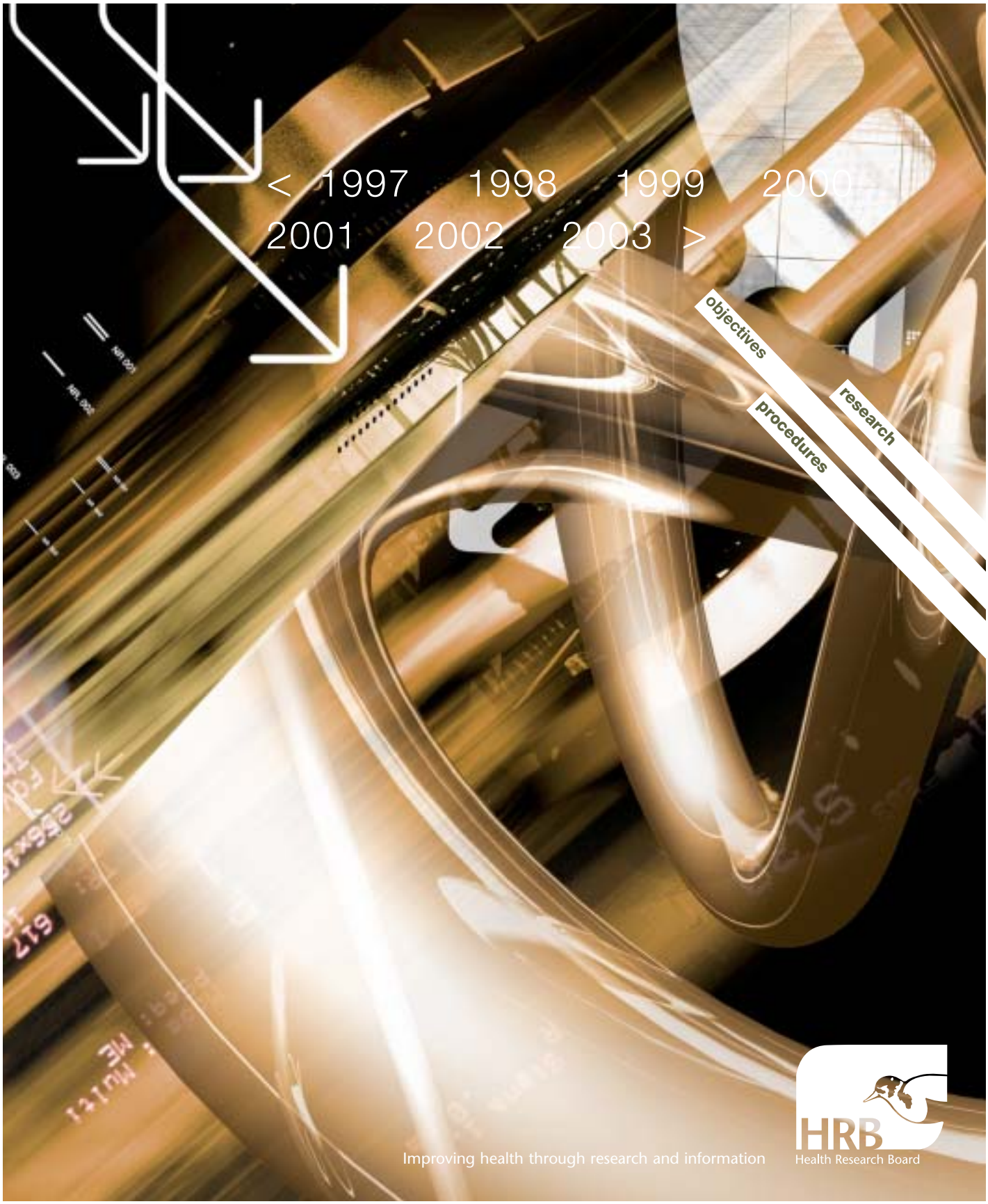
AN EVALUATION OF THE RESEARCH PROJECT GRANTS SCHEME

June 2004



Improving health through research and information

HRB
Health Research Board

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June 2004

N O'Donovan and AM McCafferty

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CHAPTER 1

Summary

Between 1997 and 2003, the HRB awarded €33,133,871 to 376 research project grants. Since 1997, the average amount awarded per grant increased from €31,849 to €137,761. In the same period, the success rate for applications was approximately 25 percent, though this varied from a high of 37 percent in 2001 to only 13 percent in 2003.

In the five years from 1999 to 2003, 173 PhD students were supported through the project grants scheme. A survey of researchers supported through the scheme indicated that the majority were happy with the level and quality of training and supervision received. The number of postdoctoral researchers supported has increased steadily with funding levels.

Based on 2001 and 2002 end of grant reports, the average number of publications per grant was 1.9 and 2.3 respectively, and the average number of peer-reviewed articles was 1.3 and 1.5 respectively. However, a quarter of grants did not produce any peer-reviewed publications. For grants completed in 2001, 70 percent of PhD students finished their PhD within four years.

The majority of researchers who responded to the questionnaire survey ranked *'funding high quality research' as the highest priority for the scheme. 'Funding new researchers to establish new research groups'* was ranked second and 'funding training for postgraduate students' was ranked third, though a number of respondents commented on the interlinked nature of these priorities.

Almost 70 percent of the researchers classified the research funded by the project grants scheme as basic, 34 percent classified it as clinical and 40 percent as applied (note that respondents could select more than one option). Almost three-quarters were satisfied with the coverage of health research.

Almost half were dissatisfied with the level of funding available through the scheme on the grounds that it was insufficient to support an experienced researcher and the student stipend was too low.

The majority of respondents were satisfied with the administration of the scheme but a number were unhappy with the time taken to process applications and the quality of the feedback. The major criticisms of the scheme related to the low success rates, particularly in 2003, the perception that committee members have a better chance of being funded and the inadequate consideration of the international reviews.

Recommendations

The aim of the project grants scheme is to support high quality health research. However, the provision of training for PhD students has evolved as an important secondary objective. While it is possible to support both objectives through one scheme, it is likely that either would be met more effectively by targeted initiatives.

In view of the increased funding available for basic research from other sources, funding should be focused on those areas identified as priorities in the HRB's Corporate Strategy, namely translational and clinical research, public health, epidemiology and health services research.

The present committees have now completed their four-year term. New committees must be established and consideration should be given to restructuring the committees so as to reduce the number and improve the consistency of assessment.

CHAPTER 2

Introduction

2.1 Background to the Scheme

The Health Research Board (HRB) project grants scheme is the oldest research support scheme in the country, dating back to 1937 and the establishment of one of the HRB's parent bodies, the Medical Research Council. In its first year of operation, the MRC, with an annual budget of £10,000 from the hospital's share of the Sweepstake's Fund, received 28 applications for grants and made 15 awards. Four categories of awards were made; training grants, full and part time grants for specific projects, and 'grants in aid' to buy consumables or equipment to support projects.

A feature of these early awards was the strong links with overseas research institutions. Half the training grants awarded were under the direction of researchers in the USA, UK or Switzerland. For example, 'an investigation into the osmotic pressure of human serum protein and the oxygen capacity of human haemoglobin' was to be carried out with researchers at the Rockefeller Institute in New York.

In its first annual report, the Council expressed the hope that 'before long, workers will be engaged on most of the vital medical problems which exist today'. However, in what was to be a recurring theme, funding problems soon began to preoccupy members of the Council. The following year, the MRC was awarded just £5,000 (€6,350), albeit guaranteed for five years. This was much less than expected and the Council reported that it would 'necessarily curtail to a considerable extent the activities which it hoped to pursue.' These difficulties forced the council to abandon its original idea of making awards three times a year and over the following years a limited number of awards were made. The importance of training however, was a constant theme with the council hoping 'to be in a position to offer each year a definite number of training scholarships so that there may be an adequate number of fully trained research workers available in this country'. All awards were for one year only with annual renewals subject to the available budget.

By the mid forties, the MRC's role in advising the Government on public health issues began to increase. The Council also anticipated a big increase in applications for fellowships and studentships 'now that more workers were becoming available to devote themselves to research and that it would be possible to send students abroad for training'. Studentships were identified for the first time as a separate category.

For the first 25 years of the MRC's existence, most awards went to workers in laboratory departments in the medical schools where accommodation was already available and where senior members of the permanent staff could direct the work. The Council provided a stipend for the researcher, technical assistance and a certain amount of special equipment when required. Since the hospitals could not provide suitable accommodation for research workers and they had no full time senior staff to act as supervisors, the Council felt unable to support any substantial programme of clinical research despite what was described as 'the wealth of problems in this area'. This changed slightly in 1960 when the MRC received a substantial increase in its budget, increasing from £27,000 (€34,300) to £40,000 (€51,000). It was agreed that this be devoted mainly to clinical research. Overall, in the first 25 years, 431 new grants were awarded, with most of the funds going to support research in academic departments and to the training of research workers. The subjects of these awards covered practically the whole range of medical science.

In the mid 1950s, the Council began a process of interviewing grant applicants before considering their applications, a practice that continued until 1999. In 1964, the first of the MRC's 'special research committees' were established in cancer, cardiovascular diseases, gastroenterology and haematology, metabolism and endocrinology, and pregnancy and congenital deformities. Each committee was composed of members active in the field and their remit was to keep under review current research and to advise the Council about steps to advance the field further. The choice of committees was based on a review of projects supported by the Council. Two more committees were established in 1967, Microbiology and Immunology, and Mental Health, while a committee on Respiratory Diseases was established in 1983.

The establishment of dedicated research committees introduced a mechanism of assessment that remained constant for almost 30 years. Grant applications were processed by the relevant committee, which interviewed the applicants and made a recommendation to the Council based on the feasibility and scientific quality of the project. In addition, grants had to be renewed annually. Committees and Council examined the progress reports and analysed the results achieved. They considered that scientific projects could not be regarded as satisfactorily completed until the results of the research appeared in a reputable journal. The Council used this as a criterion in its evaluation of request for continued support, and in general placed a high value on the standard of a grant holder's publications as a measure of accomplishment.

In 1971, the Council noted that the establishment of the National Science Council and the Medico-Social Research Board enabled the MRC to give special attention to clinical research. This remained the focus of support throughout the 1970s, with particular attention being paid to training medical scientists through the provision of research grants.

By the early 1980s, the MRC was supporting medical research using three different mechanisms: grants to individual investigators for single project (project grants), support for research units to undertake programmes of research (later to become programme grants) and support for the MRC's own laboratory located in Trinity College Dublin. In 1981 it was reported that while financial constraint was necessary in all areas, it was in the first, namely the support of project grants, that the greatest difficulties were encountered. As the universities and hospitals expanded in terms of personnel and expertise, the number of first class proposals submitted to the Council had grown steadily over the years. It was reported that year that 'even by drastic restriction in the level of support to any worker by declining to fund most equipment costs and by reducing running costs granted to a bare minimum, it was not possible to make the available funds meet the minimum requirements'. The Council noted that Ireland's contribution to medical research was one of the lowest, if not the lowest, in the EEC. Despite this, in 1981 its total grant of £837,000 (€1,063,000) supported 98 people. In 1982, 55 applications for project grants were received of which 42 were highly recommended. However, only 27 were actually funded, and in the majority of cases the sums granted were substantially less than requested.

In 1986, the MRC merged with the Medico-Social Research Board to form the HRB. When the HRB was established, it was allocated wider responsibilities in research than had existed under its parent bodies. These included medical research, health and health services research and epidemiological research. The new Board faced two major problems, the continuing funding and management of programmes inherited as commitments from its parent bodies and the development and financing of a research programme which would recognise the wider research responsibilities assigned to it in its new role. These challenges were even more daunting in the context of the severe financial cutbacks imposed in the late 1980s.

In 1987, 74 applications were received for project grants, and 23 were funded. Support for 50 on-going projects was renewed. In 1988, the lack of any increase in the Board's annual allocation from the then Department of Health resulted in cutbacks in some activities of the Board. However, project grants continued to be supported and a total of 46 new awards were made. Support for 43 on-going projects was renewed.

