



National Centre
for the Replacement
Refinement & Reduction
of Animals in Research

NC3Rs funding opportunities

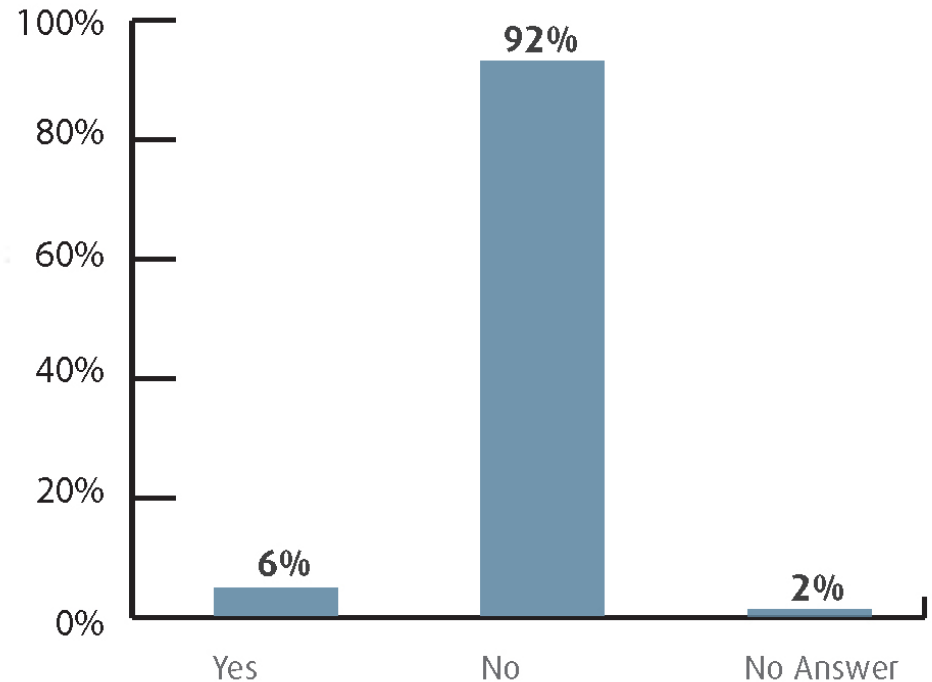
Vicky Robinson

NC3Rs as a research funder

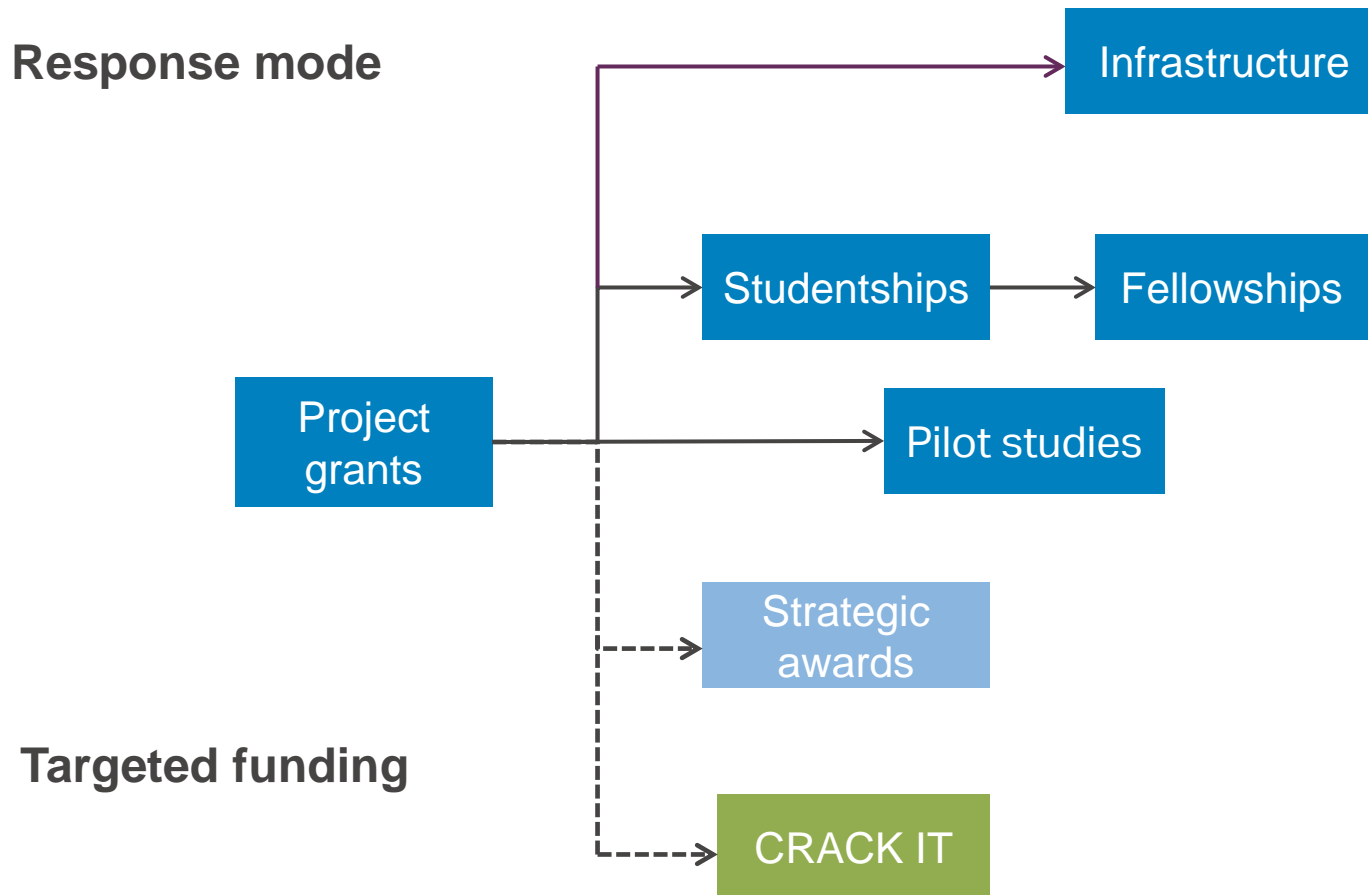
- UK's major funder of 3Rs research & training
- Key to strategy
- Any area of biological, medical or veterinary science eligible
- Schemes to support academics, industry & SME sector
- 'Traditional' funding opportunities & novel schemes (CRACK IT)
- Demonstrated 3Rs research has wider benefits – providing new knowledge, opportunities to improve human health & protection of the environment
- Overview of schemes & what makes a good NC3Rs application

Have you ever applied for external funding to undertake 3Rs research?

Base: All scientists (1,529)



Evolution of the funding schemes



Headlines

Sept 2004 – April 2015

217 major
awards

totalling
>£43 million

>450
investigators

>60 research
organisations

93% to
universities

70 students
and fellows

Top 10 NC3Rs funded Institutes

Rank	Institution	Number of awards	Total value of awards
1	Newcastle University	17	£2,970,681
2	University of Nottingham	9	£2,889,685
3	Imperial College London	14	£2,616,080
4	Queen Mary, University of London	9	£2,327,454
5	University of Oxford	11	£2,007,777
6	University of Cambridge	9	£1,898,343
7	King's College London	8	£1,878,114
8	University of Glasgow	8	£1,761,090
9	University of Southampton	8	£1,565,080
10	University of Edinburgh	8	£1,496,051

Scientific classification scheme for NC3Rs awards

PHARMACEUTICALS AND CHEMICALS

- Biologics
- Drug delivery
- Ecotoxicology
- Efficacy
- Pharmacology
- Safety
- Toxicology

TECHNOLOGIES AND APPROACHES

- Behavioural modification/monitoring/testing
- Bioinformatics
- Engineering
- Genetic modification/sequencing/screening
- *In vitro* techniques
- Imaging
- Improved study design
- Mathematical and computer modelling
- Non-vertebrate models
- Species substitution
- Stem cells
- Tissue engineering
- Synthetic biology
- Systematic review

CELLS AND SYSTEMS

- Cancer
- Cell biology
- Development biology
- Genetics
- Physiology and disease (of all major organ systems, except the brain)
- Structural biology and biophysics

