A4L_ACTIONS

Alliance for Life Sciences: From Strategies to Actions in Central and Eastern Europe

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D1.3 Peer evaluation reports

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Table of contents

Introduction

Evaluation of research performance has become a topic of intense discussion of research community because of its strong impact on decisions on funding and promotion, thus shaping strategic development of research institutions. There is now wide recognition that quality of research is very difficult to assess using quantitative data alone and that peer review-based qualitative assessments are essential. Therefore, one of key goals of the Alliance4Life consortium within the A4L_ACTIONS project is to embed international scientific evaluation as a strategic tool in CEE health research institutions. We consider evaluation of not only scientific performance, but also of institutional practices and societal impact of research as the best ground to start with the cultural transformation, because fair and open feedback from external scientific peers facilitates informed decision-making by the institutional management.

The first step towards this goal was self-assessment of the A4L_ACTIONS partner institutions, based on complex analysis of internal and external factors affecting their functioning and performance, overview of their managerial practices, anonymous survey of employees' opinions on internal institutional culture and comparison of quantitative research outputs of A4L_ACTIONS partners (publications, projects, applications and innovations) using a set of benchmarking indicators. Since research in life sciences strongly depends on technologically advanced equipment and methodologies, the self-assessment included comments, questions and indicators related to arrangements, operations, management, funding, sustainability and renewal of core facilities and/or specialized infrastructures.

The public version of the Self-assessment is available at https://alliance4life.ceitec.cz/public-version-of-self-assessment-report/.

In the next step, three A4L_ACTIONS partners, namely the CEITEC MU, ICRC FNUSA and BMC SAS were subjected to peer review evaluations, which are described in more detail as case studies within this Deliverable 1.3. These case studies are intended to serve as good practice examples for the institutions that plan to pilot peer review evaluation process themselves, or as a background enabling comparison for the institutions that will be subjected to evaluation organized by higher-level and/or national authorities.

Case study 1:
ISAB Evaluation of Research Excellence at CEITEC MU in 2022

CEITEC
Central European Institute of Technology
BRNO | CZECH REPUBLIC

1.1 Objectives, timing, scope and organization of the evaluation

Objectives

- To assess the scientific quality of research at CEITEC MU and the progress made since the last evaluation in 2018
- To obtain comments and advice from respected experts in the field
- To rate the performance of the research teams on a scale of A–E
- To assess the performance of junior research groups and their progression to the senior research group

Timing

- End of February 2022 – final list of confirmed evaluators (ISAB members)
- End of May 2022 – evaluation reports prefilled by administration
- End of July 2022 – evaluation reports completed by RGLs
- End of August 2022 – set of evaluation documents sent to evaluators
- 17th October – mini-conference
- 18th October – individual interviews with evaluators
- 19th October – final meeting of ISAB
- December 2022 – announcement of final results

Scope

The evaluation covered all active CEITEC MU research groups (RGs) as of 1 January 2022.
The Evaluation Board shall prepare a short report (an overall assessment) of every RG and the ranking of the RGs according to the grading rules.

Organization and general provisions

The assessment will take into consideration research outputs covering the period of the **preceding 5 years, i.e. outputs accepted after 1 January 2017 and before the end of 2021** (outputs from 2022 and pre-prints can be mentioned and will be considered if beneficial for the group), assigned to Masaryk University. Outcomes of all members of the research group will be counted.

- Based on trust that researchers provide true and accurate data, no check was done in cases where self-assessment played a key role (e.g. determination of the share of intellectual vs. equipment input in collaborative projects). The remaining input was provided by the administrative staff.
- A preparatory session with all members of the Evaluation Board was held on-line approximately a month before the evaluation itself in order to harmonize instructions to achieve fair conditions for all evaluated units.
- All RGs were assigned to one of five categories: A (5) – Outstanding; B (4) – Very Good; C (3) – Good; D (2) – Satisfactory; E (1) – Unsatisfactory. Numbers in brackets correspond to the Masaryk University grading system.
- In addition, junior research groups (JRGs) that had been operating at CEITEC MU for four years or more were assessed for transition to the senior level. JRGs were further assigned to one of three categories: **Senior** (the group meets the prerequisites for successful progression to the senior category); **Junior with deferral** (the group has not yet reached a satisfactory seniority

level, but its performance is promising enough that it is appropriate to extend the junior status for two additional years with subsequent re-evaluation); **Unsatisfactory** (the group has not reached the seniority level and its performance does not anticipate reaching seniority in the next two years).

1.2 The Evaluation Board

Rules for ISAB members

The ISAB panel/faculty member should:

- be familiar with current trends and developments in the relevant scientific field(s);
- be able to assess the position of the research of the evaluated unit in relation to the international context;
- be able to assess the applicability and societal relevance of the research of the evaluated unit;
- cover the breadth of the research area;
- have an overview of research strategies in the relevant area;
- be able to assess the management of the unit under evaluation;
- for evaluators from the Czech Republic: have an overview and experience of the Czech HEI environment and education system, including its mechanisms and PhD studies;
- be able to comment on topics such as Open Science, PhD studies and programme design, academic culture or HR policy;
- be non-biased and maintain confidentiality. It is essential that he/she confirms that he/she has no direct relationship or connection with the unit being assessed. It is considered bias if the evaluator:
  - has an employment relationship, or has had an employment relationship within the last five years, with the unit(s) being evaluated or another part of MU.
  - is a member of one of the MU bodies or any of the bodies of other MU units or holds a similar position at MU (this rule does not apply if the unit being evaluated delegates the evaluation to its existing ISAB).
  - has participated at least five times in scientific collaboration or has been a co-author of MU outputs or results at least five times in the last five years,
  - has close family ties (spouse, cohabiting or non-cohabiting partner) or other close personal ties with a person who holds a senior position at MU (Head of Department, Institute Director, etc.) or with any MU legal representative.

The composition of the panel respected the diversity of the academic environment. The composition of the panel should reflect and balance gender considerations, an emphasis on international composition as well as disciplinary specificities.

Composition of ISAB

The Evaluation Board was composed of 12 members of ISAB. Individual ISAB members represented recognized experts in the areas of expertise of CEITEC MU.

Name	Affiliation to University/Research Institute	Field of specialization
Dirk Inzé	» Ghent university, Ghent, Belgium » Flemish Institute of Biology (VIB), Ghent, Belgium	Plant biology
Dorothea Bartels	» Rhenish Friedrich Wilhelm University of Bonn, Germany	Plant biology
Claudia Koehler	» The Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden	Plant biology

Michal Hocek	» Institute of Organic Chemistry and Biochemistry of Czech Academy of Science (IOCB CAS), Prague, Czech Republic	Structural biology
Philipp Selenko	» Weizmann Institute of Science, Rehovot Area, Israel	Structural biology
Gaia Pigino	» Max-Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany » Human Technopole, Milan, Italy	Structural biology
Michael Hothorn	» University of Geneva, Geneva, Switzerland	Structural biology
Witold Filipowicz	» Friedrich Miescher Institute for Biomedical Research, Basel, Switzerland	Molecular medicine
Johannes Zuber	» Research Institute of Molecular Pathology, Vienna BioCenter, Vienna, Austria	Molecular medicine
Eric Lecuyer	» Institut de Recherches Cliniques de Montéral (IRCM), Montreál, Canada	Molecular medicine
Christoph M. Michel	» University of Geneva, Geneva, Switzerland	Neurosciences
Viktor K. Jirsa	» Institut de neurosciences des systems (INS) CNRS, Aix-Marseille Université, Marseille, France	Neurosciences

1.3 Evaluation Procedure

Part	Responsibility	Realization	Documents
A – Background information	CEITEC MU	CEITEC MU administration and research group leaders (RGLs)	RG report (annex 1, part A)
B – Description of research	CEITEC MU	RGLs	RG report (annex 1, part B)
C – Scientific outputs	CEITEC MU	CEITEC MU administration and RGLs	RG report (annex 1, part C)
D – Bibliometrics	CEITEC MU	CEITEC MU administration	RG report (annex 1, part D)
C – Mini-conference	CEITEC MU	RGLs	Template of presentation
D – On-site Interviews	Evaluation Board	ISAB, RGLs	
E – Overall performance report	Evaluation Board	ISAB	Explanation of categories (Chapters 7, 8) Evaluation report (annex 3)

RG reports

RG reports (see Annex 1) for individual groups were prepared between March and July 2022 by joint activities of research groups and the CEITEC MU administration. The final document was approved by the RGL.

RG reports were sent together with all attachments two months before the evaluation to ISAB members. ISAB members studied the RGL reports before the beginning of the evaluation. In order to make the evaluation results as objective as possible, it was recommended that evaluators prepare a short paragraph summarizing the quality of performance based on the written report for all evaluated in their area of specialization prior to the mini-conference.

Part A: Background information
Each research group leader (RGL) verified the background information in a given format and structure for the period 2017–2021 pre-filled by CEITEC MU administration and added missing information about previous career and graduates of the RG.
Part B: Description of research
Each RGL provided a description of current and future research topics and specified active collaborations within the CEITEC consortium (including cooperation with groups at CEITEC MU) and outside CEITEC. Part B was completed by the RGL.
Part C: Scientific outputs
Each RGL specified major publications, applied results and grant achievements in the period under review. The results of the collaboration with the industry were partially pre-filled by the administration. The RGL completed the missing information and verified the accuracy of the information provided. In addition, the RGL listed other types of significant research activities and outputs.
Part D: Bibliometrics
The bibliometric analyses were prepared by the administration of CEITEC MU. The list of publications in the given format was approved by the RGL.

Mini-conference

The first part of the on-site visit was an internal mini-conference (open to all CEITEC MU employees) where all research groups had an opportunity to introduce their research in the form of a short public presentation. The total length of the presentation was 12 min (8 min lecture + 4 min discussion). The lectures were designed to allow the review panel to gain a sufficient overview of the scientific standards and typical projects undertaken across the institution. They were intended to show the quality, potential and ambition of the research teams. Part of the conference was also dedicated to overview talks about the CEITEC consortium, CEITEC MU as a whole and the functioning of the Core Facilities.

