Freshney Consulting

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Review of the Springboard Scheme for Biomedical Scientists

The Academy of Medical Sciences

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Executive Summary

Key findings

General points

- Insight and feedback obtained throughout this review were overwhelmingly positive about the value of the Springboard scheme, backed up by evidence of awardees' achievements. It enables new lecturers and junior group leaders to start their own research programme, generating preliminary data for future grant applications. The scheme was considered to be an essential route for supporting basic biomedical scientists to transition to independence.

- Springboard helps awardees to fulfil their institutional commitments and progress their research. There exist far too few fellowships to meet the demand for researchers seeking to establish their independence and therefore Springboard fills a very important niche. Biomedical research careers can be quite varied and therefore having a scheme that provides good flexibility is important. Funders and institutions placed a high level of prestige on individuals winning these grants competitively from a highly respected funder.

- Springboard's 'USP' combines mentoring and career development with a funding package, placing the emphasis on 'propelling early careers' alongside the generation of data.

- The flexibility offered through Springboard funding is also a particularly valuable aspect of the scheme. This enables awardees to allocate funding towards their specific needs, providing optimal support within the modest amount available.

- The scheme's flexibility also enables individuals to take career breaks, and it is a valuable funding source for those returning from career breaks, such as women who are starting a family at this stage in their career, as illustrated in the case studies of awardees that have been prepared.

Landscape

- Whilst a wide range of funding programmes exist for biomedical researchers, the Springboard scheme fills an important niche in providing support for individuals to establish their independence.

- The only other scheme comparable to Springboard is the Wellcome Trust's Seed Awards programme. However, this scheme has a wide remit and is not specifically targeted to support individuals at this critical stage in their career.

- There is a large and growing cohort of biomedical researchers in the UK. In 2017/18, 28% of early / mid-career biomedical researchers were employed on a combined research and teaching contract.

- From 2014/15 to 2017/18, the proportion of biomedical researchers from other (non-UK) EU countries increased by 2%, to 29% and the proportion from non-EU countries increased by 2%, to 18%

Springboard Funding
- Since Springboard began, 105 awards have been made from a total of 396 applications, representing an overall success rate of 27%. Ten institutions have secured 58 of these awards, achieving an overall success rate of 50% or more.
- 28% of all Springboard grants have been awarded to institutions in Greater London, which itself receives 32% of all UK government and charity funding for Health Research.
- Just over one third of all Springboard applications are from the fields of Cellular Biology and Neuroscience.

Awardees' time spent doing research and teaching
- After receiving an award, Springboard grant-holders spent on average more time teaching, reporting a 4% increase for the duration of the award and a 9% increase once the award had been completed
- Unsuccessful applicants experienced a 7% increase in their teaching workload after applying.

Career stage and target audience
- 56% of Champions and 50% of Panel members considered lecturers (or equivalent) within three years of appointment to be the career stage of greatest need for Springboard support.
- However, 30% of Champions and 40% of Panel members also considered senior postdoctoral researchers aiming for independence to also merit support of this kind.
- 70% of Panel members and 59% of Champions felt that the Springboard scheme should not be extended to clinical academics. Interviewees felt that there were better career structures and more funding options available for clinical academics.
- Mixed views were received on whether to extend Springboard to researchers in Low and Middle-income countries (LMIC). Comments received indicated that other schemes, such as GCRF, exist to fulfil this aim and there was an overwhelming case for Springboard to provide more support for the UK biomedical research community.

Limits on applications per Institution
- In round 4 of Springboard, 49% of eligible institutions submitted 3 applications and 51% submitted 2 or fewer applications.
- Our survey indicated that only 15% of Champions who responded believed that the cap prevented potentially successful candidates from applying, however Champions from Russell group universities were more likely to see this as an issue.
- Overall, interviewees felt that the institution cap was a pragmatic solution to managing demand whilst encouraging regional and disciplinary diversity.

Research outputs from Springboard
- By 31 March 2018, Springboard awardees from rounds 1 and 2 had reported a wide range of research outputs since receiving funding:
    o 11 awardees reported 33 awards and recognition factors
    o 17 awardees reported 34 new collaborations and partnerships
    o 20 awardees reported securing 44 new research grants
    o 17 awardees reported 32 new research publications

- o   20 awardees reported 57 public engagement activities
- Round 1 Springboard awardees that secured future funding by March 2018 reported total follow on funding of £2.4m[1], representing an impressive return of £1.30 for every £1 of Springboard funding awarded.
- 54% of follow on funding secured by round 1 awardees was in the form of fellowships and 55% was from the charity / non-profit sector.
- On average, successful applicants to Springboard had submitted a further 2.3 grant applications each, whilst unsuccessful applicants had submitted a further 3.3 applications each since applying to Springboard.
- Springboard awardees and unsuccessful applicants experienced a similar success rate in further funding applications (57%). However, awardees were twice as likely to seek substantial grants (£500k or more e.g. fellowships) than unsuccessful applicants to Springboard, who were more likely to seek grants of less than £100k (e.g. pilot grants or seed awards).
- Springboard awardees reported having established an additional 2.6 academic collaborations since receiving the award. Unsuccessful applicants reported an average of 3.3 new academic collaborations since applying to Springboard.
- The level of new clinical or industrial collaborations established by these groups was much lower with the averages ranging from 0.4 to 0.86.
- Research papers published by Springboard awardees received 23% more citations than for unsuccessful applicants.
- When selecting papers that had received 10 or more citations, papers from Springboard awardees received 44% more citations than papers from unsuccessful applicants.

Value of Springboard Funding
- 98% of Springboard awardees responding to our survey told us that receiving a grant had had a "very significant" or "significant" impact on their research plans.
- Successful applicants considered the most valuable elements of the scheme to be funding leverage, personal recognition and increased research confidence.
- Awardees from non-Russell group institutions were more likely to receive additional financial support from their institution (e.g. to support a PhD student), indicating that funding leverage from Springboard is greater at non-Russell group institutions.
- Awardees were more likely to have been promoted after receiving an award (40% of survey respondents) than individuals who had applied to Springboard but been unsuccessful (24%).
- Receiving a Springboard award did not influence the proportion of time awardees spent doing research. In fact, awardees reported a slight decrease in overall time spent doing research (5% less once completed). Unsuccessful applicants reported a 7% decrease.

Funding leverage
- There is good evidence of the funding leverage that Springboard provides. For example, some Institutions provide additional funding to enable a PhD student to be appointed for 3 years.
- Funding leverage appears to be higher at non-Russell Group universities, where there is more evidence of Institutions providing additional support to awardees.

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[1] Excludes a £2.2m European Commission grant awarded to one Springboard awardee

Support for mentoring, career development and networking

- The Academy's career development and networking support for applicants were seen to be valuable and unique aspects of the Springboard scheme.
- At least 60% of awardees have taken up mentoring in each round. 84% of awardees in our survey who participated in mentoring found the programme to be "very useful" or "quite useful".
- Several suggestions were received for expanding the Academy's networking support through more regional meetings and a focus on topics such as translational, developing clinical or industrial interactions, and engaging in interdisciplinary or transdisciplinary research.

Funding provided and grant duration

- 22% of Champions and 40% of Panel members believed that the current offer of £100k was sufficient, however, 41% of Champions and 20% of Panel members believed that the award size should be increased to £125k.
- The current level of funding appeared to limit some awardees from recruiting a postdoctoral researcher, although 44% of awardees were able to do so.
- Further awardees reported challenges in recruiting a PhD student, although in several cases, the Host Institution provided additional funding to enable such appointments.
- Several stakeholders pointed out that they would not want to see the amount of individual awards increasing at the expense of funding fewer grants.
- The majority of Panel Members and Champions considered the current duration of grant funding for 2 years to be appropriate, although applicants indicated a preference for a longer duration.

1. Introduction

1.1 Background

Early career Biomedical Scientists working in academia represent a significant and diverse section of the UK's Life Sciences community. Within this group are the UK's future leaders, who will develop pioneering research to tackle the significant challenges we face in health and society. The Life Sciences sector also plays a major role with the government's economic strategy for the UK, as set out in the Life Sciences Industrial Strategy.

However, despite the importance of this sector, early career structures in academia are poorly defined and securing research funding is extremely competitive. A key goal of the Academy is to support the careers of the next generation of biomedical researchers through targeted grant schemes, providing access to support and funding to make them more likely to succeed. With this goal in mind, the Academy established the Springboard scheme for biomedical researchers in 2015.

1.2 Objectives of the Springboard Scheme

The overall aim of Springboard when launched in 2015 was to increase the number of early-career, non-clinical, biomedical scientists transitioning to an independent position. The need for such a scheme was recognised through evidence that limited start-up funding packages were available to individuals within three years of their first independent (salaried) position, creating a major hurdle to career progression.

Alongside supporting career progression, a key goal of the scheme is to enable awardees to develop preliminary data to support future, larger applications. In 2012, scoping work for the new scheme also emphasised the importance of increasing early career biomedical researchers' engagement i) with the Academy, industry, healthcare and with other biomedical researchers, and ii) in translational and interdisciplinary research.

1.3 Aims and scope of the evaluation

The purpose of this report is to evaluate the contribution that the Springboard Scheme has made in advancing the careers of Biomedical Scientists. To conduct this evaluation, we have assessed i) the wider funding landscape, ii) stakeholder perceptions on the scheme's value and design, and iii) outputs from the scheme. Together, this assessment provides a robust platform for considering how the scheme can be developed further in future rounds.

The key objectives of this review have been framed by several key questions, as follows:

   i)   What were the original aims of the scheme, and have they been achieved at this early time-point?
   ii)   Is the scheme fit for purpose?
   iii)   Has the landscape changed since the scheme was launched and if so, how?
   iv)   What has been the impact of the scheme on the award holders and their careers?
   v)   How is the scheme viewed externally, by funders, Panel members and Springboard Champions?

1.4 Methodology

Data and information for this report were drawn from several sources:

Topic	Source
UK's biomedical research landscape – relevant funding programmes	● Desk research; funders' websites
Numbers of Biomedical Lecturers (or equivalent)	● HESA (Higher Education Statistics Agency)
Research output analysis	● ResearchFish (data provided by awardees) ● Applicant survey
Citation Analysis	● Data from Web of Science, provided by Clarivate Analytics
Insight on scheme value and experience (Online survey)	● Successful applicants ● Unsuccessful applicants ● Panel members ● Springboard Champions
Insight on scheme value and experience (1:1 interviews and case studies)	● Panel members (4) ● Springboard Champions (4) ● Partner funders (3) ● Successful applicant (awardee) Case Studies (5)

Table 1.1 – Summary of information sources used in this review

To gather insight on the progress and future development of the Springboard scheme, we invited applicants who had been successful or unsuccessful to share their views through an online survey. Panel members and Institution Champions were also invited to participate in a separate survey. Please refer to Appendix III for details of survey methodology and level of participation, and Appendix IV for details of survey participant demographics.

We also gathered insight through 1:1 interviews with selected stakeholders. Please see Appendix III for further details.

2. Landscape Review

2.1 Overview of major funding schemes available for biomedical researchers

A range of funding schemes is available for biomedical researchers at postdoctoral or more advanced stages in their careers (see figure 2.1).
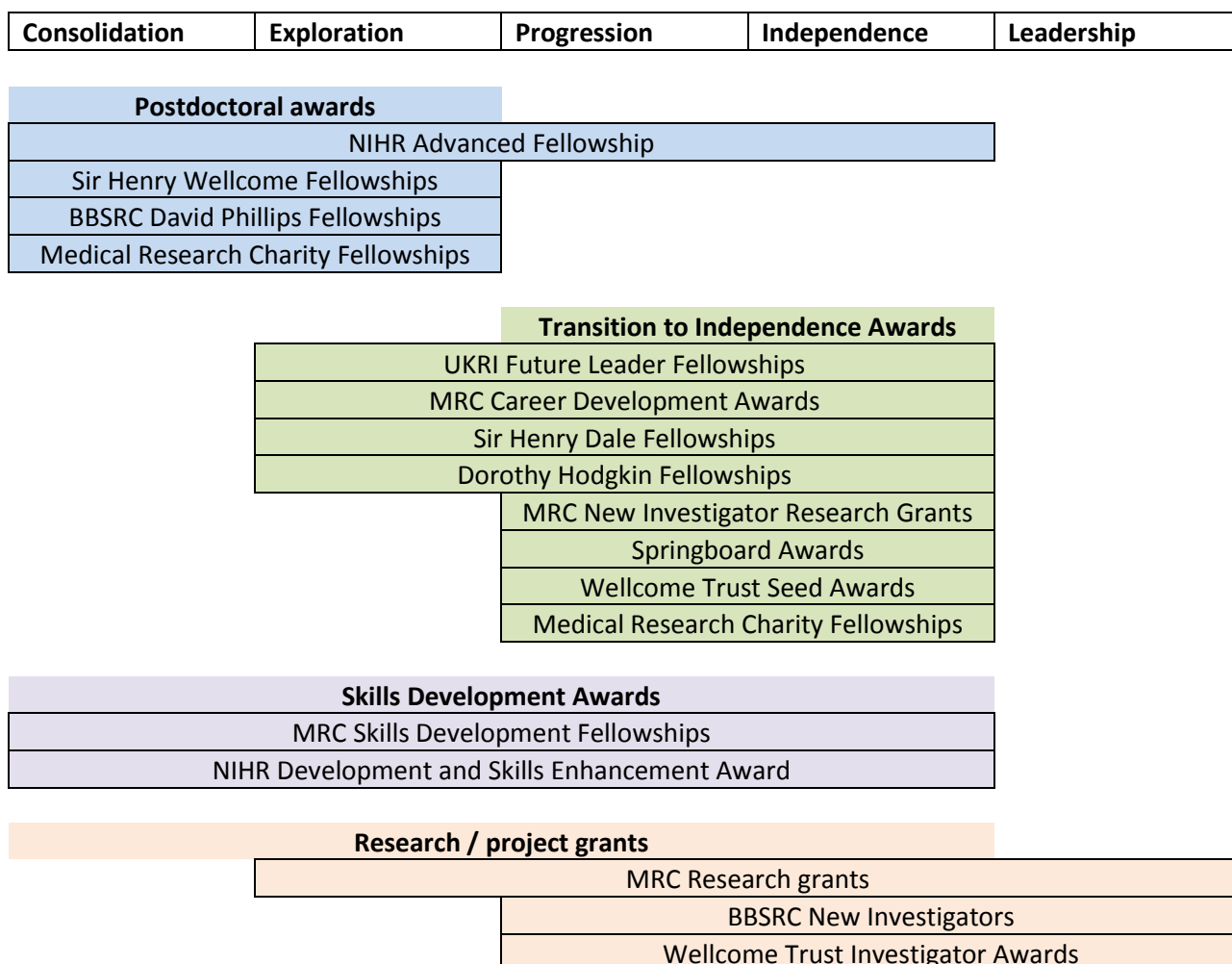
Consolidation	Exploration	Progression	Independence	Leadership

Postdoctoral awards

NIHR Advanced Fellowship	
Sir Henry Wellcome Fellowships	
BBSRC David Phillips Fellowships	
Medical Research Charity Fellowships	

Transition to Independence Awards

UKRI Future Leader Fellowships
MRC Career Development Awards
Sir Henry Dale Fellowships
Dorothy Hodgkin Fellowships
MRC New Investigator Research Grants
Springboard Awards
Wellcome Trust Seed Awards
Medical Research Charity Fellowships

Skills Development Awards

MRC Skills Development Fellowships
NIHR Development and Skills Enhancement Award

Research / project grants

MRC Research grants
BBSRC New Investigators
Wellcome Trust Investigator Awards

Figure 2.1 – *Overview of the major funding programmes available to non-clinical biomedical researchers. Medical Research Charity Fellowships include e.g. Cancer Research-UK, BHF. The structure of this diagram is based on the MRC's interactive careers framework[2].*

Of particular note, the Wellcome Trust's Seed Awards in Science are quite similar in remit to the Springboard awards – both were set up in 2015-16. This programme is discussed below.

Table 2.2 summarises major Fellowships targeting individuals transitioning to an independent position. These fellowships cover all or a proportion of PI salary. The Springboard and Seed Awards schemes are summarised in table 2.3.

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[2] https://mrc.ukri.org/skills-careers/interactive-career-framework/

Funder	Scheme	Aim of scheme	Eligibility	What it provides	Demand / Success rates
UKRI	Future Leader Fellowships	To enable the fellow to transition to or establish their research/innovation independence in any area supported by UKRI.	Doctorate or equivalent research experience: Any institute	Funding for 7 years (4+3 model); Fellow's salary and justified research, staff and training costs, with seven years of support	First call: 2018/19
MRC	Career Development Award: Transition to independence	Supports talented post-doctoral researchers to lead their own research plans and establish their own research team to make the transition from post-doctoral researcher to independent investigator.	No eligibility rules based on years of post-doctoral experience.	Funding for 5 year; Fellow's salary costs, research support staff, consumables, travel costs, equipment	113 applications; 14 awards; 12% success rate
MRC	New Investigator Research Grants (NIRGs)	For researchers who are capable of becoming independent Principal Investigators and who are now ready to take the next step towards that goal.	No eligibility rules based on years of post-doc experience; graduate degree, PhD or an MD	Funding for 3 years; Up to 50% of Fellow's salary; research support staff, consumables, travel costs, equipment	98 applications; 20 awards; 20% success rate
NIHR	Advanced Fellowship	Aimed at several specific points of a researcher's career development.	Recently completed PhD; transitioning to independence; transition to applied health research	Funding for 5 year (up to £500k); Fellow's salary costs; research support staff, consumables, training, travel, equipment	First call: 2018/19; Previous fellowships in 2017/18: 325 applications; 47 awards; 14% success rate
Wellcome Trust / Royal Society	Sir Henry Dale Fellowships	For postdoctoral researchers who aim to become independent scientists leading their own groups.	PhD and significant postdoctoral research experience; not eligible if you hold an established post	Basic salary +£7.5k Wellcome Trust enhancement; research support (1 post); consumables, travel	FY14/15 to FY18/19: 812 applications; 159 awards; 20% success rate
Royal Society	Dorothy Hodgkin Fellowship	Support towards an independent career for researchers who need flexible support (i.e. need to work part-time).	Up to 6 years postdoc	Up to £450k for salary, consumables, travel, PhD student, equipment	2017: 106 applications; 14 awards; 13% success rate

Table 2.2 – Overview of major funding schemes for researchers transitioning to an independent position; open to postdoctoral researchers. N.B. Data collected by the Academy describes success rates from the equivalent Research Council programmes as ranging from 19% - 27% in 2012/13.

There is clearly a very high demand for fellowship funding, with success rates typically under 20%. The Academy's Springboard scheme provides an important niche and alternative route for early career researchers to develop their research independent programmes of research. Around the same time that Springboard began, the Wellcome Trust launched its Seed Award scheme. Whilst having somewhat similar aims, the eligibility requirements for accessing Seed Award funding were broader than for Springboard.

Funder	Scheme	Aim of scheme	Eligibility	What it provides	Demand / Success rates
Academy of Medical Sciences	Springboard Awards	Support basic biomedical scientists as they develop their independent research careers.	Within three years of being appointed to your first independent post; specified list of HEIs	Up to £100k over 2 years for research support salary; consumables, travel; No PI salary	Rounds 1-3: 396 applications; 105 awards; 27% success rate
Wellcome Trust	Seed Awards	Develop novel ideas that will go on to form part of larger grant applications to Wellcome or elsewhere.	PhD or an equivalent higher degree; receive salary from host organisation	Up to £100k over 2 years for research support salary; consumables, travel; No PI salary	FY14/15 to FY18/19: 2238 applications; 271 awards; 12% success rate

Table 2.3 – Overview of the Academy's Springboard Awards and the Wellcome Trust's Seed Awards funding schemes for researchers transitioning to an independent position.

2.2 Lecturers in Biomedical Science

Introduction
The aim of this section is to identify the number of lecturers (or equivalent) in biomedical science working at Higher Educations Institutions in the UK. The source of data for this analysis is the Higher Education Statistics Agency (HESA).

Overview of methodology
Academics aged 26-45 working in bioscience, medicine, dentistry or health holding a Senior Professional or Team Leader contract at a Higher Education Institution were included in this analysis. Further restrictions applied excluded individuals with a clinical contract or a medical, dentistry or veterinary degree. Data for 2014/15, 2015/16, 2016/17 and 2017/18 were collected to assess trends.

Whilst we were particularly interested in assessing early career Lecturers, the dataset did not allow extraction of this group from other roles, such as Research Fellows, Senior Research Fellows, Senior Lecturers, Senior Research Assistants, Teaching Fellows and Team Leaders. Therefore, we describe the group of interest as being 'Early Career Biomedical Researchers'. Full details of the methodology for data extraction and analysis, including a summary of caveats to note, are described in Appendix II.

Total number of Early Career Biomedical Researchers working in bioscience and health research

The total number of Early Career Biomedical Researchers included in this analysis, for years 2014/15 to 2017/18 is shown below (figure 2.5). During this period, the total number of Early Career Biomedical Researchers increased by 19%, from 11,795 (2014/15) to 14,043 (2016/17).
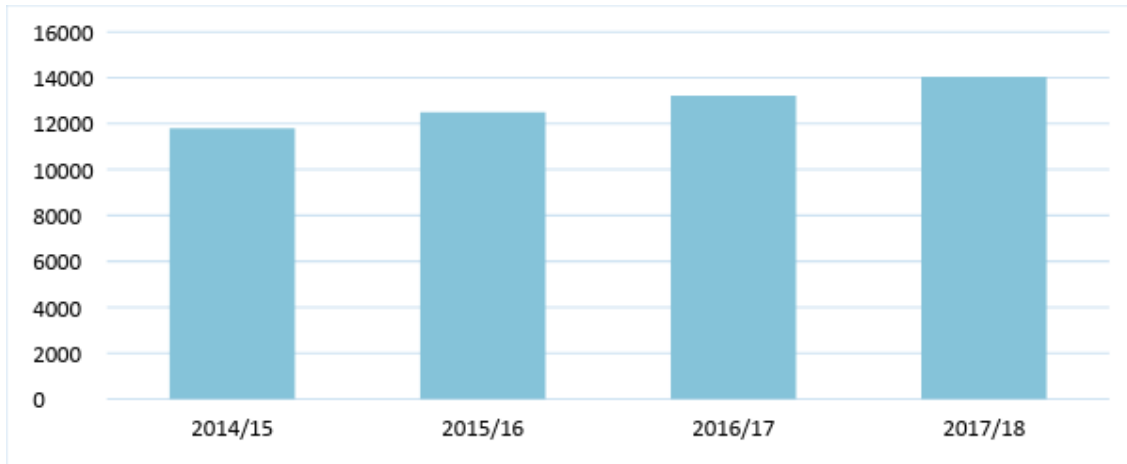

Figure 2.5 - Total number of Early Career Biomedical Researchers working in bioscience and health research between 2014/15 and 2017/18. Source: HESA.

Contract type (teaching and research) and terms of employment

There was a small increase in the proportion of Early Career Biomedical Researchers employed on teaching only contracts, which rose from 4.7% (2014/15) to 5.7% (2017/18) – see figure 2.6. The proportion of researchers employed on research only contracts also rose slightly, from 64% (2014/15) to 66% (2017/18). The proportion of researchers employed on research and teaching contracts declined, from 31% (2014/15) to 28% (2017/18).
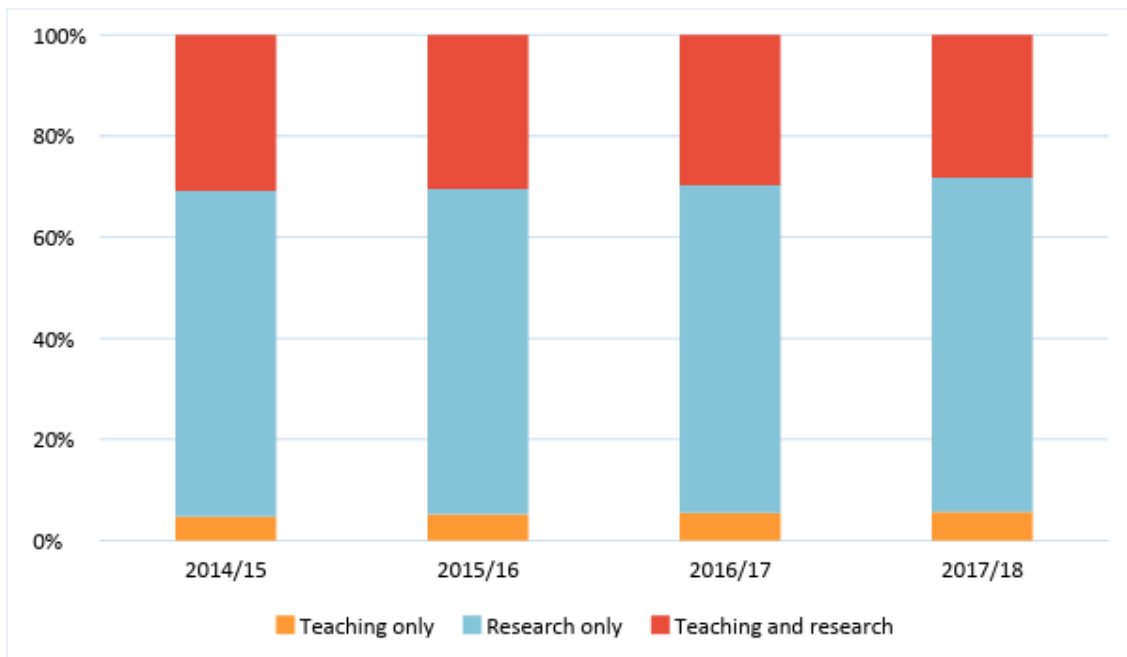

Figure 2.6 – Proportion of Early Career Biomedical Researchers employed on research, teaching or research and teaching contracts between 2014/15 and 2017/18. Source: HESA.

The proportion of researchers on open-ended or permanent contracts remained level at 52%-53% between 2014/15 and 2017/18, with the proportion on fixed-term contracts remaining at 47%-48%.

