CRACK IT

CRACK IT Challenges

Guide for Participants

Single Phase Challenges

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CRACK IT Challenges programme overview

CRACK IT is the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs) open innovation programme that supports the development of marketable products and improved business processes with 3Rs benefits.

CRACK IT Challenges is a challenge-led funding competition. Challenges are developed by Sponsors from industry, academia and the charitable sector in collaboration with the NC3Rs and put forward to investigators to solve. Successful applicants receive funding from the NC3Rs and/or co-funders along with in-kind support from the Sponsors (for example data, compounds, equipment).

Challenges are supported by the CRACK IT Business Growth Scheme (BGS), where all CRACK IT Challenge contractors can apply for additional support to maximise their business strategy for near-market ready products and services, within 12 months of the end of their Challenge award.

This document provides a comprehensive guide for participants in **Single Phase Challenges** as part of the CRACK IT competition, including:

- Challenge process and structure.

- Eligibility criteria.

- Application guidance.

- Definitions.

- An introduction to the Business Growth Scheme (for full guidance on this scheme, go to the NC3Rs Innovation Platform).

Guidance for Single Phase CRACK IT Challenges

1. Overview

The CRACK IT programme consists of three types of Challenges:

- **Single Phase Challenges require less research and lower development costs compared to Two Phase Challenges and primarily focus on the validation of new technologies, prototypes and methods that are closer to market.**

- Two Phase Challenges require a significant amount of funding and may include research, development and validation of new technologies, prototypes and methods.

- Mega Challenges are similar to Two Phase Challenges but on a larger scale, requiring additional investment and time for completion. Mega Challenges have three Phases, with Phase 3 awards being subject to successful delivery of Phase 2.

Table 1: Types of Challenge

	Single Phase Challenges	Two Phase Challenges	Mega Challenges
Budget*	**Up to £150k**	Phase 1: up to £200k Phase 2: up to £1.5M	Phase 1: up to £100k Phase 2: up to £1.6M Phase 3: up to £1M
Duration	**Up to two years**	Phase 1: up to nine months Phase 2: up to three years	Phase 1: up to nine months Phase 2: up to three years Phase 3: up to two years

*Note: budgets are inclusive of VAT/reverse charges. The specific budget and duration of each Challenge can be found in the Challenge briefs in the Full Challenge Information on each [Challenge page](#).

1.1. Roles

Funders

The NC3Rs provides the majority of funding for CRACK IT Challenges, however specific Challenges can be co-funded by organisations from industry, the charitable sector and other research councils. Note that CRACK IT is contract research (not a grant) for research and development services to solve the Challenge.

Awardees

Challenges are awarded to successful applicants from academia and small and medium enterprises (SMEs). Successful applicants are the (lead) **contractor** and other team members/organisations are **sub-contractors**.

Sponsors

Sponsors can come from industry, academia or the charitable sector. Sponsors provide in-kind contributions (e.g. access to data, compounds, expertise etc) and/or co-funding to help solve the Challenge. See Section 1.5.2 for further information about Sponsor eligibility.

Partners

Partners are organisations from across the bioscience landscape that support the development and dissemination of technologies as they emerge from Challenge projects. See Section 1.5.3 for further information about Partner eligibility.

1.2. Defining the Challenges

CRACK IT Challenges are identified with Sponsors either through an open call or through office-led initiatives:

- **Open call**: the NC3Rs invites submissions on an annual basis from organisations that would like to sponsor new Challenges.

- **Office-led initiatives**: Challenges that align with the NC3Rs strategy are proposed to Sponsors and developed for the competition.

The CRACK IT Advisory Panel assess potential Challenges, taking into consideration comments from external reviewers that are experts in the relevant field, and recommends to the NC3Rs which Challenges to run as competitions. All Challenges are developed jointly by the NC3Rs and the Sponsors. An invitation to tender and brief explaining the overall aims of the Challenge and the key deliverables are published for each Challenge on the NC3Rs Innovation Platform.

The naming of Sponsor(s) in the Challenge brief does not legally commit them to provide support, however, the expectation is that such support will be forthcoming for high quality applications. Sponsors should only participate with this intention in mind.

For further information on current Challenges including key dates and deadlines please visit the NC3Rs Innovation Platform.

1.3. Launch event

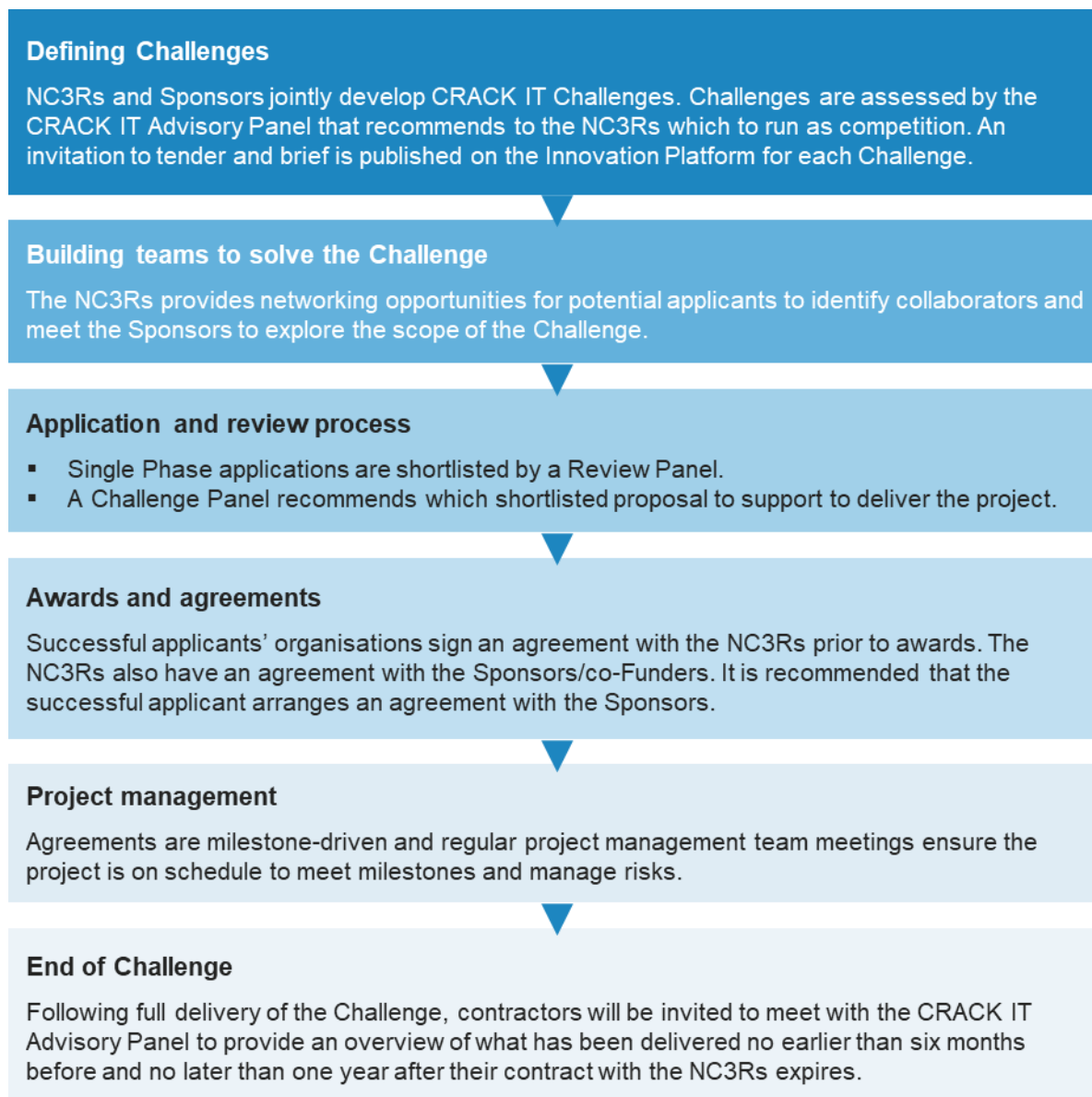The NC3Rs hosts a launch event to provide networking opportunities for potential applicants to meet new collaborators and the Sponsors. The Sponsors of each Challenge hold a surgery at the launch event where potential applicants have the opportunity to ask questions about the Challenge. Applicants are strongly encouraged to attend the launch event to engage with the Sponsors, explore the scope of the Challenge and

