

History

The *stricto sensu* Postgraduate Program in Surgical Sciences of the Department of Surgery, Faculty of Medicine, Federal University of Rio de Janeiro (UFRJ) began its activities in 2009, when the Master and Doctorate courses were approved and authorized (1st and 2nd semester, respectively). In fact, the new program represented a major challenge replacing a former General Surgery Program in the School of Medicine, a bicentennial institution which has established the basis of the Surgery, not only in Rio de Janeiro but all over the country, after 30 years of existence. The proposal of the new Program (Master and Doctorate Academic's Courses) had to overcome outdated rooted beliefs and symbolized an institutional renewal as a result of the desire and commitment of scientific leaders, deans, chairmen and several professors of the academic-surgical community of the Faculty of Medicine, UFRJ, with the production of knowledge, in the field of teaching, research, academic extension activities and vocational training, enabling students to solve problems in the area of Health, with social responsibility. Therefore, the core of these actions was based on competent and motivated teachers, with great expertise and innovative attitude, whose objectives were in line with the goals established by UFRJ itself and also with the principles arising from the area of Medicine III/CAPES. In this way, the Surgical Sciences Program was constituted by means of a translational and interinstitutional conception, with multi and interdisciplinary approach and the participation of professors with different academic backgrounds and profiles (from medical and non-medical specialties) in distinct areas of knowledge, integrating and gathering fundamental values, based on quality and excellence. With the support of both Congregation (School of Medicine and the sovereign body of the UFRJ), this Program was designed with the mission to reconstruct paradigms within the rules of a modern educational and health policies, developing qualified human resources and producing knowledge for the benefit of science and technology in a health environment, harmonious with the society desiderates.

When the Post-Graduate Program in Surgical Sciences was created, the experimental and clinical-surgical researches still lacked of a translational interaction and there was only one Academic Postgraduate Program in the area of Medicine III/CAPES, in the State of Rio de Janeiro. Since its recommendation and beginning, in 2009, the Postgraduate Program in Surgical Sciences has trained human resources that spread their activities on teaching, research and assistance/extension in a great number of distinguished institutions. This program also plays a constructive role in Science in the State of Rio de Janeiro, including the qualification of teachers and researchers from several Brazilian universities and also professionals trained to act in communities' services. Therefore, in the last four year (*quadriennium*) the goals of the Program have been aligned with the generation of new and innovative knowledge, as well as the translational scientific production, considering its regional and national impacts, aiming to reinforce the internationalization, with social responsibility.

In the Academic Postgraduate Program in Surgical Sciences there are two concentrations areas: **Experimental Surgery and Applied Clinical and Surgical Research**, with respective lines of research which disclose in projects. In its integrating essence, the area of concentration Experimental Surgery produces a set of evidences in the scope of Surgery that supports future application of knowledge, in a translational way, with the use of animal models. Indeed, it aims to elucidate basic mechanisms of diseases and improves techniques, re-evaluating concepts, proposing the development of science with innovations and applicability. The other concentration area is the Clinical and Surgical Research Applied which has the main focus in the health assistance, searching in the translational knowledge and technological advances an effective integration based on solid scientific bases, from the bench to the clinical research or vice versa (Morphology, Biophysics, Genetics, Biochemistry, Molecular Physiology, among others). It is our goal to quality the assistance, searching for

answers to questions that still distress patient which need a clinical and surgical care with better results and a standard of excellence. Both concentration areas converge to the mission of seeking solutions of surgical practice problems, with increasing complexity, in several scenarios, with autonomy, ethical, criticism and reflection. The research lines, therefore, are inserted in both areas of the Program and directed to both the Master's and the Doctorate degrees. With regard to Experimental Surgery, the lines of research are entitled: Cellular and Molecular Biology in Surgery, Development and Incorporation of Technology in Surgery and Drugs for Anesthetic-Surgical Procedures. Regarding to the concentration area of Applied Clinical-Surgical Research, the research lines developed are: Cellular and Molecular Biology in Translational Surgery, Clinical and Surgical Ocular, Nasal and Hearing Surgical Procedures, Organic and Tissue Disorders in Surgery, Development and Incorporation of Technology in Translational Surgery and Drugs for Translational Anesthetic-Surgical Procedures. These lines of research allow both concentration areas to dialogue with each other, sharing issues of relevance and impact in several fields of knowledge with transdisciplinarity covering, among other areas of knowledge the General Surgery, Gastroenterology/ Hepatic Surgery, Plastic Surgery, Vascular Surgery, Transplants, Urology, Gynecology, Ophthalmology, Neurosurgery, Anesthesiology, Biomedical Engineering, Pathology, Molecular Biology, Genetics, Physiology, Biochemistry and Pharmacology. Thus, multiprofessional research groups with skills in their areas of expertise contribute to generate a new and cutting-edge knowledge, besides the exchange of multidisciplinary information and an interdisciplinary symbiosis in the development of the studies. Therefore, from the onset, students enrolled in the Program reflect this diversity, covering different areas of training in the field of Health Sciences (such as: Medicine, Nursing, Veterinary Medicine, Dentistry, Physiotherapy, Nutrition, Psychology, Pharmacology, Biology and Physiology). Throughout the last four-year period, the Program has sought to incorporate innovations, deepening the lines of research and creating projects adjusted with the evolution of the knowledge (for instance: stem cell studies, nanotechnology, ultrasonic biomicroscopy, high resolution images applied to Medicine, genetic and molecular disorders). This plurality allows a variety of perspectives, with matters that contemplate different critical looks, in a beneficial and productive environment, plentiful of integration.