Source of salary

46% of Early Career Biomedical Researchers had their salary financed by their higher education provider in 2017/18 – 'HEI' in figure 2.7. 20% of researchers' salaries were supported by charity and a further 13% by UKRI. The number of researchers receiving their salary from multiple sources doubled from 2014/15 to 2017/18. The overall proportion receiving their salary from the European Commission had remained at 5%.
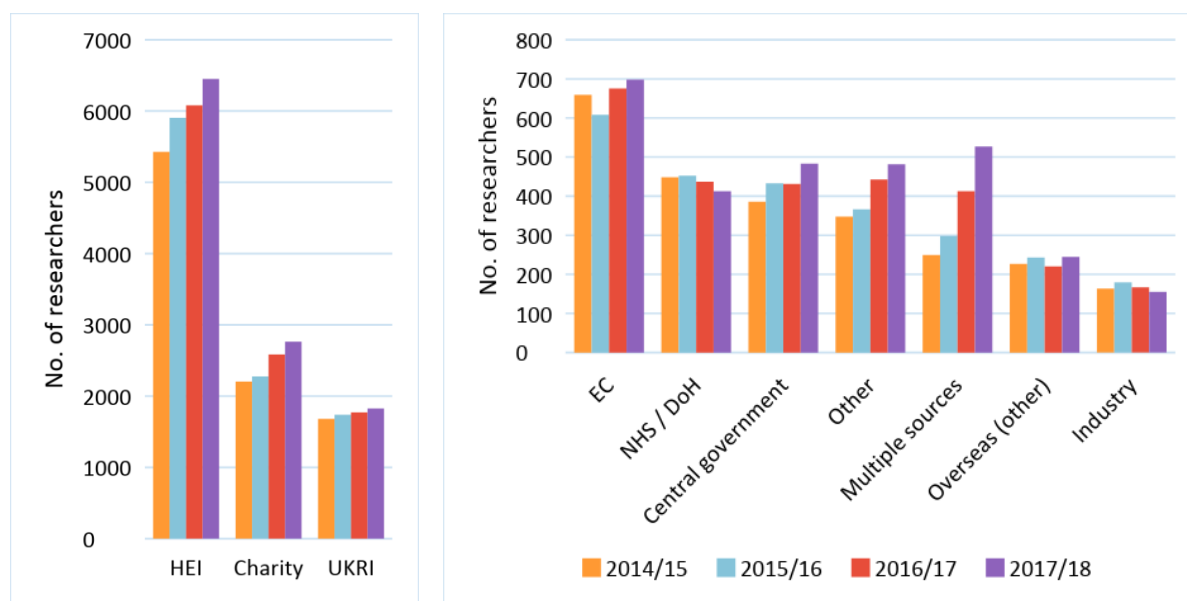

Figure 2.7 – Source of salary for Early Career Biomedical Researchers between 2014/15 and 2017/18. Source: HESA.

Nationality and gender

The proportion of Early Career Biomedical Researchers from the UK decreased from 56% in 2014/15 to 52% in 2017/18 (figure 2.8). Over this period, the proportion of researchers from other EU and non-EU countries both increased by 2%, to 29% and 18% respectively in 2017/18.
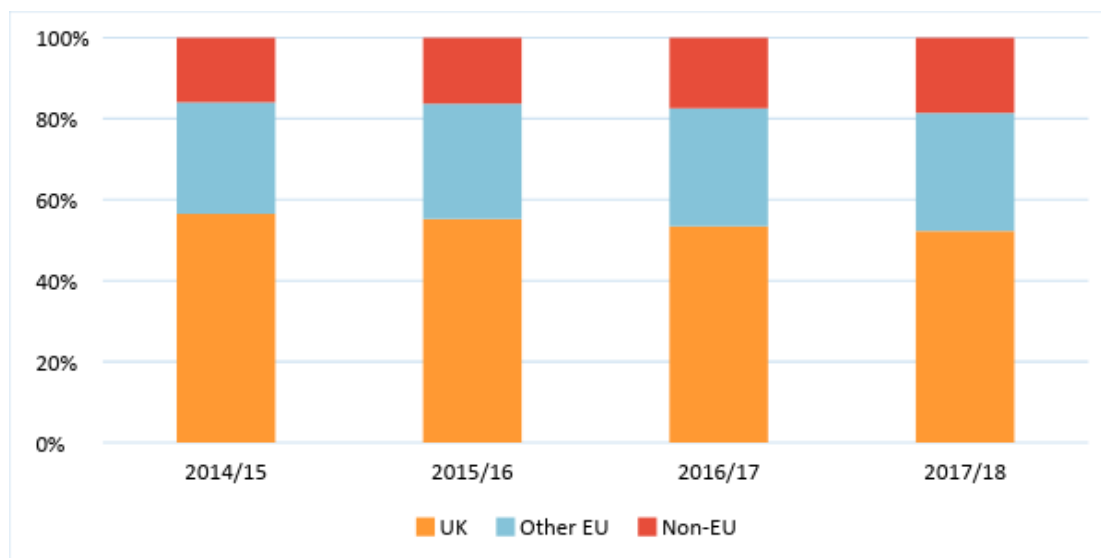
Figure 2.8 – Nationality of Early Career Biomedical Researchers between 2014/15 and 2017/18. Source: HESA.

The proportion of female Early Career Biomedical Researchers increased slightly, from 54.3% to 55.4% between 2014/15 and 2017/18, whilst the proportion of male researchers declined from 45.7% to 44.6%.

Institution

This analysis covered 14,040 early career biomedical researchers based at 130 Higher Education Institutions in 2016/17. 54% of these researchers were based at the 15 Institutions shown in figure 2.9.
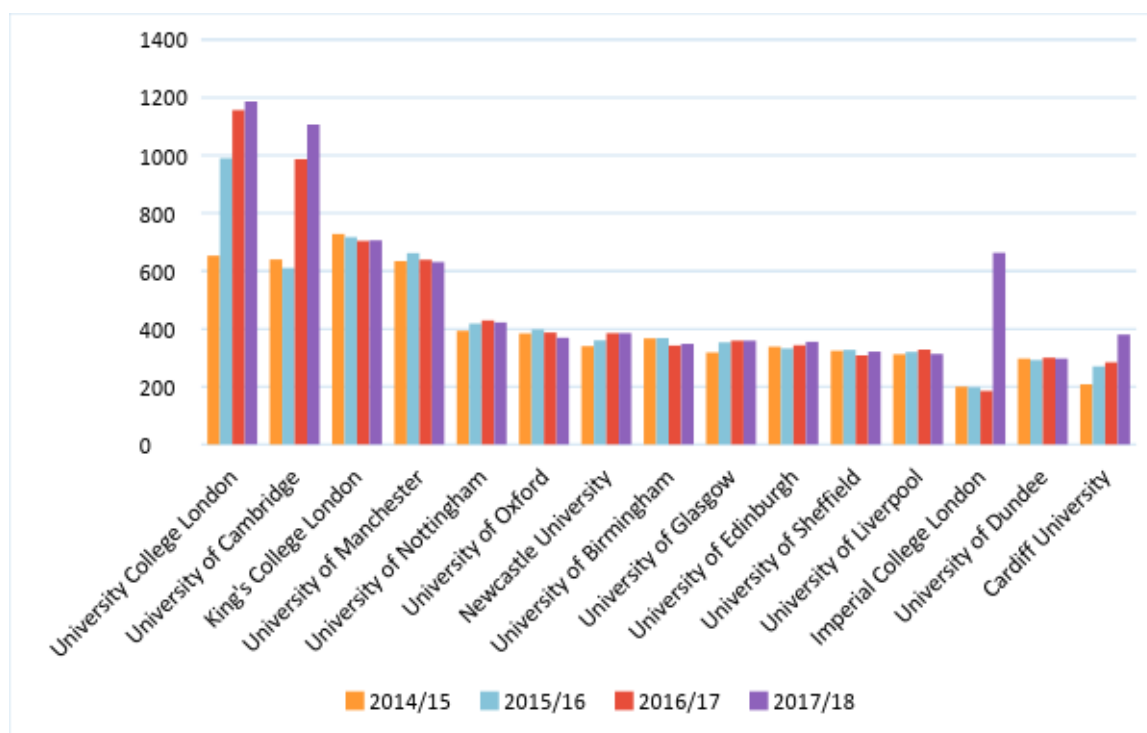

Figure 2.9 – Top 15 Host Institutions for Early Career Biomedical Researchers between 2014/15 and 2017/18. Source: HESA.

2.3 Summary

Landscape
● Whilst a wide range of funding programmes exist for biomedical researchers, the Springboard scheme fills an important niche in providing support for individuals to establish their independence.
● The only other scheme comparable to Springboard is the Wellcome Trust's Seed Awards programme. However, this scheme has a wide remit and is not specifically targeted to support individuals at this critical stage in their career.
● There is a large and growing cohort of biomedical researchers in the UK. In 2017/18, 28% of early / mid-career biomedical researchers were employed on a combined research and teaching contract.
● From 2014/15 to 2017/18, the proportion of biomedical researchers from other (non-UK) EU countries increased by 2%, to 29% and the proportion from non-EU countries increased by 2%, to 18%.

3. Overview of Springboard Awards to date (Rounds 1-4)

3.1 Distribution of Springboard awards

Institution success rates

Since the first round of Springboard was launched in 2016, a total of 396 applications have been received in rounds 1-4. Within these rounds, 105 awards have been made, representing an overall success rate of 27%. Ten institutions have achieved an overall success rate of 50% or more (figure 3.1). Together, these ten institutions have received 58 awards from 102 applications.
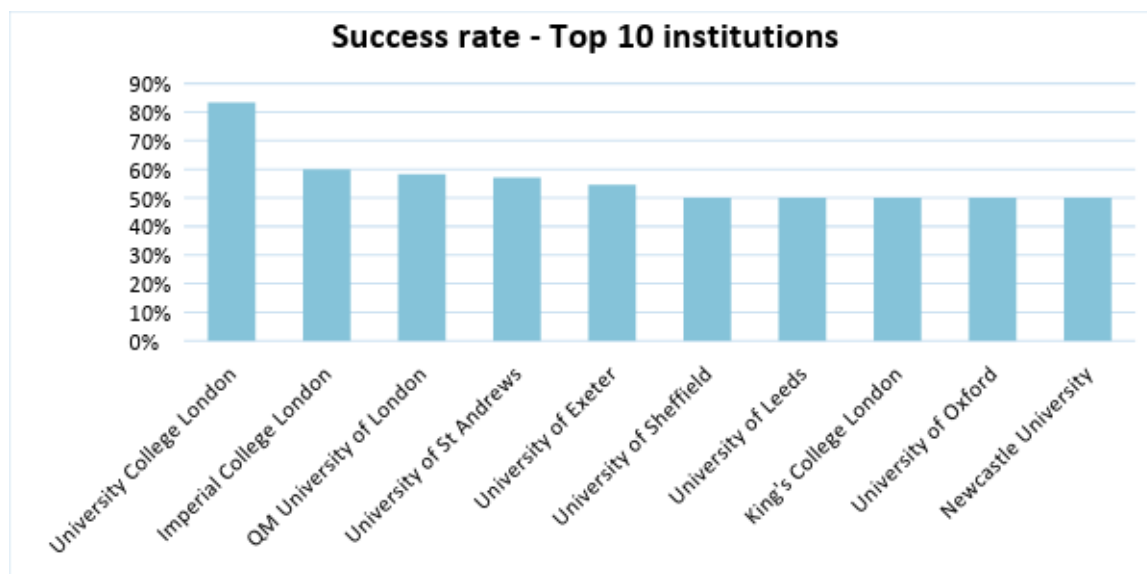

Figure 3.1 – The ten institutions with the highest success rates in receiving Springboard awards

The ten institutions shown in figure 3.2 have the lowest success rates within institutions that have received at least one award. Together, these ten institutions have received 13 awards from 100 applications.
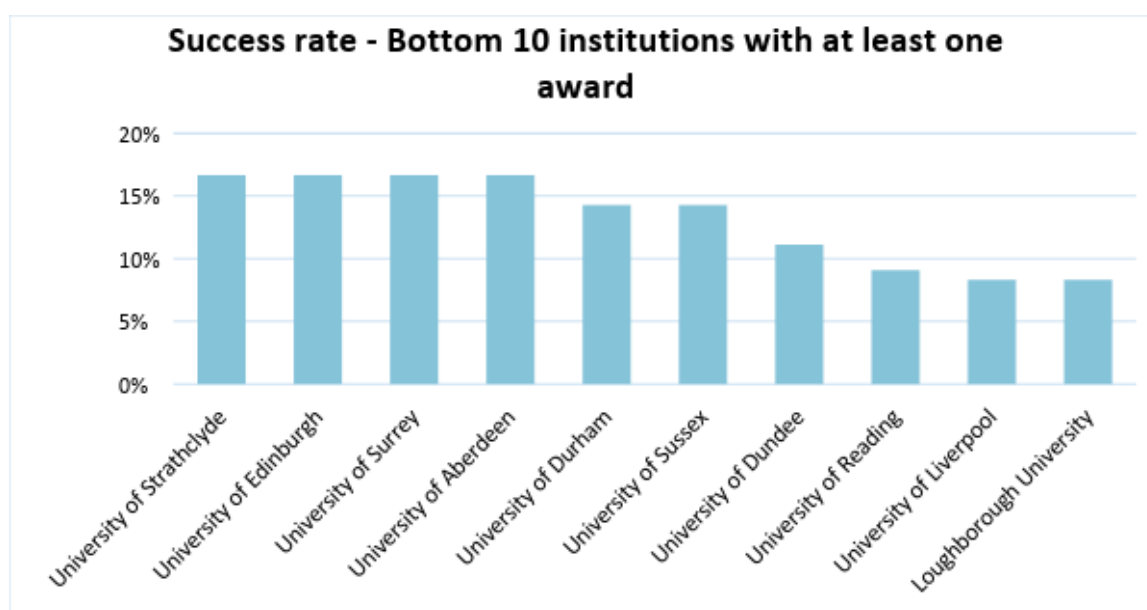

Figure 3.2 – The ten institutions, receiving at least one award, with the lowest success rates.

In addition, the following 12 institutions have submitted a combined total of 69 applications and have not received any awards to date:

1. Royal Veterinary College
2. St George's, London
3. University of Keele
4. University of Essex
5. University of Hull
6. University of Bath
7. University of Nottingham
8. University of Kent
9. University of Warwick
10. Bangor University
11. London School of Hygiene and Tropical Medicine
12. Swansea University

There is considerable variation in success rates achieved by Institutions. UCL has received 10 awards from 12 applications, whilst the University of Nottingham has received no awards from 12 applications. A full list of all eligible institutions and their success rates can be found at Appendix II.

Regional success rates

Greater London has the strongest success rate, with 52% of all Springboard applications being successful (figure 3.3). The East Midlands has the lowest success rate, with only 12% of all applications being successful.

Region	Total Applications	Total Awards	Regional success rate	% of total SB awards
East Midlands	34	4	12%	3.8%
East of England	24	5	21%	4.8%
London	56	29	52%	28%
North East England	13	4	31%	3.8%
North West England	31	6	19%	5.7%
Northern Ireland	10	2	20%	1.9%
Scotland	57	13	23%	12%
South East England	51	11	22%	10%
South West England	30	8	27%	7.6%
Wales	20	3	15%	2.9%
West Midlands	31	5	16%	4.8%
Yorkshire and Humber	39	15	38%	14%
Grand Total	**396**	**105**	27%	100%

Table 3.3 – Regional success rates (i.e. success rate within each region - see also Fig. 3.4) and total Springboard awards in each region as a percentage of total awards.
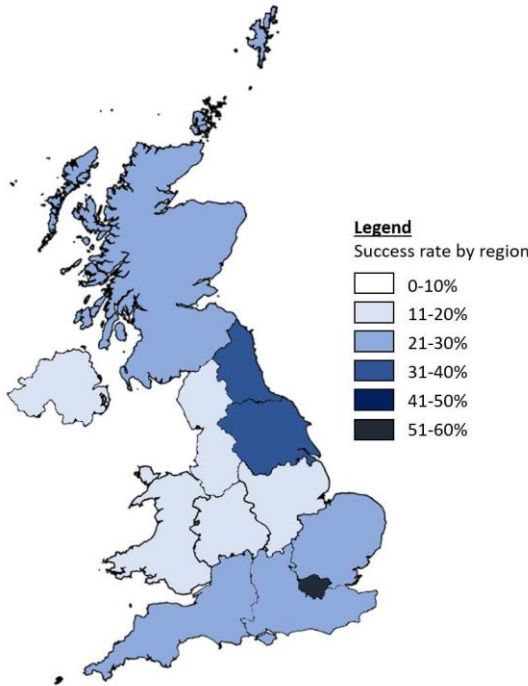
Figure 3.4 – Springboard award success rates within each regional. Figures are presented as the number of awards as a percentage of applications in each region.

Regional distribution of Springboard grants

28% of all Springboard grants have been awarded to institutions in Greater London (table 3.3). However, 32% of all Health Research activity in the UK that is supported by government and charity[3] takes place in this region and therefore the proportion of Springboard grants awarded to this region is comparable (figure 3.5).
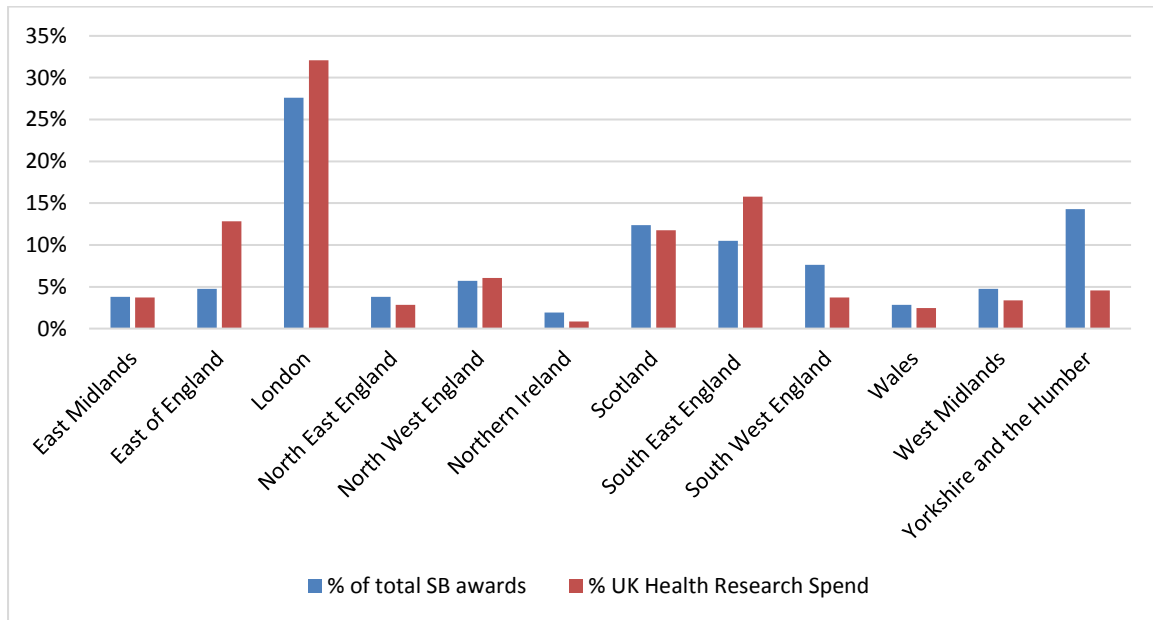

Figure 3.5 – Proportion of Springboard awards by region compared with and total Health Research Spend (2014) by region.

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[3] https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2018/

In comparison to regional spend across all health research areas, Yorkshire and the Humber fares particularly well in securing Springboard awards, with the East of England receiving a comparably low proportion of Springboard awards.

3.2 Awards by subject area

A high proportion of applications to Springboard are from the fields of Cellular Biology and Neuroscience (figure 3.6). Just over one third of all applications are from these two fields.
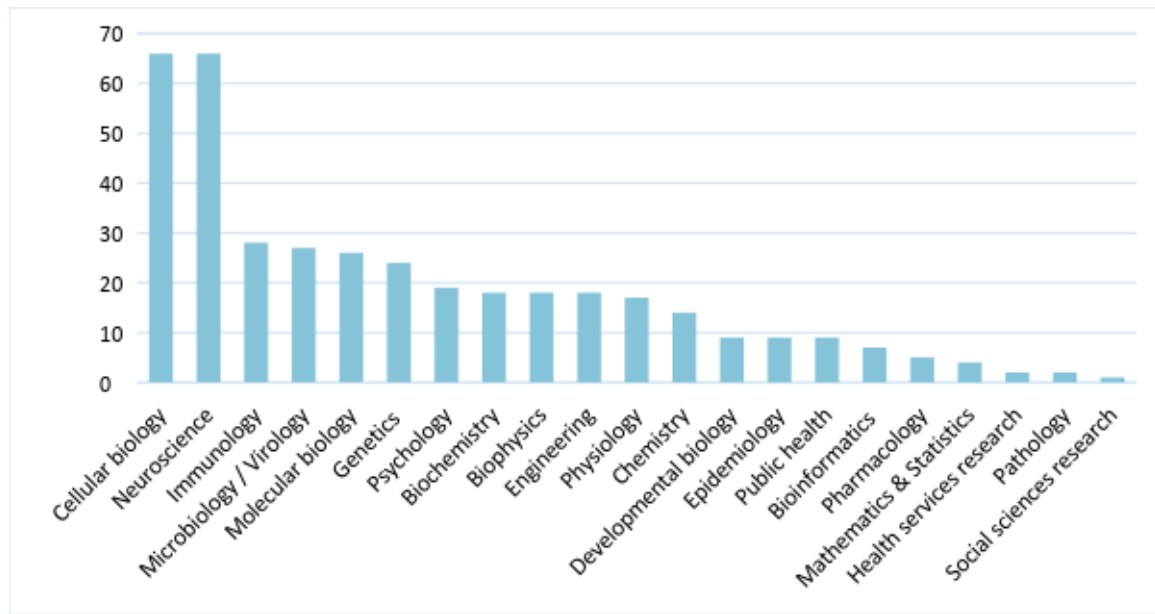
Figure 3.6 – Total number of applications to Springboard (rounds 1-4) by subject.

When looking at success rates within each subject area (figure 3.7), 50% of all applications in biophysics have been successful. 31% of all applications in molecular biology and 29% of all applications in genetics have also been successful.
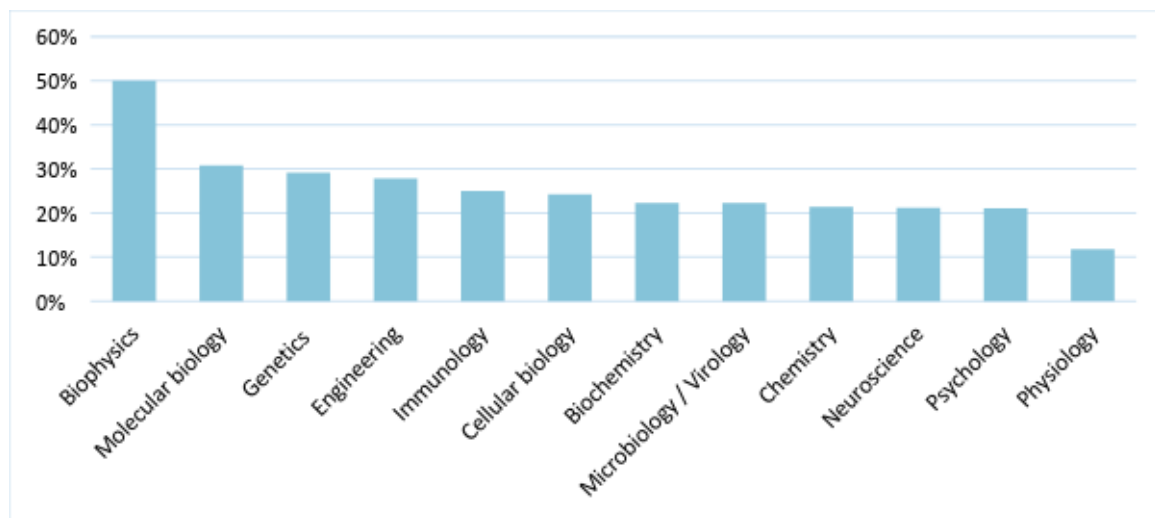

Figure 3.7 – Success rates within each subject area (rounds 1-4), where total applications exceeded 10 applications for each subject.

Success rates in each round for the six most popular subjects have been assessed and are shown in figure 3.8. Success rates for applications in neuroscience, immunology, cellular biology and molecular biology have increased during the four rounds.
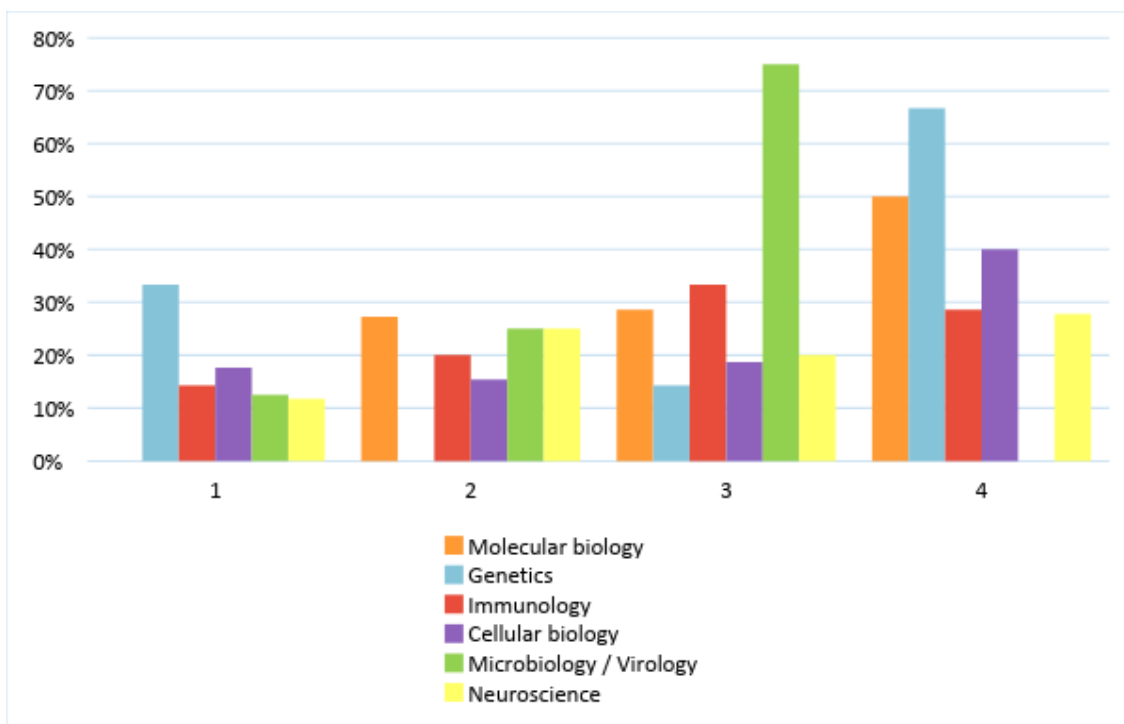

Figure 3.8 - _Success rates in each round (1-4) for the six most popular subjects._

3.3 Applicants' time spent on research and teaching

Panel members who were interviewed were keen to understand more about how institutions can protect or increase the time that awardees have for research, freeing them up from teaching commitments. Researchers' institutional commitments require careful management to ensure that they can progress their research careers. However, financial pressures on institutions are placing increased pressure on researchers to fulfil a demanding teaching schedule. One institution Champion felt that the level of the Springboard award was unlikely to influence awardees' time spent doing teaching and research.

	Before applying to SB (n=52)		During SB award (n=52)		After SB award / current (n=11)	
Awardees	% research	% teaching	% research	% teaching	% research	% teaching
	76%	18%	72%	23%	70%	35%
	Before applying to SB (n=58)		Current (N=58)		After SB award / current (n=0)	
Unsuccessful applicants	% research	% teaching	% research	% teaching	% research	% teaching
	72%	21%	65%	28%	N/A	N/A

Table 3.9 – _Average time spent on research and teaching (survey; successful and unsuccessful applicants)_

Using the survey, we asked awardees and unsuccessful applicants to estimate how much of their time was spent on research versus teaching. Overall, the results imply that receiving a Springboard

award did not increase the time awardees had for doing research. In fact, a slight increase in the time they spend teaching was reported during and after receiving the Springboard award (table 3.9 and figure 3.10). A similar trend was seen for unsuccessful applicants, which may reflect the increasing pressure on teaching workloads in the last 2-3 years.