In 1989, the Department of Health's allocation to the HRB almost halved and for the first time in the scheme's history, it was not possible to issue a call for new project grants. 14 research projects held over from the previous year were funded, while support was renewed for 43 on-going projects.

By 1990, the primary objective of the project grants scheme was described as being 'to provide short- term employment and research training opportunities in Ireland for some of the best medical and science graduates'. The maintenance of research competence was deemed very important in the context of having a skilled workforce available to meet the future manpower needs of the Irish health care system. Despite no increase in the Department's allocation to the HRB in 1990, 38 new project grants were awarded and support for 35 on-going projects was renewed. However, a further 33 highly recommended projects had to be refused funding support. The average award that year was in the region of £8,000 (€10,160) pa with a PhD stipend of £3,500 (€4,450).

That year, the Board moved to strengthen its peer review system further by using external referees for research proposal assessment. Prior to 1990, it relied solely on the committees to review applications.

In 1991, the HRB carried out a detailed review of the membership and composition of its research committees. As a result, two new research committees were established, one in cell biology and one in dental sciences, and new members were recruited to some existing committees. Finances improved with an increase in funding from the Department of Health, to £1.6 million (€2.03 million). The Board supported 37 new project grants in 1991 and renewed support for 30 on-going projects, but as in previous years, a number of highly recommended projects (26) were turned down due to lack of funding. The Board also introduced a more objective grading system for grant applications, based on a priority score system.

In 1992, a new Board was appointed. The Board's allocation from the government in 1992 was £1.7 million (€2.16 million), a modest increase over 1991. The 13 newly constituted research committees approved the funding of 40 new project grants while support for 57 on-going projects was renewed. Also, in 1992, the PhD stipend was increased to £4,000 (€5,080) per annum.

Funding improved in 1994 with a 30% increase in the government allocation. This allowed the Board to expand its portfolio of research initiatives although funding for project grants still accounted for almost 60% of the annual spend. The demand for research support continued to grow as evidenced by a 35% increase in applications for project grants. The Board approved the funding of 61 new research projects, up from 44 in the previous year. The average value of each award was just under £10,000 (€12,700) per annum with a PhD stipend of £4,200 (€5,335). The membership of the Board's research committees (13 in total) was reviewed and new committees appointed for a three- year term. With the increase in applications, interviewing all applicants became impractical and provision was also made for the introduction of a pre- screening stage for grant applications from 1995. By that year, 133 projects were being supported, representing a funding commitment of £1,371,474 (€1,741,772).

By 1999, the number of applications for project grants had increased to almost 200 and 47 awards were made. The total value of these grants was £2.2 million (€2.8 million), and the fact that 17 of the 47 awards were to first time applicants reflected the start of an unprecedented growth in research activity in universities and hospitals. The previous decade had seen a substantial increase in both the number and diversity of research support schemes but the project grants scheme remained the principle mechanism for funding research across a wide range of topics.

At the end of 2000, the HRB reviewed and reorganised the project grants scheme so that it would better reflect the science underlying research for health and support important areas of research that were traditionally under-funded. Thirteen new research committees were established, nominations were invited from the research community for membership of the committees and, in 2001, interviews were replaced by a greater emphasis on international peer

review of all applications. The amount of funding available for each award was also increased substantially to £40,000 per annum (€50,800) including a PhD stipend of £10,000 (€12,700).

In 2004, the number of applications submitted to the scheme increased to almost 250, while the value of the grant stood at €55,000 pa (€165,000 over three years) including an annual PhD stipend of €13,000. The HRB also agreed for the first time to pay a contribution to overhead costs (10%) with an agreement to move towards full payment (30%) by 2006.

Overall, in the period 1997 to 2003, the HRB awarded €33,133,871 to 376 research project grants.

2.2 Aims and Objectives of the Evaluation

In 2001 the Department of Health and Children published *Making Knowledge Work for Health: A Strategy for Health Research,* which was prepared by the HRB after a consultation process involving health policy makers, health service providers, health professionals, health researchers, research policy makers, voluntary organisations, the healthcare industry and other interested individuals. The strategy identified two key areas required to support a research culture in the health services, namely supporting science for health and establishing a research and development function within the health services.

The research project grant scheme comes under the heading of supporting science for health. In the research strategy project grant funding was recognised as "an important way of developing news ideas and training research personnel". The strategic priorities for supporting science for health were recognised as supporting programmes of research, establishing clinical research centres and greater career support for researchers.

There were a number of reasons for reviewing the scheme at this time. The project grants scheme represents the single biggest annual investment in the research system by the HRB. In some areas of health it is the main source of support for research as well as providing training for substantial numbers of PhD students. The current research project grants committees were established in 2001 for a four-year term and new committees must now be established. In addition to this, the availability of increased funding for basic research from other agencies affords an opportunity to consider the remit of the scheme. Finally, concerns about the quality of PhD training are leading to a number of initiatives at national level and it is appropriate to consider the training aspects of the project grants scheme in that context.

The evaluation of the scheme was carried out between June and December 2003 and consisted of three strands:

1. An analysis of administrative procedures, publications and awards and review procedures (chapters 3 and 4).
2. A review of outputs based on final grant reports submitted in 2001 and 2002, and a research outputs survey of grant holders (chapter 5).
3. An online questionnaire survey of applicants, grant holders and committee members (chapter 6).

The aim of the evaluation is to assess the extent to which the project grants scheme meets its objectives, to assess whether or not the objectives of the scheme are clear and appropriate and to make recommendations for the future of the scheme.

CHAPTER 3

Research Project Grant Procedures

Two members of staff, a Research Grants Officer and the Research Grants Manager, support the research project grants scheme. Some administrative support and technical support for the online applications *(eGrants)* system is also available.

3.1 Schedule

The call for proposals for the scheme is generally advertised in August/September in national newspapers and on the HRB website. In addition, university research liaison officers, deans and vice-presidents of research are notified by email. The deadline for applications was changed in 2003, from early January to late November. The date was brought forward to avoid clashing with the January deadline for Enterprise Ireland's Basic Research Grant scheme and to increase the time available for sourcing external reviewers.

As all applications are now submitted using the online eGrants system the administration involved in processing the grant applications has changed somewhat. The following is a brief outline of the administration involved at present:

August

- Advertise scheme in national newspapers and on the HRB website and notify university research liaison officers, deans and vice-presidents of research by email.

November

- Deadline for submitted applications.

December - April

- Sort applications by research committee.
- Check each application for eligibility and appropriate signatures. Code applications.
- Download applications from the eGrants system to the Grants Database.
- Send acknowledgements to all applicants (Principal Investigator only).
- Contact committee members and chairpersons to arrange dates for meetings in April/May.
- Assign three committee members as reviewers to each application (primary, secondary and tertiary reviewers), based on their willingness to review applications (subject to conflict of interest).
- Identify two external referees for each application.
- Provide committee members with the required documentation including applications, guidelines for reviews and referees reports. (Note: Committee members can access the applications online but if requested hardcopies of the applications are provided).

April - May

- Conduct committee meetings. Notes are taken of discussions and scores awarded to applications for feedback.
- Based on agreed scores the top ranking applications are recommended for funding, depending on the amount of funding available. A number of applications are placed on a reserved list.
- Recommendations are submitted to the next board meeting for approval. Note the board does not receive details of the applicants; they approve the process and the number of awards.

June - August

- Letters are sent to successful and unsuccessful applicants.
- Feedback from external referees and committee members is provided to all applicants.
- Contracts are prepared and sent to the successful applicants.
- Payment of grants is approved once the signed acceptance form is returned, along with any other required documentation such as ethical approval.

September - October

- If additional funding is available applications on the reserve list may be funded.

3.2 International peer review

Sourcing international peer-reviewers is the largest task in processing the applications. For each application two external reviewers are required. All staff of the Research Funding and Policy Division help with this task and in some cases temporary staff are also recruited.

Applicants are invited to suggest two international reviewers on their application and one of these may be used, provided they have expertise in the area and have not published with the applicant in the last five years. Additional experts are identified by searching publication databases, such as PubMed and Web of Science.

In 2003, 512 international reviewers were required for the 256 eligible applications submitted. In total, 322 international reviews were received for the 256 applications. No international reviews were obtained for 37 of the applications, 128 applications had one external review and 91 had two or more external reviews.

An additional problem with identifying international reviewers is that they may not return the review report at all or in some cases too late for the committee meeting. For example, for three of the 2003 committees (67 applications), 225 experts were contacted and 121 agreed to review the application but only 95 reviews were returned. At present the international reviewers are not paid for the review. In 2002, in an effort to increase the number of international reviews returned they were paid an honorarium of 100 per review. However, this did not make a significant difference to the numbers of reviews returned. The international reviewers are asked to comment on the quality of the proposed research, the objectives and methods, track record of the applicant, project management and budget.

Up to 2003 the scoring system was from 1 to 5 (to two decimal places) based on:

Score	Interpretation
5	High quality research of international standing: must be funded
4	High quality research of national standing: should be funded if budget permits or if it is in a high priority area
3	Research has some merits but needs revision: cannot be supported at present
2	Research needs major revision: not fundable
1	Research is not fundable: revision not possible

Note: Projects scoring less than 3.5 are deemed not fundable

There have been some inconsistencies in scores awarded by international reviewers, for example in some cases the reviewers give the application a high score but are very critical of the application in their comments or vice versa. This may be due to differences in the scoring system used by other funding agencies. To address this issue the scoring system has been changed for the 2004 applications and the international reviewers are asked to rank the applications in the top 10%, top 20%, top 30%, top 50% or bottom 50%, relative to other applications in the same area of research that they have experience of reviewing.

Reports from the international reviewers are provided to the committee members before the committee meeting, as they become available. Late reports are provided at the meeting.

3.3 Committee Review Process

Applicants to the research project grant scheme submit their proposals to one of thirteen committees based on research area – for a full list of committees and the research areas covered please see Appendix A.

The current committees were established in 2001 (Appendix B). Researchers were invited to nominate themselves or others as members of committees. Criteria for membership included track record in funding and publications. As far as possible, committees were balanced by gender, region, area of research interest, and expertise. Membership of committees is for a four-year period. New committees will need to be established in 2004.

Conflict of interest rules are applied across all committees. A conflict of interest exists if:

- A committee member is working in the same department as an applicant.
- A committee member is an applicant or a collaborator in the project before the committee.
- A committee member has supervised an applicant within the previous five years and is a member of the same institution.
- A committee member has, or has had, a personal relationship with the applicant.
- Any other reason considered relevant by the committee member.

Where a conflict of interest exists, a committee/panel member must leave the room when the application is being considered and cannot score the application or take any part in its assessment.

Members of the Board chair committee meetings and the chair does not necessarily have expertise in the area. The main role of the chairperson is to ensure that proper and fair procedures are followed in the evaluation of applications.

Three committee members are assigned as lead reviewers to each application: these members act as primary, secondary and tertiary reviewers. As well as introducing the assigned applications, lead reviewers are asked to read the other applications before the committee. All three lead reviewers are required to complete an assessment form for each of the applications assigned to them. In the assessment form they are asked to comment on the quality of the research proposal, objectives and methods, track record of the applicant, project management and budget. They are then asked to score the applications as above.

At the committee meeting the three reviewers lead the discussion on the assigned application. After considering the committee reviewers' comments and the international reviewers reports, the committee agrees a score for each application.

3.4 Awards

When all the committees have met, the scores and recommendations are collated. The research grants manager reviews the scores and the budgets requested and based on the budget available will put forward recommendations for funding. The budgets for individual awards can be reduced so that the budget awarded may be lower than the budget requested.

Based on the 2003 awards the costs most frequently cut are equipment, consumables and travel. If personnel costs are cut, it is usually based on the committee reviewers' recommendations, for example if a project is better suited to a PhD student rather than a postdoctoral scientist. Of the 33 project grants awarded in 2003, the budget was reduced for 30 grants and the average budget reduction was 8.95% (range 0-32%). Implementing budget cuts frees up funding for additional awards.

