presented to Council in June and ensure close monitoring and reporting on milestones. In parallel, EMBL will have to start considering, together with its Council, contingency plans in the event that the delays extend indefinitely or that there is no fulfilment of commitments.

If the refurbishment programme is delivered within the renewed timelines, EMBL will be in a position to reverse the saving measures that are currently planned and will move to launch the recruitment for a Head of Site and additional group leaders immediately, finding alternative saving measures if required. The amendment of the Host Site Agreement allows for a larger pool of scientists to be attracted to the site and allows for exciting evolutions of the site. The strengthened research at EMBL Rome, new services, increased collaborations with the Italian research community and alignment of EMBL Rome's science with Italian scientific priorities over this review period are firm foundations for enabling successful growth of the site.

The lack of critical mass on the campus has been a long standing problem. I agree with the panel that the appointment of the new local CNR Director and the plans for the site will bring a major opportunity. I strongly welcome any joint initiatives, such as seminar programmes, that will help achieve closer CNR-EMBL integration and thereby maximise the potential of the shared site for all parties. However, the local CNR unit is itself of a small size, thus - for the site to flourish - this will require further scientific presence. EMBL has made this case with the CNR and will continue discussions in this direction. EMBL can help tackle the critical mass issue as soon as renovations

are completed. However more investment in the site is critical to render it attractive and scientifically competitive.

I would like to join the panel in valuing the consolidation of the core facilities at EMBL Rome as well as the latest developments, which have enabled higher user and technology development capacities as well as more outward facing services. We are confident that these developments will maximise EMBL Rome's visibility, collaboration potential and scientific output.

I am very pleased that the predoctoral and postdoctoral fellows are satisfied overall and find the environment at EMBL Rome to be collaborative and supportive. I thank the panel for bringing up the students' concerns about a perceived lack of support in bioinformatics. Increased support in data sciences training was already planned in the EMBL Programme and a dedicated data scientist for EMBL Rome with links to the new Data Science Centre is planned to be recruited in 2024 to help address the computational needs of the EMBL Rome trainees. Despite this, EMBL will take this feedback on board and we will go back to the Data Science team to ensure the provision of suitable training and support. I also fully support additional initiatives that will strengthen interactions with Sapienza University, CNR and IIT to maximise uptake and benefits for early career researchers at the site. This will bring networking opportunities as well as exposure to different career paths.

I would like to conclude by once again congratulating Cornelius Gross for his leadership and renewed scientific vision, and everyone at EMBL Rome for a successful review. Despite the issues with the site, which remain deeply concerning, EMBL is extremely proud of what the EMBL Rome staff and its leadership have achieved over this challenging review period. I am looking forward to supporting EMBL Rome in the years to come and seeing the impact of its future contributions to science and to EMBL's programme. My immense thanks to James Briscoe and everyone on the review panel for their fruitful discussions, advice and expert contributions, which will be crucial to the future success of EMBL Rome.



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Director General
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