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

NC3Rs David Sainsbury Fellowship 2017

30 March 2017

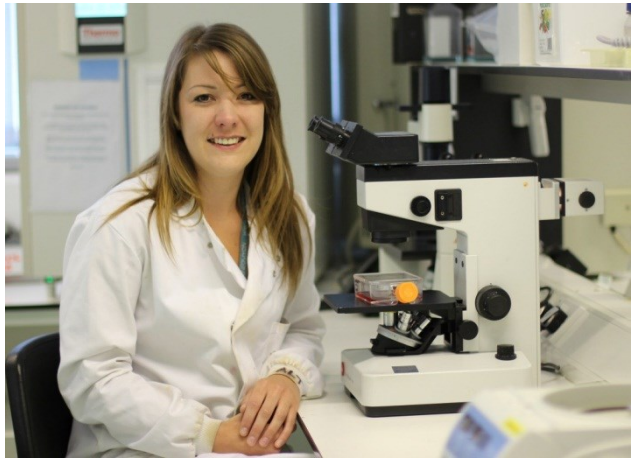
Pioneering Better Science

Outline

- The scheme, application process, and timeline
- Our remit and the 3Rs
- Demonstrating excellent science
- Demonstrating 3Rs impact
- Demonstrating your potential as a Fellowship candidate
- Choosing your sponsor and research environment
- Other considerations - grantsmanship

NC 3Rs

David Sainsbury Fellowship



Supports talented, 3Rs-minded researchers with the transition to an independent academic career

- **Eligibility:** 2-6 years post-doctoral experience
- **Funding:** Salary + up to £30k p.a. for 3 years (non-FEC)
- **Awards:** Up to 3 awards available
- **Timing:** Annual competition opening in March
- **Process:** 3 stages – informal outline, full application, and interview
- **Decision:** December 2017
- **Fellowship start date:** within 12 months of award date (Deadline December 2018)

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Human Tissue Highlight 2017

Background:

- First year we have had a highlight notice that applies to all of our response-mode funding schemes.

Aims:

- Build confidence in the use of human tissue to reduce and replace animal models.
- Raise awareness about its feasibility, viability, and supply.

Process:

- No separate budget for highlight notices although they may receive a strategic uplift at the panel ranking.
- Applicants are advised to contact the Office before submitting an application under this highlight notice to ensure it meets the aims of the highlight.
- More information at our Human tissue resource hub

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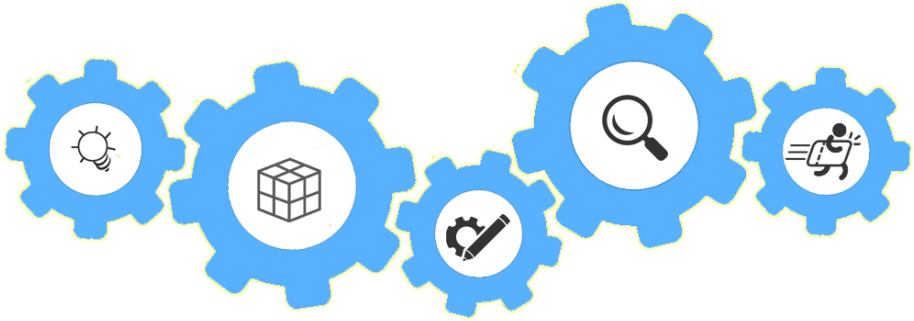
Process and Timeline



24 April

Informal outline

Internal assessment

21 June

Full application

July-October

External Peer review

November

Panel shortlisting

6 December

Candidate group interview

Mid-December

Decision & feedback

Note: Those not shortlisted will receive their feedback and reviewer comments in December. Declines from the interview stage will receive reviewer comments in December and feedback in January.

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Process and timeline

Informal outline:

- Download the outline form from the David Sainsbury Fellowship page
- Submit completed form and CV via email: fellowships@nc3rs.org.uk
- Outlines will be assessed for applicant eligibility, remit, and 3Rs potential, amongst other considerations
- For more information, please see our Outline assessment criteria

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Process and timeline

Full application:

- Application form available on Je-S: 3 May 2017
- Attachments

✓ Case for Support	✓ Data Management Plan
✓ Justification of Resources	✓ HoD and Sponsor letter
✓ Pathways to Impact	✓ Applicant and Sponsor CVs

- For more information, please see our Applicant handbook

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Process and timeline

External peer review:

- Your proposal will be reviewed by relevant national and international experts
- You can nominate up to 3 independent reviewers – they cannot be from your organisation, or collaborators on recent or proposed projects (within past 5 years)
- We aim for a minimum of three reviews per application, only one of which can be a nominated reviewer
- Final ranking recommendations are made by the Assessment Panel who have broader expertise
- For more information, please see our Peer Reviewer Guidance

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Process and timeline

Panel shortlisting:

- The Assessment Panel will score each application according to the following criteria:
  - Scientific excellence
  - 3Rs impact
  - Applicant
  - Sponsor and research environment

- The Panel will shortlist up to six applicants for the candidate group interview.

