Application summary

Application title This is the title of your proposed project.

Length of project (weeks)	

Proposed start date	

Name of administering organisation If your application is successful, this is the organisation that will be responsible for administering the award.

Lead applicant's address at administering organisation If your application is successful, we will use this address in your award letter.	
Department/Division	
Organisation	
Street	
City/Town	
Postcode/Zipcode	
Country	

Research funding area Select the most relevant area, based on the key aims of the research. This allocates your application to the relevant Grants team. We may reallocate your application to another area if we consider it appropriate.

Student

Full Name	
Department	
Division	
Organisation	
Address Line 1	

City/Town	
Postcode	
Country	
Telephone No.	
Email Address	

Education/training				
From	**To**	**Qualification**	**Subject**	**Organisation**

Current degree course

Year of course (for example, second year of a three year course = 2/3)

Summarise your university courses/modules taken and completed (with results)
As well as your course summary, provide the following information:

- confirm whether you are enrolled on a foundation, sandwich or intercalated degree course and the year it will be undertaken (for example, 3/4);
- if applicable, confirm which year of your course you will undertake a research project.

Provide the average score of all modules taken (presented as a percentage or equivalent) and the overall class of degree (for example, 2:1, 2:2).

Supporting information
Explain how your project will contribute to the improvement of health.
(100 words max.)

Why do you wish to apply for a Vacation Scholarship? What are your career intentions? (150 words max.)

Have you previously held a Vacation Scholarship, supported either by Wellcome or another funder?	

Provide details.

Have you had any other research experience (apart from your course projects)?	

Provide: • a brief description of your research experience; • the duration of your research placement and the number of days per week that you worked (for example 6 weeks, two days a week). (150 words max.)

Recommendation by applicant's present tutor Upload a letter of support from your current tutor (200 words maximum). If you are unable to provide results of the university courses/modules taken and completed so far, your tutor should include an evaluation of the standard of your work to date. The letter of recommendation should show clearly the tutor's name, position and address.

Supervisors

1

Project supervisor	
Full Name	
Department	
Division	
Organisation	
Address Line 1	
City/Town	
Postcode	
Country	
Telephone No.	
Email Address	

Title of current post

Date of appointment	

Expected date of termination	

Source(s) of personal salary support State all your sources of salary funding (for example, through your organisation's block grant from a Higher Education Funding Council), and the percentage of your salary they contribute.
If your source of salary places any ties on intellectual property rights or restrictions on publications arising from your

research, you must contact us as this may affect your eligibility.

Have you supervised Wellcome Trust Vacation Scholars before?	

Will a member of your laboratory, other than you, be closely supervising the student on a day-to-day basis?	

Provide the following details for that individual:

Name, including title (e.g. Professor, Dr)

Title of current post

Expected date of termination	

Related applications

Have you applied elsewhere for a vacation research period this year?	

To which organisation(s) have you applied and when will you know the result? If you accept another scholarship you must let us know immediately.

Research summary

Research summary Provide a summary of your proposed research, including key goals, for an expert audience. (200 words max.)

The summary should be as complete as possible within the word limit. Include key words which best describe the proposal to enable text searching. *We will use this as a short abstract and to classify your proposal by subject. We may edit your summary and then use it to describe your research on our website and elsewhere (we publish summary details of all our awards).*

Lay summary Provide a summary of your proposed research for a non-specialist audience. You don't need to

oversimplify your research, but try to explain it as clearly as possible. Write in the first person ("I" and "we") and structure your summary in this order: background to the research problem; your approach; expected impact of your work.

We may edit your summary and then use it to describe your research on our website and elsewhere (we publish summary details of all our awards).

Example of a lay summary
In response to stress and environmental changes, bacteria generate hundreds of small RNA molecules that have key roles in regulating gene expression. This process of riboregulation involves chaperone proteins that facilitate the actions of regulatory RNAs, and enzymes that affect RNA transcript lifetimes. I aim to understand the molecular basis of riboregulation by taking a multidisciplinary approach. I will use biochemical and structural analyses, including cryoEM and cryoET, to visualise how RNA transcripts are captured and channelled to active sites, either for degradation or processing. I will also identify the RNA targets of chaperone proteins and the degradative machinery, and explore whether the patterns change with physiological state or during the cell cycle, and why. These studies will help to explain how small RNAs enhance the speed and accuracy of bacterial genetic regulation, enriching the capacity of the simplest organisms to exhibit complex behaviour.

