

Review

Royal Society of Edinburgh/Scottish Executive Research Fellowships Schemes

Report

September, 2005

Review of the Royal Society of Edinburgh/ Scottish Executive Research Fellowships Schemes

**Report to the Review Steering Group
September, 2005**

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Executive Summary

This study stems from the report of the Scottish Science Advisory Committee 'Investing in Scientific Talent' published in October, 2004. It covers two personal research fellowship schemes which are grant funded by the Scottish Executive and administered by the Royal Society of Edinburgh:

- 1) Three-year Personal Research Fellowships, primarily for non permanent staff
- 2) One-year Support Fellowships allowing established staff to take study leave

The Steering Group chaired by Professor Sir John Enderby was charged with implementing an independent review and reporting back to the Council of the Royal Society of Edinburgh and the Scottish Executive. The remit was as follows:-

“To assess the extent to which the RSE’s Scottish Executive funded Personal and Support Research Fellowships are attractive, provide value for money, meet market demand, are administered effectively, require improvements or changes of any kind, and to consider the implications of full economic costs.”

This report was commissioned to provide a review of the two fellowships schemes, assess the implications of the introduction of full economic costing and inform the recommendations of the Steering Group to the Council of the Royal Society of Edinburgh (provided separately).

The study has found that both the Personal Research Fellowships and Support Fellowships schemes have addressed their stated aims and a rigorous selection process has been applied consistently over the years. Career progression and retention in Scotland has been very good. There is good evidence that the awards have been additional to the uptake in Scotland of fellowships from the main UK schemes run by the Royal Society and the Research Councils.

The schemes can clearly be regarded as having provided value for money against their remit. However, it was a premise of the review that updating was due and a number of areas are identified. Further, the profile and impact of the schemes has been limited by the very small number of awards available each year. Significant changes in terms of scale and clarity of purpose are needed for an optimum contribution to the objectives set out by the SSAC.

The review indicated that the Personal Research Fellowships in the sciences should be scaled up and the overall goal repositioned along the following lines:-

‘To create the conditions for those with the highest potential and motivation to prove their capability, become strongly established in their research field and proceed to make a long term contribution to Scottish science and its application.’

The current Support Fellowships have lower leverage and are not well known. However, they have probably achieved more than was previously apparent and could also be repositioned to better effect. The review indicated that further consideration should be given to the role of personal fellowships for established academics, in different research fields and in different types of institution.

Future fellowships schemes should follow the principles and methodology of Full Economic Costing as determined by UK Treasury policy. However awards should be made on the basis of tapered funding with increasing responsibility being taken by the host institution in the later stages of a fellowship.

Acknowledgements

The consultancy team is most grateful to Professor Sir John Enderby FRS for his expert chairmanship of the review and to all members of the steering group for their support and most valuable contributions. It would also like to thank all respondents to the survey and consultations for their ready participation and the high quality of their responses. The extensive input received, together with the desk research, has provided the main basis of this report.

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Section 1 Introduction

1.1 Objectives

This independent review was set up to cover two personal research fellowship schemes:-

- 1) Three-year Personal Research Fellowships, primarily for non permanent staff at an early stage in their development as an independent researcher
- 2) One-year Support Fellowships allowing established staff to take study leave

The schemes are grant funded by the Scottish Executive, administered by the Royal Society of Edinburgh and have run for around 20 years with some incremental improvements during that time.

The overall objective of this review was defined as:-

“To inform the Scottish Executive and the RSE on the effectiveness of the Fellowship programme and how far it is achieving its aims.”

This report was commissioned to provide an evidence base to inform the steering group assessment and ensuing recommendations. The recommendations of the review Steering Group to the Council of the Royal Society of Edinburgh are provided separately.

1.2 Background

The requirement for this review was agreed in order to help address recommendations of the Higher Education Review Phase 3 Report and the report of the Scottish Science Advisory Committee (SSAC), *‘Investing in Scientific Talent’*, published in October, 2004. The recommendations relating to the Personal Research Fellowships (PRF) scheme were that it should be:-

“A prestigious and flexible fellowship scheme for outstanding young scientists who have the potential to be the scientific leaders of the future.”

From the SSAC report, this refers to engineering and technology as well.

The objective of early career personal fellowships programmes is to provide a route for the most capable to establish independent careers and new programmes of research. This opportunity may otherwise be difficult to find as the research positions available tend to be on the programmes of established, more senior researchers.

Issues identified in the report *“Investing in Scientific Talent”* include:-

- More excellent applications for 3-year Research Fellowships are received than can be funded under the current scheme.
- The 3-year duration may not be sufficient for a highly ambitious and risky programme of work, or offer sufficient professional and personal stability.
- The level of award, which is not sufficient to cover the costs of an average laboratory based research project. Most fellows spend considerable time applying for additional research funds.
- Enhancements to the scheme are likely to be required to provide a more appropriate model for developing scientific talent in Scotland.

- It is unclear if the 1-year Support Fellowships (SFs) are adequately focused on individuals who have strong research capabilities.

The SSAC report considered the Royal Society University Research Fellowships (URF) scheme the best model currently available for early career fellowships aimed at developing research talent. The duration of award (5 years with the possibility of extension by a further 5 years) allows for more ambitious programmes of work to be undertaken and the greater provision for research costs reduces the need to seek small scale research grants.

The UK Research Councils also award 5-year fellowships aimed at the same career stage, and these were also recommended as models by the SSAC. Since publication of the SSAC report, the distinction between fellowships and research grants has become somewhat blurred. This is due in part to the recent introduction, by EPSRC at least, of a single application for both the fellowship and a research grant, where a research grant is required. If the fellowship is awarded, the grant is awarded automatically. This reduces the burden, uncertainty and possible time lag associated with a separate application and assessment process. However, it may be argued that the first stage of an early career, personal research fellowship should be spent in exploratory work and pressure to make an early application for grant funding may not be appropriate. Secondly, under Full Economic Costing (fEC), the time the Principal Investigator (PI) spends on a project will be included in research project costing from now on. Research Council advanced research fellows and Royal Society URFs are already eligible to apply for grant funding as PIs. At present there is no formal arrangement between the RSE and the UK Research Councils concerning PI status for Personal Research Fellows.

The budget implications of even a relatively modest enhancement to the existing RSE/Scottish Executive scheme are significant compared to current funding levels, although very small in the context of funding high impact science and public expenditure in general. Nevertheless the implications from the sponsor's perspective have been a very important consideration on the part of everyone involved in the study. There have been no presumptions concerning future funding.

The SSAC also considered the Support Fellowships Scheme. The recommendation was that it should also be reviewed to establish whether it is focussed adequately on individuals who have strong research capabilities.

The review was set up under the direction of a Steering Group chaired by Professor Sir John Enderby FRS (Appendix 1). The steering group was charged with implementing an independent review and reporting back to the Council of the Royal Society of Edinburgh and the Scottish Executive as follows:-

“To assess the extent to which the RSE’s Scottish Executive funded Personal and Support Research Fellowships are attractive, provide value for money, meet market demand, are administered effectively, require improvements or changes of any kind, and to consider the implications of full economic costs.”

1.3 Terms of Reference for the study

The overall aim of the study was to provide the evidence base to support further consideration of the future of the two fellowship schemes. The review of the current programme was in particular required to consider:-

- Aims and objectives.
- Programme achievements.
- How comprehensive the programme has been.

- Lessons learnt and any areas for improvement.
- Retention of researchers.
- Value for money.

Looking to the future the main considerations were:-

- Demand for research fellowships.
- Universities' views of research fellowships.
- How the programmes stand in relation to other schemes.
- Implications of the introduction of Full Economic Costing of research projects for the future costs of the scheme.

1.4 Method and sources of data

The approach to the study may be summarised as follows:-

- Initial consultations with the current RSE Research Awards Convenor and the Scottish Executive.
- Interrogation of scheme documents and records plus interviews with current personnel.
- Tracing past research fellows via programme information and public domain sources.
- E-mail surveys for completed fellowships from a base date of 1990.
- Extensive desk research and analysis related to fellowship schemes, full economic costing and research careers.
- A small number of university consultations, mainly with vice principals responsible for research. The main topics were:- the role of personal fellowship schemes, how they should be positioned for the future and the implications of full economic costing.
- Consultations with the Royal Society and three of the UK Research Councils concerning fellowship schemes, full economic costing (fEC), programme data and career destinations.
- Consultation with the Scottish Higher Education Funding Council (SHEFC) on the value of personal fellowship schemes and how they should be positioned for the future.

The work was conducted between May and September, 2005. There were two interim meetings with the Steering Group and a final meeting with its chairman.

One of the most pertinent reports relevant to this project was published by the Academy of Medical Sciences in July, 2005¹. It covered non-clinical research fellowships in the biomedical sciences and the approach included conducting focus groups around the UK with research scientists holding awards at all levels.

¹ The Academy of Medical Sciences. *The Freedom to Succeed - A Review of Non-Clinical Research Fellowships in the Biomedical Sciences* July, 2005.

Section 2 Scheme descriptions and processes

2.1 Scheme descriptions

This section provides in note form a summary of the main components of the personal award schemes. This follows the same structure as the summaries of other fellowship schemes provided for reference in Appendix 2.

2.1.1 Personal Research Fellowships

1) *Stated Aims of Fellowship Scheme*

To support independent research in any discipline, with preference given to research likely to enhance the transfer of ideas and technology from the research community into wealth creation and improvement of the quality of life.

2) *Number and Duration of Awards*

Currently 3 awards per year. Duration 3 years. Applications for 2 years will be considered if appropriate to the research proposal.

3) *Link to Permanent Post*

No specific link.

4) *Eligibility Criteria*

Applicants should:

- Have a Ph.D. or equivalent higher qualification, obtained prior to the date of appointment.
- Be aged 32 or under by 1st October of the year of appointment, or have 2-6 years post-doctoral experience because of a career break (*NB Age related restrictions will be dropped from the 2006 competition onwards*).
- Demonstrate their capacity for independent research and have a substantial body of published work relevant to their proposed field of study.

Fellowships must be held in Scotland in any Higher Education Institution (HEI), Research Institute (RI) or industrial laboratory. The Fellowship must be devoted to full time research although a limited amount of related teaching is allowed.

Preference is given to candidates not already holding a permanent research position in an academic or research institution.

5) *Assessment Process/Timing*

Closing date for applications	Mid March
Short listing for interview	Mid April
Final selection interviews	Mid May
Final allocation of Fellowships	June
Fellowship start date	1 st October or otherwise by arrangement

6) *Support Provided*

(i) *Salary*

Salary within the scales for Research Staff in Higher Education Institutions, Grade 1A. Corresponding scales will apply to a Fellowship held in either an RI or industrial laboratory. Normal annual increments and superannuation benefits apply. Salary placement according to age, qualifications and experience, plus two extra increments.

(ii) *Research Expenses*

Support grant of £2000 per year for travel, consumables, equipment and other direct research expenses in approved categories of expenditure.

Up to a further £4000 per year of research expenses (not guaranteed). Fellows require to submit an annual bid for funding from the limited Research Support Pool.

7) *Treatment of Overheads/fEC*

No contribution to host institution overheads up to, and including, the 2005 competition.

2.1.2 Support Fellowships

1) *Stated Aims of Fellowship Scheme*

To enable the Support Fellow to take study leave, either in his/her own institution or elsewhere, while remaining in continuous employment with his/her own employer. The Fellowships may be in any discipline in a field of research likely to enhance the transfer of ideas and technology from the research community into wealth creation and improvement of the quality of life.

2) *Number and Duration of Awards*

Currently 3 awards per year; normally for 1 year from January.

3) *Eligibility Criteria*

Must be existing members of academic staff who have held a teaching appointment for at least 5 years in any Higher Education Institution in Scotland.

Normally aged 40 or under by 1st October of year of application (*NB Age related restrictions will be dropped by the 2006 competition*).

Fellowship can only be held in a Scottish institution.

4) *Assessment Process/Timing*

Closing date for applications	mid March
Final allocation of Fellowships	June

5) *Support Provided*

(i) *Salary*

Salary for a temporary replacement at actual cost on Lecturer A scale, maximum spinal point 13. Placement on the scale determined by the employer according to normal qualifications and experience criteria. Includes superannuation costs and employers national insurance contributions.

(ii) *Support costs*
£2000 per year for approved expenses. Fellows may bid for up to a further £2000 (not guaranteed).

6) *Treatment of Overheads/fEC*

No contribution to host institution overheads up to, and including, the 2005 competition.

2.2 Operation and management of the schemes

2.2.1 Roles and responsibilities

Chief Executive, RSE

Overall responsibility for the scheme and financial accountability to the Scottish Executive (Higher Education and Research Branch) as sponsor

Research Awards Co-ordinator, RSE

Provides the secretariat function to the committee; co-ordinates all aspects of the running of the competition; main point of contact for applicants, award holders and their institutions; co-ordinates mentoring. The normal duties are concentrated in the period of the competition and are estimated to fall in the range 10-15 % of a full time equivalent post at the current scale of the scheme and using current procedures. Financial administration and records are handled by another member of staff.

Research Awards Convenor, RSE

(Chairs the Scottish Executive Research Fellowships Committee)

The Research Awards Convenor typically holds a current appointment within the most senior levels of the Scottish academic and research community and serves the scheme for three years on a voluntary basis. The successor is nominated by an informal process from among RSE Fellows and ratified by the RSE Council.

Scottish Executive Research Fellowships Committee

Committee members are almost all Fellows of the RSE and again serve a three year term on a voluntary basis. The Convenor requires that all the main fields of research be represented on the committee. Potential committee members are identified through knowledge of the personal expertise of RSE Fellows and the database maintained by the RSE. Committee members retire and are replaced by rotation.

Sponsor

The Scottish Executive as sponsor monitors the overall financial aspects of the scheme and sends an observer to the Research Fellowships Committee. The sponsor has also provided guidance concerning occasional changes that have affected the scheme e.g. the application of the former DTI Technology Foresight Programme.

2.2.2 Operational processes

Public communication

The main public communication is associated with the annual competition and awards. Otherwise there is virtually no public communication about the scheme.

The main communication channels currently used are:-

- RSE website:-
 - ❖ Announcement of Fellowship competition.
 - ❖ Application form (to download).
 - ❖ Regulations (to download).
 - ❖ Announcement of awards.
- Press advertising: one round typically placed in the Scotsman, Times Higher Education Supplement and Research Fortnight.
- Via the universities e.g. direct mailing to Research and Enterprise Offices for distribution within each institution.
- Announcement of results via the annual Research Awards Reception and any accompanying publications.

While public communication is essential, in practice word of mouth is likely to play a large part in encouraging successful applications.

Short-listing candidates²

The ranking process takes account of:-

- Published qualification thresholds and eligibility criteria.
- The judgement of a committee member with breadth and depth of knowledge of the particular research field.
- Applicant's publication list.
- Applicant's references.
- Achievements in relation to age.
- Proposals that are new ideas and new projects, not simply a continuation of existing research work.
- Likelihood of the research resulting in the transfer of ideas and technology from the research community to wealth creation and quality of life.

It is a duty of the Research Awards Convenor to ensure impartiality in the selection process as well as take account of the sponsor's requirements for a spread of awards across different research fields.

Selection of external assessors

The identification of suitable external assessors for short-listed applications depends heavily on the personal knowledge of the selection committee and the wider RSE contacts. This aspect of the scheme is demanding to orchestrate within a window of only 2 to 3 weeks.

External assessment process

The applications of short listed candidates are sent to external assessors for evaluation against three criteria:-

- The strength of the research proposal.
- The suitability of applicant to undertake the research.

² Aide-memoire for Selection Committee

- The suitability of the proposed institution.

The responses are distributed to the committee before the final selection meeting.

Selection interviews

Selection interviews are considered an essential part of the process for Personal Research Fellowships in order to verify the strength of the application and the personal qualities sought. Re-ranking after interview depends on the judgement of the selection panel on these two factors³.

There are no selection interviews for Support Fellows who are expected to have a substantial track record and evidence of recognition.

Project Monitoring

The role currently requested of Project Monitors for Personal Research Fellows is:-

- 1) To ensure that a live contact exists between the Research Fellow and the RSE
- 2) To ensure that the funds awarded are properly applied via:-
 - Visiting the research fellow at least once per year.
 - Reporting back to the RSE on how the research work is progressing.
 - Refereeing the research fellow's annual progress report.

