

IOCB: Goals and Organization 2016-2020

*Institute of Organic Chemistry and Biochemistry
of the Czech Academy of Sciences*

Contents

Introduction.....	2
IOCB mission and goals	3
Organizational structure and internal operation mechanisms	5
Research Groups	7
Distinguished Chairs.....	7
Senior Research Groups	8
Junior Research Groups.....	8
Targeted Research	9
Research-Service Groups	9
Service Groups	10
International Advisory Board	10
IOCB Research Support Programs	10
Summary and Outlook.....	11

Introduction

The Institute of Organic Chemistry and Biochemistry (IOCB) of the Academy of Sciences of the Czech Republic (AS CR), v.v.i., was established in 1953. During more than six decades of existence, it has gained a reputation as a prominent research institute in the areas of organic and medicinal chemistry and biochemistry. The most significant and remarkable achievements of the institute include the discovery of original peptide based drugs and the development of several commercially successful antiviral drugs, among which the multi-billion drug tenofovir developed by Antonín Holý and coworkers warrants special mention. These IOCB antivirals currently help millions of people worldwide. Moreover, they provide significant income from royalties to the IOCB. These financial resources have facilitated the transformation of the IOCB into a modern and highly competitive research center at the forefront of cutting-edge science.

En route to achieving this goal, the international visibility of the institute has increased considerably in recent years. In the 2004-2010 period, it was accompanied by a significant increase in most scientometric indicators. In part, this progress was due to an increase in the total number of scientists at the institute, but it also reflected an increase in the scientific productivity of individual groups. Since 2010, IOCB scientists have published approximately 250 to 300 papers per year, and the total number of citations for papers with IOCB affiliations is currently 10,000 per year and increasing. In addition to the growing number of publications in high-impact journals, the success of the institute is also reflected by two ERC Advanced grants awarded to IOCB scientists in 2009 and 2010. Currently, the emphasis at the IOCB is on publishing high-quality and innovative studies rather than a large number of medium quality papers.

These recent successes were also facilitated by an unprecedented restructuring of organizational infrastructure that started in 2007. This resulted in a one-layered (“flat”) structure comprising research, research-service, service, and targeted research groups. The individual group leaders report directly to the director of the IOCB, while group members report directly to their group leaders.

IOCB mission and goals

The main mission of the IOCB is to promote exploratory and curiosity-driven research that provides information about fundamental chemical and biological processes at the molecular level. The core scientific areas of the institute are in chemical biology and medicinal chemistry. A major area of emphasis is on the identification and characterization of targets for therapeutic intervention in human and veterinary diseases. This includes the design, synthesis, and testing of new ligands and inhibitors, studies of the ways in which they are metabolized, investigations of the mechanisms of their action, and identification of relationships between their structure and activity. Another area of emphasis is biologically oriented chemistry, including investigation of the chemical principles that govern fundamental processes in nature, and the use of small molecules or biomacromolecules to map and control biological processes. Progress in these areas would not be possible without strong support from fundamental research in organic synthesis, catalysis, material design, method development, structural biology, and computational and theoretical chemistry.

Main goals:

- *To promote cutting-edge scientific research in the areas specified above.*
- *To sustain excellence and international visibility in chemical biology, medicinal chemistry, and related scientific disciplines including biology, biochemistry, organic synthesis, physical chemistry, theoretical chemistry, and computational chemistry.*
- *To keep in mind practical applications and commercial opportunities that may arise from basic research and promote mutually beneficial relationships with the commercial sphere while maintaining respect for academic freedom and exploratory, curiosity-driven research.*
- *To be a leading research institute in the Czech Republic and an attractive place of training for bachelor, master, and doctoral students in Czech and foreign universities.*
- *To cooperate with partners in Czech academia, and communicate with the public, the media, and schools.*

- *To create an inspiring, international, friendly, but also competitive environment for the professional growth of scientists.*
- *To exercise the highest ethical and professional standards in scientific research.*

The institute will provide an environment conducive to cutting-edge scientific research, and at the same time will respect the freedom of researchers to choose specific research topics. This takes into account the dynamic character of scientific research as well as the role played by serendipity in many fundamental discoveries. Such an approach is expected to be more productive and rewarding than attempting to plan scientific progress over the long-term. Therefore, individual group leaders are expected to choose research topics within chemistry, biology, and related fields according to their own judgement and intuition. Neither the IOCB management nor the IOCB Board will intervene in the research directions pursued by research groups unless required to do so due to unforeseen circumstances.