- For more information, please see our Scoring criteria

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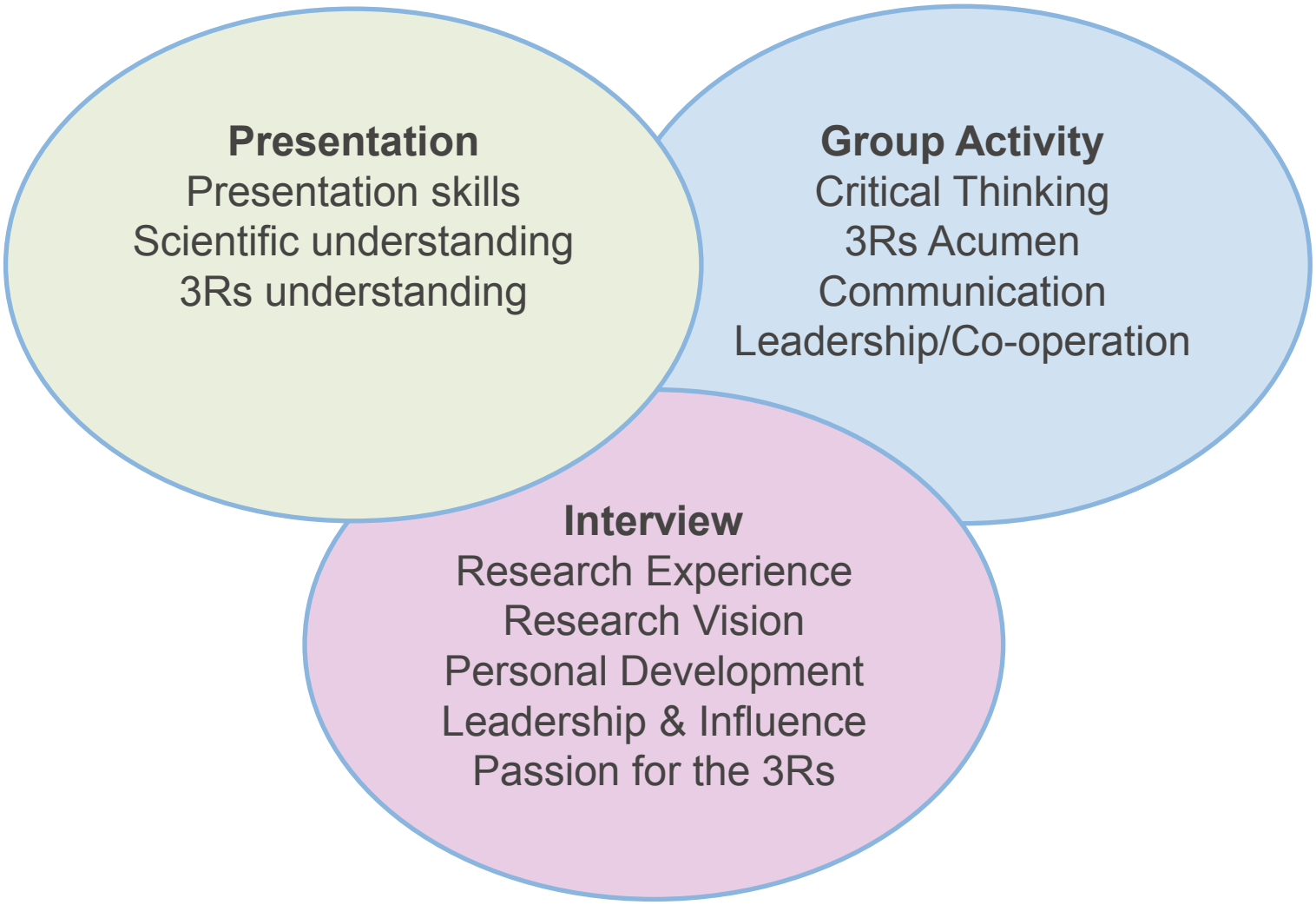
Process and timeline

Candidate group interview:



For more information, please see our Scoring criteria

Process and timeline

Candidate group interview:

Additional tips

- Be able to articulate the scientific rationale behind the choices you have made in your proposal
- Be prepared to discuss your research in the context of other work done in your field
- Be prepared to discuss your research vision and future goals
- Take time to think before answering
- Don’t be afraid to ask for clarification or for the question to be repeated if necessary
- Perform a mock interview with your sponsor/mentor/colleagues

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Our remit and the 3Rs

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Our remit

Any area of science, technology, engineering or mathematics that has the potential to impact on the replacement, refinement or reduction of animals in research

However…

Just because an application is technically within remit does not mean it will be competitive!