build the strongest possible team. Frequently asked questions and a recording of the launch event can be viewed on the relevant Challenge page on the NC3Rs Innovation Platform.

1.4. Building teams to solve the Challenges

Launch events are held in-person or over Zoom. Further information about how potential applicants can network to form consortia is provided at the launch event for each Challenge and on the NC3Rs Innovation Platform once the competition opens for applications. The NC3Rs facilitates interactions between applicants and Sponsors following the launch event and during the application process.

Figure 1: Challenge competition overview

Defining Challenges

NC3Rs and Sponsors jointly develop CRACK IT Challenges. Challenges are assessed by the CRACK IT Advisory Panel that recommends to the NC3Rs which to run as competition. An invitation to tender and brief is published on the Innovation Platform for each Challenge.

Building teams to solve the Challenge

The NC3Rs provides networking opportunities for potential applicants to identify collaborators and meet the Sponsors to explore the scope of the Challenge.

Application and review process

- Single Phase applications are shortlisted by a Review Panel.
- A Challenge Panel recommends which shortlisted proposal to support to deliver the project.

Awards and agreements

Successful applicants' organisations sign an agreement with the NC3Rs prior to awards. The NC3Rs also have an agreement with the Sponsors/co-Funders. It is recommended that the successful applicant arranges an agreement with the Sponsors.

Project management

Agreements are milestone-driven and regular project management team meetings ensure the project is on schedule to meet milestones and manage risks.

End of Challenge

Following full delivery of the Challenge, contractors will be invited to meet with the CRACK IT Advisory Panel to provide an overview of what has been delivered no earlier than six months before and no later than one year after their contract with the NC3Rs expires.

1.5. Eligibility criteria

1.5.1. Applicant eligibility

CRACK IT Challenges are run using [Contracts for Innovation](#) (formerly known as the Small Business Research Initiative or SBRI). Innovate UK are the custodians of Contracts for Innovation.

The competition is open to:

- Any UK, European Union (EU), European Economic Area (EEA) or European Free Trade Association (EFTA) body, public or private.

- Applications can be made from single organisations/investigators or from consortia.

- The lead applicant must be based in the UK, EU, EEA or EFTA.

1.5.1.2 Project eligibility

- Projects able to address the Challenge deliverables and supported by relevant expertise may be led by organisations from within and outside life sciences (e.g. multi-disciplinary consortia may be formed and are encouraged).

- Organisations must demonstrate how the proposed technology/product/service will be disseminated to end-users.

- All organisations must demonstrate a route to market.

Single Phase contracts are expected to be signed with commercial enterprises and not academic institutions however, academic institutions are eligible if they can demonstrate a strong commercial strategy.

Applicants may already hold a grant or contract from the NC3Rs and other funding bodies for research related to the topic for which new funds are being sought. Applicants should provide details of all relevant research funding, including that from industry, in their application.

Please note: this competition will not fund any procurement, commercial, business development or supply chain activity with any Russian or Belarusian entity as lead or sub-contractor. This includes any goods or services originating from a Russian or Belarusian source.

1.5.2. Sponsor eligibility

Challenge Sponsors can come from industry, academia or the charitable sector. It is preferable but not essential that each Challenge has more than one Sponsor. Challenges should generally have broad relevance across the industrial and/or academic sector.

There is no restriction on where the Sponsor's contributory work is carried out. For practical reasons and for ease of project management, the UK/EU is preferred, but a case can be made for work outside the UK/EU if this is critical to the success of the project.

Sponsorship normally takes the form of in-kind contributions. Although no formal estimation of the value of the in-kind contribution or auditing of the work done is undertaken, the NC3Rs expects Sponsors to act in good faith in providing an in-kind contribution that adds significant value to the financial contribution of the NC3Rs and is complementary to the research undertaken by the academic/SME partner(s).

A list of the in-kind contributions is required for the Challenge brief. These might include data, data processing, clinical materials, human and animal cells and tissues, access to equipment, complementary in-house experiments, hosting of investigators, etc.

- For Single Phase awards the list of in-kind contributions forms part of the agreement between the NC3Rs and the Sponsor(s). See Section 5 for further information about agreements.

If the in-kind contribution from the Sponsors involves the use of animals, the research must conform to the standards required by UK legislation and adhere to the Guidance on Responsibility in the Use of Animals in Bioscience Research, even if this work is conducted outside the UK.

1.5.3. Partner eligibility

Partners can come from industry, academia or the charitable sector. They do not define Challenges but provide additional support to Challenge delivery and dissemination of the technology or service.

Partners collaborate with the NC3Rs and provide additional resources to help winners solve the Challenge. Access to the resources from the Partners is provided by the NC3Rs and shall align with what is described in the Challenge Brief. Awardees may be required to sign appropriate agreements with Partners to access additional resources. See Section 5 for further information about agreements.

1.6. Independence

A typical project consists of at least two legal entities: one or more Sponsors and one contractor.

