

# Annual Report Volume XXXI

1 July 2020 – 30 June 2021



His Royal Highness, The Prince of Wales, meeting INT Early Career Fellows L-R: Dr Lorna Dillon, Dr Rajesh Bhagat, Dr Rihab Khalid and Dr Godwin Aleku. 23 November 2021. Photo: David Johnson, Homerton College.



#### **Isaac Newton Trust**

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Cover: Isaac Newton's apple tree *Malus pumila* 'Flower of Kent' at Cambridge University Botanic Garden by permission of the Cambridge University Botanic Garden. Report designed by **www.dangould.co.uk**, printed by Minuteman Press, Cambridge

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#### H.R.H. The Prince of Wales

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**Prof. Sir David Baulcombe** Plant Sciences, T (Trinity Trustee)

**Prof. Dame Ann Dowling** Engineering, SID (appointed 1 October 2020)

**Prof. Loraine Gelsthorpe** 









**Prof. Jeremy Baumberg** Physics, JE (on leave calendar

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Mathematics, CHR

(Trustee, Chairman from 1 October 2020)

**Prof. Gerard Evan** Biochemistry, CHR

year 2021)

Criminology, PEM





**Prof. Rae Langton** Philosophy, N

Prof. John Marenbon Philosophy, T (Trinity Trustee)

**Prof. Dame Jean Thomas** Biochemistry, CTH





**Prof. Richard Smith** Geography, DOW



## **Officers & Staff**

Dr Laurie Friday (Director) Mr Donald Hearn (Treasurer) Dr Nichola Tooke (Senior Administrator) Ms Janet Sparrow (Research Administrator)



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## Welcome to the Isaac Newton Trust's thirty-first Annual Report

t would be an unusual Annual Report for 2020-21 that didn't start off with the terms 'exceptional', 'unprecedented'....it has, indeed, been a most unusual and challenging year, but I would like to start with a celebratory note: on 2 July 2020, the Trust celebrated another milestone in its history when the Chairman welcomed the Trustees, albeit virtually, to their 100th meeting. The inaugural Trustee meeting was held on 22 November 1988 under the Chairmanship of HRH Prince Charles, The Prince of Wales. His Royal Highness has been a positively supportive Patron throughout the Trust's history and we are delighted that he has recently agreed to continue as our Patron for a further five years.

With the steadfast financial support of Trinity College, the Trust has come a long way since 1988: more than 1,400 research grants, large and small, have been awarded over the lifetime of the Trust and several transformative strategic projects have been launched. These include CRASSH (Centre for Research in the Arts, Social Sciences and Humanities), the Isaac Newton Institute for Mathematical Studies, and Cambridge Zero, the University's interdisciplinary hub for research towards reaching net zero carbon. In this way, more than £75 million has been injected into the University's research endeavours and many hundreds of individuals have been beneficiaries.

Funding for novel and transformative research is still the Trust's core business. However, as for so many others, the past year has seen a good deal of our funding and effort directed towards helping those whose research has been curtailed by COVID. We have been greatly assisted in our rescue efforts by unsolicited offers of additional funding from Trinity College and from the Leverhulme Trust. This has enabled us to support new research as usual, as well as covering emergencies thrown up by the pandemic. We are extremely grateful for these generous and timely interventions. Nowhere is the transformative effect of our partners' generosity more evident than in our Leverhulme Early Career Fellowship (LECF) programme. Cambridge candidates have been exceptionally successful in the national competition this year - Cambridge yet again tops the rankings for the number of fellowships awarded - and the INT will be supporting at least 19 new LECFs in 2021-22. The INT would not have been able to provide the matching funds for the whole cohort without delving deep into its reserves had the Leverhulme Trust not stepped up to increase its contribution and had Trinity not provided the means to cover COVID relief for other grant holders.

Our report celebrates this good fortune by spotlighting our Leverhulme Early Career Fellows. Over 14 years, the INT has match-funded 146 LECFs, across the broadest possible range of topics, many of whom have gone on to secure academic and independent research posts across the globe. The impact of this programme on the University's intellectual community, particularly in the Arts and Humanities, as well as on the careers of the individuals concerned, cannot be overestimated.

Finally, I am thrilled to note that, with the appointment of Professor Dame Ann Dowling, the representation of women among the Isaac Newton Trustees has now reached 40% - just a small step from equality - and a far cry from 0% representation in 1988.

I hope you enjoy reading this report. Please do contact me if you have any questions.

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Dr Laurie Friday Director

# **DIRECTOR'S REPORT 2020-21**

## **Funding strategy**

In deciding who and what to fund, and to what extent, the Trustees continue to hold to the following general principles:

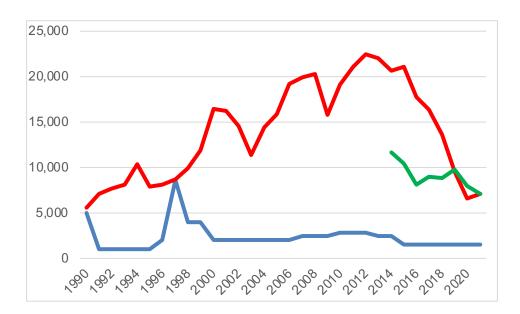
- promote excellence in research and scholarship;
- respond flexibly to emerging needs;
- help new projects get off the ground, committing to individual projects for no more than 5 years, and reviewing
  ongoing programmes at intervals;
- prioritise early career researchers, helping to nurture and grow the University's intellectual capital;
- assist the University to secure funding from outside sources wherever possible.

The Trustees' overall financial management policy is to ensure that Trinity College's donations are used to their full potential. Following a series of Strategic Reviews undertaken since 2015, three key approaches have been established:

- investing unspent income appropriately and spending the resulting income;
- holding sufficient reserves to cover our forward commitments in the event that all sources of income ceased, but otherwise making full use of donated income for the support of research in the University;
- budgeting to bring our reserves and forward commitments into balance.

Over the past four years, the Trust has drawn down its investments at a rate of about £4m per annum, by offering several large grants for strategic projects across a wide range of subjects.

Our reserves and commitments are now in balance, as intended.





For the 2020-21 financial year, the budget for new research commitments was set in line with expected income, at £2.0m. We are pleased to report that this target was achieved, in spite of the extra demand created by the COVID crisis (see page 6).

# **Investment Strategy**

The Trust's investment portfolio is placed in the Cambridge University Endowment Fund (CUEF), whose performance is reviewed periodically by the Trust's Investment Sub-committee. This year, the Trustees amended their primary objective, to aim to achieve a total return of at least CPI inflation plus 5% with the additional requirement that the portfolio be invested in a socially responsible manner. Trustees are therefore pleased that CUEF has declared an ambitious programme to align its investment portfolio with the University's own contribution to the decarbonisation of the global economy. Trustees are also delighted with the decision by our principal donor, Trinity College, to divest from fossil fuel investments by the end of 2021.

Details of the CUEF can be found at https://www.finance.admin.cam.ac.uk/policy-and-procedures/financialprocedures/chapter-12-investments/investment-cambridge-university. We report on the performance of our investments on p 22.

