

**Centre of Chemistry and Biochemistry  
Faculty of Sciences  
University of Lisbon**

***A report by  
An International Scientific Advisory Board  
To***

**Fundação para a Ciência e a Tecnologia**

**1. Introduction**

The report sets out the findings and conclusions of an International Scientific Advisory Board convened to provide advice to the Centre of Chemistry and Biochemistry under the terms of the arrangements of FCT for the funding of its Centres. The group consisted of one former Vice-Chancellor of a UK University and a Professor of Chemical Physics (Sir William Wakeham), a Professor in Protein chemistry in a Danish University (Peter Roepstorff) and an Executive of an International Pharmaceutical business based in Portugal (Peter Villax). The group thus comprised a spectrum of scientific expertise and a spectrum of external strategic experience.

In advance of a meeting the Group were helpfully provided with examples of the publication output of the Centre, its membership at Ciencia and Postdoctoral level. The group then convened for a meeting over one whole day on 26<sup>th</sup> March 2011. After an initial briefing about the Centre which provided an overview of the facts around the Centre, the Group met separately the Senior Staff of the Centre, the Ciencia Staff, the postdoctoral research workers as well as doctoral students and masters students. In addition, the group were able to interact with all members around a series of poster displays. This session allowed the group to ask questions about the research content, direction and results of the work of the Centre.

It is the view of the International Group that these arrangements allowed them to form an overall view of the Centre, of the quality of its work and its strategic direction as well as the aspirations and expectations of the staff at various levels. The Group is grateful to the staff of the Centre and to the students for the open and positive way in which they engaged with the discourse that enabled full coverage of the issues in a short time. They wish to compliment the Coordinator of the Centre, Ana Ponces, for the efficient and effective organisation of the day.

**2. Scientific Quality**

We found that Science developed at the Chemistry and Biochemistry Centre (CQB) is of extremely high quality and have no reason to differ from previous assessments of the activity of the Centre reported to FCT. There were no

obvious areas weaker than others. These conclusions were based on the international journals used for publication (impact factor), the volume of publication and the citations received. At the same time the Board noted that while some publications had occurred in high impact journals, there were few reported papers in journals with the absolute highest impact factors among the scientific literature in the world such as Nature or Science. The Board also observed that the science conducted was of an exceptional breadth. Indeed, the Board reached the conclusion that the breadth of topics covered in research may preclude the advancement of the science to the very highest international level. This is indicated by the relative absence of papers in the most prestigious journals in some fields. In the view of the Board this is not a result of any weakness in the staff but almost certainly stems from a lack of specific focus forced upon the Centre by the absence of a clear strategic direction.

*The Board advises that the Centre should be encouraged to adopt a narrower strategic base for their research which would lead to greater impact upon the Scientific Community as well as Portuguese Society and the World at Large. In particular we advise that it is possible to combine such an increased focus with work that addresses societal problems. The Board believes there is no validity in the proposition that a focus upon strategic needs perverts an attempt to conduct fundamental research if it is done in an open manner which recognizes that different scientists have a different role to play in such a strategy. The Board believes that at this stage in the development of the Portuguese Science base, scientific research should be linked to the resolution of problems which affect Portugal, Portuguese society or the World at large. The Board recognizes that the current breadth of CQB's current scientific portfolio is a direct consequence of the funding regime and the academic career progression that current operate in Portugal, and thus that change does not entirely rest with CQB*

*Notwithstanding the need for a national shift of policy, CQB should elect a focused area of excellence predicated on objectives which are as important to the advancement of knowledge as they are to the resolution of issues which affect our lives, sufficiently general to allow the freedom which is essential to Science, but also adequately oriented to allow for synergistic complementarities between the various research groups within CQB and even between different universities*

### **3. Staff Performance Evaluation**

The Board heard that the performance evaluation system for staff is exclusively focused on the production of scientific publications. *Ciência* and post-doc members indicated that on average 20% of their time was dedicated to teaching activities which are not included in the evaluation system.

*We recommend that this be altered so that all activities be considered in staff evaluation.*

The Board noted that only recently had there been significant collaborations within the twelve subgroups within CQB. It concluded that twelve subgroups revealed the lack of a strategic focus as remarked earlier.

*We therefore also recommend that scientific collaborations between research groups within the same research centre be as much valued as those with external universities and that larger groupings within CQB may be strategically advisable.*

#### **4. PhD Students**

The Board was told by a great majority of Ph.D. students that Portuguese industry is not interested in giving them jobs. In view of the fact that the number of Ph.D. graduates has increased very considerably and that Universities cannot possibly offer everyone tenured teaching positions, industry should be encouraged to open its doors to Ph.D. graduates.

*We recommend that this change can be promoted in three ways:*

- a. By asking government to legislate to include in the SIFIDE system (the tax credit companies receive for R&D investment) the obligation for companies to hire Ph.D. graduates, or by making SIFIDE less generous for those who do not.*
- b. By having universities and Ph.D. students alike increase the number of communication events and media contacts to publicize their value to businesses.*
- c. By having universities orient their scientific activities to areas that matter to industry, no matter how fundamental the research may be.*

#### **5. Research Funding**

**The Board** found that the base of funding for research was rather narrow and dependent on FCT itself to a large extent. The average size of grant from FCT was rather small nationally and this was evidently not likely to increase in the short term. On the one hand this situation encouraged the fragmentation and lack of focus apparent in the research activity and at the same time made CQB vulnerable to fluctuations in FCT funding. In addition, many grants were too small to invest in modern instrumentation. It is clear that the instrumentation available is far from international standard.

*The Board recommends that CQB should seek to broaden the base of its funding with some urgency. As well as European Union Funding, the Board*

*recommends that Industry be developed as an alternative source of funding for academic research. This will require a deep understanding of industry's needs and the definition of coordinated research programmes where fundamental and applied projects are carefully managed to ensure that they are linked by a common thread. A specific programme for instrument infrastructure is also recommended.*

## **6. National Policy**

Although strictly not a part of its remit the Board feels compelled to offer to FCT, The University of Lisbon and the Department of Chemistry and Biochemistry some Strategic advice. Government policy in Portugal has been extremely successful in the past ten years in developing a significant critical mass of scientists as an exclusive objective

It is our view that the desired increase in the scientific manpower of Portugal has been achieved and CQB is an excellent demonstration of that success having a large group of high quality staff and students. It is equally apparent to us that the current policy is now creating problems because the lack of a strategic national plan for Science.

*In order to facilitate this coordination, national objectives for research should be determined under government guidance, involving scientists, business and society. The next policy objective should be the prioritizing of research activities and establishing a funding mechanism which takes such priorities into account.*

Professor Sir William Wakeham  
Professor Peter Roepstorff  
Peter Villax

April 2011