The legal entity receiving funding, for example an SME, must be independent from legal entities providing financial or in-kind support. Independence can be defined to mean that neither legal entity is under the direct or indirect control of the other. Control can take the form of directly or indirectly holding a majority of the nominal value of the issued shared capital in the legal entity concerned, or a majority of the voting rights of the shareholders or associates of the entity, or directly or indirectly holding decision making powers in the entity, whether in fact or in law.

2. How to apply

Applicants are required to submit an application form which can be downloaded from the NC3Rs Innovation Platform. Specific guidance on completing the application can be found in Section 3 and should be read in conjunction with the Invitation to Tender prior to submission.

Before submitting applications, lead applicants are expected to have discussed their proposals with their organisation, sub-contractors, or any other body whose co-operation will be required in the conduct of the project.

By submitting the application, applicants are confirming that the information given in the application is complete, that they are actively engaged in the project and are responsible for its overall management and agree to administer the award if made.

2.1. General guidance for all applications

- Applications for CRACK IT Challenges must be made using the application form and guidance available on the Innovation Platform. Completed applications must be sent by email to crackitenquiries@nc3rs.org.uk. All applications are treated in confidence.

- Application forms and attachments must be submitted as PDF files.

- Failure to complete mandatory fields on the application form and/or to submit all required attachment types with an application may result in the rejection/return of the application.

- Where there is more than one organisation involved in the proposal, the application must be submitted by an agreed lead applicant and all other organisations listed as sub-contractors.

- The application form should be completed using a font size no smaller than 10pt (Arial) and text limits must not be exceeded.

- The used of acronyms should be kept to a minimum.

- If an applicant wishes to submit more than one application to the competition, they must contact the NC3Rs via email to crackitenquiries@n3crs.org.uk before the competition deadline.

- **For dates and deadlines please visit the NC3Rs Innovation Platform.**

- Please note CRACK IT is contract research (not a grant) for research and development services to solve the Challenge. Please ensure you have read and understood our example Challenge agreement; our terms and conditions are non-negotiable.

2.2. The assessment processes

Following submission, Single Phase application forms are assessed and shortlisted by a Review Panel. Shortlisted applications are then assessed by a Challenge Panel and up to one proposal is recommended for funding. Please see Section 4 for more information about assessment procedures.

> **Please see the NC3Rs Innovation Platform for dates and deadlines**
>
> Questions about the application process should be addressed directly to the NC3Rs via email crackitenquiries@nc3rs.org.uk
>
> The NC3Rs reserves the right to amend the application process.

3. CRACK IT Challenges application form

This section contains guidance on how to complete the application for. Sub-sections are numbered as they appear in the application form. Single Phase application forms should be completed and submitted via email to crackitenquiries@nc3rs.org.uk by the application deadline.

3.1. Completing the application form

Question 1: Application

- **Project title**: please provide your own title for the project. The title should be descriptive, concise and contain keywords relevant to the project.

- **Projection duration**: as specified in the Challenge brief.

- **Total costs (£)**: proposed projects can request up to the maximum cost which is specified in the Challenge brief. **The total costs must include VAT or reverse charge VAT where applicable**. Requests for more than this sum will be rejected. Please see Question 10 for more information about finances.

- **Challenge number**: please select the number of the Challenge you are applying for from the drop-down menu.

- **Proposed start date**: please refer to the specific dates provided on the **NC3Rs Innovation Platform**.

- **Does your application include sub-contractors**? If yes, please list the name(s) of the sub-contracting organisation(s).

Question 2: Details of lead applicant organisation

Please include the name of the organisation of the applicant and other details as requested on the application form. Applicants for Single Phase competitions are expected to be made from a commercial entity (see Section 1.5 for further information on eligibility criteria).

Question 3: Contact details

Please provide contact details for the lead applicant (lead applicant's name, organisation name, position, etc).

Question 4: Abstract for publication

Describe the proposed project in simple terms suitable for a lay audience.

Please note the NC3Rs publishes abstracts from its funded contracts on the NC3Rs website to demonstrate the potential impact of funded research. Applicants are responsible for ensuring that any confidential or sensitive information is not included within the abstract.

Question 5: Description of proposed idea/technology

Describe clearly how your proposed idea or technology will deliver the outcomes as outlined in the Challenge brief, avoiding the use of unnecessary technical jargon. Provide a general overview on your approach to address the Challenge as a whole.

> Associated attachment (optional) – additional pictures or diagrams (maximum two sides of A4).

Question 6: Scientific/technical project summary

Provide a structured summary of the scientific and technical basis of the project, including:

- The innovative approach to be taken in the context of the key deliverables.

- Details of the research and development that will be done to demonstrate the scientific merit of the project.

- The key scientific and technical challenges of the project and how they will be overcome, including consideration of alternative and risk management strategies.

- Reference to the resources required as in-kind contributions from the Sponsor(s) where necessary.

Please note if a proposal includes *ex vivo* or *in vitro* work it is encouraged that both sexes of animal- or human-derived tissues and (non-immortalised) cells are included as appropriate in scientific experiments. There is no requirement to 'balance' or use equal numbers of both sexes and the use of both sexes does not apply to immortalised cell lines.

If a proposal includes *in vivo* animal work, it is expected that both sexes are used and the **Justification of Animal Use / Experimental Design** form must be completed and submitted with the application. The form is included in the application form as Annex 1. Further guidance can be found in [Section 3.3](#). More information on the use of both sexes in experimental design can be found on the [NC3Rs website](#) and the [Experimental Design Assistant.](#) If you are unsure about the requirements for your proposal, please contact [crackitenquiries@nc3rs.org.uk](#).

Question 7: Current state of the art and intellectual property (IP)

Describe the current state of the art and any competing or alternative strategies and explain the benefits of your proposed approach to the Challenge. Include details of any other existing IP and its significance to your freedom to operate. Include details of your own background IP and any restrictions this may impose on the dissemination and exploitation of the project outputs.

Please include proposed arrangements for IP, including how any IP which may arise during the project would be handled (i.e. the proposed arrangements for ownership, exploitation and dissemination).

Question 8: Project plan and methodology

The project plan should identify the major packages of work with well-defined milestones and key deliverables. The key scientific lead for each milestone should be listed. Applicants should include plans for commercialisation of the results of the project.

Identify the project management processes that you will use to ensure that milestones are achieved in a timely manner. Please also provide details of identified risks and mitigation strategies and proposed Sponsor interaction.

Include details of the in-kind contributions that will be needed from the Sponsor(s) in the resource requirements section. The emphasis throughout should be on practicality – we are seeking evidence that the technology works, can be made into a viable solution to the Challenge and can achieve the proposed benefits.

> Associated attachment (mandatory) – associated milestones / Gantt chart (maximum two sides of A4).

Question 9: Scientific/technical team and expertise

Provide a detailed description of the skills, expertise and track record of the team including those of any sub-contractors. Indicate the relevant knowledge and skills of each team member and the proportion of their time that will be spent on the project. Relevant commercial and management expertise should also be included.