The chairpersons of all the committees agree the final recommendations, which are put to the Board of the HRB at their next meeting, for approval.

3.5 Feedback

All applicants are provided with feedback. Traditionally reviewers' comments (committee members and international) were photocopied and sent to the applicants with the reviewers' names and scores removed. On the eGrants system applicants can now be given access online to the reviewers' comments, again without the scores and reviewers identities.

CHAPTER 4

Research Project Grants 1997-2003

4.1 Funding

In the period 1997 to 2003, the HRB awarded €33,133,871 to 376 research project grants. Since 1997 the average amount awarded per grant has increased from €31,849 to €137,761 in 2003. Table 4.1 shows the amount of funding and the number of grants awarded from 1997 to 2003. The total funding awarded to the research project grant scheme increased steadily between 1997 and 2001. In 2002 it decreased slightly and in 2003 the total funding was reduced to similar levels as 2000.

Table 4.1 Research project grant scheme funding and awards, 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Number of awards	39	59	48	60	77	60	33
Average awards	€31,849	€48,712	€61,114	€82,375	€110,669	€134,570	€137,761
Total awards	€1.24m	€2.87m	€2.93m	€4.94m	€8.52m	€8.07m	€4.55m

The HRB's total budget increased from €5.55 million in 1997 to €21.3 million in 2002, which enabled the HRB to increase funding to existing schemes over that period and in 2002 to award 14 programme grants. In 2003, the HRB's overall budget increased marginally to €22.8 million but combined with the increased commitments from 2002, this resulted in a reduction of funding for all schemes in 2003. The success rate for the research project grant scheme was reduced from 25% to 13% (Table 4.2). In 2004, the budget increased marginally to €23.9 million and with lower commitments in 2004 it is hoped that the number of awards for the research project grant scheme will be increased to 40.

Table 4.2 Research project grant success rate, 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Applications	171	204	187	202	208	242	259
Awards	39	59	48	60	77	60	33
Success rate	22.8%	28.9%	25.7%	29.7%	37.0%	24.8%	12.7%

After the review of procedures for the research project grant scheme in 2000 the funding available for each award was increased from £30,000 per annum to £40,000 per annum in order to allow postdoctoral researchers to be supported. While the majority of grants are still used to support PhD students, the numbers of postdoctoral researchers supported by the scheme increased from 1 in 1999 to 19 in 2002 (Table 4.3).

Table 4.3 Researchers supported by the research project grant scheme, 1999-2003

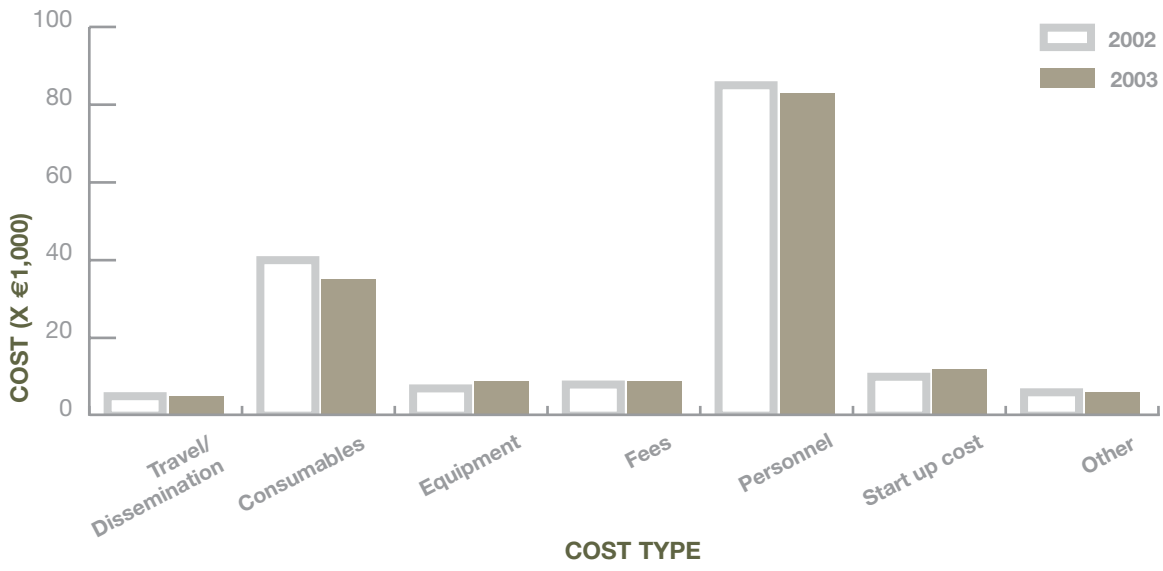
Type	1999	2000	2001	2002	2003
MSc/MD	5	4	3	1	0
PhD	33	44	47	35	14
Postdoctoral scientist	1	5	14	19	17
Research nurse	6*	2	1	2	1
Research assistant /Technician	2	5	11	6	3
Other	3	-	-	5	2
None	3	1	4	2	0
Unknown	2	2	0	0	0

* 3 part time nurses were employed on one grant.

4.2 Budgets

At present applicants to the project grant scheme can apply for up to €55,000 per annum for up to 3 years. In addition, applicants can apply for start-up funding of up to €15,000. Of the 33 successful applications in 2003, the average budget requested was €147,844 and the average budget awarded was €137,761. Figure 4.1 shows the breakdown of average costs for each cost type in 2002 and 2003. The average values were calculated based on the number of grants that have costs associated with a particular cost type. The most significant costs associated with the project grants are for salaries and consumables. The student stipend for a three-year grant is €39,000 but the grants can also be used to support postdoctoral researchers or other research staff, which accounts for the higher average salary costs per grant (€83,000). There are also variations between committees in the different cost types. The average costs in each cost category for each committee are detailed in Appendix C.

Figure 4.1 Average cost by each cost type for grants awarded in 2002 and 2003



4.3 Application Scores

Tables 4.4 and 4.5 show the distribution of applications and the success rates for research committees in 2002 and 2003. When selecting successful applications the cut-off score is dictated by the amount of funding available. However, as there is some variation in the scoring pattern between committees, the success rates across committees are also taken into consideration, although there is no formal normalisation of committee scores. (See Appendix D for details of the committee scoring patterns for 2001-2003) The variations in scoring between committees may be due to differences in scoring applications or it may be a reflection of differences in the quality of the applications to different committees.

Table 4.4 Applications and awards for each research committee, 2002

Committee	Number of Applications	Number Funded	% Success
Biomaterials & Bioengineering	14	4	28.6
Cancer Biology & Haematological Diseases	19	4	21.1
Cardio-Respiratory & Renal Diseases	29	5	17.2
Dental & Digestive Sciences	18	5	27.8
Epidemiology, Health of the Population & Primary Care	11	2	18.2
Genomics, Proteomics & Human Disease	17	5	29.4
Health Services Research & Practice Based Research	18	5	27.8
Immunology, Pathology & Mechanisms of Disease	26	7	26.9
Mental Health & Mental Illness	10	2	20.0
Metabolism, Endocrinology & Reproductive Medicine	16	5	31.3
Microbiology, Mechanisms of Infectious Diseases & Host Defence	21	3	14.3
Molecular, Cell & Developmental Biology	20	6	30.0
Neurosciences	23	7	30.4
Totals	**242***	**60**	**24.8**

* Four applications were not reviewed – two were ineligible and two were withdrawn.

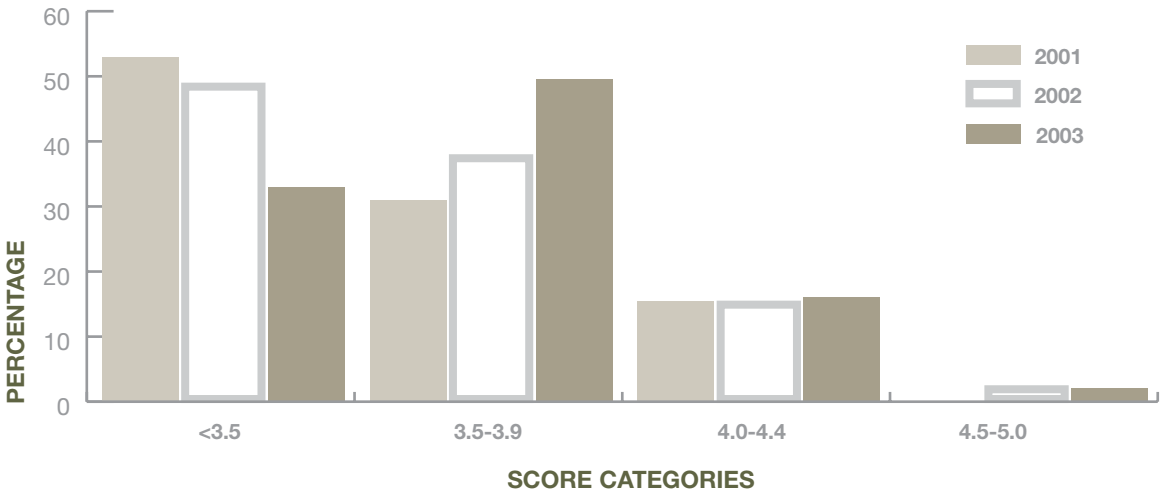
Table 4.5 Applications and awards for each research committee, 2003

Committee	Number of Applications	Number Funded	% Success
Biomaterials & Bioengineering	16	2	12.5
Cancer Biology & Haematological Diseases	23	3	13.0
Cardio-Respiratory & Renal Diseases	29	4	13.8
Dental & Digestive Sciences	14	1	7.1
Epidemiology, Health of the Population & Primary Care	18	1	5.6
Genomics, Proteomics & Human Disease	18	3	16.7
Health Services Research & Practice Based Research	17	3	17.6
Immunology, Pathology & Mechanisms of Disease	28	4	14.3
Mental Health & Clinical Neurology	10	1	10.0
Metabolism, Endocrinology & Reproductive Medicine	21	2	9.5
Microbiology, Mechanisms of Infectious Diseases & Host Defence	21	3	14.3
Molecular, Cell & Developmental Biology	24	3	12.5
Neurosciences	20	3	15.0
Totals	**259***	**33**	**12.5**

* Three applications were not reviewed – two were ineligible and one was withdrawn.

Applications scoring less than 3.5 are considered not fundable and all applications above 3.5 are deemed fundable. However, the number actually funded depends on the amount of funding available. Over the three-year period of these committees (2001-2003), the percentage of applications that were considered not fundable (<3.5) has decreased while the percentage of applications scoring between 3.5 and 4.0 has increased (Figure 4.2). This may be interpreted as an improvement in the quality of applications. However there was not a significant increase in the percentage of applications scoring above 4.0.

Figure 4.2 Percentage of applications in each score category (<3.5, 3.5-3.9, 4.0- 4.4, 4.5-5.0) for 2001-2003.



At present, scores are given to two decimal places. Generally the cut-off score lies within the 3.5-4.0 category and the grouping of a large percentage of applications in this category can make it difficult to select a cut-off score that also takes into consideration scoring variations between committees.

4.4 Research Areas

A number of the current committees cover multiple research areas. Table 4.6 illustrates the breakdown of applications when committees are divided into the individual research areas. For 2003 and 2004, all applicants were asked to select the relevant area of research for their application. For 2002, research areas were assigned to the applications based on the titles and keywords of the applications.

There is significant overlap between the research areas covered by the committees, for example, an application on colon cancer can be submitted to the *Cancer Biology and Haematological Diseases* committee or the *Dental and Digestive Sciences* committee. As new committees will be required for 2005, the committee structure should be reviewed before appointing new committee members.

