UNIVERSITY OF DUBLIN
TRINITY COLLEGE

PROVOST'S REPORT TO COUNCIL ON THE REVIEW OF THE DEPARTMENT OF PHYSIOLOGY

1. INTRODUCTION

This report presents the outcome of a departmental review of the Department of Physiology. An external peer review visitation was undertaken on the 17th and 18th of February, 2004 by Professor Cecil Kidd, University of Aberdeen, and Professor Michael Murphy, University College, Cork. During the visit the reviewers met with all staff of the Department, staff of cognate departments, representatives of undergraduate and postgraduate students, research staff in the Department, and senior officers of the College.

The report is based on (i) feedback from the external reviewers, received on the 25th May, 2004, (ii) a submission from the Dean of Health Sciences, received on the 16th August 2004 and (iii) a submission from the Department of Physiology received on the 14th July 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 any areas of concern in this regard are identified and addressed within an eighteen month timescale, having regard to the resources available. This review process ensures that each academic department in College is reviewed once every five years.

2. OVERVIEW OF THE DEPARTMENT

2.1 Aims and Objectives of the Department

1. To continue to consolidate and develop the departmental profile in teaching and research
2. To ensure that individual staff members' career plans are advanced to meet their goals and objectives and the Department's needs
3. To develop the internal structures for effective scientific training of all students in the Department
4. To increase the number of enrolled postgraduate research students
5. To ensure that academic staffing is held at a level that allows retention of key training programmes
6. To create the additional physical facilities that are needed to service the aims for research and training.

2.2 Programmes to which the Department provides teaching

Undergraduate programmes
The Department is responsible for undergraduate teaching in all aspects of Physiology across two faculties - the Faculty of Health Sciences and the Faculty of Science.

In Health Sciences, courses are provided for students in:

a. Medicine, Physiotherapy and Radiotherapy - lecture and practical courses, and for Dental students, practical courses only
b. Occupational Therapy, Clinical Speech and Language Studies and Pharmacy.
c. Neuroscience to medical students.

The medical curriculum has changed radically in the last year and further, as yet unspecified, alterations are anticipated.

In Natural Sciences, courses are provided for students in:

a. Second Year - General Biology course (contribution to the course)
b. Third Year Courses in Physiology to Junior Sophisters
c. Fourth Year courses in Physiology to Senior Sophisters
d. Moderatorship in Neuroscience

Postgraduate (taught):

M.Sc. in Mammalian Cell Physiology
M.Sc. in Exercise Physiology

In addition, the staff of the Department are involved in the delivery of lectures and a component of practical training for the M.Sc. in Cardiac Rehabilitation.

2.3 Research

There are two major areas of active research: (i) cellular communication, with a particular emphasis on neuroscience and (ii) exercise physiology, with an emphasis on cardiovascular and muscle function. Six members of staff are involved in the TCD Neuroscience Institute and two staff each are involved in the Bioengineering and Cardiovascular Institutes. There has been a progressive rise in external funding over the past eight years with a more substantial increase over the past three years. There are strong interactive links with researchers in other departments and these can be expected to widen. The established programmes in cellular neuroscience led by senior staff are both of international standing. The parallel programmes in related areas by younger and recently appointed staff are also of high quality and are of national standard already.

2.4 Summary Statistical Profile of the Department for the Academic Year 2002 - 2003[1]

Staff FTE	Undergraduate FTE	Postgraduate FTE	Department Staff:Student Ratio	Faculty Staff:Student Ratio
11.95	147.56	37.44	15.5	12

[1] Figures from Senior Lecturer's Annual Report approved by Council at its meeting on the 3rd December 2003.

2.5 Accommodation and Facilities

The Department is located on the College Green campus and is equipped for molecular biology, light and fluorescence microscopy, image analysis, neurochemistry, tissue culture, intracellular ion measurement, electrophysiology, membrane patch-clamping, human biomechanics and electromyography, and analysis of human and animal cardiovascular, respiratory and metabolic functions. The Department is affiliated with the TCD Neuroscience Institute and the TCD Cardiovascular Research Institute and there are ongoing collaborations with the neighbouring Departments of Zoology, Psychology, Pharmacology & Therapeutics, Biochemistry and Anatomy. Additional departmental research facilities are available at St James's Hospital.

3. EXTERNAL PEER REVIEW REPORT

SUMMARY OF REPORT

The reviewers begin by stating that there have been many changes in the Department since the current Head of Department took office in 1995 and they suggest using this date as a base-point. Overall, they consider that there has been a very positive attitude among staff and students to the changes in teaching, research and governance.

TEACHING

The reviewers outline the teaching responsibilities of the Department at undergraduate level across the Faculties of Health Sciences and Science, and at postgraduate level across the three taught Masters courses. At undergraduate level, they say that there have been radical changes in the medical curriculum. They note that the new course "*follows many of the tenets of 'Tomorrow's Doctors' in the UK*" and that further changes are anticipated. Although it is too early to know what the precise contribution of Physiology to this new integrated course will be, the reviewers acknowledge that "*Physiology is a critical ingredient of the training of medical students*".