The primary aim of the IOCB is scientific excellence. This is a complex parameter consisting of two equally important components:

1. *A quantitative aspect measured by research performance.* This can be indirectly evaluated by assessing papers published in impacted scientific journals, citations, commercially successful patents, and recognition in the scientific community reflected by invited lectures at prominent conferences, international or domestic awards, professional memberships, and editorial and educational activities.
2. *A qualitative aspect measured by scientific originality and enthusiasm.* This can be judged by outstanding achievements or ground-breaking discoveries and is much more difficult to assess.

The IOCB performs annual assessments of both of these components. These annual assessments will result in financial awards to the most successful groups.

The IOCB supports collaborative research, and actively encourages communication between various research groups. It also provides incentives for interdisciplinary research carried out at the institute, which is considered one of the most effective ways to explore the potential created by the unique environment at the IOCB.

Organizational structure and internal operation mechanisms

The IOCB has transformed itself into a streamlined and efficient research institute, in part by establishing limits on its size. In terms of personnel, the optimum and sustainable size of the institute should be approximately 450 full time equivalents (FTEs), the majority of whom will work in research and research-service groups. The IOCB will strive to maintain a delicate balance between the dynamics of scientific and personnel development, represented primarily by the opening of new junior positions, and the continuity of ongoing high-quality research that preserves key methodologies and expertise. Undoubtedly, this is one of the most difficult managerial tasks in light of the limitation in the number of FTEs. Therefore, a set of transparent rules governing the organization of the IOCB, including mechanisms that apply for establishing, evaluating, and terminating individual groups at IOCB in all three research-oriented organizational units (research, research-service and service) is described in more detail below.

General guidelines

Group leaders for newly opened positions will be selected via a public international competition in cooperation with the International Advisory Board (IAB, see below). It is expected that the IOCB will regularly open junior positions for early-stage scientists, preferably those who have been awarded a Ph.D. less than ten years ago. In exceptional cases, IOCB may offer a senior or Distinguished Chair position to scientists who are considered extraordinary according to international standards. The strong recommendation and support of the IAB is a prerequisite in such cases. Preference will be given to individuals who are expected to promote the scientific development of the IOCB, establish strong collaborations with existing research groups and stimulate a productive atmosphere.

Group leaders are permitted to use allocated financial resources according to their discretion. This includes the salaries of individual group members, although they must comply with Internal Salary Regulations. These financial resources will be allocated at the beginning of every year and individual institutional budgets (VEJ, in Czech) and are transferable from year to year. Other employees, financed by extra-budgetary means such as grants, donations, and cooperation with industry, can be hired if groups have enough space to accommodate them.

The formation and termination of research groups and the evaluation process.

A peer-review evaluation system is the basic instrument of personnel changes and intra-institutional dynamics. The management of the institute together with the IAB guarantees the transparent peer-reviewed evaluation of research groups.

Openings for new positions will be broadly advertised. On-site interviews with pre-selected candidates will be conducted by an international evaluation committee assembled by the management of the institute in cooperation with the IAB. This evaluation committee is expected, in most cases, to coincide with the IAB or its subset.

A research group will be terminated and dissolved when a group leader leaves the institute, does not succeed in the complex evaluation after a five-year term, retires, or reaches 65 years of age. While the age limit of 65 should be a default position and most senior research group leaders would be expected to step down after reaching this age, there should be a reasonable opportunity for those with the energy and ambition to continue after 65. Group leaders wishing to continue can request an extension of their position, but will undergo further evaluation. They would need to make a convincing case to the IAB that termination of the group would result in a significant loss to the scientific world, and that continuation of the group would be more beneficial for the institute than the alternative of starting one or two new junior groups in its place. The initial assessment of the extension request will be made by the IAB, and the final decision by the IOCB director. The dissolution of a group is understood as reorganization according to the Labour Code. For group members, a one-year interim period applies during which they can be offered employment in another group at the IOCB. Other outcomes might also be possible depending on the resources available at the institute. This mostly applies to senior researchers in these groups. Retired scientists of undisputable reputation and recognized achievements can be offered the status of emeritus scientist on an individual basis. Emeritus scientists at the IOCB are offered adequate conditions for continuing involvement at the institute (typically an office space). If the last successful evaluation of the group occurred eight years or less before a group leader reaches the retirement age, the position can be automatically guaranteed until retirement and there is no need to undergo evaluation three or less years prior to the regular five-year period.

