



**PROVOST'S REPORT TO COUNCIL ON
THE REVIEW OF THE
DEPARTMENT OF BIOCHEMISTRY**

1. INTRODUCTION

This report presents the outcome of a departmental review of Biochemistry. An external peer review visitation was undertaken on the 6th and 7th of April, 2004 by Professor Jean O. Thomas, University of Cambridge, and Professor A. J. Turner, University of Leeds.

The report is based on (i) feedback from the external Reviewers received on the 30th November, 2004, (ii) a submission from the Pro-Dean of Science received on the 17th December, 2004 and (iii) a submission from the Department of Biochemistry received on the 6th December, 2004.

The main purpose of the departmental review is (a) to provide a structured opportunity for the Department to reflect on its activities and plans for development, while benefiting from a constructive commentary by senior colleagues external to College; (b) to ensure that quality and standards in teaching, research and administration are being maintained and enhanced; and (c) that areas of concern in this regard are identified and addressed within an eighteen month timescale. This review process ensures that each academic department in College is reviewed systematically once every five years.

2. OVERVIEW OF THE DEPARTMENT

2.1 Aims and Objectives of the Department

1. To promote research by its entire staff, and through this research to educate and train both undergraduates and post-graduates in Biochemistry and related disciplines.
2. To support in an inclusive way its academic staff in their aspirations to perform research to the highest level in a structured way consistent with resources available or which can be realised, and in a manner which also fulfils College's strategic objectives and national strategies for interdisciplinary and collaborative research.
3. That the Department's research will inform and support teaching, both directly with content and also by provision of facilities and expertise for teaching support.

2.2 Programmes to which the Department provides teaching

The Department is involved in core teaching of Science students to degree level in Biochemistry, Biochemistry with Immunology, and Neuroscience. It provides service teaching to students in the disciplines of Pharmacy, Botany, Chemistry, Microbiology, Physiology, Mathematics, Geology, Geography, Zoology, Medicine, and Radiation Therapy.

2.3 Research

The Department has three main areas of research interest as follows:

- Molecular and Cellular Immunology
- Neuroscience
- Integrated Biomolecular Discovery.

2.4 Summary Statistical Profile of the Department for the Academic Year 2003 - 2004¹

Full-time Staff FTE	Undergraduate FTE	Postgraduate FTE	Department Staff:Student Ratio	Faculty Staff:Student
15.62	175.62	45	14	16

¹ Figures from Senior Lecturer's Annual Report approved by Council at its meeting on 1st December 2004.

2.5 Accommodation and Facilities (Physical Resources)

The Biochemistry Department is located in the East End of College in the Wellcome Building and in the new Biotechnology Building: these two buildings are connected by a bridge.

3. EXTERNAL PEER REVIEW REPORT

SUMMARY OF REPORT

The Reviewers' overall view is that *"the Department of Biochemistry at Trinity provides an excellent environment for the delivery of quality teaching in an atmosphere of internationally recognised research and there exists an excellent link between research and teaching provision"*.

TEACHING

The Reviewers begin their report by stating that *"The Department of Biochemistry has considerable strengths in research and teaching and the staff are highly committed and passionate about the development of their discipline. The Department works extremely well as a team and its teaching is informed by the research-active environment in which it operates."* They note that *"biochemistry as a discipline underpins all of the biological sciences and hence is a key component of undergraduate degree programmes and of biomedical research"*.

The Reviewers outline the core teaching programmes in which the Department is involved and note that *"a course on Biochemistry with Molecular Medicine is being planned as well as some inter-disciplinary initiatives"*. The Reviewers note that integration of teaching is encouraged across Departments and that *"the Department actively promotes transferable skills in the undergraduate programmes."* They add that the *"Department is teaching to its strengths and providing a balanced and topical biochemical education."* The students with whom the Reviewers met were *"generally very supportive of the Department"* and they note that the *"quality of the student experience was excellent"*.

The Reviewers report that *"the greatest change in curriculum structure has occurred in the teaching of Medicine at Trinity"* and that the principal changes include a reduction in course length from six to five years and the introduction of problem-based learning (PBL) in the first year of the new curriculum. Although the medical students whom the Reviewers met were broadly supportive of these changes, *they had some criticisms of the lack of PBL in the Biochemistry teaching* and felt that *"Biochemistry was not integrated well into the new medical course"*. It is the Reviewers' understanding that more biochemistry-based clinical problems will be introduced. There is currently internal debate about the use of PBL in the teaching of medical and dental students and the Reviewers feel that *"it is important that the PBL approach does not lead to a lessening of quantitative and mechanistic understanding of biological processes"*.

