

METAPANEL FINAL EVALUATION REPORT ON SAS RESEARCH INSTITUTE

Period January 1, 2016 – December 31, 2021

The Regular Evaluation of SAS Research Institutes is announced and implemented by the Presidium of the Slovak Academy of Sciences pursuant to the provisions of § 10 par. 5 letter d) of Act no. 133/2002 Coll. on the Slovak Academy of Sciences. The process was approved by the SAS Assembly on November 21, 2021. The invited external remote expert issues his or her report with the following evaluation and proposal for the rating of the Institute.

Name and address of SAS Institute	Biomedicínske centrum SAV, v. v. i. Dúbravská cesta 9 845 05 Bratislava
On site visit date	September 21, 2022

Scientific quality and productivity

Comments , including strengths and weaknesses (recommended number of characters with spaces: up to 4000)	Rating*
<p>Disclosure: To avoid possible conflict of interest, Professor 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 Professor Kristian Vlahovicek. During the meeting of Panel II Sept. 23rd, 2022, Professor Toivo Maimets left the room, when the final marks for the Biomedical Research Centre were discussed.</p> <p>BMC is the largest institute following a merger in 2016 of 4 independent institutes in Bratislava and in 2018 inclusion of the Institute of Neurobiology in Kosice and partial redesign of the departments. BMC provides for the evaluation an impressive presentation of their strategy, operations and output. Preparation of this document has been carried out through a well-organized participatory approach. Based on the hearing the merger appeared successful in creating a critical mass of researchers. Moreover, they have created an enthusiastic environment with a culture of sharing of expertise and infrastructures. A common administration has been established including a joint budget and a public procurement department to provide support to the researchers.</p> <p>The centre is organized for research in understanding metabolic, neuroendocrine, autoimmune and cardiovascular disorders, cancer and infections, and their interrelationships. The focus is broad, but obesity appears as a cross-cutting theme. All focus areas are active and the research is especially successful in cancer research and in viral ecology in rickettsial and chlamydial infections and more recently regarding the Covid pandemic. Internationally leading research is performed in the roles of carbonic anhydrase IX and its relevance to hypoxia. Of note is also the alkaptonuria clinical testing consortium.</p> <p>The BMC leader is an internationally outstanding scientist and at the panel meeting she provided an excellent presentation of the centre as well as clear answers to all questions. Several other PIs are also highly qualified leading scientists, with very good citation records. The age distribution among the centre's</p>	A/B

<p>staff is well balanced, and includes strategic support of early career researchers as evident for repatriation of 2 cases.</p> <p>The publications are generally in good journals and are reasonably well cited. They have increased the number of Q1 publications, but there is still room for improving the publication track record, especially in high-tier multidisciplinary journals. With maturing of the large merger, a focus on the publication strategy should be possible.</p> <p>The experimental facilities appear good and include bioimaging, cytoanalytics, a laboratory of dg and prevention of rickettsial and clamydial infections, the recently established research clinic and center for physical activity, DNA diagnostics, proteomics, an facility for immunodeficient mice, other animal facilities, a BSL3 lab, radiobiology, a specialized bioinformatics lab, and biotech and analytical laboratories and GMP.</p> <p>BMC is internationally well connected including participation in several EU projects. They are also very active in organization international conferences.</p> <p>BMC has a robust student body and good thesis completion numbers. The panel's discussion with the students and other early career researchers highlighted several good practices such as mentoring and enthusiastic supervisors, and encouragement of participating in courses abroad. The supervisors are teaching at the universities, which opens up opportunities such as fellowships for the students. Their critique related to the salary system, which is not very transparent.</p> <p>Weaknesses/considerations: The publication spectrum would benefit from further increases in the international level and focus.</p>	
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Societal, cultural, or economic impact

Comments, including strengths and weaknesses (recommended number of characters with spaces: up to 4000)	Rating*
<p>Translational and societal significance is substantial and strongly embedded in the activities of BMC in a manner that supports clinical therapy decisions. Translational modes of their research are demonstrated by the influence on clinical practise in the case of the diagnostic use of carbonic anhydrase IX in cancer and hypoxia, which is based on their scientific discoveries. The Rickettsia projects are another example of translational and societal importance as well as prevention of obesity at national level. The Centre provides the Eurosurveillance data on mosquito surveillance of West Nile and Usutu viruses in Slovakia as well as surveillance of ticks and tick-borne diseases in Slovakia. Altogether, the centre includes work on zoonotic viruses, diagnostics and prevention of Q fever, tick surveillance, DNA diagnostics of monogenic diseases, physical-activity mediated interventions, clinical trials, histological evaluation of spinal cord injury, and development of a new expression system for erythropoietin.</p> <p>During the pandemic they participated in the development of novel diagnostic test kits in collaboration with a company. They also worked on SARS-CoV-2 surveillance, including sequencing and identification of virus variants archived in the European virus archive. Altogether, they contributed markedly to pandemic monitoring and management in Slovakia, and to new drug development for SARS-CoV-2,</p> <p>Clinical contacts and collaborations are well integrated to the operation. Of special note is that BMC includes a non-state outpatient clinic, and they provide</p>	A

