

Title of the doctorate theme	BLUE MUSSELS MYTILUS SPP. IN THE ARCTIC: NORTHWARD EXPANSION, POPULATION DYNAMICS, AND ADAPTATION
Brief description of the topic	The blue mussel <i>Mytilus</i> complex is a key model for studying climate-change-driven northward dispersal of boreal and sub-Arctic species in polar regions, including Svalbard and Greenland. Genetic analyses have revealed the complexity of <i>Mytilus</i> taxa, including <i>M. edulis</i> , <i>M. galloprovincialis</i> , <i>M. trossulus</i> and their hybrids across the Arctic. Studies of populations in Greenland and the North Atlantic show that shell shape plasticity plays a crucial role in understanding how blue mussel populations adapt to rapidly changing environments. The detection of microplastics in blue mussels from Svalbard underscores their potential as environmental biomarkers. A recent discovery of <i>Mytilus</i> larvae within adult mussels' mantle cavities in a Spitsbergen fjord raises new questions regarding their reproductive behaviors. The proposed PhD topic focuses on an in-depth study of blue mussel ecology in polar regions, providing flexibility in selecting research areas such as dispersal vectors, population dynamics, parasitism, microplastic pollution and the role of epigenetics in adaptation to new Arctic conditions.
Requirements for a candidate	The prospective PhD candidate should have a thorough knowledge of general ecology and practical skills in at least one of the disciplines that may be involved in the study of the blue mussel ecology and biology, such as mollusk morphometry/anatomy, environmental genetics, microbiology or parasitology. Preference will be given to candidates who have experience in specialized techniques, such as computerized image analysis, eDNA, or histology.
Existing research infrastructure and support	A doctoral student will join a research team with extensive experience in polar environmental research, currently involved in Arctic-related projects EIDEMBUKTA (an Arctic lagoon study) and MP-ARCTIC (microplastics in Arctic biota and the environment). There is an opportunity for research fellowships at Aarhus University, Denmark, under the supervision of Prof. Jakob Thyrring, as well as in other institutions within the Arctic Coastal Biodiversity Observation Network (arc-bon.com) and the University Centre in Svalbard (UNIS). Part of research material (littoral mussels) has already been collected from various Arctic regions and is ready for analysis
How the topic advances the research capacity of the Klaipėda University	The proposed project is part of the MRI Polar Research Group's research focus, aimed at advancing our understanding of climate change in the Arctic environment, with particular emphasis on the biology of coastal intertidal communities. Building on MRI's long-standing tradition in coastal environmental research, the project will contribute to the development of innovative research methods and enhance Klaipėda University's position in international polar research.
Potential scientific supervisor	Prof. habil. dr. Sergej Olenin. Email: sergej.olenin@ku.lt Senior researcher at the Marine Research Institute, Klaipėda University. https://scholar.google.com/citations?user=3TuWI_0AAAAJ&hl=en&oi=ao%20/%20orcid.org/0000-0002-0773-1442/ www.researchgate.net/profile/Sergej-Olenin?ev=hdr_xprf Prof. dr. Jakob Thyrring thyrring@ecos.au.dk senior researcher at Department of Ecoscience – Marine Ecology, Aarhus University www.au.dk/en/thyrring@ecos.au.dk https://scholar.google.com/citations?user=DZNA6SgAAAAJ&hl www.researchgate.net/profile/Jakob-Thyrring https://orcid.org/0000-0002-1029-3105
Potential scientific advisor	Scientific advisor(s) may be appointed based on the methodology selected for the research.