The practice sessions of the presentations were organized from 26 September to 12 October 2022 by the director of the CEITEC consortium (the RGs were advised to minimise travel and maximise availability in that period). The RGs were asked to prepare a full presentation for the mini-conference (8 minutes) and present it in a series of **two practice sessions** and one "**dress rehearsal**" during the first half of October. An RGL who did not meet the requirement of two mock presentations was not allowed to present at the mini-conference. All RGLs were invited to participate in the rehearsals, and to give feedback on the presentations. The attendance of all RGs was mandatory for at least two practice sessions (the schedule was provided during the summer).

Interviews

The second day of the ISAB visit was dedicated to individual meetings of ISAB members with RGLs. RGLs met individually with two different ISAB members. Each meeting lasted 45 min. The RGL presented his/her research and discussed with the evaluator the research vision of the group, career plans and any other issues related to the research performance of the group.

Every evaluator evaluated a maximum of **six research groups**. For a maximum of three of them was a **primary evaluator** (i.e. was responsible for creating the evaluation report, see Annex 1), and a **secondary evaluator** for up to three others (revised the report). All evaluators of a given group assigned a consensus grade to the group (they could discuss the case with any other members of ISAB). Only the evaluator and the RGL participated in the one-on-one interview.

Evaluation report

After the individual meetings (i.e. at the end of the second day of the ISAB and in the morning of the third day), the primary evaluators were asked to write a pre-report in the given structure and scope and to award marks to all groups they evaluated. The pre-reports were completed in a shared document available to all evaluators. Secondary evaluators were asked to at a minimum provide the grade of the performance of the group and review the report. On the basis of the comparison of the marks for one RGL, a decision was made by the primary evaluator whether the assessment was final (the marks of the different evaluators are the same), or whether it needed further discussion.

The last day of assessment was dedicated to the compilation of grades and written reports. The evaluators were given space to discuss privately altogether or in small subgroups. They were free to organise their procedure as they saw fit; however, for RGs whose evaluation could not be considered objectively closed, i.e. one evaluator differed in his/her evaluation by more than one grade from another evaluator, evaluators from a respective field met together and discussed the final grade. The primary evaluator moderated the discussion and commented in the final report reasons why the mark was awarded. The draft of the evaluation report done by the primary evaluator was completed that day, revisions by the secondary evaluators were delivered within 14 days after the end of the on-site visit. The primary evaluator delivered the final reports within one month after the visit to the **ISAB chair**. The ISAB chair was asked to compile the individual reports and **in addition prepare a short report** about the state of the institute as a whole, its international standing and recommendations with respect to future directions. This was based on discussions of the entire ISAB.

Feedback session

In the early afternoon of the third day of the evaluation the ISAB met with the leadership of CEITEC MU (i.e. the consortium director, CEITEC MU director, all deputy directors and the scientific secretary) and provided oral feedback about the state, direction and vision of CEITEC MU as an institution and preliminary assessment of the performance of the research groups. This served as a preview of the written reports. The minutes of the meeting were prepared and were kept private among the group participating in the feedback session.

Disclosure of results and appeals process

Each evaluated RG received only the final evaluation report of its group (i.e. after revisions by all evaluators). The evaluation reports and grades were then only available to the management of CEITEC MU and also to the management of MUNI. The results of the evaluation will not be announced publicly.

The report and final grade could be appealed within 14 days of the date of receipt of the report (receipt was deemed to be by email to the institutional address of the RGL). Only the group leader of the evaluated group could appeal. The appeal should be submitted to the director of CEITEC MU, who should further discuss the appeal with the ISAB and the director of the consortium. The director of CEITEC MU should respond to the appeal within 14 days of its receipt.

1.4 Grading

The following description served as a rough guide of the level the evaluated research group was expected to reach in order to receive a given grade. It was absolutely not necessary to meet all the conditions listed at the same time to be awarded a grade and the interpretation did not need to be literal. Award of the grade was based on an overall evaluation of all aspects being considered in the research assessment, considering the competitiveness of the research and knowledge of the research field. The term "international comparison" used on the scale usually ment the EU-15 environment or a comparable environment an evaluator might be more familiar with, e.g. the USA.

5 – Outstanding – World Leader

Scientific performance and excellence: The evaluated RG is considered a world leader in its field. The research environment and performance are fully comparable to groups in top international institutions. In terms of originality of research outputs and competitiveness, the team is internationally excellent overall, i.e. at the level of the best international research organizations in the field. The RG is deeply involved in international scientific research networks and is a recognized member of the community worldwide. The level of internationalization of the group is at the highest level both among the academic staff and students (high proportion of international students, zero inbreeding, etc.).

Societal relevance and community outreach: Research in the RG has a very high potential for societal impact in terms of its reach and relevance. The research results bring about a fundamental change with an international economic impact (a realistic expectation of a wide application in multiple foreign markets, etc.) or a change with an extraordinary international impact on society (a realistic expectation of a fundamental application internationally in areas of public interest). The RGL is an outstanding communicator of science on many levels, builds and leads research communities, generates resources that have a broad impact on an international level.

Resources for research: The evaluated unit successfully competes for top international research grants and is extremely successful in obtaining national grant funding. It participates in international research projects both as an investigator and as a principal investigator. Furthermore, it has an outstanding HR policy and mentoring track record (recruitment and support of researchers at all levels, several group alumni run independent groups in academia or industry).

4 – Very good (Strong international level)

Scientific performance and excellence: The evaluated RG is at a high international level. The research environment and performance are internationally competitive and, in some aspects, comparable to the world's top performers. In terms of originality of research outputs and competitiveness, the RG is comparable to international centres of excellence. However, research does not yet reach the highest standards of excellence. The team is involved in international scientific research networks and is a recognized community member at European and national levels. The level of internationalization is at a very good level among both academic staff and students (a high proportion of international students, minimal inbreeding, etc.).

Societal relevance and community outreach: Research in the RG has a high potential for societal impact. The results bring about a change with international economic impact (realistic expectation of application in foreign markets, etc.) or a change with significant impact on society (realistic expectation of application in areas of public interest). The RGL is an effective science communicator, organizes meetings, shares the results of their research at multiple internationally visible fora and generates shared research resources of high impact.

Resources for research: The RG is sporadically successful in competing for top international grants, but is consistently successful in obtaining national grant funding. The unit has a functional HR policy in place (attracting and supporting researchers at all levels) and mentoring track record (several alumni moved on from the group to continue a successful career in research or industry).

3 – Good (Strong national level)

Scientific performance and excellence: The evaluated RG is one of the above-average units at the national level. In terms of originality of research outputs and competitiveness in international comparison, the research environment and performance of the RG is of a good standard, and at the national level the RG can be ranked among the best research organizations. The RG is involved in excellent national projects and is a recognized member of a community involving national leaders in the field. It has limited involvement in international scientific research networks, and the degree of internationalization is low (little participation of international staff or students).

Societal relevance and community outreach: Research in the RG has good potential for societal impact. The results bring change with an economic impact on the Czech market or change with an impact on society (realistic expectation of application in areas of public interest). The RGL shares results of their

research occasionally at international fora, teaches and communicates science to local and national stakeholders.
Resources for research: The RG regularly competes for international grants, but mostly receives national grant funding. There is sporadic evidence that graduates of the group continue in a research career.

2 – Satisfactory (Satisfactory national level)
Scientific performance and excellence: *The e*valuated RG is among the average at the national level. The research environment and performance lag behind the international environment standard. In terms of originality of research outputs and competitiveness, the RG is at a good national level. The RG participates in national projects in the field and is involved in the national community. It is sporadically involved in international scientific research networks and has very few or no international academic staff and students.
Societal relevance and community outreach: The evaluated RG has a low potential for societal impact. Results bring partial change with an economic impact on the Czech market or partial change with an impact on Czech society (realistic assumption of partial application in areas of public interest). The RGL, if at all, presents research results to national audiences. Public communication of science and teaching activities are limited.
Resources for research: The evaluated RG is not successful in obtaining international grants and is only moderately successful in obtaining national grant funding. There are no significant graduates of the group continuing in research yet.

1 – Insufficient (Weak national level)
Scientific performance and excellence: The evaluated RG is one of the below-average at the national level. The research environment lags far behind in both international and national comparison. The RG's performance is poor in terms of research output and competitiveness. Most of the academic staff and students are from the evaluated unit and the level of inbreeding is high.
Societal relevance and community outreach: Research in the evaluated RG has little to no potential for societal impact. In practice, the results do not bring any change with an economic impact or change with an impact on Czech society (no realistic expectation of application in areas of public interest). There is no evidence of any community building or outreach activity.
Resources for research: The evaluated RG has only limited success in obtaining national grant funding. The unit has little or no substantive collaboration at the national level. The Research Group does not ensure its members further development of their careers and potential.

1.5 Seniority assignment

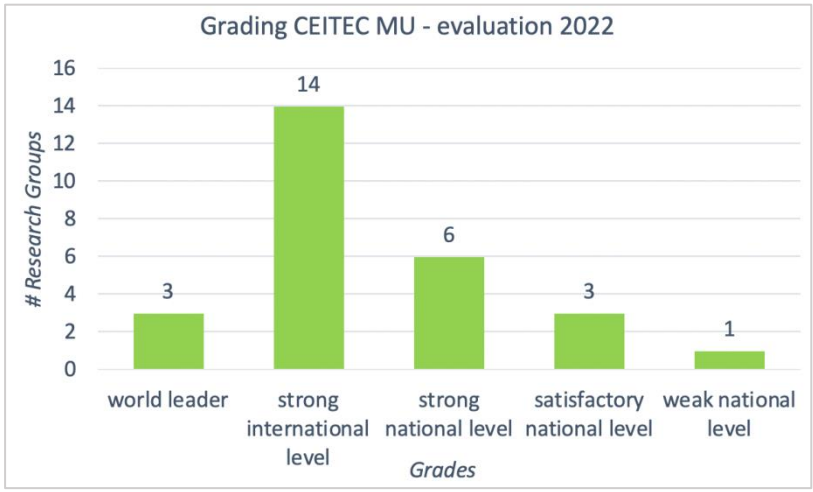
The process of promotion to the position of Senior Research Group Leader is an integral part of CEITEC MU HR policy. The aim is to standardize the structure and life cycle of the research group. A junior research group leader, i.e. a group leader who establishes an independent research group at CEITEC MU for the first time in his/her career, must undergo an evaluation after 4–5 years at CEITEC MU to assess whether the group is mature enough to move to the senior level. This means, among other things, that the group will continue to be funded according to budgetary rules, not through a negotiated start-up package.