Project Monitors at times are referred to both within the scheme administration and by the research fellows themselves as mentors, so there is now some expectation that the Project Monitors will also perform this role as well. This is not however the original intention nor is it formally requested of the Project Monitors. In practice, in some cases there is apparently considerable interaction between monitor and research fellow, but in others there is apparently little contact at all.

There seems to be some mix up between the processes of monitoring and mentoring and clarification is required. The communication on this point with the research fellows may not be entirely consistent with the remit as given to the Project Monitors.

Further, although all the research fellows become personally known to the scheme administrators, the variable contact by Project Monitors means that avoidable problems and under-performance could go un-noticed. Any cases of long absence also need to be dealt with, and at least one has arisen. For example, the programme of work may need significant revision in order to deliver best value both in terms of the development of the individual and the research outputs.

The main verification that has in the past been required from Support Fellows is the submission of a final report. This has not been insisted on in recent years but the occasional report has been submitted anyway.

A bit of tightening up concerning verification of progress, in particular a timely and effective start, is required on both schemes while retaining a light touch and minimum bureaucracy. Final reports should be used to collect programme monitoring data, in consistent form. This should include key achievements, research outputs attributable to the fellowships using standard metrics, indicators of esteem, first destination and longer term career objectives.

The view of the Steering Group for this review is that career progression may be taken as a strong indicator of overall performance, of which the quality of the science is a critical part.

³ The EPSRC, like the RSE, considers the interview to be an essential part of the selection process for its early career fellowships. The Royal Society does not interview candidates.

Administration and finance

The administrative processes are outlined under the duties of the Research Awards Co-ordinator. Finance processes are covered by the scheme document '*Financial Procedures and Approved Expenses*'. Basic records are thorough and kept for a long time. In some points of detail they are opaque to external review – for example the institution and subject affiliations of the successive selection committee members are well known to those involved but are not documented in the committee minutes. The reasons for final ranking should be recorded in the committee record.

The RSE approach is to appoint scheme administrators who are personally motivated to combine efficient administration with a friendly, approachable style. Comments received from a recent unsuccessful candidate and feedback from the surveys indicate that they do indeed take care of the relationship with research fellows at all stages. This is very important to communication and confidence; the continuity and quality of administration has been found to have a major influence on the success of personal award schemes⁴ and the RSE strives for best practice in this respect.

The main administrative difficulties relate to requirements that arise for flexibility in fellowship start dates, to accommodate opportunities for visiting fellowships held elsewhere that enhance the objectives of the RSE award and to accommodate longer absence including maternity leave. This is difficult and time consuming to manage within the present accounting regime.

2.3 Areas for development and change

It was a premise of this review that, after 20 or so years with only some incremental improvements, updating would be in order. Participants suggested a number of areas largely confirmed by observations made in the course of the study:-

- The stated objectives of the scheme are broad brush; they need to be crisped up and articulated better. Retaining and attracting researchers of outstanding quality is a core goal.
- Over-all culture and public presentation of the schemes need to be updated.
- The various forms used in the application and refereeing process need to be overhauled to provide better guidance as to what is required and elicit more useful and consistent responses.
- The attractiveness of the scheme to well qualified candidates compared to others that offer longer fellowships and higher research expenses needs to be looked at.
- Although the PRF scheme attracts sufficient quality applications it is probably not well enough known, particularly in the rest of the UK. It needs to be able to draw on a bigger pool of the most able candidates and counter the dominant position of Cambridge, Oxford and the main London institutions.
- The 3-year duration of the PRF is a weakness, especially with respect to securing Research Council funding where this may be required.
- Eligibility criteria should be defined as for comparable Royal Society schemes and the assessment process needs to take account of other higher education and qualification systems in addition to UK norms. Age related restrictions need to be dropped for legal reasons and to allow for wider access e.g. by 'late starters'.
- Electronic applications systems are becoming the norm. Although the scale of the scheme does not justify the development and maintenance of an elaborate system, better use of standard technology should be sought.

⁴ Academy of Medical Sciences '*The Freedom to Succeed – A Review of Non-Clinical Research Fellowships in the Biomedical Sciences.*' July 2005. Appendix 1 Focus Group Reports

As this section shows, there is quite a lot involved in running personal awards schemes. Although the processes are robust, apart from the appropriate tightening up of project and scheme monitoring already identified, it needs to be ensured that custom and practice is documented and the information on scheme processes, procedures and finance is pulled together to provide a single reference source.

In addition:

- It would be worth considering broadening the pool from which the selection committee is drawn while still retaining the emphasis on the quality of the science and the attributes that are needed in order to succeed as an independent researcher. Two obvious groups would be:-
 - ❖ Past research fellows themselves.
 - ❖ Fellows of the Royal Society of Edinburgh with an industry background.
- More information should be published about the scheme and readily available year round on the RSE web site. The present approach creates an impression, quite unnecessarily, of lack of openness. From the surveys (Sections 3 and 4) and public domain sources, it is undoubtedly the case that there are past fellows who provide excellent role models and excellent public presentation of their research groups.

2.4 Resources employed

2.4.1 Programme funding

The programme grant provided by the Scottish Executive covers the direct costs of the fellowships and the cost of scheme administration. The RSE record of direct fellowship costs for the period 1994-2005 is reproduced in Table 2.1.

Table 2.2 provides the full time equivalent number of fellows in post during each financial year from 1998. It also shows the increase in the allowance for research expenses from 2001/02. The number of awards is currently set at three per year. Additional funding was made available in 2001 (six awards), 2002 (five awards) and 2003 (five awards).

Year ending 31 March	Support Fellows (£)	Personal Research Fellows (£)	Total (£)
2005	105,867	399,640	568,770
2004	99,698	377,203	476,901
2003	77,629	344,920	422,549
2002	61,292	276,350	337,642
2001	60,093	206,900	266,997
2000	55,831	171,916	227,747
1999	44,605	151,196	195,801
1998	27,925	167,234	195,159
1997	38,393	149,717	188,110
1996	32,316	155,655	187,971
1995	24,827	145,944	170,771
1994	18,136	129,776	147,912

Table 2.1 Direct fellowship costs 1994 – 2005

Year	Fellows in post (FTE)			Split of costs as percentage	
	Personal	Support	Total	Salary %	Expenses %
2004 - 05	11	2.75	13.75	88.3	11.7
2003 - 04	11.5	3.25	14.75	86	14.0
2002 - 03	9.75	2.25	12	87.1	12.9
2001 - 02	8	2	10	87.9	12.1
2000 - 01	6.75	2.5	9.25	96.8	3.2
1999 - 00	6	2.5	8.5	97.3	2.7
1998 - 99	5.25	2	7.25	95.0	4.1

Note: Salary costs include National Insurance and superannuation

Table 2.2 Breakdown of fellowship numbers and costs

Applying a nominal index of 3% to allow for inflation, direct fellowship costs for the five year period 2001-02 to 2005-06 amount to £2.178 million. Scheme administration has been reported by the RSE to average 12.5% per annum covering internal costs, committee expenses and advertising. The estimate at current prices of cumulative programme costs (fellowship costs plus administrative costs) is £2.45 million for the five years up to 31st March, 2005.

There appears to be no provision within these resources to support any substantive work on developments and changes to the schemes e.g. programme monitoring, changes to data structure, following up issues such as the under-representation of the life sciences or closer partnership working.

2.4.2 External contributions

The programme benefits from goodwill contributions, principally from HEIs in Scotland. In particular, the post of Research Awards Convenor is filled for a three year term by a senior scientist who, in addition, has both senior management and extensive recruitment experience. The Research Awards Convenor is responsible for the selection process which is fundamental to the success of the scheme.

The running of the programme requires a high level of expertise to be mobilised to take part in the sifting of applications, expert reviewing of short-listed applications and the selection committee.

It is only organisations that carry weight in the sector, typically the learned societies, the major research charities and the UK Research Councils, that can mobilise this resource for the purpose of cross institution funding competitions. In connection with the RSE/Scottish Executive schemes, this includes contributions from expert reviewers from outside the Scottish sector and occasionally overseas as well.

The fact that the sector contributes significant input in terms of the time of senior people in itself is an endorsement of the schemes.

2.5 Distribution of awards

The operation of successive competitions has resulted in the distribution of awards by research field and host institution collated for the two schemes in Table 2.3.

University	SHEFC Main Qual. Research Grant 2005-06 (£ m)	No of PRFs 1990 - 2001	Total PRFs for University	No of SFs 1990 - 2003	Total SFs for University
Edinburgh	46.198				
Chemistry				4	
Computer Science				1	
Geosciences		3		1	
Life Sciences					
Cell, Animal & Pop. Biology		1			
Genetics		1			
Parasitology		1			
Veterinary Studies				1	
Physics		4			
Total			10		7
Glasgow	32.396				
Biomedical & Life Sciences		1			
Computing Science		1			
Electronic & Electrical Eng.		1		2	
Mathematics				1	
Physics		1		1	
Total			4		4
Strathclyde	15.803				
Mathematics				1	
Physics		4		1	
Total			4		2
Dundee	14.540				
Life Sciences					
Biochemistry		1			
Microbiology				1	
Mathematics		2			
Total			3		1
St Andrews	12.149				
Chemistry		3		1	
Computer Science				2	
Physics		1			
Total			4		3
Aberdeen	11.247				
Biological Science				1	
Total			0		1
Heriot Watt	8.119				
Mathematics				1	
Physics		1		1	
Total			1		2
Stirling	7.743				
Biology/Env. Science				2	
Total			0		2
Napier	1.253				
Chemical Physics				1	
Total			0		1
Paisley	0.410				
Molecular Biology				1	
Total			0		1
Abertay/Dundee Inst.Tech	0.307				
Molecular & Life Sciences				1	
Total			0		1
Programme Total		26		25	

Table 2.3 Distribution of Personal Research and Support Fellowships

Fellowships tend to be held in established, research intensive departments. A small number of Support Fellowships have been held at post 1992 universities but no Personal Research Fellowship applications have to date been successful. No fellowships have been held in industrial laboratories although this is permitted under the scheme.

Section 3 Review of Personal Research Fellowships

3.1 Applications and awards

3.1.1 Analysis of application data and records 1990-2005

The Personal Research Fellowships competition has consistently attracted a high number of applicants in relation to a small number of awards. Both application numbers and the numbers of awards available have fluctuated. Application numbers have ranged from a high of 109 in 1995 to a low of 32 in 2001. Although the competition has consistently been oversubscribed with quality applicants, at times there has been concern to reduce the number of irrelevant applications. The number of awards available has generally been two or three, subject to funding arrangements. Exceptionally (2001, 2002 and 2003) funding was made available for more awards.

Typically eight to ten candidates have been short-listed in the more recent competitions. Very occasionally there has been a single candidate who has stood out from the others on the short list but generally it is a closer contest. After interview, the majority that reach the short list are considered suitable for appointment in the judgement of the selection committee. Therefore the short-listing process has been consistent and effective in selecting candidates with both the academic and personal qualities sought.

Where short listed candidates have been judged unsuitable for appointment, in the opinion of the selection committee they have not shown the expected breadth and depth of knowledge of their research field, do not display the personal qualities sought or in other ways have been assessed at interview as not living up to their application and references. A way of improving the reliability of the initial references would clearly be helpful. Clearer guidance for candidates' referees may assist (Section 2.3).

The degree of experience and knowledge of what is required to succeed in a competition of this type may be a factor. For example, a recent candidate was judged the least impressive of the shortlist in 2002 and not suitable for appointment. Two years later in the 2004 competition this individual came top of the list. However they accepted an EPSRC Advanced Research Fellowship in the same Scottish research group.

3.1.2 Withdrawal of short-listed candidates

Concern has been raised about the number of short-listed and successful applicants taking up fellowships from other sources rather than an RSE Personal Fellowship. This is inconvenient administratively and has raised concern about the prestige of the scheme and its attractiveness to candidates of the highest calibre. However the Royal Society and UK Research Council schemes encounter a similar issue. This situation is probably inevitable in what is in effect a specialised labour market providing multiple opportunities in an annual recruitment round.

The instances of withdrawal recorded are set out in Table 3.1 and the destinations of the applicants provided in Table 3.2.

Withdrawal from the RSE scheme is only a major issue overall in Scotland if (a) most of the candidates who withdrew from the RSE scheme leave Scotland, (b) Scottish research groups do not host many Royal Society of London and Research Council fellowships and (c) in this specialised labour market there are fewer applicants of sufficient calibre than there are fellowships in a given year across all the schemes. None of these appear to hold true. Further, at least one of the UK Research Council schemes has a similar withdrawal rate; the other main schemes were not able to provide such detailed information.

Date of competition	No. of withdrawals	Fellowship accepted
1993	1	BP/RSE
1994-1999	None recorded	
2000	1	Caledonian Research Foundation
2002	1	BBSRC (5-year)
2003	2	Royal Society (2)
2004	5	EPSRC (1); Royal Society (3); Seeking a lectureship (1)
2005	3	Caledonian Research Foundation (1) Lectureship in London (1) Position in Paris (1)

Table 3.1 Withdrawal of short listed candidates

Following up the first point, Table 3.2 sets out the destinations of recent short-listed applicants who withdrew. Only 40% took up positions elsewhere, the main drivers being the location of the research group targeted and the availability of lectureships. These factors have nothing whatsoever to do with the prestige or provisions of the RSE scheme. With respect to the second point, the take up of Royal Society and Research Council fellowships in Scotland is provided in Section 3.4.2. Thirdly, given that all schemes are greatly oversubscribed, there is no shortage of demand from able candidates even taking multiple applications into account.

Of the four candidates who went elsewhere in the UK, one was offered a lectureship and a second was known to be looking for progression to a permanent appointment that the Scottish department was not able or prepared to guarantee. The other two had applied for and secured 5-year Royal Society of London fellowships in the south of England. Since they could have applied for the Royal Society fellowship with a Scottish host university, the Scottish research group was presumably not their first choice. Both appear to have been based in Scotland when applying to these competitions.

In 2003 one of the candidates was judged 'not appointable' by the RSE but was awarded a Royal Society University Research Fellowship to be hosted by the same Scottish research group.

Competition date	Destination			Total
	Scotland	Rest of UK	Non UK	
2000	1	-	-	1
2001	-	-	-	0
2002	1	-	-	1
2003	2	-	-	2
2004	2	3	-	5
2005	1	1	1	3
	<u>7</u>	<u>4</u>	<u>1</u>	<u>12</u>

Table 3.2 Destinations of candidates who withdrew

It is to be expected that candidates looking for this type of opportunity will apply to several schemes. Table 3.3 provides a list of those mentioned on recent RSE applications (2004 and 2005).

<p>Caledonian Research Fund Personal Research Fellowship (biomedical sciences)* Wellcome Trust Advanced Training Fellowship RSE International Exchange Programme Scheme Post-doctoral positions advertised by research groups ** Research Council personal fellowships (PPARC, EPSRC, BBSRC, MRC)* Royal Commission for the Exhibition of 1851* Royal Academy of Engineering/EPSRC Research Fellowship Royal Society Dorothy Hodgkin Fellowship NWO-Veni (a Dutch research fellowship) EU Marie Curie Fellowship Royal Society of London* Lister Institute Research Prize (US) Proof of Concept Funding (commercialisation)* Wellcome Trust Programme Grant Leverhulme Trust Early Career Development Fellowship Scottish Universities Physics Alliance Advanced Fellowship Lectureship, University of Edinburgh European Young Investigator (EURYI) Fellowship</p> <p><i>* mentioned by more than one candidate</i> ** advertisements in Spring 2005 from the University of Edinburgh and University of St Andrews for example have offered non competitive progression to permanent appointments</p>
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Table 3.3 Alternative fellowships and employment sought

The timing of the RSE competition (Table 3.4) means that it is available as a fall back to Scottish based candidates targeting the main UK schemes from, or those based elsewhere who can find a Scottish host. However, if the decision is brought forward, there is a risk of funding candidates who would have been funded anyway to undertake fellowships in Scottish host institutions.

