

<b>IPMB IAB Report 2023</b>	
<b>International assessment of the Institute of Plant Molecular Biology by the International Advisory Board</b>	
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<b>Date of assessment</b>	21-23 May 2023
<p>Thanks to the MOLIPPEC project, Biology Centre CAS (BC) established the International Advisory Board in Plant Molecular Biology (IPMB IAB) for years 2023-2027. The very first meeting of the IPMB IAB was held in České Budějovice on Sun-Tue 21-23 May 2023. Finally, five members of the IPMB IAB joined the meeting: Jiří Friml, Asaph Aharoni, Bert De Rybel, Guido Grossmann and Julia Santiago Cuellar. They had a very busy schedule:</p> <p><b>Sun 21 May 2023</b> 18:00-21:00 Working dinner of IPMB IAB in Restaurace Masné krámy</p> <p><b>Mon 22 May 2023 Day 1: IPMB Conference</b> 09:00-17:30 Public presentation of IPMB group leaders in Biograf Kotva, <a href="https://ipmb2023.bc.cas.cz">https://ipmb2023.bc.cas.cz</a> 19:00-22:00 Working dinner of IPMB IAB with PIs in Restaurace Solnice</p> <p><b>Tue 23 May 2023 Day 2: IPMB onsite visit</b> 09:00-12:00 Individual meetings with PIs (Fránová/Lenz, Küpper, Litvín, Mozgová, Wrzaczek) 12:00-18:30 IPMB guided tour, discussion with PhD &amp; postdoctoral representatives, <a href="http://www.umbr.cas.cz/en/">www.umbr.cas.cz/en/</a> 19:00-22:00 Working dinner of IPMB IAB with IPMB management in Minipivovar Krajinská</p> <p>The main goals of the IPMB IAB meeting were</p> <ul style="list-style-type: none"> <li>○ to get to know other IPMB IAB members and the role of the IPMB IAB;</li> <li>○ to visit and experience Biology Centre CAS &amp; Institute of Plant Molecular Biology;</li> <li>○ to meet IPMB principal investigators, to get detailed overview about all research groups;</li> <li>○ to discuss with management, PhD candidates and postdocs;</li> <li>○ to provide recommendations and comments on research performance and further development.</li> </ul>	
<p><b>Assessment of the institute (public) Specific recommendations and comments on IPMB</b></p> <ul style="list-style-type: none"> <li>○ research quality, potential, vision, and strategy</li> <li>○ leadership, organisational structure</li> <li>○ research infrastructure, state-of-the-art equipment, available services</li> <li>○ human resources, mentoring and career development of employees</li> <li>○ economic stability, use of institutional funding, grant strategy</li> <li>○ outputs, publication strategy, level of publication, etc.</li> <li>○ contribution to research community, social relevance, etc.</li> <li>○ international visibility and attractiveness</li> </ul>	
<p><b>Assessment of IPMB research groups (confidential) Specific recommendations and comments on</b></p> <ul style="list-style-type: none"> <li>○ quality and novelty of current research</li> <li>○ research potential, vision, and strategy</li> <li>○ composition and productivity of the research group</li> <li>○ mentoring and career development of group members</li> <li>○ grant strategy (writing, submission, implementation)</li> <li>○ national and international collaboration</li> <li>○ outputs, publication strategy, level of publication, etc.</li> <li>○ contribution to research community, social relevance, etc.</li> <li>○ contribution to IPMB/BC</li> </ul>	

## 1. General introduction (public)

IPMB is one of the three fundamental plant science-focused institutions within the Czech Academy of Sciences (CAS). It has generous space allocations, a guaranteed annual budget and is embedded in the Biology Centre (BC) – the largest and a very successful institute within CAS with several centralized scientific, technical, and administrative facilities. In addition, the BC shares campus with and thus has excellent links to University of South Bohemia allowing access to potential master and PhD students. This all provides excellent conditions for IPMB to achieve international recognition as a world-class institute performing modern and impactful plant biology research.

However, this potential has not yet been fully leveraged, and there exists a variance in the level of research excellence among different groups and research directions. While many groups perform very good to excellent research, IPMB as a whole is not internationally well-known. Additionally, it faces many structural challenges that require a restructuring at the institutional level.