Table 4.6 Applications in each research area, 2002-2004

Committee	Research Area	2002	2003	2004
Biomaterials & Bioengineering	Biomaterials & Bioengineering	14	16	15
Cancer Biology & Haematological Diseases	Cancer Biology	16	20	22
	Haematological Diseases	3	3	3
Cardio-respiratory & Renal Disease	Cardiac Disease	16	12	9
	Respiratory disease	7	12	8
	Renal Disease	4	5	2
Dental & Digestive Sciences	Dental Sciences	5	1	3
	Digestive Sciences	13	13	11
Epidemiology, Health of the	Epidemiology	4	6	9
Population & Primary Care	Health of the Population & Primary Care	7	12	10
Genomics, Proteomics & Human Disease	Genomics & Human Disease	15	12	12
	Proteomics & Human Disease	2	6	5
Health Services Research &	Health Services Research	16	14	9
Practice Based Research	Practice Based Research	1	3	7
Immunology, Pathology &	Immunology	13	10	14
Mechanisms of Disease	Pathology & Mechanisms of Disease	13	18	11
Mental Health & Clinical Neurology	Mental Health	6	9	10
	Clinical Neurology	4	1	3
Metabolism, Endocrinology &	Metabolism	7	8	6
Reproductive Medicine	Endocrinology	3	6	5
	Reproductive Medicine	6	7	12
Microbiology, mechanisms of infectious	Microbiology, Mechanisms of Infectious	21	21	21
Diseases & Host Defence	Diseases & Host Defence			
Molecular, Cell & Developmental Biology	Molecular & cellular Biology	17	23	10
	Developmental Biology	3	1	4
Neurosciences	Neurosciences	23	20	23

CHAPTER 5

Research Outputs

5.1 Grant Reports

Research project grant holders are required to submit a final report after the grant has been completed. The report includes a summary of the results of the research, details of research outputs and details of researchers funded by the grant. To get an overview of outputs from research project grants completed in 2001 and 2002 the final grant reports were reviewed. These project grants include awards from 1998, 1999 and 2000. The research outputs measured include publications, presentations, patents and postgraduate students trained (Table 5.1).

Table 5.1 Summary of outputs from research project grants completed in 2001 and 2002

	2001	2002
Grants completed	48	44
Reports returned	44	38
Peer-reviewed publications	57	57
Other publications	26	32
Publications in preparation	37	50
Presentations	168	160
Patents	1	1
Postgraduate students	41	33

Based on the 2001 and 2002 grant reports, the average number of publications per grant was 1.9 and 2.3 respectively, and the average number of peer-reviewed articles was 1.3 and 1.5 respectively. However a number of grants (24) did not produce any peer-reviewed publications (Figure 5.1, below).

Figure 5.1 Number of peer-reviewed articles published from grants completed in 2001 and 2002.

For the 57 peer-reviewed publications listed in the 2001 reports, the journal impact factors ranged from 0.308 to 29.600 and the average impact factor was 5.532[1]. For the 57 peer-reviewed publications from the 2002 reports, the journal impact factors ranged from 0.091 to 30.432 and the average journal impact factor was 4.429[2]. While the journal impact factors are an indicator of the quality of journals they are not a direct measure of the impact of an individual publication. The number of times a particular article is cited is a better measure of the impact of a publication. Taking a snapshot of publications from projects completed in 2002, the number of citations per publication ranged from 2 to 53 and the average number of citations per publication was 10.34[3]. Citations were only counted for the 38 publications published in 2000-2002, as it takes time for citations to accumulate. A large-scale bibliometric study would be required to fully assess the impact of the research funded by the project grant scheme and to compare the impact of the research with that of international research in similar areas.

The results of the research have been presented at an average of four conferences/meetings. Of the 160 presentations listed in the 2002 grant reports, 68 were at international conferences and 92 were at national conferences. The data from the 82 reports returned in 2001 and 2002, show that only 2 projects had filed for patent applications.

The 82 project grants also trained 74 postgraduate students. The majority of the postgraduate students were PhD students (66) but there were also a number of MSc and MD students (Table 5.2).

Table 5.2 Number of postgraduate students trained for grants completed in 2001 and 2002

Postgraduates	**2001**	**2002**
PhD students	37	29
MSc students	3	3
MD students	1	1
Total	**41**	**33**

1. ISI Journal Citation reports 2001
2. ISI Journal Citation reports 2002
3. Note: This figure does not exclude self-citations

For the grants completed in 2001 information on PhD completion was available for 30 of the PhD students. These students started their PhD in 1998. Three students finished their PhD in 2001, 23 finished in 2002 and 4 finished in 2003. For the grants completed in 2002, only 3 of the PhD students completed their PhD in 2002 and the remaining 26 were planning to have finished their PhD by the end of 2003.

5.2 Research Outputs Survey

In addition to the information available from the submitted grant reports, a research outputs survey of grant holders was also conducted. The survey was circulated along with a questionnaire for applicants, grant holders and committee members (section 6). Grant holders who received one or more project grant(s) that concluded between 1997 and 2003 were asked to complete the survey.

Responses were received for 67 individual project grants awarded between 1997 and 2002. For the 67 grants, 128 peer-reviewed publications have been published with an average of 1.9 peer-reviewed publications per project. The 67 project grants supported 41 PhD students, 2 MD students, 2 MSc students, 6 postdoctoral researchers, 2 research nurses, 2 research assistants and 2 technicians. In the case of PhD students, respondents were also asked for the thesis submission date. The average completion time for the 41 PhD students was 3 years and 8 months.

4. Articles in press or submitted were also included.

CHAPTER 6

Views of the Research Community

Participants in the research project grant scheme were invited to give their opinions of the scheme. The survey was conducted using an online questionnaire and two questionnaires were prepared: one for the applicants, grant holders and committee members and the second for researchers supported by the scheme (for example PhD students).

6.1 Applicants, Grant Holders and Committee Members

Details of the questionnaire and how to access it online were circulated to 602 individuals including committee members (183), grant holders from 1997-2001 and all applicants to the scheme in 2002 and 2003[5]. The total number of respondents was 227, (38%).

6.1.1 Profile of respondents

Respondents were asked to enter their current position (Table 6.1). 70% of the respondents are employed in an academic post i.e. lecturer, senior lecturer or professor. Approximately 10% of the respondents are employed in a medical setting i.e. registrars and consultant. However it should be noted that there could be considerable overlap between lecturers/professors and consultants.

Table 6.1 Current position held by respondents

Position	Number	Percentage of respondents
Lecturer	85	37.6
Senior lecturer	23	10.2
Professor	50	22.1
Researcher	24	10.6
Consultant	20	8.8
Senior scientist/researcher	14	6.2
Director/Manager/Group Leader	7	3.1
Registrar	3	1.3
Total	**226**	**100**

Interestingly, in the lecturer category, 57 (67%) of the respondents have been in their current post for 5 years or less. Respondents were also asked about the composition of their research group. Of the 227 respondents, 222 completed this question and the total numbers of students and staff are listed in Table 6.2.

5. Details of unsuccessful applicants were only available for 2002 and 2003.

Table 6.2 Numbers of researchers in respondents research groups (n=222).

Researcher	Number	% of total research staff
PhD students	598	38.0
MSc students	188	12.0
MD students	129	8.2
Postdoctoral scientists	344	21.9
Research assistants	139	8.8
Technicians	89	5.7
Nurses	85	5.4
Total numbers	**1572**	**100**

One of the respondents commented that the term 'research group' used in the questionnaire could have different interpretations. The intended definition of research group was a principal investigator and the researchers working in their group. However, in some cases it may have been interpreted as all researchers in a department, which may have resulted in some duplication of counts and needs to be considered when interpreting the results. However the mean and median values suggest that the numbers are more representative of a PI's research group, rather than a department.

Based on a total of 222 respondents to this question, the ratio of PIs to postgraduate students in this group is 1:4.1, PIs to postdoctoral scientists is 1:1.5 and research assistants/technicians to PIs is 1:1. The ratio of postdoctoral scientists to postgraduate students (PhD, MSc and MD) is 2.7:1. There is also considerable variation in the ratios between groups, with the ratio of PIs to PhD students or postdoctoral scientists to PhD students as high as 1:8 in some cases.

6.1.2 Rationale for the scheme

Respondents were asked to rank the priorities for the research project grant scheme. Almost three quarters (71.4%) of respondents (155/217) ranked *'funding high quality research'* as the highest priority for the scheme. *Funding new researchers to establish new research groups* was ranked second (24%) and *funding training for postgraduate students* was ranked third (18%). A number of respondents ranked more than one option as highest priority. Several respondents commented on the interlinked nature of the priorities, for example high quality research will only emerge if we fund training and new research groups. In addition, 22% of respondents who added comments (23/106), suggested that there should be a specific mechanism for funding new researchers within the project grant scheme. One respondent also commented that this should not be open to postdoctoral scientists but there should be a separate category for postdoctoral researchers who wish to apply for funding for their own salary and maybe to supervise a PhD project. A number of people also commented that the issue may be area specific, for example it may be difficult to get funding for postgraduate or postdoctoral researchers in some areas of research.

Respondents were also asked to classify the research funded by the project grant scheme as basic, clinical or applied or a combination of the three. Almost 70% of respondents (156/225) classified the research as basic, while 34% (76/225) classified it as clinical and 40% (91/225) classified it as applied. Of the 156 respondents that classified the research as basic, 19 respondents also ticked clinical and applied, 27 classified it as basic and clinical, and 23 classified it as basic and applied. Overall this suggests that the research funded by the project grant scheme falls into the three categories with a significant proportion of the research being basic research. Three

respondents commented that it is more difficult to get funding for clinical research than basic research and one suggestion to combat this is to include similar numbers of clinicians and scientists on the committees where possible.

6.1.3 Research areas covered by committees

Approximately 74% of respondents (163/221) agreed that the committees cover all areas of health research. There was no significant difference between respondents that are or have been committee members (74.4%) and those that are not (73.1%).

A number of respondents commented on specific areas of research which they feel are not adequately represented in the current committees including:

- Primary care
- General practice
- Epidemiology
- Practice based research
- Population based research
- Disability/rehabilitation research
- Chemical biology/Medicinal chemistry
- Drug synthesis, drug discovery, drug development, drug delivery
- Mental health
- Neuroimmunology/neuroimmunomodulation
- Medical technology/bioinformatics
- Cross-disciplinary
- Psychiatric genetics
- Environmental health
- Pharmacology and pharmacy
- Inequalities in health
- Clinical surgery/medicine
- Urological disease
- Rheumatology, orthopaedics and musculoskeletal conditions
- Technical improvements in health care
- Nutrition and health
- Ageing and mental health
- Developmental biology
- Childbirth research
- Palliative care
- Technology and medicine
- Psychological and social dimensions of health

A number of respondents expressed dissatisfaction with the combinations of research areas covered by certain committees, such as dental and digestive sciences and cardio-respiratory and renal diseases. Some respondents also commented that there should be a smaller number of committees covering more broad topics such as basic research, clinical research, and applied research.

6.1.4 Level of funding available through the scheme

Approximately 55% of respondents (124/225) said that the level of funding for the project grant scheme is adequate while 45% do not feel that the funding is adequate (101/225). Several recurring comments were made about the funding available and are summarized below:

- The funding available is not sufficient to pay the salary of an experienced postdoctoral researcher and consumables.
- There should be more start-up funding available for new researchers.
- The student stipend should be increased.
- The success rate within the scheme is very low, particularly in 2003.
- There should be more flexibility in the levels of funding per year.

Over 70% (159/226) said that the duration of funding was adequate. However, 34 respondents commented that three years is not adequate for a PhD and the scheme should be extended to four years to cover completion of a PhD.

6.1.5 Administration of the project grant scheme

Currently the call for applications to the project grant scheme is advertised in August and the deadline is at the end of November. The majority of respondents hear about the call for applications through their institutional research officer or on the HRB website (76%), while approximately 15% saw the advertisement in the national papers. Approximately 84% of respondents (185/221) felt that the current closing date is appropriate and 89% (196/219) are satisfied that the time between the call for proposals and the deadline submission is sufficient. Respondents commented that the HRB should ensure that the deadline dates do not coincide with the closing dates of other funding agencies and also should try to keep a set date each year. If the date is to be changed the research community needs advance notice of the new date, preferably 6 months. A number of respondents commented that it would be useful if the deadline could be announced before the universities break for summer.

