

BMB strategy 2020-25





About this strategy:

This strategy paper aims to present some of the ambitions and actions indicating the directions of the development of BMB towards 2025.

The paper is divided into four topics and for each topic you will find a page describing how we see our role, value and ambitions related to the topic. You will also find a page listing some of the topic-related actions we will take towards 2025 to further strengthen our department.

About us

At the Department of Biochemistry and Molecular Biology (BMB) we aim to produce scientific knowledge at the highest international level. We are driven by curiosity and the aim to make important conceptual discoveries contributing to the molecular understanding of eukaryotic and prokaryotic life and human diseases.

We work on the global goals and use our deep understanding of cellular functions to bridge between fundamental research and novel applications that can be transformed into valuable solutions to major societal challenges, thereby creating a sustainable world of tomorrow.

We take pride in educating highly qualified scientists for the future. Our students obtain excellent and research-based training in both experimental and computational bioscience skillsets that are aligned with receiving industries and academic institutions.

Our ambition is to be an attractive place to work and study. We support employees at all levels in pursuing their ambitions, and we nurture a transparent and inclusive trust-based culture where everyone feels comfortable raising ideas, questions or concerns.



The Research Sections

FGM

"We provide insight into gene regulatory mechanisms controlling cellular plasticity and metabolism with a particular focus on mechanisms of metabolic diseases and the role of cellular constituents of adipose tissue, liver, mammary tumors and the embryo. In the coming years we aim to consolidate our position internationally among the leaders in our field and to attract new centers as well as major international funding." *Functional Genomics and Metabolism*

RUMM

"The overarching research theme is molecular mechanisms in prokaryotes. One common focus is virulence mechanisms and antibiotic resistance in important bacterial pathogens that cause disease in humans. By providing a basic molecular understanding of bacterial (patho)physiology, we provide a fundamental framework for future prevention and treatment of challenging infections. We work in close collaboration with clinical microbiologists at regional hospitals." *Molecular Microbiology*

BioMS

"We investigate biological and biomedical questions concerning the basic function of macromolecules and their role in health and disease. We use advanced mass spectrometry-based approaches and computational methods to study a wide variety of living organisms and cell-model systems. We measure and characterize lipids, metabolites, proteins and nucleic acids with the aim to obtain novel insight into the intricate biochemical processes in living organisms." *Biomedical Mass Spectrometry and Systems Biology*

Bio-imaging

"We excel in the areas of quantitative bioimaging, super resolution and chemically specific imaging. Our research is interdisciplinary and is focused at the interface between molecular biology and biophysics. We aim to strengthen our position as a leading capacity for quantitative bioimaging by focusing on synergies with the coming OUH, attracting new talent, and by further developing state of the art bioimaging techniques." *Bioimaging*

T-Bio

"We focus on basic research in RNA-biology, cell biology and metabolism for improved diagnostics and new treatments employing state-of-the-art technologies. We have translational cancer research as our joint strategic focus. We aim to strengthen existing and establish new collaborations with research groups at OUH to enhance our connection to the clinic. Our section is strong in computational biomedicine and it is our goal to further strengthen this." *Translational Biology*

Research at BMB is performed within five research sections. Detailed research strategies are to be found in the individual section research strategies. Here you find a short statement from each of the five research sections.

Research and recruitment



At BMB we conduct fundamental research at the highest international level and produce valuable knowledge relevant to society. We address major societal challenges including cancer, obesity and diabetes, age-related degeneration of the nervous system and life-threatening bacterial infections. Our research sections provide an effective framework for scientific interaction and creativity, for scientific career development, and for recruitment of competitive scientists from Denmark and abroad.

As colleagues at BMB we share many research interests. We take advantage of our ability to complement one another in conducting scientific studies of high quality and ambition. Our cutting-edge technology platforms for mass spectrometry, sequencing and imaging and our green-lab certificated laboratories are used by all researchers, often through direct collaborations.

BMB research groups actively contribute to the data-driven future of healthcare and precision medicine as we generate large datasets describing cellular function in health and disease, supporting SDG 3. Building infrastructure for data storage and maintaining strong bioinformatics expertise is therefore a high priority for all research sections at BMB.

The future SDU/OUH joint campus offers unique opportunities for BMB researchers to bridge the gap between fundamental research and clinical treatment. We continue to develop our interaction with research groups at OUH and the health faculty in order to strengthen our connection to the clinic.

Towards 2025 we will...


- Ensure that our instrumentation, bioinformatics expertise, and research infrastructure, including supporting staff, remains competitive.
 - We will strengthen Computational Biomedicine through future recruitment of scientific staff.
 - We will attract large research infrastructure grants.
 - We will apply for external funding to maintain and further develop our support staff.
- Ensure the highest research quality at BMB by working proactively with public private foundations.
 - We will increase the number of external projects by offering peer-to-peer feedback during idea generation and the writing of high-quality proposals.
 - We will strategically recruit externally funded top scientists at all levels.
 - We will work closely with the External Relations team at the Faculty of Science to increase the number of ERC grants and EU partner projects .
 - We will explore the potential of our research in relation to the UN Sustainable Development Goals.
- Stimulate internal collaborative projects and synergies within the department and with our close collaborators and future neighbours at SDU Health and OUH by facilitate scientific interaction.
 - We will arrange regular seminars within sections and at the department level.
 - We will highlight existing collaborations.



**Research and
recruitment**

Teaching and Education

At BMB we proudly educate and inspire the next generation of scientists. BMB study programmes rest on a solid foundation of cutting edge research, and we teach in teams across sections to ensure academic breadth. A degree from BMB can lead to many different professions, and we make sure that our students are well informed in their choice of study and intended career path. The international and multidisciplinary research environment at BMB therefore provides an excellent starting point for a career in biotechnology, biomedicine or bioinformatics.