Comparing these results, the overall trend was for both successful and unsuccessful applicants to be carrying out more teaching during the period after applying to Springboard (figure 3.10). For example, on average current awardees were doing 4% more teaching. Comparing just the 11 who had completed the award to their starting average, they were spending 9% more of their time teaching after completing the award. Unsuccessful applicants were currently doing 7% more teaching than when they had applied.
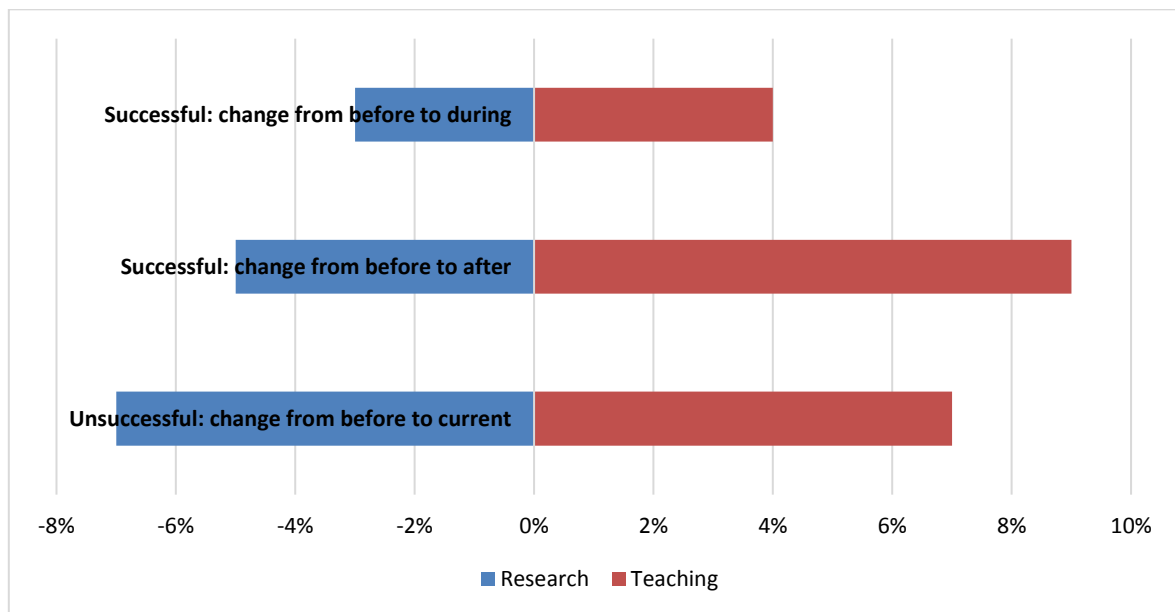

Figure 3.10 – *Change in average percentage of time spent doing research and teaching (survey; successful (n = 52), successful applicants who had completed the award (n=11), and unsuccessful applicants (n=58))*

This increased teaching workload experience by all applicants may reflect increased demands on early career lecturers to deliver teaching in recent years. Nevertheless, further consideration of the appropriate teaching / research balance for awardees and evidence of institutional support would be helpful.

3.4 Summary

Springboard Funding
- Since Springboard began, 105 awards have been made from a total of 396 applications, representing an overall success rate of 27%. Ten institutions have secured 58 of these awards, achieving an overall success rate of 50% or more.
- 28% of all Springboard grants have been awarded to institutions in Greater London, which itself receives 32% of all UK government and charity funding for Health Research.
- Just over one third of all Springboard applications are from the fields of Cellular Biology and Neuroscience.

Awardees' time spent doing research and teaching

- After receiving an award, Springboard grant-holders spent on average more time teaching, reporting a 4% increase for the duration of the award and a 9% increase once the award had been completed. Unsuccessful applicants experienced a 7% increase in their teaching workload after applying.

- Some key questions raised by this review are whether Springboard should be protecting awardees' research time, or whether the goal is to provide additional resource for research *whilst* awardees deliver their teaching commitments.

4. Target Audience and Eligibility Criteria

4.1 Career stage

When Springboard was established, lecturers (or equivalent) within three years of appointment were considered to be the career stage of greatest need. In our survey, 56% of Champions and 50% of Panel members considered this group to be most in need of support (figure 4.1). One Panel member explained that targeting support at this stage enabled individuals to have established their programme of teaching whilst progressing their postdoctoral research interests without significant gaps in research output emerging.

However, 30% of Champions and 40% of Panel members considered senior postdoctoral researchers aiming for independence to be the greatest point of need for research funding support. This career stage was also considered to be particularly challenging and the shortage of fellowship schemes underlined the need for providing further support to advance their careers.

Figure 4.1 – *Views on the career stage having the greatest point of need for research funding support (survey; Panel members, Champions).*

One comment was also raised about the scheme's emphasis on awardees' securing an independent position, how this model fit with the culture of "Team Science" and how career structures might evolve in the future.

The majority of applicants also agreed that start-up funding for lecturers (or equivalent) at an early career stage to be of greatest need: 62% (n=32) of successful applicants and 64% (n=37) of

unsuccessful applicants agreed, a slightly higher proportion than seen for Champions and Panel members (figure 4.2).

What is the point of greatest need for research funding support?

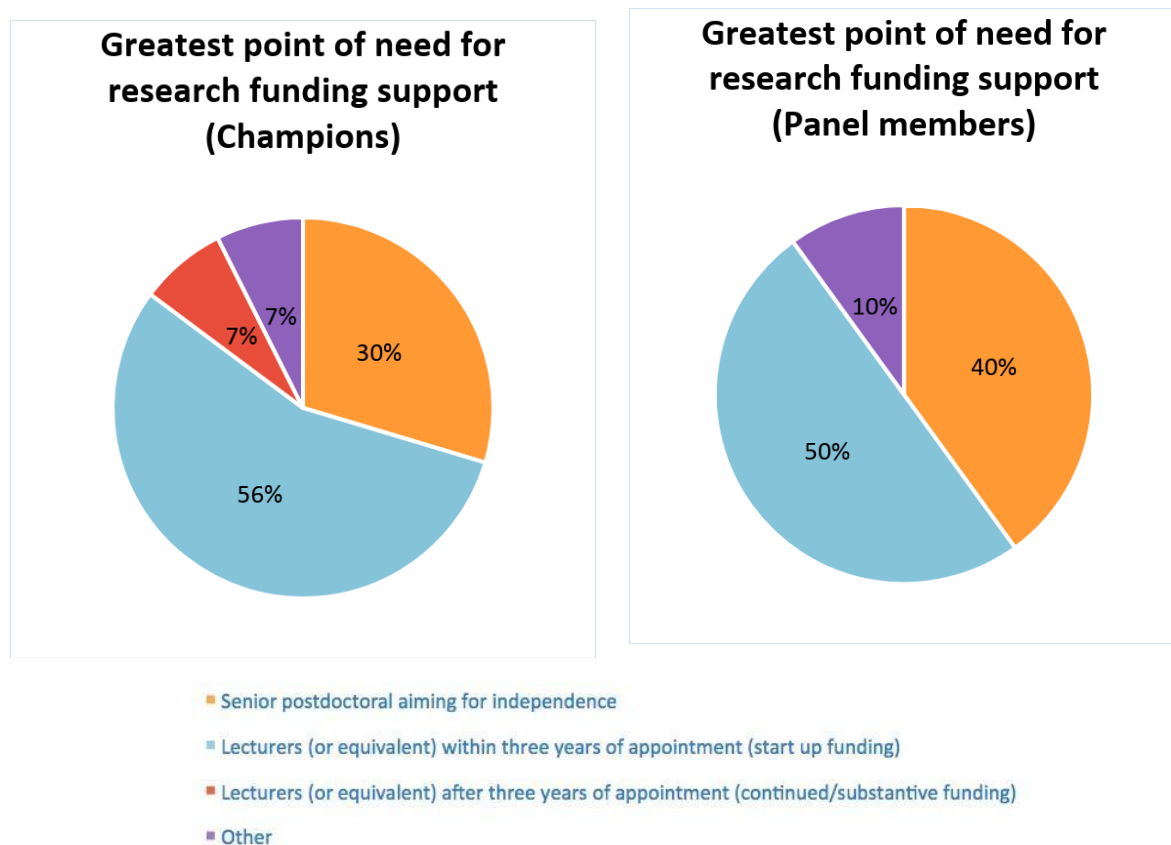Successful applicants ■ Unsuccessful applicants ■ Panel members ■ Champions
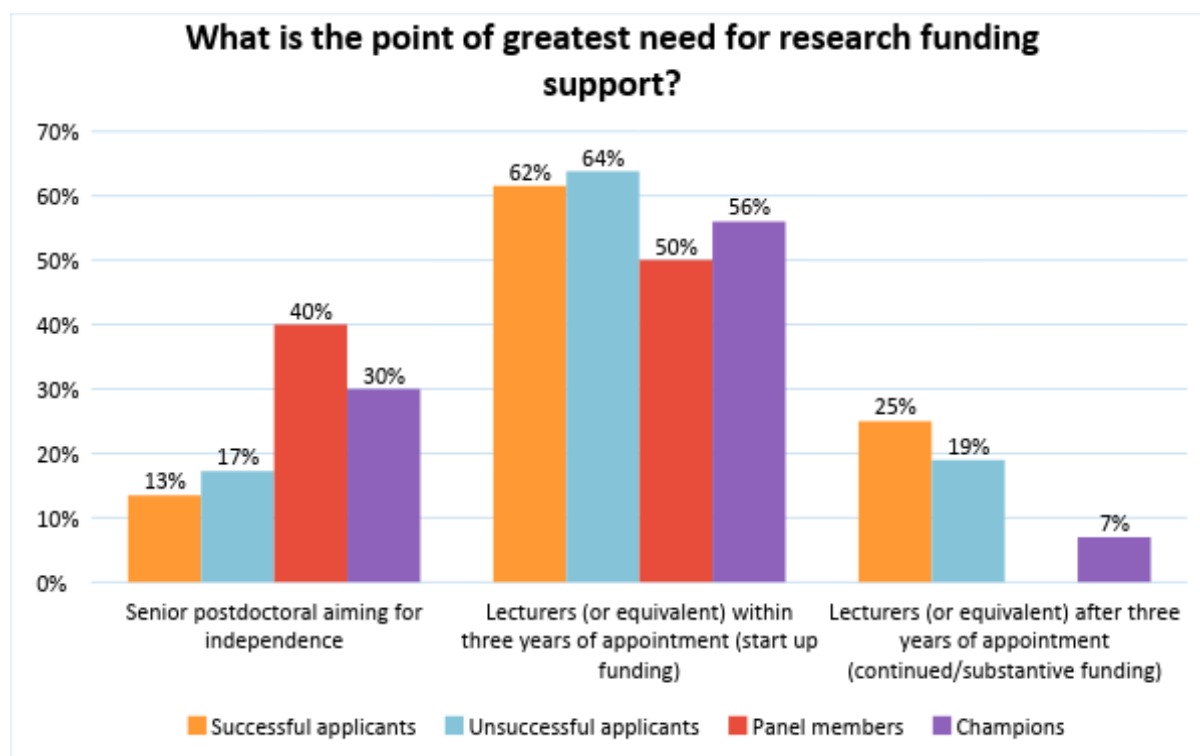
Figure 4.2 – Views on the career stage having the greatest point of need for research funding support (survey; Panel members, Champions, successful and unsuccessful applicants)

Career breaks

An important feature of Springboard is the flexibility it provides to individuals wishing to take a career break to e.g. start a family or return to work afterwards. This represents a highly challenging career stage for women. One Panel member explained that Springboard has an important role to play in supporting "women who would otherwise be lost in the system". Furthermore, the case studies of awardees (appendix 1) illustrate the value of Springboard in helping women though this challenging phase of their careers.

4.2 Institutional cap on applications

Limits on applications per Institution

The Springboard scheme operates with a cap in place, where Institutions can submit a maximum of three applications per round. In round 4, 27 of the 53 eligible institutions submitted 3 applications, with the remaining 26 eligible institutions submitting 2 or fewer applications, reaching a combined total of 20 applications. Therefore, whilst there is demand for the cap to be increased to four, less than 50% of institutions are likely to take advantage of this.

74% (n=20) of Champions responding to the survey believed that this cap did not prevent potentially successful candidates from applying, with only 15% (n=4) believing that the cap did have an impact (figure 4.3). Furthermore, 87% of Champions from non-Russell group universities felt that the cap did not prevent potentially successful candidates from applying, compared with 50% (5 out of 10) of Champions from Russell group universities. This probably reflects the greater volume of biomedical

research that takes place in Russell group universities and therefore the higher number of eligible candidates.
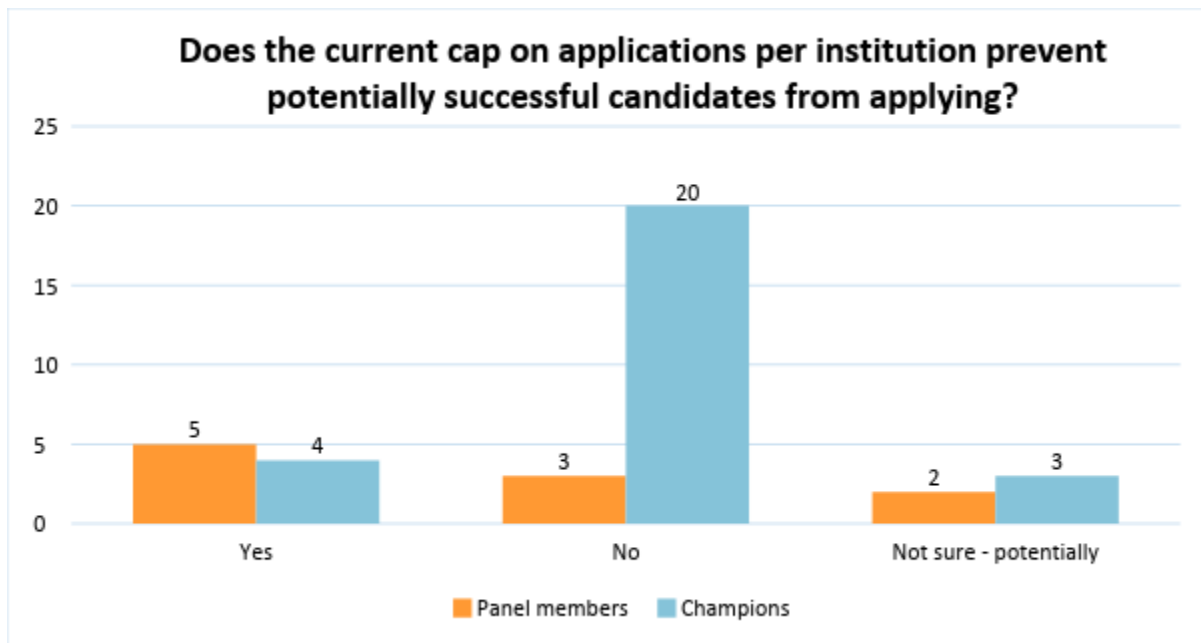

Figure 4.3 – Views on the cap of three applications per institution (survey; Panel members, Champions)

Half of Panel members who responded (5 out of 10) felt that the cap did prevent potentially successful candidates from applying. However, when interviewed, Panel members generally believed that the institution cap was a pragmatic solution to managing demand whilst encouraging regional and disciplinary diversity.

As discussed further in Chapter 7, 26 of the 53 eligible institutions submitted 2 or fewer applications in round 4 of Springboard. The remaining 27 institutions submitted 3 applications, and there exist several institutions within this group that would welcome the opportunity to submit a higher number of applications.

One consideration would be to introduce a weighting system, linking institutional caps to volume of research, with larger institutions submitting up to 4 applications and smaller ones submitting up to 3. Indeed, about half of all eligible institutions submitted less than 3 applications in round 4. However, it was acknowledged that a system with differing quotas could be more complex to manage.

4.3 Extending Springboard to target other potential groups

Clinical Academics

70% of Panel members and 59% of Champions felt that the Springboard scheme should not be extended to clinical academics. Interviewees felt that there were better career structures and more funding options for clinical academics. Furthermore, the Academy operates a dedicated funding programme to support clinical academics (the Starter Grants for Clinical Lecturers) and there was strong justification for retaining a dedicated programme for non-clinical biomedical scientists.

Researchers in Low and Middle-income countries

60% of Panel members and 48% of Champions felt that Springboard should not be extended to researchers in Low and Middle-income countries (LMIC). However, when interviewed, Panel members (n=4) and Champions (n=4) were generally not supportive of such an extension. There also appeared to be some different interpretations of this question through the survey, specifically whether to provide support for researchers working in LMICs or researchers from LMICs to work in the UK. Comments received from the survey and interviews reflected a range of views on this issue:

- "It seems desirable, but only if there are more funds, and appropriate support."
- "Only if [...] in collaboration with a UK academic. "
- "This could help consolidate the exchange of staff in GCRF funded partnerships."
- "Other schemes exist and my understanding was that Springboard was aimed at building momentum and capacity in the UK."
- "There is an important niche here that Springboard meets and which would be lost if spread too widely whereas other GCRF schemes are readily available for LMIC's."
- "I think the situation is so bad in the UK that we need to get this community supported as the priority."

Other groups

One partner funder indicated that they would like to see a similar level of support made available Allied Health Professionals pursuing research. This could be pursued either through extending the Springboard scheme or the Academy's Starter Grants for Clinical Lecturers.

4.4 Summary

Career stage and target audience
- 56% of Champions and 50% of Panel members considered lecturers (or equivalent) within three years of appointment to be the career stage of greatest need for Springboard support.
- However, 30% of Champions and 40% of Panel members considered senior postdoctoral researchers aiming for independence to be the greatest point of need
- 70% of Panel members and 59% of Champions felt that the Springboard scheme should not be extended to clinical academics. Interviewees felt that there were better career structures and more funding options available for clinical academics.
- Mixed views were received on whether to extend Springboard to researchers in Low and Middle-income countries (LMIC). Comments received indicated that other schemes, such as GCRF, exist to fulfil this aim and there was an overwhelming case for Springboard to provide more support for the UK biomedical research community.

Limits on applications per Institution
- In round 4 of Springboard, 49% of eligible institutions submitted 3 applications and 51% submitted 2 or fewer applications.
- Our survey indicated that only 15% of Champions who responded believed that the cap prevented potentially successful candidates from applying, however Champions from Russell group universities were more likely to see this as an issue.
- Overall, interviewees felt that the institution cap was a pragmatic solution to managing demand whilst encouraging regional and disciplinary diversity.

5. Research Outputs and Programme Impact

5.1 Introduction

We used a number of approaches to assess early indicators of outputs and impact from the Springboard scheme. These included output metrics captured through the ResearchFish platform, and citation analysis of applicants' publications. We also captured information on research outputs through our online survey of successful and unsuccessful applicants. Please see Appendix III for further details of our methodologies.

5.2 Research outputs

Summary

All awardees are asked to provide an annual report of research outputs using the ResearchFish platform. A summary of the key questions asked, and the most informative responses received are shown in table 5.1. Awardees from the first two rounds who reported outputs in March 2018 are included in the Researchfish analysis below. The current window for data collection closes on 31 March 2019 and key findings will be presented at the Working Group meeting.

		Responses (n)		
Category	**Types of Responses**	**Round 1**	**Round 2**	**Example**
1. Awards and Recognition	Awards, speaker invitations, joining committees	31	2	Keynote speaker, Stem cell banking symposium (UKSCB, EBiSC), Berlin, Germany
	Round 1: 9 awardees reported 31 outputs *Round 2: 2 awardees reported 2 outputs*			
2. Collaborations and Partnerships	With academic, healthcare, public and private sectors; outputs described where relevant	22	12	Data analysis, technical assistance and training
	Round 1: 9 awardees reported 22 outputs *Round 2: 8 awardees reported 12 outputs*			
3. Further funding	Research grants, fellowships	28	16	BHF Intermediate Basic Science Research Fellowship
	Round 1: 13 awardees reported 28 outputs *Round 2: 7 awardees reported 16 outputs*			
4. Publications	Journal articles and conference proceedings / abstract	21	11	"Epigenomic Modifications Mediating Antibody Maturation"
	Round 1: 10 awardees reported 21 outputs *Round 2: 7 awardees reported 11 outputs*			
	subtotal	*102*	*41*	
5. Dissemination to non-academic audiences	E.g. schools, undergraduates, media, industry, patients and third sector	45	12	Participation in an activity, workshop or similar
	Round 1: 13 awardees reported 45 outputs *Round 2: 7 awardees reported 12 outputs*			
	total	*147*	*53*	

Table 5.1 – Output data report from round 1 and 2 awardees via ResearchFish in March 2018. There were 19 awardees in round 1 and 20 in round 2.

The first four categories, which describe scientific outputs, encompass 143 contributions from round 1 (102 contributions) and 2 (41 contributions). Two grant holders from round 1 each recorded 15 contributions and one grant holder from round 2 recorded 10 contributions across these four categories. Eight grant holders (one from round 1 and seven from round 2) did not record any outputs across these four categories. Eight grant holders reported a promotion or new appointment – two of these were appointments abroad (Yale and Barcelona).

5.3 Citation analysis

Overview
A citation analysis was conducted as described in the methodology (appendix VI). Please note the caveats associated with conducting such analyses. The published outputs from 39 successful applicants were compared with 39 unsuccessful applicants, who had been selected at random. Papers published between 1 August 2016 and 31 March 2018 (Round 1 applicants) and 1 August 2017 to 31 March 2018 (Round 2 applicants) were selected for this analysis.

Overall citation counts
Total citations from all publications identified from the successful and unsuccessful applicants were compared (figure 5.2). In each year, the successful applicants achieved a higher citation score than for the unsuccessful group. For example, in 2018, papers published by successful applicants received 303 citations, compared to 246 citations for papers published by unsuccessful applicants. This means that papers published by successful applicants received 23% more citations than for unsuccessful applicants.

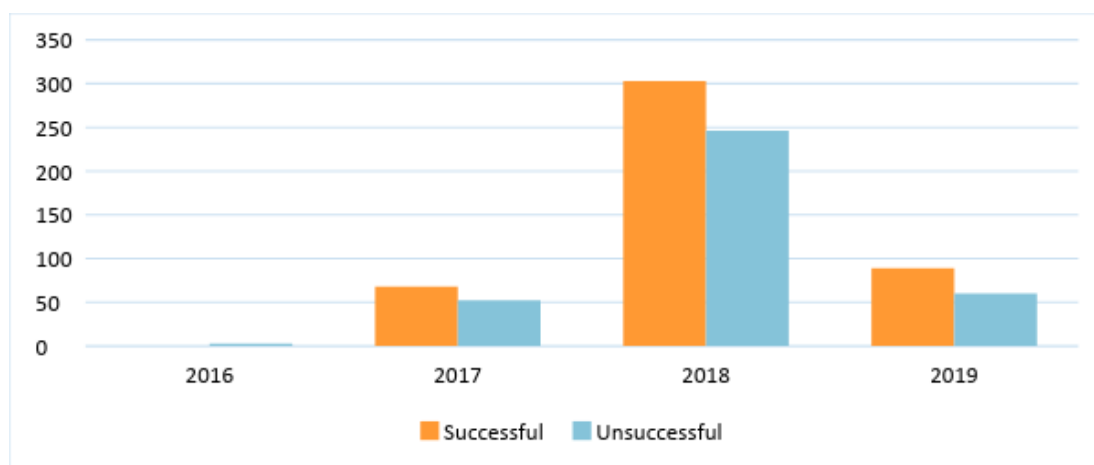*Figure 5.2* – *Overall citation counts in each year from papers published by successful and unsuccessful applicants. Source: Data from Web of Science, provided by Clarivate Analytics*

Most cited papers
All publications receiving 10 or more citations were collated and the results are shown below (figure 5.3). Applying this threshold, papers from awardees received 44% more citations than papers from unsuccessful applicants.
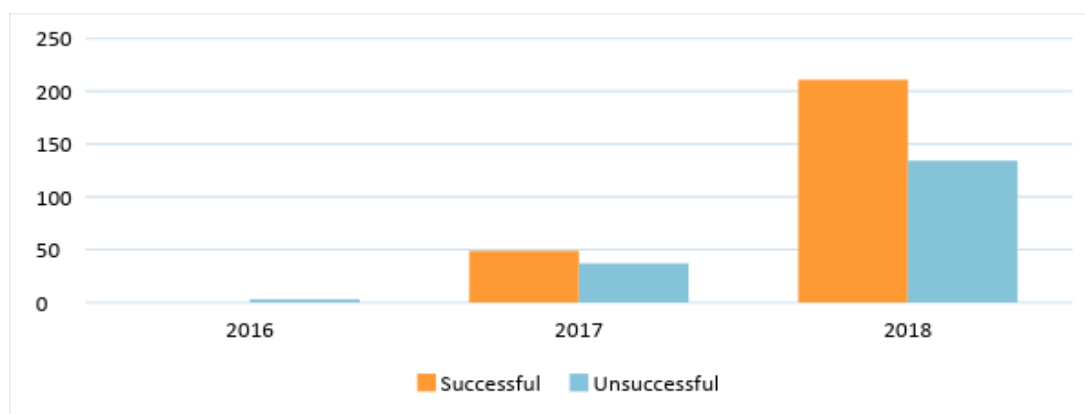
Figure 5.3 – Citation counts in each year from papers receiving 10 or more citations, published by successful and unsuccessful applicants. Source: Data from Web of Science, provided by Clarivate Analytics

Three original publications by awardees were identified that each received more than 20 citations between 2016 and 2019 (table 5.4). One publication from an unsuccessful applicant (not shown) received 38 citations, however the applicant's authorship position was 8th of 13 authors.

Applicant	RO	Round	Total Citations	SB author position	Journal	PMID	Date of publication
A) Michael Okun	University of Leicester	2	90	24th (of 35)	Nature	29120427	Nov-17
B) Florian Merkle	University of Cambridge	1	76	1st (of 17)	Nature	28445466	May-17
C) Inez Schoenmakers	University of East Anglia	2	26	Last (of 4)	J of Steroid Biochem & Mol Biol	28093353	Oct-17

Table 5.4 – Citation counts for the three most cited papers from successful applicants.