The primary driver of the proposal must be the 3Rs!

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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*

It is not replacement if the model will be used in a context where animals would not have been used anyway – e.g. due to cost or practicalities of using a large number of animals

Potential replacement methods:

- Use of invertebrate models such as *Drosophila* and *C. elegans* where there is a clear and direct replacement of vertebrate models
- Use of new or existing *in vitro* or tissue engineered approaches that enhance the replacement potential of these methods
- Use of non-protected immature forms of vertebrates such as embryonic and foetal forms. It is not Replacement to swap one protected form for another

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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

Potential reduction methods:

- Imaging for longitudinal studies instead of serial sacrifice – must offer novelty, not something that is already in routine use
- Improved experimental design to allow more data to be gathered from the same animal

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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 the housing and husbandry used, to the scientific procedures performed on them

Refinement refers specifically to improving the experience of the animal.

Potential refinement methods:

- Methods for assessing and improving animal welfare
- Non-invasive or less painful methods

Refinement research has to have the potential to deliver practical improvements in animal welfare, and cannot not just be about understanding animal behaviour or sentience.

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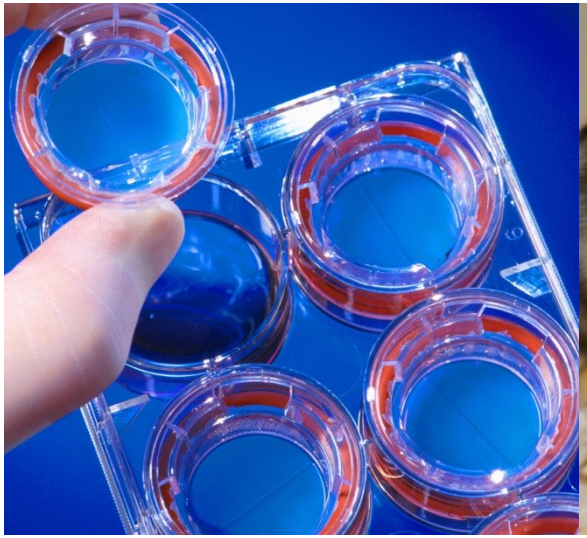
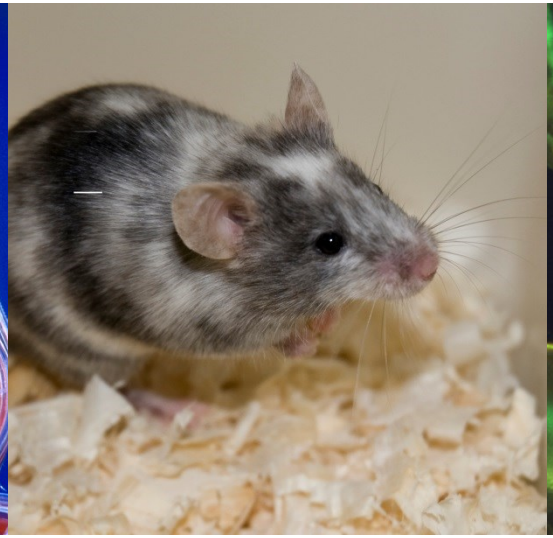
The remit in practice

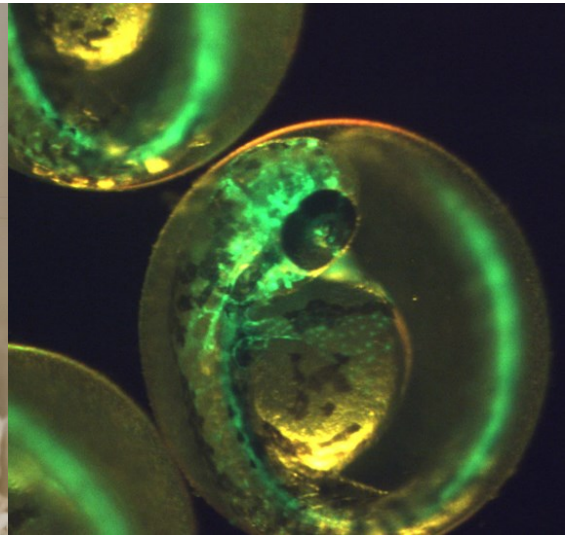
All proposals need to offer a 3Rs impact!