> Associated attachment (mandatory) – CVs of up to five principal team members may be combined and included as a separate attachment (maximum of one side of A4 per team member).

Question 10: Application finances

CRACK IT contracts are non-Full Economic Costing (FEC) and as such applicants can apply for 100% directly incurred and indirect costs. Please provide a summary of the overall costs for the whole project, inclusive of VAT or reverse charge of VAT, where applicable. Please note CRACK IT is **contract research** (not a grant) for research and development services to solve the Challenge.

For UK-based lead applicants: CRACK IT awards are subject to VAT at UK standard rates (20%) where applicable. All VAT registered applicants must include VAT as part of the project costs. Applicants who think they are VAT exempt may quote excluding VAT but are not permitted to add VAT after submission. It is the responsibility of the lead applicant to determine whether VAT should be paid. We will not provide further advice and suggest you seek independent advice from HMRC if required. If VAT should be paid the total amount including VAT should not exceed the Challenge budget.

For EU/EEA/EFTA-based lead applicants: please note that a reverse charge of VAT (20%) will be charged to your award and must be included in the project costings. This must be taken into consideration when costing your application as the maximum amount that will be paid out will not exceed the total amount offered for the Challenge, inclusive of the reverse charge of VAT.

- **Costing**: please detail the model used to calculate costs and provide justification for the model used and the resources required to undertake the proposed project. Review and Challenge Panels are required to judge requested resources in terms of value for money, including whether the proposed cost for effort and deliverables reflects a fair market price.

- **The costs can cover the following**, as applicable:

Table 2: Direct and indirect costing overview

Direct costs – these are the costs specific to the project:	**Indirect costs** – should be charged in proportion to the amount of effort deployed on the project and calculate by applicants using their own cost rates:
▪ Labour costs for all those contributing to the project broken down by individual ▪ Material costs including consumables specific to the project ▪ Capital equipment costs ▪ Animal costs ▪ Travel and subsistence ▪ Other costs specifically attributed to the project (e.g. costs associated with the protection of IP)	▪ General office and basic laboratory consumables ▪ Administrative support and library services / learning resources ▪ Finance, personnel, public relations and departmental services ▪ Central and distributed computing ▪ Cost of capital employed ▪ Overheads ▪ Publications and Open Access for publishing (for non-academic and non-UK based applicants only).

Ensure the detailed costs fit the criteria for this competition. The maximum project costs for each Challenge can be found on the Challenge page on the [NC3Rs Innovation Platform](#).

Itemisation of costs and methods of calculation may be requested to support the application at a later date. Please note the NC3Rs **will not** cover applicants' travel costs to the Challenge Panel.

▪ **Payment schedule:** for Single Phase projects, payments will be made according to the following schedule:

  ▪ 50% of the total award value will be paid following a kick-off meeting with the Sponsors and on receipt of the signed agreement with the NC3Rs.

  ▪ The remaining 50% will be paid six months into the project subject to progress against milestones.

- **Funding from other public and private bodies**: please provide details of other funding, public or private, for related work including the source and the amount.

Associated attachment (mandatory): if the proposal involves sub-contractors, applicants must provide a breakdown of the costs for each contributing organisation in the same table format as Section 10 of the application form and combined in one PDF document.

Question 11: Plans for dissemination and commercialisation of Challenge product

CRACK IT Challenges are designed to support the development of new 3Rs technologies and approaches which will improve business processes and/or lead to new marketable products. Please include a plan for commercialisation and dissemination of the Challenge product.

Question 12: 3Rs impact assessment

The potential 3Rs benefits arising from the successful completion of the project are outlined in the Challenge brief. Please provide your own assessment of the 3Rs impacts of your work and how you will deliver them, including quantitative estimates of the numbers of animal affected wherever possible.

For guidance on how to successfully write about the 3Rs, please visit the NC3Rs website.

Question 13: Declaration

The lead applicant is expected to have discussed the application within their own organisation and with any other body whose co-operation will be required to deliver the project. The lead applicant must obtain consent from an authorised officer or appropriate signatory who will sign the agreement if successful. The agreement is a legally binding document and subject to the outcome of this competition. By submitting the application, you are confirming that the information provided is complete and that you are actively engaged in the project, responsible for its overall management and agree to administer the award if made. You are also confirming that you have read and understood the relevant explanatory materials including the Invitation to Tender, this Guide for Participants and the Terms and Conditions on the application form.

The application cannot be accepted without the declaration section being completed.

Please see Annex 1 for the applicant checklist to ensure you have completed all the required applicant steps.

3.2. Attachments

Supporting information can be provided in the form of attachments as indicated within this guidance and the application form. Attachments must:

- Be submitted as separate PDF files.

- Be named appropriately and indicate the application form section number to which they refer, for example, Challenge title: Lead Applicant name: Section 5 Additional Information/Diagrams.

- Not be added or pasted within the application form.

- Be completed using a font size no smaller than 10pt (Arial).

Only provide attachments as specified in the application form and in this guidance. Any additional materials or documentation submitted will not be considered and may result in your application being rejected/returned.

Table 3: summary of all attachments

Application form section	Attachment name	Page limit (sides of A4)
Section 5	Additional information/diagrams	2
Section 8	Additional milestones / Gantt chart	2
Section 9	CV	1 per team member (up to 5 in total)
Section 10	Sub-contractor costings	1 table per contributing organisation
Projects involving animal use	See Section 3.3 and Section 3.4 for guidance on additional information required	

3.3. Animal use and experimental design

Where a proposal includes animal work the Justification of Animal Use / Experimental Design form must be completed and included as part of the application. The form is included in the application form as Annex 1. Guidance on completed the form is provided below.

Applicants are expected to have developed their application in accordance with the cross-funder guidance for the use of animals in research and, in the case of use of non-human primates, the NC3Rs Guidelines: Primate Accommodation, Care and Use. Compliance with the principles within these documents is a condition of receiving funds from the NC3Rs.

It is expected that both sexes will be included in animal experiments but if a single-sex study is proposed, applicants must justify why using both sexes is not appropriate or possible. There is no requirement to 'balance' or use equal numbers of both sexes. More information on the use of both sexes in experimental design can be found on the NC3Rs website and the Experimental Design Assistant.

Experiments using animals funded by the NC3Rs must also comply with the Animals (Scientific Procedures) Act 1986, amended 2012 (ASPA) and any further embodiments, in:

- Using the simplest possible, or least sentient, species of animal appropriate,

- Ensuring that pain and distress are avoided wherever possible, and

- Employing an appropriate design and using the minimum number of animals consistent with ensuring that scientific objectives will be met.

Advice on opportunities and techniques for implementing these 3Rs principles can be found on the NC3Rs website.