## Summary of new grants awarded 2020-21

The Trust committed **£2.3m** for research and scholarship in the University including:

£650k for Research Grants (including those made jointly with the Schools)
£105k for Strategic Grants
£1.1m for Early Career Fellowships
£60k for College Teaching Officers' research
£316k for extensions relating to COVID-19



**11** Research Grants to individual researchers



**55** Grants for research projects jointly with the Schools of the University











**21** new Leverhulme and Humboldt Early Career Fellowships



**5** INT/College Junior Research Fellowships

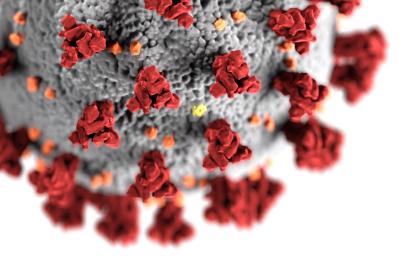


**2** College Teaching Officers' research leave awards



**4** Postgraduate Hardship grants

Full details of all these grants will be found in pages 10-20.



# **RESPONDING TO COVID-19**

As we reported last year, the University of Cambridge closed its labs, libraries and offices on 20 March 2020, in line with Government policy, for an initial period of 12 weeks. Who would have thought we would be continuing to wrestle with the COVID pandemic and its stifling effect on research and scholarship more than 18 months later?

As for so many others, the daily routines and research activities of Isaac Newton Trust grant holders have been severely disrupted, whether through closure of research collections, denial of access to experimental facilities, loss of precious colonies of subject organisms, learning to adapt to new technologies, prolonged periods of home-schooling, illness, or a combination of several (or even all) of these.

This is a large and rapidly-moving challenge for any funding body to respond to effectively, so it has been essential for a small charity like the INT to work with our grant holders and fellow funding bodies to establish how best to target our assistance. We have:

- provided short extensions, whether paid or cost-neutral, to current grant holders and research fellows, in line with support schemes adopted by the Government and our principal co-funding charities; and
- set aside emergency funding specifically to support our grant holders, research fellows and other researchers in urgent need of assistance.

Over the course of 2020-21, the INT's financial contribution to COVID relief amounted to £316k:

- **£128k** Emergency Grants to individual researchers and groups
- **£135k** Early Career Fellowship extensions (Leverhulme ECFs and ESRC)
- **£37k** PhD funding extensions for students on the AHRC DTP
- **£16k** Postgraduate emergency hardship grants to least wealthy Colleges

We expect to continue to provide support for researchers affected by the pandemic for at least another year. We could not do this without the support of fellow funders:

- the **Leverhulme Trust** increased its funding for Early Career Fellows starting in the 2021-22 and 2022-23 academical years from 50% for each of three years to 100% for year one and 50% for the remaining years. This in effect provides host institutions with an extra £25,000 in their budget for the salary of each of the new starters;
- **Trinity College** has offered an exceptional £500k donation to the INT for 2021-22 in addition to the usual annual donation, to enable the Trust to maintain its current level of funding for a range of research activities in spite of the additional costs of managing additional expenditure for COVID relief.

The INT has gratefully taken up these two extraordinarily generous offers, which offer financial stability and leave us in the happy position of being confident that we can continue to fund new and innovative research to our usual level in 2021-22 and beyond.

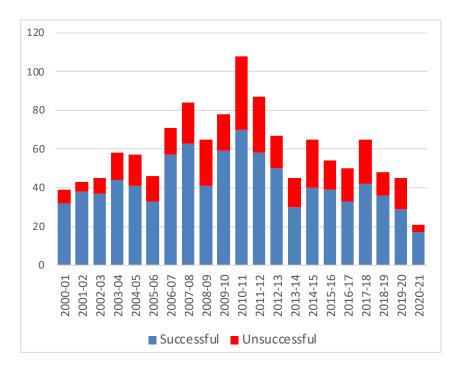
# NEW AWARDS 2020-21

## **Research Grants**

Trustees committed £0.46m to new Research Grants in 2020-21

Financial year	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16
Research Grants	£0.46m	£1.1m	£2.1m	£3.0m	£3.6m	£1.0m

A dip in support for Research Grants compared to previous years is in part a result of the Trustees' Strategic Reviews of 2015 and 2019, which introduced a policy of bringing expenditure in line with income.





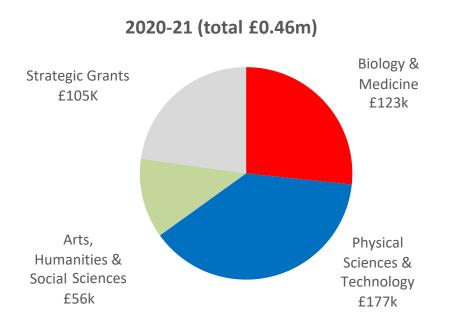
There has been wide variation in the numbers of applications, and the proportion of these which have been supported by the Trustees, over the past 20 years, reaching a peak in 2010-11. Some of this variation can be explained by the changing funding strategies of the Trustees, however, the very small number of applications received in 2020-21 stands out as unusual.

Most of the applications this year were for relatively modest emergency cover and extensions for projects and researchers whose work had been severely disrupted by the COVID pandemic. There were relatively few applications for starting up new projects, perhaps reflecting the uncertainty that researchers have faced regarding the immediate future of their work and a reluctance to take on new staff until the extent of the pandemic is completely clear. Perhaps, as for the economy, planning for research - and grant applications - will rebound at that point. Given the low application rate this year, and the compelling cases made for support, the success rate was exceptionally high and most awards were granted in full.

The Trustees had set aside a budget of £0.7m for Research Grants in 2020-21 and the low demand allowed the Trustees to review their budget mid-way through the year and the underspend in the Research Grants budget was redirected to our Joint Research funding programmes with the Schools of the University (see pages 12-13).

A full list of the projects and researchers supported can be found on pages 10-11.

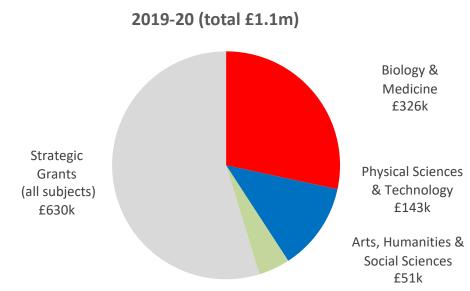
In 2020-21, awards for Research Grants were spread approximately evenly across the three main subject divisions: Arts, Humanities & Social Sciences; Biological & Medical Sciences; and Physical Sciences & Technology. Both of the Strategic Grants awarded this year were for projects in the Arts, Humanities and Social Sciences.



#### Figure 3: New INT research grants in all categories: 2020-21 with 2019-20 for comparison.

The total awarded for Strategic Projects was unusually low this year, partly due to a change to the timing of decision-making: four preliminary applications for strategic grants were selected in a first round held in March, and invited to submit a full application for a final decision in July 2021. Any awards made in this final round will fall into the 2021-22 Financial Year.