There needs to be a clear 3Rs legacy which demonstrates how a practical change in the use of animals in research will be achieved after the lifetime of the award.

We are looking for applications that will challenge the "status quo" and the way things are done!







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NC3Rs scoring matrix

- The Panel score on a 1 – 10 scale
- Applications are scored using a matrix which considers both the 3Rs and the science and/or technology development.

SCIENCE AND TECHNOLOGY DEVELOPMENT	POTENTIAL 3Rs IMPACT				
	Exceptional	Excellent	Very Good	Good	Not competitive
Exceptional	10	9	8	7	5
Excellent	9	8	7	6	4
Very Good	8	7	6	5	3
Good	7	6	5	4	2
Not competitive	5	4	3	2	1

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Demonstrating excellent science

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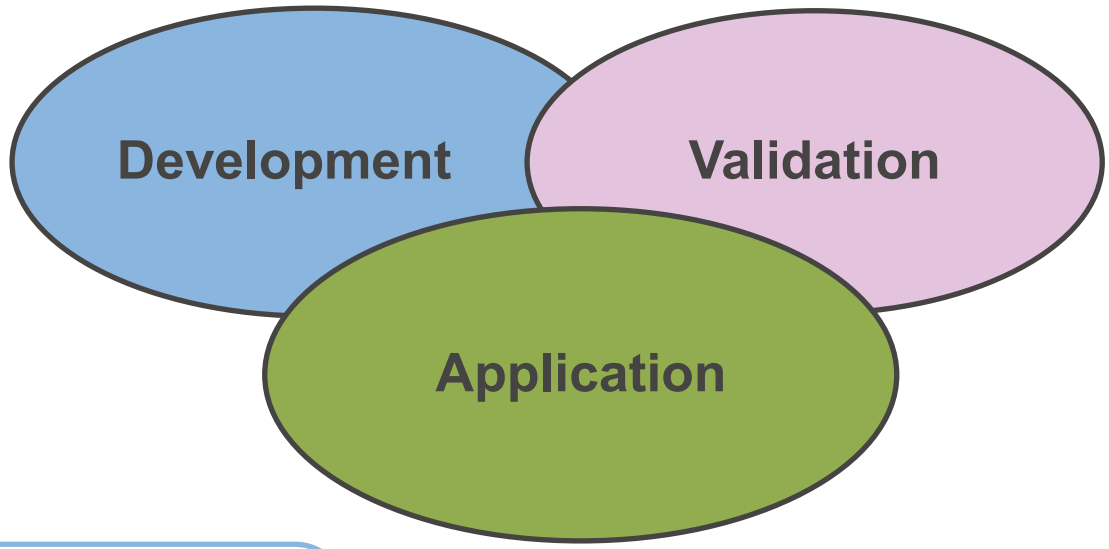
The scientific case

Proposals should be focused on one of, or a combination of these three aspects



Note: Realistically, in order to be competitive, a proposal needs to address two out of three of these.

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Development

Applications may seek to develop a novel technology or method e.g. an *in vitro* assay, imaging approach or animal monitoring system

Key points that should be addressed:

- Recognise the competition
  - What similar methods already exist?
  - Scientifically, why is this approach significantly better?
  - What are some other benefits - is it more cost effective, or easier to adopt by other groups?
- Demonstrate feasibility - include preliminary or proof-of-concept data where possible
- If developing a model using animal tissue, why would human tissue not be a suitable alternative at this stage?
- Have potential end users been engaged in the development process?

Validation

In order for a novel 3Rs approach to be adopted it is important for the method to be validated, e.g. against the current “gold standard”

Key points that should be addressed:

- What is the current “gold standard” in the field and how will the new method be validated against it?
- Who are the potential end users of the new method?
- Are there letters of support/ collaborations to demonstrate they would take it up?

Application

Using the new method to answer novel scientific questions fosters confidence in and establishes the scientific benefits of the approach

However…

Application of the method should be in the context of the 3Rs, and demonstrating the additional 3Rs benefits that can be achieved, and not simply about using the method.

Many proposals focused on application of a model often fall into the trap of focusing too much on the scientific outcomes and losing sight of the 3Rs objectives.

Key points that should be addressed:

- How will application of the model encourage its adoption by others?
- What are the barriers to adoption and how can these be overcome? (e.g. access to human tissue/data/specialist equipment)
- Are there any additional steps necessary to support adoption of the model, e.g. regulatory changes, and have these been discussed?