Researchers using animals are strongly advised to read this guidance carefully before preparing an application to ensure all the relevant information required is included in their application. Applicants should ensure their application clearly sets out and justifies the following:

- Research objectives and how the knowledge generated will advance the field,

- The need to use animals and the lack of realistic alternatives,

- Choice of species of animals to be used,

- Type of animal(s) for example, strain, pathogen free, genetically modified or mutant,

- Planned experimental design and its justification,

- Number of animals and frequency of measurements/interventions to be used,

- Primary outcomes to be assessed, and

- Planned statistical analyses.

3.3.1. Experimental design, minimising subjective bias and statistical considerations

There are a wide range of designs and approaches to animal experimentation that are appropriate depending on the objectives of the application. In all cases, the NC3Rs expects that researchers provide well justified information in their applications concerning the experimental design and its suitability to answering the research questions posed. Applicants should therefore provide adequate justification for their choice of design and numbers of animals and interventions. It is important that adequate information is also given concerning methodological issues including (but not restricted to):

- The avoidance of bias (for example blinding of observers assessing outcomes to the group allocation in a randomised design).

- How randomisation will be carried out (if used) or why it is not appropriate if it will not be used.

- A clear definition of the experimental unit in the analysis and the implications thereof (that is there is a difference between N samples from one animal, as distinct from one sample from each of N animals/or combining samples from multiple animals).

- A principled justification of the adequacy of the number of animals to be included so as to be able to minimise the likelihood of spurious results due to the play of chance alone.

- Where animals are used in multiple types of experimental approach within a single application (e.g. for tissue supply, pilot experiments or more defined pre-clinical studies), exemplars for these types of experiment should be provided.

- The number of different time points at which measurements will be made on each animal.

- A description of the statistical analysis methods that will be used, explaining how they relate to the experimental design and showing that they are appropriate for the types of data that will be collected.

- An indication of the number of independent replications of each experiment to be performed with the objective of minimising the likelihood of spurious non-replicable results.

The **NC3Rs Experimental Design Assistant** (EDA) captures methodological details about the experimental plan in the form of a diagram and provides tailored guidance and feedback on the design. It can then generate a PDF report which provides a transparent description of the experimental design in a standardised format.

3.3.2. Guidance on completing the 'Justification of animal use / experimental design' form

Information must be provided for all applications involving animals (including where the only procedure is Schedule 1 killing), regardless of whether the animal costs are requested as part of the application.

- Please provide details of any procedures categorised as moderate or severe, including how the procedure is undertaken, adverse effects experienced by the animals, and measures taken to minimise any pain, suffering, distress or lasting harm (address this point in response to question five on the form).

- If use of non-human primates, cats, dogs, pigs or equines will be involved in addressing the Challenge, applicants must also complete the 'Standard questions on the use of non-human primates, dogs, cats, equines and pigs' form. All applications which involve the use of these higher

species are reviewed by the NC3Rs Office to ensure the usage is fully justified and that the welfare and husbandry standards are optimal.

- Sound scientific reasons for the use of animals and an explanation of why there are no realistic alternatives must be given, along with an explanation of how the choice of species complies with ASPA (address this point in response to question eight on the form).

- The experimental design should be outlined, including a justification of the total numbers of animals to be used and, where appropriate, the frequency of measurements/interventions required on each animal. Planned procedures to minimise experimental bias (e.g. randomisation protocols, blinding) should be outlined or an explanation included as to why such procedures are not appropriate. Each experiment does not need to be described in detail, but sufficient information must be included so that reviewers are readily able to understand the experimental plan (address this point in response to question 10 on the form).

  - Researchers must provide a properly constructed justification of how the numbers of animals to be used were determined. In general, it would be expected that professional statistical advice is sought in compiling this answer.

  - In many instances this answer will include statistical power calculations[1] based on justifiable and explicit assumptions about the anticipated size of the experimental effects. If statistical power calculations are not given, applicants should provide a principled explanation of the choice of numbers. In general, explanations based solely in terms of 'usual practice' will not be considered adequate. An overview of the planned statistical analyses and their relation to the choice of sample size should be included.

  - Where experiments involve genetically altered animals, examples of the breeding strategies should be included to support the total number of animals requested. Please provide information on resources requested for breeding, maintaining and using the chosen number of animals and the scientific and statistical justification of how the chosen number of animals was arrived at.

3.3.3. Additional information

- The costs of both the animals themselves and their maintenance may be requested and should be listed in the 'Application Finances' section of the application form under Directly Incurred Costs.

- Applicants contemplating the use of animals purchased from commercial suppliers should, wherever possible, use UK suppliers, to minimise the risk of suffering during transport. For cats, dogs and

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[1] Power calculations can be used to calculate the minimum sample size required so that one can be reasonably likely to detect an effect of a given size, or to calculate the minimum effect size that is likely to be detected in a study using a given sample size.

primates, Home Office-approved suppliers must be used. Applicants planning research using rhesus macaques should obtain animals from the Centre for Macaques.

3.3.4. Ethical and welfare standards and review

Applicants must ensure that best practice in relation to animal husbandry and welfare is followed. Where the work proposed is not covered by an existing Project Licence under ASPA, applicants should put their applications to the local Animal Welfare and Ethical Review Body (AWERB) for review prior to submission and ensure that ethical or welfare issues raised are addressed.

If applicants are proposing to undertake any animal experiments as part of collaborative programmes outside the UK, these experiments must be conducted in a way that conforms to the legislation in that country. In addition, ethical and welfare standards equivalent to those provided in the UK (under the ASPA) must be applied and maintained. Where the standards are different, the more rigorous will apply. See Responsibility in the Use of Animals in Bioscience Research, p14.

3.3.5. Home Office licences

It is the responsibility of all applicants to ensure that the appropriate Home Office licences are obtained. This will include the requirement that the research applications are approved by the local AWERB. Home Office licences (or amendments to existing licences) do not have to be obtained before the application is submitted to the NC3Rs, but if a contract is awarded, contractors (successful applicants) must have the necessary licences in place before any animal experimentation begins.

3.3.6. Mouse strains

The NC3Rs encourages the archiving and sharing of genetically altered mouse strains as a means of both reducing and refining animal use[2]. The MRC supports a central repository of mouse strains, the Mouse Frozen Embryo and Sperm Archive (FESA) at MRC Harwell. FESA aims to ensure that valuable mouse strains are safeguarded, that the need to maintain colonies of live mice for long periods of time is reduced, and that the significant investment in engineering strains is capitalised upon fully.

Where there may be a need for the repeated creation of pre-existing genetically modified mouse strains, this must be fully justified. Applicants planning to produce genetically modified mouse strain(s) should investigate whether suitable strains are available via FESA or elsewhere before requesting resources for creating new strains. Applicants planning on creating new genetically altered mouse strains as part of their work should actively consider archiving and sharing these strains via FESA. When archiving and sharing of genetically modified mice is not possible, please clearly state in your application the reasons for this.