In 2022, the promotion of junior group leaders to senior level was part of the evaluation of scientific excellence of CEITEC MU research groups. This means that for junior research groups, in addition to the standard evaluation, ISAB also provided an assessment of their potential as a senior group. For this purpose, ISAB provided CEITEC MU management with a recommendation on whether:

- the performance and setting of the research group meets the requirements for promotion to a senior group and the research group leader may be appointed senior group leader, or
- the performance and setting of the research group does not meet the prerequisites for promotion to senior group leader and the research group will be terminated. The termination of the group will take place according to the rules defined by the CEITEC MU career system, i.e. in the following period of one year recruitment of new staff and students as well as submission of grants under CEITEC MU will be restricted, or
- the performance and setting of the research group does not meet the requirements for promotion to seniority, but the group shows promising progress with the potential to meet the seniority criteria in the near future (i.e. within the next two years at most). The group will be given room to achieve seniority; however, after two years it will be reassessed, with the resulting recommendation not allowing for further extension and one of the previous options must be selected.

1.6 Final assessment report – general conclusions and recommendations

The outcomes (recommendations and grades) of the evaluation were specified in individual and institutional reports that management of CEITEC MU received in December 2022. Individual reports were sent immediately to the research group leaders. At the same time, the heads of research programme received evaluation reports from all groups in their programme. For the distribution of grades within CEITEC MU see the graph below.



On the institutional level, ISAB considers CEITEC MU as a leading life sciences institute in Central Europe and one of the most advanced institutes in the entirety of Europe. Nevertheless, ISAB recommends encouraging the publication of comprehensive papers in top journals and prioritizing quality over quantity. Other recommendations were directed towards effective defending for PhD students (implementation of Viva Voce) or creating a long-term funding strategy for core facilities. In the HR area, they pay attention to the low involvement of foreign scientists in teaching and comment on the promotion of equal opportunities and work-life balance. ISAB also vividly discussed the implementation of a retirement policy in relation to harnessing the potential of senior researchers.

1.7 Follow-up activities

Once the evaluation process was complete, the research group leaders were asked to prepare an implementation plan for the recommendations from the evaluation.

The deputy director for research in cooperation with the CEITEC consortium director will assess the adequacy of the implementation activities and, if necessary, adjust the activities in their scope and timing. Where appropriate, he/she will suggest other suitable activities.
Implementation of the recommendations will be part of the next evaluation.

1.8 Economic aspects

The remuneration for carrying out the tasks in the evaluation was 280 EUR / full day. The per diem's remuneration (EU rate 230 EUR / full day) was reduced by the costs provided by MU, i.e., accommodation, transportation in Brno, and food. Accommodation was provided and paid for by MU. For Evaluators not within walking distance to the place of the EP meetings from their accommodation, transportation in Brno was also paid by MU. Furthermore, MU also paid for meals in the form of open accounts at the hotel where the Evaluator was accommodated. Consumption of alcohol and tobacco products was paid by the Evaluator.
MU arranged and paid for the transport of the Evaluator to the place of the EP meeting from either the Evaluator's residence or their workplace and back.

1.9 Annex 1: Evaluation Report – template

EVALUATION OF RESEARCH GROUP

RG Leader: *RGL name*
RG: *RG title*

Grade (*5 – Outstanding – World Leader, 4 - Very good (Strong international level), 3 – Good (Strong national level), 2–Satisfactory (Satisfactory national level), 1–Insufficient (Weak national level)*	
Comments and recommendations on quality of research:	
Specific recommendations/comments on RG performance at:	
➢ publications strategy, level of publication	
➢ grant strategy (writing, submission, alignment with needs of research programme / group)	
➢ cooperation with the focus on interdisciplinarity (joint projects with other RGs / RPs inside / outside CEITEC, joint students)	

➢ research potential + vision and strategy of the RG
➢ composition of RG/HR
➢ collaboration with application sphere (robustness /impact of the collaboration both intellectually, scientifically and financially)
➢ other (e.g. impact with social relevance, invited speakers, awards, membership in boards…)

Case study 2:
ISAB evaluation at ICRC FNUSA in 2021

FNUSA ICRC
ST. ANNE'S UNIVERSITY HOSPITAL BRNO
INTERNATIONAL CLINICAL RESEARCH CENTER

2.1 Objectives, organization and timing of peer evaluation

Objectives

- To assess the progress of ICRC in the evaluated period and the fulfilment of strategy identified in 2016
- To have feedback on international competitiveness of ICRC, progress of the research teams and the quality of research results
- To receive recommendations and comments for the further development of research teams and ICRC as an institution, based on the 2021+ strategy

International evaluation is a unique opportunity to discuss and receive feedback from the ISAB members and external experts both for Principal Investigators and ICRC management

Evaluation period

Evaluated was five-year period 2016 – 2020 of the NPU II project Translational medicine.
Both research teams and ICRC as an institution were evaluated in 2021. Core Facilities were excluded from the evaluation.

Main evaluation principles

Informed peer-review

- Based on data from background materials, prepared by research teams with annexes from administrative teams, provided to evaluators in advance.
- On-site visit - discussion with the PI and team members, visit of the lab

External evaluators

- External evaluators – members of ISAB and other international experts
- Any conflict of interest avoided
- International experts proposed by Principal Investigators
- Evaluation panel for each field of research with appropriate international experts

Given the epidemiological situation at the time, it was necessary to abandon the principle of on-site visits and organize the entire evaluation online.

Evaluation timeline:

- **2Q/3Q 2020 – Preparing evaluation methodology.**
- **September/October 2020 – Collecting nominations for evaluators from Principal Investigators.**
- **October/November 2020 – Addressing potential evaluators**
  ISAB members confirmed their participation in 2021 Evaluation.
  Compilation of evaluation panels.
  Preparation of background materials – all PIs.
- **December 2020 – Preparation of background materials from admin teams.**
- **January 2021 – Background materials and evaluation forms sent to evaluators.**
  Selection of admin assistants for evaluation panels.
- **February 15, 2021 – ISAB meeting – Discussion with the ICRC director**
  Evaluation panels – evaluation of the research teams
- **February 16, 2021 – Evaluation panels – evaluation of the research teams**

- **February 17, 2021 – Writing of the evaluation reports**
- **February 18, 2021 – Finishing of the evaluation reports**
  ISAB Meeting – Evaluation results
  Meeting of FNUSA-ICRC management and ISAB members
- **February 22 – 26, 2021**
  Individual meetings of ICRC Director with PIs on the evaluation results

2.2 Evaluators

Main focus while selecting evaluators was on ensuring the correct and transparent process of evaluation and valuable outcomes from the scientific point of view.
There were two types of evaluators – permanent and visiting. Permanent evaluators were members of ISAB. They were taking part in evaluation repeatedly so they ensured continuity of evaluation process. Visiting evaluators were selected for each evaluation and for a specific field of research separately to even strengthen ISAB expertise and underline the independent point of view.

Nomination process

Nomination process began in sufficient advance before evaluation, initiated by Research Coordination Office (RCO).
All PIs nominated 3-5 scientists in their field of research. Nominees had to have an excellent track record and be without conflict of interest. Members of ISAB could also nominate their candidates.
ISAB clustered all research teams into the evaluation panels and selected evaluators.

Evaluation panels

Evaluators were divided into panels according to the field of research:

- 4-6 members in each panel
- at least one member of ISAB
- at least one visiting evaluator

Each panel had a chairman from the ISAB. Chairman reports the panel evaluation results at the ISAB meeting. Each chairman has one administrative from ICRC administration.

Conflict of interest

Before accepting the evaluation invitation, scientist had to confirm no conflict of interest, and their ability and intention to evaluate impartially. If a conflict of interest could not be avoided for specific reason, the evaluator had to specify exactly what the conflict of interest is. The ISAB then assessed its relevance and decided whether to exclude the evaluator from the evaluation of a particular research team or from the evaluation as a whole.
In specific cases, ISAB could decide that the conflict of interest was impossible to avoid. In such cases, there had to be clear explanation of the connection of the evaluating expert and evaluated research team on the one hand and clarification why the expert was included among the evaluators despite this connection.
ISAB could, based on any kind of information received, re-evaluate the situation and decide to exclude an evaluator or arrange for a re-assessment even during the assessment process.

A conflict of interests could exist if an expert:
a) directly or indirectly profited from the evaluation;
b) had close family or personal relations with a person employed by the evaluated organization;
c) was employed or contracted or planned to be employed by the evaluated organization;

d) had taken part in research collaboration with the organization under evaluation, has had common research result or common grant with any employee of the evaluated organization;
e) had been a mentor to, or mentored by, the employee of the organization under evaluation;
f) was known to have had relations amounting to research rivalry or professional animosity with any person employed by the evaluated organization.

2.3 Required documentation and evaluation procedure

Background materials

Background materials were an important source of information for the evaluators about the research team. Structure of these materials was designed to cover all necessary data for the evaluation.
All materials, prepared by PIs and administrative teams, were reviewed by PIs before they were submitted. Evaluators received the material well in advance (at least 4 weeks) of the evaluation via email. Detailed description of the materials is in Annexes.

Background materials for assessment of research teams

1. Materials prepared by PI

- Research team report
  Basic information about the team, research progress made since the beginning of the evaluation period, main research result, and teams current status.
- Future plan
  An outline of future plans indicating possible hypothesis, approaches taken to execute the plans, needed human resources, and how to identify and attract them and planned financial sources.
- CV of PI
- Presentation
  A summary or highlights of the research team report and future plans in one comprehensive presentation to be presented by PI or his/her designated deputy at the panel meeting.