The satisfaction rating with the application form and guidelines was quite high, with 91% (204/225) of respondents rating them as fully satisfactory (29.3%) or satisfactory (61.3%). However some respondents feel that there is some duplication in the application form, particularly between the background section and the project description. Communication of the results of the scheme was rated as fully satisfactory or satisfactory by 71% (160/224) of respondents. However 24% (53/224) of respondents were not satisfied with the communication of results and 31% (70/225) of respondents were not satisfied with the feedback on applications. Based on the comments of the respondents the reasons for dissatisfaction were mainly based on the time taken from submitting a proposal to the announcement of the results and the length of time taken to receive feedback on the application. Also a number of respondents commented on the quality of the feedback, which in some cases is not very detailed or illegible hand-written notes were received as feedback.

6.1.6 Review procedures

Respondents were also asked to rate their satisfaction with the review procedures, in particular, the international peer review, the committee peer review and the grant scoring. Approximately 50% of all respondents rated the three sections as satisfactory (Table 6.3). However, over 30% rated the committee review and the grant scoring as not satisfactory. When the respondents are divided into committee members and non-committee members, over 30% of the committee members (27/88) are not satisfied with the international review. Based on the comments given, this dissatisfaction is caused by three main factors:

- Inconsistencies in the quality of the international reviews.
- Inconsistency in the availability of two international reviews for each application.
- Receiving the reviews late.

Of the committee members 75% rated the committee peer-review as satisfactory or fully satisfactory. Conversely, just over a third (34%) of the other respondents rated the committee peer-review as not satisfactory. It seems that this dissatisfaction stems largely from the perception that applicants who are committee members have a better chance of being funded. Also there is a belief among some respondents that the committee members do not take the comments and scores of the international reviews into consideration. Interestingly, almost 40% of the committee members are not satisfied with the current grant scoring system.

Table 6.3 Satisfaction rating with the review procedures for the project grant scheme. (%)

		International peer-review	Committee members peer-review	Grant scoring
Committee members (n=88)	Fully satisfactory	14.8	11.4	4.5
	Satisfactory	53.4	63.6	52.3
	Not satisfactory	30.7	23.9	39.8
	Don't Know	1.1	1.1	3.4
Non-committee members (n=138)	Fully satisfactory	23.2	7.3	6.5
	Satisfactory	50.7	43.1	52.9
	Not satisfactory	12.3	34.3	26.1
	Don't Know	13.8	15.3	14.5
Grant holders (n=127)	Fully satisfactory	22.8	10.2	7.1
	Satisfactory	44.9	50.4	53.5
	Not satisfactory	23.6	29.9	29.9
	Don't Know	8.7	9.4	9.4
Unsuccessful applicants (n=99)	Fully satisfactory	16.2	7.1	4.0
	Satisfactory	60.6	52.0	51.5
	Not satisfactory	14.1	30.6	33.3
	Don't Know	9.1	10.2	11.1
All respondents (n=226)	Fully satisfactory	19.9	8.9	5.8
	Satisfactory	51.8	51.1	52.7
	Not satisfactory	19.5	30.2	31.4
	Don't know	8.8	9.8	10.2

We analysed the scores given by international reviewers and the final scores agreed by the committee for four of the research committee in 2003. The international reviewers tended to score higher than the committee members (Figure 6.1). This may be due to the fact that the international reviewers are only reviewing one application in isolation. Although the number of applications was limited (n=65), there was a linear relationship (r=0.570) between the scores awarded by the international reviewers and the final scores agreed by the committee members (Figure 6.2).

Figure 6.1 Scoring of applications by referees compared to the final scores agreed by the committee members for 67 applications in 2003.

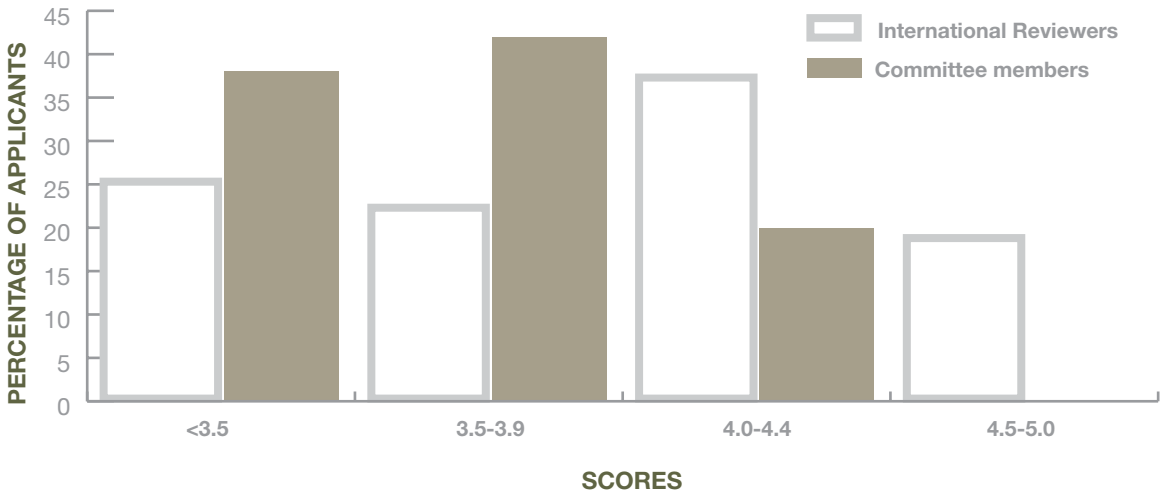
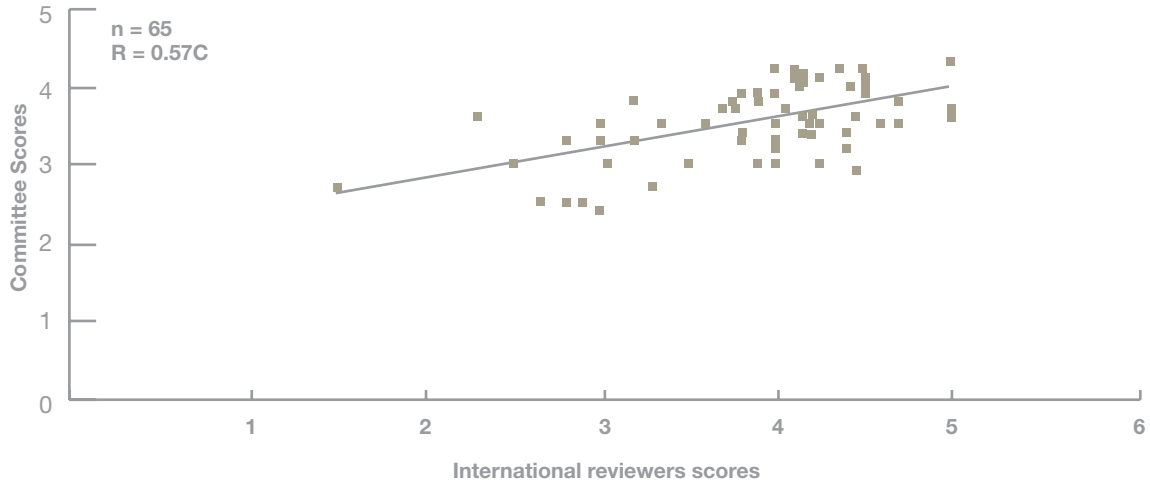


Figure 6.2 Scatter-plot of committee scores versus international reviewers scores for 65 applications to the 2003 project grant scheme.



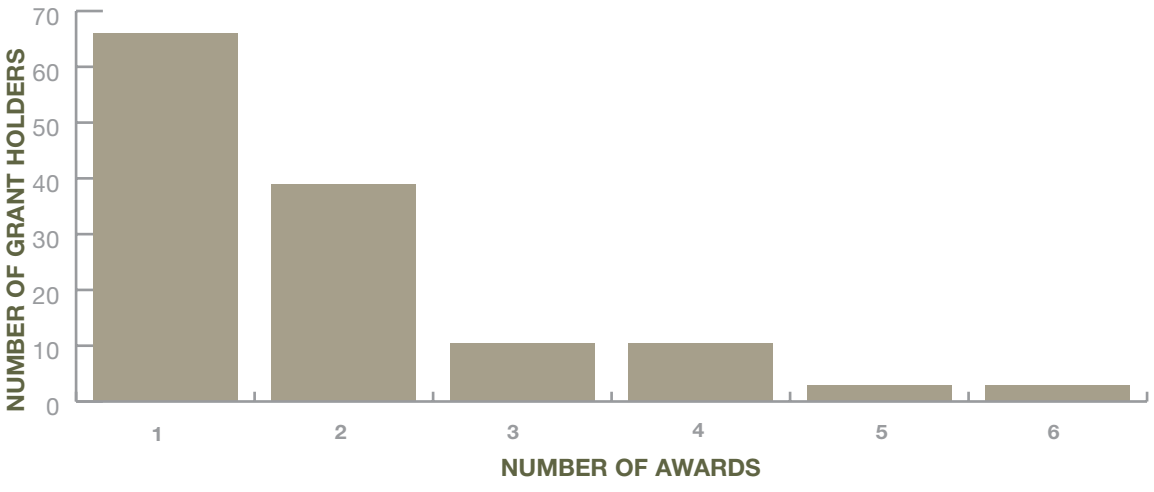
The committee members were also asked to rate the overall effectiveness of the review process and 61.6% (53/86) rated the process as effective whilst 38.4% (33/86) rated the process as somewhat ineffective (32.6%) or ineffective (5.8%). Again a number of committee members commented on the time taken for the review process. Seventy five percent (64/85) of the HRB committee members have also acted as reviewers for other funding agencies. When asked to compare the HRB review process to the other agencies they have been involved with, 22% (13/59) rated the HRB review process as better than the other funding agencies, 54.2% (32/59) rated it as the same and 23.7% (14/59) rated the HRB review process as worse than the other agencies they have worked with. Committee members who have reviewed applications for the Wellcome Trust commented that their review procedures are better than the HRB's review procedures. Again a number of committee members commented that more consideration should be given to the international reviewers reports.

Committee members were also asked about the composition of the committee that they are/were a member of and 67.9% (64/85) are satisfied with the committee's membership while 32.1% (21/85) are not satisfied with their committee's membership. Some committee members feel that the committees are too large and that the size could be reduced if pre-screening of application was introduced. A number of committee members commented that all of the committee members should be actively engaged in research and there should be representation of less-established researchers on the committees.

6.1.7 Applicants' success rates 1997-2003

The respondents were asked to enter the number of applications they have submitted to the project grant scheme and how many project grant awards they have received since 1997. Almost 54% (133/208) of the respondents who have submitted applications to the scheme have received at least one award between 1997 and 2003 while 36.1% (75/208) have submitted applications but have not received an award. The numbers of awards received by individual investigators are detailed in Figure 6.3. The average success rate for respondents was 37.2% for all applicants (208). It should be noted that as the survey includes co-applicants and principal applicants, the success rate is for applicants rather than applications. When the respondents are separated based on committee membership, the success rate for non-committee members is 30.7% and for committee members is 49.3%. However, on average the committee members also submitted more applications to the scheme; 4.4 per committee member versus 2.6 per non-committee member.

Figure 6.3 Number of awards received by individual investigators in the period 1997-2003. These figures include principal applicants and co-applicants.



Grant holders were asked to rate the benefits of the project grant(s) to their research. The most significant benefit was producing high quality research (31.7%), followed by training postgraduate students (19.0%) and answering a particular health research question (17.6%). When asked if having a research project grant had helped them to attract other funding, 47.9% of grant holders (58/121) said that it had helped to attract other funding whereas 52.1% (63/121) said that it did not help to attract additional funding. The sources of additional funding included Enterprise Ireland, Science Foundation Ireland, EU, HEA (PRTLI) and research charities.

The grant holders were generally satisfied with the administration of the grants they received in terms of administration of contracts, payments, grant reports and flexibility with changes requested (Table 6.4).