Through the implementation of an evaluation process by an international advisory board, the institute demonstrates its willingness to address these challenges and initiate reforms. As the IAB, we are committed to supporting the IPMB to the best of our abilities in targeted structural improvements, enhancing research quality, and developing strategies for future development, with the aim of transforming the institute into an internationally recognized hub for scientific excellence.

In some groups and research directions, the IAB observed a rather conservative mind-set with unclear research visions and limited adoption of modern approaches. The management structure of the institute is unnecessarily complex, the distribution of internal funds lacks transparency, with rules for this allocation not yet established. The IAB recognizes that some of these issues are imposed on IPMB by external constraints at the level of CAS and Czech education/research legislature.

While seeing the challenges, the IAB also recognizes very positively the recent and current changes happening at IPMB. The addition of new research groups with international experience, a new leadership of the institute and the award of the ERA Chair funding are very strong indicators for rapid improvement to exploit its potential fully. Together with all the above-mentioned advantages, this offers a truly unique opportunity for the IPMB to reach its full potential and put itself on the map of excellent plant science internationally.

## 2. Individual reports (confidential)

Here we list the reports based on the individual interactions with the group leaders:

- Jiří Macas, Molecular Cytogenetics
- Ondřej Lenz & Jana Fránová, Virology
- Radek Litvín, Photosynthesis
- Hendrik Küpper, Plant Biophysics & Biochemistry
- Iva Mozgová, Plant Epigenetics
- Michael Wrzaczek, Plant Molecular Signaling

## 3. Additional Reports: PhD Students and postdocs (public)

The advisory board met with 5 PhD students from the total pool of 7 PhD students in IPMB. The advisory board was pleased to see that students were very open and honest in their views of the PhD student life at IPMB and beyond. Although the students were, in general, pleased with their training and support at the IPMB, the advisory board did notice several shortcomings which should be addressed in the near future to improve the student training. It is however important to note that several of the valid points raised are not easily or impossible to solve by the IPMB itself but would rather require changes at the University or even Ministry of Education level. For those points it would, however, be advisable to discuss this with all PhD students so they also understand such systemic limitations for change in the short or even long term.

- The PhD students would see a benefit in having a PhD committee which would consist of at least one external expert. This advisory committee would meet at least once per year to discuss the progress of the PhD and provide an outside view on the project. This concept is well established at most reputable institutions. We acknowledge this would be best achieved in collaboration with the University and/or within the BC.
- The students (and post-docs) indicated that there is not sufficient interaction between the different research groups. This could be tackled by establishing departmental seminars and occasional common

retreats and/or team building activities. Students should be strongly encouraged to ask questions and for motivational purposes, as many group leaders as possible should attend regularly. We acknowledge that making this compulsory would be good but perhaps difficult to achieve.

- The PhD students indicated, and the IAB fully agrees, that it would be important to have a PhD student contract over a minimum of three/four years to prevent a potential situation that there is not sufficient funding midway through the PhD to provide the complete salary. The advisory board strongly agrees that this insecurity does not create a fair environment and can be a source of considerable additional stress and frustration. The IPMB management should consider establishing an equal pay system for PhD students with secured salaries. A decision should be made by the IPMB leadership whether PhD projects are allowed to be initiated without the group leader being able to show that sufficient funds to support the student for the full 4 year have been secured. Alternatively, a system of IPMB “loans” could be conceived that would, in case of insufficient funding for PhD salary, deduct the corresponding amounts from the institutional support to the given group. IAB feels strongly that something should be done here to attract motivated PhD students, and assure fair and comparable conditions for all PhD students.
- The students (and post-docs) indicate that the structure of the building prevents easy interactions and that a common social area would be needed. After touring the building, the advisory board very much agrees with this statement. How easy this can be improved is, however, unclear as it might require significant investments which are, at this moment, more urgently needed to upgrade the labs and growth facilities. The advisory board would however suggest keeping this comment in mind, as creating an enjoyable and communicative work environment is very important for motivation and creativity, as well as networking and collaboration.
- To promote interactions between postdocs and PhD students from different groups, the advisory board also suggests that the office space between groups located in the same floor could be shared. This way students and postdocs from different groups would have the opportunity to interact and discuss their projects and share their knowledge on different methods and topics of research. That would foster synergies between groups and initiate collaborations between the different groups.
- The IPMB group leaders should consider establishing a structured yearly feed-back discussion with all team members to get feed-back on issues they experience. In the experience of the advisory board members, this can be very beneficial for both parties involved.
- As a final remark, the students indicated that they sometimes receive emails in Czech only from the university. To create an inclusive work environment that is attractive for international scientists, IPMB leadership should insist at the institutional level that all official communication with employees is in English or bilingual.