<p>personalized prevention and intervention programs against obesity and other conditions. They are in the process of establishing a Slovak Centre of Obesity Management, which provides a translational approach from subjects to research. They have established a Centre of Physical Activity in 2017, which links physiological research and patient treatment regimes.</p> <p>Patenting and IPR is applied as shown for the carbonic anhydrase IX work. The Centre has developed processes for material transfer agreements, securing IPR and licensing.</p> <p>BMC researchers have contracts and research projects with numerous industrial partners; 15 listed, 2 are large, others small in terms of incoming money.</p> <p>In terms of science policies BMC is a founding member of the Alliance4Life consortium for closing the divide in European health research and innovations. This Alliance gathers health research institutes from 11 of the EU-13 countries to improve research policies, networking and research cultures.</p> <p>BMC personnel is very actively serving in numerous societal expert functions and they have an excellent outreach program.</p> <p>BMC is also active in organising international conferences, several per year, the largest with over 200 participants. Moreover, they publish 3 international journals.</p> <p>Weaknesses: No major ones. Company/industrial activities are always a challenge, but in the wake of the pandemic, coherent policies for stepping up these contacts is recommended.</p>	
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Strategy and potential for development

Comments (recommended number of characters with spaces: up to 4000)	Rating*
<p>BMC was formed in 2016 from 4 independent institutes in Bratislava and in 2018 included the Institute of Neurobiology in Kosice. This is a significant merger that has resulted in the largest SAS institute. Clearly, the increased critical mass, joint administration, and the possibility to share research infrastructure and build an interactive and academically ambitious environment demonstrate the benefits of the large merger. An important new activity is the establishment of a Laboratory of Bioinformatics in 2018 after the return of a specialist from abroad.</p> <p>Many of the suggestions from the previous evaluation have been followed, and the Centre is doing well but improvements can be made. Despite mergers of some departments the current institute structure still reflects this merger in terms of research activities. It is recommended to pay attention to the activity and viability of the many departmental (several very small) and research group structures and the need for dynamic renewal.</p> <p>The institute has identified its strategical focus areas, one of these being the research agenda. During the panel hearing it became clear that the institute will address this in a Centre-wide process starting next spring with the aim to strengthen the existing research topics and at the same time open new research avenues. They should identify the best scientists and support them and focus on tackling important problems. In this they should also engage their international Advisory Board.</p>	A/B

While relying on established senior researchers in visibility and funding, securing a new and successful generation of researchers should be a top priority. BMC is mindful of strategic recruitment and career development and has made success along these lines. It is very important that young excellent students and post docs go abroad, learn new things, and eventually come back. The Centre has been quite good here but could still improve.

Altogether, enforcing scientific excellence and dynamic renewal is key in further developments. BMC has a great potential for increasing its international significance and societal relevance.

Weaknesses/considerations

The publication spectrum is very wide and would benefit from further increases in the international level and focus (but perhaps the system pressures for salami slicing). Increasing international collaborations and activities is encouraged as such have positive impacts on visibility, publication levels and gaining competitive funding. EU's Horizon Europe 2021-2027 should be targeted maximally both in terms of thematic consortia and ERC (especially), MSCA and RI fundings. Securing the necessary research infrastructures as open professionally run core facility services would benefit the entire researcher community. Further development of research infrastructures should be secured using EU's structural funds.

*Rating on a scale from A to D, where A is internationally leading; A/B part is internationally leading, overall is visible at the European level; B is visible at European level; B/C part is visible at the European level, overall is solid; C is solid; C/D is partly solid; D is not solid;

OVERALL ASSESSMENT

General comments on the Institute performance (2016-2021)

In view of the major merger that resulted in BMC, it is important to assess how successful this merger has been. Based on the provided material and the panel hearings, this Centre is an excellent testimony to successful merger of several original institutes, building of critical mass and bringing together many of high-level researchers, and creation of joint leadership. Also included is further expansion of expertise in the area of bioinformatics.

The Centre is mindful of creating equal opportunities in terms of gender with a significant number of females in leadership positions.

The Centre is doing very well along its broad spectrum of activities, extending from research to doctoral training and supporting the early career researchers, acquisition of funding, and to societal and industrial activities. Translational approaches are well integrated to the operations.

The Centre has a broad spectrum of scientific interests, and they are quite strong in virology and areas of cancer research. The Centre is also well integrated with European activities seen from the spread of international projects and memberships in strategic alliances.

Their publication output has improved, with 54% of their 175 listed papers in the Q1 category, which is a good figure. However, they should continue to increase the citation numbers and improve in using more of top-level publication venues.

Comments and recommendations for further improvement and development of the institute

With the upcoming research strategy process of the Centre, they should tackle important problems and identify the best scientists at different levels of the academic career spectrum and direct support to them.

Sending post docs abroad is very important for renewal of approaches and in educating a new generation of leading researchers.


The publication spectrum is very wide and would benefit from further increases in the international level and focus on high-level journals. Increasing further their international collaborations and activities is encouraged as such have positive impacts on visibility, publication levels and gaining competitive funding. EU's Horizon Europe 2021-2027 should be targeted maximally both in terms of thematic consortia and ERC (especially), MSCA and research infrastructure fundings. In the panel hearing it was indicated that an ERC application is under preparation.

The Centre has an extensive research infrastructure, and these are shared between groups. It is vital to be able to renew and up-date the necessary research infrastructures and open professionally run core facility services would further benefit the entire researcher community. Slovakia should build programs that allow sustainable development of research infrastructures and good practises in their use.

Proposal of overall institute rating:

A/B

December 12, 2022


On behalf of the Metapanel
Prof. Marja Makarow