Research	area	in	Strategic	Objective	"Establi	ishment	t of	envira	onme	ntally-a	daptiv	ve-plant	design
systems fo	or stal	ble j	food suppl	y in the age	of climat	te chan	ge"						
"Establis	hing	Тес	hnologies	for Genon	1e-scale	DNA S	Synth	nesis d	and .	Functio	nal E	Expression	ı, and
Creating	Techn	oloz	gy Seeds fo	or Material	Producti	on and	Med	lical C	Care"				
"Design o	of plai	nt-d	erived mo	lecules buil	ding up th	he foun	datic	on for	plant	synthe	tic bio	logy"	

Environments and Biotechnology

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Overview

Efforts to overcome global environmental problems and social issues are necessary, and biotechnology is one of the major basis for their solutions. However, in order to solve these difficult problems, huge advances in basic and applied biotechnology based on original ideas, creation of innovations through interdisciplinary research, as well as support for young scientists that will become future leaders of the next generations, are indispensable.

The aims in this research area are to promote pioneering basic research, and to develop new technologies that will lead to create new fields and new value in biotechnology, and also to nurture young and motivated scientists capable of contributing to the solution of environmental problems in the future. We support pioneering research projects that are based on novel concepts in a wide range of fields, such as microbial or host-microbial interaction/symbiosis, ecological monitoring and engineering, bioremediation, sustainable biomaterial development, and metabolic engineering. We are also seeking a wide range of challenging research proposals that will lead to characterizations, findings and utilizations of new biofunctions.

In promoting research, we encourage young scientists to communicate with fellow researchers, and would further support them to promote scientific networking for developing cross-sectorial research after having gathered with biotechnology as a common language. Another aim is to train human resources who can lead advanced research which would contribute to environmental problems, by providing support so that young scientists will develop wider and larger research frames towards the future, while exploring their respective research projects in the spirit of friendly competition.

Research Supervisor's Policy on Call for Application, Selection, and Management of the Research Area

1. Background

As spelled out in the SDGs (Sustainable Development Goals), efforts to overcome common global environmental problems and social issues are demanded. Because biotechnology is a key part of the infrastructure for solving such problems, this research area supports young scientists who have innovative ideas in diverse fields that can contribute to solving environmental problems and social issues, with biotechnology as a common language. This program "supports young scientists to grow as individual scientists" with the aim of nurturing scientists who will be responsible for achieving dramatic advances in scientific/technological innovation in the biotechnology field.

Innovation has been triggered by the integration of basic research and technology from different fields. Such integrations are particularly essential in the "Environments and Biotechnology" research area, precisely because this is an interdisciplinary field. Therefore, the purpose in this area is to provide support to young researchers in order to develop wider and larger research frames towards the future while they pursue their respective research projects in basic or applied fields. By encouraging exchanges between researchers both in their own fields and in other fields, we also expect new developments, contributing not only to science but also to technological innovation.

The "young scientists," who can be applicants in this research area, are "the researchers who have been a Ph. D. for less than eight years (or the researchers who have been a bachelor for less than 13 years in the case of researchers who have not received a doctorate)."

2. Principle of invitation project and selection

In screening, priority is given to novelty, originality, a desire to challenge and ideas. A researcher's research achievements after receiving a doctoral degree tends to be governed by their research environments, in which the researcher is placed up to the time of application. Therefore, from the perspective of discovering and training young scientists, screening in this area is conducted not only based on the researcher's achievements up to now, but also from a long-term perspective which includes the potential for future development of the research project proposal. We expect applicants to propose and carry out challenging research based on their own ideas, that may become the basis for their own future research. For this reason, in this research area, we give precedence to doctorate holders in our selection as they can make plans for, and implement, their research institutes (and also companies*) throughout Japan, and we do not discriminate on the basis of gender.

*Since collaboration with industry is crucial to solving environmental issues, ambitious proposals from industry representatives are also welcomed. We look forward to receiving proposals from corporate researchers, who can facilitate academia-industry cooperation and lead the world in the areas of both basic research and application development in the future.

3. Direction of the themes called for in this research area

We invite a wide range of basic research projects that lead to the opening of new fields and creation of new value in biotechnology research fields related to all the environments that surround us. For example, we invite research proposals in connection with: interaction/symbiosis between microorganisms or other living beings, ecological monitoring, bioremediation, biomaterial development, and metabolic engineering, from the viewpoints of functions, analysis, control and use. The objects of research cover a wide range of organisms, from microorganisms to plants and animals. We also welcome proposals on informatics and analysis, measurement and imaging technologies and others that contribute to the development of research projects in this field.

We look forward to proposals based on preliminary data which shows feasibility, working out your story (your own approach for problem-solving) by leveraging your strengths.

4. Research period and research funds

The period of a research is 2 years and 6 months from the day of making a contract for the applicants in fiscal year 2022(in principle, until March 31, 2025, for the successful applicants in fiscal year 2022). The standard budget for one research project is in total six million yen (the direct expenses for the entire period (2 years and 6 months)). The applicants are asked to make proposals for their research under the conditions of this research period and research budget. The applicants can also make proposals that exceed the standard budget by describing in the proposal why it needs to exceed six million yen. However, even in this case, it is assumed that the total budget will be less than 10 million yen. Approximately 20 proposals will be adopted in the research area in the call for proposals this time.*

The successful applicants will be evaluated on the progress of their research around two years after the start of their research. On that occasion, as for the research challenges from which we can expect further achievement by providing continuous support, we will continue providing the research budget from 5 million yen / year to a maximum 10 million yen / year for another year as an acceleration phase. We are assuming that the ratio of the research that will acquire support in the acceleration phase is approximately one-third to one-fourth the research of the successful applicants.



*The number of successful applicants may vary depending on the status of our budget.

5. Principles of the research area management after the selection

In this research area, an area advisor, a researcher who has been playing an important role at the front line of each field, will be assigned to each researcher; thus, we will implement a system that makes it possible to provide advice on research for instance through site visits. We will also host research area meetings where the research supervisor, area advisors, and researchers will gather at the same time in order to encourage exchanges between fellow researchers. Development from a human network of diverse young researchers with biotechnology as a common language to cross-sectorial group research is also expected. For this purpose, when necessary, we will support new development of young researchers by advice from the research supervisor or area advisors on collaboration among researchers in the area and, in addition, collaboration with other researchers (including company researchers). In this area, we are creating an atmosphere where researchers can freely and flexibly carry out their research with the aim of establishing individuals, regardless of short-term results. We will also manage the area where researchers at various life stages can easily participate.