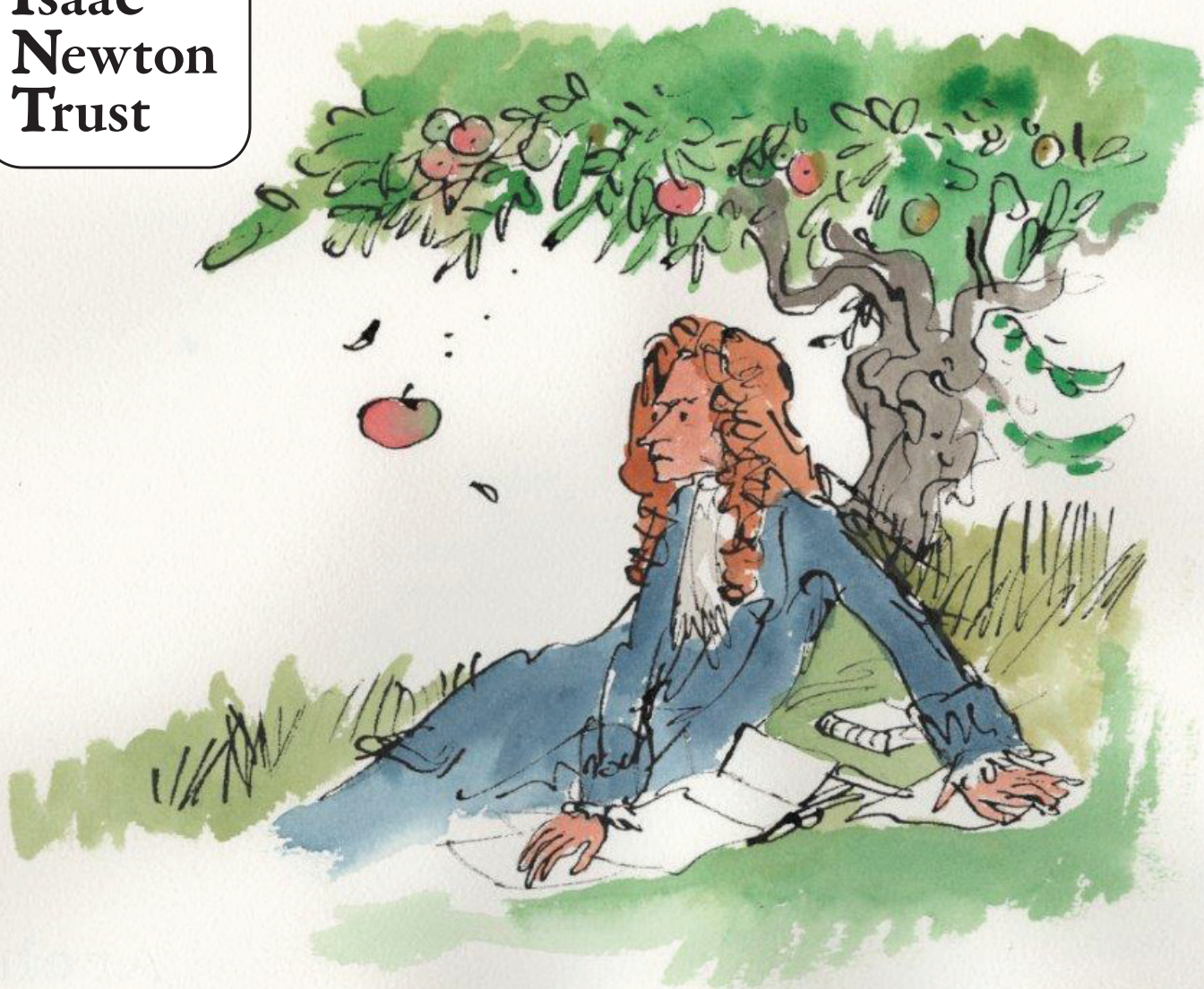


Isaac  
Newton  
Trust



# Annual Report

Volume XXVI

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1 July 2015 – 30 June 2016

## CONTENTS

Welcome	3
Patron, Trustees and Officers	4
1. Director's Report	5
2. Financial Summaries	9
3. Notes on Awards Made in the Year 2015-16	
A. Research Grants	14
B. College Teaching Partnerships	24
C. Student Awards	26

Cover Artwork: Isaac Newton's Prism, created by Sir Quentin Blake on the event of the University's 800th Anniversary as a way of marking the outstanding contribution to science and art that the University and its members have made over the years. Reproduced by kind permission of the University of Cambridge. Copyright Quentin Blake.

Report designed by [www.dangould.co.uk](http://www.dangould.co.uk), printed by Minuteman Press, Cambridge.



## Welcome to the Isaac Newton Trust's twenty-sixth Annual Report.

The Isaac Newton Trust was founded by Trinity College in 1988 to provide financial support for high- quality research and educational projects in the University of Cambridge. Since then, the Trust has funded many hundreds of researchers, and thousands of students, in a modest way and by doing so has created a distinctive and valued niche for itself in the University.

There can be no doubt that the Trust has been a supportive element in building the intellectual capital of the University over these years, but it has also helped to secure millions of pounds in grant income and donations from external bodies by providing matching funding in a supple, responsive and innovative fashion. The Trustees, who represent a wide spectrum of academic research across the University, are particularly pleased to note that many of their grants, while necessarily small in comparison to those from the major external funding bodies, often create opportunities for individuals and projects that might otherwise be missed, and the results may be far greater than the face value of our input.

The Isaac Newton Trust reviews its activities continually in the light of the changing background of research funding and educational needs, and this year has provided an opportunity for a more comprehensive review than usual. As we have proceeded to look at our activities in the context of the changes taking place in the University, Colleges and the wider world, we realise that we have only really just begun, and so we expect to bring news of further progress in our 2016-17 report.

This Annual Report is presented in a new format, which we hope will set out the range and scope of our activities for the benefit of our collaborators, friends, applicants and enquirers. We have made use of charts and figures to summarise our income, outgoings and new commitments, which we think will speak louder and more clearly than the detailed accounts themselves (these are published on our website to provide the full picture for those who would like to see it, as before).

You will also notice that we have adopted a simple logo, designed by Dan Gould, to encourage our beneficiaries to acknowledge the support of the Isaac Newton Trust, and to bring the Trust's activities into clearer focus.

If you have any queries or comments on this Report, or on the Trust in general, please do not hesitate to contact me.

Dr Laurie Friday  
**Director**

## **Patron**

H.R.H. The Prince of Wales

## **Trustees**

Professor Lord R J Mair (Chairman)

Professor J J Baumberg

Professor S Collini

Professor G I Evan

Professor S C Franklin

Professor D J McKitterick

Professor R M Smith

Professor Dame AM Strathern

Sir Gregory Winter

## **Officers**

Professor JP Parry (Director) to 31 July 2015

Dr LE Friday (Director) from 1 August 2015

Mr DP Hearn (Treasurer) from 1 November 2015

*The Isaac Newton Trust is an exempt charity under the Charities Act 2011  
and is regulated by HEFCE under the general oversight of the University of Cambridge.*

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Trinity College, Cambridge CB2 1TQ  
Tel (01223) 339933

**[www.newtontrust.cam.ac.uk](http://www.newtontrust.cam.ac.uk)**



# 1. DIRECTOR'S REPORT

2015-16 has been a year of transition and reflection for the Isaac Newton Trust.

The Trustees took the opportunity of a change in Director and Treasurer to conduct a comprehensive review of their funding activities. They were keen to evaluate the Trust's current funding activities, and to identify any new areas that should be explored further with a view to funding. They also agreed to find out where the Trust might reasonably draw in its sphere of influence and so create a more logical division of labour between the various funding bodies that exist within the wider University. I therefore had the pleasure of conducting a period of very enjoyable and fruitful fieldwork, meeting with many of our collaborators in Cambridge to gauge their attitudes towards the Trust and its existing range of activities. The Trustees then brought their considerable collective expertise and wisdom to bear on the results in a series of meetings that helped to crystallise the priorities that the Trust should pursue in the next few years.

## The Trust's Priorities

### Early Career Research Fellowships

The Trustees affirmed their commitment to helping to launch the independent careers of young researchers across the full range of subjects. In 2015-16 the Trust supported more than 50 early career fellows by providing matching funding on behalf of the University for Leverhulme Early Career Fellowships, ESRC Future Leaders and Newton/College Junior Research Fellowships, as well as a Royal Commission for the Exhibition 1851 Fellowship, a Humboldt Foundation Feodor Lynen Fellowship and two Swiss National Science Foundation Fellowships. The total cost of these grants amounted to approximately 20% of the Trust's research costs in 2015-16 and this level of commitment is likely to be sustained in future. The Trust also intends to take a more pro-active interest in the careers of these fellows and hopes to create greater awareness of their successes through the medium of our website.