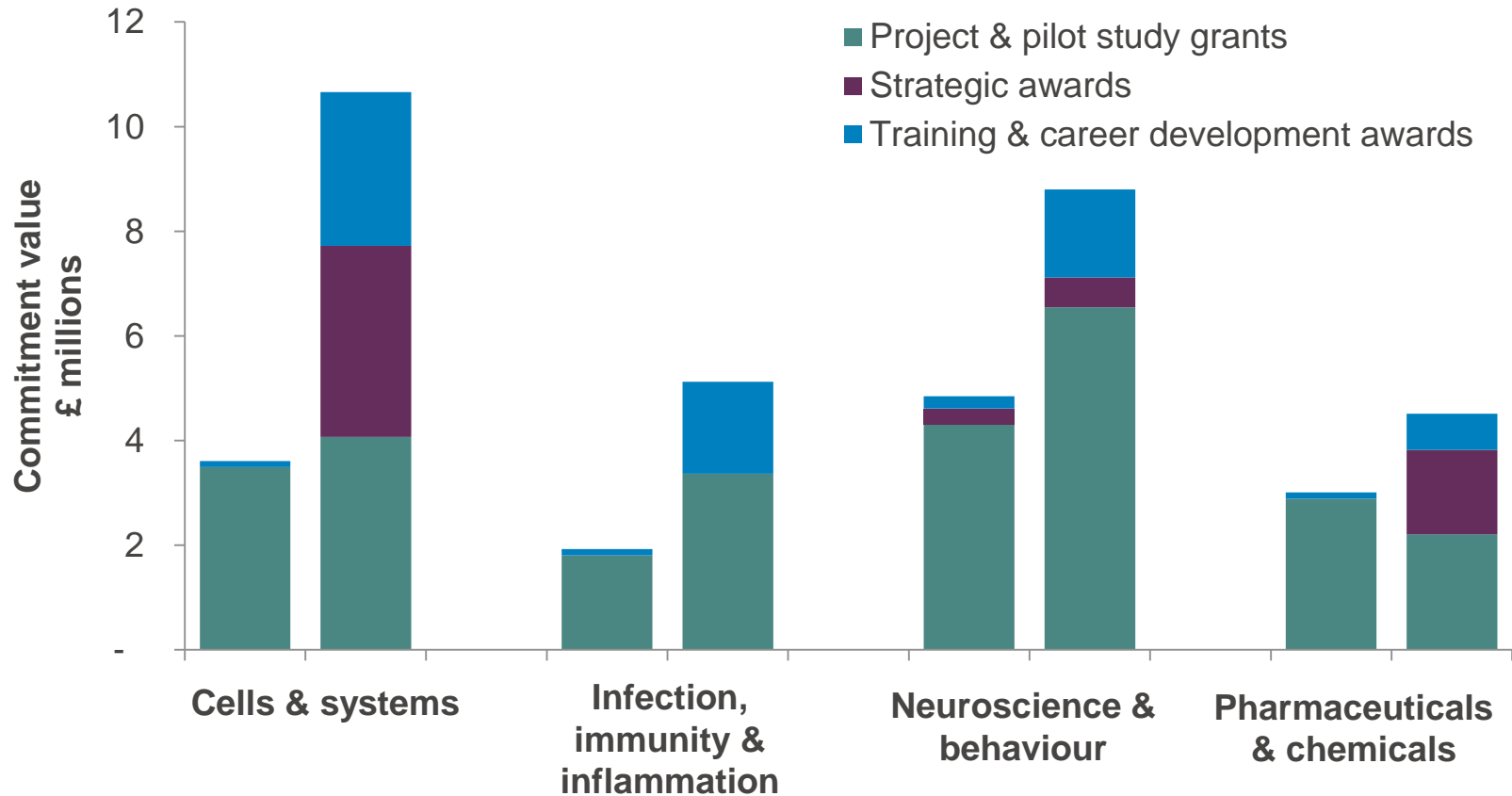
NEUROSCIENCE AND BEHAVIOUR

- Animal welfare
- Basic neurobiology
- Behaviour
- Cognition
- Neurodegenerative disease
- Neurological disorders
- Pain and analgesia
- Psychology