Most cited authors

Authors with 20 or more citations generated from all of their papers published during the period of interest (2016/17 to 2019) were collated (figure 5.5). This cohort contained 8 successful applicants and 7 unsuccessful applicants, who had each received 20 or more citations from their publications. In 2018, the group of successful applicants received almost 50% more citations than for the unsuccessful group (232 compared with 156 citations).
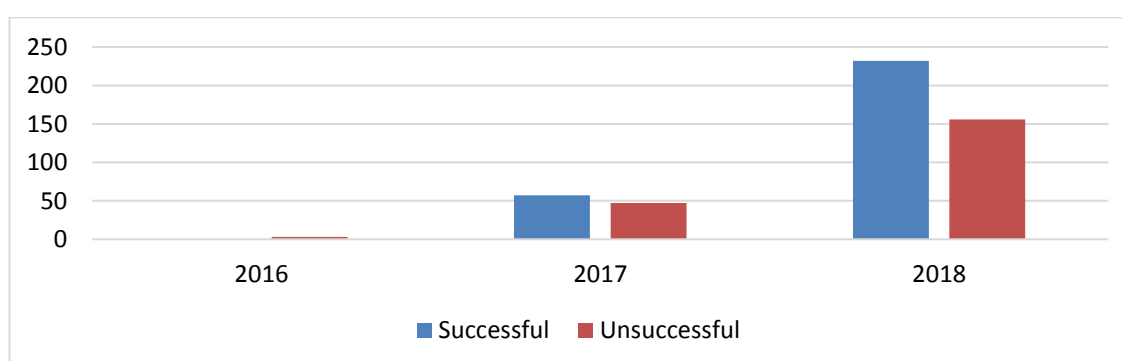

Figure 5.5 – Citation counts for the most cited authors (successful and unsuccessful applicants), who had received 20 or more citations. Source: Data from Web of Science, provided by Clarivate Analytics
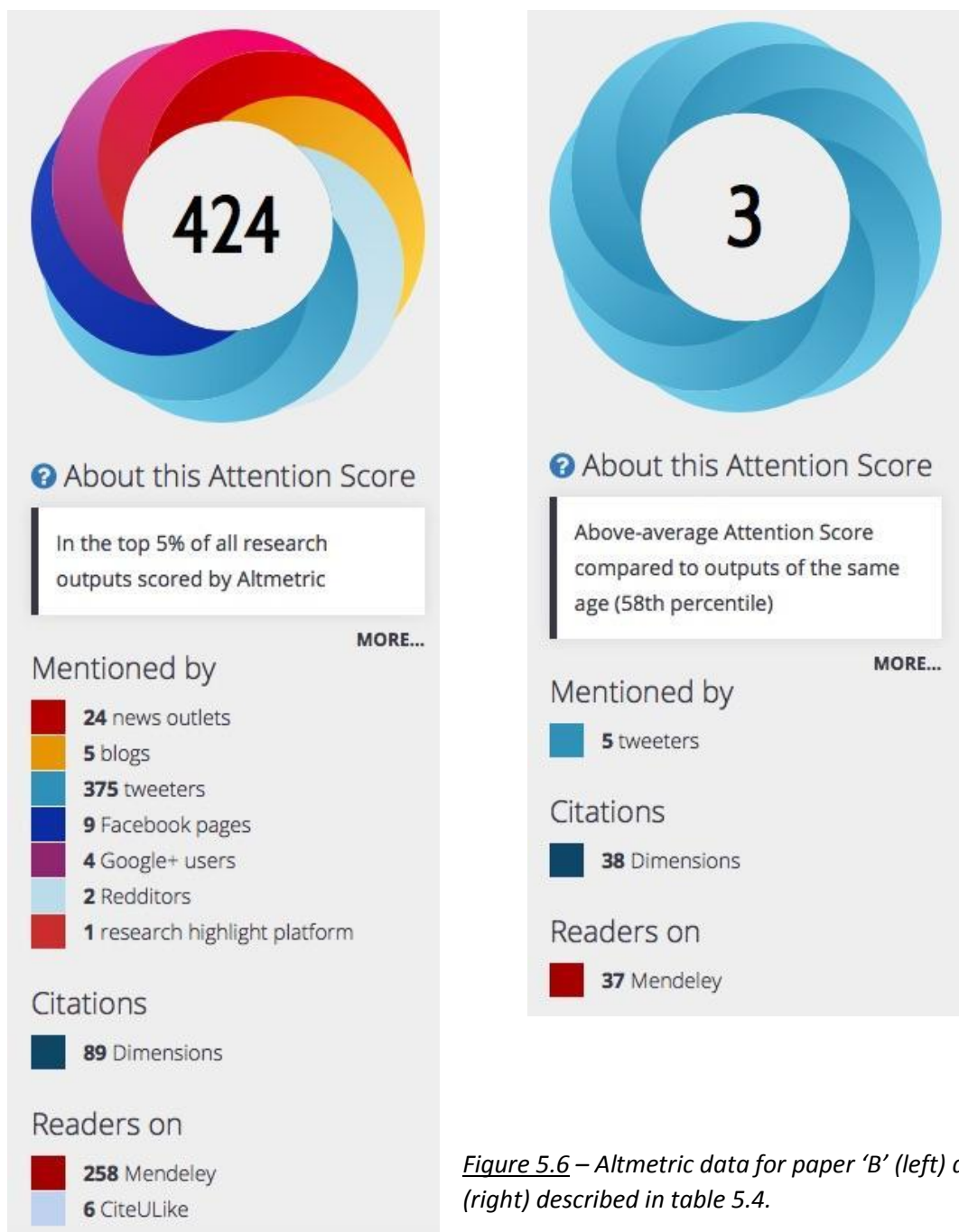
Figure 5.6 – Altmetric data for paper 'B' (left) and 'C' (right) described in table 5.4.

Altmetric profiles have also been generated from the two most cited papers in which the Springboard author had a prominent position (first or last author) – see figure 5.6. Altmetric data shows the level of interest in a published paper through a range of social media platforms such as Twitter and Facebook.

Interpretation

These results could be interpreted as an early indication of Springboard awardees publishing papers that are more highly cited and impactful than unsuccessful applicants. As such, it could indicate the added value that Springboard has provided in supporting data generation. However, a relatively short time has elapsed from publication to citation measurement and therefore a more robust assessment is recommended 3-5 years after the majority of papers have been published. An

alternative interpretation is that the results of this citation analysis are a validation of the Academy's rigorous selection process.

5.4 Further funding applications

Further funding

A key intended outcome from Springboard awards is for awardees to generate data to support grant applications and attract future funding. Round 1 awardees that secured future funding by March 2018 reported total follow on funding of £4.6m, representing an impressive return of £2.50 for every £1 of Springboard funding awarded (table 5.7). Notably, this figure includes a major European Commission grant of £2.2m that was awarded to the University of Surrey. Excluding this grant from the calculation identifies £2.4m in follow on funding, still representing a healthy return of £1.30 for every £1 of Springboard funding awarded in round 1. By March 2018, significant follow on funding of £1.74m had already been reported by round 2 awardees.

		Excluding EU grant*		Including EU grant*	
	Total Springboard funding	Total follow on funding	per pound return	Total follow on funding	per pound return
Round 1	£1,841,434	£2,399,940	£1.30	£4,600,616	£2.50
Round 2	£1,978,740	£1,739,655	£0.88	£1,739,655	£0.88

Table 5.7 – Future funding secured by round 1 and 2 applicants by March 2018; reported through Researchfish. A major European Commission grant of £2.2m was awarded to Springboard awardee Dr Dan Horton at the University of Surrey[4], and figures are shown including and excluding this grant.

Further analysis shows that awardees from round 1 secured the majority of follow on funding (54%) in the form of fellowships (figure 5.8).
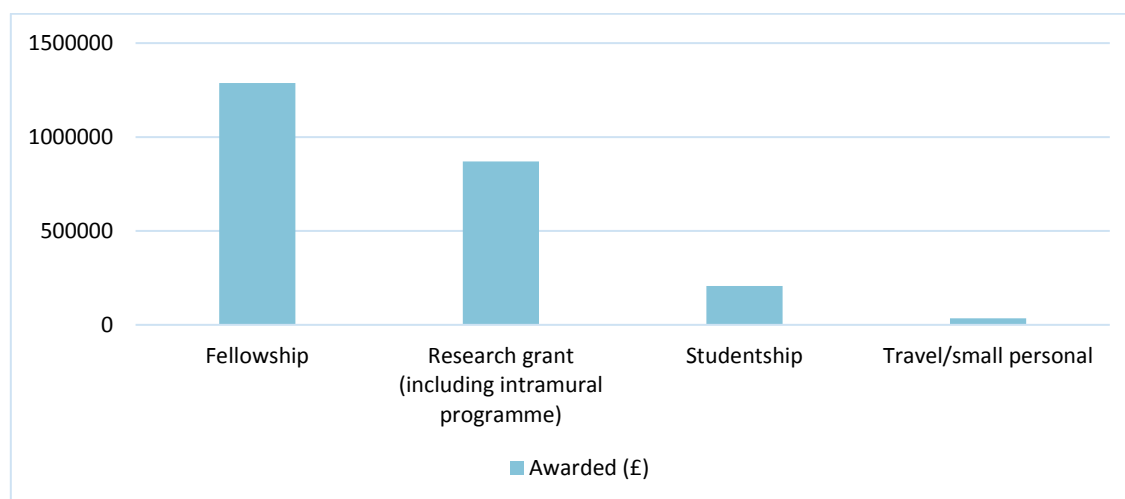

Figure 5.8 – Follow on funding secured by awardees (round 1) by type of funding. Excludes the £2.2m EC grant. Source: Researchfish

55% of follow on funding secured by awardees (round 1) was from the charity / non-profit sector (figure 5.9).

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[4] www.surrey.ac.uk/mediacentre/press/2018/%E2%82%AC2-million-awarded-university-surrey-ground-breaking-research-emerging
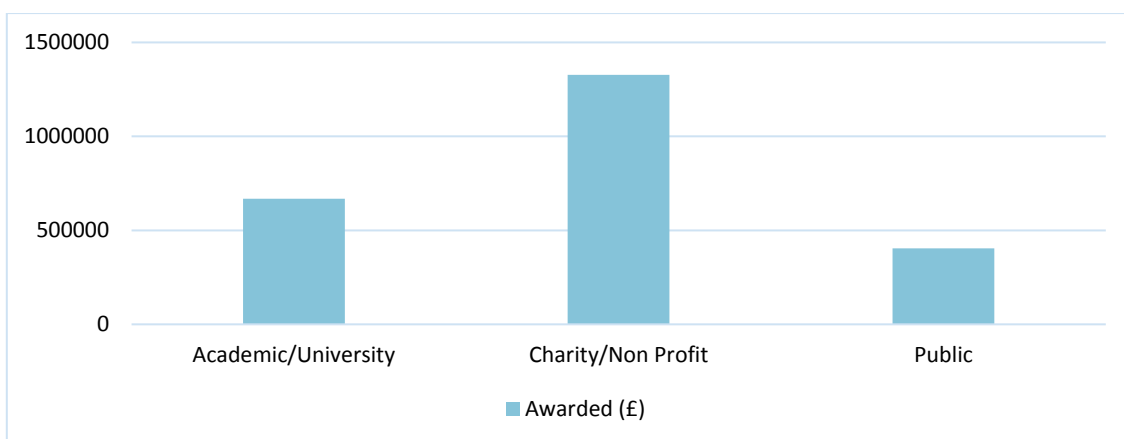
Figure 5.9 – Follow on funding secured by awardees (round 1) by source of funding. Excludes the £2.2m EC grant. Source: Researchfish

A full list of grants secured by awardees in round 1 is shown below.

Description	Funder name	Award (£)	Duration (months)
Fellowships			
BBSRC-NIRG	BBSRC	507465	36
Career Development Award	Moorfields Eye Charity	112260	20
BHF Intermediate Basic Science Research Fellowship	British Heart Foundation	667864	60
Research grant (including intramural programme)			
Project Grant	Rosetrees Trust	30000	36
Imperial College Wellcome Trust Centre for Global Health Research Seed Award	Imperial College London	8000	9
UCL Therapeutics Acceleration Scheme	University College London	65556	12
Project Grant	Worldwide Cancer Research	235633	36
Internal match funding studentship	University of Exeter	43000	48
BHF CoRE, Edinburgh Centre of Research Excellence pump priming grant	BHF Centre of Research Excellence	8424	18
University of Strathclyde AWERB 3Rs grant	University of Strathclyde	3000	6
BRC Challenge Fund	NIHR Moorfields Biomedical Research Centre	27000	16
ARUK Pilot Grant	Alzheimer's Research UK	49926	24
MRC Discovery Award	MRC	117040	24
MRC Discovery Award	MRC	124488	20
MRC Discovery Award	MRC	61584	27
MRC Discovery Award	MRC	49092	8
Horizon 2020 research and innovation programme	European Commission	2200676	60
Pilot/Seed Corn Funding	Rosetrees Trust	24000	24
Research Grant	MRC	13613	36
Global Challenges	EPSRC	9921	6
Studentships			

The Princess Royal Tenovus Scotland Medical Research Scholarship	Tenovus Scotland	100000	36
Vacation Studentship	British Pharmacological Society (BPS)	1850	3
Studentship	Moorfields Eye Charity	100000	36
Summer Student	London Interdisciplinary Doctoral Biosciences Consortium	2500	2
Summer Student 2	London Interdisciplinary Doctoral Biosciences Consortium	2500	2
Travel/small personal			
EPSRC-funded UCL Future Leaders Award	EPSRC and CRUK	29224	6
Winston Churchill Memorial Trust Fellowship	Winston Churchill Memorial Trust	5600	12
Travel award	Biochemical Society	400	1

Table 5.10 – Summary of future funding secured by awardees in round 1 (source: Researchfish)

Further grant applications – survey results

We also asked respondents to both surveys to tell us how many additional grant applications they have completed since applying to Springboard (figure 5.11). There was a clear divide between the number of applications from successful and unsuccessful applicants, with unsuccessful applicants applying for more grants on average.

Taking the data for successful applicants first, on average successful applicants had completed 2.5 further grant applications since applying for Springboard funding. Once outliers had been removed this was reduced to 2.3 additional grant applications. The range in the number of applications was fairly large, 4 applicants had completed no applications while one respondent had completed an additional 9 applications. However, the data was quite condensed. 50% of respondents fell between 1 and 4 applications (inter quartile range.)

In contrast, the unsuccessful applicants reported completing a much larger number of applications. In the initial data set of 58 responses, the average number of additional grants applied for since applying for springboard funding was 4.7, and the number of additional applications ranged from 0 to 40. The data, however, was still fairly concentrated, with 50% of respondents falling between 2 and 5 applications, and once outliers had been removed the average reduced to 3.3 additional applications.

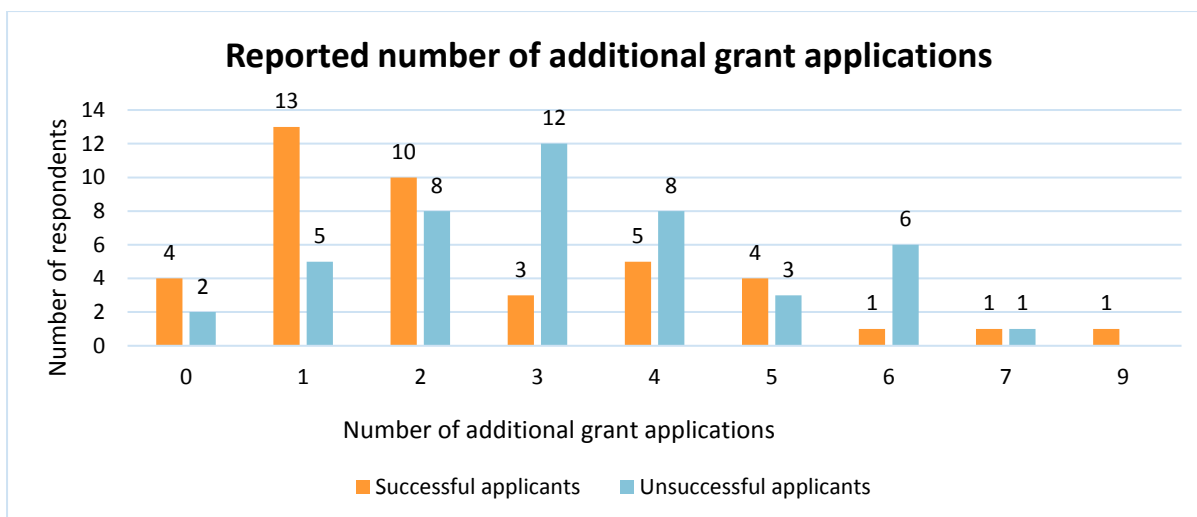**Reported number of additional grant applications**

Figure 5.11 – Number of additional grant applications made by successful and unsuccessful applicants. E.g. one successful applicant submitted 13 grant applications; two successful applicants submitted 10 grant applications etc. Source: survey

This analysis should be caveated with the fact that our sample size for unsuccessful applicants is much smaller as a percentage of the whole population, and we therefore must assume we have a representative sample.

In summary, these results such that unsuccessful applicants made on average 3.3 further grant applications since applying to Springboard, whilst successful applicants made on average 2.3 further grant applications. This could be due to applicants who did not receive Springboard funding placing more effort on obtaining funding from elsewhere to continue their research.

Detail on further grant applications

Survey respondents were also asked to provide further information about the grants they had applied for: grant type, size, sector and the status of their application. Naturally, this was a time-consuming process, and therefore not all applicants took the time to provide us with additional data on all their grant applications. Combining the data from the two surveys, we received further data on 228 grant applications. Successful applicants responding to our survey provided details of 99 grants and unsuccessful applicants provided details of 129 grants (figure 5.12).
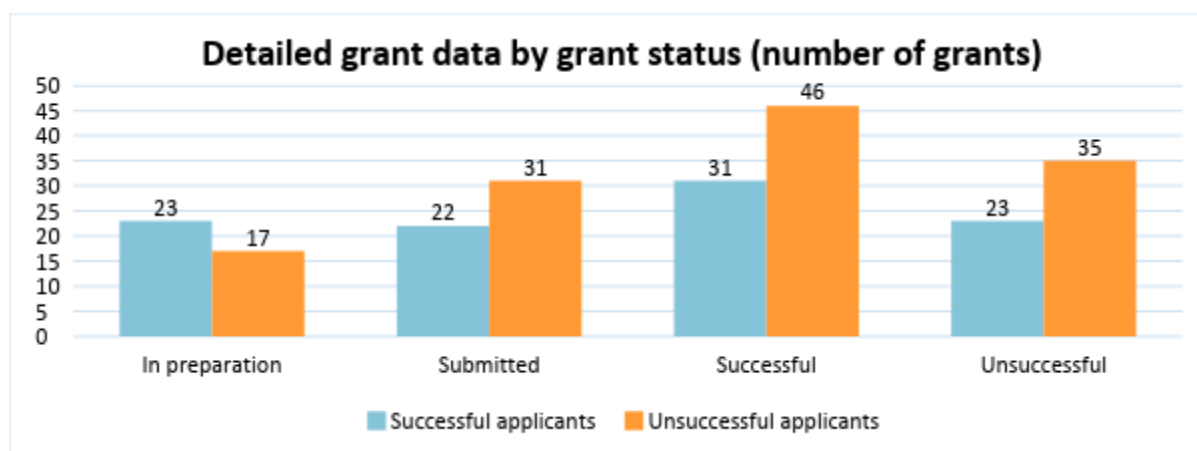

Figure 5.12 – Number and status of further grant applications made by successful and unsuccessful applicants. Source: survey

33

Where an outcome had been reported, 57% (31 of 54) of subsequent grant applications from Springboard awardees had been successful. Similarly, 57% (46 of 81) of subsequent grant applications from the group who were unsuccessful with Springboard were also successful.

The success rate also varied depending on the type of institution that the respondent was based at (figure 5.13). Individuals from Russell group universities had a greater success rate with subsequent grant applications (60%) than individuals from other universities (50%). For the Golden Triangle grouping, the reported success rate was 65%, although this sample size was relatively small (23 grant applications).
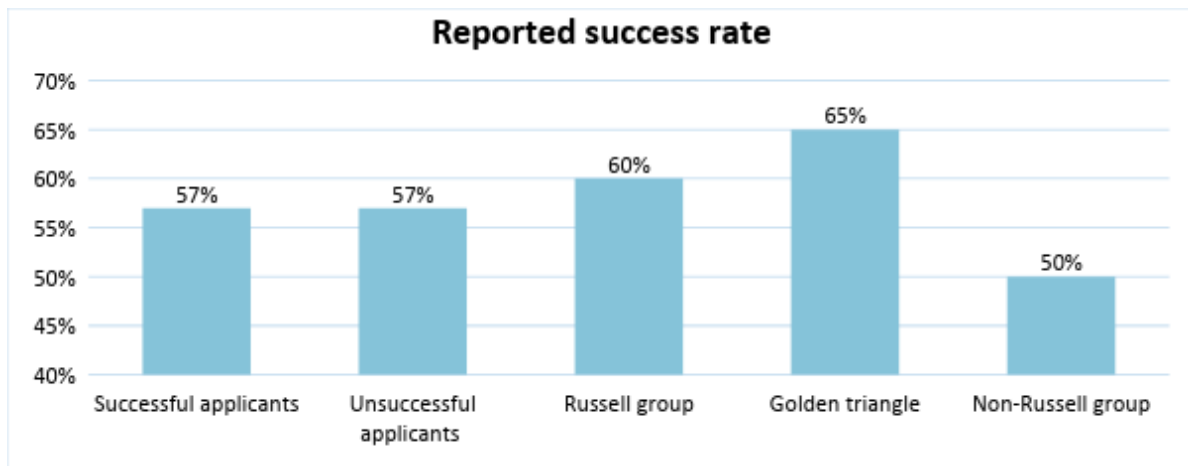

Figure 5.13 – Success rates for further grant applications by institution type. Source - survey

It should be noted that we do not know the outcome for a large number of grant applications, since these were either in preparation or submitted with no outcome reported.

Size and type of subsequent grant applications

There were notable differences in the size of the awards for which successful and unsuccessful Springboard applicants subsequently applied. 32% of applications from Springboard awardees were for substantial grants of £500k or more. In contrast, only 16% of applications from the unsuccessful group were for grants of this size (figure 5.14). Conversely, the group unsuccessful with Springboard funding made more applications for grants of less than £100k, compared with Springboard awardees (42% and 28% respectively). These results could indicate a greater emphasis on Springboard awardees seeking follow-on funding in the shape of larger grants, such as fellowships, with the unsuccessful group seeking start-up funding from other sources.

Reported grant size by applicant status
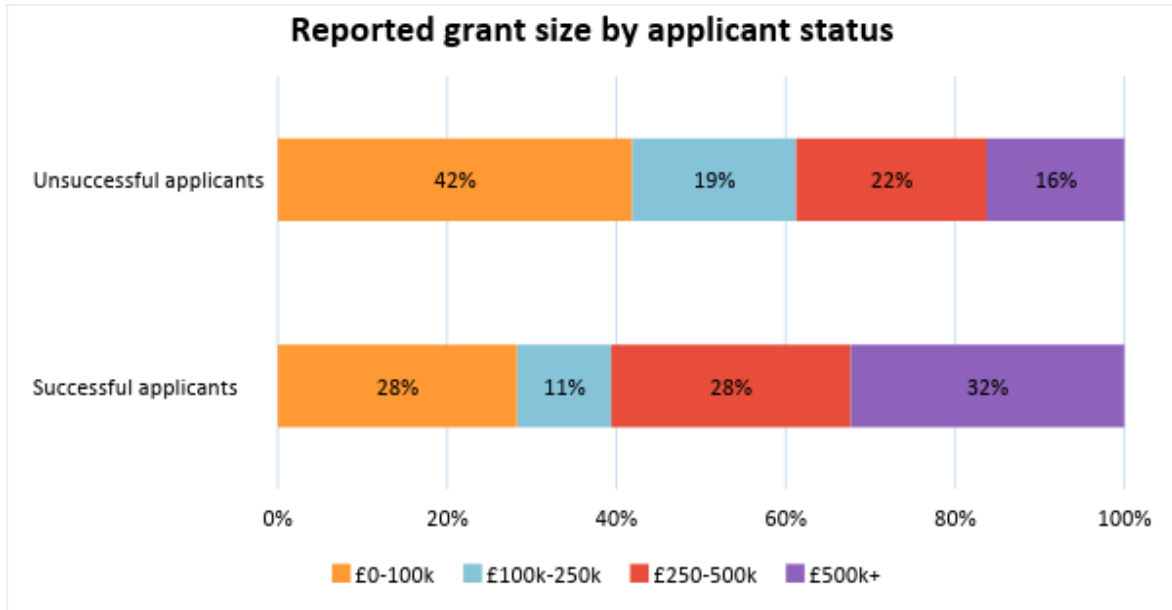
Figure 5.14 - Size of subsequent grant applications by successful and unsuccessful applicants. Source: survey

All previous applicants to Springboard were equally likely to apply for projects grants (figure 5.15). However, Springboard awardees were more likely to apply for fellowships (17%), whilst unsuccessful applicants were more likely to apply for small pilot grants or seed awards (32%). These results highlight the importance that applicants unsuccessful with Springboard place on seeking alternative funding of a similar size.
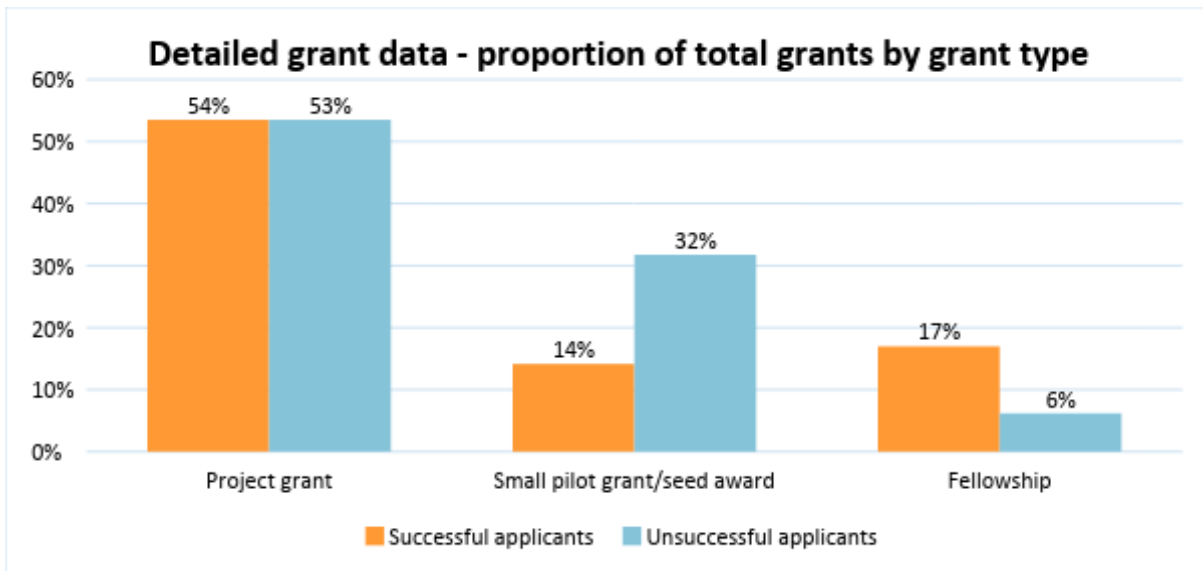

Figure 5.15 - Type of subsequent grant applications by successful and unsuccessful applicants. Source: survey

Funders approached

Both groups of applicants, who had been successful and unsuccessful in applying to Springboard, approached the charity sector and Government / Research Councils at similar levels (table 5.16).

	Charity	Government and Research Councils	Other
Successful applicants	43%	39%	18%
Unsuccessful applicants	37%	38%	25%

Table 5.16- Source of funding for subsequent grant applications by successful and unsuccessful applicants. Source: survey

5.5 Perceived value and impact

Perceived value of Springboard to research careers

Champions, panel members and funding partners who were interviewed were overwhelmingly positive about the value of the Springboard scheme. It enables new lecturers or junior group leaders to start their own research programme, generating preliminary data for future grant applications. The scheme was considered to be an essential route for supporting basic biomedical scientists to transition to independence.

