

# Strategy 2020-2024

The Centre for Molecular Medicine Norway (NCMM) at the University of Oslo (UiO) aims to shed light on the molecular mechanisms of health and disease to enable precision medicine. NCMM is co-funded by UiO, the Research Council of Norway (RCN), and the South East Regional Health Authority (HSØ) and operates as a greenhouse for talented early career group leaders and trainees by providing a stimulating and supportive research environment. NCMM strives to be a multidisciplinary life science collaboration hub at international, national, and local levels.

## NCMM vision statement

Our vision is to bridge the gap between basic science research and translational and clinical medicine to improve patient care and outcomes through precision medicine.

## NCMM mission

- To be a leading research institution in molecular medicine.
- To perform basic research breakthrough discoveries in health and molecular mechanisms of disease.
- To be a driving force in translating basic research discoveries into the clinic to develop precision medicine.
- To provide outstanding training to students, post-doctoral researchers, and early career group leaders.
- To provide a diverse, inclusive, and equitable work environment.

## Our model

NCMM was founded in 2008 as a national partnership institution within the Nordic European Molecular Biology Laboratory (EMBL) Partnership for Molecular Medicine alongside two other nodes in Finland (FIMM) and Sweden (MIMS), complementing each other's research expertise. In 2013, the Nordic EMBL Partnership for Molecular Medicine was renewed for 10 years and expanded to include DANDRITE, the Danish sister node. The second 10-year extension was signed in 2022. NCMM merged with the Centre of Biotechnology in 2017 and has operated under this format within the Faculty of Medicine at UiO since then.

Since its inception, NCMM has become a driving force for excellence in molecular medicine research in Norway and internationally. We aim

to strengthen our national and international collaboration networks through our focus areas, bringing together scientists from different backgrounds to accelerate research and enable precision medicine.

NCMM coordination and progress are the responsibilities of its director in collaboration with the NCMM Board (which includes representatives from UiO, as the host organisation, and from its core funders). Moreover, strategic and academic advice is sought from its international Scientific Advisory Board (SAB). The Centre is in charge of hiring all its personnel. Importantly, the group leaders' appointments follow the EMBL model, i.e. internationally competitive recruitment for 5 years that can be extended once for 4 years, based on performance (considered by an international panel, the SAB, and the NCMM

Board). The model also entails that the Centre is evaluated regularly. This model ensures that NCMM stays agile and at the forefront of scientific advances by tailoring the field of recruitment to acquire new skills and expertise and complement the existing portfolio. The model also enables the recruitment of talented early-career researchers to Norway.

As an essential asset to the Life Science environment in the Oslo area, NCMM will be one of the entities from UiO to relocate, in 2026, to the new state-of-the-art Life Science Building (LSB) in Oslo alongside other scientists from the Faculty of Medicine and the Faculty of Mathematics and Natural Sciences. This relocation will promote collaborative and translational research at the core of NCMM's vision.

### **Our research, commercialisation, and innovation**

NCMM's scientific ethos is to develop novel and innovative technologies to tackle clinical problems based on basic knowledge of the underlying biology of health and disease. Specifically, we focus our research on understanding molecular mechanisms of rare diseases, cancer, and neurology to enable precision medicine. Our approach has three main pillars: disease mechanisms and gene therapy, computational biology, and the development of novel technologies. Through these pillars, we aim to improve diagnosis, risk prediction, disease classification, and identification of novel treatment targets. By bridging the gap between basic science research and translational and clinical medicine, we aspire to contribute to patient care and outcomes significantly.

Research at NCMM is collaborative, and to facilitate this, an Associate Investigators' (AI) scheme was created in 2009. Calls for AIs are occurring regularly for scientists to apply. AIs are outstanding scientists based in Norway with expertise closely related to the ones of NCMM; upon appointment, they gain the NCMM affiliation whilst working at their institution. The idea of the network is to create synergy between the different parties, one of them being to foster national project collaborations. Conversely, NCMM group leaders have the opportunity (and, on appointment, are required) to choose a co-affiliation to either an academic department within UiO or with the Oslo University Hospital; this process enables them to facilitate their integration in the local scientific landscape and to start building their professional network.

