

Evaluation of the Research and Professional Activity of the Institutes of the Czech Academy of Sciences (CAS) for the period 2010–2014

Final Report on the Evaluation of the Institute

**Name of the Institute: J. Heyrovsky Institute of Physical Chemistry of the CAS,
v. v. i.**

Fields, in which the Institute registered its teams:

Biochemistry and molecular cell biology, biophysics, virology, ...

Observer representing the Academy Council of the CAS: Karel Aim

Observer representing the Institute: Petr Čársky, substitute observer Stanislav Záliš

Commission No. 6: Biochemistry and molecular cell biology, biophysics, virology

Chair: Professor emeritus Morten Kielland-Brandt

Date of the visit of the Institute: November 12, 2015

Programme of the visit of the Institute: see attached Minutes from the visit

Evaluated research teams:

No. 1 - Department of Biophysical Chemistry

A. Evaluation of the Institute as a whole

1. Introduction

The J. Heyrovsky Institute of Physical Chemistry has ten Departments. The Commission 6 was assigned to evaluate only one Department out of the ten, the Department of Biophysical Chemistry, which was found to be excellent. In addition, this Commission was asked to evaluate the Institute as a whole. The scientific output of the Institute is really excellent; among the institutes in section 2 of the Czech Academy of Sciences, the Institute achieved the highest number of IF per employee (5.66) during the evaluation period. The Institute has high-quality pedagogical activities at several universities in the Czech Republic. The infrastructure of the Institute is focused in the Center for Innovation of Nanomaterials and Nanotechnologies and is of high quality. In addition, the Institute has a joint Laboratory of Solid-State NMR Spectroscopy with the Institute of Macromolecular Chemistry. The Executive Council of the Institute has introduced an incentive personnel policy, helping experienced researchers to stay in research after retirement age and opening new positions for young, excellent scientist. They also have changed the hierarchical structure based on three Departments into a flattened structure with ten Departments at the same organizational level.

2. Strengths and Opportunities

- The quality of outputs of the Institute is of very high quality.
- The quality of outputs by intensity of citations is close to equal the quality of the outputs.
- The institute has intensive pedagogical activities at several Universities and impressive involvement in research popularization.
- The personnel policy is clear and well organized at the Institute.
- Close to optimal age profiles in most of the departments.
- High grant success at national and international grant agencies. Sixty percent of the FTE in research is financed by external funding resources.
- The Institute has high enough ratio of foreign researchers employed, contributing to its international profile; two of the ten departments have foreign heads.

3. Weaknesses and Threats

- Some departments have difficulties to recruit very good PhD students.
- The organization of the core facilities is not always optimal.
- The salary levels in the Institute for the researchers and the PhD students are not optimal either.

4. Recommendations

The Institute should continue to aim at journals with the highest impact. More attention should also be given to visibility for prospective PhD students, so good students can be attracted.. The Institute should focus on improving the core facilities, thereby providing better working environment.

5. Detailed evaluations

Declaration on the quality of the results and share in their acquisition

The scientific output of the Institute is excellent; many papers were published in high impacted journal. The Institute has high grant success at national and international grant agencies.

Declaration on the involvement of students in research

The number of students involved in the research in general is high enough; their number, however, should be increased in some departments of the Institute.

Declaration on societal relevance

The pedagogical activity of the Institute is excellent. The activity of the Institute in the area of research popularization is very impressive; the public has been approached at many levels.

Declaration on the position in the international and national context

The Institute has very good and fruitful national and international collaborations. The high level of scientific research in nanomaterials and nanotechnologies make the Institute very attractive for collaborative research.

Declaration on the vitality and sustainability

The age structure of the Institute is close to optimal. The Executive Council dared to flatten the hierarchical structure of the Institute; ten Departments have been created, and the new structure offers capability to follow new trends in research more efficiently.

Declaration on the strategy and plans for the future

The Institute has a realistic research plan for 2015-2019; some of the plans already have grant support.

B. Evaluation of the individual teams

Evaluation of the Team No. 1: Department of Biophysical Chemistry

1. Introduction

The Department of Biophysical Chemistry develops high-resolution and other advanced fluorescence techniques and applies them, mostly in collaboration with other teams, in both in-vivo and in-vitro studies of biophysics of lipid bilayers, the importance of specific lipids (e.g. cholesterol or oxidised lipids) in these for, e.g., membrane-mediated protein oligomerization leading to amyloid formation, structure-function relationships of transmembrane domains of integral membrane proteins, and generic phenomena of enzyme catalysis using haloalkane dehalogenation as a model system. The personnel structure of the Team has significant international representations; seven of the eighteen scientists are foreigners, and so are four of the six key scientists. The age structure of the Team is really excellent.

2. Strengths and Opportunities

The research program of the Team is very interesting, and the output is excellent; many papers were published in high impacted journals. In addition, the number of citations is also very good.

The Team has intensive national and international collaborations contributing to its publication activity.

The structure of the scientific team is excellent, and the composition is really international. The Team has high grant success. The leader of the group was also awarded the prestigious Praemium Academiae grant.

New methods have been developed, such as dynamic saturation optical microscopy (DSOM) and fluorescent spectral correlation spectroscopy (FSCS).

The education activity of the Team is excellent; plenty of special courses are coordinated by the members of the Team.

The number of students involved in the research is very high.

The Team has a realistic research plan for 2015-2019; most of the projects already have sufficient grant support.

The outreach activity of the Team is excellent.

3. Weaknesses and Threats

No obvious weaknesses and threats.

4. Recommendations

Having very good scientific parameters, the Team should try to apply for EU grants.

5. Detailed evaluations

The Team has high grant success. The leader of the Team also won the prestigious Praemium Academiae grant. No international grant was awarded to the Team during the evaluation period. The personnel structure of the Team has significant international representation. The scientific output of the Team is excellent; many papers were published in high impacted journal. The educational activity of the Team is excellent. The Team has very good and fruitful national and international collaborations. The Team has a realistic research plan for 2015 - 2019; most of the projects already have sufficient grant support.

Date: December 16, 2015

Commission Chair: Professor emeritus Morten Kielland-Brandt