Springboard helps lecturer awardees to fulfil their institutional commitments and progress their research. There exist far too few fellowships to meet the demand for independent researchers and therefore Springboard fills a very important niche. Biomedical research careers can be quite varied and therefore having a scheme that provides good flexibility is important. Funders and institutions placed a high level of prestige on individuals winning these grants competitively from a highly respected funder. It was also noted that winning such an award early in one's career was very helpful in boosting researchers' confidence.

Reported contribution of Springboard on research plans

We asked respondents to both surveys to indicate the impact on their proposed research plans of receiving, or not receiving, Springboard funding (figure 5.17). Awardees were very positive about the impact of the grant. Of the 52 responses, 54% told us that receiving a Springboard grant had a "very significant" impact on their research plans, with a further 44% reporting that the impact had been "significant".
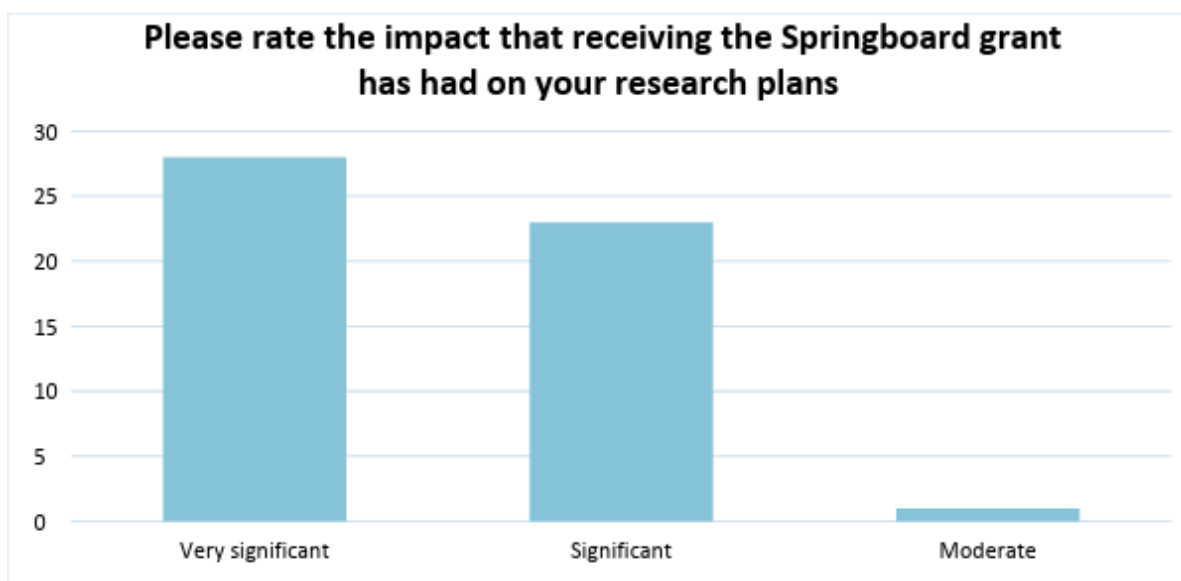
Furthermore, of the 11 survey respondents who had completed the award, 7 reported that they could not have completed their proposed pan of research without having received the award. The remaining respondents told us that they would either have had to scale down their research plans or it would have taken them a lot longer than they initially proposed.

Of the 58 respondents who were unsuccessful in their bid for Springboard funding, 62% indicated that they had been unable to undertake their proposed plan of research.

When asked how Springboard funding contributed to the publication of their most significant research to date, 31 respondents told us that Springboard funding had supported the generation of new data for grant applications, 30 told us that it had provided increased capacity to do research, and 29 told us that it had supported generation of new data for publication (figure 5.18).
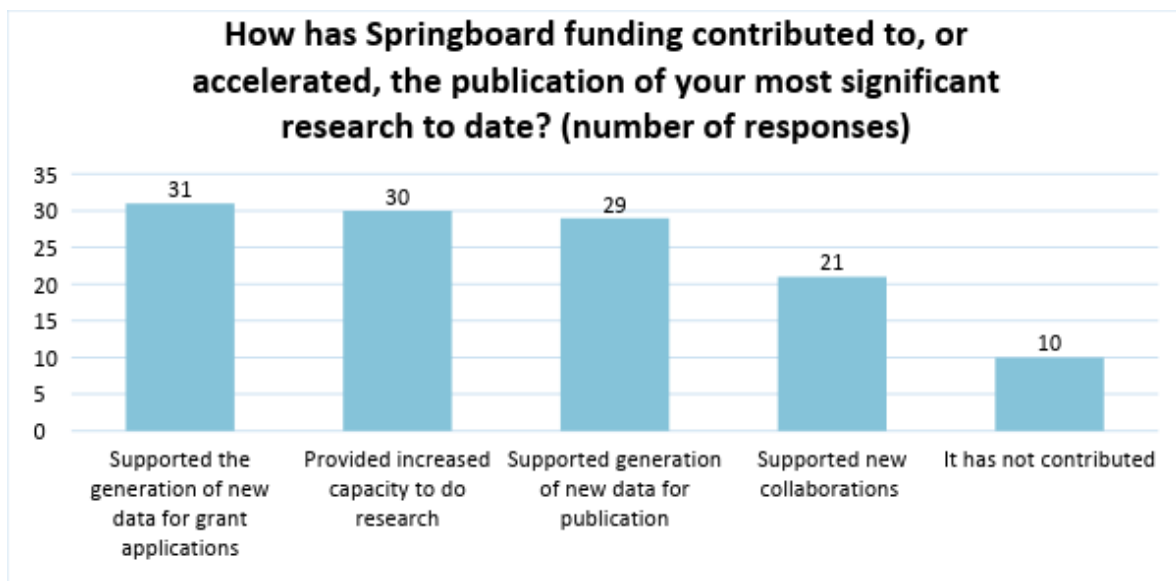
Figure 5.18 – Contribution of the Springboard award (survey; successful applicants)

When asked to rank the top three most helpful aspects of the scheme, all 11 respondents who had completed the award highlighted the funding for support staff. 9 respondents also ranked consumables as being particularly important. Respondents also ranked access to meetings and networking (4), mentorship (3) and flexibility for career breaks (3) as being important aspects of the programme.

Most valuable elements of the scheme

Successful applicants who responded to our survey considered the most valuable elements of the scheme to be funding leverage (87%), personal recognition (77%) and research confidence (75%); (figure 5.19).
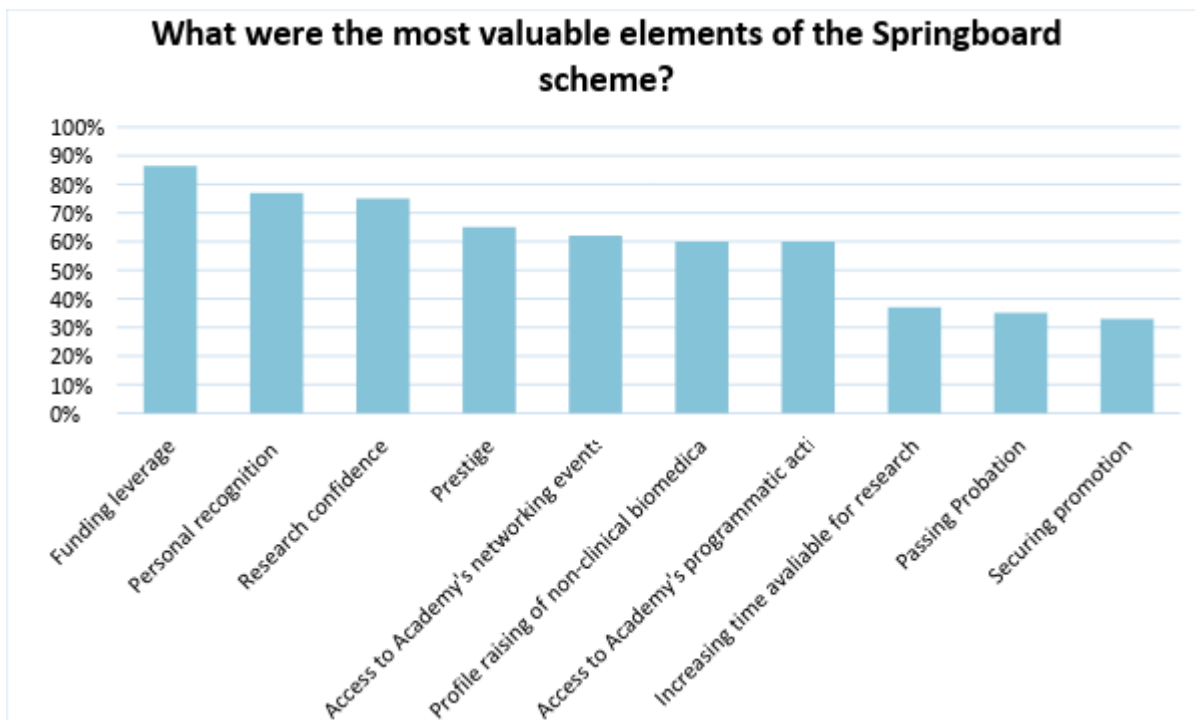
Figure 5.19 – *Most valuable aspects of the Springboard scheme (survey; successful applicants)*

We also asked Panel Members and Institute Champions, through our survey, to rank what they consider to be the most valuable elements of the scheme. The highest ranked elements were personal recognition and funding leverage (figure 5.20).

Figure 5.20 – *Most valuable aspects of the Springboard scheme (survey; Panel members, Champions)*

63% of Champions and 80% of Panel members considered there to be a high level of prestige in receiving a Springboard award. No Panel members and only 7% of Champions considered the level
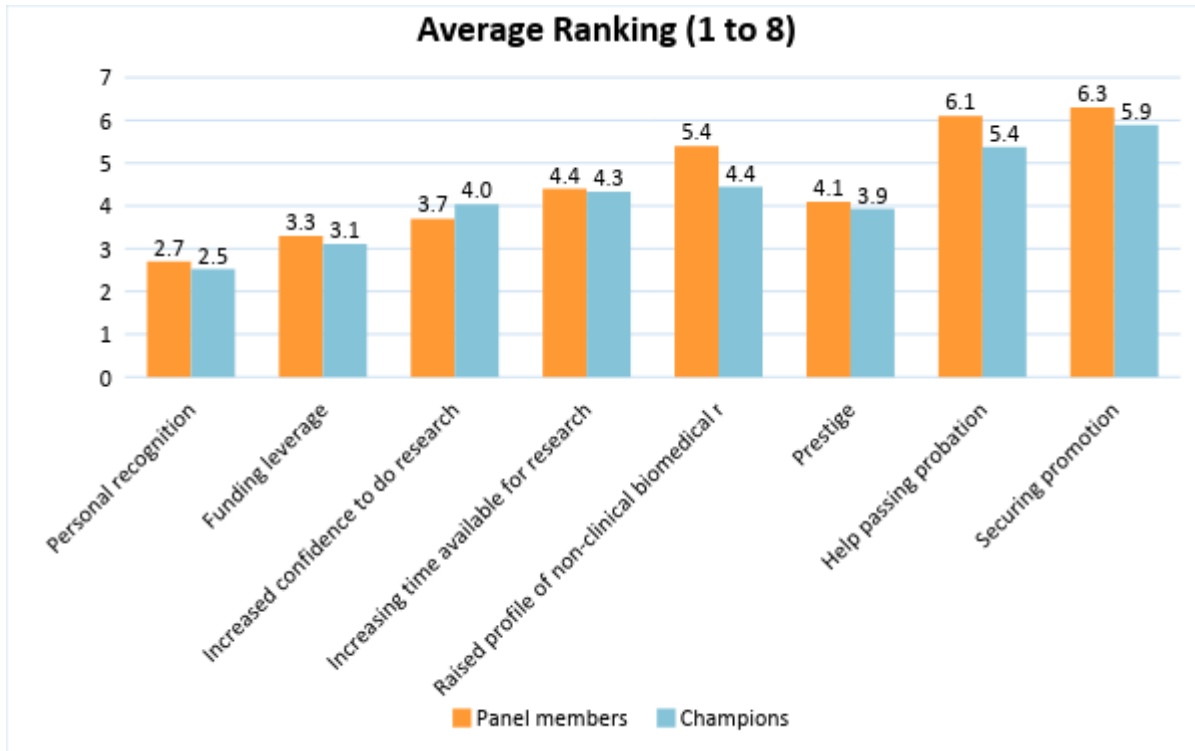
of prestige to be low. In our survey, 44% of Champions considered Springboard to be more attractive than other funding schemes available for this cohort of researchers. However, a further 44% considered Springboard to be of similar level of attractiveness and 11.1% considered it to be less attractive. Springboard Champions from Russell group universities were less likely to believe that the scheme is more attractive than others, only 30% believed that this is the case compared to 56% of those from Non-Russell group universities.

5.6 Career progression

Current roles and previous experience

For the surveys of successful and unsuccessful applicants, Lecturer was the most common current role of respondents. 60% of respondents to our survey of successful applicants (31 of 52 respondents) were currently Lecturers, with the next most common response being Research Fellow at 19%, followed by Group Leader at 17% (figure 5.21). Similarly, in the case of unsuccessful applicants, 60% (35 of 58 respondents) were Lecturers, with the second most common response being research fellow at 19% followed by Group leader at 16%.
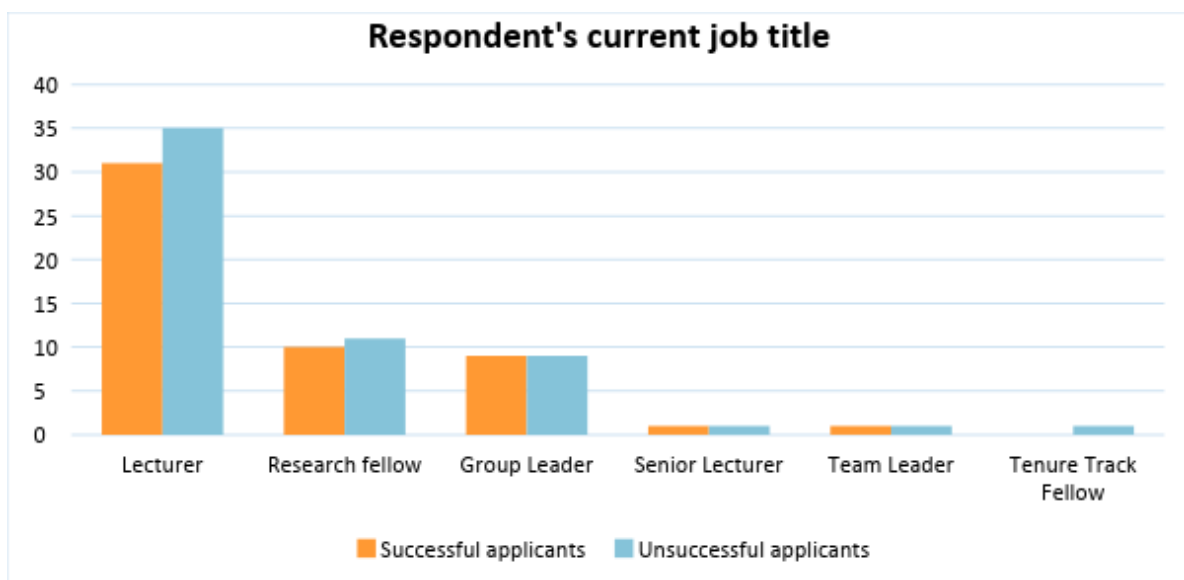
Figure 5.21 – Job title of survey respondents (survey; successful and unsuccessful applicants)

Both sets of respondents had similar levels of experience prior to applying to Springboard. On average, successful applicants responded that they had spent 6.3 years as a post-doctoral researcher and 0.9 years as a Lecturer (figure 5.22). In comparison, respondents to our unsuccessful applicants' survey said that they had spent on average 6.9 years as a post-doctoral researcher (6.6 years once outliers have been removed) and an average of 1 year as a lecturer. While lecturers are the most common respondents to our surveys, they tend not to have held this position for a particularly long time, which is to be expected given the criteria for the award.
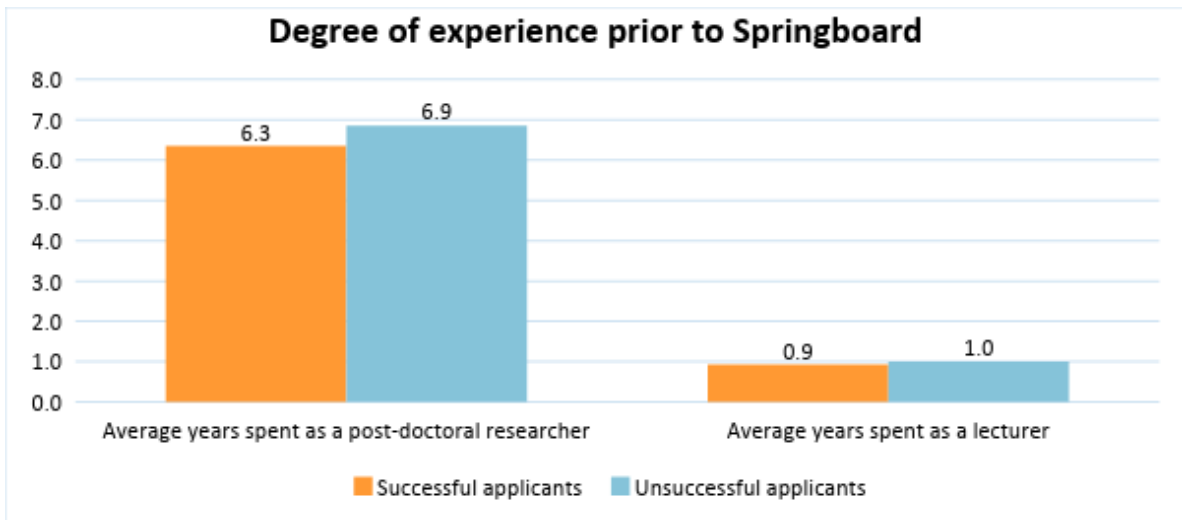
Figure 5.22 – Experience prior to Springboard (survey; successful and unsuccessful applicants)

Promotions

We also asked both successful and unsuccessful applicants if they had taken on a new position or been promoted since receiving or applying for a Springboard award. The results imply that successful applicants were more likely to have been promoted (figure 5.23). In the case of successful applicants, 21 (40%) told us that they had been promoted or taken on a new position, compared to only 14 (24%) of the unsuccessful applicants.
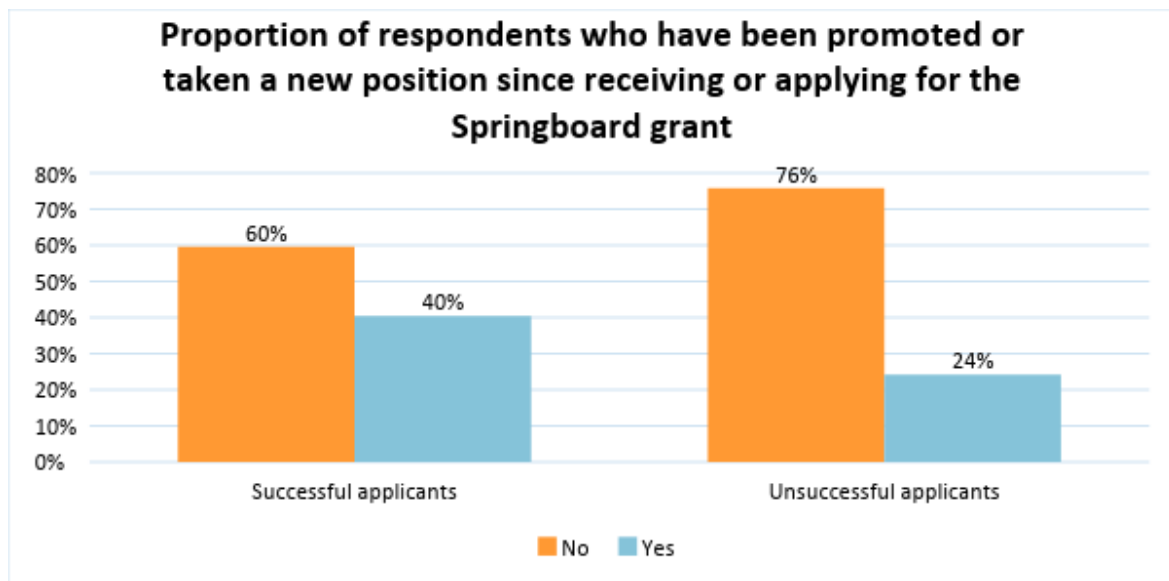
Figure 5.23 – Promotions (survey; successful applicants)

5.7 Mentoring

Mentoring

The Academy provides opportunities for all applicants to the Springboard programme – successful and unsuccessful – to join their highly commended mentoring programme. Figures from the Academy indicate that, from each round (1-3), at least 60% of awardees have participated in this programme (figure 5.24). 25-40% of unsuccessful applicants have also taken up this opportunity.
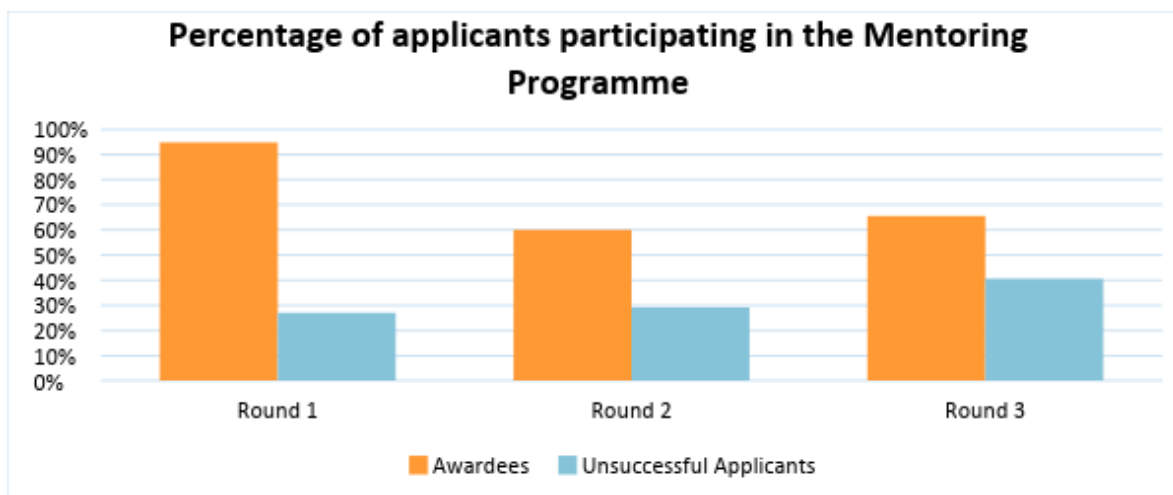
Figure 5.24 – Participation in the Academy's mentoring programme (data from the Academy)

73% (n=38) of awardees who responded to our survey had enrolled in the mentoring programme. 84% (n=32) of these respondents indicated that they found the programme to be "very useful" or "quite useful" (figure 5.25).
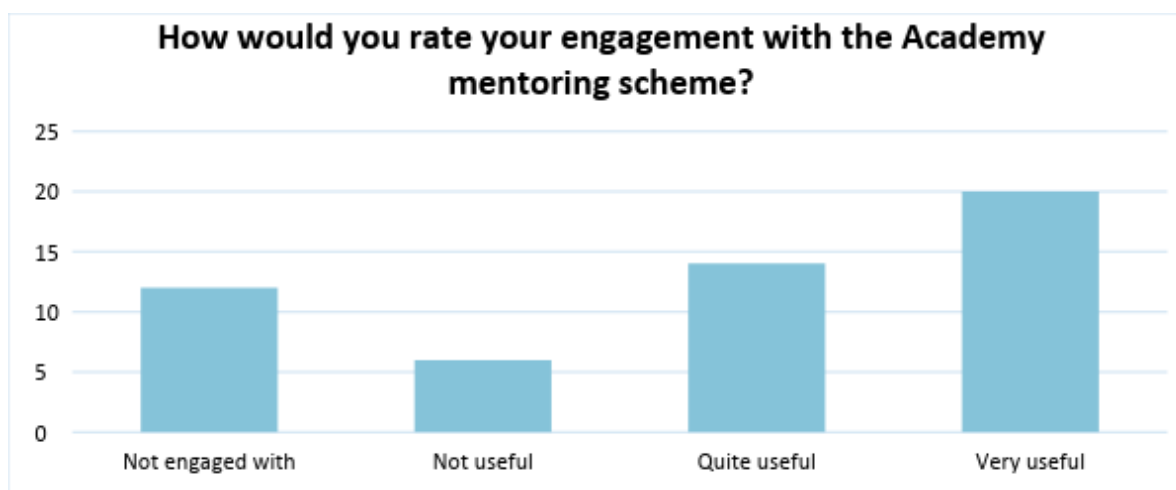
Figure 5.25 – Views on the Academy's mentoring programme (survey; successful applicants)

Mentoring and access to the Academy's programme of scientific meetings and networking were considered to be valuable and unique aspects of the scheme. It was pointed out that many people don't recognise the importance of mentoring at this stage in their career and therefore it is very valuable to raise their awareness and engage them. Further suggestions for how the Academy could further develop its career development and networking support were provided:
● Inspiring evenings with a career development focus
● More regional scientific meetings and career development events
● Events to promote interdisciplinary and transdisciplinary working e.g.
   o Discipline hopping events and experiences
   o Opportunities to meet role models and potential mentors from other disciplines
   o Improving the interface between biomedical science, physics and engineering
   o Networking events to promote biomedical researchers engaging in the translational space

Many such activities would underpin the goals of the government's Life Science strategy.

It was also recommended that the Academy could do more to raise its profile within the non-clinical biomedical science community, which would in turn increase the prestige of Springboard grants further.

5.8 Collaborations, networking and engagement

Collaborations

We asked all survey respondents to indicate the number of new collaborations established since applying to Springboard. The radar chart below (figure 5.26) indicates that unsuccessful applicants reported a slightly higher number of new collaborations established with other academics. On average, successful applicants reported having established an additional 2.6 academic collaborations since receiving the springboard award. Unsuccessful applicants reported an average of 3.3 new academic collaborations since applying to Springboard (once outliers had been removed).
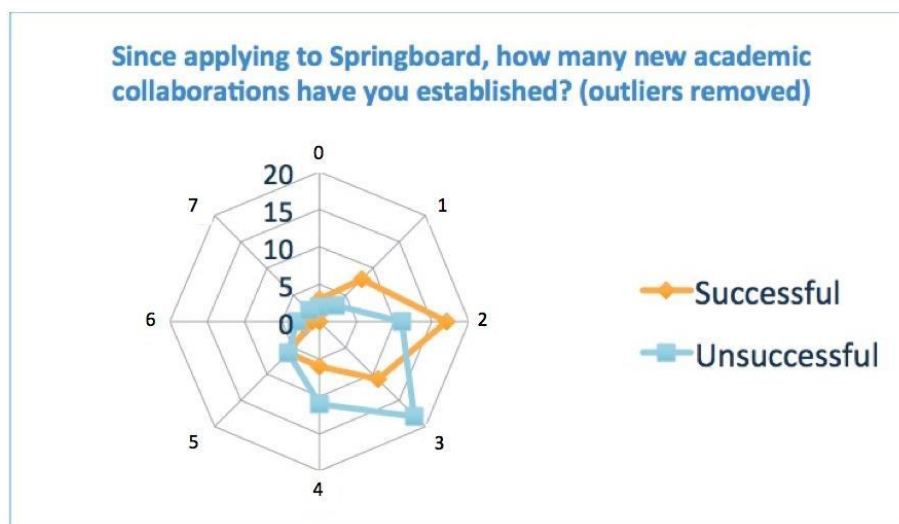
Figure 5.26 – *Number of new academic collaborations reported by successful and unsuccessful applicants since applying to Springboard. The numbers on the perimeter are the number of collaborations reported and the scale radiating from the centre indicates how many respondents reported a specific number of collaborations. I.e. 17 successful applicants reported 2 new collaborations.*

Respondents reported establishing a significantly lower number of new clinical or industrial collaborations. Successful applicants reported an average of 0.67 new clinical collaborations, with unsuccessful applicants reported an average of 0.86 new clinical collaborations. Successful applicants reported an average of 0.4 new industrial collaborations, with unsuccessful applicants reported an average of 0.53 new industrial collaborations.

