

World Premier International Research Center Initiative (WPI)

Host Institution's Commitment

June 1st, 2018

To MEXT

National University Corporation Hokkaido University
Toyoharu Nawa, President

Signature

I confirm that the measures listed below will be carried out faithfully and concretely as follows regarding the "Institute for Chemical Reaction Design and Discovery (ICReDD)" if it is adopted under the World Premier International Research Center Initiative.

Concrete Measures

· Describe the concrete measures that the host institution will take to satisfy the following requirements.

- 1) For the center to become a truly "world premier international research center" and independent by the time WPI support ends, the host institution must clearly define the center's role within its own mid-to-long-term strategy and provide its comprehensive support from the time that the funded project starts.**

※ Describe the center's role within host institution's own mid-to-long-term strategy.

The mid-to-long-term strategy of Hokkaido University is based on several progressive schemes related to research and education towards the internationalization of the university. In 2002, the Creative Research Institution (CRIS) was established to promote interdisciplinary research under a trans-departmental scheme. In 2014, Hokkaido University defined its vision for the near future, i.e., until its 150th anniversary in 2026, as contributing to the resolution of pressing global issues, which are outlined in the 'Future Strategy for the 150th Anniversary of Hokkaido University'. In order to accomplish the objectives, the Global Institution for Collaborative Research and Education (GI-CoRE) was founded in order to promote international collaborative research and education based on the characteristic strengths and distinctive features of Hokkaido University. The immediate objective of GI-CoRE is to become a research center of excellence that acts as a hub for world-class researchers. The ultimate objective of GI-CoRE is to reform and globalize Hokkaido University by the end of the third medium-term as specified by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT). For that purpose, Hokkaido University has developed the proposal for the World Premier International Research Center Initiative "Institute for Chemical Reaction Design and Discovery (ICReDD)" as a flagship initiative to substantially improve the research performance of Hokkaido University in collaboration with already established GI-CoRE projects and to provide maximum research support to achieve its near-future vision. The ICReDD will be incorporated into the CRIS framework and thus be able to make full use of already established infrastructure and resources to promote the proposed WPI.

Following the approval of the ICReDD, Hokkaido University will revise its third mid-term goals and plans in order to clarify its commitment to the WPI. Hokkaido University will use the momentum of the ICReDD as a driving force to transform the entire university into an internationally outstanding center for research and education that contributes to the resolution of pressing global issues.

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- 2) **Providing a mid-to-long-term policy for amending the plan on the direction of the host institution's organization and operation, one that includes the reform of the institution's existing organization in ways that will achieve the center's independence and create a permanent place for it within the organization. A concrete plan and schedule must be set and carried out for restructuring the host institution's organization.**

※ Describe both a mid-to-long-term policy for amending the plan on the direction of the host institution's organization and operation and provide a concrete plan and schedule.

Hokkaido University will establish the ICReDD within the CRIS framework and establish close collaborations with the Information Science GI-CoRE and the Soft Matter GI-CoRE to provide maximum support for this international research center. In order to become a world-leading research center and generate results that may change the future of humanity, this WPI will advance the research implementation and involve further research collaborations outside the ICReDD's core areas (computational, information, and experimental sciences). To manage such a progressive performance of the ICReDD, CRIS will be reorganized into an institution that pioneers novel interdisciplinary research. The following measures will be implemented in order to maximize the performance of the ICReDD via the restructuring of already existing organizations within the university in the foreseeable future.

1. Upon launching the proposed program, Hokkaido University would provide physical and financial resources (research space, utility fees, and the usage of equipment owned by the open facility center) that at least equal the WPI project grant. In order to gradually promote the independence of the ICReDD and to ensure its permanent establishment as an integral part of Hokkaido University, the university plans to increase the ratio of its own contribution to the ICReDD budget starting from the sixth year.
2. In order to ensure that the ICReDD sustainably continues its research activities independently, the university will provide financial support starting from the sixth year for tenure positions that will be offered to outstanding WPI researchers. These will be appointed following a rigorous selection process based on research activities such as high-impact publications and receipt of competitive funds. The university will also provide the ICReDD with full access to its financial infrastructure, i.e., the opportunity to request budget estimates and to apply for competitive cross-departmental funding.
3. From the sixth year onwards, preparation for establishment of the new "Graduate School of Chemical Reaction Design and Discovery" will be launched, which will be based on the intellectual resources obtained from the discoveries of the ICReDD; the university will begin the reorganization and integration of existing graduate school(s) in cooperation with WPI-related departments.
4. The university will support the formation of consortia that involve companies and research institutions that collaborate with the ICReDD in order to promote industrial collaborations and establish a system to attract independent funding for the ICReDD.
5. After ten years, the ICReDD will become a permanent independent research organization within the university. The university's evaluation committee will assess the ICReDD's approach and reapply successful systems and methods, such as research and education systems, to other departments of the university.