Fellowship	Application closing date	Competition results
Royal Society University Research Fellowships	12 January 2005	End May 2005
BBSRC David Phillips Fellowships	12 November 2004	by 12 May 2005
EPSRC Advanced Research Fellowships	11 November 2004	June 2005
Royal Society of Edinburgh/Scottish Executive Personal Research Fellowships	11 March 2005	End June 2005 (Selection 13 May 2005)

Table 3.4 Fellowship scheme competition dates, 2005

3.1.3 Analysis of awards data

Overview of awards 1990-2005

Thirty-nine Personal Research Fellowships were awarded in the sixteen year period 1990-2004 inclusive, an average of 2.4 per year. A minimum of one award per year was made and the maximum number in a single competition was six in 2001. The success rate ranged from 1 in 55 in 1995 to around 1 in 6 for 2001. In 2004 the success rate went back down to 1 in 20 because there were both fewer awards and almost double the number of applications compared to 2001. Three awards were made in 2005, the success rate being 1 in 15.

Application success rates in the main UK schemes are typically between 1 in 5 and 1 in 10. The RSE scheme is therefore oversubscribed to a greater extent. It is not possible to say whether or not it attracts a greater number of inappropriate applications than other schemes. Departments may in general provide more input and apply stronger filters to applications to the Royal Society and UK Research Council schemes. This was indicated in a couple of the university consultations and may apply more widely.

Analysis of awards 1990-2001

Twenty six fellowships were awarded in the competitions run in the period 1990-2001 inclusive. This analysis excludes fellowships in progress at the time of the review, fellowships awarded in the 2005 competition and the lone 1990 award in the social sciences. It has essentially operated as a science programme and the distribution by university and department or school is provided in Section 2, Table 2.3.

The majority of these fellowships were concentrated in a small number of departments: 16 Fellowships (61%) were distributed across just five as follows:-

Mathematics, Dundee	2	1999, 2000
Chemistry, St Andrews	3	1993, 1994, 1995
Physics, Edinburgh	4	1993 onward
Physics, Strathclyde	4	1991 onward
Geosciences, Edinburgh	3	1994, 2001(2)

These departments or Schools accounted for the only awards made in the fields of Mathematics, Chemistry and Geosciences. Edinburgh and Strathclyde dominated the awards in Physics, accounting for eight out of eleven Personal Research Fellowships in this field. The only previous awards in physics were in 1988 with one each in the Universities of Edinburgh and Glasgow.

The University of Edinburgh hosted ten RSE fellows over the period, not even one per year, while Glasgow (4) Strathclyde (4), Dundee (3) and St Andrews (4) together hosted 15. No awards to date have been held at a post-1992 university.

A notable gap is the relatively few awards in the Life Sciences with only five in the period 1990-2001. The reasons for this are not clear given the scale and quality of research groups in the life sciences. However, the life sciences community does use fellowships of this type. For example, the Caledonian Research Foundation makes two similar awards per year in Scotland in this field, the medical research charities also fund prestigious fellowship schemes in the biomedical and life sciences and the life sciences are well represented among awards held in Scotland under the Royal Society URF scheme.

Factors liable to influence the distribution of successful applicants include:

- Knowledge, precedents and encouragement in the host department.
- Departmental research strengths are critical for attracting high calibre applicants.
- Departmental/institutional policy and the extent to which they know and target various funding sources.

The small number of fellowships has been concentrated in the more research intensive universities and in departments with RAE units of assessment rated 4 and above (referring to the 2001 RAE). The majority are rated 5 or 5*. This is consistent with the requirement that the fellowships be held in a suitable research environment.

3.2 Survey analysis

3.2.1 Survey coverage and response rate

The survey aimed to provide as comprehensive coverage as possible of all Personal Research Fellowships awarded and completed since 1990, excluding the 1990 award in the social sciences. Of the 26 awards made between 1990 and 2001 inclusive, 24 were traced to their current position. Eighteen of these responded to the survey. This represents 69% of the total and a 75% survey return rate.

The survey was conducted by e-mail and covered three main topics: the fellowship itself, what the recipient achieved as a result of the opportunity and career issues. It was restricted to questions considered essential in relation to the brief for this review and designed to be as quick to complete as possible. CVs were also received in most cases and further supplementary information was obtained from public domain sources.

Care has been necessary in the interpretation of the responses because of (a) the small numbers and (b) the variation in time of 0-12 years since the fellowships were completed. Figures quoted for grant funding are as given in the survey returns i.e. do not reflect current prices.

3.2.2 The fellowship

Alternatives to the RSE Personal Research Fellowship

The survey sought to establish firstly whether or not the RSE research fellows would have sought alternative funding for the same research and secondly, if neither the RSE nor an alternative award had been forthcoming, what they would have done instead.

Had they not been awarded the RSE fellowship, the great majority would have aimed to undertake the same research with alternative funding. Only three stated that they would have pursued other options at that point, mainly grant funded post-doctoral appointments. At least one of these three would have looked at overseas opportunities also.

Had they been unsuccessful in the RSE or other personal research fellowship competitions, two thirds would have sought other post-doctoral employment where they were less likely to develop as an independent researcher. At least four would have applied for lecturing positions where they might have been able to do the research in part. Two thought they would have changed their careers at that stage; one would have aimed to join a non profit organisation and the other expected they would have gone into industry. A third recorded that, had they not been successful in obtaining personal funding, ultimately a career change would have been essential.

Career preferences at the time of application fell into the following pattern:-

- 1st choice: Personal Research Fellowship
- 2nd choice: other post doctoral or teaching position
- 3rd choice: career change (2nd choice for a small minority)

Requirement for research grants

The great majority of research fellows required to obtain research funding in order to progress their programme of work. The sums quoted for the three year period ranged from £18,000 for consumables and small equipment to £340,000 for grants that employed research assistants and supported students. The highest awards were reported by those who started their fellowship in 1995 or earlier. The highest recent award was £119,000 from a research charity. In several cases analytical costs were covered by the host institution or by a collaborator.

Three fellows reported that they had had to scale down, reposition or delay their work due to unsuccessful grant applications early in their fellowship. Only two of the survey respondents stated that they did not require research grants. In a third case, it was not critical but being a co-investigator on two Research Council grants had helped widen the application of the RSE research.

The total research grant funding reported was around £1.5 million⁵ with seven of the fellows accounting for 86% of this sum. However, the extent to which such awards were made to RSE research fellows as applicants in their own right was impossible to determine.

⁵ Not at current prices

Suggestions for improving/updating the scheme

The issues that surfaced and the views quoted here fell into two main groups (a) research funding and (b) the length of the fellowship.

a) Research funding

Research funding issues fell into two categories - fellowship start up/support funds and larger scale research costs:-

- Start up/support funds are generally needed for science based projects; there is better provision in the EPSRC, Royal Society and Wellcome fellowship schemes; some respondents stated that they did not meet eligibility criteria but not all points concerning eligibility criteria were consistent with the criteria published by the grant awarding body.
- Survey respondents reported the risk of the major research funding bodies declining a project accepted by the RSE and the problems for the fellow if this happened. One reported that their first grant application failed even though it received a good referees report.

(b) Length of fellowship

Only a minority made specific comments on the length of the fellowship. The main observations related to:-

- The pressure to get a permanent post early on and the risks associated with not being successful.
- The time that may be needed to raise the level of research funding required; multiple applications may be required to different sources.
- The requirement of the UK Research councils that the Principal Investigators post outlasts the period of the grant.

(c) Collated individual observations

Although the question only asked for areas of improvement, respondents volunteered a number of positive comments quoted here (précis):-

- *'Scheme was exactly what I needed at that stage in my career.'*
- *'Good as it was; the RSE had got just about everything right.'*
- *'Application and interview process well organised and straight forward.'*
- *'Very grateful for the flexibility to work part time.'*

There were single suggestions on aspects of the scheme that could be looked at:-

- **Career progression:** there needs to be a future in Scotland after the fellowship – otherwise the investment will be wasted; the fellowship could offer three years' full time salary then two years' transition where the salary is shared between the RSE and the university.
- **Mentoring:** one research fellow reported only one contact with their mentor, at the second attempt; a second thought the re should have been more scientific input from someone experienced in the relevant field of research.

- **Outlook of host institution/department:** departments may be prepared to host RSE research fellows for the duration without any particular interest in or commitment to keeping them on.
- **Publicity:** the scheme could perhaps be advertised more widely.
- **Meetings and networking:** more meetings between research fellows would be a good idea.
- **Support funds:** the recently introduced competitive bidding for small sums of additional support funding appears to require disproportionate time and effort on both sides.
- **Full economic costing:** fEC may have a significant impact on the attractiveness to host institutions unless adequate provision is made in the RSE scheme.

3.2.3 Indicators of achievement

Fellowship output

As would be expected, the widest used outlet for research findings was publication in peer reviewed journals. Some of the earlier research fellows highlighted publications that had received particularly large numbers of citations. Many had also published via international conferences and the associated journals, book chapters or had provided open source software or computer based modelling tools. Some had more papers in preparation and one had attracted a book contract.

Application of Fellowship output

Respondents provided the following evidence of application of their work in subsequent research:

- Citation evidence (reported in Section 2.2.2)
- Four were aware that scientists in their own field and in some cases a range of disciplines were known to have used the results, or were very likely to, in order to further their own research.
- Opening a new research field

Two reported filing patents, both from their RSE and later related work. At least one of these and a third fellow had subsequently taken technology to the market place.

Post graduate teaching was mentioned by a few and one fellow had also broadcast on a subject directly related to the research

New research programmes

At least fourteen respondents had gone on to develop new programmes of research attracting significant amounts of funding for the research itself and associated facilities. The scale varied with at least two listing total grants for research, equipment and facilities of £3 million or over either on the survey return or their CVs. Three others had either attracted smaller grants or were still at the planning stage.

Indicators of esteem

The main indicators of esteem were as follows:-

Invited speaker at international conferences and meetings: the majority.

Medals and prizes: two had received prizes directly related to their RSE work; three had received this type of honour subsequently for their work in the same field.

UK and international expert advisory panels, grants and awards panels, peer review for research grants: at least one third.

Election as FRSE: one (at a later date).

3.2.4 Career issues

Capability as an independent researcher

For the great majority, the fellowship provided the foundation for their subsequent career opportunities, enabled them to make their name in a particular niche or permitted more rapid progress in research than they thought they would otherwise have achieved. Even those who completed the fellowship within the last year reported that the research fellowship had helped them build their scientific reputation.

In their own words:-

'Provided the security and freedom which enabled me to work on a broad, higher risk research front and build up an independent interdisciplinary research programme rather than a single niche area'

'Very useful, perhaps pivotal; demonstrated that I could function as an independent researcher'

'Absolutely. It is very difficult as a post doc to explore one's own research agenda, especially developing the collaborations needed for interdisciplinary research'

'Allowed me the freedom to develop very rapidly as a researcher'

Career benefits/advancement

Around two thirds of the eighteen respondents attributed their career progression either primarily to the personal research fellowship or regarded it as a very significant factor. For the others, it is probably too early to have that perspective. Some of those who have achieved the most in their scientific careers see the fellowship as having been absolutely critical to getting on to that track. In their own words:-

'Without this fellowship, I would never be where I am today.'

'No way would I have been awarded a permanent lectureship so quickly.'

'The fellowship marked me out from hordes of other post-doc applicants.'

'It enabled me to secure a foothold to start a new role at the university, secure a permanent lectureship and then ultimately become professor... both posts a direct result of holding this award.'

'It is probably not an exaggeration to state that I only have a career because of the RSE Fellowship.' (Senior academic, very research active)

The contributor of the first of these comments secured a lectureship in their host department at the end of the fellowship and was awarded a professorship around three years later. Their lively research group currently comprises around 25 people including 12 post doctoral research staff. The group undertakes international collaborations, strongly promotes interdisciplinary activity, has direct interactions with industry in the UK and abroad and also participates in applications development and commercialisation projects.

The full analysis of career progression is provided in Section 2.3.

Barriers to progression to a permanent appointment

Generally, RSE fellows have been very successful in obtaining permanent academic appointments either around the end of the Fellowship or after a further period as a postdoctoral researcher. However, two respondents commented that there were too few positions in their field and too many people chasing them.

Two recent fellows reported that they had experienced reluctance or lack of intention by their host department to consider them for a permanent appointment; in the event one was kept on in the same group and the other secured an opportunity elsewhere.

Future goals

How respondents expressed their goals varied considerably. However they fell into four categories:-

- Scientific – further research and publication; increasing their personal standing and recognition.
- Establishing/further developing a research group of international standing.
- Career progression – some had explicit aims in terms of achieving particular status within a certain time period, others did not.
- Contributing to the development of others: post-doctoral, post-graduate and undergraduate levels.

3.3 Recruitment, retention and career progression

3.3.1 Recruitment and retention

Recruitment

Only 6 out of 26 research fellows are known to have taken their first degree and/or PhD in Scotland. No information surfaced during the review on the backgrounds of seven.

At least fifteen were based in Scotland at the time of appointment, almost all in the university that hosted the fellowship. Of the others one was based in England, one in Europe, one each in Australia and New Zealand, and three in North America. No information was obtained for four.

Only 3 out of 26 awards have gone to alumni of Scottish universities in post doctoral research posts outside Scotland prior to taking up the RSE fellowship. All three were abroad. This is a bit surprising since the fellowships provide an opportunity for alumni to re-establish themselves in Scotland.

Retention

Information on first destination was obtained for 22 out of the 26 cases. Twelve obtained permanent appointments, nine of which were in Scotland in the host department. It is confirmed that a further eight stayed in Scotland, four on Research Council or Royal Society advanced personal fellowships, two in fixed term lecturer or research posts and two probably as a post docs.

Of the 15 RSE fellows known to have taken their first degree in England or abroad, 9 stayed in Scotland for their first post after the RSE fellowship. Seven are currently in permanent academic posts in Scotland. This pattern of around 50 % retention of this group applies both to the whole period analysed and to the more recent fellowships (dates of award 1997-2001). It may provide a useful rule of thumb concerning likely retention levels of incomers. All except one (from the 2001 cohort) have so far remained in the UK.

For the 10 competitions run from 1990-1999 inclusive, 16 out of 18 fellows initially stayed in Scotland and 2 took up posts in England. One of these was a lectureship; one was a Royal Society University Research Fellowship which is still underway.

Of the most recent cohort of six, at least five took their first degrees in England or overseas. Of these, three have already left Scotland. Two secured lectureships in England, incidentally both at the universities where they took their first degree, and one returned to Canada via the US west coast. Three are so far still in Scotland. However retention from this cohort could well end up as low as one in six.

Overall retention in Scotland for the 1990-1999 cohorts (i.e. 3 years or more after completion) is down by around one third to just over 60%. Retention to date in the UK is 100%. However, the case of the 2001 cohort suggests that if retention in Scotland is to be optimised, more attention needs to be paid to the issue of career progression (and other factors affecting the likelihood of retention in Scotland) at all stages from recruitment to the management of the end of the fellowship. However, where people move away, scientific collaborations may continue, to mutually beneficial effect.

3.3.2 Career progression

As of mid 2005, twelve former fellows hold permanent academic posts in Scotland, seven being either professorial appointments or readerships. Overall seventeen (65%) are confirmed as holding permanent academic positions in the UK. The current position is set out in Table 3.5.

Current position	UK Scotland	England	US / Canada	Not known	Year of RSE Fellowship Award
Professor	5				1990, 1991, 1992, 1995, 1997
Reader	2	2			1992, 1993, 1996, 1997
Senior Lecturer					
Lecturer	5	2			1993, 1994, 1998, 1999, 2000, 2001 (2)
Post Doctoral Research	4	1			1997, 1998, 2000, 2001 (2)
Other (Assistant Prof.)			1		2001

Not known	Total	4				1994, 1997, 1999, 2001
		16	5	1	4	

Note: (1) excludes the 1990 Fellowship in the Social Sciences (2) prepared from public domain sources such as university web sites, internet searches and CVs submitted with survey responses

Table 3.5 Personal Research Fellows, 1990-2001 Destination Status, Aug 2005

3.4 Findings

3.4.1 Overview

Aims of the scheme

The survey has provided unequivocal evidence that the Personal Research Fellowship scheme has met its central aim – that of providing promising people at an early stage in a research career with the opportunity to develop further as scientists and prove their capability as researchers. This is confirmed by the excellent record of career progression. The RSE, its Research Award Convenors and selection committees now have a long track record in selecting candidates who go on to prove their worth in academic, science based careers.