Other considerations

Is the science robust and the project feasible?

Key points to address:

- Is the experimental plan logical and detailed?
  Tip: Your proposal should address both an expert and a general scientific audience.

- Is the project supported by preliminary or proof-of-concept data that demonstrates feasibility?

- Is the work novel? Cite the competition and explain why your approach is better/adds value.

- Is the work feasible within the timeframe and resources requested?
  Tip: Stick to three to four objectives and focus on doing them well.

- Have you considered the risks and are there contingency plans?

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Other considerations: Experimental design

Mandatory information:

- Sound scientific reason for the use of animals and choice of species

- Experimental approach
  - Relevant information about the animals (species, strain, sex, age, weight)
  - Number of animals in each experimental group
  - Number of times each animal will be measured
  - Number of independent replications of each experiment
  - Steps taken to minimise the effects of bias (e.g. randomisation, blinding)
  - Primary and secondary outcomes to be assessed

- Sample size
  - Explanation for the number of animals used with power calculations (including justification for the effect size)

- Planned statistical analyses
  - Overview in relation to the choice of sample size
  - Details of any statistical advice sought/available

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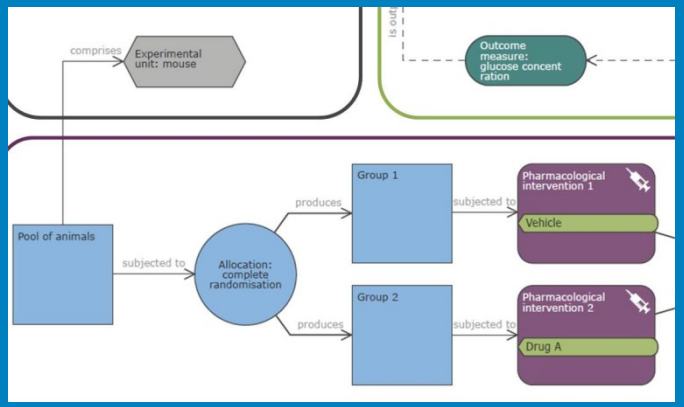
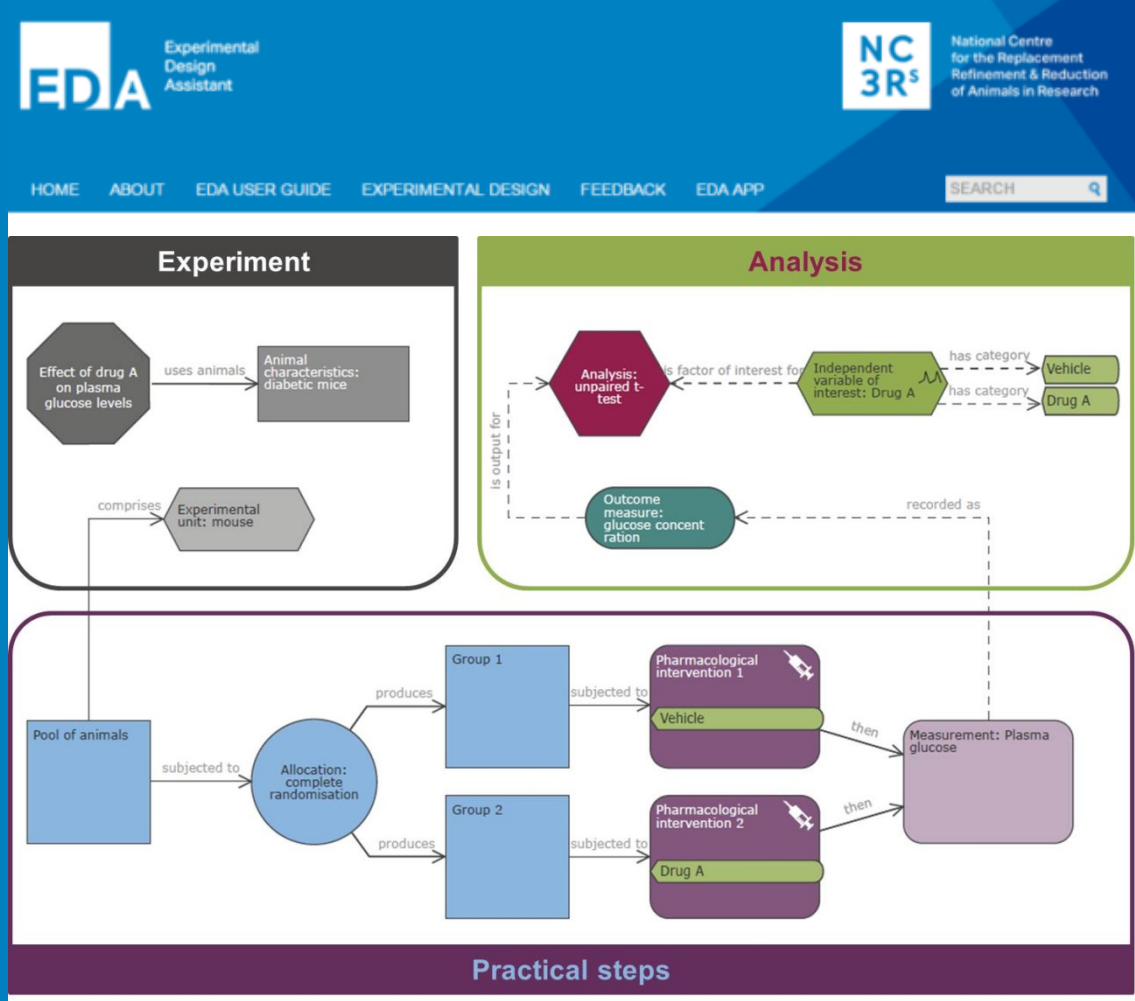
Experimental Design Assistant (EDA)