The Reviewers feel that *"overall, the curriculum is broadly in line with the major departments of Biochemistry in the U.K. in terms of breadth of coverage and learning outcomes"* and they do not recommend any curricular changes. They note that there is a strong linkage in the Sophister years between research in the Department and teaching and that there is a relatively high content of taught practical work in the Moderatorships compared with equivalent U.K. courses. They believe that there could be *"a larger element of project work as part of the overall course"* but recognise the substantial costs involved. They note that there are some opportunities for two-way undergraduate student exchange through the successful EU SOCRATES exchange scheme and suggest that the Department *"might consider additional opportunities for student placement in Industry or in Institutions outside Ireland"*. They also suggest that *"a staged increase in*

the number of international students, or the introduction of some specialist taught postgraduate resources, could help to alleviate funding shortfalls”, but recognise that this may be difficult to accomplish given the current teaching resources.

The Reviewers feel that the teaching load carried by contract staff may “*impact negatively on their research output and career development*”. They feel that it is important that there is transparency and fairness in the allocation of workloads and suggest that “*the implementation of a workload model may help in this respect*”.

The Reviewers note that the Department has a high proportion of staff on contract appointments and that “*the future of one key member of the contract staff seems likely to be at risk because of an unfortunate coincidence of circumstances in the present financial situation*” and feel “*strongly that some...funds be made available to secure this post*”. They note that there are several retirements in the pipeline and recommend that “*strategies should be developed urgently to secure future appointments against forthcoming retirements, but also taking into account the need to bring in individuals with experience of other environments (“new blood”)*”.

RESEARCH

The Reviewers gained an impression of “*a research-active Department with generally high morale*” and “*overall the research community in the Department is energetic and thriving*”. However, they are disappointed to find that no formal Research Plan for 2005 - 2010 exists and note that the reasons given were all finance-based. They also feel that “*the lack of a Research Plan was particularly disappointing given the opportunities presented by the new Life Sciences Building*”, but note that a plan for 2005-2010 was under way and that “*two scenarios were being considered*”.

The Reviewers comment that “*some very well funded groups (and not only by Irish standards) had benefited over the last few years from generous SFI funding...and this had clearly had a beneficial effect on the Department as a whole*”. This funding has allowed hiring of young, research-active group leaders in addition to bringing “*state-of-the-art equipment*” into the Department. They report that “*the publication rate and quality is high for the leading research groups, and good generally amongst all research-active staff, although understandably some of the more junior staff with smaller groups and high teaching loads are less productive*” in this area. Departmental staff are involved in national and international collaborations and opportunities to commercialise the results of research are being investigated: three spin-off companies are being set-up and several patents have been filed.

The Reviewers report that only three of the academic staff of twenty-four are female, “*one of whom is coming to the end of a five-year contract, with no offer of a permanent post*”. They feel that other Departments (Chemistry, Genetics) appear “*to be no better off in terms of staff gender balance*” and express disappointment at this gender imbalance especially in a year when College is celebrating the centenary of the admission of women.

The Reviewers report concern amongst the staff that there is an apparent lack of consultation between the College and the Department in relation to support for research. There is uncertainty about “*the filling of academic posts and a perceived lack of clarity about, and communication of, College policy, in relation to this*”.

The Reviewers state that there are opportunities for strategic appointments if uncertainties about staffing policies can be resolved and suggest that “*some posts might be filled as fixed-term initially (e.g. as SFI appointments), with subsequent transfer of salary costs to the Department*”. They feel that the Head of Department is justifiably optimistic about the performance of the Department at both national and international levels over the next five years and note that the Departmental Research Committee is working with all staff towards developing future plans in three main research areas – Molecular and Cellular Immunology; Neuroscience; and Integrated Biomolecular Discovery. The Reviewers feel that this is “*highly appropriate, given the existing strengths and the interdisciplinary nature of the areas, and existing critical masses*”.