Table 6.4 Satisfaction ratings with administration of research project grant awards.

	Contracts (n=122)	Payments (n=121)	Grant reports (n=109)	Flexibility with changes (n=90)
Fully satisfactory	51.6%	61.1%	45.0%	44.4%
Satisfactory	46.7%	36.4%	54.1%	54.4%
Not satisfactory	1.6%	2.5%	0.9%	1.1%

6.2 Researchers Supported Through The Scheme

The survey on which this section is based, was administered between October and December 2003. A total of 261 researchers supported by the research project grant scheme between 1997 and 2003 were contacted to participate in the survey – 173 by email and 88 by post. Ninety-three researchers responded to the survey, giving a response rate of 35.6%. The total sample consists of 64.5% males and 35.5% females. Almost two thirds (64.5%) of the respondents were in the 20-25 year age group when they commenced their research project.

Of the researchers supported 77.4% were postgraduate students with a further 14% working as postdoctoral scientists. Research assistants accounted for 4.3% while the research nurses accounted for 1.1%. The postgraduate students funded by the scheme were registered for a number of different degrees, which included PhD (60.2%), MSc followed by PhD (16.1%) and MSc (1.1%) (Table 6.5). Of the 72 postgraduate students, 44.1% also carried out undergraduate teaching during their postgraduate degree.

Table 6.5 Researchers position

	Number	Percentage
Postdoctoral scientist	13	14
Research assistant	4	4.3
Research nurse	1	1.1
Other	3	3.2
Postgraduate student	72	77.4
MSc	1	1.1
MSc followed by PhD	15	16.1
Phd	56	60.2

The majority (52.7%) of respondents conducted their research in a university laboratory. Hospital based laboratory research accounted for 10.8%, followed by university non-laboratory based research with 4.3%, university based research institute (2.9%), and finally hospital non-laboratory research (2.2%).

Table 6.6 Research environments where research project were conducted

	Number	Percentage
Hospital- non laboratory based	2	2.2
Hospital – research laboratory	10	10.8
University based research institute	27	29
University- laboratory	49	52.7
University- non laboratory based	4	4.3
Other	1	1.1
Total numbers	**93**	**100**

On completion of their HRB funded research project, 77.4% of respondents indicated that they continued or that they intend to continue to work in research. 18.3% were less definite about their future in research and encouragingly only 4.3% of respondents did not see research as their future career. Of those respondents who have completed their HRB funded project and are currently employed in research, the table below gives their employment details. We can see that 76.5% are working in academic research and that the research is predominantly funded through the public sector (62.5%). The main country of employment is Ireland (74.7%).

Table 6.7 Employment details after completion of research project grants

	Number	Percentage
Research Environment		
Academic research	26	76.5
Biotech/Pharmaceutical industry	2	5.9
Clinical research	3	8.8
Industry-other	2	5.9
Other	1	2.9
Research Funding Source		
Charity	2	6.3
Private	10	31.3
Public	20	62.5
Country of Employment		
Ireland	32	74.7
United Kingdom	1	2.3
Continental Europe	1	2.3
USA	7	16.3
Other	2	4.7

Table 6.8 Adequacy of HRB funding (%)

	YES	NO
Level of funding	74.7	25.3
Duration of funding	54.9	45.1
Facilities	87.9	12.1
*Equipment	91.4	6.5

*2.2% did not need equipment

From table 6.8, it is clear that overall respondents found the support provided by the HRB through funding, facilities and equipment to be adequate. However the duration of funding garnered the least amount of support, with just over half (54.9%) of respondents agreeing that it was adequate.

Respondents who thought the funding was inadequate, were given the opportunity to provide their opinions. Of the 50 comments provided, the dominant theme was the issue of the duration of the grant. Over half (30) of the respondents thought that three years was insufficient to provide comprehensive cover for a PhD research programme. This point is supported by the average length of time taken to complete a PhD, which was 4.1 years (22 respondents). It was felt that an extra year's funding would help to alleviate the financial burden of trying to complete the PhD.

The second theme emerging from the comments pertains to the level of funding provided by the HRB. The main concern was that the funding is not sufficient to enable researchers to concentrate solely on their PhD's. Living expenses are very costly and account for largest expenditure of their stipend. Many have to supplement their salaries with other work, or in some cases borrow from parents.

Table 6.9 Ratings for research training and project supervision

	Number	Percentage
Research Training		
Excellent	41	44.1
Good	33	35.5
Average	6	6.5
Poor	4	4.3
No training required	9	9.7
Project Supervision		
Excellent	56	60.9
Average	7	7.6
Adequate	2.3	25
Inadequate	6	6.5

In 1998 the stated purpose of the research project grant scheme was "*…to conduct research on a specific topic and to support the training of the next generation of skilled researchers.*"

The statistics from table 6.9 provide us with some insight to the extent of the success of this objective among the respondents to the survey. It is clear that the majority of respondents considered the research training and project supervision received during the grant to be of a high standard. Just under 80% rated their research training to be either excellent or good, and a further 60.9% rated their project supervision as excellent.

Respondents also had the opportunity to provide their personal opinion about the supervision of their project. Overall the comments were very positive, and many found the supervision to be informative and very useful. However there were a number of comments concerned with the availability of supervisors, particularly when the research ran into difficulty, a time when more supervision was required.

The positive feedback regarding project supervision is further underlined when we examine the frequency of how often laboratory/team meetings took place, and one to one meetings with supervisors. 83.7% of respondents participated in a team meeting at least once a month and over half of (56.5%) had weekly team meetings. Furthermore 80.9% of respondents met with their supervisor at least once a month and over one third (36%) had weekly meetings with their supervisor.

CHAPTER 7

Other Funding Sources

Details of funding schemes operated by other funding agencies that may also fund health research are outlined in Table 7.1. Funding for health research can also be obtained from research charities and from industry.

Table 7.1 Irish research funding agencies and schemes that partially or fully support health research.

Funding agency	Scheme
Health Research Board	Fellowship schemes – Clinical, Postdoctoral, Nursing and Midwifery and Health Services Research
	Programme Grants
	Research Project Grants – Ireland-Northern Ireland Cooperation
Science Foundation Ireland	Basic Research Grants Scheme
	SFI Investigator Programme Grants
	SFI Fellow Awards
	Centres for Science, Engineering, and Technology
Irish Research Council for Science	Embark Initiative's Post Graduate Scholarship Scheme
Engineering and Technology	Embark Initiative's Post Doctorate Fellowship Scheme
Higher Education Authority	Programme for Research in Third-Level Institutions
Enterprise Ireland	Advanced Technologies Research Programme
	Commercialisation Fund
	Innovation Partnership
	International Collaboration
Irish Research Council Humanities	Government of Ireland Post-Graduate Scholarships
and Social Sciences	Post-Doctoral Fellowships
	Government of Ireland Research Project Grants in the Humanities and Social Sciences
	Government of Ireland Schemes for Academics

7.1 Basic Research Grant Scheme (SFI)

The Basic Research Grants scheme, originally managed by Enterprise Ireland and now managed by SFI in association with IRCSET is also a project grant scheme but has a broader remit than the HRB's research project grant scheme and covers all areas of science and engineering. Funding of €190,000 is available for up to three years and applicants must be independent researchers which has been defined as: "A researcher at least three years beyond the PhD who has a record of internationally competitive research accomplishment (as measured by publications in international journals, invited talks at international conferences, or other academic metrics appropriate to the applicant's field), and who will have an independent office and research space at the host research body for which he/she is fully responsible for at least the duration of the SFI funding". The scheme aims to support new researchers or researchers who have returned after a career or parental leave break, to establish their research careers and to build on their existing basic research programmes. Since 2001, approximately 30% of applications to the scheme have been in the biotechnology category. In 2003, the success rate within the biotechnology category was 14.9% (26/174) and approximately €3.9 million was awarded to the biotechnology grants. Based on the project titles 23 of the 26 awards in the biotechnology category related to health research.

7.2 IRCSET Postgraduate Scholarships

The IRCSET postgraduate scholarship scheme provides funding of €19,050 each year for three years for PhD students (total funding of €57,150) and one year (€19,050) for MSc students. Of the €19,050, €12,700 goes directly to the student with the remainder available to fund other forms of support such as fees, appropriate travel and other expenses. Applications are assessed on the academic record and research preparation of the candidate, a personal statement from the candidate, a referee's statement and the research proposal. In 2003, 160 awards were made of which 32 were in a biology related discipline.

7.3 HRB PhD Training Sites

In response to concerns about the standard of training for postgraduate students in Ireland the HRB launched a pilot programme to support PhD students in 2003. The purpose of the scheme is to improve the quality of PhD training in health research by facilitating a broader education for young researchers, and enhancing co-operation between post-graduate students in different research groups. It will also encourage institutions to establish a critical mass of students in a themed area by funding four-year PhD training programmes.

The disciplines covered include health, biomedical and clinical sciences, public health, epidemiology, health services research and practice based research. As this is a pilot scheme, two training sites will be funded in 2004 and the scheme will be kept under regular review.

Funding of up to €1,000,000 over four years is available for each site. Costs covered include €18,000 per annum per student, fees, training, research expenses, small items of equipment, travel and dissemination of results.

At the end of the first year, students should be formally assessed for their suitability to continue the programme. The PhD Training Sites will be expected to carry out continuous assessment of the students throughout the four-year training period, and to provide the supports necessary to the students to help them successfully complete their training (e.g. performance reviews, mentoring). At the end of the four years, students should be able to demonstrate:

- A broad knowledge of the themed research area.
- A knowledge and understanding of the relevant research methodologies and techniques (including problem analysis and resolution skills, scientific reasoning and logic).
- A knowledge and understanding of the broader research environment (including research ethics, science and society, commercialisation).
- Project management skills.
- Communication skills, both written and oral.
- Team working.

It will be a condition of the awards that annual reports are provided to the HRB for the period of the grant. The report will include a progress report on each of the students supported by the training site.

The criteria for assessing applications are:

- Research track record and international standing of the members of the team.
- Track record of members of the team in supervising PhD students.
- The coherence of the themed research area.

- The quality of the structured training programme.
- Arrangements for management and co-ordination of the training site.
- The infrastructure and facilities available for the training site.

A call for expressions of interest was advertised in September 2003. Sixteen expressions of interest were received in and were short-listed by a panel. The five short-listed applicants were invited to submit full applications. Full applications were subject to international peer review and a panel of national and international researchers and administrators meet in March 2004 to select the successful proposals.

7.4 Career Development and Research Programmes

The HRB, IRCSET and SFI also offer career development schemes in the form of postdoctoral and fellowship awards. There are also a number of schemes that fund larger research programmes such as the HRB's programme grants, SFI's Investigator Programme Grants and CSETs and the HEA's PRTLI programme.

7.5 Wellcome Trust

The Wellcome Trust operates a Project Grants scheme, which provides funding for high-quality projects in the basic and clinical sciences, which are relevant to human and animal health. Applications are submitted to four panels:

- Infection and Immunity
- Molecular and Cell
- Neuroscience
- Physiology and Pharmacology

Each panel has 17-23 members and is supported by 7/8 Wellcome Trust staff including a programme manager, programme officers and administrators.

Applications can be submitted at any time and are processed for consideration at panel meetings, which are held five times a year. Support is available for research assistants and/or technicians, consumables, animal research, equipment and travel for up to three years. Research leave may also be requested to provide the salary of a temporary lecturer, research expenses and a travel allowance. Typical three year project grant awards are in the region of £150,000 - £300,000.

Assessment of grant applications is based on peer review. External referees' comments are considered by the panels, which decide whether or not to fund the application. The panels comprise independent scientists from the research community with appropriate expertise and research experience. They are asked to express their own views on the research proposal and to adjudicate on the external expert opinions received on it.