2. Materials prepared by administrative teams

- HR overview
- Project overview
- Bibliometric profile

3. Background materials for assessment of ICRC as a center

- ICRC status report
  Overview of the research strategy in the evaluated period, main research results and cooperation, overview of research infrastructure, internal strategy documents, management of the centre, administrative support, PR and popularization of science.
- Future strategy
  An outline of future plans and focus areas, HR and financial plan.
- HR overview
- Financial overview
- Institutional project overview
- Bibliometric profile
- Presentation
  A summary or highlights of the status report and future plans in one comprehensive presentation to be presented by FNUSA-ICRC director at the ISAB meeting.

Evaluation indicators for research team

1. Indicators for research

- Quality of research results
  Publications – authorship (1st/corresp. author), quality (Q, top 10/top5/top1), impact (citations)
  Applied results – patents, commercialization potential, clinical applications
  Other important outputs – scientific recognition, social relevance of the results, clinical results
- Grants and cooperation
  Obtained national/international grants
  Level of internal collaboration – within FNUSA-ICRC, with FNUSA
  Level of national/international collaboration
  Collaboration with non-academic partners and application sphere
  Contract research
- Research strategy
  Research mission and strategy for next period
  Strengths and weaknesses

2. Indicators for research team management

- Management of the team
  Appropriate size and composition of the team
  Team work, team support, team cohesion, staff turnover
  Recruitment process, targets, and achieved results
  Individual team member career management and career progress
  Mentoring and student support
  Mobility and internationalization
- Financial sources
  Current team funding
  Future strategy for attracting grants
  Other sources – contracted research etc.
- Results from previous evaluations
  Commented list of measures adopted as a response to the recommendations of earlier evaluations.

Evaluation indicators for ICRC as a center:

1. Indicators for research

- Research strategy
  Research mission and strategy for next period
  Complementarity and focus of research teams
  National and international context of conducted research
  Social relevance and contribution
  Strengths and weaknesses
- Research infrastructure
  Existing and required equipment
  Clinical or other utilization of required equipment
  Implementation of the Core Facilities principle
  Research infrastructure strategy
  Acquiring, modernization and sharing of research equipment
- Quality of research results
  Publications – authorship (1st/corresp. author), quality (Q, top 10%/top 5%/top1%), impact (citations)

Applied results – patents, commercialization potential, clinical applications
Level of the scientific recognition of the researchers and the institute as a whole

- Grants and cooperation
  Obtained national/international institutional grants
  Level of internal collaboration within FNUSA-ICRC and with FNUSA (promotion of internal grants etc.)
  Institutional support of national/international collaboration
  Collaboration with non-academic partners and application sphere, contract research

2. Indicators for management of the center

- Management of the centre
  Management of the research
  Professional research support
  Strategy of funding, financing and developing of the research teams
- Human resources and research career
  Career plans for researchers, evaluation system
  Recruitment strategy and internationalization
  Gender issue measurements
  Mobility and internationalization
- Financial sources
  Current funding of the centre
  Future funding strategy
- Good practice in research
  Internal rules for good practice in research
- Popularization of science
  Activities
  Communication with public

2.4 Assessment scale

The final assessment is explained in a written evaluation report.

EXCELLENT

Internationally competitive with excellent results.

- High quality of research results with predominant first/corresponding authorship and significant impact.
- Well established national and international cooperation/cooperation with application sphere.
- Competitive financing - international grants, contract research etc.
- Strong, realistic, and robust research plan.
- Internationally recognized and professionally managed research team of appropriate structure, attractive for high-quality researchers.

VERY GOOD

Stable quality with excellent research results with a few important development areas.

- High quality of research results with significant numbers of first/corresponding authorship and adequate impact.
- Solid national and international cooperation/cooperation with application sphere.
- Sufficient financing – national/international grants, contract research etc.
- Achievable, realistic, and robust research plan.
- Potentially high quality of team management, high recognition on the national level and also internationally, attractive for young researchers.

AVERAGE

Unbalanced quality with good or average results with several opportunities for improvement.

- Research results with low number of the first/corresponding authorship or mostly in journals of lower quartiles, average impact.
- Mostly national cooperation, weak international cooperation.
- Sufficient financing – mostly national grants.
- Average research plan with low ambitions.
- Team management with unbalanced structure, high staff turnover, lower attractiveness for the new researchers.

BELOW AVERAGE

Number of weaknesses and results of quality below average.

- Team does not achieve the average level, with insufficient research results and number of weaknesses in monitored indicators.
- There is little potential and confidence for a significant improvement.

2.5 Composition of ISAB / panel of evaluators (Database of experts)

The evaluated research teams were divided into five evaluation panels. Every panel was chaired by one ISAB member, except for the yellow panel, where we had to replace an ISAB member who could not attend with another chair.

Composition of the panels:

PANEL BLUE

Chair: **Kenneth Moya -** ISAB member
(Center for Interdisciplinary Research in Biology, CNRS, France)

Evaluators: **Guimaraes Fernando F.**
(University of Queensland, Diamantina Institute, Australia)
Buratti Emanuele
(Molecular Pathology Laboratory, International Centre for Genetic Engineering and Biotechnology, Italy)
Morgan David G.
(Translational Neuroscience, Michigan State University, USA)

Evaluated teams:

1. **Mechanobiology of Disease** (MBD), dr. Giancarlo Forte
2. **Cellular and Molecular Immunoregulation** (CMI), dr. Jan Frič
3. **Translational Neuroscience and Aging Program** (TAP), dr. Gorazd Bernard Stokin
4. **Medicinal Chemistry** (MCHEM), doc. Kamil Paruch
5. **Cell and Tissue Engineering Facility - cGMP** (cGMP), doc. Irena Koutná

PANEL GREEN

Chair: **John Cleland -** ISAB member
(Imperial College London, UK)

Evaluators: **Bartuś Stanisław**
(Jagiellonian University in Krakow, Poland)
Gerber Bernhard
(Institute of Experimental and Clinical Research, UCLouvain, Belgium)

Hatala Róbert
(Faculty of Medicine of the Slovak Medical University, Slovakia)
Mihaicuta Stefan
(Victor Babes University of Medicine and Pharmacy, Timisoar, Romania)

Evaluated teams:

1. **Acute coronary Syndromes** (ACS), dr. Ota Hlinomaz
2. **Interventional Cardiac Electrophysiology** (ICE), dr. Zdeněk Stárek
3. **Sleep Medicine** (SMED), prof. Ondřej Ludka
4. **Cardiovascular Magnetic Resonance** (CMR), doc. Roman Panovský
5. **Nuclear Cardiology and Cardiac CT** (NCT), doc. Vladimír Kincl

PANEL RED

Chair: **Brett Kissela -** ISAB member
(University of Cincinnati Gardner Neuroscience Institute, USA)

Evaluators: **Vančura Vlastimil**
(Department of Cardiology, Teaching hospital Pilsen, Czechia)
Osuchowski Marcin
(Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Austria)
Průcha Miroslav
(Clinical microbiology and antibiotic surveillance, Na Homolce Hospital, Prague, Czechia)

Evaluated teams:

1. **Biomedical Engineering** (BME), Ing. Pavel Leinveber
2. **Kardiovize Brno 2030** (KV), dr. Juan Pablo Gonzalez Rivas
3. **Stroke** (STR), prof. Robert Mikulík
4. **Dementia** (DMT), prof. Jakub Hort
5. **Clinical Pharmacology Unit** (CPU), dr. Václav Trojan
6. **Intensive Care Research** (INC), dr. Martin Helán

PANEL VIOLET

Chair: **Gustavo Sevlever -** ISAB member
(FLENI Buenos Aires, Argentina)

Evaluators: **Pastoreková Silvia**
(Biomedical Research Center SAS, Slovak Academy of Science, Slovakia, A4L expert)
Sdelci Sara
(Centre for Genomic Regulation, Barcelona, Spain)
Jiricny Josef
(ETH Zürich, Dep. of Biology, Switzerland)
Rudolf Emil
(Faculty of Medicine in Hradec Králové, Czechia)

Evaluated teams:

1. **Laboratory Oncology Translational Research** (LOTR), prof. Renata Veselská
2. **Pediatric Oncology Translational Research** (POTR), prof. Jaroslav Štěrba
3. **Molecular Control of Cell Signaling** (MCCS), dr. Jaeyoung Shin
4. **Cancer Plasticity** (CAP), dr. Karel Souček
5. **Epigenetics, Metabolism and Aging** (EMA), dr. Manlio Vinciguerra
6. **Genome Integrity** (GENI), doc. Lumír Krejčí

PANEL YELLOW

Chair: **Janeček Štefan**
(Institute of Molecular Biology, Slovak Academy of Science, Slovakias)
Evaluators: **Adjaye James**
(Institute for Stem Cell Research and Regenerative Medicine, Heinrich-Heine-Universität Düsseldor, Germanyf)
Zweigerdt Robert
(Hannover Medical School, Germany)
Ng Lai Guan
(The Agency for Science, Technology and Research, Singapur)
Murray Paul
(Institute of Immunology and Immunotherapy, University of Birmingham, UK)
Osuna Sílvia
(Institute of Computational Chemistry, Universitat de Girona, Spain)
Sedlák Erik
(Center for Interdisciplinary Biosciences, P.J. Safarik University, Slovakia)

Evaluated teams:

1. **Protein Engineering** (PEG), prof. Jiří Damborský
2. **Cell Signaling** (CS), dr. Pavel Krejčí
3. **Molecular Control of Immune Response** (MCIR), doc. Lukáš Kubala
4. **Cell and Tissue Regeneration** (CTR), doc. Aleš Hampl
5. **Stem Cells and Disease Modeling** (SCDM), dr. Vladimír Rotrekl

2.6 Program of on-site visit/hearings

As was mentioned, due to the pandemic situation, the entire evaluation had to be online. This situation was very challenging to organize, given that the evaluators were from different parts of the world and it was necessary to coordinate the whole program across several time zones.
The evaluators were therefore not able to meet in person, which placed enormous demands on the evaluation itself, on the determination of the results and, above all, on the preparation of the final reports for the individual teams and for the ICRC as a whole.

Program of online evaluation

February 15, 2021
ISAB meeting – Discussion with the ICRC director

- ICRC director presentation (30 min.)
- Questions, discussion (90 min.)