### Research partnerships with the Schools

The Trustees were pleased to note the positive impact of their contribution to research funding for newly-appointed University Lecturers and independent Principal Investigators (PIs) through grants administered by the Schools of Biological Sciences/Clinical Medicine and Physical Science/Technology. They similarly consider their contribution to the Cambridge Humanities Research Grants (CHRG), which are managed by the Schools of Arts & Humanities and Humanities & Social Sciences and includes a small grant scheme, to be highly valuable, with beneficial impact far in excess of the size of the grant.

These programmes, which are reviewed periodically by the Schools and the Trust, are likely to continue while other sources of matching funding (whether from the Wellcome Trust, or central funding, or School resources) remain available.

### Isaac Newton Research Grants

Grants to departments and institutions for the support of research projects are often perceived to be the Trust's main business, and indeed these accounted for 26% of the Trust's costs in 2015-16. However, it has become evident that the number and size of individual grants has been falling gradually over the past few years and there has been a growing trend towards providing bridging or seed-corn funding. Trustees have reaffirmed that their priorities for these grants lie in supporting truly excellent and innovative research, providing enabling funding for projects that are otherwise difficult to fund, and giving impetus to PIs who are nearer the start of their career, as well as responding to emergency applications for short-term bridging and underwriting.

There has, however, been considerable discussion about the most effective mechanism for making these awards and it has been agreed to trial one or more alternative models in the coming year.

## Strategic Programme Grants

Over the past few years, the Trust has supported a number of major programmes through substantial, strategically important grants. The emphasis has been on support for research in the Arts, Humanities and Social Sciences, areas that tend to be less-well served by major research grants. Notable among the Trust's most successful projects has been assisting in setting up postdoctoral fellowships and other key elements for the Centre for Research in the Arts and Humanities, (CRASSH). Similarly, the Trust has provided matching funding that double the value of external funding for PhD studentships within the AHRC Doctoral Training Programme, and has given substantial teaching support to the two Schools concerned through funding 10 five-year lectureships.

The Trustees have agreed that they wish to expand their funding of major strategic projects across the full range of subjects, including those of an interdisciplinary nature, and expect to do this during the next few years. The Trust's expenditure now exceeds its annual income, so this will be achieved by mobilising a proportion of our investments, while maintaining sufficient funds to cover existing forward commitments.

## Partnerships with Colleges: the position of post-doctoral researchers

The Trust wishes to build on existing relationships with the Colleges, in particular those with fewer resources, and especially where this can benefit early career researchers. Trustees have been encouraged by a groundswell of support across the wider University for the idea of providing College links for some of the many post-doctoral researchers working in University departments, and have considered various ways in which they might facilitate such arrangements.

Two small but useful contributions to this project are the 'Time-Limited' Teaching Fellowship programme, which allows Colleges to apply for the costs of undergraduate supervisions to be carried out by named post-doctoral researchers who are then elected into a Fellowship, and the Newton/College Junior Research Fellowships, which provide a first independent research post linked to a College fellowship. Both of these programmes have scope for expansion, should the Colleges so wish.

The Trust also supports established College Teaching Officers (CTOs) through grants to Colleges that allow for teaching cover for a period of research leave of up to a year. This programme is due for review in 2016, but it is evident that the CTOs concerned, who might otherwise find it difficult to obtain substantial sabbatical entitlement, have been warmly appreciative of the opportunities afforded by these grants.

## Student support

The most momentous change in many years in the Trust's funding activities came when the Trust brought to an end its pivotal role in the funding and administration of the Cambridge Bursaries Scheme (CBS) and related programmes for EU students. As reported last year, up to the end of June 2015, the Trust had managed the University's contribution to these Bursaries, channelling University bursary funds of more than £5m annually through our accounts, as well as managing our own contribution from a restricted fund established by Trinity College for this purpose. The Trust's office processed hundreds of student applications annually; assessed their eligibility; corresponded with Colleges regarding their students' bursary entitlements; made payments to Colleges; received donations from outside bodies; and accounted for and reported on the use of the funds.

The Isaac Newton Trust had contributed to the CBS in these ways for many years and it had been agreed that a managed withdrawal over the course 2015-16 should take place, smoothing the transition towards handing





over the CBS to the University's central offices. First, the Trust agreed to provide a reduced financial contribution of 10% of the total (£764,908k) in 2015-16 as a final contribution from its restricted Bursary Fund. Secondly, the transfer of the administration took place in July and August 2015. Thirdly, funds remaining in the 'University' Bursary Fund held by the Trust (£211,512) were returned to the University in November 2015. Fourthly, all donors who had previously directed their support for Bursaries to the Trust (via CUDAR or Trinity) were redirected to the new administration. Finally, the Trustees agreed to direct the remainder of its restricted Bursaries Fund to a programme set up in collaboration with the Colleges and the Student Registry in 2013 to provide MPhil bursaries for UK students seeking to proceed to doctoral research.

These changes have had the inevitable effect on the Trust's accounts: the large proportion of the Trust's income in the form of grants and donations specifically for CBS, and a concomitant level of expenditure, are no longer featured.

Recent developments have created alternative avenues for the support of graduate students, through major commitments from the central University (including the Vice-Chancellor's Awards for UK PhD students), and further rationalisation of funding competitions through the administrative services of the Student Registry. It seems likely that, in future, once the Trust's existing commitments to research students have been honoured, the Trustees will decide to move away from student support entirely, leaving this area of activity in the safe hands of our colleagues in the Cambridge Trust and the University.

## Trustees and Officers

The Trinity College Council re-appointed as Trustees Professor Richard Smith and Professor Gerard Evan for a further three years from 01 June 2016.

Professor Jon Parry stood down as Director at the end of July 2015 to take up well-deserved research leave. I am immensely indebted to him for making sure that the Trust was in good shape, and for devoting many hours to helping me to understand the nature of the organisation. I took up the post of Director on 1 August.

The post of Treasurer remained vacant till November 2015, when the Trust was fortunate to recruit Mr Donald Hearn, previously Bursar of Clare College, to fill this vital role.

## The Office

The transfer of all CBS responsibilities created a considerable gap in the activities of the Trust's office, for which there has been no obvious replacement. Ms Marilena Gonella, who provided meticulous and dedicated support for the CBS, left the Trust in March 2016. Over the summer, I have been able to conduct a comprehensive review into the working practices of the Trust, and have recommended the appointment of a part-time Senior Administrator. This post was unfilled at the year end, but we are delighted that Dr Nichola Tooke has since been recruited, to take up her post in October 2016. Ms Janet Sparrow continues as the Trust's part-time Administrator with particular responsibility for Isaac Newton Research Grants.

On a personal note, I would like to say how much I have enjoyed the challenge of getting to know the Trust and its funding activities. It is evident, from my conversations with our friends and partners in the University, just how much the timely and inventive support of the Trust is valued. This is true across the board, from the Chairs and senior officers of the Schools, the Heads of Houses and their Senior Tutors, to individual PIs and research fellows who have benefited from the Trust's willingness to act as the institutional matching funder. I hope that some of



the quotations we have added to this year's Annual Report will give some idea of the effect the Trust's support is having in the wider research community in Cambridge.

I would also like to thank all those who have given me their time and attention throughout the year. I am grateful to the Trustees, who have unstintingly offered me encouragement and advice, and whose patience I have sorely tried as I tracked them down for signatures on bank mandates. In particular, I would like to thank our Chairman and Treasurer, who have helped me in so many ways, above and beyond the call of duty. The Trust's many projects could not have been achieved without the continuing generosity of Trinity College, which not only provides the greater part of the Trust's unrestricted income, but also accommodates the Trust's office and provides a congenial environment in which to conduct our business. I am grateful to the Master, the Fellows and staff of Trinity College for the warmth of their welcome and assistance in many matters. Lastly, I thank my administrative colleagues, both in the office and in the University's central offices, for their invaluable collaboration through the year.



Isaac Newton Trust officers and staff 2015-16 outside the Trust's offices in Angel Court, Trinity College. Left to right: Ms Janet Sparrow (Research Grants Administrator); Mr Donald Hearn (Treasurer); Prof Lord Robert Mair (Chairman); Dr Laurie Friday (Director).