- 3) **Provide sufficient support for carrying out the center's operation and research activities, including necessary personnel, financial, and system support.**

The university will provide physical and financial support that is at least equal to that of the WPI grant via the following measures.

1. In October 2017, the university established a WPI task force that is staffed by full-time clerical

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employees and two university research administrators (URAs). Provided the success of this application, the university will successively increase the number of office management personnel and transform the management office into the WPI administration office. In order to guarantee smooth program management, and given the international orientation of the ICRReDD, the university will hire full-time clerical employees who are fluent in English for the ICRReDD.

2. The university has already provided research funds (10 million yen) and research space (120 m²) to the designated director of the ICRReDD in order to initiate interdisciplinary integrated research. After the launch of the ICRReDD, the university will initially provide further space (1,000 m²) at the CRIS, which will be expanded progressively.
3. To reduce the educational and administrative burden on the departments of each PI, the university will take measures to provide labor costs (~50 million yen per year) for the corresponding departments as a form of compensation. The university has also established a “specially appointed professor (re-employment of retired instructors) system” to ease the educational strain on researchers who participate in larger projects. Furthermore, the university will also revise related provisions as and when necessary, e.g. the employment of researchers taking advantage of various financial resources.
4. When researchers at the ICRReDD use shared university equipment, the university will pay any usage fees and provide a suitable research environment so that researchers can start their research immediately after their arrival.

4) Provide necessary support to achieve the independence of the center and sustain its research at a top world level after the WPI grant period ends.

After the end of the supporting program, the ICRReDD will continue to operate as an independent research department and implement the results obtained from this initiative to promote the sustainable development of human resources engaged in CReDD. Furthermore, industrial collaborations will be established and promoted to practically implement the results obtained from the ICRReDD. To achieve this goal, the following steps will be taken.

1. From the 5th year, the university will provide the ICRReDD with the opportunity to request budget estimates, which will allow the IRCD to establish an independent financial base.
2. After the end of the grant period, outstanding researchers at the ICRReDD will be appointed following a competitive selection process and offered tenured faculty positions in order to ensure the continuation of internationally leading education and research at Hokkaido University.
3. To promote research collaborations and to establish a system that attracts independent funding for the ICRReDD, the university will support the establishment of research consortia between the ICRReDD and corporations that are engaged in CReDD.

5) Provide a system that will in practice allow the center director to make decisions in implementing the center project, including personnel and budgets, and that will secure the autonomy of its operation.

Even though the ICRReDD will eventually become a permanent part of CRIS, the university will initially implement exceptional rules until the ICRReDD becomes an independent institute in order to provide the director of the ICRReDD with all decision-making rights regarding important matters of institute management such as recruitment and budgetary discretion. To support the director in the decision-making process, the university will set up a management committee that includes vice directors, administrative directors, and URAs.

Furthermore, the university will establish discretionary funds (at least 10 million yen per year) that can be used freely by the director of the ICRReDD.

6) Provide support to the center director by coordinating with other departments regarding the

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assigning of researchers to the center and the creating of an effective environment for the center within the host institution. Needed adjustments to do so should be made proactively while giving consideration to their effect on the educational and research activities of those departments.

The university will set up an environment in which the participating PIs from each department in the ICRReDD can concentrate on WPI research. Coordination with the individual departments will be led by the president and the vice president in charge.

1. To reduce the educational and administrative burden on the departments of each PI, the university will take measures to cover occurring labor expenses for the corresponding departments as a form of compensation. Additionally, a "specially appointed professor (re-employment of retired instructors) system" has been established.
2. The university will revise and adapt existing systems to provide access to a variety of financial resources in order to employ permanent researchers that will support the ICRReDD permanently.

7) Offer cooperation in flexibly applying, revising, or supplementing the host institution's internal systems as needed for the center to effectively implement new management methods unfettered by conventional modes of operation (e.g. English-language environment, merit-based pay, top-down decision making, linkage to graduate school education).