Evaluation panels – evaluation of the research teams

- PI´s presentation (30 min.)
- Questions, discussion – PI and key team members (30 min.)
- Questions, discussion – PI and ISAB only (30 min.)

February 16, 2021
Evaluation panels – evaluation of the research teams

- PI´s presentation (30 min.)
- Questions, discussion – PI and key team members (30 min.)
- Questions, discussion – PI and ISAB only (30 min.)

Writing of the evaluation reports
February 17, 2021
Writing of the evaluation reports

February 18, 2021
Finishing of the evaluation reports
ISAB Meeting – Evaluation results

- Overview of the team results
- Approval of the results and recommendations for the teams
- Overall evaluation of the centre
- Definition of the results and recommendations for the centre

Meeting of FNUSA-ICRC management and ISAB members

- Overview of the ISAB outcomes
- Overall discussion and comments

2.7 Evaluation reports and recommendations

Evaluation report was prepared for every evaluated research team separately. ISAB members also prepared one comprehensive report as an outcome of the evaluation of ICRC as a center.

Evaluation report for research team – structure

Name of the team
Name of the PI
Final result
According to assessment scale + explanation
Research

- Strengths
- Weaknesses

Management

- Strengths
- Weaknesses

Comments on the evaluated indicators

- Quality of research results
- Grants and cooperation
- Research strategy
- Management of the team
- Financial sources

Recommendations for the future

Evaluation report for FNUSA-ICRC centre – structure

Overall summary
Research

- Strengths
- Weaknesses

Management

- Strengths
- Weaknesses

Comments on the evaluated indicators

- Research strategy
- Research infrastructure
- Quality of research results
- Grants and cooperation
- Management of the centre
- Human resources and research career

- Financial sources
- Good practice in research
- Popularization of science

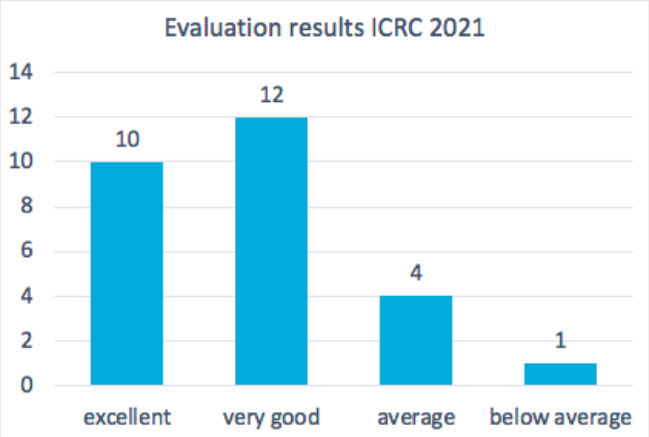
Recommendations for the future

2.8 Economic aspects of evaluation

In case of online evaluation, it is difficult to assess its economic aspects. Evaluators do not normally receive any remuneration for their participation in the evaluation, so most of the costs would be for accommodation, travel and refreshments. However, this is not the case for on-line meetings.
For the next evaluation, which should take place in November 2023, we plan to introduce remuneration for evaluators, and the evaluation is planned as an on-site visit. However, the planned costs are not yet specified.

2.9 Evaluation results

Distribution of the final assessment of the teams is shown in the graph below.



The majority of the research teams were assessed as Excellent or Very Good, which is a very positive result. Nevertheless, all teams received feedback on their strengths and weaknesses and recommendations for their further development or for maintaining their excellence. Individual team results and ISAB recommendations were further discussed during individual follow-up meetings of every PI with the ICRC Director in February 2021.

As part of the evaluation of the ICRC as a center, evaluators highlighted remarkable progress since its inauguration both in terms of science and organizational evolution, high quality of scientific results, mainly a steadily increasing proportion of publications in the top quartile of scientific journals, and establishment of excellent research teams both in clinical and pre-clinical research.
The main recommendations for ICRC were the appointment of a new scientific director of ICRC and maintaining the international character of the centre.
The issue of ensuring the financial sustainability of the Centre in the period after the end of the National Sustainability Programme project (NPU II), when it was necessary to negotiate financial support with the founder, was widely discussed.
Another important issue was cooperation and relationship with key institutions - St. Anne's University Hospital Brno and Masaryk University.

All these recommendations have been reflected and addressed in the following years. The most important events in this regard were the appointment of a new scientific director (The Head of ICRC) in January 2022 and the conclusion of an agreement on the establishment of a joint ICRC workplace with the Faculty of Medicine MU.

Case study 3:
Regular Evaluation of the Research Institutes of the Slovak Academy of Sciences by Panel of International Experts at the Biomedical Research Center SAS in 2022

3.1 Objectives, organization and timing of peer evaluation

Objectives

- To evaluate performance of research institutes of the Slovak Academy of Sciences (SAS), including the Biomedical Research Center SAS (BMC SAS) in three major areas:
  - Quality and performance
  - Contribution to society
  - Strategy and development potential
- To rate the institutional performance in seven categories at a scale A-D
- To obtain comments and advice from international experts in the field
- To provide expert opinion to the SAS Accreditation commission as a basis for decisions of the SAS Presidium on implementation of the evaluation results.

Organization and rules

- The process of evaluation covering the period 2016 - 2021 began with the approval of the Principles of regular evaluation of SAS research institutes by the SAS Assembly and publication of the timetable by the SAS President based on the resolution of the SAS Presidium (P SAS).
- The evaluation procedure was based on the peer review principle in combination with scientometric and other data.
- The evaluation was carried out by foreign evaluators. First, P SAS appointed the Head of evaluators, who, after negotiations with P SAS, appointed Chairs of Panels for each of three SAS Sections (namely, Technical Sciences, Life Sciences and Humanities). In the next step, at the proposal of the chairs, at least two other experts were appointed as Panel members, so that Panels had at least three members and the total number of members was odd. The Head of evaluators chaired the Metapanel consisting of Panel chairs and other nominated experts.
- In order to coordinate the process of evaluation of the SAS research institutes, P SAS established an Accreditation commission, activity of which has been governed by the statute and rules of procedure approved by the P SAS.
- Before the start of the evaluation, all evaluators signed a declaration on conflict of interest and commitment to confidentiality.
- The overall evaluation of Institutes issued by the Evaluation Panels following in site visits with hearing and discussions included recommendations to address weaknesses and to increase the level of scientific research until the next regular evaluation.
- The Head Evaluator submitted the evaluation materials of each Institute to the SAS Accreditation Committee, which will draft recommendation on the implementation of the results of regular evaluation for P SAS.
- P SAS informed the Institutes about the results of evaluation in writing. This communication contained an evaluation report prepared by the Evaluation Panel, including any received expert opinions.
- Institutes might appeal against the decision of P SAS regarding the results of evaluation within 21 calendar days from the date of notification of the written decision. P SAS will forward this appeal to the SAS Accreditation Committee. The appeal hearing by the SAS Accreditation Committee will involve the Institute's Statutory Body (or their representative) and Chair of the

Institute's Scientific Council (or their representative). The Evaluation Panel shall adopt an opinion on the content of the appeal. The SAS

- Accreditation Committee will subsequently adopt a draft decision on the appeal and forward it to the P SAS for a final decision. The final hearing by P SAS will involve the Institute's Statutory Body (or their representative) and Chair of the Institute's Scientific Council (or their representative).
- After the end of all appeal proceedings, the P SAS will issue a final decision regarding the accreditation of all evaluated Institutes.
- By resolution, P SAS will decide on the implementation of the results of the regular evaluation in accordance with the Principles of Evaluation and Principles of Budgeting of Budgetary and Contributory Organizations of the Slovak Academy of Sciences.
- All costs of the evaluation process were covered by the SAS Office based on the approval by the SAS Presidium.

Timing of the process organization

- 10/2021 – Nomination of the Head of evaluators and Panel's chairs
- 11/2021 – Nomination of additional Metapanel members – experts for translational research and for young researchers, online Metapanel meeting to specify the evaluation process and the questionnaire content
- 01/2022 – Nomination of panel members (each section panel consisting of five members)
- 03/2022 – Meeting of the main evaluator with the SAS Presidium and Accreditation commission
- 04/2022 – Self-evaluation Questionnaire delivered to SAS research institutes, including the BMC SAS, to be completed by the 30/06/2022, see https://www.sav.sk/uploads/dokumentySAV/evaluation/AccreditationQuestionnaire.pdf
- 06/2022 – Approval of independent external referees for each SAS research institutes
- 08-09/2022 – Reports of referees
- 09/2022 – Metapanel meeting
- 09-11/2022 – Panels' visits with on-site hearings of the representatives of the SAS research institutes
- 12/2022 – Evaluation results delivered to the SAS research institutes
- 01/2023 – Possible appeals and the final results

Timing of the BMC SAS participation in the evaluation process

- 04/2022 – Concept of the questionnaire elaboration was discussed and adopted by the Managing board, with full agreement that the emphasis is given on presentation of outputs with intellectual origin in / organized by the BMC SAS
- 05/2022 – Information about the evaluation and the questionnaire concept to the members of the BMC SAS Scientific board and heads of research departments
- 06/2022 – Contributions of the directors of BMC institutes and heads of research departments to summary of R&D activities, narratives of the most important research outputs, activities with international relevance / national importance, list of invited presentations, societal impact, popularization, infrastructure etc. – all using common rules for text volume and structure, contributions of the Project department to list of projects,
  - contributions of the Scientific secretary to information on PhD studies, educational activities and postdoctoral fellows
  - contributions of the Legal department to information on human resources and processing of publication data
  - contributions of the Economic department to all data related to budget
  - drafting chapters on implementation of recommendations and strategy by the BMC SAS director (based on the BMC SAS Strategy 2017-2026 approved and updated by the

Scientific board in 2017 and 2019) and text completion following discussions and comments from the members of governing bodies
  - assembly of the questionnaire by the BMC SAS director in order to harmonize the form of the content
  - approval of the final version by the boards
- 21/09/2022 Panel visit at the BMC SAS, on-site hearing

