

Outline of Selected Projects

Host institution	Nagoya University
Center name	Institute of Transformative Bio-Molecules
Head of host institution	Michinari Hamaguchi
Chief center-project officer	Kenichiro Itami
Prospective center director	Kenichiro Itami
<p><Project Summary></p> <p>Our goal is to develop innovative functional molecules that make a marked change in the form and nature of biological science and technology by taking full advantage of the cutting-edge molecular synthesis expertise of our chemistry principal investigators (PIs) and intense interactions with our leading plant/animal biology PIs. Through this interaction, which is fundamental to the Center, transformative bio-molecules will be synthesized that can (1) enhance biotic productivity and quality and (2) realize innovative bio-imaging. To ensure the advancement of these projects, we will (3) develop catalysts that enable incredibly efficient synthesis and molecule activation on demand. The ultimate goal is to have a positive impact on global issues such as food production. Our team of PIs is an innovative mix of chemists and biologists from Japan and abroad. A Co-PI system, and an efficient administration with English will ensure that international members will have significant involvement in the project.</p> <p>The mission of the Center is to develop diverse functional molecules that afford innovative impact on the operating principle of the biological systems. To accomplish this, we will harness our synthetic abilities based on molecule-activation chemistry. We seek to effect a paradigm shift in science by creating a new field of research that aims to implement programmed chemical transformations in vivo for precisely controlling the production of bio-functional molecules of requisite structures and their functional expressions. The identity of this Center resides in the development of brand new bio-molecules that will affect this goal. To accomplish this, we will enlist the best synthetic chemists and plant and animal biologists worldwide.</p> <p><u>Target research field</u> Molecule-Activation Chemistry for Advanced Systems Biology (This is an area in which Nagoya University has significant international competitive advantages: synthetic chemistry, molecular catalysis, systems biology, plant science, peptide science, live-cell imaging.)</p> <p><Remarks></p> <p>A very ambitious mission with high return if successful, to construct a new interdisciplinary field between chemistry and biology. The targets, future food, bio-mass, and others are major interests of society.</p> <p>A fresh group of young investigators of different disciplines who already performed interesting and high quality researches. The director is a young and visionary leader, talented to lead a new domain of research. The support of Nagoya University is well designed. The proposed new building is the strength.</p>	