In 2019-20, by contrast, the total expenditure on new INT research grants was more than double the amount spent this year and more than half of this was awarded in two substantial Strategic Grants, one of which was interdisciplinary (Cambridge Zero).



## Isaac Newton Trust Research Grants awarded in 2020-21

Applications were invited in three categories:

## **Project Grants**

- one call per annum, in Michaelmas Term;
- awards of up to £30k over periods up to three years:
- normally for the support of a specific project under the leadership of a named Principal Investigator (PI);
- offering initial partner funding for new research projects, grants for unconventional, innovative forms of research and scholarship;
- normally awarded for research associates' salary costs but may include small contribution to consumables or equipment;
- particular attention is given to the qualities of the research project, on which we seek advice from external and internal referees, but consideration is also given to the likely benefits of a grant to the Department, PI, and/or early career researchers involved.

#### **Emergency Grants**

- three rounds per annum (termly), to respond rapidly and flexibly to cases of need;
- awards of up to £30k over a period of up to12 months;
- normally for a named research associate in cases for which short-term immediate intervention is needed;
- bridging or underwriting salary costs up to the start of a new grant;
- providing start-up costs for a pilot ahead of a major grant application;
- meeting a funding deficit in an external competitively-awarded early career fellowship (fellowship support).

In 2020-21, most of the applications under this heading have been for support of researchers whose projects and careers have been severely impacted by COVID.

#### **Strategic Grants**

- preliminary round (Lent Term); full applications by selected applicants (Easter Term);
- one or more awards of up to a total of £500k for up to 5 years duration;
- for major projects endorsed by a Head of School or Pro-Vice Chancellor as being of strategic importance to the University;
- awards may be to a Department, Faculty, School or a non-School institution;
- this year, the Trustees agreed to consider applications for renewal of ongoing strategic programmes alongside applications for new projects

## Project and Emergency Grants awarded in 2020-21

grants related principally to COVID relief

## Schools of Arts, Humanities and Social Sciences

**History** (Professor John Arnold) Jews at Court in Spain, 1000-1300 Two-year grant in part-support of a research associate.

**Music** (Professor Ian Cross) *Text Designs for the facilitation of reading: linguistic and musical approaches* One-year grant towards the salary costs of a research associate, equipment and consumables.

## **Schools of Physical Sciences and Technology**

**Applied Mathematics and Theoretical Physics** (Professor Gordon Ogilvie) *Breaking of strongly warped astrophysical discs* Six-month bridging grant in support of a research associate.

**Chemistry** (Dr Jessica legre) Development of an integrated microfluidic platform for the generation and screening of therapeutic peptides for intracellular targets A grant for the purchase of a camera and microscope as part of a microfluidic kit.

**Chemistry** (Professor Angelos Michaelides) *How ice forms on carbon substrates: an atomistic study of ice nucleation* One-year subsistence payment to make up the shortfall in a research associate's fellowship.

#### Chemistry (Dr Robert Phipps) 🛠

An enantioselective, photocatalytic Giese reaction controlled by a chiral phosphoric acid One-year grant towards the salary costs of a research associate.

**Judge Business School** (Dr David Stillwell) Developing a fairness metric for artificial intelligence Nine-month grant in part-support of a research associate.

**Materials Science and Metallurgy** (Dr Giuliana Di Martino) *Epitaxial (Doped) HfO2 in RRAMs: optical investigation for highly reliable ferroelectric materials* Eight-month grant for the salary costs of a research associate.

**Physics** (Dr John Ellis) *The Cavendish Atom Scattering Facility* Underwriting over four months for the salary costs of an instrument scientist.

**Physics** (Dr Andrew Jardine) Developing the field of helium microscopy Six-month bridging grant in part-support of two research associates.

**Pure Mathematics and Mathematical Statistics** (Dr Po-Ling Loh) *New directions in privacy and robustness* 

One-year grant towards the salary costs of a research associate.

## **Schools of Biology and Clinical Medicine**

#### Medicine (Professor Margaret Ashcroft)

*Exploring the relationship between hypoxia and histones in cancer biology* Bridging grant over four and a half months towards the salary costs of a research associate and consumables.

Pathology (Professor Minq-Qing Du)

*Functional characterisation of surface receptor mutations in MALT lymphoma* Nine-month bridging grant in part-support of a research associate.

**Physiology, Development and Neuroscience** (Dr Simon Tunster) *Challenging the paradigm: littermate controls in mouse models of placental endocrine dysfunction* Thirty-week bridging grant towards the salary costs of a research associate.

**Cambridge Stem Cell Institute** (Dr Maria Alcolea) *Stromal niche orchestrates epithelial cell behaviour in early tumorigenesis* One-year bridging grant in part-support of a research associate.

Zoology (Professor Chris Jiggins)

A theoretical approach to the mimicry-diversity paradox in Heliconius butterflies One-year grant towards the salary costs of a research associate.

Zoology (Professor Rebecca Kilner)

*The origins of epigenetic variation: genetic versus environmental effects* Underwriting over seven months in support of a research associate.

## **Strategic Grants**

**Asian and Middle Eastern Studies** (Professor Barak Kushner) Junior postdoctoral fellowship in Japanese Studies One-year grant towards the salary costs of a fellowship as part of a pilot scheme.

Fitzwilliam Museum with University of Cambridge Museums (Mr Luke Syson)

*Legacies of Enslavement* Two-year grant in part-support of a research & engagement fellow.

Four other Strategic Grant applications were successful in the preliminary round held in March and were invited to submit full applications for the final round in July. The results will be reported in the next Annual Report and the costs will fall in the Financial Year 2021-22.

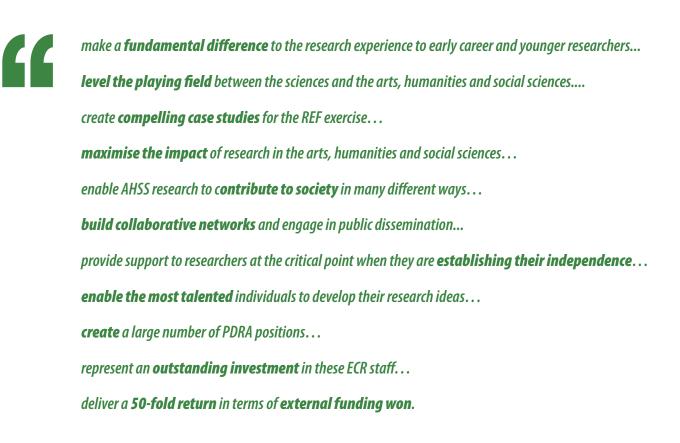
## JOINT RESEARCH GRANT PROGRAMMES WITH THE SCHOOLS

In each of the past seven years, the Isaac Newton Trust has committed almost a quarter of its annual expenditure (£500k) to three 'Joint Schools' Programmes in which the Trust's donation is variously matched by the University, Schools, Departments, and, for biomedical subjects, a contribution from the Wellcome Trust Institutional Strategic Support Fund (ISSF).