The Wellcome Trust supports PhD students through 12 Four-Year PhD Training Programmes in UK Universities. The Trust's Prize Studentships scheme for PhD students is currently suspended. Specialist subject-specific PhD training schemes are also supported in Biodiversity, the Cardiovascular Research Initiative and Biomedical Ethics. PhD training opportunities are also offered through Research Training Fellowships for Medical, Dental and Veterinary Graduates. Career development is also supported through a number of fellowship initiatives for basic research, medical, dental and veterinary research and health services research.

CHAPTER 8

Conclusions & Recommendations

8.1 Objectives and Outcomes

In the period 1997 to 2003, the HRB awarded over €33 million to health research through the project grants scheme. The aim of the research project grant scheme is described as being "*to facilitate research in health related biological sciences, epidemiology, health services research and health research in Ireland*". However it is clear that the provision of training is also a significant objective. This is reflected in the fact that the scheme has predominantly been used to fund postgraduate students and in particular PhD students.

The success of the scheme in achieving these objectives is difficult to measure but it is clear that it has contributed to the training of postgraduates and in particular it has made a significant contribution to the training of PhD students in health research. In the five years between 1999 and 2003, 173 PhD students were supported through project grants. Data on completion rates is limited but a snapshot from grants completed in 2001 shows that of the 37 students, 26 completed within three or four years. While this completion rate might be adequate, it does suggest that there is room for improvement. The standard of training provided to the student is critical for producing high quality research and if the scheme is to continue supporting students, efforts should be made to improve the standard of postgraduate training.

Assessing the overall impact of the publications arising from the research project grant scheme would require a large-scale bibliometric analysis of those publications. Based on the limited information available from the grant reports and the output survey, the average number of publications from research project grants seems low and in some cases there were no publications from the research. This is surprising for a scheme that aims to support high quality health research and may indicate a conflict between that objective and the provision of training. Several respondents to the survey suggested that providing training for postgraduate students and conducting high quality research are not mutually exclusive, but it may be that either objective could be met more successfully through dedicated support schemes. At the very least it suggests that the track record of previous grant holders should be taken into consideration when reviewing applications.

With the establishment of dedicated PhD training sites, which support students for four years, it may be more appropriate to focus the project grants scheme on the objective of conducting high quality health research. This would mean shifting the focus of the scheme away from postgraduate students in favour of postdoctoral researchers.

Up to 2004 postdoctoral researchers could only apply for research project grants if their contract of employment extends for the duration of the grant. The HRB's postdoctoral fellowship scheme supports a number of excellent postdoctoral scientists each year. However it is limited to small numbers and given the ratios of postdoctoral researchers to postgraduate students there is also a requirement to increase the number of postdoctoral researchers. Postdoctoral researchers see the research project grant scheme as a means of gaining independence and setting up their own research group but limited postdoctoral employment contracts were an obstacle for postdoctoral researchers applying for funding. To facilitate career development opportunities for postdoctoral researchers, they could be allowed to apply for their own salary through the project grants scheme. This would have implications for the HRB's postdoctoral fellowship scheme but it would provide researchers at that level with much improved access to research funding.

8.2 Research Focus

In common with the HRB's remit, the research covered by the project grants scheme spans all areas of health and all types of research. Respondents to the survey were asked to classify the research funded by the project grant scheme as basic, clinical or applied or a combination of the three. Overall the results suggested that the research funded by the project grant scheme fell into all three categories but that a significant proportion of the research being funded was classified as basic research. Historically, the HRB was one of only a few sources of support for health research and the dominance of basic research projects might be expected in that context. However, the availability of increased funding for basic research from other agencies affords an opportunity to alter the balance of support in favour of those areas identified within the HRB's Corporate Strategy, namely, translational and clinical research, and epidemiology, public health and health services research, for which the HRB is the sole source of support.

8.3 Committees

The current research project grants committees were established in 2001 for a four-year term. New committees will be required in 2005. This offers an opportunity to restructure the present committees to better reflect the HRB's strategic objectives and to improve the reviewing process.

A number of respondents commented on the large number of committees (13) and the overlapping remits. Against that, any restructuring needs to take into account the increasingly specialised nature of research and the workload for committee members. Given that Ireland's research community is small, it may be necessary to recruit international members to achieve the right balance of expertise.

The options for restructuring the committees include:

1. Restructuring of the existing committees to reduce overlap and to increase compatibility between research areas in committees. This would allow for some rationalisation of existing structures but would not lead to a significant reduction in the number of committees.

2. A small number of committees with larger membership, for example based on the MRC (UK) model of five committees; this would make it easier to establish consistent assessment procedures across committees.

8.4 Views of the Research Community

Overall the responses to the project grant scheme from the research community were positive. There were some suggestions for improvements that arose frequently. In relation to funding postgraduates, respondents felt that funding should be extended to four years for PhD students. The HRB should consider introducing a category for new researchers i.e. those in their academic post for less than five years, and possibly a separate category for postdoctoral students. The major criticisms of the project grants scheme related to the low success rates, particularly in 2003, the perception that committee members have a better chance of being funded and the inadequate consideration of the international reviews. With regard to administration of the scheme the response was generally positive except on the issue of the time taken to process applications and to receive feedback on the applications.

The current scoring system was seen as somewhat arbitrary as reviewers are asked to rate the application on a scale of 1 to 5 to one decimal place. This score is based on their overall view of the application. Based on the survey responses a significant number of the committee members are not happy with the current scoring system and in addition there has been some inconsistencies in the scoring by international reviewers. The scale should be changed to a 1 to 100 scale with each of the assessment criteria being allocated a specific score.

The objectives of the research project grant scheme in terms of the outputs that it hopes to achieve should be clearly stated for the scheme and efforts should be made to encourage researchers to publish their findings.

Finally, a time frame should be set for reviewing the scheme again, to assess the achievement of its objectives and the effects of any changes.

8.5 Summary of Recommendations

The objectives of the scheme should be clearly stated, i.e. whether it aims to support high quality health research or to train postgraduate students.

Consideration should be given to focusing the scheme on supporting high quality health research, with PhD training devolved to dedicated training sites.

In view of the increased funding available for basic research from other sources, funding should be focused on those areas identified as priorities in the HRB's Corporate Strategy, namely translational and clinical research, public health, epidemiology and health services research.

The committees should be restructured so as to reduce fragmentation, improve the consistency of assessment and allow for greater international involvement.

The assessment and scoring procedures should be clarified further, especially in relation to the role of international peer review.

APPENDIX A

Research project grant committees and research topics

Bio-materials and Bio-engineering

Engineering underpinning biomedicine

Instrumentation development

Biostatistical methods

Mathematical modelling

Imaging techniques

Biomaterials

Bioengineering and radiologic imaging

Diagnostic bioimaging

Cancer Biology and Haematological Diseases

Cancer genetics and cell biology, including metastasis

Environmental carcinogenesis

Drug development and evaluation

Therapeutic and clinical oncology

Leukemias and lymphomas

Radiotherapy, biological response modifiers, and chemoprevention

Stem cell biology and hematopoiesis

Red blood cell biology and structure

Leukocyte biology

Bone marrow transplantation and transfusion

Coagulation biochemistry and disorders

Complementary and non-conventional therapies

Cardio-Respiratory and Renal Disease

Cardiovascular diseases

Cardiovascular pharmacology

Vascular biology/thrombosis

Cytokines/nitric oxide

Angiogenesis

Cardiac physiology

Heart failure and transplantation

Renal diseases, including chronic renal failure and transplantation

Renal physiology

Cerebrovasculature

Lung development and transplantation

Pulmonary physiology

Chronic airway diseases, including asthma, cystic fibrosis, obstructive airways diseases, and interstitial lung diseases, including pulmonary fibrosis

Sudden Infant Death Syndrome

Complementary and non-conventional therapies

Dental and Digestive Sciences

Oral diseases and oral medicine

Oral pathology

Oral clinical research

Peridontology

Public dental health

Restorative dentistry and materials science

Saliva and Salivary Gland

Gastroenterological pharmacology and physiology

Oesophageal, gastric, intestinal, and pancreatic diseases, including disorders of the gall bladder and biliary system

Liver diseases, including liver transplantation

Clinical nutrition/malnutrition (not including prevention)

Digestion, absorption, and nutrient transport

Complementary and non-conventional therapies

Epidemiology, Health of the Population and Primary Care

Epidemiology

Population based intervention trials

Primary care

Public health

Patterns of health

Health psychology

Sociological influences on health

Health attitudes and behaviour

Health status and inequalities

Bio-medical ethics

Genomics, Proteomics and Human Disease

Prokaryotic and eukaryotic genetics and genomics

Mammalian and human genetics and genomics

Quantitative genetics and genetics of complex traits

Population structure and dynamics

Evolutionary genetics

Genetic / molecular epidemiology

Genomic structure and function; molecular approaches to gene function

Regulatory mechanisms of gene expression

Chromosome structure and dynamics

DNA recombination and repair

DNA transcription and translation

RNA processing, stability and degradation

Protein sequence, function and expression

Bioinformatics

Health Services Research and Practice Based Research

Research issues specific to any of the health professions

Provision and utilisation of health services

Identification and quantification of health care needs

Health outcomes

The economics of health service provision

Immunology, Pathology and Mechanisms of Disease

Immune system

Cellular, molecular and developmental immunology

Immunochemistry and immunogenetics

Autoimmune and hypersensitivity diseases

Immunodeficiency diseases, including studies of the immune defects due to HIV

Rheumatology and rheumatological disorders

Tumour immunology and immunotherapy

Chronic fatigue and related disorders

Mucosal immunology

Innate immunology

Fundamental transplantation immunology, tolerance, and rejection

Pathology

Complementary and non-conventional therapies

Mental Health and Clinical Neurology

Clinical neurology

Aetiology of mental illness

Developmental and mental disorders

Learning disabilities

Emotional, behavioural and cognitive disorders

Addiction and substance abuse

Forensic psychiatry

Ageing and mental health

Childhood and mental health

Rehabilitation

Development, prevention and treatment of mental diseases and disorders

Mental health promotion

Complementary and non-conventional therapies

Metabolism, Endocrinology and Reproductive Medicine

Foetal, maternal, and neonatal physiology

Hormone physiology and biochemistry

Endocrine function and disease

Diabetes and diabetic complications

Neuroendocrinology

Genitourinary, including prostatic function and disease

Reproduction, fertility and contraception

Metabolism and metabolic diseases

Nutrient metabolism, obesity and clinical nutrition

Reproductive toxicology

Menopause

Complementary and non-conventional therapies

Microbiology, Mechanisms of Infectious Diseases and Host Defence

Bacteriology and bacterial pathogenesis

Virology and viral pathogenesis

Mycology and fungal pathogenesis

Parasitology and parasitic diseases

Vaccines

Infectious diseases

HIV virology and pathogenesis

HIV opportunistic infections

HIV drug development

Host/pathogen interactions

Complementary and non-conventional therapies

Molecular, Cell and Developmental Biology

Membrane transport, structure and dynamics

Membrane and protein trafficking

Cytoskeleton, cell division

Intra and intercellular signalling

Cell cycle control

Apoptosis

Cell and tissue development

Cell and tissue maintenance, repair and ageing

Embryonic development and cell differentiation

Protein processing, stability and regulation

Enzymology and catalysis

Protein chemistry, structure and folding

Nucleic acid chemistry, structure and folding

Oligosaccharide and polysaccharide biochemistry

Neurosciences

Neurophysiology

Neurochemistry and neuropharmacology

Neurogenetics

Neurodegeneration

Chemosensation, hearing, balance, touch, somatosensation

Ageing, memory and other cognitive processes

Computational and theoretical models of cognitive processes

Neural coding of complex stimuli (e.g., spatial transformations, speech perception)