Those interested in attending the Postgraduate Program of the Department of Surgery undergo a selective process (annual for Masters and continuous flow for Doctorate), regulated by public disclosure that can be found on the site of the Program linked to the School of Medicine. An Examining Committee composed of permanent teachers evaluates the Curriculum Vitae and the applicants must present their projects, previously approved by the specific Ethics Committees (for research with humans/CEP or for research with animals/CEUA). The interested part must obtain the prior approval of a permanent teacher of the Program who is willing to guide him, with the obligation of inserting the project into one of the research lines of the Program. The student's curriculum is structured with 360 hours for the Master Course and 450 hours for the Doctoral one, distributed in disciplines (compulsory and optional/elective) designed to the training of the researcher and the qualification of future teachers for the professional exercise. These disciplines form a grid inserted and integrated with the areas of concentration and lines of research, consubstantiating the teaching-learning process and the skills training with the competences necessary for the development of research projects. In addition to the specific curricular content that is given to them, the students participate in a monthly General Session, where a simulated defense with presentation of the projects in progress is carried out, followed by discussions and comments by the students and teachers in charge of this activity. Periodically, lectures are given on subjects of general interest, or as demanded by the students themselves (for instance: Resources available for research in PubMed, Writing and frequent errors in final projects defenses, Research ethics, Plagiarism and authorship). The subjects content are dynamic and over the last four years evolution of knowledge have been incorporated technological

innovation and new therapeutic approaches, such as notions of entrepreneurship and grants from several institutions, whether in the surgical scope or in the field of other cognitive domains. These activities aim to develop competences with high quality, compatible with a postgraduated degree conferred and the expectation of society.

It is also noteworthy that the Surgical Sciences Program of the Faculty of Medicine of the Federal University of Rio de Janeiro has been developed consistently and continuously, improving its quality indicators. Its pedagogical project includes the perspective of permanent renovation of its infrastructure, with its own multi-user laboratories and interinstitutional partnerships in order to overpass the walls of a fragmented knowledge and promotes the wide circulation of ideas, from students and teachers, stimulating the dialogue between teaching and innovative research in Science and Technology and the health assistance as a development strategy. The infrastructure of laboratories and the Center for Experimental Research has a standard of excellence, attested by peers external to UFRJ and comparable to international centers. In 2012, the Laboratory of Translational Molecular Physiology was incorporated into the Program with the acquisition of modern equipment, and in the last four-year's period a new scientific level was reached for the Program researches. It was not only pursued the expansion of partnerships with national laboratories but also stimulated the international interchange. In the evaluation prior to this quadrennium, there were no actions characterizing international interchanges or internationalization. Throughout the last four-year's period, four groups from abroad (two in Toronto, one in Chicago and another in Oslo) were contacted sharing activities and a common production, or even grants. The Program received visits from several foreign professors, including a Visiting Professor of the Sciences without Borders Program. There was also a postdoctoral fellowship in Germany, a teaching interchange for Canada and a graduate student who spent six months in France and Spain, broadening their academic horizons. In the four-year's period, there were 24 grants of diverse origins, even though in face of adverse and progressively critical circumstances regarding the tough financial situation of the State of Rio de Janeiro and Brazilian budget availability.