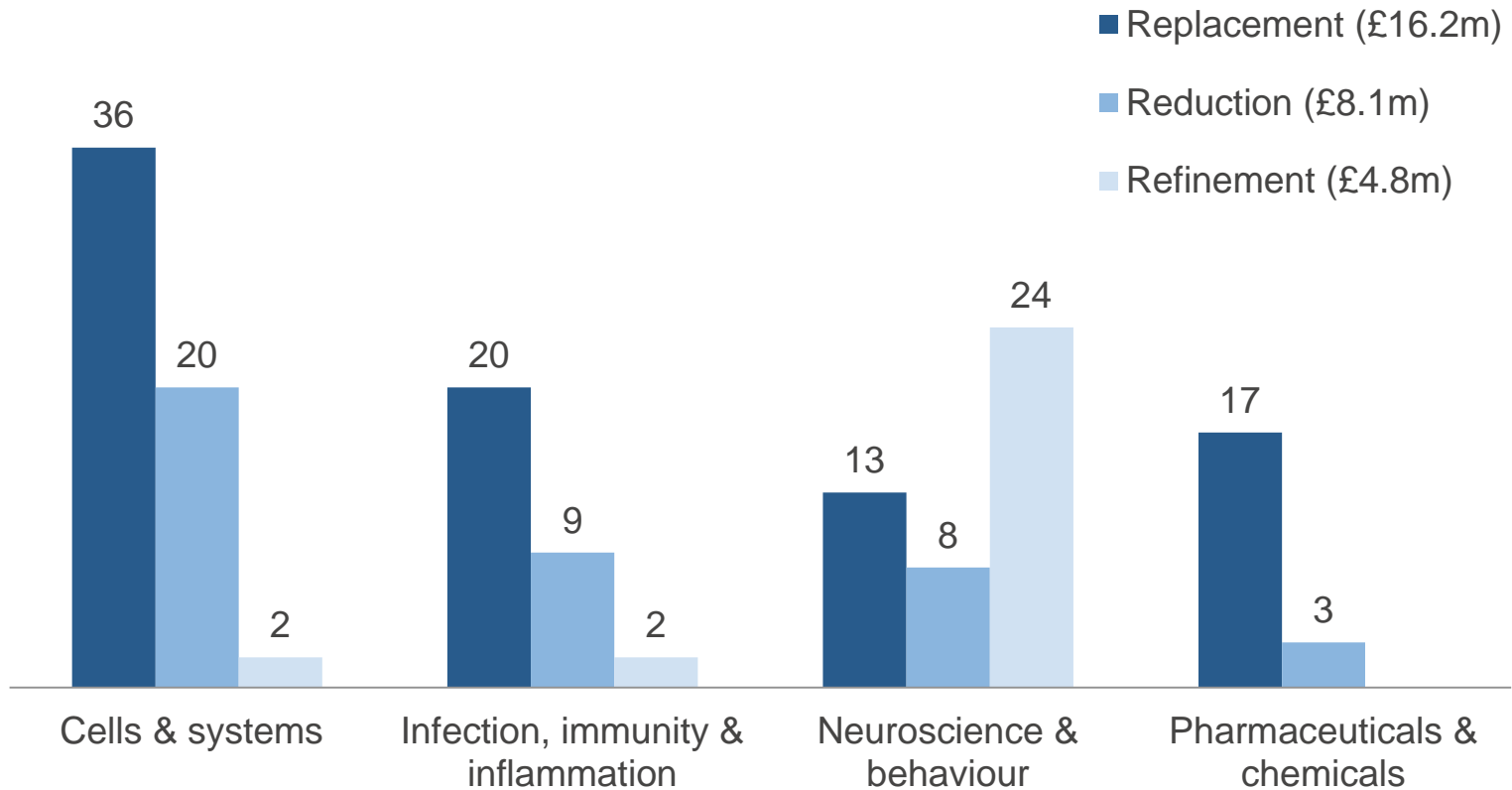
INFECTION, IMMUNITY AND INFLAMMATION

- Basic immunology
- Immunity and immune tolerance
- Infectious agents
- Inflammation
- Host-pathogen interactions
- Vaccines

Commitment value by scientific category: 2004/05 to 2009/10 and 2010/11 to 2014/15



Number of awards by primary 'R' and broad scientific category, 2010/11 to 2014/15



What makes a good NC3Rs application?