A new online tool for animal researchers to improve the design of their experiments.



- Consists of a web application and a supporting website
- Can help to ensure robust study design and reliable and reproducible findings

https://eda.nc3rs.org.uk/



Benefits of the EDA include:

- Feedback and advice on your experimental design
- Support for randomisation, blinding and sample size calculation
- Practical information to improve knowledge of experimental design
- Improved transparency, allowing you to share and discuss your plan with colleagues and collaborators

Demonstrating 3Rs impact

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The 3Rs impact case

- **Which of the 3Rs will the proposed research advance?**
- **How are you challenging the 'status quo'?**
- **How are you advancing the 3Rs?**

<u>Be specific:</u>

- **What species of animal will be affected?**
  - Which species is currently used for this type of work?
  - Could the proposed method impact other species as well?
- **What type of animal procedures will the proposed research have an impact on?**
  - Will this affect all models, a certain model, or a specific aspect of a model?
  - Could it affect the severity limits of procedures/models?
  - Could it impact other similar models in use/ research outside of your area?

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Metrics

We are looking for reasonable and realistic estimates based on a logical approach.

We are not looking for:

- Exact numbers
- Broad generalisations, such as Home Office statistics

Metrics can be based on:

- How many animals are used locally for this work, and how many would be affected/no longer used
- How many groups in the UK/overseas use the animal model and could benefit from the approach
- How many papers published annually use this model, and how many animals are used in a typical publication

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Examples

BAD

According to the UK Home Office in 2014,130,000 animals were used in basic oncology research and a further 60,000 in translational or applied human cancer research. The vast majority of the animals used in these procedures are mice. We believe our *in vitro* system can replace the use of mice in 20% of such research in the UK, equating to millions of animals worldwide.

GOOD

In our laboratory we use 1000 mice annually in this procedure which is classified as severe by the Home Office. Using our new method we believe we can replace 50% of our animal work and use only 500 mice. We know of 5 other groups in the UK who use this model. Assuming they use a similar number of mice to us, our model could replace 3000 mice annually in the UK. A PubMed search shows there are 100 papers published each year that use the animal model. Each paper typically uses 200 animals. If our method was adopted we believe we could replace 50% of this use – equating to a further 10,000 mice internationally that would no longer be used in a severe procedure.

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Creating a 3Rs legacy

Maximum 3Rs impact can only be achieved if the approach is adopted by others

Impact summary and pathways to impact:

- What is the likely uptake of the method?
- Have you demonstrated buy-in from end users and have you quantified what impact this could have on the 3Rs?
- What are the barriers to adoption and how can they be overcome? (regulatory, cost, technological, access issues, competition…)

Dissemination plan:

- How will you convince others to take up your method/ technique/ model beyond the lifetime of your award?

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Routes to achieving impact

Note: It's not just about publications and conference attendance!

We want our grant holders to actively drive 3Rs impact from their research outputs!

Demonstrating your potential as a Fellowship candidate

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What is the Panel looking for?

- Track record of challenging, original and productive research
- Expertise in the area and ability to carry out the proposed work
- Scientific independence
- Ambition and potential
- Leadership and influence
- Passion for and commitment to the 3Rs
- For more information, please see our Scoring criteria

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Maximise your competitiveness!