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[2] See 'Sharing and archiving of genetically altered mice: Opportunities for reduction and refinement'.

Contact FESA by email: fesa@har.mrc.ac.uk

3.4. Use of animals outside the UK

If a project involves the use of animals outside of the UK, a dated and signed letter of support from all applicants stating the below must be included as a separate PDF attachment to the application:

- They will adhere to all relevant national and local regulatory systems in the UK and overseas.

- They will follow the guidelines laid out in the Responsibility in the Use of Animals in Bioscience Research and ensure that work is carried out to UK standards.

- Before initiation of the proposed research work, appropriate approvals from Institutional and/or central animal ethics committees will be obtained for experimental protocols to be adopted in their projects. Successful proposals may be expected to provide copies of these permissions before funding is released.

- Details on where the animal research will take place (UK or overseas) and through which funder the resources are being sought.

If the research involves the use of rodents outside of the UK, please also complete the 'Additional questions on the use of rodents overseas' form which is included in the application form as Annex 2.

Additional guidance on conducting and reporting animal research can be found on the NC3Rs' Peer review and advice service hub.

4. Assessment procedures

All Challenges go through two stages of assessment, a Review Panel and a Challenge Panel.

4.1. The Review Panel

The evaluation of written applications for Single Phase is undertaken by a Review Panel via video conference / Zoom. The Single Phase Review Panel:

- Assesses submitted applications and shortlists the most promising proposals to invite to the Challenge Panel.

- Shortlisted applicants receive feedback from the Review Panel which should be addressed in their presentation at the Challenge Panel.

The lead applicants are informed by email of the decision of the Review Panel approximately one week after the Panel meeting. The Review Panel's decision is final and not open to appeal.

The Review Panel and Chair are appointed for each Challenge by the NC3Rs and consists of experts from academia and industry with the appropriate business development experience. Each Panel also includes a representative(s) from the Challenge Sponsors. Members of the Review Panels may also participate in the Challenge Panels.

Single Phase Review Panel assessment criteria

- Quality of the science and technological innovation
- Expertise and track record of the team
- Value for money
- Interpretation of the 3Rs impact
- Plans for dissemination and commercialisation of Challenge product
- Sponsor interaction and collaborative potential
- How the proposal will meet the key deliverables set out in the Challenge brief

Membership of the Review Panels is published on the NC3Rs Innovation Platform in the Full Challenge information section of each Challenge page.

4.2. The Challenge Panel

The evaluation of shortlisted Single Phase applications is undertaken by a Challenge Panel, run in a 'Dragons' Den' style. Applicants are invited to present their proposals in a 30-minute presentation to the Panel, followed by a 30-minute question and answer session.

The **Single Phase** Challenge Panel:

- Assesses and questions shortlisted applicants on their proposals to address:

  - The key deliverables as outlined in the Challenge brief.

  - The feedback provided by the Review Panel.

- The Challenge Panel recommends up to one Single Phase award per Challenge with funding of up to £150k for up to two years.

Presentations to the Challenge Panel are made by no more than two speakers, one of whom must be the lead applicant. A presentation template and guidance will be provided in advance of the deadline. A maximum of six additional team members are welcome to also attend the interview to answer the Panel's questions.

Up to one award will be made per Challenge. If none of the applications provide adequate evidence of their ability to meet the criteria and deliver the Challenge, then no award will be made. The lead applicant will be informed by email of the decision of the Challenge Panel approximately one week after the presentation. The Challenge Panel's decision is final and is not open to appeal.

The NC3Rs will not cover costs associated with travel to the Challenge Panel interviews.

> **Single Phase Challenge Panel assessment criteria**
>
> - Quality of the Science and Technological innovation
> - How the proposals will meet the key deliverables as outlined in the Challenge brief
> - Expertise and track record of the team
> - Interpretation of the 3Rs impact
> - Plans for dissemination and commercialisation of Challenge product
> - Sponsor interaction and collaborative potential
> - Value for money

The Challenge Panel and Chair are appointed for each Challenge by the NC3Rs and includes the Sponsors and independent experts. The members of the Challenge Panel who represent the Sponsors should consult within their companies to ascertain their level of commitment and come to the meeting with delegated authority to make decisions on funding or in-kind contributions. In the event that Challenge Sponsors are unable to agree on which applications to support, the NC3Rs may decide that it is more appropriate for each Sponsor to fund its preferred application directly without the financial involvement of the NC3Rs. Such decisions are agreed on a case-by-case basis between the Sponsors and the NC3Rs.

Membership of the Challenge Panels is published on the [NC3Rs Innovation Platform](#) in the Full Challenge information section of each Challenge page.

4.3. Panel terms of appointment, code of conduct and conflicts of interest

Panel members are required to comply with the [UKRI Conflicts of Interest Policy](#). Members are required to declare any private, professional or commercial interests that might, or that might be perceived to, conflict with the NC3Rs' interests. On appointment to the Panel, members are required to complete a declaration of interests form and sign a confidentiality agreement. A full list of Panel members, their affiliated organisations and completed declarations of interest forms are published on the [NC3Rs Innovation Platform](#).

5. Award process

Awards are made to the successful applicant's organisation, who then administers the award, subject to them signing a non-negotiable agreement with the NC3Rs ([Single Phase contractor agreement](#)).

For successful applications involving more than one organisation, the lead applicant (contractor) must agree to manage the award on behalf of the others (the sub-contractors). Sub-contractors negotiate their agreements directly with the contractor.

Successful applicants should be able to demonstrate that they have a team in place ready to start working on the project on receipt of the agreement.

Contracts are expected to be finalised and signed within two weeks of receipt.

The NC3Rs leads the awards' announcements via the NC3Rs Innovation Platform. Award holders may be required to participate in media-related activities regarding the announcements.

> **Please go to NC3Rs Innovation Platform to view deadlines for applications and award start dates.**

5.1. Award agreements

Single Phase awards are made to the successful applicant's organisation subject to them signing a non-negotiable agreement with the NC3Rs. The NC3Rs also has an agreement with the Challenge Sponsor(s) and/or co-funder(s). A further agreement between the successful applicant's organisation and the Sponsor is also recommended.

> Please note Single Phase agreements are expected to be signed with commercial entities and not academic institutions. Please see Section 1.5 for more information.