Annual calls are made by pairs of Schools in cognate disciplines (Arts & Humanities/ Humanities & Social Sciences, Biological Sciences/Clinical Medicine, and Physical Sciences/Technology). Panels appointed by the Schools assess applications and as such are able to target funding in a more strategically informed manner than the Trustees could achieve through their own Research Grants programme.

The INT's commitment to these programmes has been on a rolling basis for three years at a time. All three were due for review in 2020-21, and, under our new budget, this creates a particular challenge. Trustees therefore reviewed these programmes and sought the views of the Chairs of the Schools and the Pro-Vice-Chancellors on their value to the University's research funding strategy. It was evident from the responses to our enquiries that all three programmes are very highly valued and that the INT donation has provided powerful leverage for other funding:

All three schemes are of exceptional value to the University.....



Trustees have agreed to continue funding all three programmes for at least one more year. In future, the Trustees will consider future continuation of these awards in Lent Term in the context of other applications for major grants under the Strategic Grants programme.

#### Schools of Art & Humanities and Humanities & Social Sciences (Cambridge Humanities Research Grants)

Awards of up to £20,000 for projects, particularly for early career researchers, especially pilots for applications to external research funding, and matching funding of up to £10,000 to support mutual exchange with institutions affiliated to *Paris Sciences et Lettres* and other partners.

Awards	2020-21	2019-20	2018-19	2017-18
Number	33	42	34	53
Total value of awards	£419k	£373k	£332k	£460k

The Trust has previously contributed £100k per year; a further grant of £70k was agreed for 2021-22.

#### Schools of Biological Sciences and Clinical Medicine

Awards for recently-appointed lecturers and equivalent, of up to £80k for up to 2 years for postdoctoral support, equipment and ancillary consumables, to develop projects that will lead to full applications for external funding.

The programme has been funded from three sources, each providing £250k per annum: the Isaac Newton Trust, the Wellcome Trust's Institutional Strategic Support Fund (ISSF); and the host departments of the successful applicants. The involvement of the INT has enabled new appointees in biological subjects whose research lies outside the Wellcome Trust's remit to secure a contribution to start-up funding.

Awards	2020-21	2019-20	2018-19	2017-18
Number	13	13	9	10
Total value of awards (from all three sources)	£1.0m	£1.0m	£738k	£747k

Trustees have agreed a further contribution of £200k for 2021-22, noting that, while the contribution from the Wellcome ISSF grant had been extended for one more year (2021-22), this arrangement would then come to an end.

#### Schools of Physical Sciences and Technology

Awards for new lecturers of up to £50k for postdoctoral Research Associate support, equipment and ancillary consumables, to develop projects leading to full applications for external funding.

Awards	2020-21	2019-20	2018-19	2017-18
Number	9	7	4	8
Total value of awards	£233k	£156k	£78k	£174k

The Isaac Newton Trust provides 50% of the total budget; a further contribution of £150k has been agreed for 2021-22.

# **EARLY CAREER FELLOWSHIPS**

## LEVERHULME EARLY CAREER FELLOWSHIPS

The Isaac Newton Trust's commitment to supporting early career researchers has never been stronger and the provision the necessary institutional match-funding for Leverhulme Early Career Fellowships (LECFs) is one of the Trust's longest-standing and most successful contributions to the academic training of the next generation of researchers.

The Leverhulme/INT Early Career Fellowship programme provides a highly effective means of recruiting and retaining the very best postdoctoral researchers, supporting them as they develop their independent research projects, helping them to establish College connections, and launching them into careers at academic and research institutions around the world. The Isaac Newton Trust takes an active lead in helping LECFs to find College attachments and providing opportunities for networking. Inevitably, our events for INT Fellows have been curtailed by COVID; we hope to be able to resume these activities in 2021-22.

Each year, the INT co-ordinates an internal competition to identify the very best scholars wishing to conduct postdoctoral research in Cambridge. The selection of up to 50 candidates for promises of matching funding to satisfy the entry requirements for the national competition is carried out by subject-specific academic panels nominated by the Schools. Successful candidates are provided with a guarantee from the INT of salary support of up to £25k per annum for up to three years should they be selected in the Leverhulme Trust's national competition.

#### **RESULTS OF THE 2021 COMPETITION**

The Leverhulme Trust offered 145 awards nation-wide this year, across the full range of subjects (apart from Clinical Medicine), of which 20 were made to applicants wishing to carry out research in Cambridge. Nineteen of the new cohort are match-funded by the INT and one by the Fellow's host institute.

The Leverhulme Trust actively encourages mobility between institutions and is unlikely to fund a candidate who has spent his or her entire academic career at the same University. Of the incoming cohort of new LECFs:

- 10 are alumni of Cambridge University or recent post-docs in Cambridge;
- Two are moving to Cambridge from Cardiff University;
- One new Fellow comes from each of: University of Oxford; King's College, London; University College, London; the Royal Veterinary College; the British School at Rome; Université Libre de Bruxelles; Tsinghua University.

In addition, two LECFs whose fellowships were awarded through the Universities of Liverpool and Sussex respectively are seeking to transfer to Cambridge in 2021; the INT undertakes to match-fund transfers of awards approved by the Leverhulme Trust.



What our recent Leverhulme Early Career Fellows have said: I took a career break following my PhD and this opportunity has really been life changing for me.

If it weren't for the Trust I would not be in the privileged position that I am in now.

This was a wonderful opportunity for me for which I will always be grateful.

#### LEVERHULME TRUST



Peter Asimov Music

# Cambridge LECF 2021-22 cohort



Rajesh Bhagat Applied Maths & Theoretical Physics



Abigail Bradshaw MRC Cognition & Brain Sciences Unit



Isaac Newton

Trust

Sam Cobb Chemistry



**Timothy Cooper** Social Anthropology



Jan Behrends

Physics

Jess Cotton English



Maxime Fouyssac Psychology



**Carlos Gantner** Physiology, Development & Neuroscience



Gabriel Jamie Zoology



Jiachen Jiang Astronomy



Sebestian Kroupa History & Philosophy of Science



Georgios Markou History of Art



Cathy Mason Philosophy



Physics



Nicholas Posegay Asian & Middle Eastern Studies



Jesús Sanjurjo History



Alexandra Wigzell Criminology



Ashleigh Wiseman Archaeology



Transfers in progress in 2021:

Dr Max Skjönsberg History

> Dr Miri Zilka Engineering

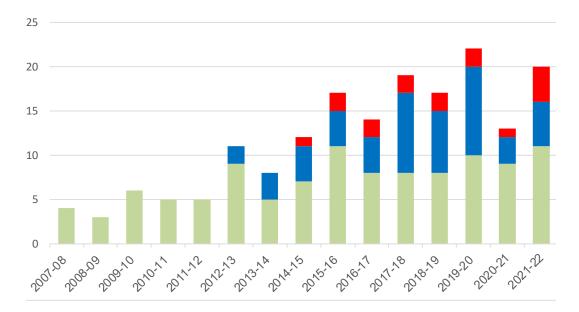
## Our record of support for Leverhulme Early Career Fellows

The INT started supporting Leverhulme Early Career Fellowships in 2007. It began in a small way, with contributions to four fellowships in the Arts, Humanities and Social Sciences, and has grown steadily as the INT has extended its support to other subjects. Fourteen cohorts have now received our support and the total cost to the INT constitutes a very large proportion of our annual expenditure.