In their discussions with the academic staff about how to ensure the success of future research programmes at an internationally competitive level, the Reviewers note the following perceived barriers:

- *“The lack of an established career structure, e.g. for contract staff...and a perceived lack of an explicit College strategy over the replacement of academic posts.*
- *The fact that further posts are needed.*
- *The apparent lack of consultation between the College and the Department in relation to support for research, and the return and use of research overheads*
- *The pressing need for more and, in some (as yet un-refurbished) areas, improved standard research space.*
- *The need for suitable shared specialised facilities for tissue culture and animal work (e.g. transgenic mouse work) for state of the art molecular and cellular biology.*
- *The lack of central funds for repair and replacement of research equipment and inadequate access to online literature”.*

The Reviewers note that the publication profile of the Department over the last five years is very good and say that *“a significant number of the publications were in front-rank journals”* and *“ members of the Department produced a large number of book chapters, and short topical news articles which tend to be widely used”*. They are confident that this high level of publications will continue for the next two years and beyond, as the research programmes are active and on-going. They feel that the Department does well for its size and that *“it compares well with that of good (although probably not the best) Departments in the UK, both in quality and (proportionately) quantity, although the proportion of very high profile papers is relatively low overall”*.

In concluding this section, the Reviewers note that *“with a steadily growing annual research income (from €4.5M in 2001-2002 to €6.02M (estimated) in 2003-2004, the Department has an excellent track record of raising research funds from diverse sources”*. They are confident that all the group leaders will actively pursue funding opportunities and recommend *“their efforts are encouraged and supported by College”*.

Research Students

The Reviewers note that there are forty-five research students in the Department, which they feel *“represents a good critical mass for graduate activities and organisation”*. They recognise that national funding for research students has improved, but recommend raising the level of the College Award to that of national awards, *“which would allow competitive recruitment of good students”*. They feel that the supervision and support to research students is *“generally good”* but *“it appears that the level of support available to postgraduate students is not uniform and the introduction of a graduate school mentor would be welcome.”* They note that *“there should, as far as possible, be equality of provision of research training for all research students”* and suggest that *“ideally all students should attend formal lectures on state-of-the-art experimental techniques”* and that *“there should be opportunities for graduate students to develop their transferable skills, including presentational skills, beyond the immediate laboratory environment”*.

The two research student representatives with whom the Reviewers met said they would welcome an “advisor” to whom they could *“turn for independent advice in the event of difficulties with their supervisor or project, right from the start of their training...”*. The Reviewers suggest that one of the internal assessors might be appointed at the start of the project to act in this capacity. They suggest that the mid-project assessment (currently at 18 months) might be better at 12 months, and that a number of further ‘milestones’ be introduced to assess the progress of students during their PhD project. They conclude by stating that *“students are integral members of research teams and their work is usually an integral part of the research program of the group, thereby assuring its relevance and quality”*.

RESOURCES

The Reviewers note that *“in 2002/03, more than 20% of the total (research) grant overhead income to the College resulted from the research in the Department of Biochemistry”* and they feel that the funding levels are good by international standards. However, despite the success of the Department in obtaining substantial peer-reviewed research funding, there is considerable pressure on resources, which the Reviewers attribute to the fact that *“only 10% of the overhead grant income is returned to the Department”*. Regarding the Wellcome building, in which much of Departmental business is conducted, the Reviewers feel that it *“is in urgent need of refurbishment or replacement”* as the quality of laboratory facilities and the quality of student experience in this environment is now inadequate. This problem is exacerbated by the fact that the numbers of students have increased substantially. This has resulted in overcrowding in the laboratories and extra strain being placed on support staff. While the equipment and computing base of the Department is

“excellent”, the Reviewers feel that the College funds available to maintain and repair this equipment are inadequate and are in danger of “*compromising productive usage of some of the equipment*”.

MANAGEMENT AND ORGANISATION

The Reviewers feel that the system of management currently in place in the Department whereby all decisions and information feeds into the Departmental Committee seems to work efficiently, “*although there was felt to be a need for more debate and better dissemination of information amongst all staff.*” The Reviewers feel that a “*better two-way communication of management decisions between the College authorities and the Department would be desirable*”. With regard to the planned restructuring of academic departments and Faculties, the Reviewers state that “*the case for any reorganisation needs to be put to all staff, including an analysis of the advantages and disadvantages of such change (“SWOT” analysis)*” and that “*any restructuring proceeds as a dialogue with Departments on the best way forward to secure the financial security and research success of both Departments and the College, in a climate of mutual confidence*”. The Reviewers state that while Biochemistry may be currently viable as a separate Department, closer links with other Departments may provide some advantages and they suggest that “*natural partners would be Genetics and Microbiology, although links with external Medical Departments might also be an option*”.

RECOMMENDATIONS

The Reviewers recommendations are listed below.

