

IOCB Prague Strategy for Development of Applied and Translational Research 2017-2022

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1. General introduction

Application of results of basic research has always been an integral part of the scientific process. If basic research leads to a substantial discovery then it is only a question of time when the discovery is converted into an invention that is then translated into practical applications helping humankind. The time factor is very variable, between the horizons of months to hundreds of years.

The conversion of discoveries into practical applications over the last thirty years has been “catalyzed” by efforts called technology transfer. The reason for speeding up these processes is mainly given by the existing system of protection of intellectual property and consequently by economic aspects. The function and meaning of technology transfer is driven by three basic motivations: economy, service to society and reward to researchers. Economic reasons are obvious. Service to society is mainly viewed as the conversion of discoveries to improve human life. Reward to researches is represented by the tremendous satisfaction resulting from successful transfer of their scientific work into a “real product”.

The technology transfer became one of the factors based on which a research organization is viewed. This is not limited to a particular local view but it is now accepted worldwide as a sign of the quality of a research organization. Especially in the areas which by definition are relatively close to being translated from research to market it is becoming almost a necessity to organize the technology transfer.

2. History at IOCB

The Institute of Organic Chemistry and Biochemistry has a long tradition in transferring the science into practical application. The major topics – organic chemistry, biochemistry and chemistry of natural products – and mainly the interdisciplinary approach, have created an environment which was in favor of applying the results of scientific work. The applications of chemistry in the areas of human and veterinary health and environmental protection are well documented.

Despite unfavorable political environment the institute was always successful in these efforts. The great economic impact of the work of prof. Holý creates not only exceptional financial conditions but it is also a great motivation for future work.

The changing environment required creation of a specialized organization focused on the processes connected to IP protection and commercialization. The changes in pharmaceutical industry again called for different processes to be adopted in the transformation of a discovery into a commercially attractive result.

In 2010 the institute started the IOCB Technology Transfer Office (called IOCB TTO, in 2018 renamed to IOCB TECH) to be able to react to these challenges. In 2012 a new concept of internal spinoffs was adopted to organize the development of projects in the status between a primary result with a commercial potential to an exit in form of license or external spinoff. The results so far are encouraging. The greatest successes are 1) the agreement with Gilead on the royalty stream from compound TAF (2013), 2) an executed license agreement with Gilead on a new antiviral inhibitor (2015), and 3) the recently executed license agreement with Novo Nordisk (2017). In addition to that we can point out to license agreements on smaller technologies such as a licenses to MERCK and a Japanese company (2016). Interestingly – from the 6 originally established Targeted Research Groups (TRGs), 2 have been successfully transformed already into commercial assets, one was terminated after one year and there is a sound perspective that at least one more will be licensed. This would represent a 50% success rate which, in this field, is exceptional. At present two types of translational organizational units are used at the IOCB. For projects with very narrow scope of development a SWAT team is established. The SWAT team works within the research group and employees of the given groups (typically 2-3 FTE) are working on the proof-of concept research. More formalized type of group is the TRG. Such a group has formal independence in the organization scheme of the institute and the research if of broader scope.

Conclusion which can be made is that we have developed a viable model which can serve all three functions of technology transfer mentioned above. On the other hand, there are still many issues which need to be addressed.

3. Goal for the technology transfer at the IOCB

To help IOCB to become one of the best ranked institutions in the relevant areas in Europe by securing financial resources, by establishing novel interactions/collaborations with companies and by marketing of the results.