*Photo: Dr Nichola Tooke.*





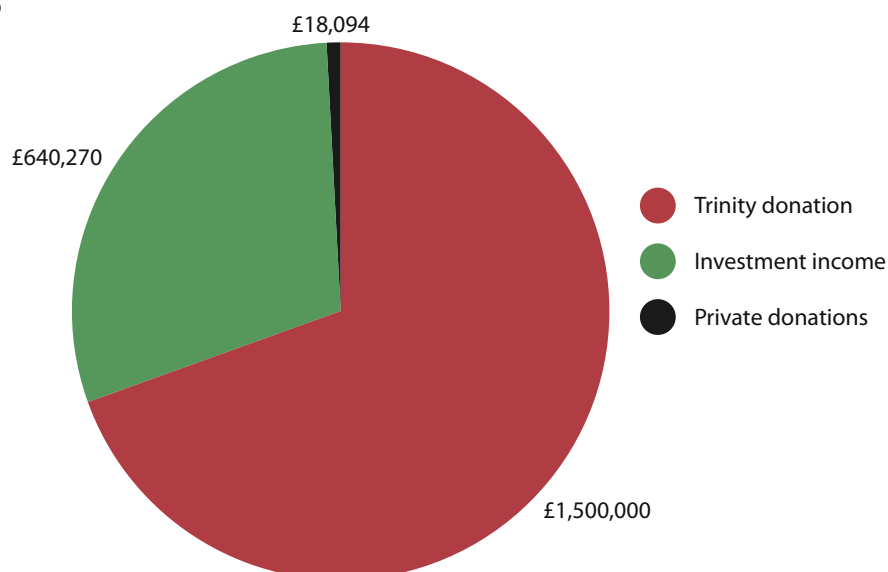
## 2. FINANCIAL SUMMARIES

### Income & Expenditure 2015–2016

The audited accounts for the year ended 30 June 2016 are presented in detail on our website:  
<http://www.newtontrust.cam.ac.uk/areport/Accounts>

#### Income

**Fig. 1: Income 2015-16**



**Total income** in 2015-16 was just over £2.2m.

The donation to the Trust from Trinity College was £1,500,000 in 2015-16, as last year, and the College Council has agreed that this level of support will continue in 2016-17.

Our investments provided a further £640k, divided between our General Fund (£582k) and the Trust's restricted Bursaries Fund (£58k).

Donations to the Trust, channelled mostly through Trinity College, amounted to approximately £18k. This is in sharp contrast with the donations income in 2014-15, which amounted to approximately £4.5m, the great majority of which was directed towards the Cambridge Bursary Scheme administered by the Trust on behalf of the University up to 30 June 2015.

#### Expenditure

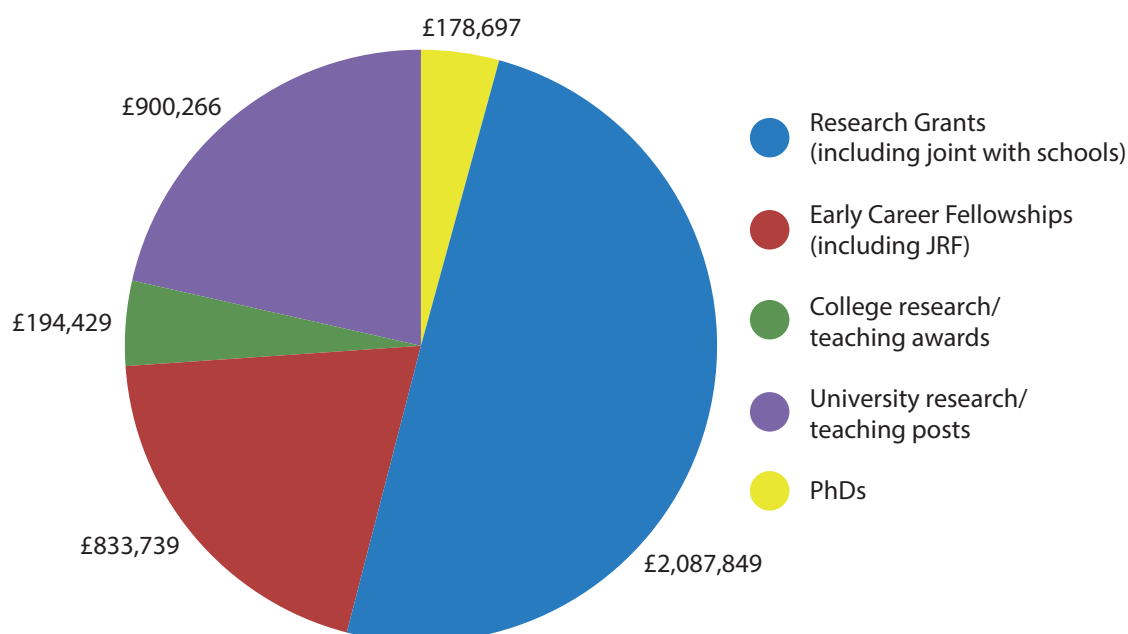
**Total Expenditure** (payments) amounted to £5.6m.

Of this, approximately 75% was in the form of research grants of various types and just over 21% in student bursaries; less than 4% was spent on administration.

## Payments – unrestricted funds

The Trust provided a total of £4.2m for research and teaching activities in 2015-16:

**Fig. 2: Research Payments 2015-16 General Fund**



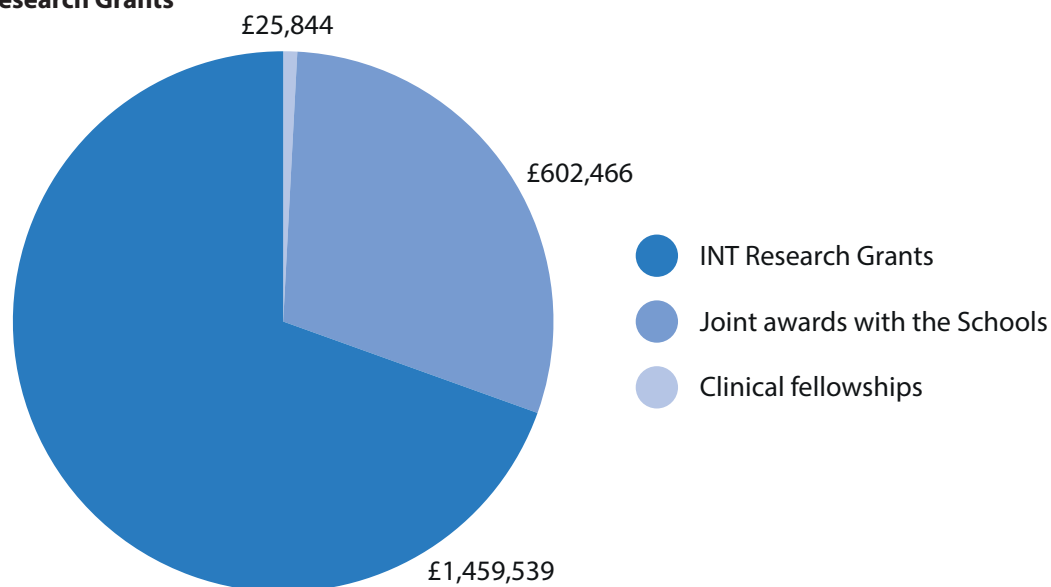
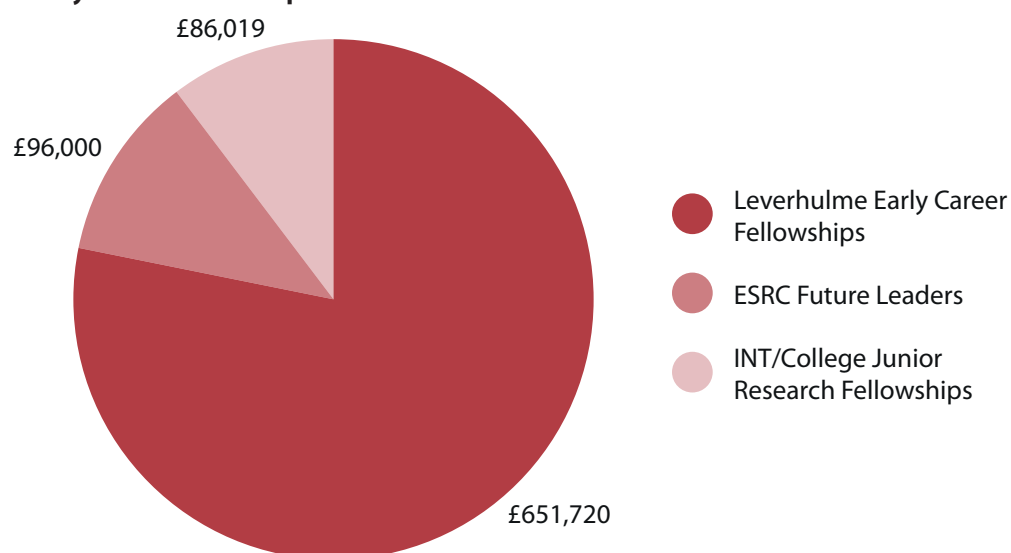
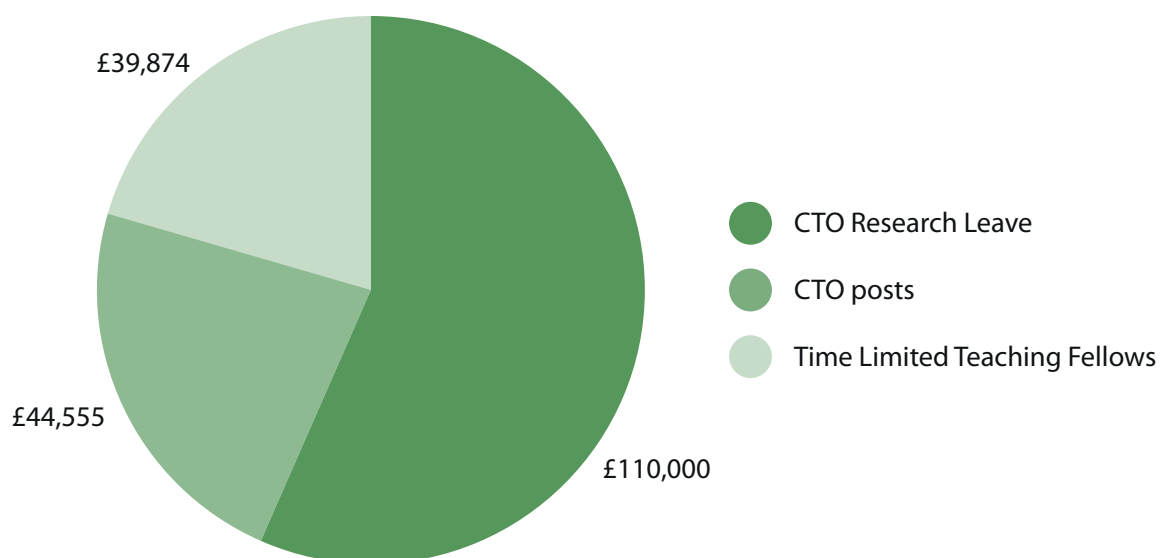
The Trust's own Research Grants together with three research grant programmes co-funded by the Schools of the University, account for approximately 50% of the research costs, and matched funding for Early Career Fellowships for a further 20%.