It is exceptionally difficult to budget for these awards, as the final selection of fellows is entirely in the hands of the Leverhulme Trust's academic panels, but we now have a strong body of data from 14 years that helps us to predict (to some extent) the number of awards we can expect to have to match: of the 50 offers in principle we budget for, we can expect anywhere between 13 and 22 to be taken up. This year, our applicants were exceptionally successful and we are grateful that the cost of the incoming cohort has been subsidised further by the Leverhulme Trust. This is in recognition of the unusually severe strains on research funding in universities, exacerbated by the cost of extensions for existing LECFs whose research has been affected by COVID.

Over the past decade, the number of LECFs awarded for research at Cambridge has grown as the number awarded nationally has increased: since 2012, Cambridge has typically obtained about 15% of the national awards. The great majority of these are match-funded by INT so the cost to the INT has also risen markedly. This programme now dominates our annual budget: our contribution to the new cohort is almost £1m, taking into account the Leverhulme Trust's additional contribution of £25k per Fellow.

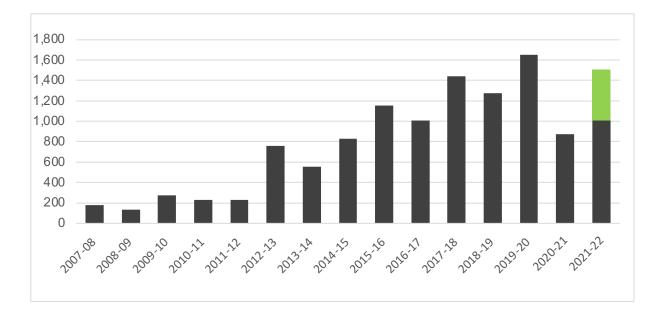
Figure 4: Numbers of Leverhulme Early Career Fellows with INT matched funding, by subject area, for the cohorts starting in the year shown (not including transfers): Red: Biological Sciences; Blue: Physical Sciences & Technology; Green: Arts, Humanities & Social Sciences



What our recent Leverhulme Early Career Fellows have said:

This has given me knowledge, experience and connections that I shall continue to carry over to the rest of my career in the academia or elsewhere.

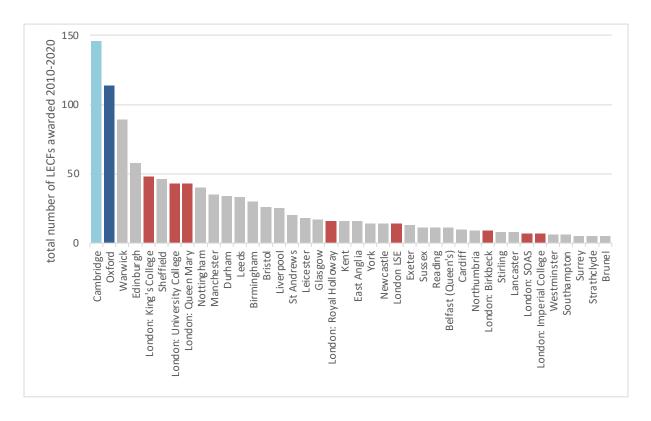
*I am deeply grateful for the unique opportunity to enjoy scholarly life in Cambridge in both the pedagogical and the collegiate aspects.* 



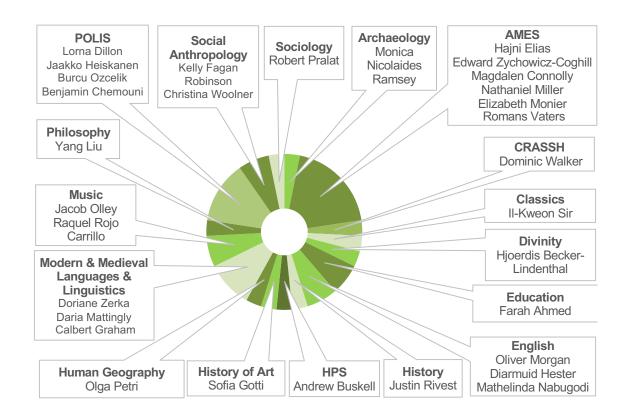
#### Figure 5: institutional support (£k) for fifteen Leverhulme Early Career Fellows cohorts: INT contribution in black; Leverhulme's additional contribution for 2021-22 in green

Cambridge has an exceptional record for securing LECFs across all subjects, consistently ranking highest among UK institutions for the number of awards secured in STEMM subjects and in the top three for Arts, Humanities and Social Sciences. Cambridge is the highest-ranking institution for the number of LECFs awarded across all subjects totalled over the period 2010-2020:



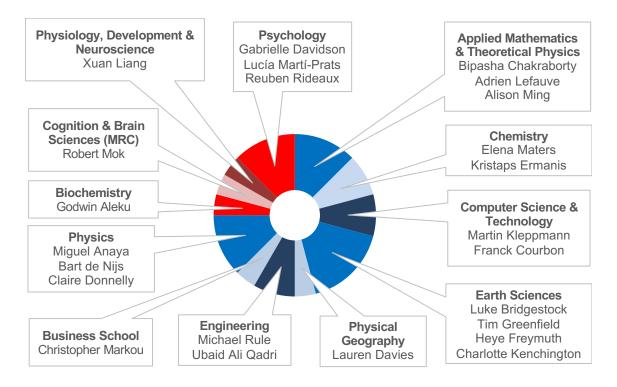


Our Leverhulme/INT Early Career Fellows resident in 2020-21 were:



## **ARTS, HUMANITIES AND SOCIAL SCIENCES (31):**

#### **BIOLOGICAL, BIOMEDICAL, PHYSICAL SCIENCES & TECHNOLOGY (24):**



## **HUMBOLDT FOUNDATION FEODOR LYNEN EARLY CAREER FELLOWSHIPS**



The Humboldt Foundation's highly competitive Feodor Lynen Early Career Fellowships are held in leading Universities globally under the guidance of a Humboldt Fellow. The INT makes a contribution of £1,000 per month for up to 24 months for any candidate who secures a Feodor Lynen Fellowship for research in the University of Cambridge.

Our Humboldt INT Early Career Fellows in residence in 2020-21 were:

	Department	start	end
Dr Matthias Schannor	Earth Sciences	Nov 19	Oct 20
Dr Aleksandar Kondinski	Chemical Engineering & Biotechnology	Oct 20	Sep 22

## **INT/COLLEGE JUNIOR RESEARCH FELLOWSHIPS**

Isaac Newton Trust/College Junior Research Fellowships provide up to £20,000 per year for three years towards stipendiary Junior Research Fellowships in the Arts, Humanities and Social Sciences. Since 2019, the Trust has also offered contributions of £3,000 per annum towards the cost of non-stipendiary JRFs in STEMM subjects.

