

Evaluation of FY2016 Operating Results for Institute of Physical and Chemical Research

August 2017

Minister of Education, Culture, Sports, Science and Technology

1. Items related to the evaluation		
Agency	Institute of Physical and Chemical Research (RIKEN)	
FY for evaluation	FY evaluation	FY2016 (3rd term)
	Mid to long-term objective period	FY2013-FY2017

2. Items related to the assessor			
The Competent Minister	Minister of Education, Culture, Sports, Science and Technology		
Incorporated jurisdiction dept.	Research Promotion Bureau	Dept. and person in charge	Basic Research Promotion Division, Tetsuya Kishimoto
Evaluation and Inspection dept.	Science and Technology Policy Bureau	Dept. and person in charge	Planning and Evaluation Division, Kenji Matsuoka

3. Items regarding implementation of the evaluation
June 28, 2017, 8th Sub-Committee for RIKEN, National Research and Development Agency Council of MEXT (1 st hearing from RIKEN)
July 6, 2017, 9th Sub-Committee for RIKEN, National Research and Development Agency Council of MEXT (2 nd hearing from RIKEN)
July 25, 2017, 10th Sub-Committee for RIKEN, National Research and Development Agency Council of MEXT (hearing opinions)
August 3, 2017, 10th National Research and Development Agency Council, MEXT (hearing opinions)

4. Important items and others relating to the evaluation
October 1, 2016 Became the designated National Research and Development Agency
October 1, 2016 Amended 3 rd mid to long-term objectives
October 3, 2016 Changed 3 rd mid to long-term plan
March 23, 2017 Changed 3 rd mid to long-term plan

1. Overall evaluation							
Rating *1 (S, A, B, C, D)	A	(Reference) Overall rating situation for the past FY years compared with the same period during this FY *2					
			FY2013	FY2014	FY2015	FY2016	FY2017
		Improvement of business quality	B	B	A	A	
		Efficiency of business operations	A				
Improvement of financial conditions	A						
Reasons for rating	As shown in the overall evaluation of the agency as a whole, more progress of performance than expected in the med to long-term plan and the FY plan is recognized.						

2. Evaluation of the whole agency
<p><input type="radio"/> <u>In its activities in FY2016, RIKEN produced remarkable research and development achievements that lead the world in each research field, including emergent matter science research, which is expected to be widely applied to industry, and therefore, it is evaluated that the agency is proceeding with plans for maximization of the R&D achievements.</u></p> <p>(Examples of considerable research and development achievements created out in FY2016)</p> <ul style="list-style-type: none"> • Emergent Matter Science (CEMS) Research: Discovery of the metastable phase of new skyrmion centered development of innovative hydrogel as environmentally-benign high-performance material, and achieving world's highest quantum bit operation fidelity of 99% or more, produced using quantum dot made with natural silicon can be very highly evaluated. • Brain Science Research: It can be evaluated by clarifying the brain section important for establishment of memory during sleep to prove that memory can be maintained and improved, and by successfully recovering the cognitive function by developing model mice of schizophrenia and genetically manipulating the mouse in their growing period and so on. • Advanced Photonics Research: It can be evaluated successfully observing very fast reaction of protein at the molecular level, using pulsed light of 100 trillionths of a second which was difficult with the conventional method, by developing a laser even/odd separation technique enabling palladium isotopes to be separated selectively with high efficiency, thereby achieving an overwhelmingly high ion yield over conventional technology, and developing a high sensitivity terahertz detection method at room temperature and succeeding in detecting 100 times higher sensitivity than conventional methods. • It can be evaluated that the photosynthetic II complex captured the state just before the oxygen molecule was generated by the water decomposition reaction of photosynthesis for the first time in the world. The simultaneous and high power operation of beamline was realized in SACLA by distributing the electron beam and developing independent control technology of the X-ray laser for the first time in the world, and the downtime due to failure, was suppressed to an unprecedented level in the world to allow for more time utilization for productive purposes. • Computational science and technology research: It can be evaluated that the operation time of “K” exceeded the targeted 8,000 hours and achieved an operation rate of 98.7%, whereby extremely stable operation is realized to contribute to the shared use of computing resources, and Graph 500 and HPCG indicators of practical performance that won the first place in the world, contributing to the development of computational science and technology. • Developmental and regenerative science research: It can be evaluated that a new genomic editing technology “HITI” that can insert genes with high efficiency even in non-dividing cells was developed, and a part of the diseased condition was reproduced by establishing iPS cells from patients with spinocerebellar degeneration and inducing the differentiation of cerebellar Purkinje cells, and the first surgical operation of transplantation was carried out in clinical studies on retinal pigment epithelial cells derived from iPS cells against exudative age-related macular degeneration. <p><input type="radio"/> <u>In addition, under circumstances in which the Basic Science and Technology Plan for Japan was revised and the importance of research and development toward realizing Society 5.0 increased, RIKEN made steady efforts for establishing the Center for Advanced Intelligence Project and starting a research program on artificial intelligence.</u></p> <p><input type="radio"/> Regarding items related to management, such as streamlining business operations, it can be evaluated that steady efforts are underway generally as planned</p>