A further breakdown of the Trust's spending within the three main categories of funding is provided in the following three charts.

Of the **research grant** payments (Fig. 2: blue segment), almost 70% were accounted for by Isaac Newton Research Grants (Fig. 3).

More than 75% of the Trust's spending in 2015-16 on **early career fellowships** (Fig. 2: red segment) were in the form of matching funding for Leverhulme Early Career Fellowship (Fig. 4).

More than half of the Trust's payments for **College teaching posts** (Fig. 2: green segment) in 2015-16 were in support of research leave for established College Teaching Officers (CTOs) (Fig. 5):

**Fig. 3: Payments 2015-16 Research Grants****Fig. 4: Payments 2015-16 Early Career Fellowships****Fig. 5: Payments 2015-16 College teaching posts (excluding JRFs)**



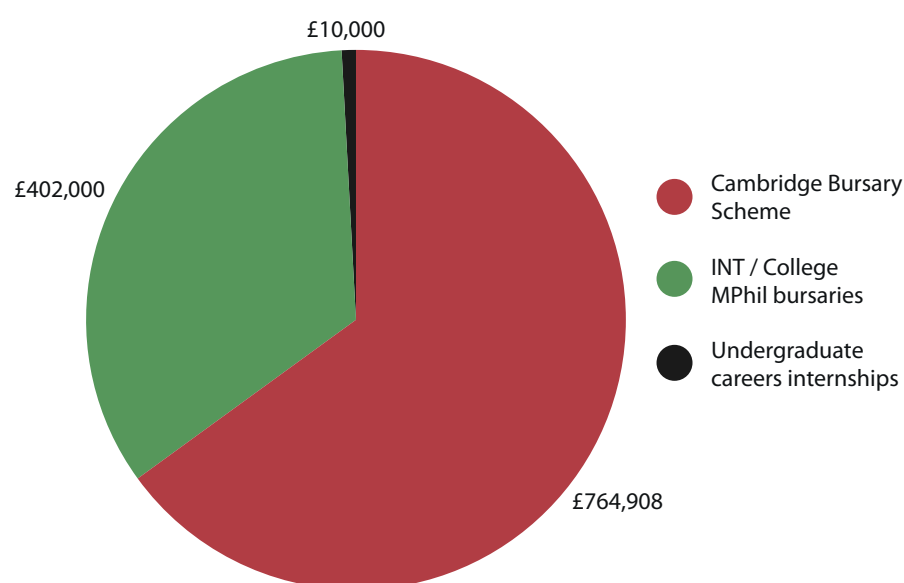
## Payments – restricted funds: Student Bursaries and Studentships

The Trust has been a major financial contributor from the inception of the Student Bursaries scheme, while the Colleges and University established and developed funds for supporting students of limited means.

The Trust's financial contribution to the Cambridge Bursaries scheme was reduced in 2015-16 from 12% to 10% and will cease after this financial year.

The net cost to the Trust in 2015-16 of undergraduate bursaries (CBS) was £0.76m (£0.74m in 2014-15, £0.8m in 2013-14).

**Fig. 6: Payments 2015-16 Bursaries Restricted Funds**



The Trust's own dedicated Bursaries endowment fund is now being run down; any funds remaining when the Trust ceases to be liable for undergraduate bursary costs in 2016 will be used to support one-year masters bursaries:

**Isaac Newton Trust / College MPhil bursaries** accounted for approximately 35% of the Trust's spending from restricted funds in 2015-16 and will be the principal beneficiary in future. We expect the cost of this programme in 2016-17 to be no less than in 2015-16, and at this rate of expenditure, the fund will be exhausted in 2 to 3 years.

The **Careers Internship** programme continued in 2015-16 at a cost of £10,000.



## Payments - Administrative Costs

	2015-2016	2014-15	2013-14
Staff salaries, pensions, NI	£148,550	£122,591	£153,694
Rent, services and miscellaneous office costs	£30,041	£19,302	£17,728
Governance (audit, accounting)*	£11,880	£6,000	£2,304
<b>Total support costs</b>	<b>£190,471</b>	<b>£147,921</b>	<b>£173,726</b>

\*Since July 2015, accounting has been outsourced to Peters, Elworthy & Moore.

## Expenditure - new commitments 2015-16

£ 2.5m of new research grants were approved during 2015-16 in all categories and £0.7m of new bursaries (CBS final contribution and MPhil Bursaries)

## Forward commitments

At the end of the year, the Trust had total forward commitments of £8.1m, allowing for any write-backs notified by the end of August 2016. These commitments have been explicitly stated in the accounts since 2014.

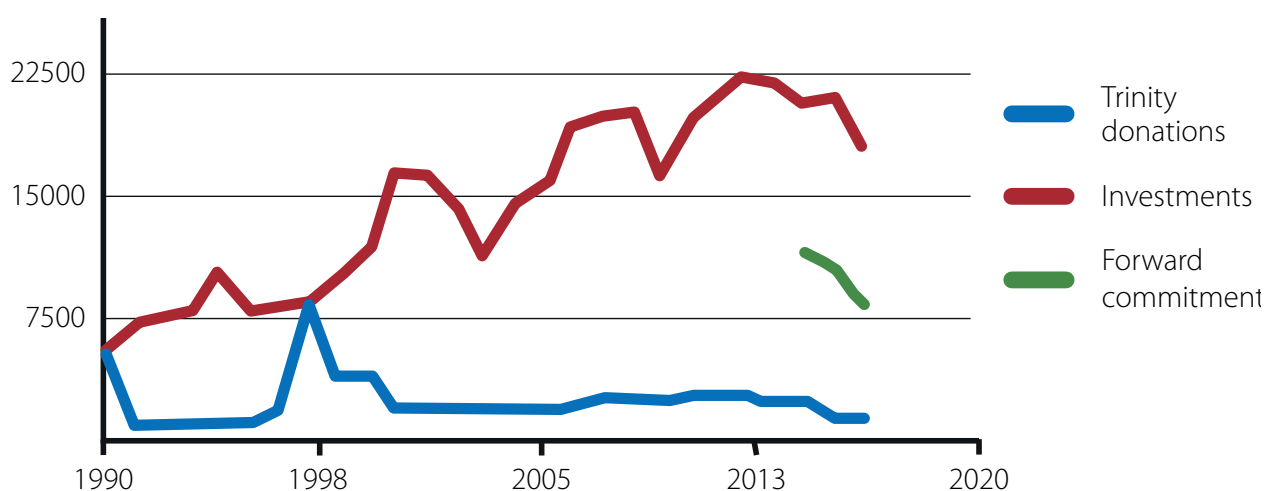
## Assets

The financial statements show an excess of expenditure over income of £1.1m. This is compounded by an unrealised loss of £0.2m on the valuation of the investment assets, resulting in an decrease of £1.3m in uncommitted funds carried forward, which amounted to £10.3m (compared to £11.6m in 2014-15) at the date of the balance sheet.

Barings manage £7.6m (£11.1m in 2014-15) of the assets, invested in its Targeted Return Fund. The Cambridge University Endowment Fund manages £10.2m (£10.0m in 2014-15).

The Trustees will decide in due course whether these proportions continue to be appropriate to their needs and are reviewing the total amount held in reserves.

**Fig. 7: INT investments, forward commitments & Trinity donation**



Additional donations were received in the period 1997-99 for specific major projects



### 3. NOTES ON AWARDS MADE IN THE YEAR 2015-16

#### A. RESEARCH GRANTS

##### ISAAC NEWTON RESEARCH GRANTS (INT RGS)

INT Research Grants are awarded to Departments and equivalent institutions across the full range of subjects for the support of a specific project under the leadership of a named Principal Investigator (PI). Particular attention is given to the qualities of the research project, on which we seek advice from external and internal referees, and to the likely benefits of a grant to the Department, the PI, and/or his or her research staff. Decisions are made by the Trustees in round-table discussions at meetings held three times a year.