Eligibility is limited to those Colleges exempt from making a contribution to the University under Statute G, Chapter II. The list is published annually, and currently comprises: Clare Hall; Darwin; Downing; Fitzwilliam; Hughes Hall; Lucy Cavendish; Murray Edwards; Robinson; St Edmund's and Wolfson.

Each College may have only one stipendiary and one non-stipendiary INT/College JRF at any one time. There is one round annually, in June/July. Selection of the Fellow is then a matter for the College, which is expected to apply the usual stringent academic criteria.

We welcome our new INT/College Junior Research Fellows in the 2021 cohort:



Dr Moataz Assem MRC Cognition & Brain Science Murray Edwards (Non-stipendiary)



Dr Colleen Drapek Sainsbury Laboratory Lucy Cavendish (Non-stipendiary)



Dr Caitlin Harvey History Fitzwilliam (Stipendiary)



Dr Giulia Maltagliati Classics Clare Hall (Stipendiary, with leave to defer to 2022)

College JRF Faculty/Department start\* end Selwyn Helena Phillips-Robins MMLL/Italian Oct 18 Sep 22\*\* Lucy Cavendish Rihab Khalid Architecture Oct 20 Sep 23 Robinson Oct 20 Sep 23 Matthew Simpson Philosophy

Three stipendiary Newton Trust/College JRFs were in post during 2020-21:

\*An award for 2019 to Girton College lapsed \*\* Granted leave 2020-21

#### Results of the Colleges' competition for JRF funding starting in October 2022

Although nine Colleges were eligible to apply this year, only one application was received, from Fitzwilliam College, for a non-stipendiary award to start in October 2022, at a total cost of **£9,000**. In addition, a non-Stipendiary JRF awarded to Clare Hall in the previous round is pending appointment for an October 2022 start.

#### **NEWTON TRUST TEACHING FELLOWSHIPS**

This programme was closed to new applications in 2017. The following Newton Trust Teaching Fellows remained in post during 2020-21:

College	Teaching Fellow	Department	start	end
Fitzwilliam	Deepak Venkateshvaran	Physics	Oct 16	Sep 20
Fitzwilliam	Fiona Danks	Scott Polar Research Institute	Oct 16	Sep 21
Fitzwilliam	Marco Geraci	Economics	Oct 17	Sep 21
Fitzwilliam	Carla Mulas	Stem Cell Institute	Oct 17	Sep 21
Lucy Cavendish	Amber Ruigrok	Psychiatry	Oct 17	Sep 21

#### **COLLEGE TEACHING OFFICER RESEARCH LEAVE**

Launched in 2013-14, this programme aims to encourage high-quality research among College Teaching Officers (CTOs). Colleges apply for grants 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.

#### Results of the 2020-21 round

Two appointments were made at a total cost of £60k:

College	СТО	Faculty/Department	Months
Fitzwilliam	Anna Watson	Economics	12
Hughes Hall	Martin Steinfeld	Law	12

Trustees reviewed this programme against a background of declining applications and noted that while most recipients had clearly benefitted from an opportunity for extended period of research leave, there was little evidence of it creating new career opportunities and the pool of eligible candidates appeared to be depleting.

Trustees decided that the programme should now be closed and that new ways should actively be explored of developing the skills and experience needed by those aspiring to set out on academic careers, particularly in the Arts, Humanities and Social Sciences, while also supporting research and teaching in Colleges.

#### **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, many of whom have been unable to secure funding from public sources such as the Research Councils. The Trust does not itself award these scholarships but directs funding through existing University competitions. The Trust does not provide salary or research costs for students other than through these established major funding programmes.

#### **PhD Studentship programmes**

The Trust supported six 3-year PhD studentships per year for the duration of the **AHRC Doctoral Training Programme** (**DTP**) **2014-19**. A residual balance of **£79,886** was paid in 2020-21 and the INT agreed to extensions for 13 students for which it was the matching funder and whose research had been affected adversely by COVID, at a cost of **£37,000**. These payments were made from the residue of the Trust's Restricted Bursary Fund

The Trust is now committed to the **second AHRC DTP** for the period **2019-26** up to a total of **£1.2m**, supporting up to six 3-year studentships per annum (at half cost, shared with the AHRC). The INT contribution enables students whose College is not a participant in the shared funding arrangements to take up their place. The cost to the INT of 'DTP2' in 2020-21 was **£131,551**.

#### **Newton Trust/College MPhil bursaries**

The INT passed the administration of the bursary scheme for undergraduate students to the University in 2015. At that point, the Trustees agreed to apply its Restricted Bursary Fund to the provision of bursaries for graduates, particularly UK students taking one-year MPhil courses as preparation for a doctoral degree. These bursaries are held in Colleges that agree to match the Trust's contribution and awarded through the University's annual graduate student funding competition.

The administration for these MPhil Bursaries passed to the Cambridge Trust in 2019 and the Trustees then transferred **£300,000** remaining in the Restricted Bursary Fund to the Cambridge Trust to continue with the awards. The Isaac Newton Trust's commitment to this programme has therefore now come to an end.

Details of the MPhil Bursary Scheme may be found at: https://www.cambridgestudents.cam.ac.uk/fees-and-funding/funding/cambridge-home-scholarship-schemechss-graduates-only/mphil-awards

Details of the Cambridge Bursary Scheme may be found at: https://www.cambridgestudents.cam.ac.uk/cambridgebursary

# **FINANCIAL SUMMARIES**

	2020-21	2019-20	2018-19	2017-18	2016-17
Opening reserves	£3,045,317	£3,543,790	£6,868,019	£8,696,489	£10,317,258
Income	£1,772,028	£1,846,009	£1,960,297	£2,046,986	£2,036,687
Expenditure	£1,612,750	£2,372,123	£5,296,340	£4,659,115	£5,734,898
Gain (Loss) on investments	£1,306,153	£27,641	£11,814	£783,659	£2,077,442
Closing reserves	£4,510,748	£3,045,317	£3,543,790	£6,868,019	£8,696,489

#### Audited accounts: headline figures and forward planning

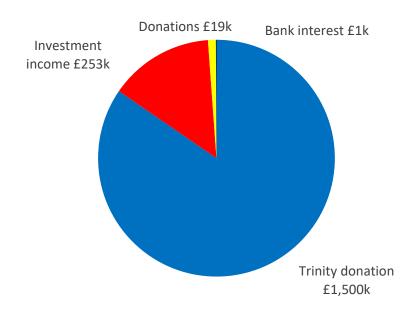
The audited accounts for the year ended 30 June 2021 are presented in detail on our website at https://www.newtontrust.cam.ac.uk/about/Accounts

This year, for the first time in many years, there was a slight excess on income over expenditure. This reflects to some extent the reduction in applications for research grants, but also the careful budgeting of the Trustees who are now attempting to match the expenditure with income.

However, the more unexpected figure is the very welcome gain on investments, which reverses a trend of a continued reduction in our opening reserves.

## Income 2020-21

Total income in 2020-21 was £1.77m (£1.85m in 2019-20, £1.96m in 2018-19; £2.05m in 2017-18; £2.04m in 2016-17).