The advisory board met with 6 postdoctoral researchers from the total pool in IPMB. The advisory board noticed a clear discrepancy with the PhD students who generally had more points or criticism and suggestions for improvement; as the post-docs were in general very positive about their training, supervision and life at IPMB. They highlighted the excellent assistance they get in grant writing from Tomáš Mozga and from the BC admin for e.g. visa applications. The only real concern raised during this meeting was the lack of space for social interactions within the IPMB building and the lack of a departmental seminar to interact between the groups. Given the strong and similar request from both PhD and postdocs in this matter, the IAB strongly suggests initiating such a departmental seminar series as soon as possible. We acknowledge that creating a social area would require more long term planning, but it is equally important.

#### Minor issues:

- Uncomfortable growth chamber, high humidity; lighting of greenhouses is problematic
- Health insurance has to be paid upfront for the duration of visa, which is a high burden for young families. Could the BC advance the money?
- The IAB wants to stress that Marie Pagunadisová was explicitly praised for her excellent support of international postdocs.

#### **4. General conclusions and suggestions (public)**

The IAB was very impressed by the overall resources and recent dynamic progress made at IPMB. IAB applauds the new IPMB director and his colleagues in their strive to improve the research conditions, working atmosphere and overall performance to reach IPMB's deserved potential. The IAB sees its role as an advisory body, which is there to help the IPMB in general and the group leaders and the management in specific. We are at the disposal of the IPMB to discuss important decisions (e.g. hiring or large investments) or provide any other help when required. We hope the management at IPMB and PIs see that our role does not end with this report, but we remain available for continuous guidance and support, if relevant and required. In the following, we will discuss several issues that we see as important to be improved for IPMB to become a top-level research institute. We wish very much for them to be taken not as points of criticism (we are well aware of past challenges and external limitations) but as suggestions for improvement.

##### **1. Equal and transparent distribution of institutional resources**

The IAB considers this as a most obvious and major obstacle in achieving fair and efficient functioning of IPMB is unequal and non-transparent distribution of internal funds. It limits financial flexibility, which is necessary to promote promising PIs or desired projects, for a central technical and administrative support or to help some PIs in the time of need. It promotes a feeling of unfairness and results in unnecessary frustrations.

The IAB understands that there are historical and legal reasons for this inequality, which might not be easily or rapidly amended. Nonetheless, the IAB would like to suggest establishing a transparent system (agreed upon by consensus of all PIs) defining how to distribute the internal resources to each group, based on scientific merit and the stage of PI's career. The IAB suggests a fixed equal support to each PI plus some flexible extra based on competitive markers (publications, grants, patents etc.). Furthermore, some budget should be allocated for central administrative and technical support and considerations should be given to establishing a solidarity fund to assist colleagues facing temporary difficulties. The system for allocating funds should be consensual among PIs and as simple as possible. Even if for historical or legal reasons, it will not be possible to apply such a system immediately, it would still give everybody a benchmark to compare with in years to come.

##### **2. Simple flat structure/hierarchy within the institute**

The IAB recognizes and appreciates the effort of the new management to simplify the somewhat unclear situations with institute(s), departments, research groups etc. The IAB suggests a simple, flat structure. IPMB management > PIs (Group leaders – either junior or senior or permanent or non-permanent, whatever makes sense) with their groups > group members (postdocs, PhD students, technician etc.). For each of these "status groups" rights and competences should be defined in writing.