The Trustees have confirmed their intention to target their awards to:

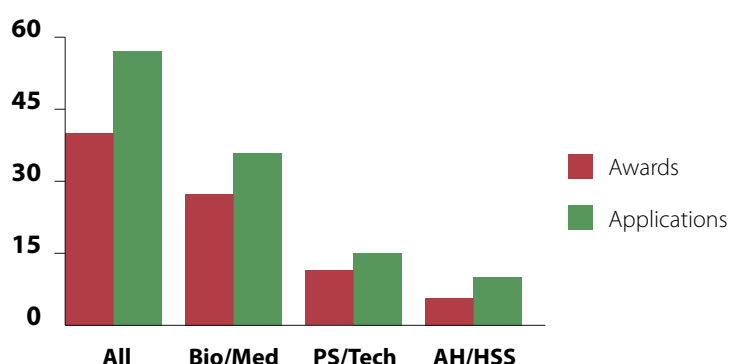
- Support research excellence and build up research capital in Cambridge;
- Enable projects that otherwise might not get started or be delayed, particularly where a grant from the Trust can open up opportunities for additional funds from outside Cambridge and seize opportunities that otherwise might permanently be lost;
- Underwrite or provide short-term bridging for successful projects while the outcome of an application to a major external granting body is awaited.

Most grants are given for the support of Research Associates, often near the start of their post-doctoral career, but occasionally grants are made for urgently-needed new equipment of strategic importance to the University.

The total amount committed to new INT Research Grants in 2015-16 was slightly lower than last year (£1,082,585 compared to £1,185,207 in 2014-15, including forward commitments where relevant).

The number of applications received across all Schools (55) was somewhat lower than last year (69 in 2014-15) but in line with previous years (55 in 2013-14). Trustees felt that the quality of applications was higher on the whole, and the success rate was high (72% compared to 58% in 2014-15, 66% in 2013-14 and 72% in 2012-13). Forty new awards were made, the same number as last year.

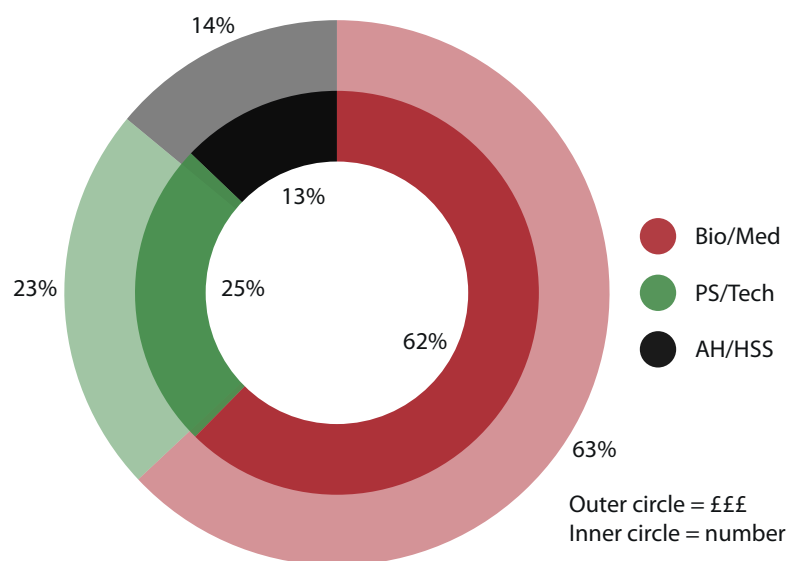
**Fig. 8: INT Research Grants 2015-16: Applications & awards by Schools**



Although, as in previous years, applications and grants were numerically dominated by biological and clinical projects, the size of individual awards did not vary significantly across subjects, so the proportion of funding awarded to applicants in each of the School pairs is a close match for the proportions of awards made (Fig. 9).

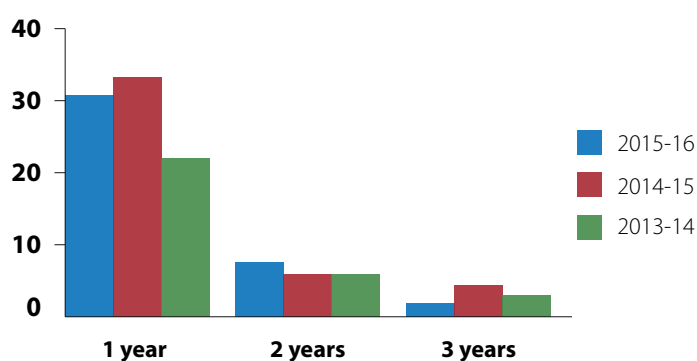


**Fig. 9: New INT Research Grants Approved 2015-16: value and number of awards, by Schools**  
Total Value = £1,082,585; total number = 40



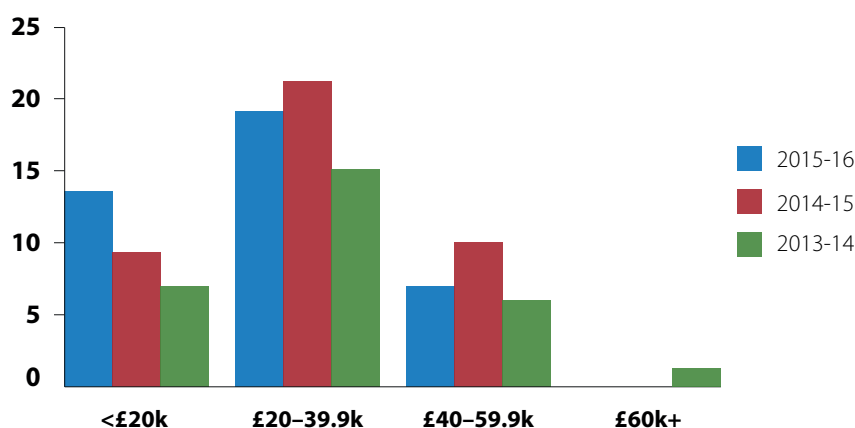
In 2015-16, a trend towards funding shorter grants continued (Fig. 10). It has become unusual for the Trust to approve applications for funding of three or more years' duration, and in several cases, the Trustees have not funded projects for the full duration sought.

**Fig. 10: INT Research Grants: duration of award**



As last year, there has been a trend towards a decline in the average value of awards (Fig. 11). Although applications for grants of more than £60,000 are still received, none of this magnitude has been approved in the last two years, although a number of these larger applications have been funded in part.

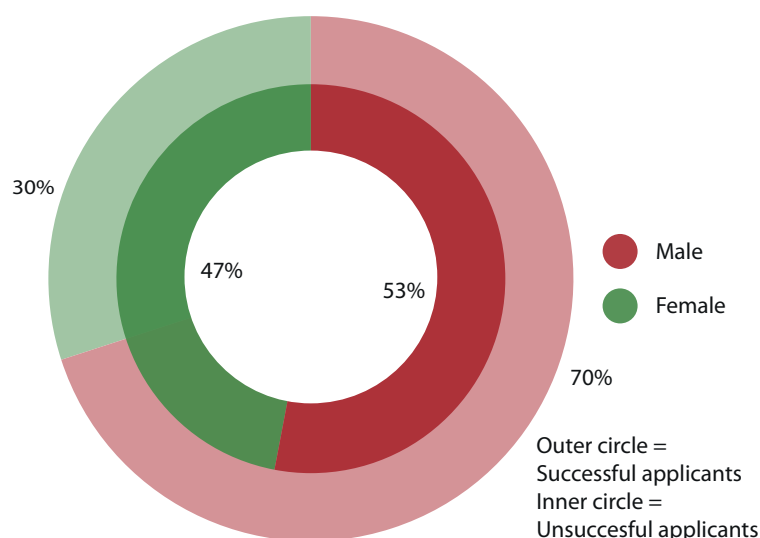
**Fig. 11: INT Research Grants: value of awards**



Most, but not all, of the money awarded is spent. Apart from small refunds of unused cash at the end of the grant, some awards are not taken up, if, for example, matching funding does not materialise or if applicants provided with bridging funds are successful in finding alternative support.

Male PIs comprise the majority of applicants for Research Grants and their success rate is slightly higher than for female applicants (Fig. 12). In 2015-16, male PIs accounted for 65% of the applicants and 70% of awards, compared to 61% of applicants and 63% of awards in 2014-15:

**Fig. 12: INT Research Grants 2015-16: applicants by gender**



### What recent INT Research Grant holders have said:

'Following completion of this grant, [the RA] secured a 2015 Leverhulme Trust Early Career Fellowship for a period of 3 years. This would not have been possible without the generous support of the INT, for which we are gratefully indebted.'