Common to all research funders, consider the “3Ps”:

- Person
- Place
- Project



Project

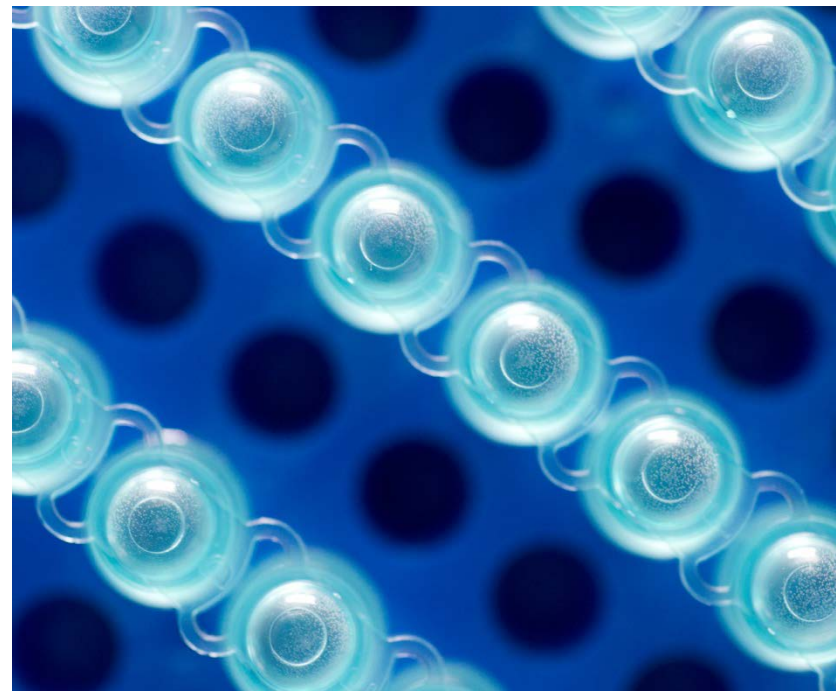
- Scientifically novel & interesting - hypothesis-driven or establishing a new model/technique
- Feasible within timeframe
- Good set of preliminary data & with logical and detailed experimental plan
- Right balance of risk – appropriate contingency plans
- Engagement with end users - recognise barriers to adoption & how these can be overcome
- Value for money
- **Must address a 3Rs need (get the 3Rs right!)**

Replacement

Methods that avoid or replace the use of animals defined as 'protected' under the (ASPA) in an experiment where they would have otherwise been used.

Includes:

- Human volunteers, tissues and cells
- Mathematical and computer models
- Established animal cell lines, or cells and tissues taken from animals killed solely for this purpose (i.e. Schedule 1)
- Immature forms of vertebrates such as embryonic and foetal forms
- Invertebrates such as *Drosophila*