Recipients clearly regard the fellowship as a very important career opportunity and a great advantage in securing a permanent appointment either straight away or after a further research fellowship.

The relatively low proportion of awards in the life sciences may be partly related to the availability of other sources of fellowship funding. Consultation input indicated that these have a higher profile in the life sciences community. However, given the scale of life sciences research in Scotland, it is not clear why life sciences are less represented among awards from the RSE scheme compared with the physical sciences.

The main limitation on the profile and the impact of the scheme is the very small numbers of awards that are made each year. Despite its relatively low profile, it currently attracts sufficient quality applications to double the number of awards that could justifiably be made per year from three to six. There is likely to be considerably more talent available, in particular among alumni of Scottish universities with post doctoral experience elsewhere. Perhaps 12 awards per year could be justifiable in science alone and still remain relatively difficult to get.

Additionality

The programmes have provided additional awards in Scotland for suitable applicants. This finding is based on the analyses of applications, the destinations of candidates who took up other opportunities and data on awards from the UK-wide, government funded schemes held in Scottish institutions.

Applicants from Scottish institutions are successful in the UK wide fellowship competitions. Therefore any Scottish scheme needs to continue to ensure that it is complementary to, and additional to, the UK wide competitions. This may be achieved, for example, by using additional channels to advertise the scheme (e.g. alumni newsletters) or by ensuring a final allocation of awards *after* the UK wide competitions without any compromise on standards.

It is important, both to Scottish research and to the correct application of Scottish public funds, that people already based in Scotland continue to be successful in the UK-wide schemes.

Reasons for location

Applicants for early career fellowships are often already based in their host department. Where applicants seek to change institution, the main driver of location is likely to be the applicant's motivation to work within a particular research group or research pool, or use the fellowship as an opportunity to get established (or re-established) in the UK or Scotland in particular.

Recruitment and retention

Critical factors in attracting and retaining the best people are:-

- The quality of the research leaders and research groups.
- The size and quality of the relevant research community in Scotland.
- The prospects for progression, in the first instance to independent investigator status with the opportunity to start building a research group.
- The prospects of securing an open ended contract of employment.

Several HEI representatives took the view that the RSE scheme should be viewed as recruiting into a Scottish-wide pool, whether an informal one or in the context of formal research pooling initiatives. This has implications for the question of progression to permanent appointments.

Retention in Scotland has been good both in the short and longer terms. However recent cases suggest that Scottish employers need to come forward with job offers at the right time to reduce the risk of people with excellent track records moving away when otherwise they might stay.

Profile within the HEIs

The visibility of the scheme at a senior level within the HEIs appears to depend on personal contact with the scheme through participation in the selection process, knowledge of individual cases e.g. through a previous departmental role, or by being a former recipient of an award.

The Royal Society URF scheme, the UK Research Council advanced research fellowships and the main charity funded fellowships are more widely known.

Continuing role of personal research fellowships

It appears to continue to be the case that personal research fellowship schemes provide a particular development opportunity. The award recipients have greater autonomy and responsibility than is the norm when working for an established principal investigator. High calibre people showing the right motivation and commitment need the headroom to prove what they can do. While they can greatly benefit from, and should value, the input of their peers and senior scientists, much has to be 'learnt by doing' and experience accumulated. The development process requires independence within an appropriate environment.

In theory, this type of development opportunity could and should be provided as a matter of course within the institutions. In the past it may have been more readily available in junior lecturer posts. Practice is probably somewhat variable and promising individuals are probably mostly encouraged to apply to external fellowship schemes. At least part of the reason is a reluctance to commit resources and permanent appointments to people who have yet to prove themselves as principal investigators, not only as talented scientists but also ones who manage their research activity to the standards required by the main funding bodies. Learned society, UK Research Council and independent charity schemes provide resources, rigorous independent appraisal and kudos.

A Fellowship of this type can allow lines of enquiry to be pursued that would not otherwise be pursued because they lie outside the specific remit of the host group or cannot otherwise realistically be resourced. This can work to the mutual benefit of the research fellow, who has the chance to make their name in a particular niche, and to the group which can have exploratory work carried out that they would not feel able to prioritise over other activities.

Both informal groupings and recent developments in research pooling provide the opportunity to recruit personal research fellows into a wider research community. This is something that could be promoted to applicants as an attractive research environment, providing ready opportunities for setting up collaborations and also early exposure to range of potential employers. This approach could also make a contribution to the development and sustainability of research pooling.

Even taking all the learned society and UK Research Council schemes together, the total number of personal research fellowships available is small. Nevertheless, they are viewed by those consulted in the course of the review as an important means of retaining and attracting talented people at a particular career stage.

Duration of personal research fellowships

The duration of personal research fellowships needs to allow for ambitious and risky lines of enquiry and also the time involved in the design, resourcing and execution of experimental work, even though not all fellowships in the sciences will be laboratory based. For example, computational modelling may draw on existing data banks or may require experimental data generated in parallel. This applies in both the physical and biological sciences.

Some research fellows may proceed to a stage where they require an allocation of laboratory space and to start building their own research group in order to make optimum progress. This requires stability, the ability to apply for research funding as an independent investigator and an allocation of space, all of which also requires commitment from the host department.

This is reflected in the view of the recent Academy of Medical Sciences (AMS) report that early career fellowships (non clinical) in the biomedical sciences should be awarded for no less than 5 years. In these fields a 3- or 4-year fellowship is considered too short because they:-

- Preclude the long term experimentation needed for high impact science to emerge
- Set an early deadline for career decision making, such as a move of institution
- Are unsatisfactory in relation to the appointment of research assistants and post-graduate students in the latter half of the award

However, the implications of full economic costing, as covered in Section 5, was not analysed in the AMS review. Further the AMS report takes the view that fellowships should be seen as a career opportunity, not a career path in their own right. So the issues are more those of stability within the host institution, independent investigator status, the conditions for people to develop to their full potential and the conditions for high impact science to emerge. A lot of the responsibility lies with the institutions themselves and initiatives such as research pooling. The AMS review had access to very little information on first destination from fellowships and none on subsequent progression.

A range of opinions on the duration of fellowships were expressed in the course of this review. One university saw the three year RSE scheme as fulfilling a particular role in addition to the Royal Society 5-year model. The 3-year awards were seen as a testing ground for individuals and they could be more flexible about the research undertaken, provided it had some link to department research strengths. 5-year fellowships required a higher level of approval and a clearer alignment with the departmental research portfolio and strategy. Others argued that all natural science fellowships, regardless of subject, will be much stronger if they are awarded for five years rather than three.

Progression to open-ended contracts of employment

Input to the review from both the HEIs consulted and the Research Councils indicated that the sector is likely to resist strongly a requirement to make an early commitment to provide a PRF with an open-ended appointment. On the one hand the HEIs do want to appoint the best people and there is a high level of trust in the RSE selection process, including from very senior people who have had no direct contact with it. On the other hand issues that may be anticipated include:-

- Internal appointment procedures and probation requirements – HEIs are likely to impose conditions that need to be satisfied in addition to any scheme requirements.
- The lack of track record in terms of sustained performance in research – an early employment commitment is more risky.
- The intermediate step of gaining PI status within the host department in itself will entail some form of assessment within the institution.
- Lectureships are in demand; an early commitment to one person may crowd out others equally eligible and cause internal problems.
- Any prospective employer would reasonably expect a bigger role in the selection process than currently.
- Resistance to being boxed in.

A reasonable approach to sharing cost and risk is likely to be much more readily accepted, particularly if the methodology of fEC is followed and cost sharing applies in the later stages of a fellowship. In the case of substantial grant applications signed off by the institution, it can be expected that a post will be underwritten for up to two years.

Monitoring of individual fellowships and the scheme as a whole

Although there has been provision for fellowship monitoring, its implementation has been patchy. Scheme monitoring has been confined to the oversight by the Scottish Executive. Good records have been kept but more use could have been made of them and also of final reports, particularly if requested in a consistent format.

Given that these fellowships are career opportunities, first destination information should be obtained as a matter of routine. The sense of the dead hand of bureaucracy can be avoided by combining data collection with the publicising of achievements e.g. by having a dedicated section on the RSE web site. This would be good for the scheme and could also result in a useful window into lively parts of the research community.

3.4.2 Standing in relation to other personal fellowship schemes

The main programmes of interest for comparative purposes are the UK wide personal award schemes run by the Royal Society and the UK Research Councils. The main provisions are summarised in Appendix 2 which also covers the main charity schemes and the current internal Birmingham University scheme.

Despite what is said about a ‘pecking order’ in terms of the prestige of the various schemes, and the differences in what they offer, the conclusion from the work done for this review is that they select from the same pool of talented and motivated people and there is greater overall quality demand than there is supply of awards. The RSE selection process appears to be at least as demanding as the others and the award holders expected to be of similar calibre.

There may be differences in the standing of the individuals and the nature of the research that are not apparent without an inside track. To assess this any further would require a detailed comparison of the award holders and the science across different schemes.

From the five competitions in 2000-04, the RSE scheme made a total of 18 awards. Data for the four most relevant UK schemes are given in Table 3.6. Scottish participation in three out of the four is very good. The RSE scheme accounted for 19.3% of the Scottish total from the five programmes. This confirms that it makes a significant additional contribution to the development of talent north of the border even at its current scale. Records and statistics are partial, and this limits the comparative analysis of schemes. As noted earlier (Section 3.1.2), all the main schemes 'lose' significant numbers of short-listed candidates to other opportunities.

Scheme	Awards 2000-04 UK total	Awards 2000-04 in Scotland	% Scotland
Royal Society URFs	211	30	14.2
EPSRC ARFs	196	31	15.8
BBSRC David Phillips	38	3	7.9
NERC ARFs	32	11	33.3
Total	477	75	15.7

Table 3.6 Scottish participation in UK schemes

The RSE/Scottish Executive PRF scheme has a good record in career progression and retention. There is insufficient comparative data to draw firm conclusions in relation to other schemes. UK retention is definitely higher than for the BBSRC David Phillips scheme. The BBSRC has also found that a significant number of award holders do not complete the five year fellowship: fourteen in total withdrew from five cohorts (1995/96 to 2001/02), eight of whom left the UK. The total number of awards for the period was not provided but in recent years around 10 awards per year have been offered. Withdrawals during the fellowship itself have not been an issue for the RSE scheme to date.

The recently introduced Research Councils UK Academic Fellowship Scheme was noted but not investigated as part of this study⁶. It is too early to be able to identify any effect on personal award schemes.

3.4.3 Future options

The development of future options for the scheme requires a number of choices to be made and there are some decisions that need to be taken before anyone can go much further. Firstly it needs to be confirmed formally that the sponsor wishes to retain the scheme. Secondly it needs to be confirmed whether or not the programme may be scaled up to a level where it can play a more prominent part in the development of scientific talent and people with leadership potential, let alone be extended to other research fields.

⁶ The Research Councils UK Academic Fellowship Scheme was set up following the Roberts Review '*SET for Success*' to provide contract researchers or those holding research fellowships with a more attractive and stable path into academia. The first competition was held in 2004 and the intention is to award 200 fellowships per year. The process differs from the schemes considered in this review in that a single application for multiple fellowships is made by the HEI which is then responsible for selection. The HEI is required to guarantee a permanent academic position following the end of the award, subject to the successful completion of a probationary period.

Scaling up could apply to both the number of awards and provisions of the scheme such as the duration of the fellowship and the level of research support particularly in the first year. Indicative costs of various permutations are given in Section 5.

It is not yet clear what the most effective scale of any future RSE scheme would be. It might well be very substantially higher than at present. This really depends on: (a) how many people with this type of background the Scottish 'system' needs for development and sustainability, (b) the extent to which this is, or should be, catered for by other sources (c) the potential of the scheme as a resource that can make a disproportionate contribution to emerging fields on a 'bottom up' basis and (d) the potential of the scheme to make a much greater contribution to retaining and attracting talent in a way that complements the recruitment and development activities of the HEIs themselves.

If the scheme can be scaled up, a minimum of six awards per year in the sciences is suggested and possibly up to twelve. This would achieve a higher profile, provide the opportunity to a wider pool of quality candidates than is currently drawn on and still be relatively hard to get. If it were thought that a higher number of awards were justified, scaling up would best be done in two stages. The view of the steering group is that, in the first instance, the minimum number of awards should be increased from the current level of three per year to six per year.

With respect to duration, the main issues with a 3-year research fellowship in the sciences appear to be:-

- It forces an early career decision which in turn may result in both a shift in career direction and relocation. This is counter productive in terms of the objectives of the programme.
- It is liable to constrain unduly the degree of originality, scale and scope of enquiry that a research fellow can embark on. Again this is counter productive to the objectives of the programme.
- The programme needs to allow for a period of thinking, experimentation and the deeper development of research ideas prior to the preparation of grant applications. Then there is the time required for the execution of a substantial piece of work, presentation of results and for the fellows to show that they can satisfy the performance requirements of the funding bodies and prospective employers.
- There is less scope to acquire research management experience and demonstrate leadership capability. There is also less opportunity to acquire teaching experience without jeopardising the main objectives of the fellowship.

Views on the appropriate duration of future fellowships varied and were also coloured by issues related to research grants, some of which may be less significant when the implementation of full economic costing is further underway. The views concerning fellowships in the sciences converge on a minimum duration of four years.

The appropriate duration is likely to differ for different research fields. Different streams may be required within one scheme if it is in future to cater for the arts and humanities, economics and the social sciences.

There is a need to enhance the Scottish dimension and potential for impact. A range of suggestions have emerged from the review and consultations:-

- Establishing a strong link to important relevant policy changes, notably research pooling.
- Positioning an enhanced scheme as an exemplar in the development of research talent that attracts national and international attention. This would require engaging the universities

and research pooling initiatives in developing the exemplar itself and ensuring that the principles and practice are applied more widely resulting in wider benefits.

- Measures related to the promotion of the Scottish scheme:-
 - ❖ Extending the approach to recruitment to ensure that the advertisements for the competition reach alumni of Scottish institutions in post doctoral positions elsewhere.
 - ❖ Stating retention of top people in Scotland as a specific objective; this should be clear even if it is unrealistic to apply intention to stay as a selection criterion.
 - ❖ Promoting the vibrancy and richness of the research environment in Scotland and the role of research pooling.
 - ❖ Promoting the attention given to career progression by the RSE and the host organisation once an improved approach is in place.

The question of a commitment from the host institution to a permanent appointment at the end of the fellowship has been considered very thoroughly throughout this review, including the possibility of offering tenure track as part of the package or subject to a tripartite mid-term review involving the fellow, the host institution and the RSE. The main arguments put forward in support are the attractiveness to applicants and that it would differentiate the RSE scheme from other externally run fellowship competitions. The main drawbacks are the likelihood of resistance from the universities for the reasons set out in Section 3.4.1, and a more complicated situation with respect to employment law. However, the benefits, both of the subsidy and to RAE grading need to be fully appreciated by the universities.

The input to the review suggests that it is inappropriate to require too early a commitment from the host institution to a permanent appointment without trying other means of addressing the issue of career development. The current scheme does very little if anything to keep this on the agenda and ensure the effective management of the end of the fellowship by both the fellow and the host. This could be done via a formative mid term review of the fellowship chaired by a representative of the RSE.

If there are future cases where high calibre people move to opportunities elsewhere, primarily as a result of sluggish recruitment in Scotland, the approach may need to be reviewed.

Section 4 Review of Support Fellowships

4.1 Applications and awards 1990-2003

The Support Fellowships scheme has attracted relatively small numbers of applicants throughout this fifteen year period and has not been oversubscribed. Despite this, selection committees have generally been able to make appointments but have withheld awards when it was felt that they were not justified.

Twenty five awards in total were made between 1990 and 2003, eighteen in the physical sciences (72%) and seven in the life sciences.

4.2 Survey analysis

4.2.1 Survey coverage and response rate

Of the 25 Support Fellowships awarded between 1990 and 2003 inclusive, 21 were traced to their current position. Sixteen responded to the survey. This represents 64% of the total and a 76% survey return rate which, as with the Personal Research Fellows, is exceptionally high.