The role of NCMM is to be a leading partner for Norwegian participation in European-wide infrastructures, namely EATRIS (European Infrastructure for Translational Medicine) and EU-OPENSOURCE. NOR-OPENSOURCE, the Norwegian network, has one of its four screening facilities at NCMM, and the Chemical Biology Screening Platform is one of two core facilities at NCMM. It is a resource accessible to public or private users. Interested parties can also buy services from the other NCMM core facility, the zebrafish laboratory. Both core facilities have dedicated personnel. The core facilities, alongside being the leading partner of EATRIS in Norway, facilitate NCMM's commercialisation and innovation agenda.

Locally, the Centre also contributes to the broader network of activities within UiO and the Oslo area regarding multidisciplinary projects (e.g. through convergence environment funding). Regarding patenting activities, it also works with the UiO Growth House and Inven2



AS, the UiO/HSØ Tech Transfer Office at Oslo Science Park.

NCMM will endeavour to:

- Drive to increase the quality and impact of its research
- Stay at the forefront of scientific discoveries to bridge the gap between basic research, translation and clinical research, and patient care.
- Strategically recruit group leaders in the most promising research areas as well as to complement the existing portfolio.
- Explore avenues to strengthen and expand international collaborations.
- Develop novel technologies to fulfil its research agenda.
- Seek infrastructure funding to develop further its core facilities and infrastructures, primarily NOR-OPENSOURCE Phase II, a national fish platform, Advanced therapy medicinal products (ATMP) Norway as one of the platforms for Nordic involvement in EATRIS, and a Cryo-EM facility.
- Increase and strengthen collaborations with industrial and other independent research institutes such as SIMULA and SINTEF.
- Promote innovation and commercialisation activities, including training, to increase the number of patents and industrial collaborations.

## **Our people**

NCMM has a director, and an associate director, who both have their research group and, at any one time, usually has a further 8-9 early career group leaders. The group leaders recruit their group members (from PhD students to lab managers and post-doctoral fellows) depending on their projects and funding. Research groups also welcome undergraduate students for short-

term research placements as part of their degree.

The administrative and technical team supports the research personnel, from HR to finance to the management of NCMM core facilities. NCMM aims to recruit talented early career researchers to become scientific experts in their field, to train and mentor them so they can achieve tenured faculty positions, preferably in Norway. As part of their training, the group leaders attend a research leadership course; they receive tailored advice and training on HR and finance matters depending on their experience and background. NCMM has implemented a comprehensive mentoring process whereby each group leader is assigned two mentors: one local to help them navigate the intricacies of the Norwegian scientific research system and an international one from their research area to guide them on their development as independent scientists. The group leaders are also being mentored daily, or as and when required, by the director and the associate director.

Post-doctoral fellows and PhD students are integral to UiO and attend courses, workshops, and career development programmes. They also receive day-to-day training from their supervisors.

Other staff members, including from the administrative and technical team, are encouraged to undertake courses relevant to their tasks so they can upskill and increase their job satisfaction.

NCMM is committed to:

- Promoting diversity, inclusion, and equity for all staff members.



- Fostering collegiality to improve internal collaboration.
- Providing leadership training to group leaders.
- Mentoring group leaders to become independent scientists enabling them to secure permanent positions, such as professorship, once they rotate out of NCMM.
- Training MSc, PhD, and postdocs to enable them to build their career within or outside academia.

To fulfil its commitments, NCMM will:

- Provide an inclusive and safe environment for all, regardless of background, gender, sexuality or disability, and in time will develop its own Equity, Diversity and Inclusion strategy.
- Continue to promote internationalisation actively.
- Strengthen the onboarding and mentoring programmes.
- Ensure that, on appointment, group leaders have split posts with either a relevant faculty at UiO or a relevant hospital department so they can integrate within the local scientific landscape.
- Provide mentoring from a local researcher and an international scientist, both chosen in agreement with NCMM.
- Support and provide career training to students and post-doctoral researchers.
- Reach out to its alumni network to undertake training activities.
- Promote and fund mobility to foster collaboration and networking.