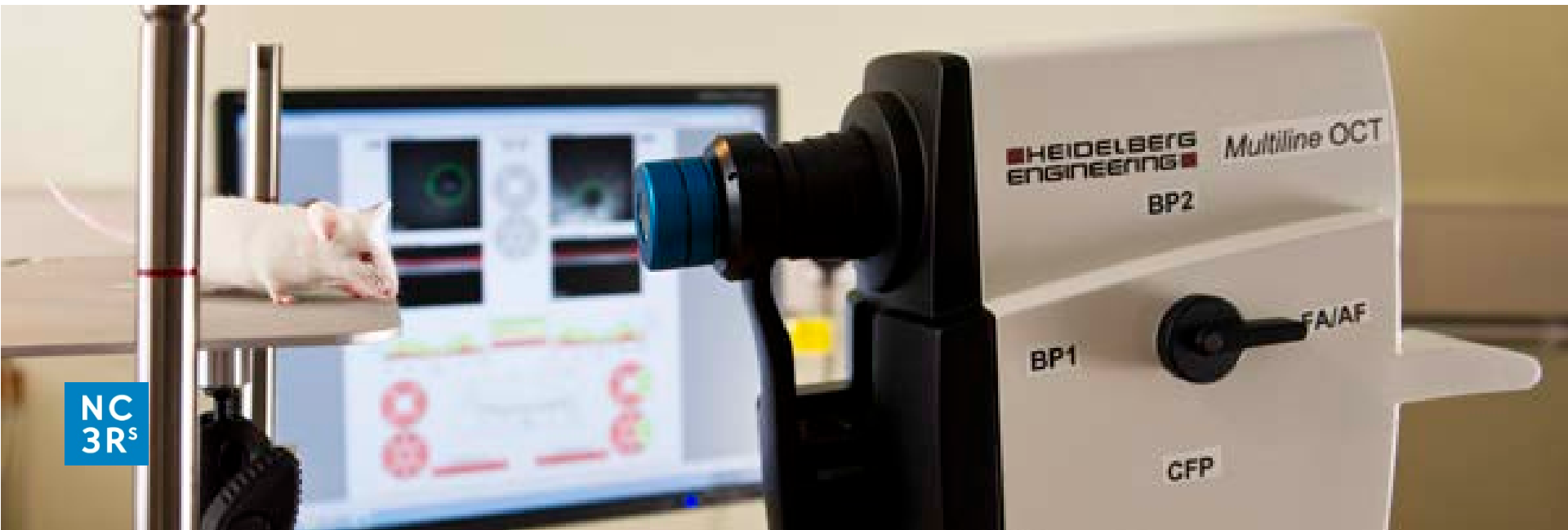


Reduction

Methods that minimise the number of animals used per experiment or study, either by obtaining comparable levels of information from fewer animals, or by obtaining more information from the same number of animals.

Includes:

- Imaging for longitudinal studies
- Sharing data and resources (e.g. animals and equipment)
- Improved experimental design and statistical analysis



Refinement

Methods that minimise the pain, suffering, distress or lasting harm that may be experienced by the animals. Applies to all aspects of animal use, from housing and husbandry to scientific procedures

Includes:

- Developing models or methods which reduce pain and suffering.
- Improved housing or husbandry
- Non-invasive techniques



3Rs in the application

- Which of the 3Rs will the proposed research advance?
- What species of animal will be affected? Just one or potentially more?
- What type of animal experiments will the proposed research have an impact on? Will this affect all models in the field, or a certain model, or a specific aspect of a model?
- How will the replacement, refinement and/or reduction be achieved? How will it be disseminated? Uptake by others?
- Provide metrics - what is the potential impact? Numbers or severity? Local or broader? Be realistic