4.2.2 The fellowship

Principal activities

All Support Fellows were based in their home institution. Some conducted all of their research there while others conducted experiments using major UK research facilities or were hosted by international collaborators. The majority presented at international conferences but only a small minority undertook extended overseas visits.

The main types of activity were:-

- Creating new UK level and international collaborations, and strengthening existing ones.
- Preparing and submitting grant applications.
- Developing theory and conducting experiments rather than primarily supervising research.
- Completing ongoing research.
- Preparing papers from completed, ongoing and fellowship research.
- Development of new programmes, fields of research or modern application areas.
- Building up the research team and attracting key staff.

The importance of each of these and the time allocated was clearly very individual.

There were single reports of the following:-

- Organising an international conference series.
- Developing a commercial opportunity with a view to forming a service company.

In one case research plans had to be cut back significantly due to unforeseen circumstances.

Main professional benefits

The main benefit for all, in line with the scheme objectives, was the freedom to concentrate on, and give priority to, their scientific work. This permitted work programmes of greater scope and ambition than would otherwise have been feasible. It also enabled recipients of the awards to broaden and deepen their research capabilities and explore new domains, in a number of cases laying the foundations for long term programmes of work and the growth of their research groups.

In addition, fewer scheduled teaching and administrative commitments coupled with travel funding allowed a much greater degree of contact with collaborators, greater use of external research facilities and fewer constraints on accepting conference invitations and other opportunities to participate in UK and international scientific activities.

Requirement for the fellowship

The main barriers to undertaking the work programme without the fellowship were teaching and administrative duties. Where the research programmes would have been pursued anyway, they would have been less ambitious, less efficient and would have taken longer. Some reported that, prior to the Fellowship, 25% or less of their time was devoted to research but respondents were not specifically asked to provide an estimate.

Suggestions for improving/updating the scheme

It was widely regarded as an excellent scheme and very beneficial to the participants. A number proposed that there should be more fellowships funded as they thought there were many others who could benefit but were probably unaware of the opportunity. The ‘hands off’ approach and limited paperwork were also greatly welcomed:-

‘The Support Fellowship scheme is excellent. It allows time for a researcher to think about and develop their research and enables significant career development.’

‘Of the various funding schemes in which I have been involved, this must rank as one of the best in terms of the balance between the benefits it affords and the (low) administrative burden it imposes.’

A range of suggestions were made but there were no dominant themes:-

- Duration: some thought that one year was about right, others that the duration was too short.
- Support funds: the funding available is not enough to cover the costs of proper sabbatical leave in another institution.
- The requirement to benefit Scotland: applicants were not clear what was actually sought.
- Application process: this should possibly include an interview.
- Responsibilities of host institution: these should be tightened up to ensure that the commitments of the fellowship are honoured.
- Schedule: it would be easier to reallocate teaching loads if the fellowship were run over the academic year rather than a calendar year.
- Reporting: from the perspective of monitoring the scheme, a more prescriptive final report that asked the fellow to describe research output with reference to the research plan in the original proposal would make it easier to judge (and justify) value for money.

4.2.3 Indicators of achievement

Output indicators

The main output was science publication, primarily in peer reviewed journals and conference presentations. The number of papers mentioned related to the fellowship varied considerably, ranging from one or two to twenty five per fellow. This is not surprising given that the scope of work varied from writing up research already completed to initiating new directions. In total, well over one hundred publications were listed with what appeared to be reasonable attribution to the work supported by the fellowship. However, judging from the final reports, the total produced may well be very much higher. More detailed data collection and analysis (e.g. the proportion of publications in the 'high impact' journals) was outside the scope of the current study.

These types of data and early indicators of esteem need to be collected in a consistent way via final reports, as is current EPSRC practice.

Applications

As well as knowledge put in the public domain via journal papers and conference presentations, the majority reported that their work had been applied in other ways:-

- Four patents in total submitted by three Fellows either during or after the end of the fellowship.
- Knowledge transfer via consulting to industry and public bodies.
- Academic and external training courses.
- Successful bid for an EC Research Training Network.
- Plans for a commercial service to industry – potential spin out opportunity.
- Broadcasts, presentations at science festivals, demonstration lectures to a wider public.
- Research and infrastructure grant applications.
- Securing research contracts.

New research programmes and contracts

Almost all submitted research grant applications either during the fellowship itself, or shortly afterwards. Some were primarily for research within their own research group; others were joint applications with close colleagues or with collaborators in other institutions. At least two had secured major contracts.

Around half indicated that the work they had undertaken in the fellowship year had had a very substantial effect on their subsequent research programme. However, where they had moved, the benefits such as the expansion of their research teams and the higher standing of their groups obviously accrued outside Scotland. One of the earliest in the sample stated:-

'Our whole research programme was profoundly influenced by the fellowship and led very directly to all the research programmes currently underway'.

This research group has a current income of £1.8M and employs 20 Ph.D. and PDRA researchers. A more recent Fellow leading an important research initiative won funding of around £0.9M for research and applications development from three different sources and a further £190,000 for

public awareness activities. A third reported that contacts and collaborations developed during the fellowship had led, as the main or principal applicant, to the award of grants totalling £5.8M for research and infrastructure.

The project brief explicitly excluded detailed quantification of fellowship impacts and the survey was designed accordingly. These figures are quoted as indicative of the scale of follow on activity and evidence backing up the fellows' reports of what had been achieved as a result of their work.

Indicators of esteem

Four Support Fellows received prestigious awards during or shortly after their RSE fellowship. Two were from UK learned societies, one from a UK charitable trust and one was an international research prize.

Respondents across the sample provided significant evidence of UK level and international recognition, the main forms being:-

- Invited speaker at UK and international conferences, including the biggest in the research field.
- Member of editorial board of leading journals.
- Member or chair of scientific advisory panels for major UK and international facilities.
- Member of programme committees of major conferences.
- Member of UK Research Councils peer review colleges.
- Invited member of overseas Grant Review Committee.
- Election as president of a membership based scientific society.
- Career progression (covered in Section 4.3).

Although the fellowship was widely used as an opportunity to increase personal contributions and profile, reputation is developed over a long period of time and these forms of recognition should only partly be attributed to a fellowship

4.2.4 Career benefits and goals

Career benefits

Holding a Support Fellowship has significant career benefits and appears even on summary CVs. The benefits start with the fact of having been deemed worthy of an award administered by a learned society. Then there is the career impact of what is achieved as a result of the opportunity.

All respondents except three (approaching 80%) provided very specific information about the significance of the fellowship for their career standing and advancement. This fell into the following categories:-

- Promotion
- Progression in responsibilities e.g. expansion of research group, head of research section, greater input to or direction of departmental research policy,
- Enhanced international reputation – personal and research group (especially for those already professors when awarded the fellowship)

Of the nine respondents who subsequently progressed to professorial appointments, two thirds considered the fellowship had contributed significantly to their career progress. Some expressed this more strongly than others:-

'...major factor in gaining my Personal Chair'

...the fellowship has had an enormous impact on my career. This cannot be overstated. The work initiated....was very much the programme of research articulated at my appointment...'

Further career goals

The most striking, but not surprising, feature of the responses was the level of continued commitment to further personal achievements in research both within their home department and through external collaborations. The more senior referred to teaching at the highest levels as well as encouraging talented younger colleagues. Two specified that they wanted to progress the industrial and commercial application of their work. Most were already in senior positions and there was only one reference to promotion as a goal.

4.3 Retention and career progression

Only two Support Fellows held professorships at the time of award. A further fourteen have since achieved this status. Only three have left Scotland, two securing appointments south of the border and a third in Germany. The great majority are still employed in the same institution in Scotland. The current employment position is summarised in Table 4.1.

Current position	UK		Germany	Not known	Year of RSE Fellowship Award
	Scotland	England			
Professor	13	2	1		1991, 1993, 1994, 1996 (2), 1998 (4), 1999, 2000, 2001, 2002 (2), 2003(2)
Reader	3				1991, 2001, 2002
Senior Lecturer	2				2000, 2003
Lecturer	1				1999
Death in service	1 (Prof.)				1999
Not known	<u>1</u>			<u>1</u>	1993, 1994,
Total	21	2	1	1	

Note: excludes the 1997 Fellowship in Law on the role of consent in the development and testing of pharmaceutical drugs

Table 4.1 Support Fellows, 1990-2003 - Current employment

4.4 Findings

4.4.1 Overview

The volume of applications is probably affected by several factors:-

- The scheme is small scale and relatively little known; there are likely to have been fewer word of mouth referrals than is likely with the Personal Research Fellowships.
- It is advertised alongside the PRF scheme which may not be effective in reaching the more senior and established group eligible for Support Fellowships.
- Little information is provided concerning what the scheme is looking for; more specific objectives and guidance could help.

It is reasonable to infer from the number and quality of responses to the survey, particularly up to fifteen years on, that the Support Fellowship has been very significant for the recipients of these awards. It would appear that the fact of being awarded a research fellowship by the RSE plus the time to concentrate on a scientific programme does enable more rapid progress in research and related activities and is beneficial to reputation. The great majority found it beneficial to their careers and at least half of respondents thought it had been an important factor in progressing to a Readership or Professorship.

The benefits are likely to be wider and longer term if the time is spent in deep thinking about a significant research field, exploring potential new directions including new collaborations, developing major new research programmes or deepening links between the domain of research and the domain of application. Several recipients emphasised that the Support Fellowship gave them the flexibility to generate, or respond to, a variety of opportunities within their international research community. For example, within their normal duties they had less flexibility to undertake longer trips, or even travel when required.

It may be argued that departments should create the conditions for staff to do the type of activity supported by the fellowship anyway and that capable people can probably find the resources needed. On the other hand, a fellowship is likely to make it both easier for an individual to take the initiative and easier for their department to go along with it. So, it is highly likely that there have been worthwhile achievements that would not otherwise have come about.

Except for the odd case, the scheme has not in practice been used for longer, overseas sabbaticals, as might have been expected. The likely explanations are firstly that the expenses are not sufficient to cover the associated costs. Secondly, staff running substantial groups simply cannot go away for an extended period, or do not want to.

There is less need for study leave in large research departments and there is probably reluctance on the part of both individuals and their heads of departments concerning sabbaticals. The situation is liable to be rather different in smaller departments and in less research intensive institutions. Both may have greater difficulty in organising duties so as to provide periods of time concentrated on research and this may limit what research active people can achieve. Overall there is liable to be a high degree of variability even within single institutions concerning time management and the organisation of duties to permit the necessary blocks of time for research.

Despite the low volume of applications, it is clear that the scrutiny of applications has been effective, the awards justifiable and the opportunity used by the individuals concerned to beneficial effect. So it may be concluded that the Support Fellowships scheme has met its objectives to date and provided value for money in that context. However it is not comparable in either provisions, exclusivity and status to the top awards in the UK, nor is it designed to be.

4.4.2 Future of the scheme

The general view is that the leverage of this scheme is not as great as that of the Personal Research Fellowships and there is less justification in continuing it along its current lines. There is probably further progress to be made in departmental and institutional arrangements to permit blocks of time for research, related developmental activities and to ensure individuals can create the openings they may need to prove themselves in the competition for further career advancement.

This then raises the question of what shape a scheme targeted at people mid stage in an academic career could in future take. Wider questions were raised during the HEI consultations concerning academic careers, the retention of talented people and needs for retraining opportunities. The following ideas and opportunities were put forward and are given in no particular order:-

- There is a need to attract top international figures to Scotland/the UK, noting that at least some HEIs are actively pursuing this type of recruitment. These individuals can have extraordinary impact; however the associated costs can be high, particularly in terms of the provision of lab facilities and equipment.
- Short term sabbaticals may be particularly appropriate in the arts and humanities; it is not known if this is adequately covered in Scotland by the Arts and Humanities Research Council and independent charity schemes. There were strong views from the consultations (mostly scientists) that there needed to be adequate support to the Arts and Humanities, that the cultural health of Scotland was very important and proper attention should be paid to it. In these fields awards of short duration could go a long way.
- Capacity building in and populating new areas, either ones where Scotland is not traditionally strong and needs to do better or emerging fields.
- Funding to support discipline hopping.
- Retraining for qualified scientists who have left science to do other things for a number of years and also people mid to late in an academic career who remain highly motivated and looking for a new challenge.
- Women leaving science, the difficulty of re-entry and being under-represented at senior levels are all continuing issues.
- Biosciences are generally well covered by existing provision; there are probably more gaps in other fields.

Section 5 Implications of Full Economic Costing

5.1 Full Economic Costing (fEC) – current status^{7 8}

The introduction of full economic costing (fEC) for research projects is considered by UK Government to be a necessary reform within the dual support system for research in HEIs. Overall, institutions have undertaken more research than can be afforded, resulting in a major threat to the long term viability of the university research base. The overarching aim of reform is to put the research base on to a sustainable footing, correcting for a long period of under-funding and a persistent failure by institutions to reinvest sufficiently in the maintenance and development of their research estate. The recurrent annual deficit within the UK research base is stated to be £0.8-1 billion.

The introduction of fEC by extending the existing Transparent Approach to Costing (TRAC) methodology to the costing of research projects is seen as a necessary step to achieving this objective. This approach makes clear the existing, and to date largely hidden, cost of proposed research activities to all involved: project leaders, HEI management at all levels and research sponsors. This in turn forms the basis of better informed decision making within HEIs concerning research project commitments and these will be subject to audit.

For sponsors, in particular government departments, the implications are that research budgets will need to be increased to reflect the true costs of undertaking research. The Research Council position is likely to become the norm for sponsored research i.e. research projects will be funded to 80% of fEC, expected to rise to 100% fEC by 2010. Research Fellowships come into this category. For research commissioned for their own purposes, it is policy that Government departments should expect to pay 100% of fEC.

The implementation of fEC has reached the stage where the approach has been introduced and the systems are in place across the UK Research Councils and the HEI sector. The HEI institutions have started this reform from different points and inevitably are at different stages of development of their internal procedures and systems. The implementation schedule is summarised in Table 5.1 below.

The transition phase is just starting (mid 2005) and from now on the Research Councils will only accept proposals for research grants and fellowships on the basis of fEC. The process of culture change will take time, to ensure that HEIs do not continue to accept more loss making research into the HEI portfolio than can be covered by the available balancing funds.

⁷ Office of Science and Technology. *Regulatory Impact Assessment for Dual Support Reform*. October, 2004

⁸ HM Treasury *Science and Innovation Framework 2004-2014*

2004/06

January 2005: universities to introduce minimum fEC requirements.

June 2005: new research grant proposal forms.

September 2005: Research Council prices set at 80% of fEC for almost all grants and fellowships for new projects.

2007/08

Robust systems of costing/cost allocation for direct, indirect and estates costs to be in place.

2008/09

Fully robust implementation of fEC.

2010

Research Council awards to reach, or be close to, 100% of fEC.

Table 5.1 Full economic costing (fEC) implementation schedule

5.2 The fEC Model for research projects^{9 10}

A project is defined as an activity that is considered by the sponsor to be a separately fundable piece of research and includes personal research fellowships for both non-permanent and permanent staff.

Each institution is expected to provide PIs and other relevant staff access to costing schedules for all cost categories required by fEC. This will include charge out rates for directly allocated costs such as technicians and each major research facility. These items will be included in the project estimates on the basis of planned use. Once projects 'go live' they will not generally be re-costed, except possibly longer projects (e.g. five years) subject to mid term review and extension.

The main cost categories in the fEC model are summarised for reference in Table 5.2. One of the major changes is that the cost of permanent academic staff is now included on the basis of the time they plan to allocate to the specific research project, unless their time allocation is already covered from another source e.g. a personal fellowship. Time estimates will be subject to peer review at the application stage, there will be monitoring and benchmarks will be established for guidance.

⁹ Joint Costing and Pricing Steering Group (JCPSG) <http://www.jcpsg.ac.uk>

¹⁰ Joint Costing and Pricing Steering Group 'Transparent Approach to Costing: an overview of TRAC' HEFCE, 2005

1 Direct project costs – main categories

(i) Staff costs directly allocated to the project (salary, National Insurance, superannuation for permanent and fixed term employees):-

Applicants

Principal Investigator (PI)

Co-investigator(s)

Research Associates

Project student (stipend and course costs)

Academic, technical and secretarial staff

(ii) Travel and subsistence

(iii) Consumables/external facilities

(iv) Equipment/major research facilities

2 Indirect costs (£ per FTE)

Include support time of academics, indirect departmental costs, central services costs, library costs, generic IT costs; based on recent historical costs for the HEI uplifted for each year of the project.