##### **3. Common strategy about what is considered a desired scientific output**

The IAB notices that there is no general publication strategy at the institute. Some groups have many publications in lower ranked journals (or even so-called predatory journals), while others have a limited number of publications, but in generally considered qualitatively higher ranked journals. The IAB suggests that an internal discussion would be useful to define amongst the group leaders what level of scientific journals the groups would like to aim for. In this aspect, the IAB would like to stress that aiming for fewer publications with a higher impact is a general hallmark of excellent science and successful institutes, especially in times when almost anything can be published when paid for. Such a strategy is also very beneficial for securing (inter)national grants and attracting high quality PhD students, postdocs and new group leaders. Which outputs are desirable can be included in the discussion in (1) about the performance-based "premium" for individual groups/PIs as a part of institutional funding. The IAB feels strongly about this point with a full awareness of difficulties to compare different subfields and limitations of using journal Impact Factors as a measure of quality. Nevertheless, publication in predatory-type journals and publication for quantity rather than quality should be discouraged.

##### **4. Common policy documents**

There is a general lack of documents listing policies for handling specific topics such as hiring, career path progression and supervision, contract termination, handling fraud etc. The IAB members would be happy to provide the management with examples of such documents from their own institutes, but perhaps a more detailed training of one person at the institute would be helpful. As mentioned before, it would be also important to define explicitly packages for the new PIs; similarly, define rules, and generate documents about the promotion tracks etc. The IAB recognizes that some of these issues may be given by the external legislature and overall, it

may seem somewhat formal but it is important to initiate discussion about these topics and produce at least a rough outline on those rules and procedures. This would, for example, give the PhD students a much needed framework for their studies including financial security and fairness.

#### **5. Discussion to define common research vision**

The IAB feels it would be good if the management (together with all PIs) would start thinking about a more general scientific direction and vision for the institute. This would be also important for the new larger investments and new hires in the future. Overall, the IAB suggests that such vision should encompass more focus on mechanistic and molecular understanding and less purely descriptive work.

#### **6. More interaction and collaboration at all levels**

Hardly anything is promoting excellent research more than meaningful exchange with peers. Such exchanges bring both inspiration and motivation to engaged researchers. The management and PIs should make a strong effort on all fronts to promote interaction and exchange. Some ideas for this:

- compulsory common seminars for PhD students (as a requirement for successful study) and postdocs, which – may be alternating with guest seminars. It is important that PIs are regularly attending. Also “pizza meetings” for students and external speakers are often highly effective.
- support building an institution-wide team spirit through retreats and other team building activities with PIs attending;
- internally supported inter-group collaborative grants and shared students and postdocs;
- particularly crucial, given the somewhat “dark” architecture of the IPMB building, is generating some pleasant common areas with coffee machines, improved lighting, posters with research highlights etc. for everybody to meet and exchange together.

#### **7. Develop culture of sharing – equipment, resources, responsibilities**

The IPMB with its size and central budget is predestined for efficient sharing of resources – from media kitchen, common lab equipment, administration tasks to small things like printers or computer stations. In addition, every individual PI should contribute to an efficient running of the institute and well-being of its employees. Some responsibilities may be distributed among PIs with a rotating scheme, where appropriate.

#### **8. Common structure for data management**

The IAB noticed there are no clear structures in place for data management and electronic lab notebooks. Although the IAB acknowledges there are perhaps larger structural items needing more attention first, this would be something to implement in the near future or at least develop a plan towards such a data management plan (DMP).

#### **9. Minor issues**

- Greenhouse energy costs are a big burden; needs to be improved.
- Free access to a fluorescence microscope needed; Olympus confocal at the entomology department is not accessible.
- Soft skill courses (scientific writing) for IPMB employees.

The IAB realizes that following all suggestions requires quite some effort from the management, administration and every PI and for some from every employee. Also implementing some of the suggestions may be delayed or hampered by external givens, which are outside of control of IPMB. Nevertheless, the IAB is convinced that these efforts will be of great future benefit to the IPMB as whole and all its employees. The IAB is confident that implementing these suggestions or their modifications will help to make IPMB a great place to work and produce excellent, internationally-recognized research. The IAB wishes the IPMB management and all PIs all the best for these efforts and is ready to help with these endeavours.