3. Issues to be solved and /or improved for each subject

4. Other items

Major opinions of National Research and Development Agency Committee	<ul style="list-style-type: none"> ○ Given the fact that enough supply time and stability has been realized in terms of sharing the research base of accelerator facilities, synchrotron facilities and supercomputers, it can be estimated that RIKEN plays the role of providing an important research base supporting innovation through steady efforts of stakeholders concerned. ○ With respect to industry-academia-government cooperation, the fact that research achievements are highly appreciated by companies, and the establishment of a collaboration center is realized greatly exceeding the target and income from intellectual property far exceeding expenses is obtained by utilizing intellectual property, can be highly evaluated from the viewpoint of promoting social return of research achievements. ○ It can be assessed that the agency is making stepped-up efforts for human resources development by introducing indefinite employment facilities and endeavoring to develop the basic science special researcher system, which will also be an extremely important measure in the next mid- to long-term objective period. Furthermore it can be evaluated that the agency is preparing a workable environment for researchers from overseas, and for female researchers and staff with family members ahead of other organizations, and it is hoped that the agency will continue to make positive efforts in that direction.
Auditor's special comments	<ul style="list-style-type: none"> ○ It is admitted that the work is properly implemented in compliance with laws and regulations, and effective and efficient operation is being conducted in line with the mid to long-term plan and the FY plan.

*1 S: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward "maximization of R&D achievements" under the conditions of appropriate, effective and efficient operations are recognized.

A: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on through its activities, the creation of considerable achievements, anticipated creation of achievements in the future and so on toward "maximization of R&D achievements" under the conditions of appropriate, effective and efficient operations are recognized.

B: Based on the National Research and Development Agency's aims, business, mid to long-term objectives and so on, as a result of comprehensive consideration based on some circumstances regarding the agency's business achievement, efforts and so on through its activities, a certain degree of expectation for the creation of achievement and creation of achievement in the future toward "maximization of R&D achievements" were recognized, and steady business operations have been also recognized.

C: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on through its activities, the creation of achievements, further drastic efforts and improvements toward "maximization of R&D achievements" or "the appropriate, effective and efficient operations" are anticipated.

D: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on through its activities, special efforts and improvements including a fundamental drastic review, toward "maximization of R&D achievements" or "the appropriate, effective and efficient operations" are required.

*2 Evaluations up to FY 2013 were not made based on the Evaluation Committee for Incorporated Administrative Agency under MEXT's jurisdiction, since evaluation was made at each step for the major items of item by item evaluation, this evaluation shall be described in the reference as the previous period's evaluation.