Concerning the Distinguished Chair group leader position, it is expected that funding will be diminished to the level of senior research group when the age of the group leader has

exceeded the official retirement age, and later gradually to the level of a junior research group, depending on the Distinguished Chair's ability to secure external funding. This transition will be negotiated on an individual basis with the IOCB management and the IOCB Board.

The complex evaluation of the overall performance of senior groups will take place every five years and is conducted by the IAB. It includes a peer review process and, in most cases, an on-site visit of the evaluation committee (or IAB). In addition to an objective and thorough assessment of the scientific achievements in the evaluated group, the complex evaluation also takes into account specific aspects of the particular research area, current trends in chemical/biological science, educational activities carried out within the group or by its members, the collaborative potential of the group, and the potential for commercialization of the research of the group (including patents, licences, and royalties).

Research Groups

The IOCB contains four categories of research groups: Distinguished Chair, senior, junior, and targeted research. As of March 2015, the IOCB contained one group in the Distinguished Chair category, 18 senior groups, 12 junior groups, 6 targeted research groups, 6 research-service groups, and 7 service groups (50 groups in total; see www.uochb.cz). The Distinguished Chair position is granted in exceptional cases to distinguished scientists, and these groups no longer undergo regular evaluations. Senior groups undergo evaluations every five years, while junior groups are established for a five-year period, after which they are dissolved or promoted to the senior research group category. The system is similar in its essential features to the standard academic "tenure track". Individual groups are autonomous, and group leaders are fully responsible for their scientific programs as well as the resulting outputs. Targeted research groups are established by the management of IOCB for a maximum of three years and evaluated annually by the management according to specifically defined milestones.

Distinguished Chairs

The '*Distinguished Chair*' position is awarded only in exceptional cases. Such a group is established by the IOCB director. The nomination will typically come from the IAB and be approved by the IOCB Board. The Distinguished Chair is expected to be a highly recognized

authority in the international scientific community. IOCB support will consist of adequate laboratory space and an annual institutional FTE-dependent ‘salary budget’ corresponding to a minimum of 6-8 employees. Depending on the amount of external resources (grants, stipends, ...) this is expected to lead to a group size of 10-20 employees consisting of senior scientists, postdoctoral fellows, Ph.D. students, and technicians.

Senior Research Groups

The *senior research group* is the standard scientific unit at the IOCB. It is expected that most senior groups start by the promotion of a junior research group. In exceptional cases the position can be offered - after the approval of the IAB and the IOCB Board - directly to individual internationally renowned scientists, such as recipients of ERC Advanced grants or EMBO gold medal winners, who would significantly contribute to the scientific development of the IOCB. IOCB support will consist of adequate laboratory space and an annual institutional FTE-dependent ‘salary budget’ corresponding to a minimum of 3-4 employees. This is expected to lead to a group size of 5-15 employees consisting of senior scientists, postdoctoral fellows, Ph.D. students and technicians. Senior research groups will undergo regular evaluations every five years. In the case of a successful evaluation, the position of the senior research group leader is extended for another five years. Exceptionally successful senior groups can be promoted to the ‘Distinguished Chair’ category, which represents a permanent position (tenure) without further evaluation.

Junior Research Groups

The *junior (starting) group* leader position at IOCB is the main ‘entrance point’ into the IOCB research system. It is the most competitive type of position, both with respect to the initial selection process and the final evaluations, in analogy with the standard tenure track system from abroad. It is expected that typical candidates for the junior research group leader position will be young scientists who have obtained their Ph.D. degree no more than ten years ago, preferably with at least one postdoctoral stay abroad, with a strong scientific record demonstrating a high degree of competence and independence, and excellent, innovative research plans. The current strategy of the IOCB proposes to open junior positions in regular intervals (with an average of 1-2 openings per year) by an open call and subsequent public evaluation of the research projects and personality of selected candidates. In exceptional cases, such positions can be offered directly to specific candidates with the consent of the IAB and the IOCB Board. Currently, this may apply to holders of ERC Starting or ERC

Consolidator Grants. The IOCB will support newly appointed junior groups with appropriate and adequate laboratory facilities, a negotiable ‘start-up package’ for initial investments and an annual institutional salary budget covering the salary of 2-4 employees, such as postdoctoral fellows, Ph.D. students, and lab technicians. The newly established junior groups are subject to an intermediate evaluation, which will be carried out after three years and will result in recommendations to the groups. The major and complex evaluation will take place after five years and only high-quality and well-performing young researchers will be considered for promotion to the senior group level. Otherwise, the junior research group will be dissolved.