Applicants can only apply to the scheme twice.

Therefore, it is important that you **time** your application such that you are at your most competitive when you apply.

- Results and outcomes from major pieces of postdoctoral work have been achieved.
- Publications from the work are submitted/in press.
- Network of collaborators allows you to assemble a strong team.

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Demonstrate your independence!

The scheme is designed as a stepping stone to an independent academic career.

Therefore, it is important that you demonstrate to the Assessment Panel that you are ready to take this step.

- Innovative research ideas that go beyond incremental improvements to your current postdoctoral research project.
- Conduct your fellowship in a different laboratory to the one you currently work in. Or if this is not possible, then consider spending some of your fellowship in a different laboratory to gain new skills and a broader research perspective.
- Well thought through plan for gaining and developing the skills that you will need as a group leader
- Draw on your network of academic and industry collaborators to incorporate relevant expertise into the project.

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NC3Rs Skills and Experience Framework

This skills and experience framework is designed to provide guidance for researchers who are interested in applying for an NC3Rs David Sainsbury or Training Fellowship. This framework is not meant to be prescriptive, but is intended to provide general guidance and clarity on the types of skills and competencies that potential applicants should seek to demonstrate at each career stage, taking into account career breaks, part-time working, and changes in discipline.

	Training Fellowship	David Sainsbury Fellowship
	Individuals should:	Individuals should:
Research Vision	▪ Have a clear understanding of the contribution of their research to their field ▪ Demonstrate an understanding of the depth and breadth of the 3Rs challenge, and the relevance to their own research ▪ Demonstrate independent research ideas, show an awareness of research in other fields, and an appreciation for the importance of working across disciplinary boundaries ▪ Be starting to establish a network(s) of research contacts independent of their current group leader/supervisor	▪ Have their own research plans/ideas, independent of their current group leader, and describe how their research plans fit into an international context ▪ Demonstrate an understanding of the wider context of how the 3Rs impacts both their own research and other fields ▪ Have a network of research contacts, independent of their current group leader, including appropriate collaborations nationally, internationally and across disciplines ▪ Be able to explain plans to establish their own research team that will enable them to become an independent research leader
Personal Development	▪ Have a clear proposal for how they might gain the research skills training and development necessary to enable them to deliver their research plans ▪ Be able to outline how they will seek opportunities to access career development support, e.g. mentoring and professional training development, and relevant training courses that will underpin their future career ambitions	▪ Have identified, and where appropriate, pursued opportunities for development, such as time in a second research centre within the UK or overseas, or time spent within industry, or learning new skills ▪ Have identified opportunities to access career development support, e.g. mentoring and professional training development, and relevant training courses that will underpin their future career ambitions

https://www.nc3rs.org.uk/sites/default/files/documents/Funding/Skills%20and%20Experience%20Framework.pdf

Note: If you are around 2-3 years post PhD, you would be eligible for both of our fellowship schemes, so it's important that you choose the scheme which best fits your competencies, and for which you would be most competitive.

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Choosing your sponsor and research environment

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What is the Panel looking for?

- Sponsor's standing in the field, expertise, and ability to support the work
- Appropriateness of the research environment and commitment from Head of Department
- Right balance of expertise on the "team", including collaborators
- For more information, please see our Scoring criteria

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Choose your sponsor and mentor wisely!

- Sponsor (mandatory)
  - Hosts the fellow in their laboratory
  - Provides scientific expertise and guidance for you/the project
  - Demonstrates a commitment to your development into an independent researcher
  - Should critique your application and provide guidance on submitting a strong proposal
- Mentor (optional but encouraged)
  - Provides generalised careers/life advice and support
  - Does not need to be in the same field/institution as you
  - More about the person/connection than scientific expertise
  - Should have an interest in helping you to achieve your goals and succeed in your chosen career.
  - You can have more than one mentor.

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Your research environment

Is this the best place to do the work?

Key points to consider:

- Access to facilities, resources, specialised equipment, samples e.g. tissue bank
- How will the institution support the research?
  Tip: A strong, personalised letter of support from the Head of Department demonstrates commitment to you/your research
- Are there other researchers at the institution who will be able to support you and the project scientifically or in other ways?
- Will there be access to facilities outside of the host institute?

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Other considerations

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Grantsmanship

- Ensure you have a well-structured and enthusiastic argument that is clearly written
- Make sure that your objectives and research plans are detailed, and follow a logical flow
- Set achievable targets and milestones
- Seek guidance from your sponsor
- Make sure your application is proofread by as many people as possible
- Read the guidance! Make sure you fill in forms correctly, and include all of the necessary attachments and letters of support

Common error to avoid: Make sure you complete the qualifications and experience section of the Je-S form and tick the boxes.