3 Estates charges (£ per FTE)

Include building running costs, depreciation, estates staff; based on recent historical costs for the HEI uplifted for each year of the project.

Indexing applies

An uplift is applied to the cost basis of the second and subsequent years of the project. A figure of 3.7% per annum was given for illustrative purposes in Spring 2005.

Table 5.2 The fEC Model for Research Projects – Main Cost Categories

5.3 Implications for the schemes

5.3.1 Precedents

The precedent for future rounds has already been set through the changes to the UK wide, government funded, academic fellowship schemes run by the Royal Society, Royal Academy of Engineering and other learned societies. Funding has been increased accordingly. From mid 2005 onward applications to these schemes for personal research fellowships will be made on the basis of fEC and funded at 80% of fEC in line with UK Research Council schemes.

Given the nature and scale of changes entailed in the introduction of fEC, government departments can expect the HEI sector to be alert to any case where Treasury policy on the matter is apparently not being followed. Consultations for this review confirmed that any instance where a government department is perceived as undermining the principles of fEC risks a very strong reaction from the institutions. It is to be anticipated that the sector will expect this type of scheme to follow the precedents of the Research Council and Royal Society schemes.

5.3.2 Fellowship funding

To date no indirect costs or general overheads have been paid, presumably on the assumption that these are adequately covered by other public funding of the universities and to include them would result in double funding.

Based on the actual programme expenditure in 2005, the programme funding (salary plus some research expenses) currently provides 48% of fEC.¹¹

5.3.3 Access to research grants

The changes to the costing of research grant applications mean that the duration of a Personal Research Fellowship may be less of an issue with respect to securing research funding than is currently perceived, provided that:-

- (i) The host institution approves a grant application including salary cost of, for example, 1 or 2 years for the period from the completion date of the fellowship to the end of the grant. This cost would exclude any time allocated to non grant activities.
- (ii) The host institution is prepared to underwrite the post where the period of the research grant goes on beyond the end of the fellowship.
- (iii) The host institution also accepts the 20% of fEC not covered by the grant or any allowance related to the indirect and estate costs of charity funded research (subject to audit).
- (iv) The research fellow can apply in their own right as PI and this is accepted by the Research Councils and the host institution.

RSE Personal Research Fellows need to be able to apply for research grants as a Principal Investigator in their own right if they are to have the best opportunity to establish themselves as independent researchers. As noted in Section 3.3.2, the majority of survey respondents required

¹¹ Programme costs to date are given in table 2.1. The current UK Research Council default rates for indirect and estates costs given in Table 5.3 were used in the calculation of fEC.

research grants but it was impossible to determine the extent to which they had applied for grants in their own right.

The UK Research Councils normally required the designated Principal Investigator on Research Council grant applications to be a member of the permanent academic staff. Exceptions include non permanent researchers holding Research Council personal fellowships and Royal Society University Research Fellowships. To the best knowledge of current RC staff, there is no similar arrangement in place with the RSE and it was suggested that the RSE should make a formal approach. The objective would be to ensure that in future the fellows sponsored under the scheme will be accepted as a matter of course as PIs for the purpose of research grant applications. The situation vis-à-vis eligibility to apply to major independent charities should also be clarified.

HEI consultations have suggested that PI status for applications for smaller research grants is unlikely to be a major issue, provided that this status is simply to enable the fellowship research within an established laboratory that has agreed to act as host. It is liable be more of an issue where an RSE research fellow wishes rapidly to scale up their experimental work. The criteria that the host institution may be expected to apply include (a) the degree of fit with departmental research strategy and (b) the criteria of any established internal procedures for selecting which research fellows will be allowed independent investigator status with their own space allocation.

What has happened to date on grant applications is not clear. Past personal research fellows have referred to holding grants and being named as co-investigator on other applications in their research field. In some cases at least this conflicts with published eligibility criteria.

In conclusion, the issue of PI status for the purpose of research grant applications needs to be clarified and a formal approach made by the RSE to the UK Research Councils. Support Fellowships are a different matter because they are held by established permanent staff.

5.4 Indicative costs

5.4.1 Introduction and scope

This section examines the implications of full economic costing for the funding of awards made under future rounds of the RSE research fellowship schemes. The funding required per award is essential input to future budget estimates and any further financial appraisal required by the sponsor prior to budget approval. Future budgets also require estimates of the resources required to administer the scheme (staff, communications, expenses) and also the resources required to implement any changes to be made. The sums likely to be required depend on a number of decisions to be made after the completion of this report.

5.4.2 Personal Research Fellowships

The figures set out in Table 5.3 provide a reasonable basis for examining the implications of full economic costs for future funding of the fellowship awards. This applies both to the scheme's current level of three fellowships per year and for several options for expanding the scheme and extending the length of award.

Personal Research Fellowships		
Item		
	Cost per annum (£)	
Salary, NI and superannuation	35,000	
Direct fellowship and project costs	6,000	
Indirect costs	36,000	
Estate costs	(i) laboratory based	9,000
	(ii) non lab. based	6,000
Larger scale direct research costs	Assumed to be grant or university funded.	

Source
Salary and employment costs: RSE budget figure for 2005/06.
Direct costs of travel and subsistence, consumables, small equipment, charges for use of larger scale facilities: RSE budget figure for 2005/06. Other informed advice is that £5-7K is a realistic current range for fellowship support costs.
Indirect costs: 2005/06 default cost rates per academic or research FTE (HEFCE 2005¹²).
Estate costs: 2005/06 default cost rates per academic or research FTE for laboratory and non laboratory based personnel (HEFCE 2005). Some universities have significantly higher estate costs.

Table 5.3 Personal Research Fellowships – estimating basis

The estimates for fellowships of 3, 4 or 5 years duration (FTE) are provided in Table 5.4.

The total cost per fellowship, funded at 80% fEC, may be calculated as follows:-

$$\begin{aligned} \text{Laboratory based} & \quad ((X + \text{£}45,000)D + A)0.8 \\ \text{Non laboratory based} & \quad ((X + \text{£}42,000)D + A)0.8 \end{aligned}$$

where X is salary and employment costs (£)
D is duration in years
A is direct cost of travel and subsistence, consumables and equipment (£)

¹² Source: HEFCE 2005 (<http://www.hefce.ac.uk/finance/fundinghe/TransparencyReview/costrates.doc>)

The more generous allowance for research costs and expenses in the Royal Society University Research Fellowships Scheme should be noted. For the 2005 competition this was £13,000 for the first year and £11,000 per year thereafter.

The EPSRC approach is to encourage applicants requiring more than £4000 in project costs to apply for a research grant. Applicants can now submit one application for both a fellowship and a research grant. If the fellowship is awarded, so is the research grant.

EPSRC have offered to provide further information on fellowship project costs under fEC later in 2005 once the first round of applications under the new system has been processed. It was decided that it would not be appropriate to pursue requests for confidential cost information from the HEIs in advance of a decision in principle on fEC for these programmes, particularly since average figures based on HEI data were already available for estimating purposes.

Indicative costings have been prepared to permit the following comparisons:-

Non fEC and fEC

Fellowship duration: 3, 4 and 5 years

No of awards per year: 3 or 6

Direct, non salary costs: £6,000 (thought to be a realistic current level), £7,000 (slightly more generous and £10,000 (closer to but not as high as the provision of the Royal Society URF scheme).

These are set out in Table 5.4, noting that not all possible permutations are given. All figures are at 2005 prices with no index applied to allow for inflation. These cover the fellowships awards only, not scheme administration.

1. Cost per fellow per annum	Current scheme (not fEC)	Options with fEC			
		1	2	3	4
	£	£	£	£	£
Salary	35,000	35,000	35,000	35,000	35,000
Other direct costs	6,000	6,000	7,000	7,000	10,000
Indirect costs		36,000	36,000	36,000	36,000
Estates costs (lab. based)		9,000	9,000	9,000	9,000
Total p.a.	41,000	86,000	87,000	87,000	90,000
80% fEC	n.a.	68,800	69,600	69,600	72,000

2. Programme costs per annum, steady state	Current scheme (not fEC)	Options with fEC			
		1	2	3	4
No. of awards per year	3	3	3	3	3
Duration (FTE in years)	3	3	4	5	5
No. of posts - steady state	9	9	12	15	15
	£	£	£	£	£
Salary	315,000	315,000	420,000	525,000	525,000
Other direct costs	54,000	54,000	84,000	105,000	150,000
Indirect costs	0	324,000	432,000	540,000	540,000
Estates costs (lab.based)	0	81,000	108,000	135,000	135,000
Total p.a. at steady state	369,000	774,000	1,044,000	1,305,000	1,350,000
80% fEC	n.a.	619,200	835,200	1,044,000	1,080,000

3. Enlarged programme – costs per annum, steady state	Current provision (not fEC)	Options with fEC			
		1	2	3	4
No. of awards per year	6	6	6	6	6
Duration (FTE in years)	3	3	4	5	5
No. of posts - steady state	18	18	24	30	30
	£	£	£	£	£
Salary	630,000	630,000	840,000	1,050,000	1,050,000
Other direct costs	108,000	108,000	168,000	210,000	300,000
Indirect costs	0	648,000	864,000	1,080,000	1,080,000
Estates costs (lab.based)	0	162,000	216,000	270,000	270,000
Total p.a. at steady state	738,000	1,548,000	2,088,000	2,610,000	2,700,000
80% fEC	n.a.	1,238,400	1,670,400	2,088,000	2,160,000

Note: All figures are at 2005 prices with no uplift applied. Final programme costing using the fEC method should use the recommended index (3.7% p.a. was the indicative figure given in spring 2005)

Table 5.4 Personal Research Fellowships – cost model

5.4.3 Support Fellowships

The implications for Support Fellowships of the introduction of fEC are very similar. The estimating basis differs only in terms of salary and a small difference in direct research costs. For ease of reference, the full estimating basis is again provided (Table 5.5).

Support Fellowships		
Item	Cost per annum (£)	
Salary	37,000	
Direct fellowship and project costs	6,000	
Indirect costs	36,000	
Estate costs	(i) laboratory based	9,000
	(ii) non lab. based	6,000
Larger scale direct research costs	Assumed to be grant or university funded.	

Source
Salary and employment costs: proposed as a reasonable estimating figure for replacement staff.
Direct costs of travel and subsistence, consumables, small equipment, charges for use of larger scale facilities: RSE budget figure for 2005/06.
Indirect costs: 2005/06 default cost rates per academic or research FTE (HEFCE 2005¹³).
Estate costs: 2005/06 default cost rates per academic or research FTE for laboratory and non laboratory based personnel (HEFCE 2005).

Table 5.5 Support Fellowships – estimating basis

¹³ Source: HEFCE 2005 (<http://www.hefce.ac.uk/finance/fundinghe/TransparencyReview/costrates.doc>)

The only option estimated in the case of Support Fellowships is that of non fEC versus fEC. The calculation is set out in Table 5.6.

1. Cost per fellow per annum	Current scheme (not fEC)	SF scheme with fEC
	£	£
Salary	37,000	37,000
Other direct costs	6,000	6,000
Indirect costs		36,000
Estates costs (lab. based)		9,000
Total p.a.	43,000	88,000
80% fEC	n.a.	70,400

2. Programme costs per annum at steady state	Current scheme (not fEC)	SF scheme with fEC
No. of awards per year	3	3
Duration (FTE in years)	1	1
No. of posts - steady state	3	3
	£	£
Salary	111,000	111,000
Other direct costs	18,000	18,000
Indirect costs	0	108,000
Estates costs (lab.based)	0	27,000
Total p.a. at steady state	129,000	237,000
80%fEC	n.a.	189,600

Table 5.6 Support Fellowships – cost model

5.5 Future budget requirements

More detailed financial modelling of future programme costs and the setting of annual budgets will require:-

- Confirmation of the sponsor's position on fEC.
- Decision on the number of fellowships per annum or the alternatives to be considered.
- Decision on the scale and scope of support provided via the fellowship rather than research grant funding and/or university internal resources.
- Decision on tapered funding i.e. the scale and timing of any contribution from the host institution in the later stages of the fellowship.
- Decision on any repositioning e.g. targeting people with more research experience than the current average, which would increase average salary, or offering relocation expenses for successful applicants based elsewhere.

- Decision on whether or not to increase the budget for direct research costs beyond the current budget figure of £6,000 per fellow to take account of the research grant issues that have surfaced in this review (Section 5.3.3).
- Verification that the default figures for 2005/06 provide an adequate estimating basis taking account of any variation in indirect and estates costs for participating universities.
- A projection of the numbers of laboratory and non laboratory based projects.
- A costed change programme (one off) to implement developments arising from this review e.g. increased partnership working with the HEIs concerning career development, overhaul of programme documents, application forms and guidance to participants, development of communications materials and the web site, improved fellowship and scheme monitoring and the change to full economic costing.
- A projection of scheme administrative costs, the main categories being:-
 - ❖ Running the competition.
 - ❖ Administration of fellowships in progress.
 - ❖ Fellowship and scheme monitoring.

Section 6 Development of future schemes

6.1 Personal Research Fellowships

6.1.1 Rationale

The rationale for this type of early career scheme is that the award provides the recipients with the basis for establishing themselves as independent researchers and accelerating their development at a critical stage in their research careers. This provides a greater opportunity to break new ground, as opposed to a post doctoral position working on projects, programmes and experiments thought up and managed by others. The recipients have the chance to prove their creativity and their ability in a range of ways: developing and delivering an original programme of research, securing funding and building a team around them. In future competitions for permanent appointments in their field, the personal research fellowship is likely to be a major advantage and may even be critical in reaching the shortlist.

The wider rationale is that of, at a critical stage, encouraging talent with the potential to make a disproportionate contribution to the sustainability of the research base and wider impacts within Scotland.

The rationale for continuing to run schemes via the RSE is:-

- To operate at the Scottish level, complementary to institution and departmental initiatives.
- To support ongoing developments, currently research pooling.
- Provides the external recognition from the RSE as a learned society that both distinguishes individuals within the institution and places obligations on them to live up to the confidence placed in them.
- The RSE has the respect and authority within the research community to be able to undertake the task plus a substantial track record in running highly effective selection processes.

It is reasonable to propose from the evidence assembled in this review that an early career scheme be continued and substantially enhanced as an important component of a wider talent strategy.

6.1.2 Objectives

Multiple objectives have been expressed in the original brief, the inputs received in the review work to date and by the SSAC in *Investing in Scientific Talent* in the first place. The main ones are:-

- Develop a cohort of influential young researchers who will be the seed-corn for Scotland's future scientific capabilities.
- Select people with the potential to be leaders in fields of international significance and in some way relevant to Scotland, and accelerate their development.
- Reputation: run a prestigious scheme attracting outstanding candidates and the commitment of host departments/institutions.
- Retain outstanding people – via the fellowship award itself and subsequent retention of a significant proportion in Scotland.
- Attract candidates from a wider pool, particularly the rest of the UK and overseas.
- Worthwhile outcomes from the research itself.
- Distinctive – in order to justify a Scottish fellowships scheme.

6.1.3 Steering Group views

The set of criteria outlined in this section were developed during steering group discussions.

Principles

- The investment is first and foremost being made in the individual as opposed to grant funding a project.
- Aimed at high fliers and creating the opportunity for them to flourish.
- Prime objective is to recruit and retain outstanding talent.
- Leverage is important: based on experience at Warwick, Bristol, Glasgow and St Andrews, one research fellow should bring in funding to support 3-6 other people.

Positioning and boundaries of the scheme

- All disciplines to be included, not restricted to science, engineering and technology.
- Personal research fellowships (as opposed to widening out to industry fellowships).
- Industry relevance will continue to be an important consideration.

Eligibility criteria

- Not in permanent position.
- Nationality - as Royal Society University Research Fellowships scheme.
- Host: restrict to Scottish HEIs and Scottish Executive funded research institutes.
- 2 years or more post doctoral experience.

Selection criteria

- Academic excellence.
- Record of achievement.
- Some criteria concerning relevance to Scotland.