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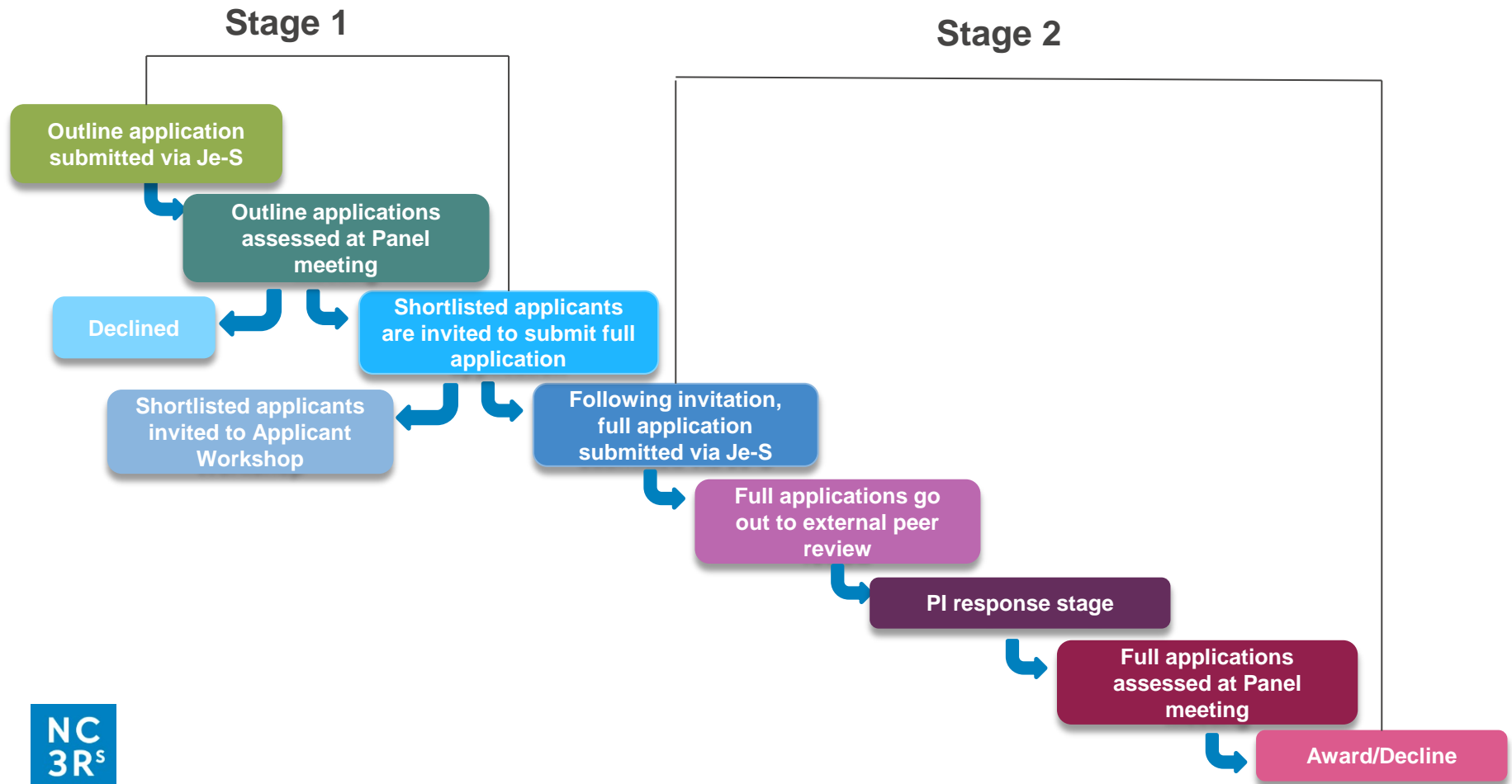
The schemes

www.nc3rs.org.uk/funding

2004 – 2014 | Ten Years of
Pioneering Better Science

Project grant applications: two stage process

- Hypothesis-driven & applied projects of up to 3 years
- 3Rs implications, scientifically novel & innovative
- Open to UK researchers from academia, industry or charity



Key Dates – similar timescales to 2015

September 2015	Outline application form available on Je-S
Early Feb 2016	Deadline for submission of outline application
March 2016	Outline applications assessment by Panel
End of March 2016	Inform applicants of outcome following outline assessment
End of April 2016	Submission of full project grant application form, via JeS
July 2016	Grants Assessment Panel meeting
End of July	Applicants informed of outcome
Grant start date	Between 1 September and 1 November 2016

PhD Studentships 2015

- £90k over 3 years – for stipend, tuition fees, travel & consumables
- 10 awards per annum
- Training environment needs to take account of the 3Rs
- Dates on the NC3Rs website – next call March 2016



David Sainsbury fellowship scheme

- Supports talented early career scientists, who want to engage in 3Rs research, with the transition to an independent career
- £65k per annum for 3 years – 100% of directly incurred costs but no indirect or estates costs
- Applicants must have PhD & maximum of 5 years postdoctoral experience
- Must have a sponsor/mentor
- Ambassadorial role for the NC3Rs & 3Rs: help increase awareness & promote 3Rs approach
- Dates on the NC3Rs website – next call opens in March 2016

Strategic Awards

Year awarded	Theme	Commitment	Co-funder
2009/10	Humane killing of laboratory rodents	£296k	
2010/11	3Rs in asthma research	£1m	
2011/12	Human cell-based carcinogenicity assays	£887k	
2012/13	Mathematical modelling in toxicology	£725k	EPSRC
2013/14	Imaging technology development for the 3Rs	£1.5m	EPSRC
2014/15	Non-mammalian models for asthma research	£386k	
2015/16	Replacing animal models of bovine tuberculosis	£1.42m	BBSRC

