



Institut Pasteur

Paulo Vieira

Unité de Lymphopoïèse

25, RUE DU Dr ROUX
75724 PARIS CEDEX 15
FRANCE

PHONE: +33 1 45 68 86 36

FAX: +33 1 45 68 89 21

EMAIL: paulo.vieira@pasteur.fr

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ICVS/3B's Associate laboratory
External Advisory Committee I Period 2013 – 2017

The ICVS/3Bs Associate Laboratory

The present report summarizes the assessment of the **External Advisory Committee (EAC)** concerning the achievements of **ICVS/3B's – Associate Laboratory (AL)** attained between 2013 and 2017.

Globally, we consider that the AL has shown an outstanding performance in line with best international standards and demonstrated a remarkable progress in the last five years.

Annexed to this report, individual analysis of the EAC members can be found.

1. From the numerous achievements of the ICVS/3B's between 2013 and 2017, we highlight the following:

- The notable impact of the scientific production in international peer-reviewed journals, reflected in an increase in the number of papers (over 1,400) and their average impact factor (see Figs. 1 and 2), namely when compared with the five previous years (700 publications in 2008-2012).
- The impressive efficiency in technology and knowledge transfer, reflected in the significant portfolio of patents, as well as in the relationships established with the industrial sector, including the creation of two new Spin-offs rooted in the AL.
- A profound, and genuine, concern with academic education and achievements of graduate and post-graduate students, manifested in the quality level of MSc and PhD programs, carried in collaboration with renowned international institutions: Columbia and Thomas Jefferson Medical Schools and the MIT in the USA, as well as partners of the European Institute of Excellence on Tissue Engineering and Regenerative Medicine.
- The offer of more than 200 advanced courses/workshops within an International Post-graduation Program of recognized international merit, aimed at developing and training skills on health sciences/technologies, attained by over 5000 participants, including more than 80% originating from outside the University of Minho.

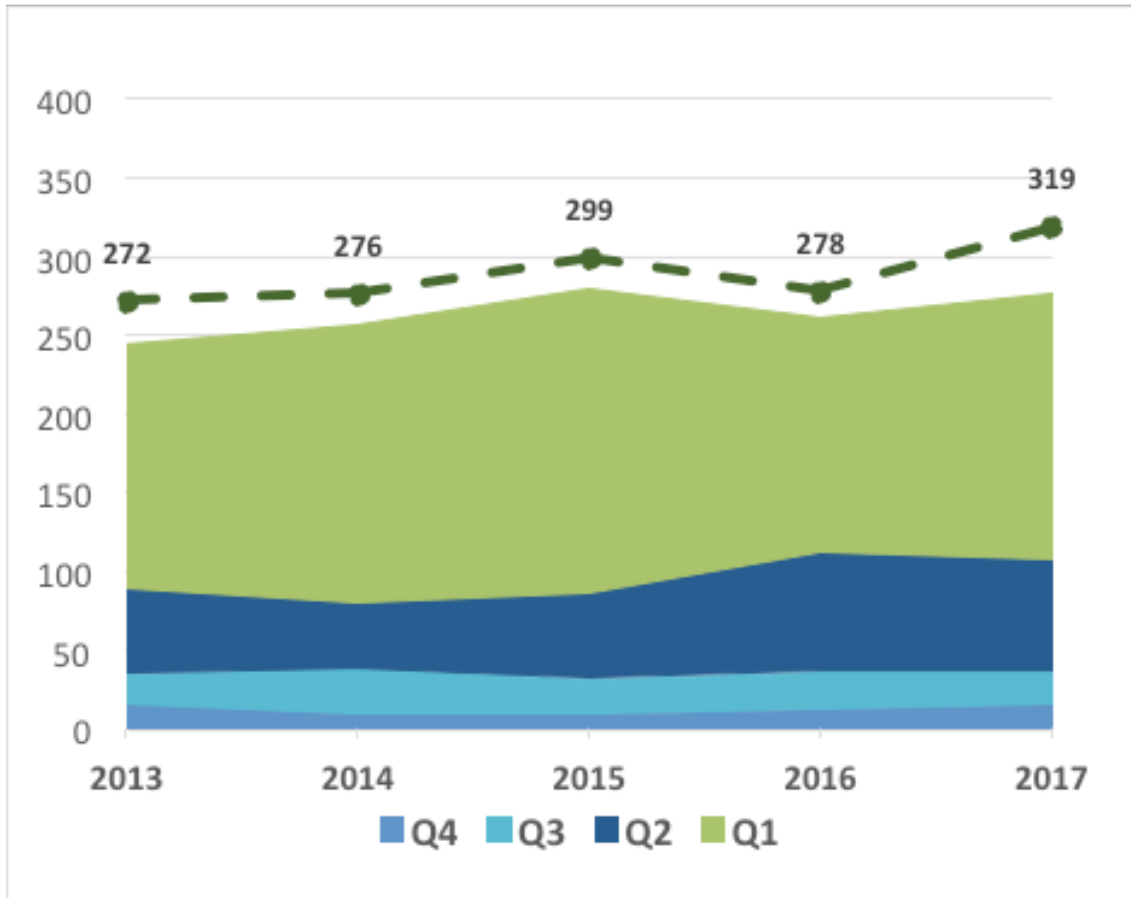


Figure 1 – Scientific Production and Quartile analysis (Source: ICVS quinquennial report, 2013-2017)