3.2 Required documentation

- The evaluation included expert assessment of the data provided in the questionnaire, divided into nine categories:
  1. Research and application outputs
  2. Citations to research outputs
  3. Position of the BMC SAS in the international and national context
  4. Funding and project structure
  5. PhD education and other pedagogical activities
  6. Institutional environment and management, infrastructure, career paths including support for young researchers
  7. Strategy and implementation of recommendations from the evaluation of 2012-2015 period
  8. Societal impact
  9. Popularization activities
- The evaluation was based on:
  - questionnaire elaborated by the BMC SAS and annexes containing lists of publications and citations as elaborated by the SAS Central Library, see http://www.biomedcentrum.sav.sk/evaluation-2016-2021/?lang=en
  - web page of the BMC SAS, http://www.biomedcentrum.sav.sk/?lang=en
  - presentation and discussion with the research community of the BMC SAS during the on-site visit of the Panel, www.biomedcentrum http://www.biomedcentrum.sav.sk/veda/akreditacia-2016-2021/

3.1 Composition of the Panel of evaluators

Metapanel members

Name and role	Affiliation to University /Research Institute	Role
Prof. Marja Makarow	University of Helsinki, Finland	Head of Evaluators
Prof. Helmuth Weissert	ETH Zurich, Switzerland	Panel Chair Section I
Prof. Toivo Maimets	Tartu University, Estonia (A4L expert)	Panel Chair Section II
Professor Wim van den Doel	Leiden University, Germany	Panel Chair Section III
Dr. Gemma Modinos	King's College, London, UK	Expert for Early Carrier Researchers
Dr. Špela Stres	Jozef Stefan Institute, Ljubljana, Slovenia	Expert for translational research

Panel Section II Members

Name and role	Affiliation to University/ Research Institute	Field of expertise
Prof. Toivo Maimets Panel Chair Section II	Tartu University, Estonia (A4L expert)	Genetics
Prof. Taina Pihlajaniemi	University of Oulu, Finland	Biomedicine
Prof. Imre Vass	Biological Research Center, Szeged, Hungary	Biology
Prof. Kristian Vlahovicek	Zagreb University, Croatia	Bioinformatics
Prof. Jaak Järv	Tartu University, Estonia	Chemistry

3.3 Program of the Panel visit

Before an on-site visit, Panel provided a written communication containing principal comments and questions to be addressed and/or responded during the on-site visit (see Annex 3.1).

Panel visit took part on September 21, 2022 and consisted of:

- presentation of the BMC SAS and its activities by the director (50 min), http://www.biomedcentrum.sav.sk/veda/akreditacia-2016-2021/
- discussion to the presentation and the questionnaire with the director (45 min)
- discussion with the research community (30 min)
- discussion with PhD students and young scientists, closed session in absence of management and senior scientists (40 min)
- presentation of the BMC SAS infrastructure (30 min)

To avoid possible conflict of interest, Prof. Toivo Maimets was not actively involved in discussions of the presentation and the evaluation questionnaire and with the institute's research community during the site visit of the Biomedical Research Centre on Sept. 21st, 2022. The session was chaired by Prof. Kristian Vlahovicek. During the meeting of Panel II Sept. 23rd, 2022, Prof. Toivo Maimets left the room, when the final marks for the Biomedical Research Centre were discussed.

3.4 Economic aspects of evaluation

The costs related to regular evaluation of SAS organization were covered by the Presidium of the Slovak Academy of Sciences from the SAS budget. These included travel, accommodation, food and panel meetings' costs. The remuneration for carrying out the evaluation activities of panel members was based on appointment contracts that are included in the publicly available database at the Central registry of agreements of the Slovak Republic. SAS also arranged and covered the costs of transport of panels' members to the sites of meetings, and refreshment during the on-site hearings as well as meetings of SAS Presidium with Metapanel members.

3.5 Evaluation reports and recommendations

The results of regular evaluation comprise:
a) Evaluation of Institutes by the Evaluation Panels in three main areas
- Quality and performance;
- Contribution to society; and
- Strategy and development potential,

grading each area within seven categories: A, A/B, B, B/C, C, C/D, D,
b) Overall evaluation of Institutes by the Evaluation Panels in seven categories:
A, A/B, B, B/C, C, C/D, D.

The verbal expression of the individual categories was proposed by the Evaluation Panel before the start of the evaluation process and was approved by the P SAS as follows:

Category	Long formulation	Short formulation
A	The research is internationally leading within the European context. The institute has demonstrated important contributions to the field.	is internationally leading
A/B	Part of the research is internationally leading within European context. Overall the research is visible at the European level. The institute has made valuable contributions in the field in Europe.	part is internationally leading, overall is visible at European level
B	The research is visible at the European level. The institute has made valuable contributions in the field in Europe	is visible at European level
B/C	Part of the research is visible at the European level. Overall the research is solid and has contributed to the understanding in the field at the European level.	part is visible at European level, overall is solid
C	The research is solid and has contributed to the understanding in the field at the European level.	is solid
C/D	Part of the research is solid and has contributed to the understanding in the field at the European level. But significant part of the research is not solid or is repetitive, or it is deficient in the scientific or technical approaches.	is partly solid
D	The research is not solid or is repetitive, or it is deficient in the scientific or technical approaches.	is not solid

BMC SAS received two evaluation reports:
- The preliminary report was elaborated by the external referee before the on-site Panel visit based on the completed questionnaire. The report was received by the BMC SAS director on September 7, 2022, the preliminary evaluation was proposed as follows:
  Scientific quality and productivity A/B
  Societal, cultural or economic impact B
  Strategy and potential for development A/B
  Proposal of overall institute rating A/B

- The overall evaluation report was elaborated by the Evaluation Panel following on-site visit at the BMC SAS, based on the completed questionnaire with annexes, hearing and discussions with the BMC SAS research community and on the web page content.
  The overall evaluation report was provided by the P SAS in writing on December 19, 2022 (see http://www.biomedcentrum.sav.sk/veda/akreditacia-2016-2021/).

The results of the BMC SAS evaluation by the Evaluation panel are as follows:
Scientific quality and productivity A/B
Societal, cultural or economic impact A
Strategy and potential for development A/B
Overall assessment A/B

- Since the BMC SAS was established in 2016 by merge of four previously independent SAS institutes that were joined by the fifth institute in 2018, the current assessment covering the period of 2016-2021 reflects the activities associated with consolidation of the BMC SAS structure, functioning, convergence of research activities, development of the internal institutional culture and implementation of strategic goals. In the previous evaluation for 2012-2015, each BMC SAS institute was evaluated separately by the grades BBCCC (B for the Institute of Virology and the Institute of Experimental Endocrinology and C for the Cancer Research Institute, the Institute of Clinical and Translational Research and the Institute of Neurobiology). Thus, the recent evaluation suggests an improvement and indicates a good direction towards future development.

- In general, the Evaluation panel concluded that the merger appeared successful in creating a critical mass of researchers, and an enthusiastic environment with a culture of sharing of expertise and infrastructures.

- With the A/B evaluation, BMC SAS belongs to seven best evaluated SAS institutes out of total 45 and to three best evaluated institutes in the SAS Section II for Life Sciences.

3.6 Further steps to implement recommendations

Metapanel final evaluation report contains the main recommendations for the BMC SAS (see Annex 3.3):

- tackle important problems and identity the best scientists at different levels of the academic career spectrum and direct support to them
- send postdocs abroad for renewal of approaches and educate a new generation of leading researchers
- increase the international level of publications and focus on high-level journals
- further increase international collaborations and activities, target EU's Horizon Europe 2021-2027 both in terms of thematic consortia and ERC (especially), MSCA and research infrastructure funding
- open professionally run core facility services
- pay attention to the activity and viability of the many departmental (several very small) and research group structures and the need for dynamic renewal.

To implement these recommendations, the BMC SAS intends to undertake the following steps

- engage the International Scientific Advisory Board (ISAB) members of the BMC SAS (different from the panel) and ask them to make the insight into an internal BMC SAS structure and evaluate performance of the individual departments and research groups – this will be important for reaching better research focus
- develop career plans for young researchers, based on the best practice examples from A4L_ACTIONS partners, and motivate them to acquire international experiences and improve rewards for excellent research outputs
- improve an internal system of evaluation and rewarding of individual researchers with emphasis on high-quality publications in high-level journals and on successful HE grants

- introduce the rules of core facility services into operations of the BMC SAS infrastructures, using transfer of knowledge from the advanced A4L_ACTIONS partners CEITEC MU and ICRC FNUSA
- develop further activities according to the Action plan within the BMC SAS Strategy approved for 2017-2026.

Case study 4:
"Verification of Excellence in Research" Periodic Evaluation of Research, Development, Artistic and Other Creative Activities of the Slovak Higher Education and Research Institutions at the Biomedical Research Center SAS in 2022

MINISTERSTVO ŠKOLSTVA, VEDY, VÝSKUMU A ŠPORTU SLOVENSKEJ REPUBLIKY

BIOMEDICAL RESEARCH CENTER SLOVAK ACADEMY OF SCIENCES

4.1 Objectives, organization and timing of peer evaluation

Organization and timing

- *Periodic Evaluation of Research, Development, Artistic and Other Creative Activities* was a pilot project, carried out by the Ministry of Education, Science, Research and Sport of the Slovak Republic, It was initiated during 2022 in compliance with the Plan of recovery and resilience, https://www.minedu.sk/periodic-assessment-of-research-development-artistic-and-other-creative-activities/.
- It was accomplished as a peer-review evaluation of the publishing and other creative activities of the Slovak higher education institutions (universities) and research institutions. The time range of the evaluation of these activities was between the years 2014 and 2019.
- The rules of the evaluation process were announced to the SAS institutions in May 2022 and the deadline for the submission of the application documents was August 15, 2022.
- The Ministry of Education, Science, Research and Sport has developed an online platform, to which all data and documents were submitted in the form of links to research outputs included in the SAS repository, which includes the outputs' pdfs, their categorization and corresponding citations (https://www.library.sk/arl-sav/en/search/).
- BMC SAS submitted the applications in June 2022.
- The results of the evaluation process were announced by the Ministry on December 19, 2022.