Currently, 14 Permanent Professors and one Collaborator are members of the Program, with planned renewal and considerable stability. All of them work full time at the institution (40 hours), except one (20 hours / Doctor), since in this last four year's period he was approved for another public university, but maintains a technical-administrative medical position in the UFRJ. Five of the 14 DPs maintain a 40-hour employment with exclusive dedication. There is a predominance of research surgeons (current occupation area), but four permanent professors, of which two physicians, work in areas of basic training (anesthesiologist / pharmacology, pathologist/histology and morphology, as well as biologist and molecular physiologist and biomedical engineer). It has to be emphasized that this group adds, in a productive way, the diversification of thoughts, with the integration between areas of knowledge, favoring innovation and broadening the scientific horizons, besides contributing, in large part, in multi and interdisciplinary projects and also participating, in a solid way, in fundraising. In this four-year's period, the number of permanent professors with a research productivity grant from CNPq has increased, encompassing four researchers (1A, 1D and two PQ-2). Over the course of the last four-year's period, the Program maintain its stability with very few changes in the teaching staff. Two of them were assigned to permanent professor (DP) and one DP was re-classified as a collaborator, since they still have one student under supervision acting as co-orientator and will be maintained until the end of the quadrennium, under the supervision of a permanent professor. It is noteworthy that the Deliberative Committee of the Program evaluated both collaborators accredited in the category of DP and consulted the senior teachers who supervised them, understanding that they demonstrated scientific maturity and integrative capacity, as well as intellectual production compatible with the profile and renewal desirable in this category. In addition to the Doctor degree, both work

in areas at the frontier of knowledge, contributing to the development of projects in new academic. One of them is related with health assistance practices and technological innovation applicable to clinical-surgical research and the other contributing, in particular, to the incorporation of modern and innovative techniques linked to experimental research, in the translational scope of molecular and cellular biology and physiology. The criterion of teacher accreditation or reaccreditation follows rigorous and semi-annual collegial control, for all teachers, eventually with participation of members outside the Program. The criteria are found on the own page of the Program:

http://www.medicina.ufrj.br/pos-graduacao/ciencias-cirurgicas/pagina.php?id_page=246

Highlighting is placed not only on teaching involvement, research and assistance activities, but also on aiming a successful performance, with consistent intellectual production, both quantitative and qualitative, considering the potential to obtain support and interinstitutional partnerships, among others attributes.

Thus, there is a fair and careful reflection regarding the various parameters established and that guides the constant revision of the *status quo* of all professor, always with the perspective of improvement of the Program, with attention to the observations coming from previous evaluations reports.

Compared to the previous four years (2009 to 2013), the qualitative and quantitative indicators increased and showed a solid evolution. The permanent professors of the Program have improved their scientific production obtaining a greater number of publications in the CAPES classification upper strata, giving it greater quality and visibility. Thus, 80% of all four-year's publications have been in A1, A2 and B1 strata. In this quadrennium, all permanent professors (DP) have published 5 or more scientific manuscripts, of which 13 out of 14DP with 4 papers in the upper stratum (A1 to B1), including at least one publication A1 or A2. Efforts have been made in the development of international partnerships, and in this four-year period, 50% of DPs received 24 grants. In the quadrennium, all permanent teachers had postgraduate students with dissertation or thesis defenses. If included in this computation, the two co-teaching staff recruited to permanent students, in the second semester of 2014 and 2015 (still without graduates), on average, 86% of DPs guided graduate students.

The student body has been successful in publishing its Dissertations and Theses. During the quadrennium, there were 46 active students in the PPG, with 30 Masters and 16 PhD students, of whom 22 and 8 degrees respectively. It was also possible to identify, in this quadrennium, progress in scientific student production with 84% of the publications in qualified journals in the upper stratum Qualis (A1, A2 or B1). On average, each permanent teacher also mentored one undergraduate/year student. In this last four-year period, undergraduate and postgraduate students are more involved in research projects, and several of them have actively participated in presentations at national and international scientific events/conferences and have obtained ten awards. From the graduates, about 75% work in the public service, with evident social insertion.

In this quadrennium, the social insertion was developed more, with greater participation with the society. Two Extension Programs were created, there was a PPSUS project funding, activities were carried out with some high schools, humanitarian actions were carried out with the assistance of the needy population in places without medical resources in the north-northeast axis, besides the involvement Of their teachers in the home care with multidisciplinary groups and in the provision of assistance to SUS patients.

In these eight years of existence, a harmonious and stable evolution was planned whose sustainability required measures based on specific growth targets, focusing on the

recommendations of the area and its Evaluation Commissions, in order to obtain a standard of excellence and seeks a desired rise of the final concept of the Program, in the area of Medicine III / CAPES. This proposal, therefore, seeks to bring together transformations at the forefront of knowledge, create competencies, overcome challenges and meet the demands of the Academy, at the regional, national and international levels, the result of deep reflection, in the search for answers that surpass the walls of the University, reaching the aspirations of society.