- (i) *The research of the Department is centred around three major research themes that interlink. Given the size of the Department, we recommended that future developments and new appointments should aim to strengthen these areas rather than develop new ones.*
- (ii) *Refurbishment and provision of quality research space is needed to maintain and enhance the research output.*
- (iii) *There is no formal postgraduate teaching to research students and the introduction of some such provision may be beneficial. We also suggest a possible model for structured evaluation of research students’ progress during the three years, for the purpose of giving constructive feedback.*
- (iv) *We strongly support the establishment of a Faculty Graduate School, which has apparently been under discussion for some years. Consideration should be given to the formation of a trans-Faculty Graduate School to ensure equality of provision.*
- (v) *The balance of teaching programmes was satisfactory but given the very rapid advances in biological sciences, new opportunities should be considered in the light of current developments and student demand. The Department should aim to improve two-way communication between staff and students.*
- (vi) *The College should take note of the great concern over the future of research-active, contract staff, who are committed to providing a high quality of teaching in the Department, and on whom the delivery of the teaching is heavily dependent. Their re-appointment is probably the other key issue that must be addressed in discussions between College and Department.*
- (vii) *There needs to be a full and open debate between the Department, other cognate disciplines and the College administration as to the most effective structures in which the biomedical sciences at Trinity can operate in an ever more competitive and rapidly moving research environment in order to achieve world-class status and financial viability.*

4. RESPONSES FROM THE DEPARTMENT AND THE PRO-DEAN OF ENGINEERING

The Biochemistry Department supports the Reviewers’ report and all the recommendations therein. The Pro-Dean of the Faculty states that the Reviewers’ report “*is a well-earned and very positive commendation for the Department of Biochemistry from two Reviewers of considerable renown and experience in the task of reviewing*”. He adds that while the report “*does not really unearth any significant problem areas*” it raises a number of issues that are typical of successful research active Departments. The Pro-Dean agrees with the Reviewers’ observation that “*there is a relatively high content of taught practical work*” in the Department’s teaching programme, and he too feels that it is regrettable “*that there is not such a complementary focus on project work*”. Regarding the teaching interface between Health Sciences and the Department and their differences in the approach to Problem Based Learning, the Pro-Dean comments that

“further discussion could resolve this issue, particularly if the expectations and deliverables could be better specified on both sides”.

The Pro-Dean notes that the relatively high number of staff on contract appointments employed by the Department have proven themselves in both their teaching and research duties and he suggests that *“the lack of a clear career path for demonstrably excellent contract staff”* is an issue that *“needs a more structured consideration”*. He notes with disappointment that the Reviewers have little to contribute to the issue by way of recommendation and he suggests that College consider *“the introduction of a tenure-track system”* in discussion with the research funding agencies. The Pro-Dean comments that while *“the excellent research achievements of this Department are recognised by the Reviewers”* the uneven spread of funding support across the Department impinges on the funding of graduate students. He recommends that the Department *“consider trying to adopt a standard level of support for each postgraduate”*.

Commenting on the lack of a formal departmental Research Plan for 2005-2010, the Pro-Dean feels that because the *“preceding five years have proven so successful”* the Reviewers *“quite sensibly recommend that the Department should aim to strengthen its existing research areas”* and adds that the principles *“underpinning a new Research Plan should be continuity and progression.”* He comments that given the funding levels secured by the Department, one might expect to find more research students than the forty-five currently registered with Biochemistry, and speculates that *“maybe the new Resource Allocation Model will encourage the Department to take on a greater number of research students”*. The Pro-Dean commends the Department for *“its well-earned achievements to date”* and concludes by saying that *“there is a model of good practice here which many other departments might well seek to emulate”*.

5. RECOMMENDATIONS TO COUNCIL

In addition to the Department of Biochemistry addressing the detailed recommendations outlined in the review report, the following recommendations are made to Council in light of the review report and the responses from the Pro-Dean and the Department:

- (a) that the Department should :
 - 1 In its planning for 2005 onward, consider the issues raised with regard to greater involvement in Socrates exchange and the use of problem based learning; a staged expansion in international student recruitment and specialist taught postgraduate programme(s); development of the support framework for postgraduate students across the department; the opportunities presented by any new academic structures and resource allocation for the exploitation of its research focus and staffing plans.
- (b) that the Faculty should:
 - 2 In the context of proposals for new academic structures and resource allocation, support the department in positioning itself to best effect to facilitate its teaching and research mission.
- (c) that College should :
 - 3 Respond to the concerns about the career path for excellent staff on contract appointment. These concerns will grow with the expansion and deepening of the department’s and the College’s research activity and a satisfactory response will require College level commitments as well as negotiation with funding agencies .

John Hegarty
Provost