4. Aims for the next 5 years

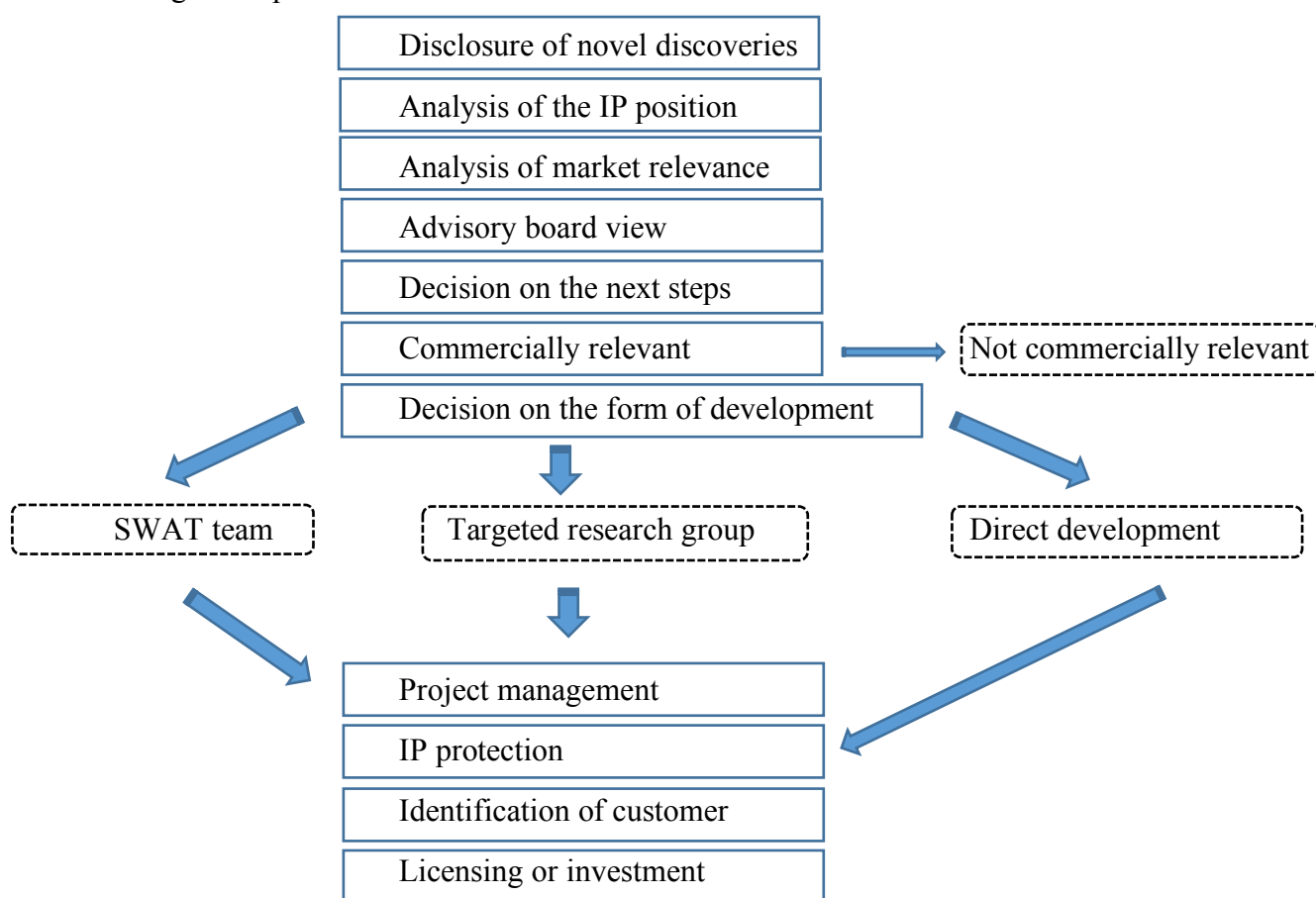
- a) Improve formal processes, their transparency and information flow on efforts and results of commercialization**
- b) Broaden portfolio of major companies which are in active contact with the institute**
- c) Participate on the design of the new premises in Papírenská street with the plan to concentrate relevant project/spinoffs in that building**
- d) Increase participation in local Czech Tech Transfer activities**

- e) **Help the institute in financing of specific activities**
- f) **Continue education in the relevant fields of IPR, Tech Transfer etc.**
- g) **Development of spin-off activities and rising of private capital**

5. Implementation

- a) **Improve formal processes, their transparency and information flow on efforts and results of commercialization**

The general process can be described as follows:



This process was done on relatively informal level. In 2018 a new methodology in this respect will be adopted: each new project will be consulted with International Commercial Advisory Board and/or with *ad hoc* invited advisors; the project development is to be evaluated on quarterly basis at meetings of IOCB TECH with the participation of director of IOCB and CFO of IOCB; the commercialization process will be either through out-licensing (the conditions of license agreement is always supervised by IOCB lawyer with help of outsourced specialized license expert) or by incorporation of a spin-off company (the process of creation of spin-off company is supervised by IOCB lawyer but will also be part of the decision of i&i Prague Investment Board (see below)).

Information flow and control

IOCB is a publicly funded institution, therefore, all processes have to be as transparent as possible. There is an ongoing discussion about developing suitable forms of efficient information flow between the management and the IOCB Board, which goes beyond this document. The current funding of SWAT teams and TRGs is based on resources coming from previous licensing successes. This is due to higher flexibility in terms of later applications of results. To keep the information flow and transparency as open as possible, representatives of the IOCB public (i.e., members of the IOCB Board and the Supervisory Board) will be informed annually about the current situation of all SWAT teams. This will be a responsibility of the director of IOCB TECH and will include short report on each team summarizing achievements, costs, team compositions, etc. The report will be prepared simultaneously with the annual report for the director during the month of June. A more detailed information will be given at biannual institutional retreats in the form of either oral or poster presentations. Once a year a summary of the existing projects both SWATs and TRGs will be presented at the group leaders meeting.

After establishing a translational potential, the prospects, aims, and risks of forming either SWAT or TRG team will be determined by the directors of TECH and IOCB. To assist the directors in this decision making process, an International Commercial Advisory Board (ICAB) has been established. In cases where it is beyond the internal capacities of the IOCB TECH the ICAB will be asked for an opinion. In the case of negative opinion, the project will not be supported. The costs associated with the work of this board will be covered from the IOCB TECH budget. The board may also include other internal or external specialists while keeping all the rules of confidentiality.

