

Division of Biological Science and Technology	Research field	Functional Biochemistry	Lab. ID BS05
Laboratory web site	http://www.se.kanazawa-u.ac.jp/bioafm_center/index.htm http://pronet.w3.kanazawa-u.ac.jp		
Research subjects			
Current research focuses on the following targets: 1. Numerous biological phenomena are driven by protein enzymes whose primary structure is encoded in genetic information. Recently, the ability to direct observation of protein structures and dynamics have become a focal point in biology/biochemistry/medicine (seeing is believing!), and high-speed atomic force microscopy is a powerful tool that can accomplish this challenging task. Our lab aspires to simultaneously observe the structure and dynamics of biologically significant proteins using high-speed atomic force microscopy. 2. Newly synthesized polypeptides become mature proteins through folding. We analyze reaction mechanisms of molecular chaperones that help polypeptides mature. 3. Although bacterial cells were historically considered to be simple with a low degree of subcellular compartmentalization, decades of studies have shown that a number of unique organelles can be found in bacterial cells. These bacterial organelles support diverse survival strategies for the bacteria, which allow them to thrive in various environments. Our goal is to elucidate the molecular mechanisms that are responsible for the synthesis and function of bacterial organelles. We study an organelle from magnetotactic bacteria called the 'magnetosome', which is one of the most studied bacterial organelles in the world.			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
Students will determine their research plan at the start of their graduate studies. They will have access to a wide range of state of the art equipment as well as expert guidance during the course of their research. It is hoped that students fervently work on their research and present their results at scientific conferences. Preparation for presenting at meetings will take place at our weekly Journal Club and Progress Reports, which provide the students with a nurturing scientific environment to discuss recent activity in their field as well as a chance to present the progress of their own research to their peers.			
Daily life in the laboratory, etc.			
Our lab has enthusiastic students who do research in the areas of molecular biology, biochemistry, and microbiology, therefore new students will have the ability to learn various techniques across these disciplines. Additionally, our lab has a diverse community of international people, which allow the students the opportunity to have English conversations with their peers. This is especially advantageous to PhD students wishing to pursue an academic career or students whose job will involve international communication. (PhD course student's comment 1) We have a friendly and open lab environment in which students are free (and encouraged) to discuss their research results with other lab members in order to facilitate their endeavors. (PhD course student's comment 2)			
Message or comments by the laboratory faculty staffs			
Nature is a fascinating topic and boundless with many unanswered questions. Scientific research is about forming hypotheses about these intriguing natural phenomena, then planning experiments to test the hypotheses, followed by performing experiments to answer these questions, and finally discussing your results. To be successful in science, students need to become knowledgeable in various fields as well as in their specific field. They can accomplish this by attending classes that give them the opportunity to learn about the newest information in various scientific fields, as well as reading generic text books in addition to many scientific journals. Science is a fascinating and thrilling subject and we hope that students foster their own enthusiasm throughout the course of their research. Additionally, our lab has the advantage of collaborating with students from other universities, not just in Japan, but globally. We regularly have students from other universities visiting our lab to perform short-term research collaborations. This gives our students a chance to network with students and researchers from other universities and broaden their scientific experience.			
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