Objectives

- The objective of this Periodic Assessment was not to evaluate only the top ('high-graded') outputs, but to find out how the quality of research and science looks like at Slovak universities and research institutions, and in particular scientific fields.
- It is expected that the results of this evaluation practice would have an impact on the funding of the Slovak universities and research institutions in future, although probably not in such strict and profound fashion as it is, for example, with the REF (Research Excellence Framework) in the United Kingdom.

4.2 Required documentation

- The assessment process was accomplished within seven scientific fields (Panels), divided into twenty-eight scientific areas, (Subpanels), see https://www.minedu.sk/data/att/24445.pdf. The Panels included (1) Natural Sciences, (2) Technical Sciences, (3) Medicine, (4) Agricultural, Forestry and Veterinary Sciences, (5) Social Sciences, (6) Humanities, (7) Arts and Theory of Art.
- Individual SAS research institutes, entire research centers or their major organization units were eligible to submit several applications, each to a different subpanel and each representing a scientific team of at least 5 research members.
- All participating research bodies generated a list of employees performing research in one of pre-defined scientific areas/Subpanels. The eligible research employees had to have

continuous working contract for at least 4 years and 0,5 FTE during the evaluation period (researchers with at least 2 years of maternity leave or incapacity of work due to health reasons were excluded).

- Each researcher provided five unique research outputs dated in the period of 2014-2019, so that each output, including that with several co-authors and generated in collaboration of several institutes, could be listed only once. That means that each output could be associated only with a single researcher and a single institution. Early stage researchers could submit less than 5 unique outputs.
- These outputs were ordered according to criterion chosen by the institution itself, and divided into at least five descending groups.
- Finally, 25 outputs evenly representing each group were selected and submitted for evaluation to panel of international experts. Thus, each set of outputs within applications consisted of outputs of diverse quality, and representativeness was also maintained in terms of authorship of the outputs. In practice, this was to avoid the situation when those authors who produce the best outputs are the only ones presented within the application's set of outputs.
- In the outputs co-authored by more than 1 author, it was necessary to specify the role(s) of the author to whom the output was assigned.
- Subpanel evaluators assessed the submitted outputs in terms of their originality (understood as the extent to which the output makes an important and innovative contribution to understanding and knowledge in the field), significance (understood as the extent to which the work has influenced knowledge, or the development and understanding of policy and/or practice), and rigor (understood as the extent to which the work demonstrates intellectual coherence and integrity, and adopts robust and appropriate concepts, analyses, sources, theories and/or methodologies).
- Each subpanel was allowed to choose its own methodology of evaluation and evaluation criteria. There was no exercise oriented on the calibration of the criteria and methodologies across the subpanels (so, the calibration/tensioning was carried out only within the individual subpanels).
- Based on the subpanel assessment, the application of each research group was assigned the "profile of quality", i.e. distribution of the outputs into five quality levels expressed in per-cent.
- The quality assessment grades within this assessment process were as follows:
  World leading quality
  Internationally excellent quality
  Internationally recognized quality
  Nationally recognized quality
  Below the standard of nationally recognized work

BMC SAS applications and submitted documents

- BMC SAS participated in the evaluation as a whole center (not individual institutes) via submission of research outputs in two scientific areas/Subpanels:
  - Basic Medicine – 84 employees with 339 unique outputs
  - Biological Sciences – 74 employees with 311 unique outputs

  The BMC SAS used primarily those outputs, to which its researchers provided key contribution.
- The criteria chosen by the BMC SAS for ordering unique outputs in both subpanels were numbers of citations in Web of Science and SCOPUS registered to the date of May 4, 2022 in the SAS Repository administered by the SAS Central Library. This fixed date was important since the citations numbers change over time, but for the ordering outputs it was essential to have a stable parameter. Citation numbers were combined with the year of output publishing

in order to arrange the outputs with the same number of citations in descending sequence from the oldest to the newest. Layout of the criterion was: xxx_20XX (number of citations_year of publication), e.g. 050_2015.

4.3 Composition of the Panels and Subpanels of evaluators

Panel: Natural Sciences

Subpanel: Biological Sciences

Name and role	Affiliation to University /Research Institute	Role
Jianfang Wang	The Chinese University of Hong Kong, Hong Kong Special Administrative Region	Panel Chair
Mark E. Smith	University of Southampton, UK	Panel Member
Eneko Larraneta	Queen's University Belfast, UK	Panel Member
Christian Dina	Université de Nantes, CHU Nantes, CNRS, INSERM, France	Subpanel Chair
Peter Sutovsky	University of Missouri, USA	Subpanel Member
Ting Fung Chan	Chinese University Hong Kong, Hong Kong Special Administrative Region	Subpanel Member
Martin Holcik	Carleton University, Canada	Subpanel Member
Carsten Janke	Université Paris-Saclay, France	Subpanel Member

Panel: Medicine

Subpanel: Basic Medicine

Name and role	Affiliation to University/ Research Institute	Role
Stefano Volinia	Universita degli Studi di Ferara, Italy	Panel Chair
Andrea Isidori	Sapienza, Universita di Roma, Italy	Panel Member
Lamberto Manzoli	Universita di Bologna, Italy	Panel Member
Tullio Florio	University di Genoa, Italy	Subpanel Chair
Elek Molnar	University of Bristol, UK	Subpanel Member
Ken Mills	Queen's University Belfast, UK	Subpanel Member

4.4 Scoring

Each subpanel was allowed to choose its own methodology of evaluation and evaluation criteria. There was no exercise oriented on the calibration of the criteria and methodologies across the subpanels (so, the calibration/tensioning was carried out only within the individual subpanels).

Panel: Natural Sciences

Subpanel: Biological Sciences

The Subpanel for Biological Sciences agreed on use of composite score on 8 points scale. Each output was evaluated with respect to basic qualitative criteria (originality, significance, rigour) as well as to impact (number of citations). Each of these four components could be assigned 0-2 points, to maximum sum of 8 points. Evaluation scale was as follows:
8 points – World leading quality
6-7 points – Internationally excellent quality
4-5 points – Internationally recognized quality
2-3 points – Nationally recognized quality
0-1 point – unclassified (below nationally recognized quality)
At the beginning of the evaluation process, selected outputs were read by all subpanel members in order to reach precise and consensual perception of qualitative criteria.

Panel: Medicine

Subpanel: Basic Medicine

Subpanel for Basic Medicine distributed evaluation of individual outputs according to the expertise of its members, based on expressed preference of each member to evaluate selected group of outputs. The outputs that were not preferentially selected by the individual experts were read and evaluated by all Subpanel members. Subpanel used three quality criteria (originality, significance and rigor), each on 10 points scale, giving together maximum 30 points.
Evaluation scale was as follows:
25-30 points – World leading quality
19-24 points – Internationally excellent quality
13-18 points – Internationally recognized quality
7-12 points – Nationally recognized quality
1-6 points – Unclassified (below nationally recognized quality)
Commission assigned the lowest quality for outputs in the form of conference abstracts.

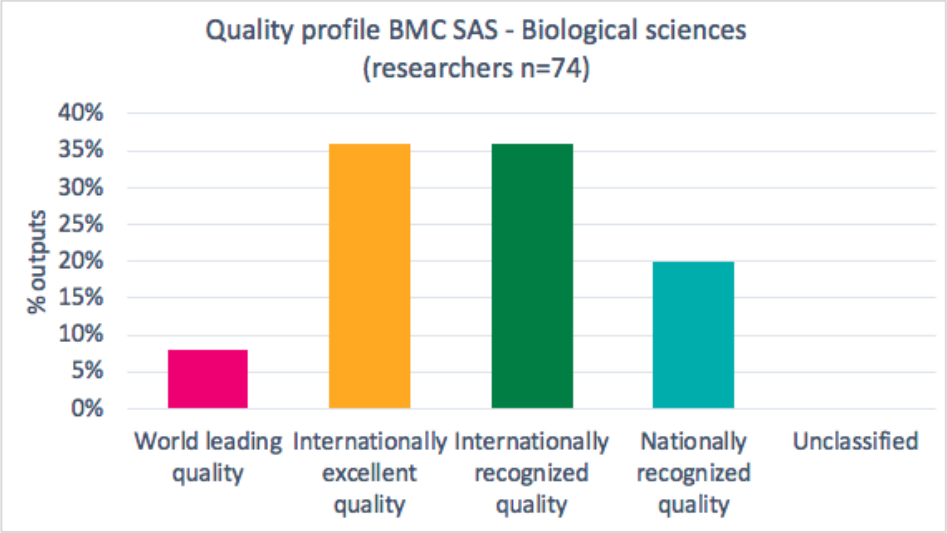
4.5 Economic aspects of evaluation

The costs related to the design and preparation of the evaluation process, setting up the main rules, developing software for data submission, processing documents, selecting and hiring evaluators, their travel, accommodation, food and panel and/or subpanel meetings were all covered by the Ministry of Education, Science, Research and Sports of the Slovak Republic. The remuneration for carrying out the evaluation activities of panel members was based on appointment contracts that are included in the publicly available database at the Central registry of agreements of the Slovak Republic. SAS also arranged and covered the costs of transport to the sites of meetings and refreshment during the on-site panel and/or subpanel meetings.

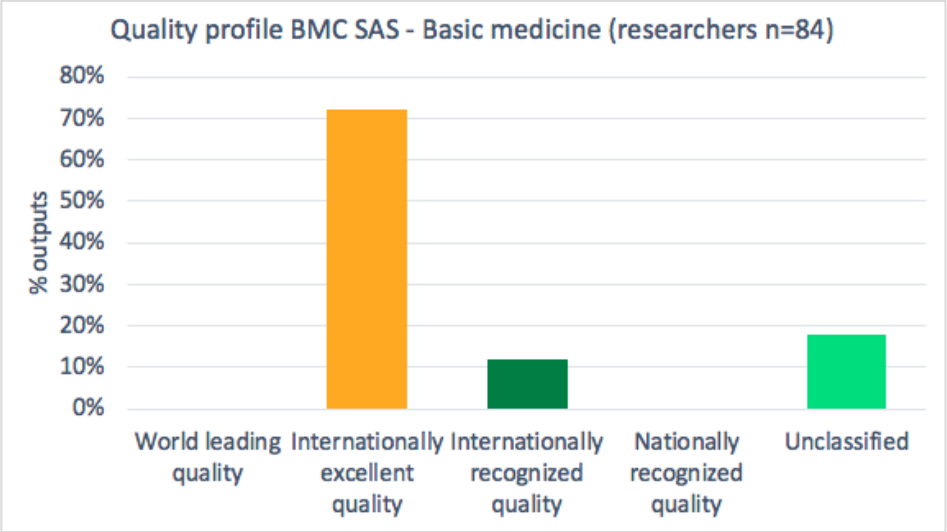
4.6 Evaluation results

Within this project of Periodic Assessment, the assessment did not result in evaluations of individual authors of outputs, or individual outputs. The product of the evaluation is the quality profile, which is created for each application in the relevant research area. The quality profile displayed on the Ministry's website expresses the overall extent to which the submitted outputs jointly meet the criteria of originality, significance and rigor.