We maintain a high degree of alignment between our research activities and our study programmes; we teach the science we practice. While students at BMB build a solid knowledge of biochemistry, molecular biology, biomedicine, and bioinformatics they also obtain relevant competences in problem-based learning, project management and sustainability.

We are frontrunners in developing and implementing new on-line teaching tools to complement our strong focus on wet-lab experimental courses, and thereby increase the quality, flexibility and efficiency of our educations. We engage in international collaboration with other Scandinavian universities to promote and share on-line teaching modules.

Our study programme in Computational Biomedicine is gaining momentum, and these candidates are in ultra-high demand. We will place a particular emphasis on consolidating this education in the coming years through strengthening our bioinformatics courses and recruiting new staff with relevant expertise.

Towards 2025 we will...

- Further strengthen our focus on and capacity in computational (bio)science in our educations.
 - We will offer more student projects with computational content.
 - We will prioritize staff resources for bioinformatics courses and conversion classes.
 - We will ensure SDU representation in a future national Ph.D. programme.
- Increase student employability and reduce bachelor student dropout to less than 33%.
 - We will invest in excellent 1st year teaching and outreach.
 - We will emphasise the diversity of career possibilities and promote student reflection.
 - We will invite alumni as external speakers in our courses.
 - We will strengthen our connections to local industry and thereby increase the number of company internships and industrial Ph.D. scholarships.
 - We will develop tools and talent programs such as iGEM.
 - We will strengthen BMB student employability through green-lab initiatives and focus on sustainability.
- Raise awareness and appreciation for excellent teaching at BMB
 - We will establish a BMB teaching prize in collaboration with our student organization CFO.
 - We will employ academic staff with special responsibility for developing education.



Teaching and Education



Working and Study environment

At BMB we consider every employee, visitor and student to be a valuable member of our community. We strive to obtain a workplace environment where both interpersonal interactions and the physical surroundings provide a high level of job satisfaction and a good match between tasks and employee skill sets. These are essential preconditions for us to deliver research and teaching of the highest quality. We value open dialogue, fairness and transparency in decision making at all levels.

At BMB we treat each other with honesty, trust and respect as a foundation for personal, scientific and general competence development. We focus on maintaining an open and welcoming atmosphere allowing everyone to thrive. Our ambitious yet collegial environment inspires creative and constructive thinking with the potential for scientific breakthroughs and effective learning.

We share and celebrate our passion for science at seminars and social functions. These events serve as the glue that ties the department together across sections and job functions.

We care about the physical and mental wellbeing of everyone at BMB. Our laboratories and offices are safe and sustainable, and we support good health by offering exercise at the workplace. We are ambitious, but also mindful of the importance of work-life balance and seeking inspiration outside the laboratory.

Towards 2025 we will...

- **Maintain a healthy and safe working environment.**
 - We will enforce a zero-tolerance policy towards bullying and unwanted behaviour, and by encouraging an open department dialogue about these topics.
 - We will appoint a task force with broad representation in order to formulate a local stress policy for BMB employees and students.
 - We will encourage physical exercise at BMB every week in the company of colleagues.
 - We will facilitate staff interaction within and between sections.
 - We will create the best possible PhD-educations together with NAT.
- **Clarify career perspectives for all employees.**
 - We will systematically use of the 'tasking, trusting, and tending' principles during MUS.
 - We will introduce matrix tool for matching expectations (for PhD students and other scientific personnel).
 - We will work closely with the SDU liaison committee on strengthening VIP and TAP career development.
- **Focus on careful onboarding of new colleagues of all types.**
 - We will develop on-line onboarding material and will appoint staff to be responsible for onboarding in our sections.
- **Strengthen student "in-reach" to significantly reduce dropout.**
 - We will invite BMB students to join department functions such as BMB seminars, 'Total dag' and Christmas lunch.
 - We will facilitate and support student-to-student activities.



**Working and Study
environment**

Visibility and Impact

At BMB, we value effective communication, both internally and with external partners. We are recognised for our scientific results, our high quality educations, and for being a great place to work and study. We communicate to very different audiences using different platforms, but always with honesty and integrity. Our interaction with the outside world is effective and professional.

BMB scientists are active and visible in the international scientific community and continue to publish in leading scientific journals and present their research at major international conferences. We invite leading international colleagues to present at the department in order to build networks and strengthen our scientific dialogue.

BMB study programmes are visible and attractive for students from Denmark and abroad. It is clear what makes BMB educations unique, and how they contribute to a sustainable future.

We actively engage in partnerships with relevant industries in order to promote the translational potential of our research and increase the employability of our students.



Towards 2025 we will...

- **Maximize BMB impact.**
 - We will continuously evaluate the impact of our scientific and educational output.
 - We will align our internal recognition and merit system to reflect impact and value for the department.
 - We will support student-driven communication initiatives aimed at our current student community (in-reach) as well as the new generation of potential students (out-reach).
- **Increase the visibility of BMB research and education by deliberate use of web communication and relevant social media platforms.**
 - We will increase awareness amongst BMB employees about the potential and the pitfalls of SoMe.
 - We will develop, maintain and communicate a dynamic and up-to-date website-suite, which is both attractive and informative to the outside world.
- **Stimulate BMB research innovation and entrepreneurship.**
 - We will form a Life-science network with local biotech companies in our region.
 - We will increase the number of student internships.
 - We will invite external partners as guest speakers on our courses.
 - We will establish a research incubator environment in the department and host early-stage company start-ups.



**Visibility and
Impact**