Engagement with the Academy

Both successful and unsuccessful applicants were fairly positive about their interactions with the Academy (figure 5.27). 75% (n=39) of successful applicants indicated that their engagement with Academy staff was "very useful". 50% of unsuccessful applicants rated the interaction to be "very useful" or "quite useful" (n=29), with 45% (n=26) indicating that they had not engaged with Academy staff.
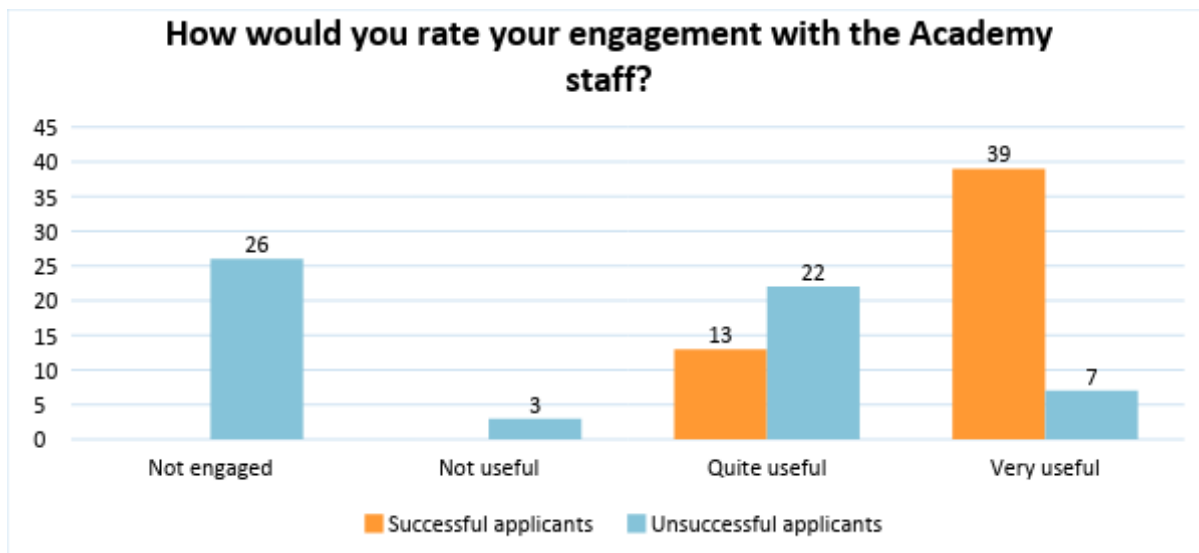
Figure 5.27 – *Engagement with Academy staff (survey; successful and unsuccessful applicants)*

Springboard awardees also reported their engagement with the Academy's Springboard awardee event and Winter Meeting (figure 5.28). 88% (n=46) of respondents found the awardee event to be either "very useful" or "quite useful". 40% (n=21) of respondents were similarly positive about Winter Meeting, however 54% (n=28) had not engaged with this event.
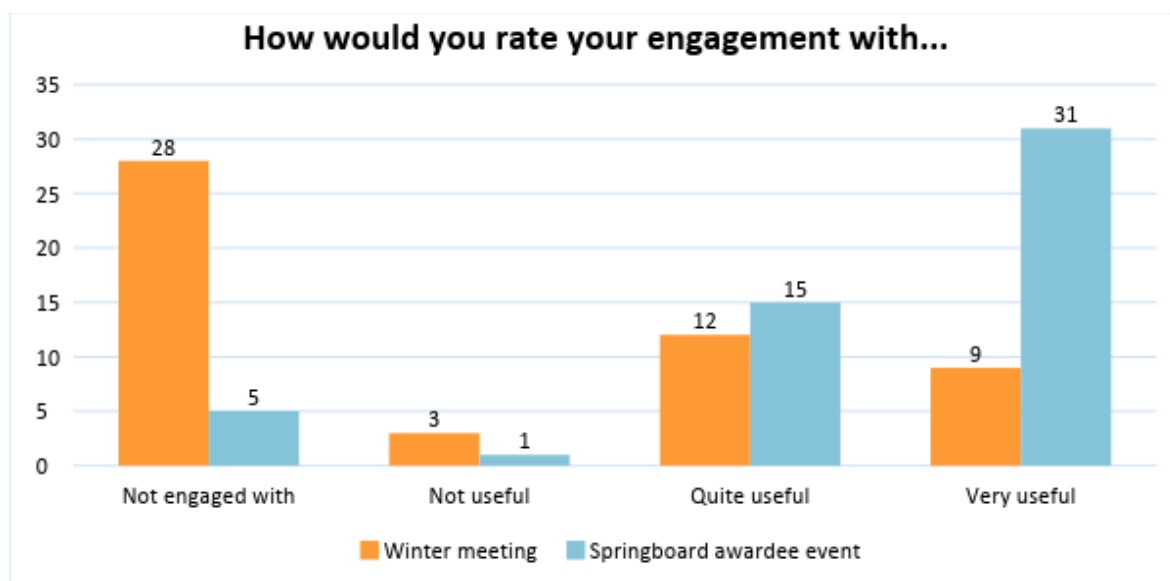
Figure 5.28 – *Engagement with the Academy's events (survey; successful and unsuccessful applicants)*

Engagement with other biomedical researchers through the Springboard programme

73% of Springboard awardees (n=38) rated their engagement with other biomedical researchers on the Springboard programme as being either "very useful" or "quite useful" (figure 5.7). 79% (n=46) of unsuccessful applicants had not engaged with other biomedical researchers through the programme.
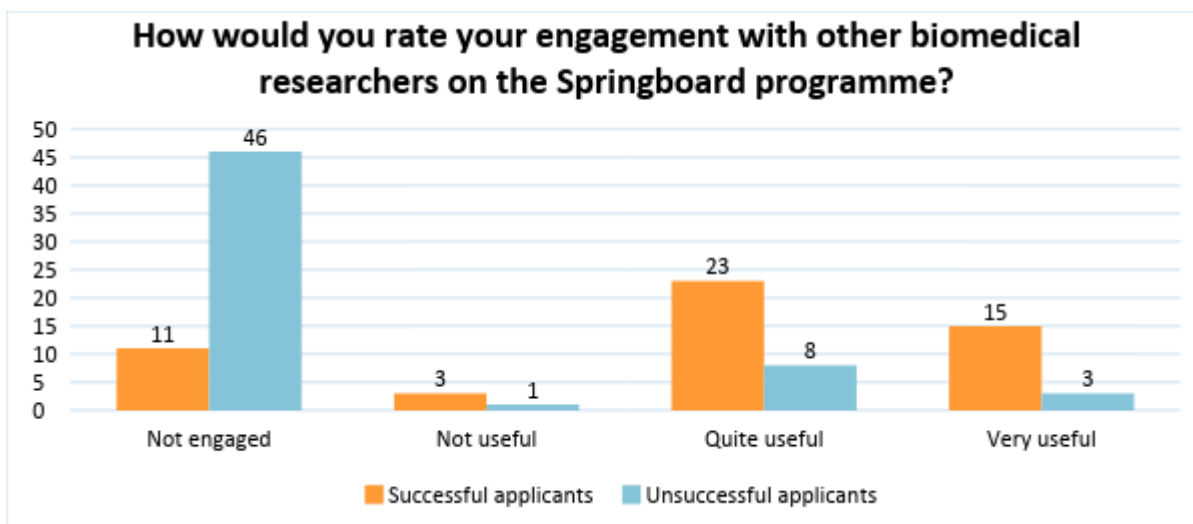
Figure 5.29 – Engagement with other biomedical researchers (survey; successful and unsuccessful applicants)

Interactions with employers

In order to get a sense of institutional support for awardees' research, we asked respondents if their institution contributed to the direct costs of awardee's research, beyond their salary and indirect costs. 29% (n=15) of awardees indicated that they had received such institutional support. Respondents from non-Russell group institutions were more likely to receive such support, with 50% of respondents indicating that they had. Only 22% of respondents at Russell group institutions indicated that they had received such additional support. This data, combined with insight from stakeholder conversations, suggests that funding leverage from Springboard is greater at non-Russell group institutions.

56% (n=29) of respondents (awardees) indicated that Springboard funding had supported interactions with their employer. However, 21% indicated that it had not supported interactions with their employer 23% responded 'don't know'.

The results were particularly positive for those who were not a member of a Russell group institution (figure 5.30), from where 83% of respondents indicated that the scheme had supported interactions with their employer.
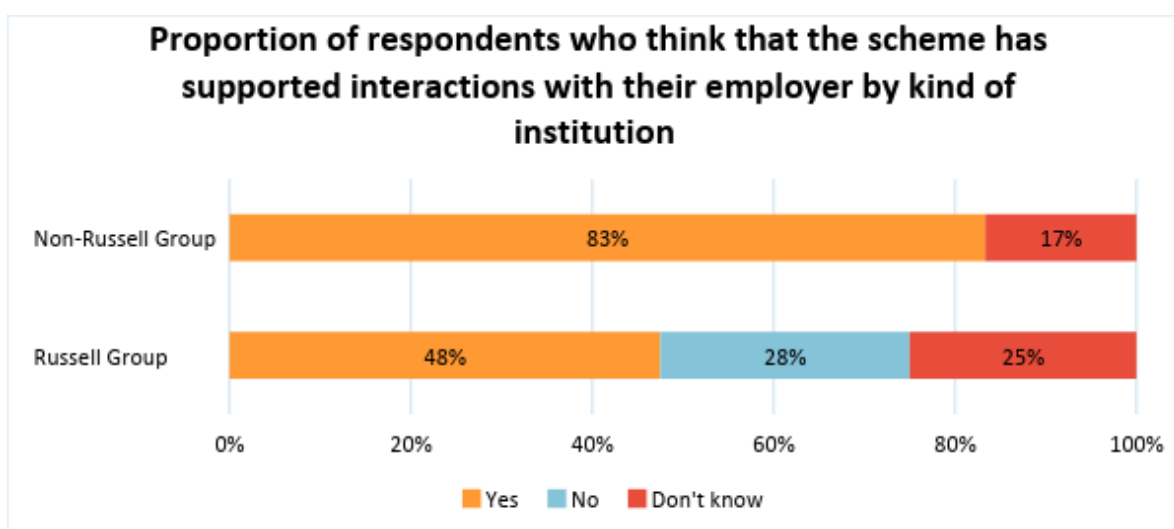
Figure 5.30 – Support for interactions with employers (survey; successful applicants)

The most common reasons for how the scheme had supported employer interactions were that it helped the successful completion of probation (48%), led to promotion (39%) or resulted in invitations to sit on leadership groups (39%).

The following comments from two awardees underline the value of Springboard:

> "The prestige and confidence that the springboard brought made it possible to start negotiations with my department and to request to be considered for promotion and permanent contract. As well as to request additional staff for my next applications/possible awards."

> "I have been offered a permanent position if my next fellowship application is successful (UKRI FLF). Without my AMS springboard I would not have been in a position to apply for this award."

Stakeholders who were interviewed (Panel members, Funders) also questioned what further commitment could be sought from the Host Institution with regard to enhancing or guaranteeing awardees' tenure track progression and consideration for a faculty position. It was suggested that greater emphasis could be placed on seeking such institutional commitments at the application stage, through letters of support from Champions and / or Heads of Department.

Charity Research Support Fund

30% of Champions who responded to our survey indicated that their institution received Charity Research Support Funding (CRSF) towards the overhead costs on Springboard grants and 11% said they did not receive CRSF support. However, 59% of Champions did not know whether access to CRSF funding was provided, which was somewhat surprising.

5.9 Summary

Research outputs from Springboard

- By 31 March 2018, Springboard awardees from rounds 1 and 2 had reported a wide range of research outputs since receiving funding:
    - 11 awardees reported 33 awards and recognition factors
    - 17 awardees reported 34 new collaborations and partnerships
    - 20 awardees reported securing 44 new research grants
    - 17 awardees reported 32 new research publications
    - 20 awardees reported 57 public engagement activities
- Round 1 Springboard awardees that secured future funding by March 2018 reported total follow on funding of £2.4m[5], representing an impressive return of £1.30 for every £1 of Springboard funding awarded.
- 54% of follow on funding secured by round 1 awardees was in the form of fellowships and 55% was from the charity / non-profit sector.
- On average, successful applicants to Springboard had submitted a further 2.3 grant applications each, whilst unsuccessful applicants had submitted a further 3.3 applications each since applying to Springboard.

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[5] Excludes a £2.2m European Commission grant awarded to one Springboard awardee

- Springboard awardees and unsuccessful applicants experienced a similar success rate in further funding applications (57%). However, awardees were twice as likely to seek substantial grants (£500k or more e.g. fellowships) than unsuccessful applicants to Springboard, who were more likely to seek grants of less than £100k (e.g. pilot grants or seed awards).
- Springboard awardees reported having established an additional 2.6 academic collaborations since receiving the award. Unsuccessful applicants reported an average of 3.3 new academic collaborations since applying to Springboard.
- The level of new clinical or industrial collaborations established by these groups was much lower with the averages ranging from 0.4 to 0.86
- Research papers published by Springboard awardees received 23% more citations than for unsuccessful applicants.
- When selecting papers that had received 10 or more citations, papers from Springboard awardees received 44% more citations than papers from unsuccessful applicants.

Value of Springboard Funding
- 98% of Springboard awardees responding to our survey told us that receiving a grant had had a "very significant" or "significant" impact on their research plans.
- Successful applicants considered the most valuable elements of the scheme to be funding leverage, personal recognition and increased research confidence.
- Awardees from non-Russell group institutions were more likely to receive additional financial support from their institution (e.g. to support a PhD student), indicating that funding leverage from Springboard is greater at non-Russell group institutions.
- Awardees were more likely to have been promoted after receiving an award (40% of survey respondents) than individuals who had applied to Springboard but been unsuccessful (24%).
- Receiving a Springboard award did not influence the proportion of time awardees spent doing research. In fact, awardees reported a slight decrease in overall time spent doing research (5% less once completed). Unsuccessful applicants reported a 7% decrease.

Funding leverage
- There is good evidence of the funding leverage that Springboard provides. For example, some Institutions provide additional funding to enable a PhD student to be appointed for 3 years.
- Funding leverage appears to be higher at non-Russell Group universities, where there is more evidence of Institutions providing additional support to awardees.

Support for mentoring, career development and networking
- The Academy's career development and networking support for applicants were seen to be valuable and unique aspects of the Springboard scheme.
- At least 60% of awardees have taken up mentoring in each round. 84% of awardees in our survey who participated in mentoring found the programme to be "very useful" or "quite useful".
- Several suggestions were received for expanding the Academy's networking support through more regional meetings and a focus on topics such as translational, developing clinical or industrial interactions, and engaging in interdisciplinary or trans-disciplinary research.

6. Use, Level and Duration of Funding

6.1 Awardees' use of funding

Information for this section was obtained through our survey of successful applicants. 44% (n=23) of respondents who had received a Springboard grant used the funding to recruit a postdoctoral researcher (figure 6.1). 33% (n=17) recruited a technician or scientific officer and 15% (n=8) recruited a PhD student.
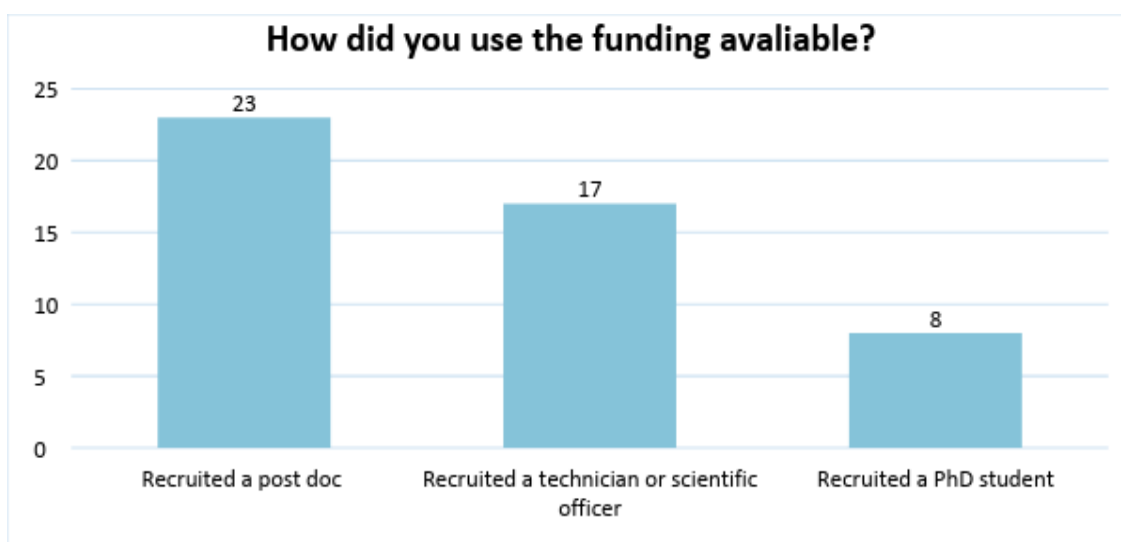
Figure 6.1 – Use of Springboard funding (survey; successful applicants).

Awardees were asked to identify any limitations in how they used the Springboard funding (figure 6.2). 29% of awardees (n=15) reported limitations in recruiting a postdoctoral researcher and 15% (n=8) reported limitations in recruiting a PhD student.
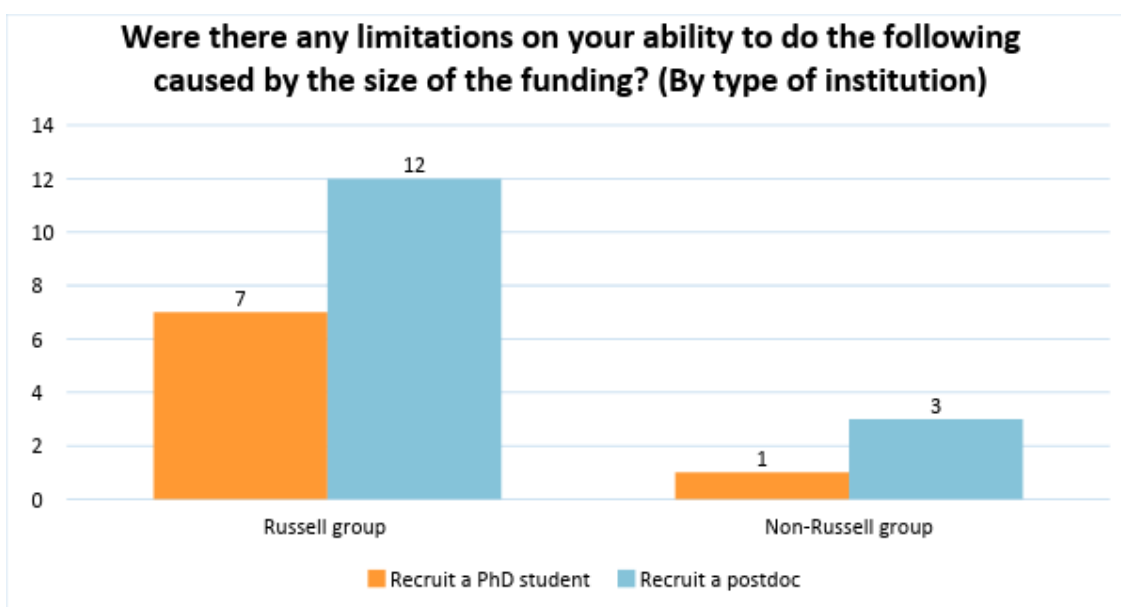
Figure 6.2 – Limitations in using Springboard funding (survey; successful applicants).

Interestingly, 18% of awardees from Russell group institutions reported limitations on recruiting a PhD student, compared with 8% of awardees from non-Russell group institutions. This may be an indicator of an institution's willingness to provide the additional funding required for the third year of a PhD student. There was little difference, by institutional type, on awardees' ability to recruit a postdoctoral researcher.

6.2 Funding size

22% (n=6) of Champions and 40% (n=4) of Panel members believed that the current offer of £100k was sufficient. However, 41% (n=11) of Champions and 20% (n=2) of Panel members believed that the award size should be increased to £125k (figure 6.3).
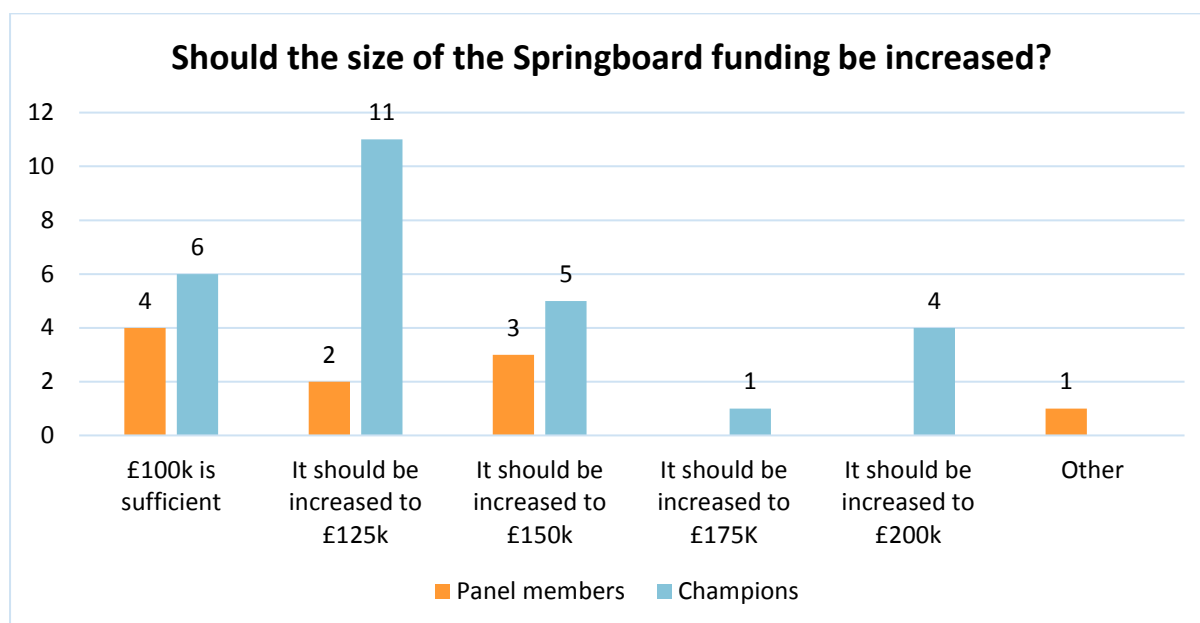
Figure 6.3 – Views on the size of Springboard funding available (survey; Panel members, Champions)

Taking inflation into account since 2016 when the scheme was launched, there would be justification to increase the amount provided to £110k. Several stakeholders pointed out that they would not want to see the amount of individual awards increasing at the expense of funding fewer grants. As one Champion explained: "If the limit was £125k, this would mean 25% fewer grants, so perhaps spreading the joy more widely, even if a little more thinly, is the optimum strategy".

6.3 Funding duration

The majority of Panel Members and Champions considered the current duration of grant funding for two years to be appropriate (figure 6.4). However, a high proportion (46%) of successful applicants indicated a preference for 3 years. Several stakeholders also indicated that the current size of grant limited the scope for recruiting a postdoctoral researcher, or where this was achieved, appointments had been made for less than two years. It was also noted that the funding level and duration was somewhat limiting for those aiming to pursue research that requires the use of animals, or those requiring ethical or regulatory approval for their programme.

Awardees request and receive a relatively high number of no cost extensions. This feature provides increased flexibility on delivering projects within the grant awarded and is discussed further in chapter 7.

Given the purpose of the grants (consolidation and data generation), what is an appropriate duration?
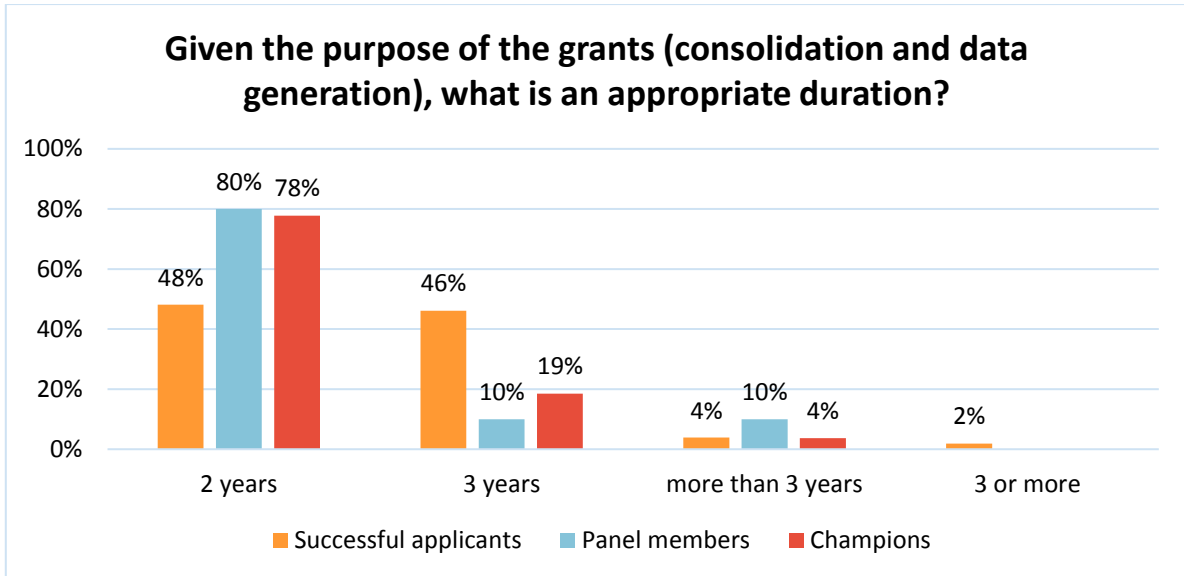
Figure 6.4 – Views on the duration of Springboard funding available (survey; Panel members, Champions and successful applicants)

6.4 Summary

Funding provided and grant duration

- 22% of Champions and 40% of Panel members believed that the current offer of £100k was sufficient, however, 41% of Champions and 20% of Panel members believed that the award size should be increased to £125k.
- The current level of funding appeared to limit some awardees from recruiting a postdoctoral researcher, although 44% of awardees were able to do so.
- Further awardees reported challenges in recruiting a PhD student, although in several cases, the Host Institution provided additional funding to enable such appointments.
- Several stakeholders pointed out that they would not want to see the amount of individual awards increasing at the expense of funding fewer grants.
- The majority of Panel Members and Champions considered the current duration of grant funding for 2 years to be appropriate, although applicants indicated a preference for a longer duration.
- Taking inflation into account since 2016 when the scheme was launched, there would be justification to increase the amount provided to £110k.