Scheme design

- Provisions to ensure, or at least strongly encourage, tenure track with retention in Scotland. Tenure is expected to be very attractive to high quality candidates. Such provisions also require to be legal, feasible for the host institution to implement, and also not be perceived as unattractive by the institution thus reducing participation. A twin track proposal was tabled, one with the option of tenure, subject to a major review at end Year 2. This would be a tripartite review involving the host institution, the Fellow and the RSE.
- Requires to be 4-years minimum where fellows are likely to need research grant funding.
- Not an appropriate vehicle to support industry directly; impacts depend mainly on what the individuals contribute subsequently in their career in Scotland.
- Minimum of six awards per year for Personal Research Fellowships.

6.1.4 Future options: issues to address

Resources

The development of future options for the scheme requires a number of choices to be made and there are some decisions that need to be taken before anyone can go much further. This applies in particular to whether or not the programme may be scaled up to a level where it can play a more prominent part in the development of scientific talent, let alone be extended to other research

fields. Scaling up could apply to any or all of the number of awards, the duration of the fellowship and a higher level of research support particularly in the first year until there is a chance for research grants to be secured.

The budget implications of various permutations of up to 6 fellowships per year are covered in Section 5. While scaling up the scheme requires significantly more resources, these need to be viewed in the context of the results that this review demonstrates can be achieved.

Fellowship Duration

The appropriate duration varies with the nature of the research and the demand for longer fellowships (minimum 4 years) comes from the sciences.

Different fields of research e.g. Arts and Humanities have different requirements. Different streams may be required to cater for these if different research fields are to be covered within one scheme.

Number of awards per year

As stated in Section 3.4.3, it is not clear what the most effective scale of any future RSE scheme would be. It might well be substantially higher than at present. This really depends on: (a) how many people with this type of background the Scottish 'system' needs for development and sustainability, (b) the extent to which this is, or should be, catered for by other sources, (c) the potential of the scheme as a resource that can make a disproportionate contribution to emerging fields on a 'bottom up' basis and (d) the potential of the scheme to make a much greater contribution to retaining and attracting talent in a way that complements the recruitment and development activities of the HEIs themselves.

The Scottish dimension

The Scottish dimension and potential for impact can be enhanced by:-

- Extending the approach to recruitment to target alumni of Scottish institutions in post doctoral positions in good groups elsewhere.
- Ensuring that the scheme continues to be additional to the main UK and other Scottish programmes.
- Specific steps related to career progression and retention that balance the interests of both the fellow and the host HEI. This will simply not be done on UK wide schemes but is feasible on the Scottish scale.
- Stating retention of top people in Scotland as a specific objective; this should be clear even if it is unrealistic to apply intention to stay as a selection criterion.
- Exploring the attitude and realism of candidates towards academic/industry interactions even where there is not a near term prospect of commercial application of their current work.
- Promote the variety of career openings that may occur in the different research communities.

Career development and retention

The question of a commitment from the host institution to a permanent appointment at the end of the fellowship has been considered very thoroughly throughout this review (Section 3.4.3).

The first step should be to take action to promote career development, for example via a formative mid-term review chaired by a representative of the RSE. This should focus on the individual's development and prospects for career progression as much as, if not more than, the science.

If the RSE introduces specific conditions concerning tenure track, there is a risk that departments will be somewhat reluctant to endorse applications for fellowships even from promising candidates. However, the experience of the university schemes previously run at Warwick and currently at Birmingham is that research fellowships with tenure track are very attractive to applicants.

Financial contribution from the host institution

Full economic costing makes clear the economic contribution the host institution makes to current salary based fellowships, as covered in Section 5.

It is assumed from this review that (a) the methodology of full economic costing will be applied in future rounds of the RSE schemes in order to comply with Treasury policy and (b) the proportion funded will be the same as for the Royal Society and UK Research Council fellowships (currently 80% fEC) . Further, it is not cost effective for the institutions to deal with different procedures, especially for small schemes.

Both the HEI consultations and the Academy of Medical Science Report confirm that tapered funding is a reasonable proposal. Under this system, the host institution makes an increasing contribution to cost of the fellowship in its later stages.

6.2 Support Fellowships

6.2.1 Rationale

The rationale for fellowships schemes for established staff appears to be related to headcount restrictions coupled with teaching loads and other duties that reduce the opportunities for outstanding researchers to devote themselves to research. Although these are personal fellowships, the support is paid to the host institution to enable the individuals to be released for research.

This rationale remains valid for the less research intensive institutions to support their efforts (i) to ensure a proper link between their teaching and research and (ii) to develop their research capability in targeted areas. It also applies more widely to smaller departments where it is more difficult to organise duties to provide blocks of time for research and to initiatives aimed at capacity building where current capability is sub-scale.

A short fellowship period is more appropriate to developmental activities e.g. preparing the ground for major grant applications in a new area than conducting the research itself.

6.2.2 Objectives

The objectives of other senior fellowship schemes are often to release outstanding scientists with an established international reputation to devote themselves full time to research. They are generally targeted at those likely to proceed to, or already at, the highest levels in their field.

These objectives are pitched at a much more ambitious level than the current RSE/Scottish Executive Support Fellowships scheme which simply provides for study leave for 12 months full time research, primarily for academics aged 40 or under.

6.2.3 Steering Group views

The Steering Committee view is essentially that the current RSE/Scottish Executive scheme is outdated for the following reasons:-

- One year is too short ; it is sub threshold, especially for science.
- The universities themselves should be able to give sabbatical leave.
- The situation at Senior Lecturer/Reader level is probably better now than at the time the scheme was established.

The university interviews confirmed that more attention is being paid to internal management, in particular creating blocks of time for research. However the situation is more difficult in smaller departments and where high volumes of teaching are undertaken. The post 1992 universities are keen to ensure that their teaching is well connected into relevant research and face substantial hurdles in this regard.

6.2.4 Future options

Briefly, the main options would appear to be:-

1) Maintain the status quo

Although the review is positive, the scheme is not positioned as effectively as it could be and in its present form is a lesser priority than funding the PRF scheme at a higher level.

2) Reposition

(a) A new scheme for permanent staff could be developed to support developmental activities and set the goals much higher e.g. in relation to high impact research.

This is potentially worthwhile, consistent with Science Advisory Committee recommendations and would:-

- Update the scheme and increase its status
- Increase the visibility of up and coming people and their fields of research
- Enable award holders to increase the rate of progress of their teams

EPSRC experience suggests that there should be no shortage of candidates, provided the scheme becomes well enough known. The survey evidence for this review suggests that RSE recognition helps individuals obtain departmental support for their initiatives. However, the Steering Group views set out in Section 6.2.3 should be noted.

(b) A new scheme targeted at the less research intensive institutions and smaller departments to support their efforts (i) to ensure a proper link between their teaching and research and (ii) to develop their research capability in targeted areas.

3) Close the SF scheme

Consideration of this option largely depends on the relative priorities of the programme sponsors and budget availability.

Section 7 Conclusions of the Review

Both the Personal Research Fellowships and Support Fellowships schemes have addressed their stated aims and a rigorous selection process has been applied consistently over the years. The career achievements of past fellows provide evidence that the selection process has consistently been very effective in making awards to people who have gone on to make very good use of the opportunity with a high level of retention in Scotland. They can therefore clearly be regarded as having provided value for money.

The schemes have not been comprehensive in terms of providing awards across all areas of the research base. This was simply not possible due to the very small number of awards made each year. The fellowships may have made a disproportionate contribution in optoelectronics, supporting talented people who have been keen to pursue research in an emerging field at an important stage in their careers. The relatively low proportion of awards in the life sciences is surprising and not readily explained without more detailed analysis of the applications and their assessment.

It was a premise of the review that updating was due and the main areas that have been identified for development of the Personal Research Fellowships scheme are:-

- Clearly positioning the PRF scheme as a personal development and career opportunity for talented people of high ambition. The role of the proposed research is first and foremost to provide a suitable vehicle for the individual's development as a scientist and one that is justifiable against Scottish aspirations.
- A need to promote progression into permanent appointments, ensure better management of the end of the Personal Research Fellowship on the part of both the fellow and the host institution, and also ensure earlier attention to these matters.
- An overhaul of the documents and forms used in the application and selection process to set out the objectives, requirements, selection criteria and information sought more clearly and in line with current best practice.
- Widening the composition of the selection committees appropriately e.g. to include past recipients of awards and a perspective from outside the research community e.g. FRSEs drawn from other domains.
- Raising the profile of the scheme, including using the findings from this review, case examples, departmental and alumni newsletters, and increasing the information available year round via the internet.
- Making better use of programme data in ongoing monitoring and collecting first destination information on an ongoing basis.
- Changes to the accounting requirements in order to reduce the administrative burden, given the flexibility required in managing the scheme.
- Stronger engagement with the universities to build consensus concerning approaches to developing research talent and best practice with respect firstly to hosting personal research fellowships, and secondly to developing new talent more generally.

The universities welcome externally run fellowship programmes run by learned societies in terms of both funding and reputation. The Personal Research Fellowships were thought to address a very important career stage. However, pressure to make an early commitment to provide a permanent appointment for early career fellows would not be welcome. Tapered funding, where the RSE/Scottish Executive contribution is reduced in the later stages, is likely to be considered a reasonable proposal.

With respect to duration, the main issues with a 3-year research fellowship in the sciences appear to be:-

- It forces an early career decision which in turn may result in both a shift in career direction and relocation. This is counter productive.
- It is liable to constrain unduly the degree of originality, scale and scope of enquiry on which a research fellow can embark, contrary to objectives put forward by the SSAC.
- The programme needs to allow for a period of thinking, experimentation and the deeper development of research ideas prior to the preparation of grant applications. Then there is the time required for the execution of a substantial piece of work, presentation of results and for the fellows to show that they can satisfy the performance requirements of the funding bodies and prospective employers.
- There is less scope to acquire research management experience and demonstrate leadership capability. There is also less opportunity to acquire the teaching experience necessary for an academic career without jeopardising the main objectives of the fellowship.

The main driver of location is likely to be the applicant's motivation to work within a particular research group or within a wider research pool. Applicants for early career fellowships are often already based in their host department but there is potential to encourage greater mobility into Scotland.

Support Fellowships of the current type are now probably more relevant to small departments, the post 1992 institutions and non science research fields.

Looking to the future, the demand for research fellowships from both early career and established staff is liable to continue. The apparent limited demand for Support Fellowships may be due to lack of awareness of the scheme and its lack of clear aims beyond enabling study leave. The scheme could be updated and repositioned with clearer and more ambitious goals. However leverage is liable to remain lower compared to Personal Research Fellowships because they operate at a later career stage.

The programmes have provided additional research fellowships in Scotland to suitable applicants. Without the Personal Research Fellowships scheme, there would have been around 20% fewer awards of this type held in Scotland (based on Scottish participation in awards made in 2000-2004 by the most relevant schemes funded by the UK government).

In 2005 the sponsor's grant for the two schemes only covered 48% of full economic costs. This will need to change in order to comply with Treasury policy. The report indicates the funding increase required to run the current programme under fEC. It also identifies items that should be included in future financial appraisal and budgets.

Section 8 Recommendations of the Review Steering Group to the Council of the Royal Society of Edinburgh

These are set out in a covering note to the Council of the Royal Society of Edinburgh.

Appendix 1

Review Steering Group Membership

Review Steering Group Membership

Chair

Professor Sir John Enderby CBE, FRS

President of the Institute of Physics and former Vice President of the Royal Society

Members

Professor Sir Brian Follett FRS

Chair of the Arts and Humanities Research Council

Professor David Saxon OBE, FRSE

*Royal Society of Edinburgh Research Awards Convenor and Dean of Physical Sciences,
University of Glasgow*

Professor Wilson Sibbett, CBE, FRS, FRSE

*Chair of the Scottish Science Advisory Committee and Wardlaw Professor of Physics, University
of St Andrews*

Observer

Dr Andy Bishop*

Science and Higher Education Research Branch, Scottish Executive

In attendance

Jenny Liddell

Royal Society of Edinburgh

* represented by Hazel Gibson on the selection panel for the consultancy study

Appendix 2

UK Fellowship Schemes

Appendix 2

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¹⁴ Prepared July, 2005. Scheme details and web sites subject to change.

A2.1 Personal Fellowship Schemes

Royal Society University Research Fellowships

<http://www.royalsoc.ac.uk/funding.asp?id=1121>

1. Stated Aims of Fellowship Scheme:

To provide outstanding scientists, who should have the potential to become leaders in their chosen field, with opportunities to build independent research careers. Awards cover Natural Sciences (including agriculture, mathematics, technology, medical and engineering sciences).

2. Number and Duration of Awards:

Approx 30 awards per year. Support for 5 yrs initially, with possible extension (in 2 instalments) to a max of 10 yrs.

3. Link to Permanent Post:

No specific link.

4. Eligibility Criteria:

Applicants should:

- Have a PhD or equivalent research experience, and between 2 and 7 years' full-time postdoctoral research experience.
- Be citizen of the European Economic Area (EEA), or have a relevant connection to the EEA.
- Not hold a permanent post in an EEA university (including in the UK).

Fellowships must be held in a UK university or not-for-profit research organisation (other than Research Council Institutes).

5. Assessment Process/Timing:

- Initial review and assessment by two members of the Royal Society selection panel who have the most appropriate scientific expertise.
- Short listed proposals are reviewed by two independent referees who have been suggested by the two panel members.
- Selection panel considers each short listed application, together with its nominated and independent references. There are **no** interviews.

- Closing date for applications Early January
- Final allocation of Fellowships Late May

6. Support Provided:

(i) Salary

Salary on non-clinical academic and academic related staff (Lecturer A and B) scale, with London weighting where appropriate. A limited number of merit increments (to reward outstanding performance) will be available each year.

(ii) Research Expenses.

Up to £13K in yr 1, and up to £11K annually thereafter. Relocation expenses, including contribution to baggage costs for successful overseas applicants.

7. Treatment of Overheads/FEC:

The Royal Society, as a registered charity, does not pay additional overheads on any grants, professorships or fellowships supported either from its parliamentary grant-in-aid or its private funds.

This is in full accord with the letter and spirit of the changes to the dual support arrangements, and is consistent with the position taken by most charitable organisations. There are no exceptions.

UK Research Councils Personal Fellowship Schemes

1. Post-Doctoral Fellowships.

A number of Research Councils award early career post - doctoral fellowships aimed principally at new or recent PhD graduates. These are typically 3-yr awards covering salary, and a limited amount of support for travel, equipment etc.

Broad objectives are to provide post-doctoral experience, and to support scientists with outstanding potential as they become independent investigators.

Examples of Post-Doctoral Fellowship schemes include:

EPSRC

Key Features: Less than 3 yrs post-doc experience. Award - 3 yrs. Salary on UCEA scale, Fellowship Support Fund of £18K over 3 yrs (max). Approx 14 awards per yr.

NERC

Key Features: Between 1 and 5 yrs post-doc experience. Award - 3 yrs, with possible 2 yr extension. Salary on UCEA scale, Recurrent Grant of up to £18 ½ K per yr, Research Support Grant of £1 K per yr. Approx 20 awards per yr.

PPARC

Key Features: Less than 4 yrs post-doc experience. Award - 3 yrs. Salary on UCEA scale, Travel Grant of £1 ½ K per yr, Equip Grant of £3 K per yr. Approx 14 awards per yr, with 175 applicants in 2004/05.

2. Advanced Research Fellowships.

These awards are focused on researchers with an established post-doctoral track record. Applicants normally need to be outstanding researchers with proven ability in their field, and with potential to establish international reputations and to become leaders in their fields. The expectation is that successful applicants will be strong candidates for permanent academic posts at the end of their fellowships. All schemes are over-subscribed, with success rates in the typically in the range 10% - 15%.

Summary information on Research Council Advanced Research Fellowship schemes is provided below. More detailed information on the EPSRC scheme is also attached. The detailed criteria for the other Research Council schemes are broadly similar to those of the EPSRC.

EPSRC – Advanced Research Fellowships.

Key Features: 3 to 10 yrs post-doctoral experience. Award - 5 yrs, with possible 2 yr extension (if linked to guarantee of permanent academic position). Salary, Fellowship Support Fund (£4K per yr), Optional Research Grant (no upper limit, subject to separate application). Approx 40 awards and 280 applicants per yr.