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Summary

- Is your proposal within remit?
- Is the project scientifically robust?
- Is there a well-articulated and reasoned 3Rs justification for the work including metrics?
- Have you demonstrated your full potential?
- Are the team and institution best positioned to deliver the project?
- Have you proofread your proposal and checked to ensure you've included all of the necessary information?

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Q&A session

Q: How is eligibility calculated?
A: Eligibility is calculated from the award date on your PhD certificate, to the outline deadline, taking into account career breaks. There is also some flexibility if you fall on the borderline of eligibility, so please contact the office to discuss your case.

Q: What kinds of experience count as “post-doctoral experience”?
A: All research experience counts as post-doctoral experience, including research roles in industry.

Q: What is the success rate for the scheme?
A: Award rates for all of our funding schemes are published on our website on our Panel meeting outcomes page

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Q&A session

Q: Is it possible to see previous applications?
A: Previous fellowship applications are confidential. However, you can search Our Science pages using your institution as a search term, which will return all of the previous NC3Rs grant holders based at your institution. You can then contact them to ask if they would be willing to share their previous application with you. Our current fellows are also an excellent source of information, and can be contacted through our Meet the Fellows page

Q: Are letters of support needed at outline stage?
A: Letters of support are only required at the full application stage.

Q: What is needed from industrial collaborators?
A: A letter of support is required from any industrial collaborator, detailing their contribution to the project. The application should also include details of how the collaborator will contribute to the project.

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Q&A session

Q: Does the scheme accept applicants from outside of the UK?

A: There are no residency requirements and international applicants are eligible to apply. However, the onus is on the host Research Organisation to ensure that all necessary work permits are in place prior to the start of the fellowship. It is recommended that you obtain at least an agreement in principle from a sponsor and their Research Organisation before you submit an outline. At full application stage, you will be required to submit a letter of support from the Head of Department outlining their agreement to sponsor your work permit.

Q: Can fellows spend time working in labs outside the UK?

A: Fellows may spend up to half of their award (up to 18 months) at a second UK based research organisation and up to 6 months at an overseas or industrial partner's organisation.

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Q&A session

Q: Who can I speak to if I have more questions?

A: Please contact the office at Fellowships@nc3rs.org.uk if you have any further questions or would like feedback on your research idea.

Q: Where can I find more information about the scheme?

A: Please see our David Sainsbury Fellowship webpage for more information

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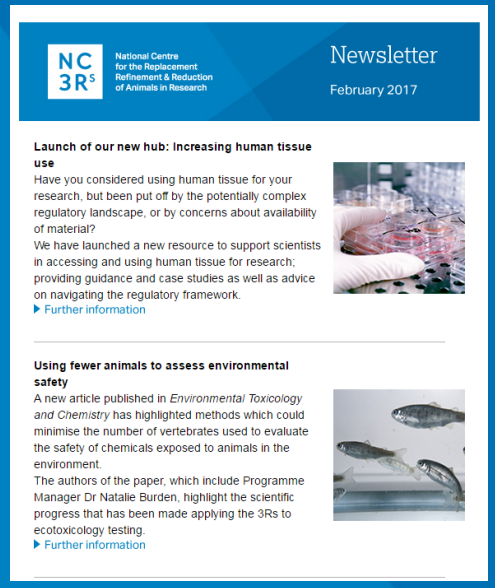
National Centre
for the Replacement
Refinement & Reduction
of Animals in Research

Further information – we're here to help!

Email: Fellowships@nc3rs.org.uk

Website: www.nc3rs.org.uk



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

Newsletter

February 2017

Launch of our new hub: Increasing human tissue use

Have you considered using human tissue for your research, but been put off by the potentially complex regulatory landscape, or by concerns about availability of material?

We have launched a new resource to support scientists in accessing and using human tissue for research; providing guidance and case studies as well as advice on navigating the regulatory framework.

Further information

Using fewer animals to assess environmental safety

A new article published in *Environmental Toxicology and Chemistry* has highlighted methods which could minimise the number of vertebrates used to evaluate the safety of chemicals exposed to animals in the environment.

The authors of the paper, which include Programme Manager Dr Natalie Burden, highlight the scientific progress that has been made applying the 3Rs to ecotoxicology testing.

Further information

Keep in touch!

Our monthly newsletter provides the latest updates from the NC3Rs, including funding calls and events

www.nc3rs.org.uk/user/register

Pioneering Better Science