'Being able to do all these initial experiments with the help of the Isaac Newton Trust has had an extremely positive outcome for us. Two biotech organisations have approached us with a view to taking this ...work to the clinic and we have recently signed Heads of Agreement for the formation of a new company to be set up by Syncona, the investment arm of the Wellcome Trust, in conjunction with Cambridge Enterprise.'

'We fully achieved our aims of obtaining long-lasting post-doctoral support for [the RA] and to provide her with the opportunity to establish EBSD studies on the department's new SEM. The work she undertook with the support of the Newton Trust funding has resulted in two publishable studies with potential for significant impact on our understanding...'

'In addition to the usual reasons for being thankful to a funding body, on this particular occasion, given the late submission and the accommodations that the Trustees accepted in order to allow this exceptional young researcher to launch his academic career, it is not an understatement to say that I am truly grateful!'

## Isaac Newton Trust Research Grants awarded in 2015-16

### Schools of Biological Sciences and Clinical Medicine

- Biochemistry (Professor Ben Luisi)  
Molecular steps in small RNA mediated gene regulation  
A six-month grant to bridge the salary costs of Dr Katarzyna Bandyra, Research Associate.
- Biochemistry (Dr Simone Weyand)  
The cellular activity of olfactory receptors  
A one-year grant in part-support of Dr Marie Provost, Research Associate.
- Cambridge Institute for Medical Research (Professor Geoffrey Woods)  
Studying Mendelian disorders of pain.  
A six-month grant to bridge the salary costs of Dr Michael Nahorski, Research Associate.
- Clinical Neurosciences (Wolfson Brain Imaging Centre) (Dr Guy Williams, representing the larger Cambridge Neuroscience group)  
Exploiting 7T magnetic resonance imaging for clinical and cognitive research.  
A one-year grant towards the salary costs of a postdoctoral research facilitator/ technician, to support the early phase of the new 7T MRI scanner.
- Gurdon Institute (Dr Eugenia Piddini)  
Investigating the molecular mechanisms of mechanical cell competition in epithelial cells.  
A one-year grant towards the salary costs of Dr Laura Wagstaff, Research Associate.
- Haematology (Dr Ana Cvejic)  
Functional characterisation of novel cancer genes.  
An equipment grant for the purchase of a fish incubator, centrifuge, spectrophotometer and needle puller
- Medicine (Dr John James)  
Pre-TCR signalling dynamics and its role in cellular lineage determination.  
A one-year grant, from the Opportunities Fund, in part-support of Dr Lewis Bell, Research Associate, for an extension of work performed under Dr James's Henry Dale Fellowship;
- Pathology (Dr Matthew Murray):  
Assessing the clinical utility of blood-based microRNAs for the management of malignant germ cell tumours.  
A two-year grant towards the salary costs of a research associate.
- Pathology (Professor Christine Watson)  
The inflammatory microenvironment of the involuting breast and its role in tumourigenesis.  
A six-month bridging grant in part support of Dr Jessica Hitchcock, Research Associate.
- Pharmacology (Dr Ewan Smith)  
Molecular mechanisms of neuronal tolerance to hypoxia in a naturally resistant mammal: the naked mole-rat.  
A two-year grant towards the costs of consumables for a research associate on a European Molecular Biology Organisation Long Term Fellowship.
- Physiology, Development and Neuroscience (Professor William Colledge)  
Investigating neuronal connectivity between feeding and reproductive circuits in the mouse hypothalamus.  
A six-month bridging grant in part-support of Drs Shel-Hwa Yeo and Victoria Kyle, Research Associates.
- Physiology, Development and Neuroscience (Dr Benedicte Sanson)  
Inferring physical forces in embryological tissues.  
A one-year bridging grant in part-support of Dr Guy Blanchard, Research Associate.



- Psychology (Dr Jeffrey Dalley)  
Serotonergic mechanisms underlying cognitive flexibility and vulnerability to stimulant addiction.  
An 8-month bridging grant towards the salary costs of Dr Bianca Jupp, Research Associate.
- Psychology (Dr Jon Simons)  
Expanding the Cambridge Cognitive Neurosciences Research Panel.  
A one-year grant in part support of Dr Sharon Erzinçlioğlu, Research Associate.
- Psychology (Professor Lorraine Tyler)  
Language dynamics: a neurocognitive approach to incremental interpretation.  
A one-year grant towards the salary costs of Ms Ece Kocagöncü, Research Associate.
- Psychology (Centre for Family Research) (Professor Claire Hughes)  
Brothers and sisters: why siblings matter.  
A 9-month grant towards the salary costs of Dr Naomi White, Research Associate, plus participant payment and transcription costs.
- Cambridge Stem Cell Institute (Dr Brian Hendrich)  
Transcriptional control of lineage decisions in embryonic stem cells.  
A two-year grant towards a research associate salary and array costs.
- Cambridge Stem Cell Institute (Professor Austin Smith)  
Realising the potential of embryonic stem cells for precision transgenesis in the rat.  
A 9-month grant to bridge the salary costs of Dr Yaoyao Chen, Research Associate
- Veterinary Medicine (Dr Simon Frost)  
Molecular epidemiology and surveillance of viral pathogens in Ghana.  
A 3-month grant for consumables costs and the stipend of Dr Samuel Kwofie, CAPREx Research Fellow (Cambridge in Africa).
- Zoology (Professor Michael Akam)  
The molecular and anatomical basis of photoreception and circadian clocks in flatworms.  
A one-year grant, partially in the form of underwriting, towards the part-time salary costs of Dr Kate Rawlinson, Research Associate.
- Zoology (Professor Andrew Balmford)  
England's green and pleasant land: comparing land sparing and sharing in the UK.  
A grant over fourteen months for a research salary.
- Zoology (Professor Christopher Jiggins)  
Genomic patterns of wing pattern introgression in *Heliconius*.  
Partial underwriting over one year, in support of Dr Markus Möst, Research Associate, to match his Swiss National Science Foundation fellowship.
- Zoology (Dr Edgar Turner)  
The Riparian Ecosystem Restoration in Tropical Agriculture (RERTA) project.  
A two-year grant in part-support of Ms Sarah Luke, a Research Associate.
- Zoology (Professor William Sutherland)  
Determining the global distribution and drivers of species population declines.  
A one-year bridging grant in part-support of Dr Tatsuya Amano, Research Associate.

## Schools of Physical Sciences and Technology

- Earth Sciences (Dr Marie Edmonds)  
Integrating space-borne observations of volcanic eruptions.  
A nine-month grant in support of Dr Brendan McCormick, Research Associate.





- Earth Sciences (Professor Simon Redfern):  
Impact of the liquid-liquid phase transition of water on the thermodynamic properties of subduction zone fluid.  
A nine-month bridging grant in part-support of Dr Sebastian Facq, Research Associate.
- Engineering (Dr Ramji Venkataramanan)  
Sparse Hadamard codes for reliable, spectrally-efficient communication.  
A 10-month grant in support of a research associate.
- Geography (Professor Clive Oppenheimer)  
Magmatic processes at an off-axis volcano in Afar: Nabro, Eritrea.  
A 4-month bridging grant in part-support of Dr Amy Donovan, Research Associate.
- Materials Science and Metallurgy (Professor Bartłomiej Glowacki)  
Increasing the thermal stability of superconducting composite permanent magnets.  
A three-month grant, to help bridge the salary costs of Dr Anup Patel, Research Associate,
- Materials Science and Metallurgy (Dr Sohini Kar-Narayan)  
Flexible polymer-based thermoelectric generators for energy harvesting applications.  
A one-year grant towards the salary costs of Mr Abhijeet Sangle, Research Associate.
- Physics (Professor Crispin Barnes)  
The commissioning of a thin film topological insulator molecular beam epitaxy chamber.  
An equipment grant for a custom-made sample manipulator (c. 20% of the full cost)
- Physics (Professor Valerie Gibson)  
The Old Cavendish Laboratory.  
A six-month grant towards the salary costs of Dr Harry Cliff, Project Manager.
- Physics (Professor Andrew Parker)  
Damage tolerant mechanisms of natural biomaterials for novel engineered composites.  
A three-year grant in part-support of Dr Katherine Brown, Research Associate.
- Physics (Dr Suchitra Sebastian)  
Optimising high temperature superconductivity.  
A one-year grant towards the salary costs of a research associate.

## Schools of Art, Humanities and Social Sciences

- Fitzwilliam Museum (Mr Rupert Featherstone)  
Developing the East Anglian rood screen project.  
Seed funding for the Hamilton Kerr Institute towards the salary costs of Dr Lucy Wrapson, Research Associate.
- German and Dutch (Professor Christopher Young)  
Processing textual matter: the Kaiserchronik and its importance for literary history.  
A one-year grant towards the salary costs of Dr Helen Hunter, Research Associate.
- Land Economy (Professor Andreas Kontoleon):  
Combining behavioural economics and social network analysis to promote diffusion of information and uptake of policy interventions in developing countries.  
An 18-month grant in support of Ms Goylette Chami, Research Associate
- Modern and Medieval Languages (Department of Italian) (Dr Helena Sanson)  
Conduct books for and about women in Italy, 1470-1900: an analytical and annotated bibliography.  
An 18-month grant towards the salary costs of a research associate.