7. Conclusions

Springboard's 'USP' combines mentoring and career development with a valuable funding package, placing the emphasis on 'propelling early careers' alongside the generation of data. The programme is valued very highly by the biomedical research community. Its continuation is vital and its expansion would be welcomed.

The first grant holders began their funding in 2016 and therefore a modest time has passed to assess the impact of the Springboard scheme. Nevertheless, we have collected evidence of how the scheme has helped individuals to start building their teams, develop their research programmes, publish research and secure future funding. This evidence is complemented by the praise and value of the scheme as reported by all stakeholders involved.

Appendix I: Case Studies

Dr Alice Davidson

*Senior Research Associate at the
Institute of Ophthalmology, UCL.
Springboard awardee, round 1 (2016)*

Career background

Dr Alice Davidson is a Senior Research Associate at the Institute of Ophthalmology, UCL. Alice's interests lie in understanding genetic defects that lead to inherited forms of eye disease.

From an early age, Alice was fascinated by the concept of genetics, and how inherited traits relate to disease. She completed an undergraduate degree in genetics at the University of Manchester, followed by postdoctoral research at UCL.

Springboard award and impact

In progressing her career as an independent researcher, Alice had secured a three-year fellowship from the charity Fight for Sight, prior to applying to Springboard. Alice explained her desire to secure a permanent position and receiving Springboard funding has undoubtedly helped her to move closer to this goal. It is important for Higher Education Institutes and funders to nurture and support new research talent coming through, however it remains very challenging to secure a permanent position in the current climate.

Dr Davidson explained that the ability to access Springboard funding was such a fantastic opportunity. Being supported by a three-year fellowship meant that Alice was not eligible to apply for any grants that would run beyond the end date of the fellowship. However, accessing a two-year grant from Springboard was a particularly attractive route for obtaining a funding boost for Alice's early career stage research within the term of her fellowship.

The Springboard funding enabled Alice to recruit a Research Assistant, who started in 2016. Alice explained that the Springboard grant "has been a fundamental driver for all my key achievements in the last 3 years". In addition to her fellowship and the Springboard grant, Alice had also secured funding from a biotechnology company, and together these three grants provided vital capacity to develop her research programme.

During the following two years, and with the support of the Springboard grant, Dr Davidson was able to published two high impact papers (*Genetics in Medicine; American Journal of Human Genetics).* Furthermore, the data generated during these two years enabled Alice to apply for – and secure – two PhD studentships. Indeed, the Research Assistant recruited through the Springboard grant has since progressed to take up one of the new studentship grants.

This funding success also enabled Alice to leverage funding from a charitable trust to underwrite her own salary once the Fight for Sight fellowship ends, supporting time to prepare applications for a new fellowship. The prestige associated with winning a competitive grant from the Academy was also of great importance when securing follow on funding.

Career Challenges

In progressing her career in a challenging, competitive environment, Alice has found the engagement of strong mentors and collaborators to be of the utmost importance. Furthermore, working in a very encouraging and positive environment has provided important support for personal development and sustaining confidence, recognising the challenges of a career in scientific research.

Alice had further exciting news in 2016, when she found that she was expecting her first child. With a rather pressing deadline ahead, she was able to train up the two new Research Assistants prior to going on maternity leave. With the helpful support of a colleague and mentor who also agreed to be honorary supervisor during this period of leave, the research programme was able to progress, with a close level of contact from Alice. Noting that this career stage can be particularly tough for women, Alice also highlighted the support of the Academy through their flexibility and support for a no cost extension to the grant.

Career Support

Springboard funding has also helped in the development of collaborations and attendance at scientific meetings, from where new contacts and opportunities have emerged, such as joining the programme organising committee for the annual meeting of the European Association for Vision and Eye Research.

Dr Davidson emphasised the increasing importance of team working in science. In part, this is driven by the need to integrate huge resources, such as large datasets. To maximise access to these resources, there is a need for strong IT infrastructure, bioinformatics support, understanding and training of staff in research governance to manage and utilise data that includes identifiable information on patients.

Advice to other researchers

Dr Davidson had sound advice for individuals wishing to pursue a career in biomedical research. "If it's something that you want to do, just don't be scared and give it a try. It's very easy to feel overwhelmed by the concept up setting up your own independent research group. Identify a funding source and just go for it. Don't be afraid of failure." She highlighted the importance of early career researchers developing a strong network of mentors and collaborators. Furthermore, she would advise researchers to position their priorities in an area that has clear, achievable short-term outcomes, *and* further long-term goals and objectives that will provide mileage for future applications.

When asked about the future development of the Springboard scheme, Alice explained that, "In my opinion, it is crucial that the Academy continues to support people at this stage."

Dr Sian Henson

Senior Lecturer, The William Harvey Research Institute, Barts and the London, QMUL

Springboard awardee, round 1 (2016)

Career background

Dr Sian Henson is a Senior Lecturer at the William Harvey Research Institute at Queen Mary University of London (QMUL). Sian is investigating a low-grade chronic inflammatory state that accompanies ageing (known as 'inflammaging'), and how changes to T cell metabolism maintain this state.

Sian's interests in biology developed at school, particularly from having an inspiring science teacher, who would engage pupils in many ways, such as viewing images down a microscope. In completing a BSc in biochemistry and a PhD in parasitology, Sian develop a strong interest in understanding what goes awry in cells and how this contributes to disease. During her PhD at Imperial College London, Sian specialised in understanding how parasites evade the immune system. Her interests in the fast moving field of immunology were developed further with postdoctoral research at Imperial College and University College London (UCL).

Springboard award and impact

Following a career break to start a family, Dr Henson joined the Centre for Microvascular Research at QMUL as a Senior Lecturer in 2015. Soon after joining, Sian became aware of the Academy's Springboard scheme, to which she applied and was successful in 2016. The funding supported Dr Henson to hire a postdoctoral researcher and grow her lab's capacity. In particular, the funding was pivotal for Dr Henson to develop new areas of research within her group. Substantial time and effort were required to set up new techniques, which was quite ambitious within the timeframe of a two-year grant. However, the outcomes have been fruitful, with three publications in the pipeline. Data arising from the Springboard grant have also contributed to 8 grant applications, which Dr Henson prepared in 2018, and from which she received two awards.

QMUL attach considerable prestige to individuals receiving a Springboard award, and have been an active participant in all four rounds of the scheme. Furthermore, the funding played a major role in helping Dr Henson to establish an independent position at the institute. Importantly, the size and duration of the Springboard award does not affect applicants' eligibility for other significant schemes, such as the UKRI's New Investigator Awards.

Springboard funding provided further recognition for Dr Henson, through being invited to join the BBSRC's Pool of Experts, who assess and recommend grant applications for support. Dr Henson was also invited to join the Dunhill Medical Trust's Research Grants Committee as an independent advisor, in recognition of her expertise in immune ageing.

Career Challenges

Prior to joining QMUL, Sian had taken a career break to start a family. Sian explained that returning to scientific research after this break was particularly challenging, noting that it's hard to have a 'perfect' CV after such a break. At the time, many funders were not very supportive of applicants with a gap in publications, which made it problematic to secure grants. The Academy's Springboard was one of the first schemes to recognise career breaks and the reasons for taking one. In recent years, many more funders have relaxed their eligibility criteria, removing stipulations about maximum years post-PhD for grant applications – a welcome change.

Career Support

In addition to financial support, the Academy's unique programmes of mentoring and career development support represent some of the most valuable aspects of the scheme. The Academy ran several events and programmes that support networking and many aspects of managing people. Following one of the Academy's events, Sian began a new collaboration with a radiographer. Sian was also invited to join the Academy and a representative of the Royal Society in meeting the Canadian Finance Minister to discuss Springboard and the SUSTAIN programme for female researchers.

Advice to other researchers

Sian's advice for researchers aiming for independence is to be proactive, keep applying for funding and "keep plugging away". Obtaining constructive feedback from funders is also an important route for learning and developing grant proposals.
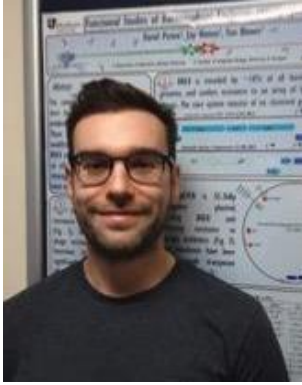
Dr Tim Blower

Assistant Professor in the Department of Biosciences, Visiting Professor in Department of Chemistry, University of Durham.

Springboard awardee, round 2 (2017)

Career background and challenges

Dr Tim Blower is an Assistant Professor in the Department of Biosciences and Visiting Professor in the Department of Chemistry at Durham University. His research focuses on Toxin-antitoxin systems and bacteriophage resistance. He is also a member of the Biophysical Sciences Institute.

Tim had a very clear idea of the direction he wanted to take in his research career from an early age. He remembers being shown protein structures in an A-Level biology lesson and found them so interesting that he immediately resolved that this was going to be his research career. Tim therefore already had a very clear idea of what he was going to specialise in during his degree and subsequently his PhD. It also helped that he grew up with his grandfather who was a zoologist specialising in millipedes and centipedes, so there were always some interesting creepy crawlies around his house.

The main challenge that Tim has faced establishing himself as an independent researcher is the current funding situation in the UK. In the current landscape, there are very low success rates for funding applications, and over the years there seems to be an emerging trend of smaller pools of money being applied to by a much larger set of people. Furthermore, research councils often treat new investigators on the same level as everyone else, so one is effectively competing against researchers who have over 30 years of experience. In this context, it is very hard to encourage funding bodies for larger schemes to take a chance on a less experienced individual, where they could alternatively get guaranteed outputs from a more established professor. The UK compares very badly in this area to the US, where they have a much larger pool of funding available.

Funding is essentially the hardest barrier and one can overcome this by applying for smaller schemes that are targeted to help younger, less established people. Springboard is a good example of this, as is the Wellcome Trust Seed Award. Of the two, the Springboard scheme appeared to be more relevant to Tim as it is specifically targeted at early career researchers while the Seed Award is open to everyone. Generally, there are not many schemes that fill this role and so there were not many other options. Tim has also benefitted from older, more experienced professors at Durham being very understanding about the difficulties of the current funding climate and, whilst encouraging him to apply for grants, have not necessarily put lots of pressure on him to be successful.

Springboard award impact

The immediate impact of receiving Springboard funding for Tim was that he was able to use the money to hire a PhD student. Tim had one student during his first year through other sources, but the Springboard funding allowed him to secure one in his second year which otherwise would not have been possible. As a result, Tim has been able to create two wings of research in his lab rather than one and therefore open up a whole new research area. He has also benefitted simply from having an extra 'body' in the lab itself. In theory, the extra data gathered can also form the basis of further, larger funding applications.

In terms of publications, Tim is yet to release anything as he is only one year and two months into the award, and this is not likely to happen for another eight months. However, he has already produced a lot of data and feels well set up to publish a large paper in the future.

Tim has also benefitted from receiving the Springboard award in terms of personal esteem factors. Having received external Springboard funding will be important as his application for promotion is considered over the coming year (outcome to be determined). He also received an invitation to speak at an Academy of Medical Sciences celebration event in Newcastle in January, where he had the opportunity to present his work in front of the Vice-Chancellor of the University, as well as the Executive Director of the Academy and two former Directors. Tim has also been invited to speak at a conference later this year in Windsor, which will be the first ever meeting of his field of research.

Furthermore, Tim has been able to develop and maintain academic collaborations that would not have been possible without Springboard funding. For example, Professor Peter Fineran has been a long-term collaborator of Tim's since they worked together at the University of Cambridge. Professor Peter Fineran has since moved to the University of Otago, but they have been able to continue collaborating as he is a named person on the Springboard grant. They have also published together on this project using some of his data. As another example, Springboard has enabled Tim to reconnect with Dr Kate Baker at the University of Liverpool, a fellow Springboard grant-holder. They reconnected at a Springboard meeting and now Tim co-supervises Dr Baker's PhD student, which is a direct result of the networks through the Springboard programme.

There has definitely been a broad impact on Tim's research career from having received Springboard funding, although the most significant element is the ability to hire a PhD student and expand the capacity of his lab. He also highlighted the personal, emotional boost that receiving such an award can bring. This job is very difficult, particularly in the early stages, and the increased confidence that comes with having been selected for the award is of real value.

Changes to the research environment

Since beginning the Springboard programme, the main challenge that has emerged which is hindering Tim's ability to develop his research programme is the UK's upcoming withdrawal from the EU. This is a particularly severe challenge for all of UK science and one that is difficult to overestimate the effect of. In terms of future uncertainty, it currently leaves Tim unable to hire promising candidates as he is uncertain as to whether he will be able to pay them. His PhD position is open at present and, despite interest from inside the EU, Tim is unclear as to whether he can actually take steps to hire these candidates. Additionally, on the supply side, he has observed price increases whilst suppliers are also warning that there may be future disturbances and advising people to stockpile supplies. Finally, it has clearly affected the morale of Tim's EU colleagues as the future for them is even more uncertain. This is by far the biggest challenge that has emerged in the research environment.

Recommendations to other researchers

Tim's main advice for researchers seeking to establish themselves in independent positions is to aim for more at the point of negotiation. Looking back, before Tim accepted his job, he believes he should have negotiated for more as the initial guarantees that one agrees with their university are very important. For example, many universities do not provide a guaranteed PhD studentship to incoming early career lab heads. This can create difficulties in the future as it means that you must compete with everyone else for studentships, without having the certainty of being offered one. Given the importance of having a PhD student in the lab, Tim recommends that early career researchers should definitely try to negotiate this from the start, otherwise one risks not making the best use of their time due to a lack of staff required to conduct significant research.

Dr Danielle Paul
Research Fellow, Structural Biology, School of Physiology,
Pharmacology and Neuroscience, University of Bristol.

Springboard awardee, round 3 (2018)

Career background and experiences

Dr Danielle Paul is a Research Fellow at the School of Physiology, Pharmacology and Neuroscience at the University of Bristol. The focus of her lab's work is to determine high resolution 3D models of the cardiac thin filament using state of the art image processing techniques and the recent advances made in the field of cryo-electron microscopy.

Science has always been present in Danielle's family. Both her parents studied chemistry at the University of Oxford and Danielle's mum worked as a research physicist and later, when Danielle went to school, returned to work as a lab technician.

The biggest challenge that Danielle has faced in setting herself up as an independent researcher has been the management of career breaks, as a result of having children. Danielle has three children and has had two sets of maternity leave and one career break across the years at various points. Putting on the brakes and ramping on and off from her work as a result of these breaks has made an already challenging career even more challenging. Winning a career re-entry fellowship was therefore of massive benefit to Danielle and was definitely the biggest single element that has helped her establish herself as an independent researcher. Additionally, flexible working and part-time work has been very helpful, and something that Danielle has had to do for the last eight years or so.

Springboard award impact

The main impact of receiving external funding from Springboard for Danielle was that she was able to employ her first group member. This has had a massive impact in terms of productivity. Prior to receiving the award, Danielle did have a fellowship, but this was a part-time fellowship and she was effectively working as a 'lone wolf' in the department. She did not have anyone to ask for support and did not have anyone else who could work on producing data. Now with Springboard, data can be generated even when Danielle is not directly attending to it. This has been the major impact – the beginning of a proper group. Related to this, Danielle has been able to use the extra data generated to apply for further funding which in the future can be used to expand again. Springboard has therefore had quite a big impact on Danielle's work.

Receiving the award has also increased Danielle's creativity and ability to move into different areas. Again, this is down to having help in the lab and more data to work with. In the past, Danielle has had to be quite focused due to constraints in time and resources, but now she has more freedom to look into areas that she might not have been able to look into before.

In terms of esteem factors, one major change that Danielle has experienced since receiving Springboard funding is that she is now able to accept overseas conferences and talk invitations. This is partially because she has produced more data and therefore more findings to present, but the main difference is the added certainty that her lab will continue to make progress in her absence. For example, Danielle was invited to speak at a Cardiac Research Institute in Sydney and was able to attend an International Microscopy Conference in Sydney. This is usually the type of event that she would have to turn down, purely because of the time involved, but now Danielle is comfortable that progress will continue to be made regardless of her absence.

Finally, the additional data that Danielle has been able to produce has not only been used to leverage additional funding, but it has also enabled her to access nationwide facilities. Danielle is now able to make regular use of a national facility for electron microscopy which is very helpful for her research. Having been able to produce more data as a result of Springboard funding has therefore benefitted Danielle in a variety of ways, and direct publications from the project are now imminent.

Start-up funding is key for early career researchers. Before, Danielle felt she was in a loop where she could not get into 'the game' from any angle. She was unable to secure staff without a project grant, but also could not produce preliminary data without staff support, so did not have the necessary data to apply for a project grant. Start-up funding is therefore essential. The ability to secure staff has resulted in multiple benefits for Danielle: an increase in productivity, an ability to go into different directions and of course establish independence – this is all predicated on having received Springboard funding.

Beyond the funding itself, Danielle has also benefitted from the mentoring scheme. Danielle has a fabulous mentor and has met her on numerous occasions. The ability to use these meetings to focus on future career direction and gain advice on how to achieve different goals has been really helpful. Danielle believes that this is an advantage that the Springboard scheme has over other similar awards, although certain applicants may not necessarily realise this. Comparable awards, such as the Wellcome Trust Seed Award, are reasonably similar in terms of the funding offered but the additional support offered by the Springboard Scheme makes a big difference.

Changes to the research environment

It has been just over a year since Danielle received the Springboard award and did not feel that any major new challenges have emerged. One change, that is perhaps yet to become clear, is the bringing together of research councils under one umbrella as UKRI (UK Research and Innovation) which appears to have increased their tendency to accept cross-council applications. Danielle has been quite interested in completing a cross-council application, as the funding is now from the same body, but the process for making cross-council applications is not particularly well explained or advertised. One potential challenge is the growing idea or tendency to try and make everything industry-related. While Danielle has not personally come under pressure to make this the case, there is definitely an increased focus on the applications of research and hopes that there is still room in the future for the type of basic scientific research that she undertakes.

Recommendation to other researchers

Danielle has two key pieces of advice for researchers seeking to establish themselves in independent positions. Firstly, finding your specific area and speciality early on and focusing on that will always help. There is often a pressure to spread yourself quite wide and work on a variety of different areas but focussing on a specific thing will help you to establish yourself. While Danielle is exploring different areas now, the key element that helped her to establish herself was the focus on a specific area where she first built her expertise and reputation. Secondly, while start-up funds are massively helpful, it is important to think about what happens next early on. Two or three years can go by very quickly, so it is important to ensure that you are set up to apply for continuation funding as soon as possible. She would advise researchers seeking to establish themselves to get into this mindset early on.

Dr Lucy Bowes
Tutorial Fellow, Associate Professor of Experimental Psychology, University of Oxford.
Springboard awardee, round 3 (2018)

Career background and challenges

Dr Lucy Bowes is a researcher in the department of Experimental Psychology at the University of Oxford, and her research focuses on the impact of early life stress on psychological and behavioural development. In particular, Lucy has focused on the effects of victimisation on young people's adjustment and wellbeing.

Lucy's interest in science developed from an early age, often asking big questions and having a wonderful Biology teacher who encouraged students to run experiments at school. These experiments were very much animal focussed, and so Lucy had initially thought that she would enter primatology and become the next Jane Goodall. Later on, she realised that the same experimental methods could be applied in other areas too and, as Lucy became interested in the social causes of bullying, she began to appreciate that there are parallels between studying child development and the animal kingdom. Ultimately, this became her initial field of research.

One of the major challenges Lucy faced when establishing herself as an independent researcher was the fact that postdocs are often encouraged to move and gain experiences outside of the institution in which they completed their PhD. Whilst it is very valuable and provides crucial contacts and experiences, this proved challenging for Lucy to align with her lifestyle. Lucy completed her first postdoc in Paris, but most of this time was spent either commuting or working from home. Similarly, during her second postdoc in Bristol, Lucy rented places during the week and travelled home at weekends, all whilst pregnant with her first child. She felt that it was definitely worth it, having the opportunity to meet new groups and widen her interests, but at the same time it was physically very challenging and exhausting.

The other major challenge that Lucy faced was building confidence. As is the case for everyone, it comes in peaks and waves, but there are times where one feels less confident and must put themselves out here. For example, she found writing fellowship applications very difficult as the ability to sell oneself is very important. This is a continuing struggle, but Lucy has found that getting exposure and feedback, talking to other scientists, seeing example of how others have done it and getting suggestions on where to improve has been very helpful.

Springboard award impact

The most exciting impact of Lucy having received Springboard funding was the ability to change the direction of her research, which would have been almost impossible with the other types of grants that she was applying for. Her work now involves virtual reality, which is a significant jump from her previous work, and other grant applications tend not to view favourably on this kind of move. This move is really exciting because as well as enabling Lucy to examine causal mechanisms, the virtual reality element adds a whole new dimension to the work that Lucy is doing involving public engagement. For example, she has an upcoming Outreach Oxford event where students will be coming into the lab to try the new equipment. This is not something she would have been able to do without the Springboard funding.

For individuals just starting and trying to build their lab, it is very difficult to apply for major grants as one is often competing with established researchers who already have a string of publications, making this a critical juncture at which to receive funding. This is especially challenging if one wants to move into an area that is a bit different from their PhD and, for Lucy, this is where Springboard fills a gap by enabling individuals to take a little bit of a risk in the direction of their research whilst also providing key start-up funding. The Springboard funding also came in a period where Lucy was

facing a lot of anxiety over the pressure of getting tenure and having schemes like Springboard as an option is important and helps to reduce some of that stress and anxiety. However, at the same time, there is a risk that funding schemes like Springboard and others may lead universities to think that they do not need to provide start-up funding for researchers themselves (which they should). There is a fine line to be drawn therefore to ensure that overall there is as much start-up funding available for researchers as possible.

In terms of the value added by Springboard, the mentoring scheme has been fantastic for Lucy. Being able to select her own mentor has further added to the value of the scheme. This meant that she was able to choose a researcher from a different university who is quite similar, both in terms of research areas but also in terms of life experiences and values. This meant that it was much more likely that they would be able to connect, and it is very valuable for Lucy to be able to ask her mentor how she coped with experiences not too dissimilar to herself. She also believes it helps that they are volunteers and have received training, so as a participant one has a degree of confidence that they will be engaged in the scheme. It has been very beneficial for Lucy in terms of helping to set her personal goals and think about the bigger picture in a way that is often quite challenging.

Changes to the research environment

There are some aspects of the environment that have become more challenging while Lucy has been on the scheme, although they are not necessarily new challenges. For example, there are the increasing administrative responsibilities of being an academic that only seem to be increasing. There are only so many hours that one can work in a day, hence why there are often discussions about academic burnout. There is also tension between open access publishing and more traditional methods. While Lucy would like to move towards more open access, there is still a lot of pressure at this career stage to get papers published in 'big' journals. Fulfilling both aims is therefore challenging. However, there are also some aspects that have changed for the better. For example, there is now a lot more discussion around diversity and equality in science, including but not limited to gender equality, which is a clear improvement.

Recommendations to other researchers

Lucy's advice for other researchers trying to establish themselves and become independent is to build a strong network and therefore highlights the importance of getting experience at a range of different institutions. Without this, it can be quite challenging if one wants to move later on in their career. This means that you constantly have a network of unofficial mentors. Lucy recently had a meeting with a colleague and friend, who is slightly more advanced in their career, and it is incredibly helpful to be able to learn from their experiences. There are times where it is going to be really challenging but talking to other people also helps one to realise that you are not alone and recognising that everybody goes through these periods is incredibly valuable. Therefore, building a strong network is probably Lucy's key element of advice. You don't have to it all by yourself.

Appendix II: Eligible Institutes and Success Rates

Below is a list of the Institutions eligible to apply to Springboard, along with the corresponding numbers of applications made and successful awards.

Institution	Total Awards	Total Applications	Success Rate
University College London	10	12	83%
Imperial College London	6	10	60%
QM University of London	7	12	58%
University of St Andrews	4	7	57%
University of Exeter	6	11	55%
University of Sheffield	6	12	50%
University of Leeds	6	12	50%
King's College London	6	12	50%
University of Oxford	4	8	50%
Newcastle University	3	6	50%
University of Lancaster	3	8	38%
University of Southampton	3	9	33%
Aston University	2	6	33%
University of Bradford	2	6	33%
University of East Anglia	2	6	33%
University of Leicester	3	10	30%
University of Glasgow	2	7	29%
University of Cambridge	3	11	27%
Cardiff University	3	11	27%
University of Birmingham	3	12	25%
University of Stirling	1	4	25%
University of York	1	4	25%
Queen's University Belfast	2	10	20%
University of Bristol	2	10	20%
University of Manchester	2	11	18%
University of Strathclyde	2	12	17%
University of Edinburgh	2	12	17%
University of Surrey	2	12	17%
University of Aberdeen	1	6	17%
University of Durham	1	7	14%
University of Sussex	1	7	14%
University of Dundee	1	9	11%
University of Reading	1	11	9%
University of Liverpool	1	12	8%
Loughborough University	1	12	8%
Subtotal	*105*	*327*	*32%*
Applications, but no awards			
Royal Veterinary College	0	3	0%
St George's	0	6	0%
University of Keele	0	5	0%
University of Essex	0	7	0%
University of Hull	0	5	0%

University of Bath	0	9	0%
University of Nottingham	0	12	0%
University of Kent	0	4	0%
University of Warwick	0	8	0%
Bangor University	0	3	0%
London School of Hygiene and Tropical Medicine	0	1	0%
Swansea University	0	6	0%
Subtotal	*0*	*69*	*0%*

No applications

The Institute of Cancer Research	0	0
Cranfield University	0	0
Heriot-Watt University	0	0
Ulster University	0	0
Grand total	*105*	*396*	*27%*

Appendix III: Evaluation Design and Methodology

Survey engagement

Group	Survey	Interviews (see list below)
Successful applicants (awardees)	72 invited to participate 52 responses (72%)	Sample of 5
Unsuccessful applicants	217 invited to participate 58 responses (27%)	N/A
Springboard Champions	57 invited to participate 27 responses (47%)	Sample of 4
Panel members	11 invited to participate 10 responses (91%)	Sample of 4
Funder representatives		Sample of 3

Stakeholder interviews

Successful applicants (Awardee case studies)	
Dr Tim Blower	University of Durham
Dr Lucy Bowes	University of Oxford
Dr Alice Davidson	University of College London
Dr Sian Henson	Barts and The London
Dr Danielle Paul	University of Bristol
Springboard Champions	
Professor Massimo Palmarini	University of Glasgow
Professor Colin Cooper	University of East Anglia
Professor Malcolm Jackson	University of Liverpool
Professor Timothy Elliott	University of Southampton
Panel members	
Professor Stephen Dunnett	Professor emeritus, Cardiff University
Professor Donna Davies	University of Southampton
Professor Tim Bishop	University of Leeds
Professor Anne Ridley	University of Bristol
Funder representatives	
Dr Noel Faherty	British Heart Foundation
Anna Morris	Diabetes UK
Peter Cozens	Department for Business, Energy and Industrial Strategy

Springboard funding analysis

Analysis by subject area

Institutional and regional success rates were calculated using data provided by the Academy. Comparisons with UK Health Research Spend were made using data from the UK Health Research

Analysis 2014[6], an audit of 64 charitable and public funders of health research covering £2bn of research grant spend.