Mid to long-term objectives (Mid to long-term plan)	FY Ratings					No. of document each item	Remarks
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017		
I. Items concerning the improvement of the service to the nation and the quality of the operations							
1. Promoting strategic/focused research development on a basis of national/social needs							
(1) Emergent matter science	S	S	S	S		I-1-(1)	
(2) Sustainable resource science	S	A	A	A		I-1-(2)	
(3) Brain science	S	S	S	A		I-1-(3)	
(4) Developmental biology	C	B	A	A		I-1-(4)	
(5) Life system research	A	S	S	A		I-1-(5)	
(6) Integration of life and medical sciences	S	A	A	A		I-1-(6)	
(7) Advanced photonics research	S	S	S	A		I-1-(7)	
(8) Information science and technology research	—	—	—	B		I-1-(8)	
2. The promotion of development and share-use study of the world's top level research base							
(1) Accelerator science research	A	A	S	A		I-2-(1)	
(2) Synchrotron radiation science research	A	A	A	A		I-2-(2)	
(3) Bio resource project	B	B	A	A		I-2-(3)	
(4) Life sciences technology platform research	A	A	A	A		I-2-(4)	
(5) Computational science and technology research	A	B	A	A		I-2-(5)	
3. Promotion of tip fusion research by establishing a system for exhibiting the comprehensive strength of RIKEN							
(1) Creative research proposal system	A	A	B	B		I-3-(1)	
(2) The creation of a system to appoint a researcher as the core	A	B	B	B		I-3-(2)	

Mid to long-term objectives (Mid to long-term plan)	FY Ratings					No. of document each item	Remarks
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017		
II. Measures to be taken for achieving the objectives concerning the efficiency of the administration of the operations							
1. Efficiency of research resource allocation							
2. Efficiency of research resource							
(1) Promotion of information disclosure							
(1) Promotion of information disclosure	A	B	B	B		II-2	
(2) Efforts for cost management	A	B	B	B			
(3) Improvement of the quality of staff	B	B	B	B			
(4) Energy-saving measures, facility utilization measures	A	B	B	B			
3. Regulation of salary levels							
4. Appropriateness of contract business							
5. Securing external funds							
6. Ensuring business safety							
III. Budget (Including personnel expenses)/ income and expenditure plan, and funding plan							
IV. Limit amount of short-term borrowing							
V. If the agency has any Unnecessary Property or any property that is expected to be Unnecessary Property, a plan for disposal of such property							
VI. If the agency intends to transfer or provide as collateral any important property other than the property provided for in the preceding item, a plan therefor;							
VII. Purpose of using accumulated profit							
VIII. Other matters concerning the administration of the operations specified by ordinance of the competent ministry							
1. Plans for equipment and facilities							
2. Plans for personnel							

4. Infrastructure construction and the promotion of industry-academia-government collaboration to create the results with the impact leading to innovation						
(1) Interdisciplinary cooperation with industry	A	B	A	A		I-4-(1)
(2) Cross-promotion cooperation ①Promotion of cooperation on biomass engineering	A	A	A	A		I-4-(2)- ①
(2) Cross-promotion cooperation ②Promotion of cooperation on drug discovery related research	A	A	S	A		I-4-(2)- ②
(3) Promotion of effective intellectual property strategy leading to practical use	A	B	A	A		I-4-(3)
5. Development of research environment, nurturing and producing excellent researchers and so on						
(1) Development of vibrant open research environment	B	B	B	B		I-5-(1)
(2) Development of human resources with internationally superior ability (Entitled, “Development of excellent researchers, etc.” until September 2016)	B	B	B	B		I-5-(2)
(3) Increase understanding R&D activities and announcing easy-to-understand R&D achievements						
① Papers and the achievements announced at the symposium and so on	A	B	A	A		I-5-(3)
②Understanding the promotion of RD activities	B	B	B	B		I-5-(3)
(4) Coordination and cooperation with research institutes at home and abroad	A	B	B	B		I-5-(4)
(5) Strengthening the strong support function for R&D from an administrative and technical perspective	B	B	B	B		I-5-(5)
6. Promotion towards the appropriate business operations efforts						
(1) Responding to national policies, and social needs	A	B	B	B		I-6-(1)
(2) Legal compliance, maintain ethics	C	B	B	B		I-6-(2)
(3) Implementation and reflection of appropriate research evaluation, and so	B	B	B	B		I-6-(3)

	3. Debt burden over the mid to long-term objective period	—	—	—	—		VIII-3
	4. Use of a reserve fund	A	B	—	—		VIII-4

on							
(4) Promoting information disclosure	A	B	B	B		I -6-(4)	
(5) Efforts for auditor enhancement	—	B	B	B		I -6-(5)	

* For items that are set to “high” level of importance, a “circle” shall be marked next to each comment.