## JOINT RESEARCH GRANTS WITH THE SCHOOLS

Grants made by the Trust through the Schools add substantial value to research funding secured from other sources. These grants form a major part of the Trust's research funding activities and accounted for approximately 30% of the total spend on research grants in 2015-16.

### Cambridge Humanities Research Grants (CHRG)

The administration of the CHRG grants is undertaken by the Schools of the Arts & the Humanities and Humanities & Social Sciences, who issue a joint call for applications for awards in three tiers:

1. Small Research Grants (up to £1,000)
2. CHRGS awards of £1,000 – £20,000 for projects, especially pilots for applications to larger external research funding;
3. Matching funding of up to £10,000 to support mutual exchange with institutions affiliated to Paris Sciences et Lettres.

The Trust contributes £100,000 per year to these awards, with a view to no less than £30,000 and no more than £40,000 being allocated for small research grants in each year.

Annual reports on the competition are received from the Schools, together with a detailed financial breakdown and individual reports from award holders.

The Trust is currently committed to continuing to contribute to these awards till 2019.

### Results of the 2015-16 CHRG application rounds

In 2015-16, the Schools approved 16 Small Research Grants (total value £22,121) and 49 CHRG grants (total value £579,781); there were no awards in Tier 3.

### INT/Wellcome Trust ISSF/University of Cambridge Research Support for Biomedical Schools (BIOMED)

These research grants are administered by the School of Biological Sciences and the Clinical School. They are aimed at recently appointed lecturers in the two Schools, or persons appointed to the equivalent posts (as approved by their Head of the School), within 3 years of the project start date. The objective is to provide small research grants to develop projects leading to full applications for external funding. Research grants of up to £80,000 for up to 2 years are available to fund postdoctoral support, equipment and ancillary consumables.

The programme is funded from 3 sources, each of which contributes £250,000 of the total value of the budget: the Isaac Newton Trust, the Wellcome Trust's Institutional Strategic Support Fund (ISSF); and the host departments of the successful applications. The involvement of the Isaac Newton Trust enables lecturers in biological subjects whose research lies outside the Wellcome Trust's remit to access setting-up funding. Selection is done by a panel of senior academics from the two Schools; the Wellcome Trust requires final reports on the supported projects and provides external scrutiny of the effectiveness of the programme by auditing the use of the ISSF fund for this purpose.



The Trust's current commitment ends in 2016, but will be reviewed when the outcome of the application to Wellcome Trust for continuing support is known.

### **Results of the 2015-16 BIOMED application round**

- 7 grants were approved by the Schools' Panel for funding (7 in 2014-15; 13 in 2013-14; 9 in 2012-13);
- Total value of new awards in 2015-16 was £449,520, of which £183,268 came from the Trust's contribution; (compared to total spends of £550,719 in 2014-15; £939,055 in 2013-14; £680,837 in 2012-13).

## **INT/University of Cambridge Early Career Support for the Schools of Physical Sciences and Technology (INT ECSPST)**

The INT ECSPST, a joint research grant programme set up in 2013 by the Isaac Newton Trust and the School of the Physical Sciences and Technology, provides modest research grants to allow new lecturers to develop projects leading to full applications for external funding. The scheme was approved for 3 years in the first instance and is due for review and possible renewal in 2016.

The Isaac Newton Trust provides 50% of the total budget; its contribution of £150,000 per annum, together with matching funds from the Schools involved, brings the annual fund to £300,000.

The competition is open to University Lecturers in all departments of the School of Physical Sciences and Technology, or persons appointed to the equivalent posts (as approved by their Head of the School), within 3 years of the project start date. Research grants of up to £50,000 are available, for PDRA support, equipment and ancillary consumables.

### **Results of the 2015-16 INT ECSPST application round**

- 7 grants were approved by the Schools' panel (6 in 2014-15; 6 in 2013-14);
- Total value of new awards in 2015-16 was £235,697, of which £117,848 came from the Trust's contribution (compared to total spends of £262,699 in 2014-15; £289,042 in 2013-14)

## **EARLY CAREER FELLOWSHIPS**

### **Leverhulme Early Career Fellowships**

The Leverhulme Early Career Fellowship (ECF) programme has proved remarkably successful in attracting and retaining talented new postdoctoral workers in the University. Awards are made across the full range of subjects, other than clinical studies, according to eligibility criteria set down by the Leverhulme Trust.

The Leverhulme Trust provides only 50% of the salary costs of its Fellows, up to a maximum of £24,000 pa. The institution in which the Fellow is based must find the other half of the salary, and the Trust has been doing this, on behalf of the University, for some years. As in the past, departments have been asked to rank their strongest applicants for consideration for matching funding by the Isaac Newton Trust in the event that the applicants are successful in the national competition.

### Results of the 2016 Leverhulme Early Career Fellowship competition:

- 79 applications were submitted to the Trust (compared to 68 in 2015);
- 63 of these were approved in principle for matching support by the Trust (54);
- 15 of these were successful in the Leverhulme's competition (17);
- 2 successful candidates declined the Trust's offer to take up a Fellowship elsewhere;
- 2 candidates were Leverhulme reserves and both obtained an award;
- The total new commitments made in 2015-16 are £1,080,000, over 3 years.

The new Leverhulme Early Career Fellows taking up their posts in 2016/17 will be:

Schools	Department/Faculty	LECF offers
Arts, Humanities & Social Sciences	Archaeology	Dr Darryl Wilkinson
	CRASSH	Dr Alison Knight
	English	Dr Claudia Tobin
	MML	Dr Emily McLaughlin
	<i>Philosophy</i>	<i>Dr Matthew Parrott*</i>
	Philosophy	Dr Remco Heesen
	POLIS	Dr Banu Turnaoglu
	POLIS	Dr Anjali Bhardwaj-Datta
Physical Sciences & Technology	DAMTP	Dr Matthew Benning
	Computer Science	Dr Noa Zilberman
	<i>Engineering</i>	<i>Dr Giorgia Giardina*</i>
	Geography	Dr Sam Halvorsen
	Physics	Dr Guillaume Schweicher
Biological Sciences & Clinical Medicine	Biochemistry	Dr Konstantin Barylyuk
	Plant Sciences	Dr Jeongmin Choi

\*Withdrew after the offer, to take up awards elsewhere.

### ESRC Future Leaders scheme

The Economic and Social Research Council's Future Leaders programme has evolved markedly over the past two years, most notably in the reduction of the tenure of awards from three years to two, and in variation of the extent of the matching funding required from the host institution.

Two new ESRC Future Leaders award holders will start in 2016:

Department	ESRC FL Fellow
POLIS	Dr Sophie Roborgh
Sociology	Dr Kate Williams

Following the most recent changes applied to these fellowships, the ESRC's contribution to these awards will be 80% of the salary costs. The total institutional commitment to be provided by the Isaac Newton Trust will therefore be £32,420 over three years.

ESRC has recently announced that this programme will be replaced in 2016-17 by New Investigator Grants; any requirement for institutional funding will be considered by the Trustees in due course.



## INT/College Junior Research Fellowships

Isaac Newton Trust/College Junior Research Fellowships were established in 2010 as a partnership with the less well-endowed colleges (the list is available at <http://www.newtontrust.cam.ac.uk/educsupport/jrf/eligiblecoll>) to enable them to appoint Junior Research Fellows in the Humanities.

Colleges submit applications to the Trust with a view to obtaining 50% funding for a JRF stipend, up to a maximum of £15,000 per year, for three years. Where a College has a particularly young or limited alumni profile, the Trust will consider making a grant of up to £20,000 per year. Each College has only one active INT/College JRF at any one time.

The Trustees have agreed to continue to offer jointly-funded JRFs for as long as resources permit and the awards fulfil a useful purpose. The Director has begun consultation with eligible Colleges and it is apparent that the contributions of the Trust not only provide an opportunity for Colleges to mobilise some of their smaller trust funds on an occasional basis but also add valuable impetus to their fund-raising for future fellowships. The programme will continue to be reviewed regularly.

### In 2015-16:

- Three new applications were approved by the Trustees for advertisement in 2016-17, to take up the award in October 2017, to Darwin (in commemoration of Professor David MacKay FRS, without restriction on the topic of research), Fitzwilliam and Robinson Colleges;
- One of the 2012 JRF cohort secured a University Lectureship in Cambridge;
- A new JRF, for whom a grant were approved in 2014-15 has now been appointed by the College concerned; another will be recruited in 2016-17.

The new commitments amount to £150,000 over three years.