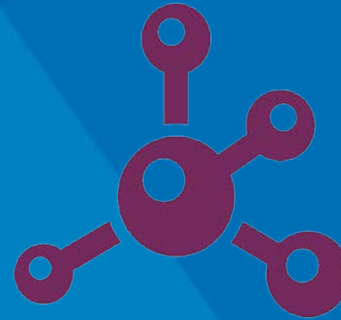
CRACK IT Open Innovation



CRACK IT Challenges

Challenge-led research

- Launched in 2011
- 3Rs Challenges set by industry for academic & SME sector to solve
- NC3Rs provides funding, Sponsors in-kind contributions
- Up to £1 million per Challenge
- £13.8 million allocated to date



CRACK IT Solutions

Technology Partnering Hub

- Launched in 2012
- Route to showcase potential 3Rs technologies & seek partners
- 25 Solutions showcased
- ~ 100 new connections made, plus 11 new partnerships
- Seed funding available from the NC3Rs - £30k

**NC
3R^s**

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<http://www.crack-it.org.uk>

If your application involves animals

Updated guidance in 2014 applicant handbooks
- revised section on the use of animals

NC
3R^s

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NC3Rs Funding Schemes

Applicant and Grant Holder
Handbook 2014

NC
3R^s

MRC
Medical
Research
Council

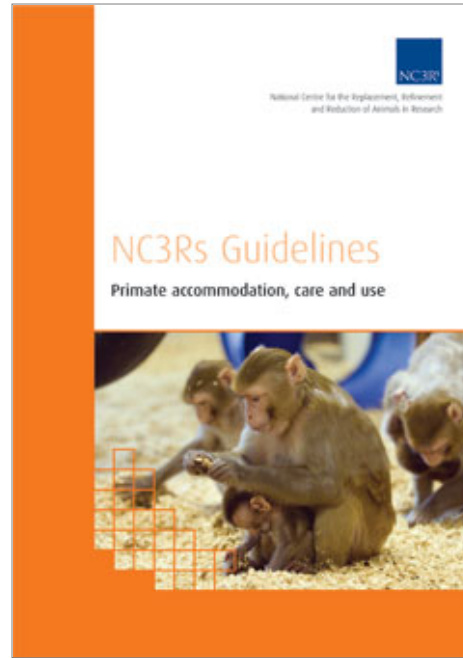
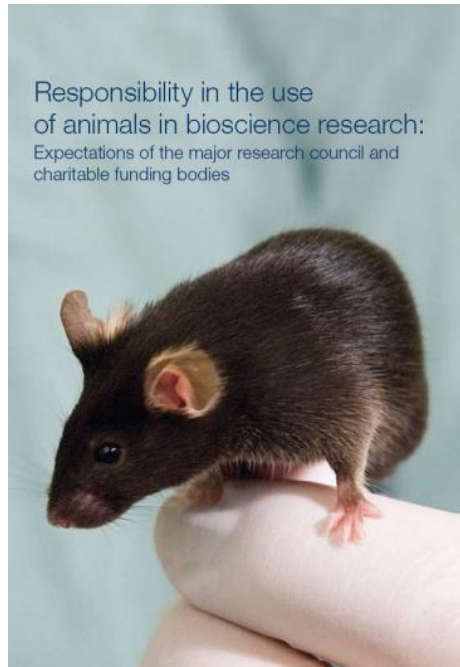
Guidance for Applicants
and Award Holders 2014



Version 4
Last updated 8 April 2014

Our expectations for animal research

- compliance with the principles is a condition of research funding



The scientists we fund



“We now have a model that avoids paralysis in our mice and has also led to the development of a new clinical trial design.”

DAVID COOPER
PROFESSOR OF NEUROSCIENCE
GLoucester University, University of Gloucester



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“Our *in vitro* model challenges the traditional dogma that animal studies of spinal cord injury can never be replaced.”

ANNE STAMM
PROFESSOR OF CELLULAR NEUROSCIENCE
University of Glasgow



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“We have combined three cutting edge technologies to use tissue from patients as an alternative to animals for studying asthma.”

DAVID COOPER
PROFESSOR OF RESPIRATORY CELL AND MOLECULAR BIOLOGY
University of Southampton



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Thank you

- Email: vicky.robinson@nc3rs.org.uk
- Website: www.nc3rs.org.uk/funding
- Twitter: [@NC3Rs](https://twitter.com/NC3Rs)