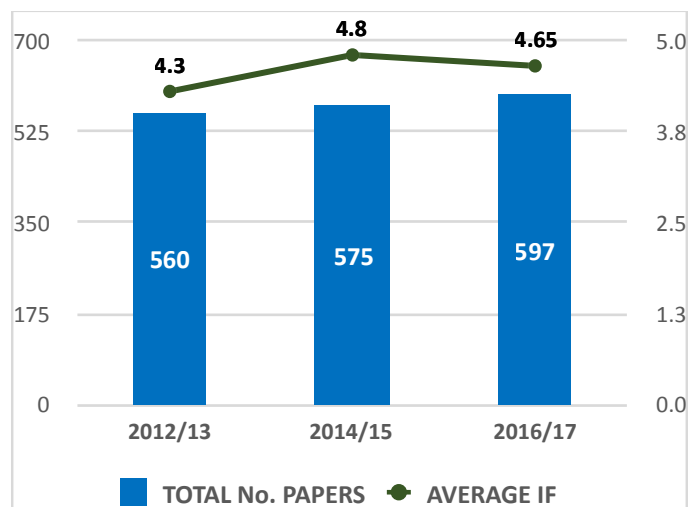


Figure 2 – Biannual Scientific Production and Average Impact Factor analysis (Source: ICVS quinquennial report, 2013-2017)

- The significant level of internationalization achieved, reflected in:
 - The number of scientific publications involving international partners (~ 70% of the overall publications);
 - The diversity of the ICVS/3B's researchers' nationalities (over 30 countries);
 - The number foreign students/health professionals attending Courses/Workshops at the ICVS/3B's (around 600);
 - The staff/researchers involvement in international collaborations under the scope of projects and grants obtained under mobility programmes within Europe, USA, Japan, and Australia.
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- The effectiveness in obtaining international funding even for large projects, as illustrated by the FP7 of the UE and 5 European Research Council (ERC) Grants.
- The creation and improvement of state-of-the-art research facilities and equipment. We particularly highlight:
 - The creation of a novel center, the Discoveries Center on Regenerative and Precision Medicine, resulting from a partnership between the ICVS/3B's and four Portuguese Universities, as well as the University College of London;
 - The construction and installation of a new Animal Facility fully equipped for research with rodent models, with funding from the ON.2 regional program;
 - The advances made in the Clinical Academic Center (2CA-Braga), concerning the acquisition of new cutting-edge imaging scanners and the installation of a Phase I Unit;
 - The hosting of the headquarters of the European Institute of Excellence on Tissue Engineering and Regenerative Medicine.
 - The increased stability of contracts with research staff. Even though the AL did not obtain the sums for human resources requested under the previous FCT evaluation exercise, the ICVS/3B's increased the number of Post-docs that obtained research contracts in competitive applications (an increase of 33% in contracts supported by H2020/ERC, H2020/MSCA, EMBO, FCT and P2020).
- The Expansion of the activities of the Clinical Academic Centre – 2CA-Braga (<http://www.ccabraga.org>), in partnership with the Hospital of Braga (*José de Mello Saúde Group*) - developing more than 100 commercial-driven clinical research studies only in 2017 (corresponding to more than 1/3 of the clinical trials run in Portugal), as well as observational and validation studies; as an important indicator, the patient recruitment rate has been consistently above 85% and all revenues have been reinvested in equipment and clinical grants.

2. In our opinion the model of organization and governance of the ICVS/3B's (see Fig 3), allying the strengths of two very complementary research groups, proved to foster a multidisciplinary networking environment. As previously addressed by the EAC, we recommend that this structure, which is at the basis of the excellent outputs of the R&D unit, should be maintained. We, further, encourage the ICVS/3B's to continue to nurture even closer interactions between the two groups.