### **Our sources of funding**

NCMM relies on three core funding sources from RCN, UiO, and HSØ, totalling 58,7 million NOK in 2019. Extramural funding is sought by the

research groups from sources such as the RCN, the Norwegian Cancer Society, HSØ, the European Commission and private foundations and organisations such as the Lundbeck Foundation, Novo Nordic Foundation, KG Jebsen Centres, and the World Health Organisation. The extramural funding increased from 7 mNOK in 2009 to 42 mNOK in 2015. In 2019, competitive funding brought in 26 mNOK, a lower amount explained by two group leaders rotating out of NCMM. These numbers show the fluctuating nature of extramural funding, depending on where the group leaders are on their NCMM term. Other international initiatives, for example, under the Nordic EMBL partnership, are a source of extramural income; one of these being the Nordic Research Infrastructure Hubs' initiative from NordForsk.

One major challenge facing NCMM over the next 5 years is that the RCN (contributing 22% of the overall core funding of the Centre) is not allowed to fund permanent structures, and anything existing for more than 15 years is considered established by the RCN. As such, since 2018, NCMM has known that the RCN funding will cease at the end of 2024; to mitigate this, NCMM will:

- Explore an increase in core funding from the host institution.
- Identify and approach potential novel partners to contribute to the core funding
- Actively promote the commercial use of its core facilities.
- Apply for infrastructure funding to increase its technological capabilities.
- Train and support the group leaders in submitting competitive funding applications to international funders, such as ERC.



## Our approach to dissemination and outreach

NCMM researchers publish their work in international peer-reviewed journals relating to their field; since the start of NCMM, the publication level has averaged about 40 peer-reviewed manuscripts in international journals per year. Moreover, the group leaders contribute to open-access and/or publicly available computational software or resources, such as the internationally renowned JASPAR database, to non-profit organisation publications, such as the World Health Organization. They disseminate their findings to the scientific community by releasing pre-prints, attending conferences and meetings, and being invited to give seminars at national and international institutions. In line with the RCN's priorities and UiO's policies, data are processed and managed under the FAIR (Findable, Accessible, Interoperable and Reusable) policy.

The group leaders contribute to the academic portfolio by delivering teaching activities within the Faculty of Medicine and the Faculty of Natural Science and Mathematics, such as PhD training courses in Molecular Medicine and relevant seminars contributing to the dissemination of knowledge. They also participate in public-facing events, including the Norwegian Science Fair, the Young Researchers' nights of the Young Academy of Norway, and the European Researchers' Night.

To increase its visibility, NCMM will:

- Keep encouraging the group leaders to consider pre-prints, open-access publications, and to continue to publish high-impact research.

- Ensure the implementation of data management plans with participation in workshops to train researchers on the importance and relevance of FAIR data principles.
- Celebrate and share successes with the scientific community and the public.
- Continue to host seminar series to expose the scientific community to outstanding research and trigger collaborations.
- Improve its social media presence across a set of platforms.
- Increase participation in outreach activities to engage with members of the public.
- Organise internal networking events to showcase NCMM so that it becomes better known locally before the LSB move.

NCMM's goal is to develop a full outreach and science communication strategy whereby:

- A programme for activities to take place at key points of the calendar is designed
- Funding sources are identified to develop science engagement workshops and sponsor seminar series.
- Videos presenting the group leaders and their research are produced for the website and to increase social media content.
- Contribution to relevant popular science magazines and the media (newspaper, TV) is promoted to widen NCMM's reach.
- A network of NCMM alumni is developed to increase NCMM's sphere of influence at local and international levels and to contribute to mentorship programmes for early career researchers, from students to group leaders.
- Events targeted at stakeholders, such as patients, will be organised to explain the impact of NCMM's research in precision medicine and, ultimately, patient care.