Analysis by subject area

Applicants in rounds 2-4 attributed a subject area to all applications. The Academy's office attributed subject areas to applications in round 1.

UK landscape for non-clinical lecturers at Higher Educations Institutions

The following parameters were used to identify the number of lecturers (or equivalent) in biomedical science working at Higher Educations Institutions in the UK. The Higher Education Statistics Agency (HESA) extracted and supplied the data.

Data search and output parameters

Search Parameters	Description and notes
Specified cost centres	(101) Clinical medicine (102) Clinical dentistry (103) Nursing & allied health professions (104) Psychology & behavioural sciences (105) Health & community studies (106) Anatomy & physiology (107) Pharmacy & pharmacology (112) Biosciences
Contract levels K0 and J0[7]	K0: Senior Professional (Technical), Lecturer, Research fellow, Researcher (senior research assistant), Teaching fellow J0: Team Leader (Professional, Technical, Administrative), Lecturer, Senior Lecturer, Senior Research Fellow
Contract type	Non-clinical; No NHS contract
Qualifications	Doctorate *Qualification* held No medical, dentistry or vet degree
Age: 26-45	26-45 years old
Years	2014/15, 2015/16, 2016/17 and 2017/18

Data output categories	Description and notes
Higher Education provider	Name of university
Academic employment function	Research only; Teaching only; Research and Teaching
Source of basic salary	E.g. HEI, NHS, charity
Terms of Employment	Open-ended/permanent; Fixed-term contract; Atypical
Nationality	UK / Other EU / Non-EU / Unknown
Sex	

Table AIII.1 – Description of HESA data search and output parameters

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[6] https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2014/

[7] https://www.hesa.ac.uk/support/definitions/staff#contract-levels

Limitations and caveats

As described in table AII.1, HESA contract categories used for this search include many other roles in addition to lecturers: Senior Professional (Technical), Research fellow, Senior Research Assistant, Teaching fellow, Team Leader (Professional, Technical, Administrative), Senior Lecturer and Senior Research Fellow. Whilst we have restricted the search to include individuals aged to 26-45, many other individuals such as Postdoctoral Researchers and Scientific Officers.

HESA does not collect data on when staff were appointed to their current position. Therefore, it was not possible to identify the number of non-clinical lecturers within 3 years of appointment to their first salaried position. Therefore, the key search restrictions for identifying the most relevant early career researchers will be age (26-45) and contract level (K0, J0)

Licence

The data sharing licence includes provision for data access permissions by Freshney Consulting and the Academy of Medical Sciences. Under the licence, the raw data provided by HESA will be available for one year, after which it must be deleted.

Note about HESA data

The HESA Services Standard Rounding Methodology has been applied to the analysis included in this report. Neither the Higher Education Statistics Agency (HESA) Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived by third parties from data or other information supplied by HESA Services.

Citation analysis

An analysis was conducted to assess the citation profile of all awardees from rounds 1 and 2 of Springboard and compared this with publication outputs from unsuccessful applicants.

Successful applicants

A list of all original publications from awardees in rounds 1 and 2 was extracted from ResearchFish (data returns for the years closing 31 March 2017 and 31 March 2018). In total, there were 39 awardees (19 from round 1 and 20 from round 2). ORCID numbers for each awardee were identified. The list of publications from ResearchFish was found to be incomplete, and this was supplemented with further publications identified through PubMed, the ORCID website and each awardees' research pages on their employers' website. PubMed identifiers (PMID) and Digital Object Identifiers (DOI) were recorded for each publication. A final list of publications was prepared as follows:

Successful applicants	Publication window
Round 1 applicants (19)	From 1 August 2016 to 31 March 2018
Round 2 applicants (20)	From 1 August 2017 to 31 March 2018

74 publications were identified from this cohort.

Unsuccessful applicants

Using a list provided by the Academy, random sample of 39 applicants who had been unsuccessful was generated (19 applicants from round 1 and 20 from round 2). ORCID numbers for each applicant were identified. Papers published by each applicant were retrieved from PubMed, the ORCID website and each awardees' research pages on their employers' website. A final list of publications was prepared as follows:

Unsuccessful applicants	Publication window
Round 1 applicants (19)	From 1 August 2016 to 31 March 2018
Round 2 applicants (20)	From 1 August 2017 to 31 March 2018

69 publications were identified from this cohort.

Citation analysis

Clarivate Analytics was contracted to carry out the citation analysis, using data contained in the Web of Science platform. Citations were identified as follows:

- Number of citations for each paper in 2016, 2017, 2018, and 2019
- Number of citations for each applicant in 2016, 2017, 2018, and 2019
- Total number of citations from successful applicants in 2016, 2017, 2018, and 2019
- Total number of citations from un successful applicants in 2016, 2017, 2018, and 2019

Caveats

It can take 3-5 years for citations to accrue on published papers, and therefore the analysis presented here is quite preliminary, since all the papers included in this analysis had been published less than three years ago. In order for a bibliometric analysis to perform significant results, a dataset exceeding 50 publications within a time window of more than 3 years is recommended. The analysis does not take into account the authorship position of each applicant.

Appendix IV: Demographics of Survey Respondents

Response rates

Our survey of successful applicants received 52 responses out of a potential 72 respondents, a response rate of 72%. Our survey of unsuccessful applicants received 58 responses out of a potential 217, a response rate of 27%. The lower response rate of unsuccessful applicants means that comparisons across the surveys should be treated with a degree of caution, as they are less likely to be a representative sample of the whole population.

Gender

There was a fairly even gender split among respondents to both surveys. For the successful survey, 54% of respondents identified as female and 46% identified as male. In the case of the unsuccessful survey, 48% of the respondents identified as female, 50% as male and 2% selected 'prefer not to say'.
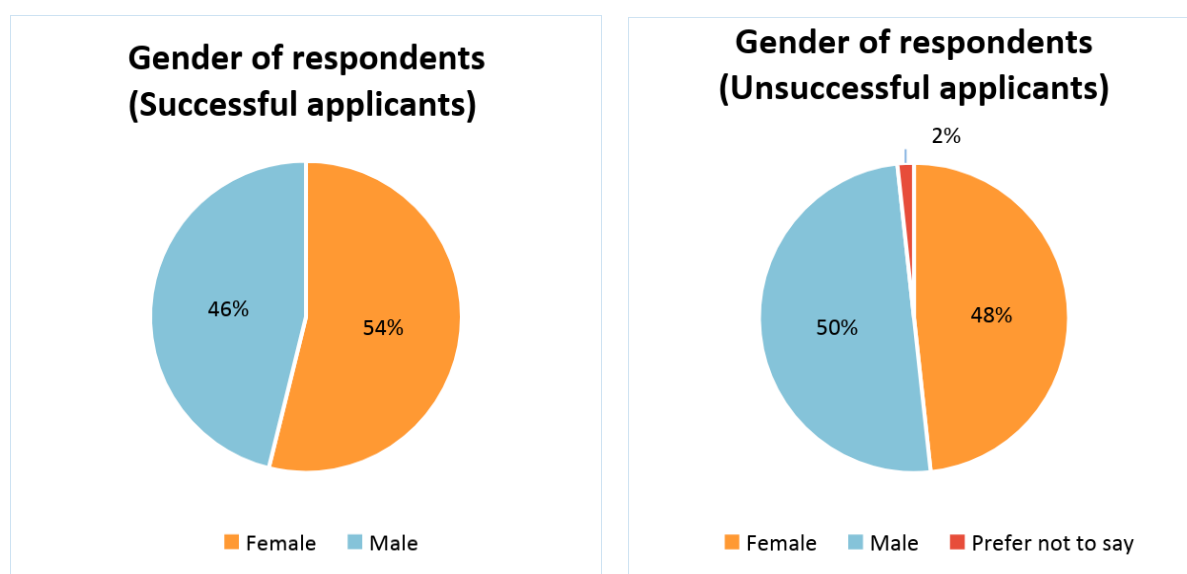

Respondents by Institution

The majority of respondents to both surveys were from Russell Group universities. In the case of the successful survey 73% of respondents were at Russell Group universities, while 23% were from Non-Russell Group universities. For the Unsuccessful survey, 69% of respondents were from Russell Group universities while 31% were not. In terms of the informal Golden Triangle grouping, 21% of the respondents to the successful applicants' survey were from one of these institutions, whilst only 10% of the respondents to the unsuccessful applicant survey were.

Respondents by number from Russell Group Institutions
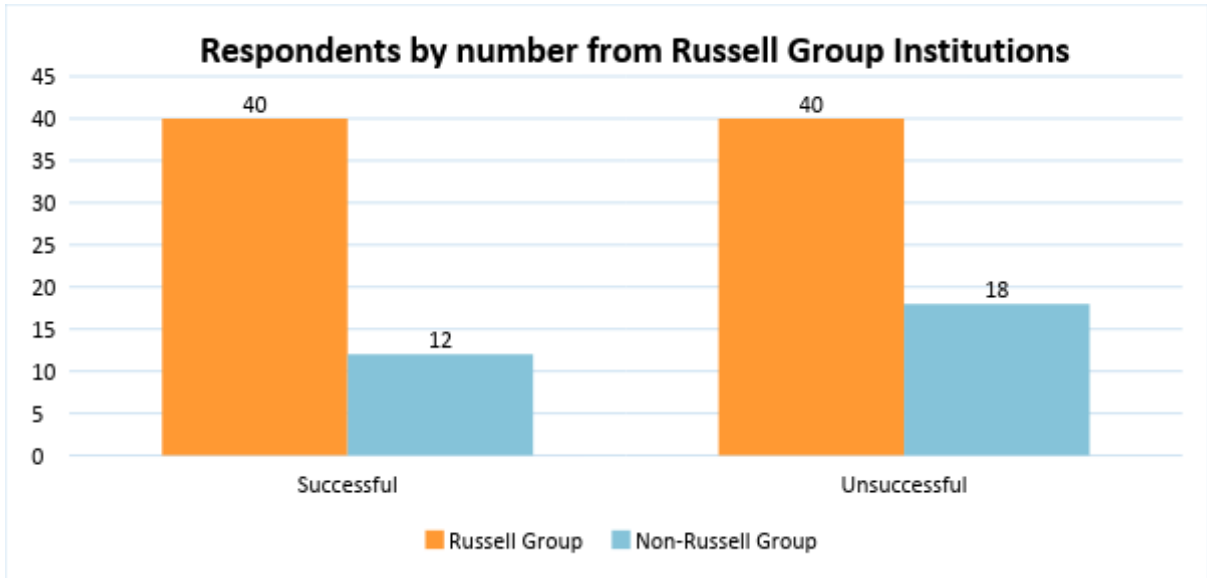
Respondents by Region

There were, however, notable differences in the proportion of respondents from different regions of the UK, as well as notable differences in the proportion of successful to unsuccessful respondents from different regions. Combining both surveys, London received the highest total number of responses (18) while Wales received the lowest number of responses (3).

Total number of respondents from UK regions
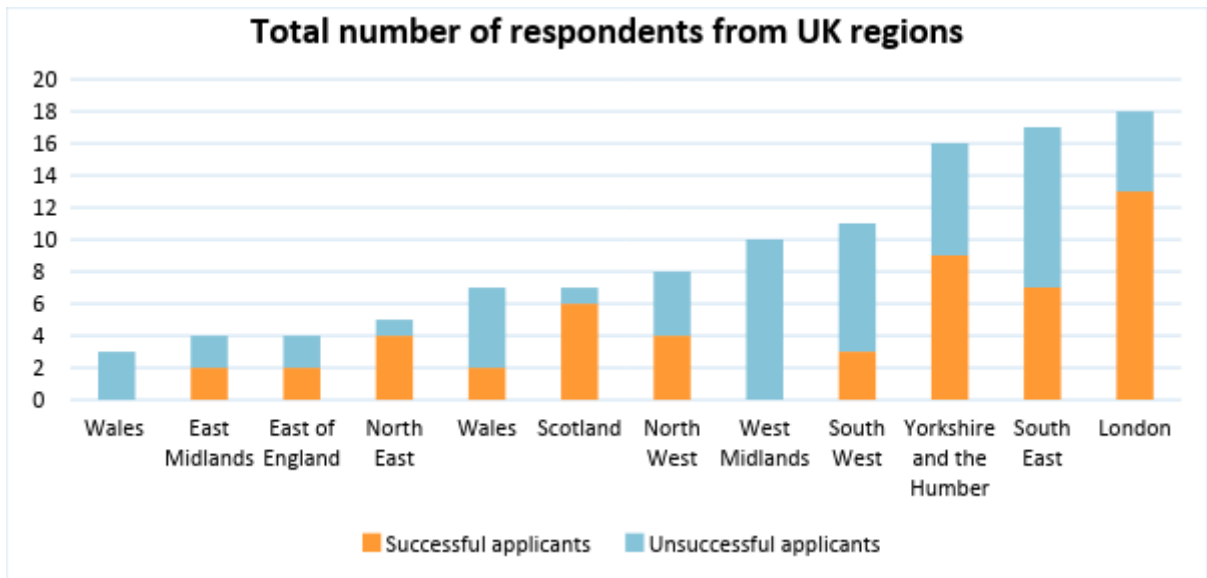
On the other hand, the region with the greatest proportion of successful applicants responding as a proportion of total responses was Scotland, where 86% of the responses were from successful applicants. In contrast, two regions only received responses from unsuccessful applicants (Wales and West Midlands.) The average proportion of successful respondents compared to total respondents was 45%.

Proportion of successful respondents as a proportion of total responses per UK region
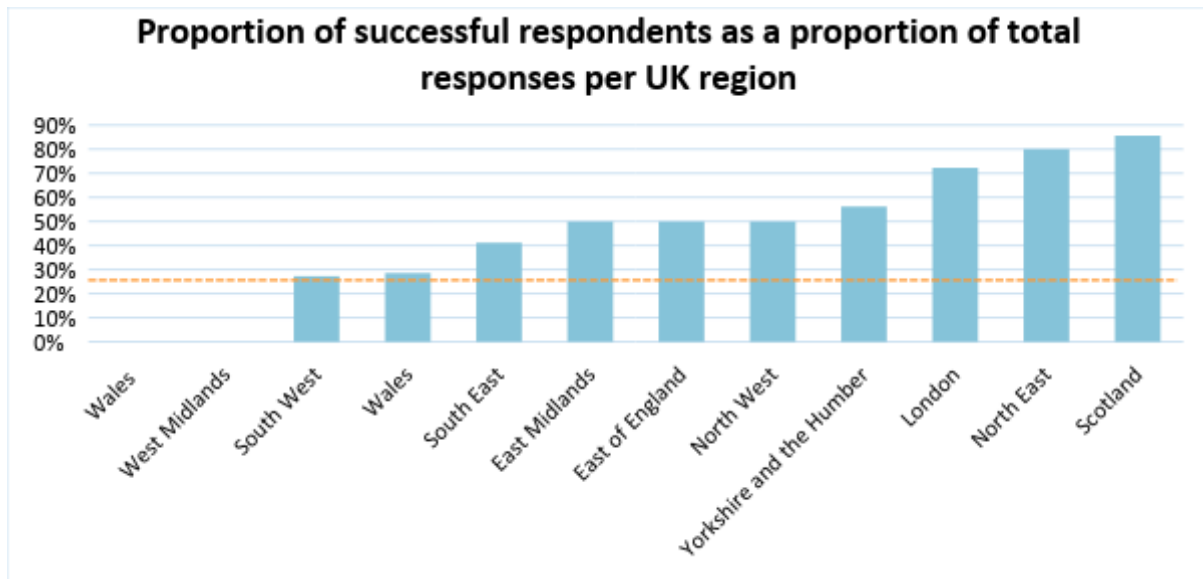
Respondents by subject

There was a wide variety in the fields of research of our respondents across both surveys, with 19 different fields being represented in our survey of successful applicants and 16 different fields represented in our survey of unsuccessful applicants. The most common fields of research represented in both cases were the same; Neuroscience and Cellular Biology. Neuroscience was the field of research for 8 of the respondents to our successful applicant survey and 10 for our unsuccessful applicants' survey, and Cellular Biology was the field of research of 7 of the respondents to our successful applicants' survey and 11 of the respondents to our unsuccessful applicants' survey.

Respondents who had re-applied

The majority (90%) of the 52 respondents to the survey were successful in their first application to the Springboard scheme, with 5 being successful at the second attempt.

Percentage of applicants successful in their first application to Springboard
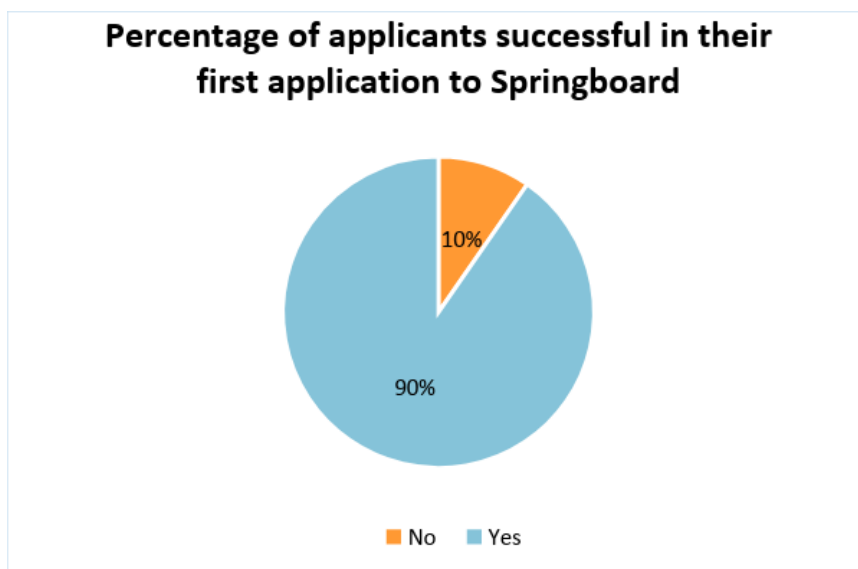
Appendix V: Selected Survey Comments

Please rate the impact that receiving the Springboard grant has had on your research plans
- "The award is considered very competitive and prestigious. The award has had a positive contribution in the initial stages of me developing (e.g. making contact) new collaborations. The award has also helped in me securing my new senior lectureship position."
- "The Springboard award has been catalytic in allowing me to realise my most ambitious research plans. It gave me funding and recognition and that has certainly been taken seriously from my department who is planning my application to become a lecturer in the near future. It has also allowed me to attend conferences and publish papers (one already accepted), conferences are important for networking. Most importantly the funding has allowed me to generate unrivalled mechanistic data which already formed the basis of a major application and will continue to inform more applications in the near future."
- "I can now pursue exciting and interesting science that should result in a clinically meaningful outcome and impact. It has allowed me to employ an excellent post-doc who is also supporting other early career researchers in my team. It has also been great for my career, having been promoted to senior lecturer within a year of receiving the award.

In two sentences, what do you consider to have been the impact of the research you conducted during your Springboard Award?
- "The research has developed novel methods for probing social cognition that may form the basis for new diagnostic and assessment tools in mental health disorders."
- "This research provided new valuable insights into how hematopoietic stem cells born and are controlled by various microenvironments at different stages of development. Data obtained led to new hypothesis and opened new key questions in the field that need to be addressed in order to develop new methods to obtain these clinical important cells in the dish for patients."

What more could be offered by the Academy to facilitate networking with wider groups and sectors (non-financially)?
- "It would be helpful to bring together networking that will help applying for larger grants and enhance industry collaboration."
- "Regional gatherings for awardees - in an already hectic schedule, travelling down to London for 2 days is quite disruptive, and not always possible."
- "For me personally I have never collaborated with a pharma and I do not know how to go about making contact or starting a collaboration. A networking session where researchers can meet pharma and a session on how to establish a new collaboration with pharma would be valuable."
- "The academy does networking events well. Targeting these to match make appropriate collaborations work could be useful."

If applicable, please explain how the mentoring programme has helped you with your research/career progression and your subsequent funding applications
- "Whilst I enjoyed meeting my mentor, it was clear they felt there was little help to provide and we didn't meet again. I didn't pursue the mentorship."
- "My mentor has the specific skill set I want to develop, and she has been a fantastic guide in unlocking some of the aspects of my career that I found challenging or which I did not know how to approach"
- "It was extremely useful to discuss my career progress and research focus with my mentor, as well as specific issued that women and young mothers face in this career."

Provide any comments to explain your ratings and suggest any improvements we could make to the process

- "A more streamlined online application form might help, but it was already pretty clear."
- "There was some confusion about the eligibility criteria which caused a degree of stress. Once through this, the process was excellent. The staff were always fantastic to deal with."
- "Very fair process, I was successful on my second attempt, largely due to the excellent feedback I received on my first attempt. I think feedback for early career researchers is very important."
- "The form was slightly lengthy and some format requirements were time consuming (e.g. format of published papers and author contributions)"

Do you have any comments on you institutional internal triage process, e.g. what worked well/not well?

- "The internal triage worked really well, I was selected one of two people in my round and I was awarded the funding."
- "The Institutional process worked very well and it was also very helpful in terms of improving the application after it was selected."
- "Not clear what the criteria was for selection at the Institutional level."
- "It was not clear to me what criteria the university was using."

What barriers/challenges have you experienced in developing your career as an independent researcher - e.g. institutional, funding, teaching?

- "Funding has been extremely difficult especially research council project grants and the lack of clear academic route within the institution can inhibit in applying for project grants. This results in fellowship routes with post PhD eligibility barriers which is being removed by most grant bodies recently."
- "Pressure to publish is always very high. There are times (experimental, data acquisition), when publication rates slow down. It is frustrating because the researcher knows they will come in good time, but the Institution doesn't necessarily understand."
- "Eligibility, low grant acceptance rates, recruiting high calibre lab members."
- "Juggling everything including a young family. I wish I had more time!"
- "Gaining funding substantial enough to do something meaningful while not taking on too large a grant early on. Teaching and teaching-related admin are the biggest challenges. Writing a grant as a post-doc you have the time but not the experience, but the opposite is true with an academic post."
- "Teaching is an obvious one. We are expected to be excellent at teaching and research, and putting together good lectures (I hope) takes a lot of time. However, once this done they can be delivered for a few years in a row. But putting them together coincides with the time when we need to be getting research going."

Please list your top three esteem factors since receiving springboard funding, such as prizes awards, talk invites etc.

- "Invited Speaker at Evergreen Phage Meeting, USA; Invited Speaker at Newcastle University, Invited Speaker at Northumbria University."
- "Election to the Royal Society of Edinburgh Young Academy of Scotland (YAS), University Public Engagement Award, Award from a Senior School for inspiring pupils with my mathematics research."
- "I gave the opening plenary at an internationally-leading conference the American Society for Microbiology's whole genome sequencing conference 2018. I have been invited to join the editorial board of a field-leading journal. I have been invited to talk at a Gordon Research Conference."

Appendix VI: About Freshney Consulting

Freshney Consulting was established in 2013. Led by Dr Norman Freshney, its goals are driven by a genuine desire to enable organisations to harness the potential of medical research for the benefit of public health and society. Freshney Consulting works with a range of medical research organisations – particularly funders – to strengthen their approach, achieving more impact for their beneficiaries. In particular, expert advice is provided to research funders on developing their research strategies and devising new funding mechanisms.

Freshney Consulting provides a range of services:
- Develop strategy within medical research fields, identifying research priorities in specific disease or subject areas
- Evaluate research impact, outcomes and outputs
- Identify and develop new funding initiatives or research partnerships
- Identify gaps, resolve challenges and test the feasibility of new initiatives
- Establish research management governance and advisory structures, tools and processes
- Translate / communicate research ambitions into strategies for engaging public support

With extensive experience of research management and policy development, Norman Freshney has worked in charity, government and academic sectors in the UK and USA. Dr Freshney was Director of Research Management for Breakthrough Breast Cancer (2006-13), at the time, the UK's largest charity dedicated to breast cancer research. In this role, he developed and led an innovative strategy that stimulated collaborative working in translational cancer research, allocating £50m over 5 years towards tangible improvements in diagnosis and treatment. Dr Freshney's experience is underpinned by academic research at prestigious research institutions in Cambridge, London and Boston.

Employing a highly collaborative approach, Norman enables clients to develop strategic goals and research priorities, pinpointing key challenges and new opportunities for focussed action. By gathering insight from a wide range of stakeholders - senior scientists, clinicians, policy makers, health professions, funders and patients – he designs strategies or funding programmes that address clearly defined challenges or goals.

Working with Aleron, Freshney Consulting has delivered a number of reviews and evaluations for the Academy:
- Scoping Exercise to develop a new Trans-disciplinary Fellowship Scheme to advance public health research
- Evaluation of the Starter Grants for Clinical Lecturers Scheme
- Review of the Spring Meeting for Clinician Scientists in Training
- Evaluation of the INSPIRE programme for Medical, Dental and Veterinary Students
- Landscape Review for Population and Public Health Research
- Scoping Exercise for developing a Starter Grants scheme in the Medical Humanities and Medically-Related Social Sciences
- Review of the Daniel Turnberg UK/Middle East Travel Fellowship Scheme

Other previous and existing clients include:
- The Health Foundation, The Institute of Cancer Research, Target Ovarian Cancer, Anthony Nolan, Brain Research Trust, the British Society for Immunology, Crohn's and Colitis UK, Breast Cancer Campaign and The Royal British Legion.

Appendix VII: About Aleron

Aleron is a strategy and social impact consulting firm dedicated to helping individuals, organisations, and governments to create positive change in society. We established Aleron in 2010 to redefine how organisations can continuously improve their contribution to our society and planet and deliver superior operational and financial performance.

Our team bring a unique blend of expertise in strategy, operations, design and communication that enable our clients to define and successfully deliver their social and environmental impact strategy. We deliver our impact through consulting engagements, conducting independent research, fostering collaboration, and developing innovative solutions.

Our Services

To create sustainable change, we provide services from strategy and transformation to impact measurement. Analytics and innovation are at the core of our work:

- *Strategy –* We work with our clients to shape organisational, impact and digital strategies by identifying key internal and external opportunities and levers to deliver them
- *Operational Excellence –* We partner with our clients in assessing and improving their operational, financial and impact performance
- *Design & Creative –* We help our clients design new products and services and tell their impact story by creating thought-provoking and entertaining content for the world to see and interact with
- *Engagement –* We support our clients to engage with the right audiences and leverage key influencers through eco-system mapping, campaigns and partnerships

Our Clients

We work with a range of clients, from individual philanthropists, trusts and foundations, corporations, government bodies, social investors, social enterprises and charities. Our expertise includes children's services, poverty alleviation, humanitarian aid, disability, human rights, education, employment, and health. We serve our clients internationally, drawing on a thorough understanding of many local, national, and international contexts.

Working Together

In today's environment, external support needs to be lean and targeted. We develop partnerships with our clients, integrating our people into their teams to bring the specific skills and expertise required. This enables us to fully align our work. Aleron adapts its approach to fit with our clients' way of working. This means bringing ideas and expertise without imposing inflexible 'consulting frameworks,' and developing bespoke support models to create cost effective ways of working together.

Our goal is not only work for organisations, but to form true partnerships where our knowledge and expertise could be leveraged to improve impact and efficiency.