<http://www.epsrc.ac.uk/ResearchFunding/FundingOpportunities/Fellowships/AdvancedResearchFellowships/default.htm>

NERC - Advanced Research Fellowships.

Key Features: Min 2yrs post-doctoral experience. Award - 5 yrs initial, with up to 5yr extension with guarantee of permanent post. Salary, Recurrent Grant (£10K per yr), Research Support Grant (£1K per yr). 8 awards in 2004.

[NERC Funding Research & Training - 2004 NERC Research Fellowship Scheme](#)

PPARC - Advanced Research Fellowships.

Key Features: Min 2yrs post-doctoral experience. Award - 5 yrs max. Salary, £2K per yr for travel, £5K per yr for equip. 13 awards per yr. 155 applications in 2004/05.

<http://www.pparc.ac.uk/Rs/Fs/Fw/Fellindex.asp>

BBSRC - David Phillips Fellowships.

Key Features: Between 2 and 6 yrs post-doctoral experience. Award - 5 yrs (max), but allowing 2 yr extension is currently under consideration. Salary, Research Support Grant of £200k max over 5 yrs (removal of max limit currently under consideration).

<http://www.bbsrc.ac.uk/funding/fellowships/review.html>

MRC (non-clinical).

(i) Career Development Award.

Key Features: 3 to 6 yrs post-doctoral experience. Award - 4 yrs max. For transition from post-doctoral research trainee to proven independent investigator.

(ii) Senior Non-Clinical Fellowship.

Key Features: Min 6 yrs postdoctoral experience. Award - 5yrs, renewable (in open competition) for further 5 yrs. For proven independent researchers able to demonstrate promise as future research leaders.

http://www.mrc.ac.uk/index/funding/funding-personal_awards/funding-fellowships.htm

3. Terms and Conditions.

The Research Councils have core terms and conditions for research grants (including fellowships), which took effect for new grants awarded from 1 April 2004. Individual Research Councils add their own specific criteria to those of the core terms and conditions.

Link to Research Councils UK Standard Terms and Conditions:

<http://www.pparc.ac.uk/jes/tcfecfinal.pdf>

4. Full Economic Costing (fEC).

Following the Government's announcement of reforms to the Dual Support system, all Research Councils are introducing new arrangements for research grants, including Fellowships, from September 2005. The changes to be made to research grant policies, forms and processes of all Research Councils will only allow the submission of grant applications costed under full economic costing (fEC) principles from 1st September 2005.

The Research Councils will pay 80% of fEC, with an aim of increasing this to 100% by 2010.

Links to Research Councils UK's information on changes to Dual Support, and FAQs on fEC:

<http://www.pparc.ac.uk/jes/DualSupport.asp>

http://www.pparc.ac.uk/jes/DSR_FAQv2.0June05.pdf

EPSRC Advanced Research Fellowship Scheme – Detail

<http://www.epsrc.ac.uk/ResearchFunding/FundingOpportunities/Fellowships/default.htm>

1. Stated Aims of Fellowship Scheme:

To enable outstanding young research workers, or those already established in research careers, to devote themselves to full-time research. Fellows are expected to establish a research career of international standing, progressing to the highest levels in their area.

2. Number and Duration of Awards:

Approx. 40 awards and 280 applications per year. Support for up to 5 years. Possible extension of up to 3 years in exceptional circumstances.

3. Link to Permanent Post:

No linkage associated with initial 5yr fellowship award. Extensions previously dependent on guarantee of permanent academic position at host institution but this condition appears to have just been dropped.

4. Eligibility Criteria:

Applicants should:

- Be outstanding researchers, of any nationality, with 3 to 10 years of postdoctoral experience, and who will benefit from the freedom to pursue their research interests full-time.
- Have potential to become leaders in their field.
- Have endorsement from the Head of Dept in the host institution, together with statement on the Dept's commitment to contribute to the Fellow's career development (i.e. proposed support and management arrangements).

5. Assessment Criteria:

- Intellectual ability of the candidate
- Quality and originality of the research proposed
- Qualities of the individual as an independent researcher
- Awareness of the broader context surrounding the proposed research
- Current standing within the international community
- Timeliness of the Fellowship
- Ability to plan and manage resources
- Ability to communicate to a generalist audience

6. Assessment Process/Timing:

- | | |
|--|---------------------|
| • Postal peer review | November – February |
| • Initial sifting by EPSRC, based on referees' comments | mid Feb/Early March |
| • Short listing of candidates for interview by Panel | mid March |
| • Candidate interviews and recommendation for Fellowship | mid April |
| • Final allocation of Fellowships | Late May |
| • Issue of Announcement Letters | June |

7. Support Provided:

(i) Salary

Current salary level or the anticipated salary level for the position (i.e. not based on “wage for age”). Salary costs include increments, national insurance and employer’s superannuation contributions. Full justification of the salary level must be provided in the case for support.

Fellowships can be held part-time (but at no less than 50% of full-time), or converted to part-time during the course of the Fellowship (but with no extension to the overall term). Extra funding and an extension of up to 6 months are provided for maternity leave.

(ii) Fellowship Support Fund (FSF)

A fixed sum of £4,000 per annum over the period of the award, to be used at the discretion of the Fellow for costs such as:

- Small items of equipment, e.g., computers.
- Travel and subsistence expenses, e.g. visits to collaborators and conferences.
- Small amounts of research and technical effort (e.g. by an undergraduate student).
- Consumables e.g. chemicals, books, software.
- Up to £2,000 in the first year to cover any necessary relocation and removal costs.
- Not to be used for university overheads, or other indirect/unspecified costs.

(iii) Optional Research Grant

Applicants can apply for a research grant to cover costs over and above those covered by the Fellowship Support Fund. Costs covered can include staff, travel and subsistence for the staff, consumables, exceptional items, equipment and access to services. The research grant can be for a maximum of three years in duration. Subsequent to gaining an award, Fellows are also eligible to apply for further research grants.

There is no upper limit on the funds sought. Assessment Panels are required to assess the quality of candidate and the resources necessary to sustain a research programme; the cost of the research grant is **not** a consideration in the assessment process.

8. Treatment of Overheads/FEC:

All fellowship applications submitted after 1 September 2005 must be costed on full economic costs (fEC) - based on the Transparent Approach to Costing (TRAC) methodology. If a grant is awarded, Research Councils will provide funding at 80% of the fEC. The host organisation must agree to find the balance of fEC for the fellowship from other resources.

Wellcome Trust – Senior Research Fellowships

<http://www.wellcome.ac.uk/node2130.html>

1. Stated Aims of Fellowship Scheme:

To encourage individuals of exceptional ability to embark on independent programmes of research in Basic Biomedical Science within the United Kingdom or the Republic of Ireland. Awards are made, in annual competition, to support outstanding investigators who have shown special promise in their studies of basic biomedical problems.

2. Number and Duration of Awards:

5 yrs initially, with opportunity to apply for renewal subject to a competitive, rolling scientific review every five years. Renewed awards will be made on the basis that the Trust and the host institution will jointly fund the Senior Research Fellow's enhanced salary through a "50:50" partnership for the duration of any renewal period. Approx 10 to 15 awards per year.

3. Link to Permanent Post:

The host institution needs to give undertakings that:

- It would hope, during the tenure of the Fellowship, to be able to arrange for a suitable new post for the Fellow.
- Conditional only on the Fellow's sustained performance as a research worker, it would support an application for any suitable permanent post that becomes vacant locally or elsewhere.

4. Eligibility Criteria:

Candidates should:

- Normally have 5 to 10 yrs post-doctoral research experience, and a substantial record of publications in leading international journals.
- Be a national of, or have a relevant connection with, the European Economic Area (EEA).
- Not hold a permanent academic post at his/her current employing institution. However, such a candidate who wishes to move institutions may submit a preliminary application for consideration.
- Have the support of a sponsoring laboratory in a biomedical or clinical department in an academic institution (or the NHS), eligible to apply to the Trust, in the UK or Republic of Ireland. The sponsoring laboratory must provide a guarantee from an appropriate established post holder (usually the head of department) that the necessary research space and facilities would be provided. The laboratory should not be a Research Council (or other directly Government-funded) unit or institute.

5. Assessment Process/Timing:

- | | |
|--|-------------------|
| • Submission of preliminary applications | Early July |
| • Submission of full applications, if invited | Early October |
| • Peer review | October – January |
| • Further short listing by relevant science funding committees | February |

- Interviews for short listed candidates April
- Final decisions End April.
- Successful candidates must take-up their awards within 12 months.

6. Support Provided:

(i) Salary

- Salary according to age, experience and the Trust's policy on enhancement, within the Trust's senior fellowship scale.

(ii) Fellowship Support Fund (FSF)

- The essential costs of the research programme (for example consumables, equipment, collaborative travel, research assistance, technical support). Awards provide for the direct costs of the research project to be conducted. For a biomedical science grant this might typically include salaries of research assistants and/or technicians; equipment; materials and consumables; animals; and travel costs.
- Large or particularly expensive items of equipment can be requested through a separate equipment scheme.

(iii) Optional Research Grant

- In addition to the essential costs, a Flexible Funding Allowance and support to attend scientific meetings will be provided.

7. Treatment of Overheads/FEC:

In common with other charities, the Wellcome Trust does not contribute towards overheads or normally towards office expenses. Following acceptance of an award, the Trust considers it the responsibility of universities to meet any additional costs for the maintenance and running of facilities required for carrying out research programmes. The Trust will not supplement awards to meet such expenses.

Other Charity Funded Research Fellowships

(Selected as being relevant to the review of the RSE/Scottish Executive schemes)

Cancer Research UK - Career Development Fellowships

Key Features: 3 to 6 yrs post-doctoral experience. Award - 6 yrs max. Salary; funding for 1 post-doctoral worker and additional technical support; “set-up” equip grant; research expenses. 2 awards per yr, with approx 20 applications per yr.

http://science.cancerresearchuk.org/gapp/grantapplications/tcdb/tcd_cdf?version=1

Leverhulme Trust - Early Career Development Fellowships

Key Features: Post-doctoral researchers normally under 35, with proven research record. Award - 2 yrs. 50% of total salary cost, up to max of £19K per yr, with balance covered by host institution. £5K per yr for research expenses. Approx 30 awards per yr. No contribution to host institution overheads.

http://www.leverhulme.org.uk/grants_awards/grants/early_career_fellowships/

Royal Commission for Exhibition of 1851 - Research Fellowships

Key Features: Recently completed, or about to complete, a PhD, normally aged less than 30. To give scientists or engineers of exceptional promise the opportunity to conduct research for a further period. Award - 2 yrs. Stipend (2005) - £21,700 in yr 1, £22,800 in yr 2 (plus London weighting). Approx 6 awards per yr.

http://www.royalcommission1851.org.uk/res_fellow.html

Caledonian Research Foundation - Biomedical Research Fellowships

Key Features: Normally under 32, with 2 to 6 yrs post-doctoral experience, and with a well developed capacity for innovative research and a substantial publication record. Only for research in biological, biochemical, physical and clinical sciences related to medicine. Fellowships can be held in any HEI, Research Institute or industrial laboratory in Scotland. Award - 3 yrs. Salary on HEI Research Staff Grades AR1A 1.3 to AR2.7; £1K start-up grant; £1k per yr for travel and subsistence; opportunity to compete annually for up to £5K from Project Support Pool (to supplement, not replace, funding normally available from Research Council and University sources).

<http://www.calres.co.uk/activity/biof/biof.htm>

University Research Fellowships – Internally Funded

Birmingham University – Research Fellowship Scheme

1. Objective:

To strengthen the university's research base by awarding Research Fellowships to outstanding young researchers across a range of disciplines/Departments.

2. Number and Duration of Awards:

Up to ten 5-year Fellowships will be awarded, as part of the university's overall £6 million investment in its research portfolio.

3. Link to Permanent Post:

Subject to performance/probation, the Fellowships will convert automatically to Lectureships.

4. Eligibility Criteria:

Applicants should have a strong record of research accomplishment, and a powerful vision to build an innovative research programme in future.

5. Assessment Criteria:

The university's standard procedures for open advertising/recruitment will be used.

6. Support Provided:

Salary during Fellowship, based on the university's standard terms and conditions for Research and Analogous Staff. Salary on transfer to permanent post will be on Academic Teaching Staff terms and conditions in force at the time.

City University – Research Fellowship Scheme

1. Objective:

To provide central funding to allow internal candidates at an early stage in their research careers to develop and enhance research that has acknowledged standards of excellence.

2. Number and Duration of Awards:

Two new appointments per year, each for a period of 2-years. Fellowships only open to internal candidates.

3. Link to Permanent Post:

No linkage for research staff not currently in permanent posts. Staff currently in permanent posts can apply if they do not already have a PhD.

4. Eligibility/Assessment Criteria:

- Candidate's career stage (focus is on early career, normally within 3 yrs of PhD).

- Demonstrable excellence or potential for excellence in research
- The fit of the proposed research with the strengths of the host School/Dept
- The potential for the research to continue beyond the period of the fellowship.

6. Support Provided:

Salary at appropriate point on Research and Analogous Staff scale. £25K per yr for research costs.

A2.2 Support Fellowship Schemes

These schemes all have the objective of enabling permanent academic staff to devote themselves entirely to independent research, free from teaching and administrative duties. They are generally targeted on those likely to proceed to (or already at) the highest level in their field. Examples of available schemes are given below.

EPSRC Senior Research Fellowships

<http://www.epsrc.ac.uk/CMSWeb/Downloads%5COther%5CFAQsSRFs.doc>

Eligibility: Recognised internationally. At least Reader/Senior Lecturer level. Proposed research important, timely and with opportunities for major scientific advances.

Length: 5 yrs (max).

Support: Salary (as if continuing in existing post); Fellowship Support Fund (£20K over 5 yrs); Optional Research Grant.

Number Available: Up to 3 per year.

PPARC Senior Research Fellowships

<http://www.pparc.ac.uk/Rs/Fs/Fw/lecture.asp>

Eligibility: Min of 5 years in established post as Lecturer or above, with a normal teaching load.

Length: 3 yrs.

Support: £38K per year paid to host institution - to be used for costs of temporary replacement.

Number Available: Up to 6 per year.

BBSRC Research Development Fellowships

<http://www.bbsrc.ac.uk/funding/fellowships/review.html>

Eligibility: Min of 5 years in post as established member of academic staff.

Length: 3 yrs, with possibility of extension for 2 more years in exceptional cases.

Support: £30K per year paid to host institution - to be used for costs of temporary replacement.

BBSRC Professorial Fellowships

<http://www.bbsrc.ac.uk/funding/fellowships/review.html>

Eligibility: Already recognised as outstanding scientist at international level.

Length: Up to 5 years.

Support: £55K per year paid to host institution as contribution to fellow's total salary cost; opportunity to apply for Research Grant of up to £200K over 5 years.

Number Available: Up to 2 per year.

Leverhulme Research Fellowships

http://www.leverhulme.org.uk/grants_awards/grants/research_fellowships/

Eligibility: Established researchers, normally aged over 30, whose routine duties prevent completion of their research programmes.

Length: Between 3 and 24 months.

Support: £22K (max) to cover research costs, or to be used as a contribution to the costs of a temporary replacement.

Number Available: 100 per year.

Royal Society Leverhulme Trust Senior Research Fellowships

<http://www.royalsoc.ac.uk/funding.asp?id=1124>

Eligibility: Holders of established university academic posts who are at a career stage where they would benefit from a period of full-time research.

Length: Between 1 term and 1 year.

Support: Up to £24,820 paid to employing institution to cover costs of temporary replacement; Research Expenses of £2,500.

Number Available: 7 per year.

The British Academy Readership and Senior Research Fellowships

<http://www.britac.ac.uk/news/release.asp?NewsID=16>

Eligibility: Individuals holding permanent academic appointments, who have already published works of intellectual distinction and who have been (and continue to be) hampered in their efforts to accomplish a major piece of research by heavy teaching/admin responsibilities.

Length: 2 yrs for Research Readerships, and 1 yr for Senior Research Fellowships.

Support: A grant to the employing institution to cover costs of a temporary replacement.

Number Available: 14 Research Readerships out of 127 applications (2005), and 7 Senior Research Fellowships out of 78 applications..