ICVS/3B's Associate Laboratory

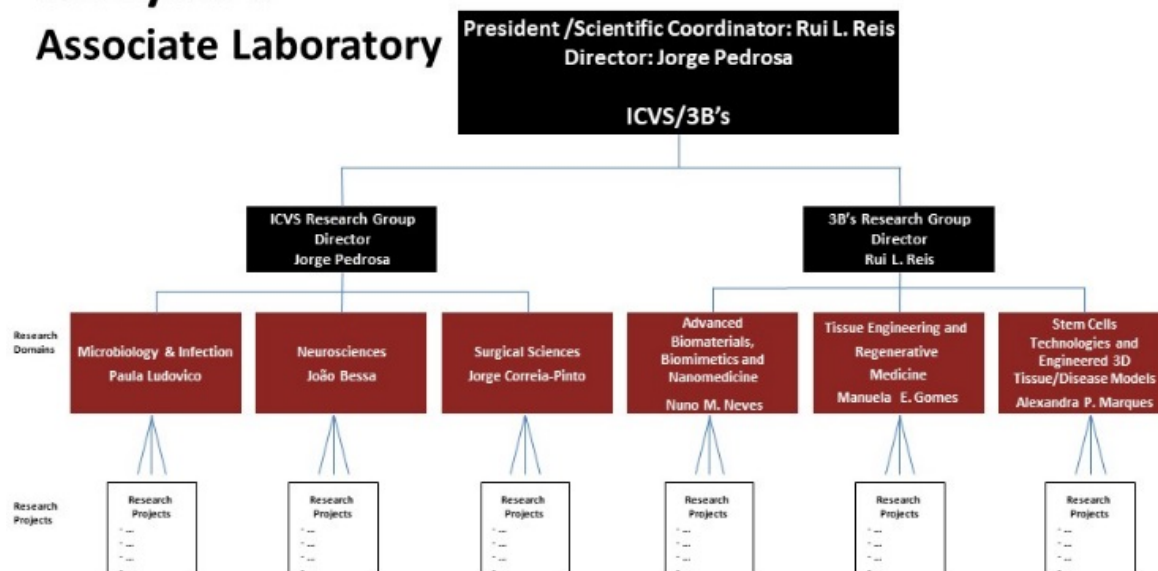


Figure 3 – Scientific organization and governance model of the ICVS/3B's (Source: ICVS quinquennial report, 2013-2017)

3. Our previous report made specific recommendations in order to improve and reinforce the complementarity within the ICVS/3B's. We are very pleased to realize that these recommendations were taken into account, and note the important improvements implemented.

Indeed, great advances were made concerning the collaborative research projects with specific funding, such as: i) the approval of funds (H2020 WIDESPREAD- TEAMING) for the Discoveries Centre on Regenerative and Precision Medicine. This new center intends to create a large multi-campi Centre of Excellence in Portugal in the field of Regenerative and Precision Medicine for the prevention and treatment of Musculoskeletal, Neurodegenerative and Cardiovascular disorders, bridging expertise to 3B's and ICVS; ii) the EU-FP7-Health-2011-collaborative project Biohybrid - Templates for peripheral nerve regeneration, FP7/European Commission; iii) the Grant Norte2020 "Frontiers of technology for theranostics of cancer, metabolic and neurodegenerative diseases (FRONThERA) - a cooperation initiative of researchers from ICVS, 3B's and the INL (International Iberian Nanotechnology Institute – located in Braga) that gathers experts in tissue engineering in vitro models, neurosciences and emergent technologies based on responsive biosensors.

Also highly commendable is the initiative of launching common (internal) funding grants. Indeed, we acknowledge the initiative "Research Grants – ICVS/3B's LA", that support the development of innovative diagnostic and therapeutic products with potential impact in society, as a good example of collaborative work between the different thematic areas of the ICVS and the 3B's. These Grants, attributed biannually, already awarded 16 projects (8 in the 2014 call and 8 in 2016) with one such project having already given rise to a spin-

off company - HydrUStent – devoted to the development of biodegradable double-J urological stent as a medical device, to avoid a second surgery for its removal.

4. Governmental Funding

Based on the information analyzed by the EAC, we conclude that the ICVS/3B's attained an exceptional set of scientific and technological accomplishments, according to international standards of excellence, and plays a leading role in the Portuguese system of R&D. In parallel, the ICVS/3B's has been extremely successful in capturing competitive funding, namely from international agencies.

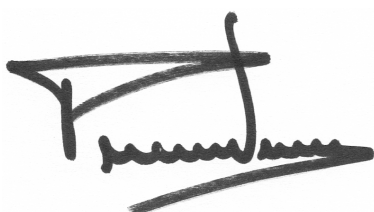
In our previous report, we noticed that, by contrast, national basic and strategic funding provided by the FCT was very limited and disproportionately lower than the average funds provided by FCT to the universe of Portuguese R&D units with comparable outputs. Unfortunately, this unjust situation persisted even after the previous evaluation exercise of R&D units carried by the FCT (2013). In fact, the data available at the FCT website indicates that the average funding per PhD/year among the 26 Associate Laboratories of the Portuguese R&D system is in the order of 24,069€ (with a maximum of 45,000€). By comparison the ICVS/3B's receives only 9000€/PhD/year from the FCT.

Final Comment

In conclusion, the ICVS/3B's AL is an excellent, internationally competitive, research Unit on the interface Health Sciences/Health Technologies integrating the Portuguese R&D network. This AL has an established an effective organizational structure which allowed scientific outputs marked by excellence.

The progress of scientific and technological outputs, measured either as peer reviewed papers, their impact factor, patent registration, interactions with the productive tissue and the clinical community, numbers of students involved or international networks of interactions, has grown to impressive numbers over the past five years. We fully expect these trends to continue on this path in 2018-2022.

NOTE: In annex to this global report are the individual analysis of the EAC members.



Paulo Vieira (on behalf of the External Advisory Committee)