The reviewers express concern that the increase in the Departmental undergraduate FTSE from 69.5 in 1995 to 149 in 2003 is not matched by a significant increase in academic staff.

The reviewers are impressed by the range and quality of the teaching in physiology delivered in all areas, both lecture and practical material, and by the appropriate balance between the cellular/molecular and integrative components, which they feel are especially important "*in view of the critical need to have trained practitioners in whole body integrative physiology in the future*".
They praise the course handbooks and laboratory notes, saying that they "*provide an appropriate level of guidance*". They were especially impressed with the following features of the Department's teaching programmes:

- the use of computer-based equipment in the elementary teaching laboratories to provide on-line data which can be assessed and evaluated by the students
- the addition of material on computing and statistics in advanced teaching
- the insistence on a full laboratory-based project with an appropriate weighting in final undergraduate year
- the effective nature of student feedback in the assessment of effectiveness of teaching
- the fact that the undergraduate taught course material adequately matches the Benchmark Statements issued by the Physiological Society for undergraduate teaching in Physiology.
- the clear increase in the proportions of first and upper second class degrees over the past few years
- the fact that most Physiology graduates go into training programmes for higher degrees
- the general high level of satisfaction of other departments with the teaching provided for their students
- the effective computer-based learning material developed by the Department
- the apparent success of the Broad Curriculum Postgraduate Teaching Studentship that is focussed on the development of advanced personal skills among undergraduates.

In the postgraduate area, the reviewers note that "*the methods used for determining the progression of postgraduates from M.Sc. into Ph.D. programmes are well established and appear to be effective*". However, they suggest that "*in addition to current requirements to demonstrate in undergraduate practical classes and present an annual talk on their research to the department*" postgraduate students should be encouraged to undertake a number of short courses designed to enhance their personal and academic development and awareness. The reviewers recommend that such courses are introduced by the Department and they give examples of courses available elsewhere.

RESEARCH

The reviewers note that there are two major active research areas: (i) cellular communication, with a particular emphasis on neuroscience and (ii) exercise physiology with an emphasis on cardiovascular and muscle function. Six members of staff are involved in the TCD Neuroscience Institute and two staff each are involved in the Bioengineering and Cardiovascular Institutes. Regarding the Department's research programmes, the reviewers note that overall they are highly commendable and effective. They comment "*that most staff run well thought out and productive programmes of research that have been successful in attracting significant external funding together with postdoctoral staff and postgraduates*" and that "*there are strong interactive links with researchers in other departments*". The reviewers note that "*the established programmes in cellular neuroscience led by senior staff are both of international standing*" and that "*the parallel programmes in related areas by younger and recently appointed staff are also of high quality and are of national standard already*". The reviewers express concern that some members of staff are not as active in research as others and suggest that this should be examined.

The reviewers indicate that '*there were clear expressions of concern about the potential impact of the new Institutes on the Department*'. While on the one hand the new Institutes will provide much needed space, there was also concern that the relocation of young staff and students to the new Institutes may result in the loss of some of the "buzz" that they provide. The reviewers advise that this matter will need careful management.

RESOURCES

The reviewers express concern that "*the Department is currently under-resourced in every respect for the role it now undertakes*". They feel that "*the hugely increased undergraduate and postgraduate teaching loads together with the much enhanced research performance are now creating real problems*" because "*the staff complement has not been effectively increased*". They recommend that the 1.5 staff posts currently frozen should be released and new posts added.

The reviewers note that the recurrent consumable funding from the College to the Department "*is completely inadequate for basic needs*" and as a result, essential chemicals and molecular biological agents cannot be provided from College funds. The reviewers consider that current funding restrictions "*will result in deleterious changes in the undergraduate programmes*". They suggest that the College and Faculty resource funding models concerned be made open and transparent.

Commenting on the departmental equipment budget, they reviewers note that it has been "*non-existent for two years*". and that departmental teaching equipment needs to be replaced on a progressive basis. They feel that the continued absence of an equipment budget will impact on teaching and research at all levels.

Overall, the reviewers feel that the space currently occupied by the Department is inadequate and "ill-suited to the present demands of staff and students". While the reviewers note that the new Neurosciences Institute may ease some of the space problems, they suggest that "*a development plan for this building and the accommodation presently occupied by Anatomy be created for a new combined Department that includes Physiology, Anatomy & Pharmacology*".

MANAGEMENT AND ORGANISATION

The reviewers comment positively on the monthly staff meetings held in the Department and note that they are attended by student representatives and senior support staff. They received positive comments from the staff regarding the methods for internal facilitation of research and teaching activities of staff, and were impressed by the support given to new staff for the establishment of their research. In addition, they note that staff/student relationships appear to be very effective.

The high cost of enhancing postgraduate training has, so far, been effectively supported by external funding but the reviewers comment that it is now argued that space is a limitation. The reviewers feel that "the *opening of the Neuroscience Institute will have a significant impact here*".