#### Figure 7: Income 2020-21

The Trinity donation (£1.5m) provides the majority of the Trust's income and most of the rest comes indirectly from Trinity, as income arising from past donations.

The College's Expenditure Committee has confirmed that it will continue to fund the Trust at this level up to 2022-23, as well as providing an additional £500k in 2021-22 to help to stabilise the Trust's finances through the COVID crisis. Our income from investments fell to **£253k** this year (£336k in 2019-20; £447k in 2018-19; £533k in 2017-18; £524k in 2016-17, £640k in 2015-16), reflecting the Trustees' policy of mobilising a portion of our investment holdings.

Private donations to the Trust, channelled mostly through Trinity College, amounted to **£19.0k** including Gift Aid, compared to £8.6k in 2019-20. This welcome increase is due to the generosity of an individual Trinity alumnus; we will seek to explore with Trinity how we can more effectively communicate the work of the INT to the alumni and so perhaps build a larger donor base. The INT does not itself engage in fund-raising.

A small return on our bank deposit account yielded a further **£1.4k**. There was no income this year from the exploitation of intellectual property on work sponsored by the INT.

# Expenditure 2020-21

At the end of this year, the Trust carried **forward commitments** totalling **£6.1m** (£8.0m in 2019-20; £9.8m in 2018-19, £8.9m in 2017-18). This reduction over the past two years of commitments carried forward reflects the Trustee's determination to bring their annual commitments to new grants in line with expected income. We expect this reduction to stabilise over the next year or two, but commitments carried forwards always exceed annual commitments because our larger grants extend across several financial years.

**New commitments** to research grants and fellowships in all categories amounted to **£2.3m** (£2.7m in 2019-20; £3.9m in 2018-19; £4.9m in 2017-18; £6.1m in 2016-17). Expenditure by major category of grants and by subject areas are shown in **Figure 8**.

Expenditure and forward commitments are accounted for net of write-backs and refunds:

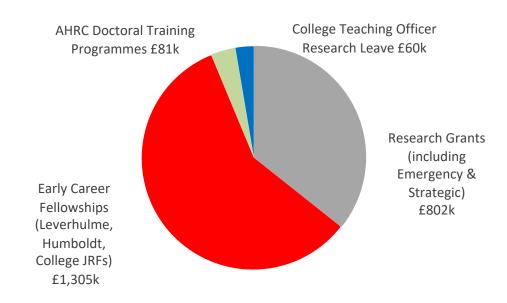
- Write-backs of unused portions of grants account for a significant reduction in commitments carried forward from year to year: the Trust wrote back £715k this year. The largest write-backs tend to come from commitments no longer required after an Early Career Fellow succeeds in securing another grant or post before the scheduled end of his or her Fellowship. In this respect, the size of our write-backs is a measure of the success of our Fellows.
- **Refunds** from the residue of completed projects amounted to **£125K** in 2020-21. These refunds help us to balance our cash flow and are recycled into new grants.

Expenditure	2020-21	2019-20	2018-19	2017-18	2016-17
staff salaries, pensions, NI	£91,705	£98,090	£102,673	£92,379	£80,960
rent, services, miscellaneous	£13,871	£9,924	£11,596	£31,199	£14,538
governance, audit, accounts	£8,851	£10,044	£14,438	£14,590	£12,120
Total	£114,427	£118,058	£128,707	£138,168	£107,618

Administration accounts for 7% of our total expenditure:

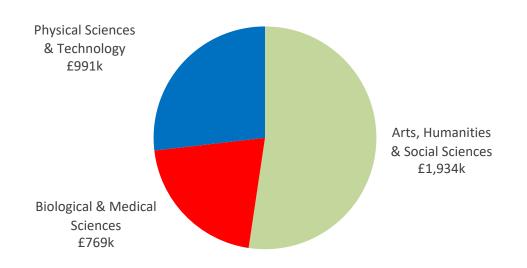
#### New commitments 2020-21: all categories

Both figures include COVID-related grants in the relevant categories.



#### Figure 8: New research commitments by major funding category 2020-21

#### Figure 9: Research awards by subject area 2020-21



#### Governance

The Isaac Newton Trust is an exempt charity under the Charities Act, regulated by the Office for Students as a connected institution of the University.

Peters, Elworthy & Moore were Auditors to the Trust for the financial year 2020-21. Our audited accounts may be found at https://www.newtontrust.cam.ac.uk/about/Accounts

#### Comings and goings...

2020-21 marked the end of an era: our excellent Chairman, Professor Lord Robert Mair, stepped down on 30 September 2020 after nine years as a Trustee. Robert has been a beacon of calm and decisive leadership through challenges large and small and has been hugely supportive of the evolution and development of the Trust over the past few years. The robust good health of the Trust is a tribute to Robert's talent and efforts. Sadly, COVID restrictions meant that we were not able to thank him in the usual way at a summer dinner, but we hope to be able to remedy this before too long.

We were delighted that Professor Frank Kelly agreed to step into the role of Chairman. As an existing Trustee, Frank knows the Trust well and he has quickly made an impression as an excellent Chairman and enthusiastic advocate for the Trust.

On Robert's retirement, Trustees felt that it would be important to recruit another Trustee from the School of Technology, and preferably from Engineering. It was also felt desirable to continue to recruit more women to the Trustee body. We were therefore thrilled that Dame Professor Ann Dowling agreed to join us. Ann's exceptionally distinguished achievements include election as the first female President of the Royal Academy of Engineering. She is also (like Professor Loraine Gelsthorpe) a Trustee of our sister charity, the Cambridge Trust, and brings a wide range of experience to the Trustees' deliberations.

There have been a number of changes during the year among our friends and colleagues at Trinity. We said goodbye to Mr Rory Landman, the Senior Bursar, who has been a steady and wise friend to the Trust for many years; we wish him a happy retirement. The Chair and Director have met with his successor, Mr Richard Turnill, and look forward very much to working with him. We also welcome the arrival of Mr Bill O'Hearn as Director of Development and have already begun discussing with him how we can make sure that news of the Trust and its activities is communicated most effectively to the College and its alumni.

The term of patronage of HRH the Prince of Wales ended in June 2020 and lockdown created some challenges in our communications with Clarence House, but we are delighted now to have received confirmation that His Royal Highness is willing to continue as our Patron for a further five years.

And finally, Trustees were saddened to learn of the death of our former Chairman, Professor Nigel Weiss, at the age of 83, and commemorated him in a minute's silence at the start of their meeting on 2nd July 2020.

#### The Trust in a time of COVID



The Trustees have conducted all their meetings by Zoom since March 2020. There has been no obvious reduction in the energy, quality and length of discussion, although it is not quite the same without the legendary Trinity fruit cake and cheese straws. Everyone has, however, missed the opportunity to meet and relax informally at our customary end-of-year dinner.

We hope to remedy this as soon as possible, to be able finally to thank in person our former Chairman, Robert Mair. The Officers and Staff have all worked from home throughout the financial year, keeping in touch with regular virtual meetings over Zoom – with coffee.