5.2. Important information

The terms and conditions for all CRACK IT awards are set out in the agreement between the NC3Rs and the successful applicant (contractor agreement) and the agreement between the NC3Rs and the Sponsor(s) and/or co-funder(s).
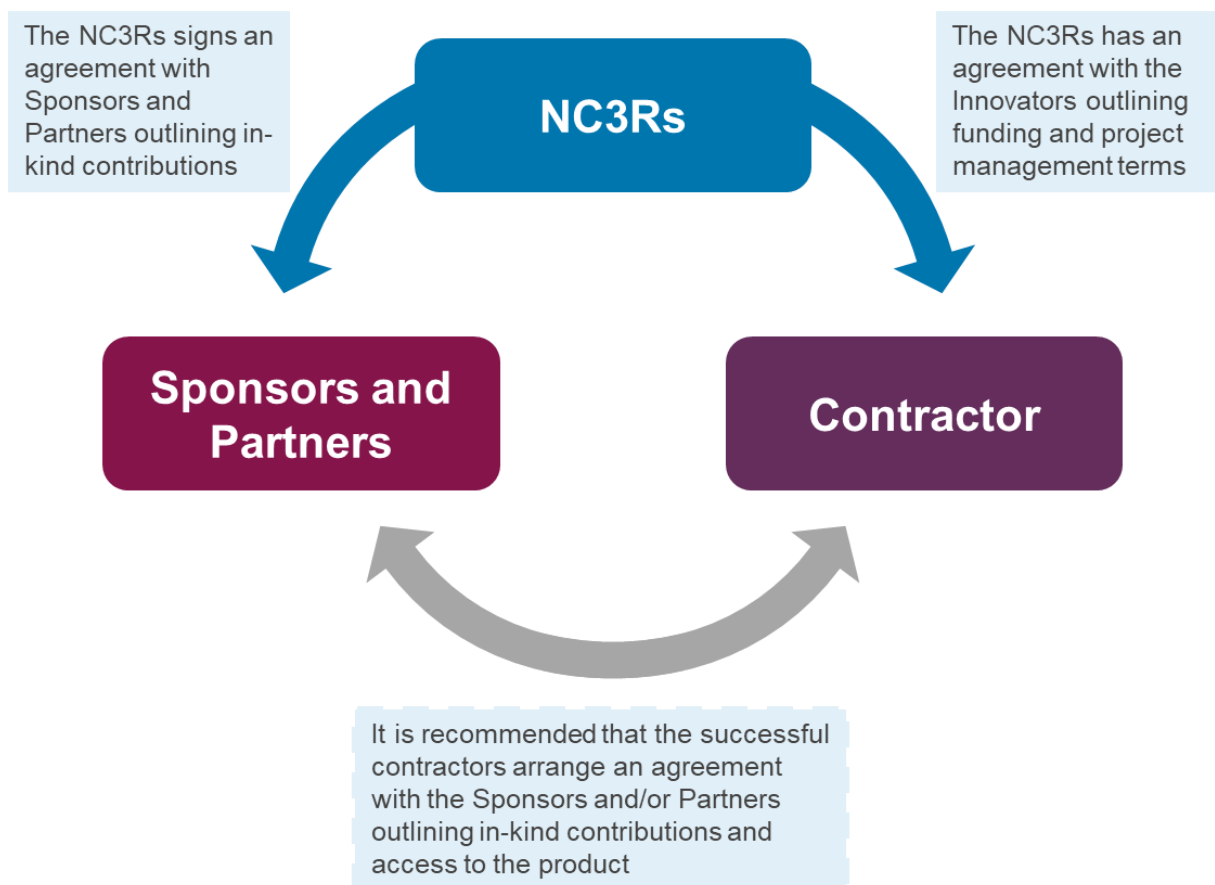
Contractor agreements are available to download from the NC3Rs Innovation Platform. Applicants are strongly advised to read the agreements prior to applying. The NC3Rs will have an agreement with the Sponsors and/or co-funder(s) and an agreement is also recommended between the successful applicant and the Sponsor(s).

Agreements:

- Agreements between the NC3Rs and the Challenge winners take the form of standard contract research agreements from the NC3Rs.

- These agreements are intended to protect and benefit both the NC3Rs and the Challenge winners to ensure the effective delivery of the research.

- Agreements are standard across all Challenges and they are non-negotiable. The NC3Rs will not amend these agreements.

- Agreements between the Sponsor and the Challenge winners should be made at their discretion. This can range from a Confidential Disclosure Agreement (CDA) or a Material Transfer Agreement (MTA) to a full contract.

- Access to the resources from the Partners is provided by the NC3Rs and shall align with what is described in the Challenge Brief. Awardees may be required to sign appropriate agreements with Partners to access additional resources.

Figure 2: Summary of agreements

The NC3Rs signs an agreement with Sponsors and Partners outlining in-kind contributions

NC3Rs

The NC3Rs has an agreement with the Innovators outlining funding and project management terms

Sponsors and Partners

Contractor

It is recommended that the successful contractors arrange an agreement with the Sponsors and/or Partners outlining in-kind contributions and access to the product

6. Post award information

6.1. Intellectual property

Intellectual property (IP) developed within the project is the property of the contractor (Challenge winner) and its sub-contractors, as described in the agreement between the NC3Rs and the contractor. One recipient of NC3Rs funding should be nominated as the IP manager for the project. The NC3Rs does not provide a model agreement but suggests as a default that IP arising from the research should be jointly owned by the contractor and its sub-contractors in equal shares. Failing this, they should agree among themselves on the ownership of IP, for example, by adapting one of the Lambert Agreements. Further details on IP can be found in the agreement between the NC3Rs and the contractor.

Although the NC3Rs is not a joint owner of any IP arising from a project, it is a condition of funding from the NC3Rs that work furthering the 3Rs must be made available to the rest of the bioscience sector. The protection of IP through filing of patents should therefore be pursued without unreasonable delay, and access by third parties to 3Rs benefits must be provided through publication and dissemination, or by appropriate licences, royalty-free or royalty-bearing on fair and reasonable terms. The exact arrangements are detailed in the agreement between the NC3Rs and the contractor.

Sponsors and/or co-funder(s) are also not joint owners of any IP arising from a project. Sponsors benefit from early access to any new technology during the term of the project. Access beyond the project duration can be through granting of royalty-free licences or through favourable pricing for an agreed period.

Any expectations of the Sponsors and/or co-funder(s) in this respect are detailed in the Challenge briefs and included in the contract between the NC3Rs and the Sponsor(s) and/or co-funder(s). The Sponsor(s) and/or co-funder(s) and the contractor are required to sign a separate agreement detailing the arrangements for access to IP arising from the project and any other matters that are necessary for the project to go ahead.

6.2. Project management

The NC3Rs requires the establishment of a Project Management Team whose members include representatives of the contractor, its sub-contractor(s) and the Sponsors. The Chair of the Project Management Team should be the lead representative of the contractor and acts as the liaison with the NC3Rs. The responsibilities of the Chair are described in the agreement between the NC3Rs and the contractor.