Vision

Traumatic brain or spinal cord injury/regeneration/transplantation

Consequences of ischemia or hypoxia, convulsive disorders

Clinical sleep research

Complementary and non-conventional therapies

APPENDIX B

Committee members 2001-2004

Bio-materials and Bio-engineering

Dr Kenneth Dawson

Professor Mark O'Malley

Dr Dmitri B Papkovsky

Dr Tim McGloughlin

Professor Clive Lee

Mr Eric Masterson

Dr Noel Ray

Ms Mary Sharp

Dr Alan Keenan

Professor Pierce Grace

Professor Tom J Glynn

Dr W J M van der Putten

Professor Jane Grimson

Dr Brendan McCormack

Cancer Biology and Haematological Diseases

Professor Andrew Green

Dr Donal Hollywood

Dr John Kennedy

Dr Mark Lawler

Professor TRJ Lappin

Dr Maccon M Keane

Professor Gerald C O'Sullivan

Dr Anthony Staines

Dr Paul Harkin

Dr Owen Smith

Dr Amanda McCann

Professor Thomas G Cotter

Professor Peter Hall

Dr Rosemary O'Connor

Dr Richard Wilson

Cardio-Respiratory and Renal Disease

Dr B Therese Kinsella

Professor Timothy O'Brien

Professor Shane O'Neill

Dr Declan Lyons

Professor Paul A Cahill

Dr Niall Colwell

Professor Dermot Kenny

Dr Clare M O'Connor

Dr Peter Maxwell

Cardio-Respiratory and Renal Disease (continued)

Professor Ian M Graham

Dr Catherine Godson

Professor Luke Clancy

Professor Paul McLoughlin

Dental and Digestive Sciences

Professor Brian C O'Connell

Professor Frederick Charles Campbell

Professor Colm O'Morain

Professor B Drumm

Dr Frank Murray

Professor Louis Anthony Buckley

Professor Dermot Kelleher

Professor John J Clarkson

Dr Finbarr Allen

Professor Fergus Shanahan

Professor Denis O'Mullane

Professor David C Coleman

Dr Wilson A Coulter

Dr Joe O'Connell

Epidemiology, Health of the Population and Primary Care

Professor Denis O'Mullane

Dr Tom O'Dowd

Dr Joseph Barry

Dr Patricia Fitzpatrick

Dr Shane P A Allwright

Professor Leslie Daly

Dr Richard Layte

Ms Anne Cleary

Dr Michael Boland

Dr Evelyn Mahon

Professor Ivan Perry

Dr Liam Murray

Professor Andrew Murphy

Dr Cecily Begley

Professor Jack James

Genomics, Proteomics and Human Disease

Dr Rosemary O'Connor

Dr James McInerney

Professor Nolaig Parfrey

Dr John O'Brien

Dr Michael P Carty

Dr William Gallagher

Genomics, Proteomics and Human Disease (continued)

Professor Kenneth Wolfe

Professor Tommie McCarthy

Dr Hillary Russell

Professor James A Houghton

Dr Andrew Wallace

Dr Mark Lawler

Professor Andrew Green

Dr Dolores Josephine Cahill

Health Services Research and Practice Based Research

Professor Hannah McGee

Dr Kathleen Mac Lellan

Professor Geraldine McCarthy

Dr Patrick C Brennan

Professor Colin Bradley

Professor Brian Nolan

Dr Joe Moran

Dr Sharon Friel

Professor Bernadette Herity

Dr Orlaith O'Reilly

Dr Eithne Fitzgerald

Professor Austin Leahy

Dr Helen Whelton

Professor Sam Porter

Mr Charlie Hardy

Immunology, Pathology and Mechanisms of Disease

Dr Cliona O'Farrelly

Professor Luke O'Neill

Dr Geraldine McCarthy

Professor Henry Paul Redmond

Professor Michael Ryan

Professor Jim Johnston

Dr Patrick Thomas Harrison

Dr Dolores Josephine Cahill

Professor Gregory Julian Atkins

Dr Aideen Long

Dr Derek G Doherty

Dr Bernard P Mahon

Dr Paul Moynagh

Professor Kingston Mills

Mental Health and Clinical Neurology

Professor Jack James

Dr Brian Lawlor

Dr Michael Gill

Dr William T O'Connor

Professor Roy McClelland

Professor Kevin Malone

Professor Ian Robertson

Dr Orla Hardiman

Professor Carol Fitzpatrick

Ms Ros Moran

Professor Patricia Walsh

Dr Joseph Barry

Dr Timothy Lynch

Professor Timothy Dinan

Metabolism, Endocrinology and Reproductive Medicine

Dr Thomas Francis Moore

Dr Catherine Mary Nolan

Professor Colm O'Herlihy

Dr John O'Mullane

Dr Philip Newsholme

Dr John J Nolan

Professor Patrick B Collins

Dr Lorraine O'Driscoll

Dr Ian Young

Professor Brian Sheppard

Dr Andy Robertson

Professor Gerald Tomkin

Professor John Morrison

Dr Cora O'Neill

Microbiology, Mechanisms of Infectious Diseases and Host Defence

Professor Fergal O'Gara

Dr Thomas Quigley

Professor Bert Rima

Professor Hilary Humphries

Dr Bernard P Mahon

Dr Catherine Greene

Dr Sean Doyle

Professor Timothy J Foster

Dr Marguerite Clyne

Professor David C Coleman

Dr Wilson A Coulter

Professor Martin Cormican

Microbiology, Mechanisms of Infectious Diseases and Host Defence (continued)

Dr Wim Meijer

Professor Kingston Mills

Dr Anthony Moran

Molecular, Cell and Developmental Biology

Dr Joe O'Connell

Professor Seamus Martin

Dr Afshin Samali

Dr Ross MacManus

Dr Carmel Hensey

Dr Niamh Moran

Dr Paul Moynagh

Professor TRJ Lappin

Dr William Gallagher

Professor Brian C O'Connell

Professor Paul A Cahill

Professor Catherine Godson

Dr Thomas Francis Moore

Dr Catherine Greene

Neurosciences

Professor Ingrid Allen

Dr Norman Delanty

Dr Cora O'Neill

Dr Kay Ohlendieck

Dr Timothy Lynch

Professor Marina Lynch

Dr Michael Hutchinson

Professor Roger Anwyl

Dr Aidan Bradford

Professor Timothy Dinan

Dr Peter Dockery

Professor Keith Tipton

Dr Mary McCaffrey

APPENDIX C

Table C.1. Breakdown of average costs for awards for each committee in 2002.

	Awards	Travel/ Dissemination	Consumables	Equipment	Fees	Personnel	Start up cost	Other
BIO	4	€5,404	€40,692	€4,248	€11,925	€94,028	€12,260	€10,730
CAN	4	€3,103	€40,175		€8,250	€64,156		
CAR	5	€5,007	€55,660	€1,000	€10,500	€77,263	€13,380	€3,667
DEN	5	€4,206	€36,949	€7,221	€7,500	€93,879	€9,603	€3,740
EPI	2	€1,000	€32,270	€30,180	€2,240	€67,732	€9,000	€8,250
GEN	5	€5,620	€45,436	€2,300	€9,009	€80,963	€11,250	€5,450
HSR	5	€8,020	€4,250	€5,883	€9,750	€118,521		€7,000
IMM	7	€3,769	€55,002	€1,300	€10,000	€109,975	€14,675	
MEN	2	€5,595	€19,638	€1,270	€2,500	€119,886		€100
MET	5	€4,480	€61,316	€5,300	€10,500	€60,631		
MIC	3	€2,933	€38,500	€4,409	€10,500	€86,334		€3,000
MOL	6	€3,483	€50,300	€1,675	€10,500	€64,162	€7,000	€6,500
NEU	7	€4,937	€46,606	€9,999	€9,265	€45,000	€15,000	€4,270
Average		€4,428	€40,523	€6,232	€8,649	€83,271	€11,521	€5,271

Table C.2. Breakdown of average costs for awards for each committee in 2003.

	Awards	Travel/ Dissemination	Consumables	Equipment	Fees	Personnel	Start up cost	Other
BIO	2	€4,000	€31,250	€18,000	€8,300	€39,000	€15,000	
CAN	3	€5,250	€42,667	€11,885	€9,000	€85,975	€8,000	€3,750
CAR	4	€2,875	€51,825	€960	€6,100	€86,093	€15,000	€1,500
DEN	1	€2,000	€53,000	€1,000		€72,000		
EPI	1	€5,000	€10,100			€72,606		
GEN	3	€2,917	€43,333		€9,000	€58,769		
HSR	3	€9,867	€6,391	€31,547	€9,762	€106,889		€1,775
IMM	4	€2,850	€46,925	€1,000	€9,900	€71,903	€8,550	€3,000
MEN	1	€3,440	€5,400	€3,828		€123,864		
MET	2	€4,000	€38,693			€118,780		
MIC	3	€3,667	€48,667	€5,125	€10,500	€67,740		€2,500
MOL	3	€4,667	€53,946	€12,000	€10,500	€81,459	€15,000	€5,250
NEU	3	€5,400	€40,500	€4,930	€10,447	€90,159	€12,000	€20,100
Average		€4,302	€36,361	€9,028	€9,279	€82,711	€12,258	€5,411

APPENDIX D

Table D.1 Committee scores, 2001

Committee	<3.5	3.5-3.9	4.0-4.4	4.5-5.0	Total
Bio-materials & Bio-engineering	2	1	0	0	3
Cancer Biology & Haematological Diseases	10	4	2	0	16
Cardio-Respiratory & Renal Diseases	10	13	3	0	26
Dental & Digestive Sciences	6	4	3	0	13
Epidemiology, Health of the Population & Primary Care	8	3	0	0	11
Genomics, Proteomics & Human Disease	5	4	2	0	11
Health Services Research & Practice Based Research	8	5	6	0	19
Immunology, Pathology & Mechanisms of Disease	11	9	2	0	22
Mental Health & Mental Illness	8	0	1	0	9
Metabolism, Endocrinology & Reproductive Medicine	8	2	3	0	13
Microbiology, Mechanisms of Infectious Diseases & Host Defence	14	10	2	0	26
Molecular, Cell & Developmental Biology	10	4	3	0	17
Neurosciences	10	5	4	0	19
Totals	**110**	**64**	**31**	**0**	**205**

Table D.2 Committee scores, 2002

Committee	<3.5	3.5-3.9	4.0-4.4	4.5-5.0	Total
Bio-materials & Bio-engineering	5	4	3	0	12
Cancer Biology & Haematological Diseases	14	2	3	0	19
Cardio-Respiratory & Renal Diseases	13	14	2	0	29
Dental & Digestive Sciences	4	11	3	0	18
Epidemiology, Health of the Population & Primary Care	7	2	1	0	10
Genomics, Proteomics & Human Disease	6	7	3	1	17
Health Services Research & Practice Based Research	10	6	2	0	18
Immunology, Pathology & Mechanisms of Disease	12	9	3	1	25
Mental Health & Mental Illness	7	1	2	0	10
Metabolism, Endocrinology & Reproductive Medicine	7	5	3	1	16
Microbiology, Mechanisms of Infectious Diseases & Host Defence	12	8	1	0	21
Molecular, Cell & Developmental Biology	7	9	4	0	20
Neurosciences	10	9	3	1	23
Totals	**114**	**87**	**33**	**4**	**238**

Table D.3 Committee scores, 2003

Committee	<3.5	3.5-3.9	4.0-4.4	4.5-5.0	Total
Bio-materials & Bio-engineering	5	7	3	0	15
Cancer Biology & Haematological Diseases	9	10	4	0	23
Cardio-Respiratory & Renal Diseases	10	16	3	0	29
Dental & Digestive Sciences	1	13	0	0	14
Epidemiology, Health of the Population & Primary Care	8	7	1	0	16
Genomics, Proteomics & Human Disease	3	11	4	0	18
Health Services Research & Practice Based Research	11	3	3	0	17
Immunology, Pathology & Mechanisms of Disease	13	7	6	1	27
Mental Health & Mental Illness	3	6	1	0	10
Metabolism, Endocrinology & Reproductive Medicine	3	13	2	2	20
Microbiology, Mechanisms of Infectious Diseases & Host Defence	7	11	3	0	21
Molecular, Cell & Developmental Biology	5	12	6	0	23
Neurosciences	6	8	4	2	20
Totals	**84**	**124**	**40**	**5**	**253**

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