For items that are set to “high” level of difficulty, each comment shall be underlined.

* Evaluations up to FY 2013 were made based on “the basic guideline regarding business results evaluation for Incorporated Administrative Agency under MEXT’s jurisdiction” (The Evaluation Committee for Incorporated Administrative Agency under MEXT’s jurisdiction on March 22, 2002).

Also, the evaluations after FY2014 are made based on “criteria relating to the evaluation for Incorporative Administrative Agency under MEXT’s jurisdiction” (decided by the Minister of MEXT in June, 2015). The details are as follows

Ratings up to FY2013	Ratings after FY2014
<p>S: Outstanding achievements are fulfilled (Without providing a cross-cutting objective standard for the agency in advance, S is rated according to the characteristics of the agency's business operations.).</p> <p>A: Achievements are in line with the medium-term plan, or beyond, or are steadily being implemented toward a medium-term objective, or beyond (achievement rate for a medium-term plan should be over 100% in a given FY.).</p> <p>B: In some ways the plan is not being implemented in line with medium-term plan, however, a medium-term objective may be achieved by means of ideas and efforts (achievement rate for the medium-term plan should be 70% to 100%).</p> <p>C: The implementation of the plan is behind the medium-term objective, therefore, improvement of business is necessary in order to realize the achievement of the medium-term objective (achievement rate for the medium-term plan in a given FY is less than 70%).</p> <p>F: The Evaluation Committee needs to warn an agency concerning the improvement of its business management and others (Without providing an objective standard in advance, F is rated as a result of judgement that a warning concerning business improvement is necessary.).</p>	<p>[Administrative and projects related to research and development (I)]</p> <p>S: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievements, efforts and so on through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward “maximization of R&D achievements” under the conditions of appropriate, effective, and efficient operations are recognized.</p> <p>A: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievements, efforts and so on through its activities, the creation of considerable achievements, anticipated creation of achievements in the future and so on toward “maximization of R&D achievements” under the conditions of appropriate, effective, and efficient operations are recognized.</p> <p>B: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievement, efforts and so on through its activities, a certain degree of expectation for the creation of achievement and creation of achievement in the future toward “maximization of R&D achievements” were recognized, and steady business operations have been also recognized.</p> <p>C: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievements, efforts and so on through its activities, the creation of achievements, further drastic efforts and improvements toward “maximization of R&D achievements” or the “appropriate, effective, and efficient operations” are anticipated.</p> <p>D: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts through its activities, special efforts and improvements including a fundamental drastic review, toward “maximization of R&D achievements” or the “appropriate, effective, and efficient operations” are required.</p> <p>[Other than administrative work and projects regarding research and development (After II)]</p> <p>S: Through the activities of a corporation, remarkable performance exceeding the intended objectives is recognized quantitatively and qualitatively in the medium-term plan (in terms of quantitative indicators, 120% or more vis-à-vis planned medium-term value (or planned FY value), and remarkable performance is also recognized qualitatively)</p> <p>A: Through the activities of a corporation, remarkable performance exceeding the intended objectives is recognized in the medium-term plan (in terms of quantitative indicators, 120% or more vis-à-vis planned medium-term value (or planned FY value)).</p> <p>B: Performance exceeding the intended objectives is recognized in the medium-term plan (in terms of quantitative indicators, 100% or more but less than 120% vis-à-vis planned medium-term value (or planned FY value)).</p> <p>C: Performance falls below the intended objectives in the medium-term plan, requiring improved performance (in terms of quantitative indicators, 80% or more but less than 100% vis-à-vis planned medium-term value (or planned FY value)).</p> <p>D: Performance falls below the intended objectives in the medium-term plan, requiring drastic improvement of business including its abolition (in terms of quantitative indicators, less than 80% vis-à-vis planned medium-term values (or planned FY value), or it is recognized that the competent Minister is required to ask for improving business operations or taking other necessary measures).</p>