Current Newton Trust/College JRFs, are as follows:

College	JRF	Start Date	Faculty
Churchill	Dr Conor O'Brien	01-Oct-15	History
Clare Hall	Dr Daniel Jolowicz	01-Oct-15	Classics
Downing	Dr Edward Cavanagh	01-Oct-16	History
Fitzwilliam	Mr Stuart Middleton <sup>1</sup>	01-Oct-14	History
Newnham	Ms Melanie Lamotte	01-Oct-15	History
Pembroke	tbc <sup>2</sup>	01-Oct-17	tbc
Pembroke	Dr Chloe Nahum-Claudel <sup>3</sup>	01-Oct-12	Social Anthropology
St Catharine's	Dr David Waddilove	01-Oct-14	Law
St Edmund's	Dr Charis Charalampous	01-Oct-15	English

<sup>1</sup>Partially funded by AHRC in first year

<sup>2</sup>Delayed start due to extension granted to the current incumbent

<sup>3</sup>Extension granted to March 2017 due to additional external funding and maternity leave



## B. COLLEGE TEACHING PARTNERSHIPS

In the past year, the Trust's partnership with Colleges has largely been focussed on the support of the body of College Teaching Officers whose primary employment is to teach for their College and who may have limited opportunities to teach in their Faculty or to apply for funded research leave. CTO grants made to Colleges by the Trust have the added advantages of increasing the pool from which University teaching may be drawn, as well as providing career development opportunities for the CTOs themselves.

'Time-Limited' Teaching Fellowships, on the other hand, provide an opportunity for postdoctoral researchers employed by the University to gain experience of undergraduate teaching and integration into College fellowships. Junior Research Fellowships (see the previous section) and shared MPhil Bursaries represent the Trust's contribution to research posts and studentships in Colleges.

### 'TIME-LIMITED' TEACHING FELLOWSHIPS (TLTF)

Up to 30 posts are available at any one time for young postdoctoral researchers to be elected to teaching Fellowships at the less well-endowed Colleges (the list is at <http://www.newtontrust.cam.ac.uk/educsupport/jrf/eligiblecoll>).

Each appointment is normally limited to 4 years' duration, but may be extended if the Fellow's post-doctoral employment by the University is extended. 'Time-Limited' Teaching Fellows are contracted by the College promoting their appointment to provide 4 hours of supervision per week. The Trust pays the College up to £5,000 per annum toward the costs, *pro rata* according to the hours taught.

Two new TLTF appointments were approved in 2015-16 to start on 1 October 2016 and to end in September 2020:

College	TLTF	Department
Fitzwilliam	Dr Deepak Venkateshvaran	Physics
Fitzwilliam	Dr Fiona Danks	SPRI/Geography

One post was extended for a further two years.

### COLLEGE TEACHING OFFICERS (CTO posts)

This programme was closed in 2011 and no new appointments have been made since then. However, faculties may request the re-appointment of existing post-holders to a maximum tenure of 8 years.

The Trust's expenditure could potentially continue to September 2019, if eligible posts are renewed.

The cost of the CTO scheme for the academic year 2015-16 was £44,555 (£36,649 in 2014-15, £58,786 in 2013-14).

Two posts were extended by agreement with the Faculty and College, to allow for sabbatical leave, at no additional cost to the Trust. Two other posts were due to come to an end in September 2016.



Five posts therefore remain current in the academical year 2016-17:

College	Faculty	CTO	Start	End	Max Tenure
Churchill	Mathematics	Dr Paul Russell	01.10.08	30.09.17 <sup>1</sup>	30.09.17 <sup>1</sup>
Girton	History	Dr Ben Griffin	01.10.11	30.09.16	30.09.19
Homerton	Mathematics	Dr Simon Wadsley	01.10.08	30.09.18 <sup>2</sup>	30.09.18 <sup>2</sup>
Homerton	MML	Dr Olivier Tonneau	01.10.09	30.09.14	30.09.17
Queens'	History	Dr Andrew Thompson	01.10.11	30.09.16	30.09.19
St Catharine's	MML	Dr Miranda Griffin	01.10.10	30.09.15	30.09.18

<sup>1</sup> Extended by one year

<sup>2</sup> Extended by two years

## COLLEGE TEACHING OFFICER RESEARCH LEAVE PROGRAMME (CTORL)

The Trust launched this programme in 2013-14 to encourage high-quality research among College Teaching Officers (CTOs), who may not enjoy the same sabbatical entitlement and support as University Teaching Officers.

The Trust provides grants to Colleges to make full-time short-term junior teaching appointments of 9 to 12 months' duration, to release an established CTO to take an extended period of leave for a significant research project. The Trustees have agreed to make up to five awards of up to £30,000 each year. The programme is open to CTOs from all Colleges.

In the nature of CTO appointments, most of the applicants are in the arts and humanities, and the Trustees are particularly grateful to Professors Chris Young and Rosamond McKitterick for assisting them in the review process and selection of CTO Research Leave awards. There is one application round per year, in January or February.

A third cohort of appointments was made in 2015-16 at a cost of £75,000, as follows:

College	CTORL	Faculty
Murray Edwards	Dr Kate Peters	History
Trinity Hall	Dr Isabelle McNeill	Modern & Medieval Languages
Trinity	Dr Anne Stillman	English

The programme was set up as a pilot scheme for three years, and is due for review in 2016.

### What our recent CTORL award holders have said:

'To put it simply these two terms (together with the preceding summer holidays) were the most productive and best research period I have had since I started my CTO post in Cambridge in 2003. I have had time to make progress in three separate research projects... This has resulted in five papers submitted for publication since the start of the Award. [My College] has recently promoted me to a Readership - I understand that the research I have done in the last 18 months was one of the key contributing factors leading to my promotion.'

'I would like to thank the Isaac Newton Trust most sincerely for my sabbatical leave, which has given me the priceless gift of time to research and write. It has been the best working year of my life...'

It may be in the nature of such leave that one does not accomplish all that one plans, but instead one accomplishes new thing that one did not see coming...'

## C. STUDENT AWARDS

### PhD STUDENTSHIPS and MASTERS BURSARIES

The Trust has maintained a long-term commitment to providing competitive research scholarships to the best of the UK and EU students who have failed to secure funding from public sources such as the Research Councils. The Trust has directed this funding through existing University competitions and has reviewed its contribution at regular intervals against a background of frequent changes in the Research Councils' policy in order to achieve the most appropriate level and type of support.

In general, the Trust does not provide salary or research costs for students other than through these major funding programmes.

#### PhD studentship programmes

In 2012 the Trustees agreed to support six 3-year PhD studentships per year for the duration of the AHRC DTP award 2014-19; this was therefore the second year of contribution to these studentships. Under-recruitment in the first year has meant that the cohorts will be uneven in size, but the cumulative costs will remain as planned:

Cost of AHRC DTP studentships	2015-16	2014-15
5 studentships starting 2014	£51,515	£51,515
7 studentships starting 2015	£75,666	-
Total cost to the Trust	£127,181	£51,515

#### Isaac Newton Trust/College MPhil bursaries

In 2013 the Trustees agreed to offer bursaries for UK students taking one-year MPhil courses as preparation for a doctoral degree. These awards would be held in certain Colleges that had agreed to match the Trust's contribution of £6,000 per student; Colleges of lesser wealth offering two such studentships would be eligible for a further bursary entirely funded by the Trust (i.e. £12,000).

The competition is run by the Student Registry along the lines of the CHESS bursary competition it replaced. Students from EU countries are referred to the Cambridge Trust for funding and UK students to the Isaac Newton Trust.

The number of Colleges participating, the number of bursaries awarded, and the cost to the Trust have risen year on year:

For awards to be held in:	2016-17	2015-16	2014-15
Colleges participating	26	25	19
Number of Bursaries awarded	66	57	38
Cost to the Trust	£444,000	£402,000	£204,000

**Of the 38 award holders who studied for the MPhil in 2014-15:**

- 15 (37.5%) took up PhD places at Cambridge in 2015-16;
- 10 (67%) of these were successful in securing funding for their PhDs from the Gates Trust, AHRC, BBSRC, ESRC or University Awards.

While progression rates may seem low, Trustees felt that, when viewed against the background of the take-up of PhDs by MPhil students in general across the University, these numbers indicate success in enabling this first cohort of students to progress to a PhD. Furthermore, some MPhil bursary holders took up PhDs at other institutions, but we have no data on the extent of this effect.

The INT/College MPhil Bursary programme has also achieved considerable success in engaging Colleges more formally with the support of MPhil students and provides a useful foil to the EU students support grants offered by the Cambridge Trust.

The Bursaries are funded from the remainder of the Trust's Bursaries Restricted Fund and will run for so long as there are funds remaining, or the programme proves to be no longer effective in enabling students to progress to research degrees. The Trustees will review the programme again in 2016-17.

## CAREERS SERVICE INTERSHIPS

The Trust has continued to support bursaries offered by the University's Careers Service to under-graduate students undertaking internships in the vacations with organisations that are not able to offer them paid work.

Students in receipt of the Cambridge Bursaries are normally prioritised for support from this fund, which is provided by contributions from the Isaac Newton Trust, the Vice Chancellor's Endowment Fund, and a group of major employers. The Trust provides £10,000 per annum.

This arrangement is due for review in 2016.





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Trinity College, Cambridge CB2 1TQ  
Tel (01223) 339933  
[www.newtontrust.cam.ac.uk](http://www.newtontrust.cam.ac.uk)