SWAT teams or TRGs will operate for a determined time period typically up to 3-4 years. The milestones and results will be checked quarterly by the IOCB TECH (see above) and annually by director of IOCB, director of IOCB TECH and one member of the ICAB and/or an *ad hoc* invited advisor. The final decision on the future of a group will be done by the director of IOCB.

Control – the supervisory board of IOCB TECH will be composed of one member of IOCB supervisory board, one member of IOCB board and one member from the financial administration of the institute (*already adopted*). The budget of IOCB TECH will be constructed in May and will be approved by the director of the institute.

An important factor is to maximize the synergistic effects between the main aim of the institute (basic science) and the translational efforts. In this respect a more frequent information on the translational projects to broader circle of PIs will be organized (presentations at the Institute Retreat etc.). This approach has been very useful during the work of the TACR supported competence centrum – Centrum for Development of Original Drugs.

b) Broaden portfolio of major companies which are in active contact with the institute

Based on previous results the IOCB TECH will continuously work on development of active contacts with relevant commercial partners, namely the pharmaceutical companies, CROs, diagnostic companies and providers of research tools. Major tool is participation on actions line BIO USA, BIO Europe, BioVaria, CPHI etc. The IOCB TECH will continue the co-organizing activities of BioSpot held in Prague since 2016.

c) Participate on the design of the new premises in Papírenská street with the plan to concentrate relevant project/spinoffs in that building

The plan on investment of a new building in the location Papírenská is being prepared. The IOCB TECH will participate on a design of the space, which would allow to accommodate 3-5 smaller groups. If practical, the TRGs and/or SWATs will be located in the new facility in Papírenská. Also potential spin-off companies will have the possibility to rent a laboratory space in this location.

d) Increase participation in local Czech Tech Transfer activities

The IOCB TECH became a full member of Transfera (association of Czech TT offices) and will broaden the involvement in the efforts to broaden the support and to increase the output from these offices within the Czech Republic. In this respect IOCB TECH is also active in seeking grant support of the applied research activities. The effort of gaining commercially relevant grant support will continue. IOCB TECH also actively helps the Institute in the participation on AV21 strategy.

e) Help the institute in financing of specific activities

The IOCB TECH is very close to the mother institute and within its marketing activities it will continue to support specific activities of IOCB. Namely the Stipends for university students in the name of the Director of the IOCB, Martina Roeselova Fund, Dream Chemistry Award, conferences and students trainings. In terms of conferences – IOCB TECH will sponsor the conferences organized by the Institute.

f) Continue education in the relevant fields of IPR, Tech Transfer etc.

IOCB TECH will organize once a year a training for new members of IOCB combined with an information on existing project (in the form and level which would not harm the protection of IP). IOCB TECH is also organizing *ad hoc* seminars and workshops on drug discovery and other fields of Life Sciences commercial issues.

g) Development of spin-off activities and rising of private capital

IOCB TECH is recognized in the Czech Republic as a commercialization expert for Biotech projects which attracts local and global investments groups and funds. Furthermore, due to its expertise, IOCB TECH is attractive partner for Biotech projects coming from other institutions and universities in Czech Republic and Central Europe.

i&i Prague company was incorporated in May 2017 as a 100% owned daughter company of the IOCB TECH s.r.o. to increase future incomes of IOCB and to reflect needs of investors on one side and research institutions on the other. Benefitting from experiences and know-how developed at IOCB TECH, i&i Prague is selecting most promising projects from Czech Republic and later from Central Europe in areas of MedTech, Diagnostics and Drug discovery, investing proof-of-concept phase and helping projects to uncover its potential and find further investor, or licensee.

Beside promising returns of invested projects - future income for IOCB, i&i Prague goal is to increase significantly an availability of relevant local and foreign venture capital in the region and increase number of successful spin-off projects. Furthermore, i&i Prague activities will help to improve the international recognition of IOCB.

For the i&i Prague following control mechanisms above standard rules given by law were adopted – control by the supervisory board of the IOCB TECH, control by a management and institutional board over the investing into projects (members of the institutional board and the institute supervisory board are members of the investment board of the i&i Prague), control of budget and spending by both the IOCB management and IOCB TECH supervisory board. The transparency will be also given by open information within the web pages.

An important role of i&i Prague will be in representing the IOCB as a share-holder in spin-off companies. i&i Prague is building know how in managing portfolio of spin-off companies and it is very different to the role of IOCB TECH. The IOCB TECH will be focused on help in project development only for the IOCB projects and on commercial interaction with both domestic and foreign partners in terms of licensing while i&i Prague will devote its efforts to later stages of development by a form of spin-off companies. There is also difference in commercial partners. While IOCB TECH is looking for licensing partners from major pharma and Life Science companies, i&i Prague is focused on interaction with investors from the Venture Capital area.