These arrangements appear to have worked exceptionally well and everyone has enjoyed the extra time freed up by the need to travel to the office: Laurie has volunteered for Cambridge Zero and started to learn German online; Nichola passed her Advanced Diploma in Accounting (taking the exams wearing a mask), as well as fitting around home schooling; Janet immersed herself in her garden, absorbed by the life-cycle of ladybirds; and Donald has split his time between Cambridge and Wimbledon.

#### Left: Celebrating the lifting of lock-down: with Isaac Newton's Apple Tree in a cold and blustery Cambridge University Botanic Garden.

Below: Trustee meetings in lockdown: an appearance by Loraine's cat adds to the occasion.



# Researchers supported by the Isaac Newton Trust in 2020-21

# Early Career Researchers

Dr Farah Ahmed, Education HH	Dr Xuan Liang, Physiology, Development & Neuroscience DAR
Dr Godwin Aleku, Biochemistry W	Dr Yang Liu, Philosophy <i>ED</i>
Dr Miguel Anaya, Chemical Engineering & Biotechnology DAR	Dr Tommaso Mari, Classics
Dr Marisol Basilio, Education	Dr Christopher Markou, Business Research JE
Dr Hjordis Becker-Lindenthal, Divinity JE	Dr Elena Maters, Chemistry G
Dr Luke Bridgestock, Earth Sciences DAR	Dr Daria Mattingly, Modern & Medieval Langs & Linguistics <i>R</i>
Dr Andrew Buskell, History & Philosophy of Science CLH	Dr Patrick McKearney, Social Anthropology T
Dr Bipasha Chakraborty, Applied Maths & Theoretical Physics CLH	Dr Alison Ming, Applied Mathematics CHU
Dr Benjamin Chemouni, Politics & International Studies W	Dr Robert Mok, MRC Cognition & Brain Sciences
Dr Magdalen Connolly, Asian & Middle Eastern Studies ED	Dr Elizabeth Monier, Asian & Middle Eastern Studies
Dr Franck Courbon, Computer Science & Technology CHU	Dr Oliver Morgan, English PEM
Dr Fiona Danks, Polar Studies/Geography F	Dr Carla Mulas, Stem Cell Research F
Dr Gabrielle Davidson, Psychology W	Dr Mathelinda Nabugodi, English N
Dr Lauren Davies, Geography Q	Dr Monica Nicolaides Ramsey, Archaeology DAR
Dr Suhail Dhawan, Astronomy LC	Dr Jacob Olley, Music <i>JN</i>
Dr Hajni Elias, Asian & Middle Eastern Studies CL	Dr Olga Petri, Geography JE
Dr Kelly Fagan Robinson, Social Anthropology CLH	Dr Helena Phillips-Robins, Modern & Med Lang & Linguistics SEL
Dr Heye Freymuth, Earth Sciences DAR	Dr Robert Pralat, Sociology SID
Dr Oliver Friedrich, Astronomy CHU	Dr Maria Rojo Carrillo, Music W
Dr Marco Geraci, Economics F	Dr Amber Ruigrok, Psychiatry LC
Dr Sofia Gotti, History of Art JN	Dr Michael Rule, Engineering
Dr Calbert Graham, Modern & Medieval Langs & Linguistics JN	Dr Kadi Saar, Chemistry <i>JN</i>
Dr Tim Greenfield, Earth Sciences JE	Dr Mathias Schannor, Earth Sciences
Dr Jaakko Heiskanen, Politics & International Studies F	Dr Sakthy Sevarkumaran, Engineering N
Dr Diarmuid Hester, English <i>EM</i>	Dr Matthew Simpson, Philosophy R
Dr Anna-Riikka Kauppinen, Social Anthropology SID	Dr II-Kweon Sir, Classics CHR
Dr Charlotte Kenchington, Earth Sciences ED	Dr Hannah Übler, Astronomy CTH
Dr Rihab Khalid, Architecture <i>LC</i>	Dr Sunny Vagnozzi, Astronomy HO
Dr Martin Kleppmann, Computer Science & Technology CC	Dr Dominic Walker, CRASSH M
Dr Adrien Lefauve, Applied Maths & Theoretical Physics CHU	Dr Christina Woolner, Social Anthropology K
Dr Johannes Lenhard, Social Anthropology K	Dr Doriane Zerka, Modern & Medieval Langs & Linguistics HO
Dr Jingwei Liang, Applied Maths & Theoretical Physics CTH	Dr Edward Zychowicz-Coghill, Asian & Middle Eastern Studies K

# Institutions and Programmes

AHRC Doctoral Training Programmes I & II	Centre for Research in Arts, Humanities & Social Sciences CRASSH
African Studies: Climate Conflict	Fitzwilliam Museum
Cambridge Brain Regenerative Therapy Centre	Interdisciplinary Research Centres, Institutions & Networks
Cambridge Digital Humanities Fellowships	Kavli-Newton Cosmology Fellowships
Cambridge Zero	MAX-CAM Social Anthropology Fellowships
CARA Refugee Fellowship Programme	Museum of Archaeology & Anthropology
Centre for Study of Existential Research	The Postdoc Academy

Dr Jim Ajioka, Chemical Engineering & Biotechnology JE	Prof Rebecca Kilner, Zoology PEM
Dr Maria Alcolea, Stem Cell Institute	Prof Barak Kushner, Asian & Middle Eastern Studies CC
Prof John Arnold, History K	Prof Christine Lane, Geography CC
Dr Massimo Asta, History	Dr Peter Lawrence, Zoology
Dr Matthew Benton, Zoology DAR	Dr Alpha Lee, Physics CTH
Dr Kevin Chalut, Stem Cell Institute R	Dr Po-Ling Loh, Pure Maths & Mathematical Statistics CHU
Dr Harry Cliff, Physics SEL	Dr Robert Mahen, MRC Cancer Unit PET
Dr Giuliana Di Martino, Materials Science & Metallurgy	Dr Lucia Marti-Prats, Psychology
Prof Ming Qing Du, Pathology HH	Prof Angelos Michaelides, Chemistry DAR
Dr John Durrell, Engineering PEM	Prof Gordon Ogilvie, Applied Maths & Theoretical Physics CL
Dr John Ellis, Physics CAI	Dr Michael Rand, Asian & Middle Eastern Studies
Prof Beverley Glover, Plant Sciences Q	Dr Alice Reid, Geography CHU
Prof Bill Harris, Physiology, Development & Neuroscience CL	Prof David Rowitch, Paediatrics CL
Dr Mark Holmes, Veterinary Medicine G	Dr Suchitra Sebastian, Physics
Dr Jessica legre, Chemistry T	Prof Geoffrey Smith, Pathology EM
Prof Chris Jiggins, Zoology JN	Dr David Stillwell, Business School
Prof Mark Johnson, Psychology K	Dr John Suckling, Psychiatry
Dr Ragnhildur Karadottir, Veterinary Medicine	Dr Melissa Uchida, Physics
Dr Sohini Kar-Narayan, Materials Science & Metallurgy CLH	

# **Project Grants**

## Our Donors

## The Isaac Newton Trustees are grateful for the ongoing support of Trinity College and its alumni

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