The Project Management Team is responsible for ensuring key deliverables are met within agreed timeframes. The Project Management Team should meet quarterly during the award period. The minutes from the Project Management Team meetings and a quarterly report (template provided) are required by the NC3Rs.

Typically, a representative from the NC3Rs will attend the introductory meeting and the quarterly (three monthly) Project Management meeting.

6.3. Reporting

All Single Phase awardees are required to submit an end-of Challenge report and a FES within three months of the completion/termination date. The end of Challenge report should describe the work undertaken, the achievements and outcomes of the project and details of how the project advanced the 3Rs. The report template, FES and additional guidance will be sent to all awardees four weeks before the completion date.

Failure to provide the requested report and final expenditure statement (FES), within the specified timeframe, may result in funding being rescinded. It is the responsibility of the contractor to manage the funds awarded responsibly and any additional costs incurred above the total amount awarded will not be reimbursed.

Single Phase award reporting requirements

- End of Challenge report

- Final expenditure statement

- Researchfish reporting (see Table 4)

6.3.1. CRACK IT Advisory Panel meeting

All CRACK IT Single Phase contractors will be invited to meet with the CRACK IT Advisory Panel no earlier than six months before and no later than one year after their contract with the NC3Rs expires.

The purpose of the meeting with the CRACK IT Advisory Panel is to update the NC3Rs on progress made in addressing the original Challenge brief and for the Panel to provide tailored advice on next steps, including commercialisation.

The original CRACK IT Challenge Sponsors and the NC3Rs representative on the Project Management Team are encouraged to participate in the meeting with the CRACK IT Advisory Panel.

6.3.2. Publication

Alongside the commercialisation and distribution of the Challenge product, award holders are expected to disseminate their results by publishing in appropriate scientific journals and at relevant conferences. The UKRI open access policy should be adopted.

Publications should have the prior agreement of the Project Management Team and in particular publication timing, must respect the need to protect IP arising from the work.

The NC3Rs support for the project should be acknowledged on all publications and presentations where such support has been significant. The NC3Rs should be informed of any publications or other promotional material or events arising from the award.

Studies using animals should be reported in accordance with the [ARRIVE guidelines](#) taking into account the specific editorial policies of the journal concerned.

Sponsors are permitted to place organisational logos on promotional materials arising from the collaboration by prior agreement with the NC3Rs.

6.3.3. Researchfish reporting

Award holders are required to report research outputs and outcomes on a regular basis using [Researchfish](#). There is a mandatory annual collection period for the submission of data. Reporting requirements are detailed in Table 4.

Table 4: Researchfish reporting requirements

Who	Compliance with Research reporting is a requirement for **every CRACK IT contractor**. The lead contractor is ultimately responsible for ensuring their Researchfish record is up to date.

When	Contractors should submit information to Researchfish all year round and after the contract has ended:
	
	     ▪ Phase 1: for at least one year
	     ▪ Phase 2 and Phase 3: for at least five years
	     ▪ **Single Phase: for at least three years**
	     ▪ BGS*: for at least five years
	
	 In line with the Research Councils, the NC3Rs has an **annual collection period** between January and March.
	
	 There is also a requirement to update Researchfish when your contract is coming to an end.

What	Details of all outputs, outcomes and impacts arising from the contract. It is mandatory to complete the sections on publications and replacement, reduction and refinement. If there are no outputs to report, please state this in the relevant section.
Why	Researchfish is one method by which we monitor progress on contracts. Contractors who do not report into Researchfish when requested to do so, or use the system inappropriately, may become ineligible to apply for additional awards from the NC3Rs (and potentially the Research Councils).

	Researchfish is not a publicly accessible data repository. However, data held in Researchfish may be used by the NC3Rs to populate our website and for production of publications such as our Annual Report.

*Where a BGS award is made, the reporting requirements noted above will supersede those detailed for Single Phase awards.

7. The Business Growth Scheme

The NC3Rs has introduced a Business Growth Scheme (BGS), where CRACK IT Challenge contractors (Innovators) can apply for additional support, of up to £50k (inclusive of VAT / Reverse Charges) for 12 months, to maximise their business strategy for near-market ready products and services.

The BGS has been designed to support the business and commercial opportunities that arise from technology developed during the Challenge. These funds will not be awarded to support further R&D work that was not completed in the Challenge period.

This document provides a comprehensive guide to participants applying to the BGS.

Table 5: Business Growth Scheme overview

Scheme	The Business Growth Scheme (BGS) has been designed to support the business and commercial opportunities that arise from technology developed from CRACK IT Challenges. CRACK IT Challenge contractors can apply for additional support of up to £50k (inclusive of VAT / Reverse Charges) for 12 months. Awarded funds will not support R&D non-completed during the Challenge period.
Eligibility	- Open to any CRACK IT Single Phase or Phase 2 contractor (includes sub-contractors). - Applicants must be based in the UK, EU, EEA or EFTA and from an established commercial entity. - Only one application to the BGS, per Challenge, will be accepted. - The BGS provides funding in line with the Subsidy Control Act 2022. Further information about the Subsidy requirements can be found within the Subsidy Control Act 2022. EU State aid rules now only apply in limited circumstances; please see the Windsor Framework to check if these rules apply to your organisation.

Application and review process	Applications to the BGS:
	
	  ▪ Will only be accepted following the end of Challenge presentation to the CRACK IT Advisory Panel (CAP).
	
	  ▪ Will be within one year of completion of the Challenge contract.
	
	  ▪ Must be made using the application form provided.
	
	  ▪ Will be reviewed by the CAP within six weeks of the NC3Rs receiving the application.

Agreements and awards	Prior to award, the successful applicant's organisation signs an agreement with the NC3Rs. Up to two awards will be made each financial year. The lead applicants are informed by email of the decision of the CAP approximately one week after the Panel meeting.
Post-award	The lead contractor will be responsible for ensuring key deliverables of the BGS plan are met within agreed timeframes. All BGS awardees are required to submit a **final report** and a **final expenditure statement (FES)** within three months of the completion/termination date.

For full guidance on how to apply to the BGS, please go to the NC3Rs Innovation Platform or contact us by email at crackitenquiries@nc3rs.org.uk.

Annex 1: Single Phase applicant checklist

- ☐ Attend launch webinar
- ☐ Complete application
- ☐ Attach appendices to the application (see Table 3):
    - ☐ Section 5 – additional information/diagrams
    - ☐ Section 8 – additional milestones / Gantt chart)
    - ☐ Section 9 – CVs
    - ☐ Section 10 – sub-contractor costings
    - ☐ Projects involving animal use (if required)
- ☐ Complete application declaration
- ☐ Send application to crackitenquiries@nc3rs.org.uk. Outcome and next steps will be provided following the Review Panel.