Evaluation of the BMC SAS selection of 25 outputs in **Biological Sciences**
8% outputs (2 publications) – World leading quality
36% outputs (9 publications) – Internationally excellent quality
36% outputs (9 publications) – Internationally recognized quality
20% outputs (5 publications) – Nationally recognized quality



Evaluation of the BMC SAS selection of 25 outputs in **Basic Medicine**
72% (18 publications) – Internationally excellent quality
12% (3 publications) – Internationally recognized quality
16% (4 abstracts) – Unclassified



The evaluation results do not specify, which of 25 selected outputs were included in the particular quality level and thus provide only general quality profile without concrete feedback to the evaluated research body.

The evaluation results do provide neither recommendations, nor ranking of the evaluated research team in the national context, but allow for its comparison with the other research teams performing in the same scientific area.

Analysis of the evaluation processes

(Comparison of different types of peer-review evaluation with self-assessment)

Experiences from different types of peer-review evaluations allow for comparison of their potential benefits and shortcomings as well as their advantages relative to self-assessment performed by the A4L_ACTIONS partner institutions described in the Deliverable 1.2.

Type of evaluation / subject	Advantages	Disadvantages
Self-assessment (D1.4) / A4L_ACTIONS partners	• Detailed insight into perception of: » External conditions and barriers (via SWOT analysis) » Challenges in managerial practices (via survey for managing body) » Views and opinions of employees on internal institutional culture (via anonymous survey) » Quantitative comparison on performance based on benchmarking indicators • Opportunity to identify weaknesses that should be addressed to achieve improvement • Opportunity to compare the A4L_ACTIONS members' performance among themselves and be inspired by their good practices • Opportunity to compare the A4L_ACTIONS members' performance to their performance in the past period • Opportunity to relate external conditions and managerial practices to research performance	• No qualitative insight into the content and perspective of research activities • No independent opinion of external experts • No external recommendations
Peer-review evaluation by ISAB / CEITEC MU	• Independent external opinion on performance of individual research groups as well as entire institution • Recommendations for improvement of the institutional strategy • On site visit of the panel with opportunity to discuss and explain context of research activities	• Not identified
Peer-review evaluation by ISAB / FNUSA ICRC	• Independent external opinion on performance of individual research groups as well as entire institution • Recommendations for improvement of the institutional strategy	• Online hearing by the panel members does not provide sufficient opportunity for direct contact and discussion

Peer-review evaluation by Panel of International Evaluators, organized by SAS / BMC SAS	• Independent external opinion on the performance of the entire institution • Complex insight into content and quality of research activities, their societal impact and potential for development • Depiction of strengths and weaknesses by external experts • Strategic recommendations for improvement of the entire institution • On site visit of the panel with opportunity to discuss and explain context of the research activities and governance • Opportunity to evaluate research performance in European context • Opportunity to compare the results of past and recent evaluations	• No deep insight into performance of individual departments and/or research groups
Peer-review evaluation by international Panel of Evaluators, organized by the Ministry of Education / BMC SAS	• Independent external opinion on the quality of publications of the institution in selected scientific areas	• No predefined fixed and unified criteria for ordering and selection of outputs • Different evaluation procedures and scoring by different subpanels • No feedback on quality assignment of concrete outputs • No recommendations for improvement • No opportunity to discuss and explain context of external factors, research activities and governance

Lessons learned

Here we describe and analyze four case studies of peer-review evaluations accomplished in three A4L_ACTIONS partner institutions.

Two of them were targeted to and organized by the evaluated institutions themselves, namely CEITEC MU and FNUSA ICRC, and were aimed at assessment of both research groups/teams and the entire institutions. These ISAB evaluations provided in-depth analysis of research performance in a broad context of outputs, projects and impact, and were found very useful for identification of excellence hubs as well as for strategic decisions on future shaping of internal research capacities and structures.

From the practical point of view, it is apparent that face-to face meetings with ISAB associated with hearings and discussions are more effective and impactful both for evaluators and evaluated research teams and/or institutional management. Mini-conference on research highlights at CEITEC MU organized at the occasion of ISAB visit was found of special value for both ISAB members and CEITEC researchers.
However, in situation connected with pandemic-related measures, on-line communications were the only option for ICRC and were found to be very useful for live, real-time presentations and discussions that are clearly superior to just reading background documents.

The other two evaluations performed at BMC SAS were organized by the higher-level authorities, namely the Slovak Academy of Sciences (SAS) and the Ministry of Education, Science, Research, and Sports (MESRS) for a whole range of research-performing institutions within the SAS and the entire Slovak Republic (including universities and higher education institutions), respectively. The SAS-governed evaluation was complex and aimed at position and contribution of institutions to ERA. Thus, it provided feedback and recommendations from the international panel on the BMC SAS research performance, societal impact and potential for development, but it did not provide any opinion on the performance of individual research teams. On-site panel visit and hearing and/or discussions with academic community at BMC SAS were found very important for presenting research content, internal culture, engagement in activities and strategic goals. Resulting recommendations are very valuable for future strategic planning. This type of institutional evaluation represents an excellent basis for the evaluation of individual research teams by ISAB, using good practice examples from CEITEC MU and ICRC.

The evaluation organized by MESRS was inspired by the REF evaluation in UK and was based on reading and assessment of selected publication outputs of research teams by external evaluators with expertise in relevant scientific areas. Research teams were perceived in a broader term as groups of scientists working in certain research area within a single institution. This approach did not include hearings and did not provide any recommendations to the participating teams and/or institution. Thus, it provided just general opinion of the evaluators on the quality profile of selected outputs. In addition, this approach did not include evaluation of other activities beyond research, but these are planned to be involved in the next round of evaluation.

Compliance with Agreement for Reforming Research Assessment and Coalition for Advancing Research Assessment (CoARA)

As described in the Scoping report of the European Commission entitled “Towards a reform of the research assessment system” https://op.europa.eu/en/publication-detail/-/publication/36ebb96c-50c5-11ec-91ac-01aa75ed71a1/language-en, reforming research assessment is increasingly considered a priority to ensure the quality, performance and impact of research. During the period of March-November 2021, the European Commission consulted European stakeholders on how to facilitate and speed up changes so that the quality, performance and impact of research and researchers are assessed on the basis of more appropriate criteria and processes. The consultation identified objectives and outlines of a reformed research assessment system, with principles and actions that could be agreed between research funding and research performing organizations, as they have the responsibility to define their criteria and processes to assess their researchers and research projects. On this basis, the process of drafting an Agreement on reforming research assessment was

initiated in January 2022. More than 350 organizations from over 40 countries were involved, included public and private research funders, universities, research centers, institutes and infrastructures, associations and alliances thereof, national and regional authorities, accreditation and evaluation agencies, learned societies and associations of researchers, and other relevant organizations, representing a broad diversity of views and perspectives. Members of A4L_ACTIONS project were part of this preparation process and expressed their written support to the initiative. Indeed, the principles on which the reform is proposed have been already implemented in the A4L activities related to building research culture and elaboration of self-assessment reports followed by pilot peer review evaluations.

The Agreement on Reforming Research Assessment includes the principles, commitments and timeframe for reforms and lays out the principles for a Coalition of organizations willing to work together in implementing the changes, see www.coara.eu.

The Agreement includes main principles to be followed in order to achieve changes in assessment practices:

- Comply with ethics and integrity rules and practices
- Safeguard freedom of scientific research
- Respect the autonomy of research organizations.
- Ensure independence and transparency of assessment
- Focus research assessment criteria on quality.
- Recognize the contributions that advance knowledge and the (potential) impact of research results.
- Recognize the diversity of research activities and practices, with a diversity of outputs, and reward early sharing and open collaboration.
- Use assessment criteria and processes that respect the variety of scientific disciplines, research types as well as research career stages
- Acknowledge and valorize the diversity in research roles and careers, including roles outside academia.
- Ensure gender equality, equal opportunities and inclusiveness.

Core commitments are as follows:

- Recognize the diversity of contributions to, and careers in, research in accordance with the needs and nature of the research.
- Base research assessment primarily on qualitative evaluation for which peer review is central, supported by responsible use of quantitative indicators.
- Abandon inappropriate uses in research assessment of journal- and publication-based metrics, in particular inappropriate uses of Journal Impact Factor (JIF) and h-index
- Avoid the use of rankings of research organizations in research assessment
- Commit resources to reforming research assessment as is needed to achieve the organizational changes
- Review and develop research assessment criteria, tools and processes

Partners of the A4L_ACTIONS project fully respect all principles of the proposed reform and peer review evaluations described in this deliverable display many features that are in compliance with the core commitments of the reform.

Several A4L_ACTIONS partners already are or belong to the signatories of the Agreement, namely the Masaryk University (including CEITEC MU), Vilnius University, Medical University of Lodz, Carol Davila University of Medicine and Pharmacy, and University of Ljubljana. Additional partners are in the process of considering participation in CoARA.

Next steps

Based on peer-assessment reports, the A4L_ACTIONS partners will design research management strategies with action plans detailing how the strategic feedback from evaluators will be implemented into the institutional practice. The actions resulting from the strategies will be subjected to bi-annual monitoring by the ISABs. At the end of the project implementation, all partners will draft a report on implementation of recommendations from the peer-evaluation, summarizing the managerial actions taken to reflect the evaluation result in their institutional strategies.