Targeted Research

The institute has a long and successful tradition of transferring the results of basic research into practical and/or commercial applications. To support these efforts in a systematic way, the institute contains specialized targeted research units pursuing ideas and programs with a potential commercial interest, either within larger research groups (sometime called SWAT teams) or as stand-alone targeted research groups. These units are fully funded by the institute, have a defined set of goals and are generally short-term in nature (from one to three years). The institute provides both financial and managerial support to these groups through the IOCB Tech Transfer Office (TTO). Both types of targeted research groups are evaluated annually by the IOCB director, head of the IOCB TTO and, when required, by an external expert. If it becomes clear that the commercial potential of a program cannot be realized, funding from the institute stops and the group or team is dissolved. The proof of success of a targeted research program is the identification of a third party willing to pay for a product or license the intellectual property created by the program. A successful targeted research group may have an opportunity to reenter basic research after standard interview process and presentation of the future research plans. In such cases, the final decision will be made by the IOCB director after considering the recommendation from the IAB and the IOCB Board.

Research-Service Groups

Research-service groups provide services which are indispensable for IOCB operations, but also have a significant scientific component. This means that these groups work on their own scientific projects or play specialized roles in projects of other groups. The research of these groups will be funded and evaluated using the same rules that apply to research groups, while the service component will be evaluated by both the IOCB Board and the research and

research-service group leaders who use their services most frequently. A poorly performing research-service group will not necessarily be terminated if it is felt that their services are essential at the IOCB. Instead, a new group leader can be hired after a public and transparent search, or the group can be reorganized to improve their service.

Service Groups

Service Groups are working units that provide indispensable services to the IOCB. Service group cannot be created to help a single research group, but instead are expected to provide services to at least three research groups, and preferably to most or all groups at the IOCB. The operations of service groups are funded by the IOCB, and a responsible and economical use of the allocated resources is required. The performance of service groups will be regularly evaluated and monitored by the research and research-service group leaders as well as by the IOCB Board.

International Advisory Board (IAB)

The IAB is the major advisory body to the IOCB Director and the IOCB Board. While not required by Czech laws, such an advisory body provides external and independent expertise in various decision-making processes of the IOCB management relating to scientific development at the IOCB. The IAB consists of renowned scientists from abroad who specialize in the major research areas explored at the IOCB. One of its roles is to ensure an independent evaluation of the quality of research carried out at the IOCB. As such, it plays a major role in evaluating the performance of scientific groups, and in recruiting and interviewing candidates for newly opened positions.

IOCB Research Support Programs

The IOCB will make a concerted effort to attract the best Ph.D. students from both the Czech Republic and abroad. It acknowledges that much of the scientific work at the IOCB is performed by outstanding and motivated Ph.D. students and postdoctoral fellows. It also acknowledges that young scientists are the most important asset of the IOCB when the future of the institute is considered. Currently, three agreements (memoranda) of mutual understanding and collaboration are in effect between universities and the IOCB. These agreements also provide a solid basis for the establishment of joint laboratories.

The IOCB seeks to maintain an international and multidisciplinary environment, which is one of its major strengths. The IOCB will continue to support both short-term and long-term visits of post-doctoral researchers and ‘visiting scientists’ (via e.g. IOCB postdoctoral and IOCB sabbatical programs). The IOCB will also strive to become a ‘national incubator’ for young scientists with the hope that they will obtain senior research positions at other academic institutions in the Czech Republic. At the same time, the IOCB will actively recruit promising young candidates to apply for new junior research group leader positions within the institute.

To support collaborative and interdisciplinary research, the IOCB seeks the establishment of an internal grant program to fund projects that require expertise from multiple scientific disciplines (such as chemistry, biology, and computations/theory). This program will actively encourage collaboration among scientists in different fields within the institute to tackle the most ambitious scientific problems by joint effort.

Summary and Outlook

This document summarizes the mission, goals, organization and internal mechanisms of the IOCB, and describes general procedures and rules that will ensure that the IOCB maintains its position as one of the top-ranked European research institutes in the areas of chemistry and biology. It also expresses and codifies the general consensus of the IOCB management, the IOCB Board and most of the individual group leaders and as such, it can be thought of as the “internal constitution of the IOCB”.