In conclusion, the reviewers consider that '*Physiology does not provide the critical mass in all areas of activity that is essential for modern needs'* and they recommend that the way forward for the Department is to merge with Anatomy and Pharmacology. They feel that "*there are strong natural synergies between the three disciplines that can be further developed in both teaching and research*". They note that the benefits of a merger lie in "*the fertile cross-discipline interaction that will inevitably create new courses and interaction with existing programmes*". In research, they suggest that the interactions will be even more productive, in particular in association with existing and future Institutes. They recommend that "*structural development of the three departments to create new research and teaching facilities should be a priority*" and that "*the provision of modern facilities for the three disciplines must be a critical component of the merger*". They conclude by saying that "*the three disciplines sit at the crossroads of the integration of advances in molecular biology and genetics into whole body, especially human, function*" and that they "*will be at the forefront of future advances in medicine*".

RECOMMENDATIONS

Teaching:

(i) Existing individual discipline-specific undergraduate programmes should be preserved and others should be developed; these will represent the distinctive bases of the disciplines and facilitate cross-fertilisation.

Research:

(ii) New research active staff should be appointed in Physiology as well as senior staff in Anatomy in research areas with potential for effective interaction. Any new appointments in Pharmacology should similarly be made be made with the benefits of the merger in mind.

Resources/Facilities

(iii) The present buildings and laboratories of Physiology and Anatomy should be developed to provide a unified base with modern accommodation and facilities.

(iv) Immediately, new posts should be appointed in Physiology to match the increased undergraduate and postgraduate inputs as well as research needs.

(v) In physiology, the funding for materials and equipment must be set at adequate levels. The urgent progressive replacement of teaching equipment should commence immediately.

(vi) In general in the department, funding should be made available to increase the number of computers and associated network facilities to enable a more effective access by senior undergraduates and postgraduates. This was the major concern expressed to us by the students. Consideration should be given to increasing the IT facilities available to students.

Management/organisation

(vii) There should be a unified Department of Physiology, Anatomy and Pharmacology. The new Department should have a neutral title.

(viii) At a College and Faculty level, there should be a more transparent resource model that is explicitly linked to student numbers, known mean costs for the disciplines concerned and research commitments. The Head of Department and senior staff should be aware of it.

4. RESPONSES FROM THE DEPARTMENT AND THE DEAN OF HEALTH SCIENCES

The Dean of Health Sciences commends the positive findings in the review but notes that the report "*identifies significant resource deficiencies in staffing, funding and accommodation*". He urges that unless these issues are resolved, staff of the School and Faculty will have to operate at a significant disadvantage compared to other universities. Resolution of these resourcing issues, he feels, can only be achieved by increasing funding and he suggests the following possible sources of funding:

a) *Outcome of the National Taskforce Report on Medical Education supporting increased funding for medical education*
b) A new resource allocation model (relates to (a) above)
c) Increasing fees for new non-EU students
d) Implementation of new courses in biomedical sciences as part of an agreement with other countries
e) Research grants
f) Other initiatives under consideration

The Department endorses most strongly the reviewers' recommendations which identify major resource deficiencies. The Head of Department agrees that "*serious investment is required in all these areas*" but suggests that the recommendations be prioritized. He suggests that "*restoring academic staffing to a level that can service current commitments satisfactorily*" should be a priority and states that "*if College wishes to retain whole-body human biology as an area for teaching and research, then immediate restoration of at least one tenured and one five-year contract post across the disciplines of anatomy and physiology is a minimum realistic commitment*". The Dean of Health Sciences says that this is "*a reasonable request and subject to Faculty resources will be supported*".

The Dean indicates that if the deficiencies in accommodation are to be addressed, it will require a strategic plan in the East End of College which should be approached with the aid of :

a) *Department of Education and Science support*
b) Endowments/benefactors
c) New initiatives in sharing governance with teaching hospitals
d) Increased fee derived income
e) Corporate support to support capital developments
f) College support
g) Support from Department of Health and Children as part of new hospital College agreements
h) Alumni of the School of Physic

The Department highlights the importance of putting plans in place to replace the Chair of Physiology when the incumbent retires in three years time. The Dean of Health Sciences acknowledges that this is a key consideration which must be set in the context of the restructuring proposals for the School of Physic.

The Head of Department refers to two developments that have taken place since the report was issued – the Centre for Bioengineering is now fully operational and informal discussions have taken place with Anatomy and Physiology regarding the possible unification of the departments.

The Dean concludes by commending the Department on such a positive review, coming at a time when "*the Faculty of Health Sciences is considering major reforms in structure and governance*".

5. RECOMMENDATIONS TO COUNCIL

In addition to the Department of Physiology 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 Dean of Health Sciences and the Department.

(a) that the Department should

1. In the context of College and Faculty re-organisation and while considering the reviewers' recommendations with regard to re-organisation, actively engage in discussions with a range of departments before any new configuration of departments/Schools is decided.
2. Develop plans for teaching and research programmes and resourcing in the context of the overall curriculum in medical education.

(b) that the Faculty should

3. Facilitate the Department in identifying and forming a new configuration with other departments that will work to the Department's and the College's best interests in teaching and research.

(c) that College should

4. Support the Department, the School of Physic and its teaching hospitals in achieving international eminence.
5. Ensure that the discipline and the School is positioned appropriately within the new structures.

John Hegarty
Provost