In order to ensure a continuous circulation of internationally leading researchers in this ICRReDD, its organizational structure will be based on flexible management in order to prioritize research activities. The necessary system reform initiatives will be executed via the ICRReDD steering committee; the director, the vice director, the administrative director, and the URAs who work at ICRReDD under the supervision of vice president.

1. The ICRReDD will capitalize on the soft infrastructure that has already been established by previous GI-CoRE activities, e.g. a framework for collaboration among departments and foreign institutions, expertise for global cooperation with companies, approaches to develop new educational programs, and livelihood support services for international researchers and their families.
2. Initially, the ICRReDD will operate a joint management system, i.e., the designated director leads the decision-making process, supported by the vice director, who has a different research background and extensive experience in organizational management, which should help to establish a top-down decision-making system for the management of an interdisciplinary research center in the medium-to-long term.
3. The ICRReDD will introduce a system to evaluate the progress of performance led by the director of the ICRReDD. This system will consist of a self-assessment process that is centered on indicators related to research output as well as flexible management of the institutional budget.
4. The president of Hokkaido University will transfer full authority to the director of the ICRReDD regarding decisive actions that include the reorganization of the personnel structure should the collaborative and institutional progress require such action.
5. The university will preferentially hire administrative staff for the ICRReDD that is fluent in English in order to promote the use of English in the office environment.

8) Secure, provide and deliver the necessary infrastructure for the center to carry out its activities (e.g. research space, facilities, land).

Provisions for the ICRReDD, such as the use of the university campus infrastructure including the CRIS building, are outlined below.

1. Initially, the university will provide 1000 m² of space in the CRIS, which will be renovated prior to use. This research space will be expanded progressively during the period of the WPI.
2. The university will provide the fees requiring to analyze synthesized samples in the context of the

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ICReDD, as well as the usage fees for the open facility system, which provides access to cutting-edge equipment such as the world's only isotope imaging microscopy system and high-resolution NMR spectrometers that are managed by the university.

3. The university will set up a common space (Inter-Science Café), where all WPI researchers can gather for lunch meetings every month in order to exchange ideas across different disciplines in English, whereby especially young researchers will be encouraged to disseminate their research progress.

9) Provide other types of assistance to give the center maximum support in achieving its concepts and objectives and in becoming a world premier international research center in both name and deed.

Hokkaido University will provide unreserved support for the implementation of the plans of the ICReDD by integrating its goals and plan into that of the third medium-term of the university, which should help to nurture and establish the institute as a permanent and integral part of the university.

1. In order to promote advanced integrated operations between the ICReDD and the university, the URAs will be granted the status of deputy administrative directors, which should facilitate communication with the president and the vice president in charge.
2. In addition to providing access to the CRIS infrastructure, the university will support the ICReDD by providing access to resources of other relevant organizations, such as the Institute for International Collaboration and the Institute for the Promotion of Collaborations with Regional Businesses.
3. The university will help to realize the objectives of the ICReDD by collaborating with projects that concern university reforms and making the most of its results. This includes seminars to promote the acquisition of competitive funding for early career researchers by the MEXT Program for Promoting the Enhancement of Research Universities (started in FY 2013) and collaborations regarding public relations with the Global Relations Office, which was established through the MEXT Top Global University Project (started in FY 2014).

10) The host institution is to self-evaluate the results of the system reforms achieved by the center and distribute the results that it evaluates highly to all of its departments.

The university's evaluation committee will assess the performance of the ICReDD and reapply successful systems and approaches, such as research and education systems, e.g. the "MANABIYA" system to other departments of the university. Especially, the research results obtained in the ICReDD will be transformed into educational activities via collaborations with closely related divisions in the university in order to train scientific leaders who may contribute to solving important global issues. On the basis of educational resources obtained from ICReDD activities such as the MANABIYA system, this initiative strives to reform and generate a new interdisciplinary graduate school that will integrate basic science, drug discovery, and medicinal technology, as well as materials and energy science.

Thus, the ICReDD should become the impulse and driving force for the restructuring of Hokkaido University into a truly international world-class center for research and education.

11) (For host institutions that already have an existing WPI center) Fully support and sustain the existing center and advance its development as a top world-level research institute while being concurrently capable of fully supporting the new center.

Not applicable.

12) (For host institutions that already have an existing WPI center) Take the initiative to spread the existing center's good system reform results to other departments throughout the institution and thus applied them to its own reform.

Not applicable.