Details of research project

Project description
Provide a description of your proposed project including:
i) Background to the project;
ii) Aims and objectives, including any key hypotheses you will test, questions you will ask and what you hope to achieve during the period of research;
iii) Experimental design and methods;
iv) Brief outline of a timetable of work.

We will not consider continuation of undergraduate projects.

Do not use more than **700** words to describe the proposal.

Provide all relevant information within the application form; do not refer to additional unpublished information on personal websites.

*The word count must not exceed **700** words in total, excluding graphs, figures etc. You may provide your answer to this question in text entry format or as a PDF attachment. If you are uploading your research proposal, the uploaded document must be in 11 point Arial font and portrait format.*

Provide any details of experimental design for animal studies as part of the justification for animals in the 'Proposals involving animals' section. Experimentation on animals protected by UK/EU legislation should not be carried out by the student. Include the name of the member of staff with the relevant licence who will be doing this work, and the licence number, in the 'Proposals involving animals' section.

Additional information
You may provide up to the equivalent of two A4 pages of additional information. Embed it in your upload for your research proposal or upload it under 'Additional information'. If you choose to embed this information, any text present (such as legends, labels, or captions) can be excluded from the word count.

(700 words max.)

You may submit up to two A4 pages of additional information (such as graphs, figures, tables and essential unpublished data).

The additional information (such as graphs, figures, tables and essential unpublished data) provided in support of the

research proposal may be embedded in the text of your file upload or attached here as a separate file. If you choose to embed this information, any text present (such as legends, labels, or captions) can be excluded from the word count.

Please note that this form asks for all the information we require to consider your application. You should not provide additional information (e.g. letters of support) unless specifically requested in the form.

References
You should give the citation in full, including title of paper and all authors.

Please ensure that all references included are pertinent to your research proposal and are cited in full, including all authors, the full title of each publication, journal title, year, volume and pages. Citations to preprints should state "Preprint", the repository name and the article persistent identifier (e.g DOI).

References with more than 10 authors may be shortened to et al.

What techniques/training will the scholarship provide? (150 words max.)

How does this research relate to work being carried out in the supervisor's laboratory? (100 words max.)

Currency requested

Select the currency in which you want to apply.
Submit costs in the currency you think will best enable you to undertake the activity. This will probably be your local currency; if not, explain why not.

If you think that the currency may not be readily available, email grantpayments@wellcome.ac.uk. For more information see our website.

If we cannot award in the currency requested, we will talk to your administering organisation about using another.

Is this your local currency?	

What is your local currency?	

Explain why you are requesting costs in the selected currency and what exchange rate you have used.
(100 words max.)

Research involving human participants, human biological material and identifiable data

Does your project involve human participants, human biological material, or	

identifiable/potentially identifiable data?	

The following notes relating to 'Research involving human participants, human biological material and identifiable data' are intended to provide guidance and advice in completing the form, rather than a comprehensive review of the legal and regulatory environment in which the application is made.

The World Health Organization defines research with human subjects as "any social science, biomedical, behavioural, or epidemiological activity that entails systematic collection or analysis of data with the intent to generate new knowledge, in which human beings i) are exposed to manipulation, intervention, observation, or other interaction with investigators either directly or through alteration of their environment, or ii) become individually identifiable through investigator's collection, preparation, or use of biological material or medical or other records."

Our policy position on research involving human participants can be found on our website

We require ethical approval (usually from the appropriate National Health Service (NHS) research ethics committees) for all research we fund involving human participants, human biological samples or personal data. Personal data (as defined in the Data Protection Act 2018) is any information relating to an identified or identifiable living person i.e. a person who can be identified either directly from that information or indirectly by combining it with other available information. Any use of personal data or biological samples, relating to living or dead persons, should conform to MRC guidelines available at: http://www.highlights.rsc.mrc.ac.uk/PIHR/index.html#/?_k=opxohv and https://mrc.ukri.org/publications/browse/human-tissue-and-biological-samples-for-use-in-research.

You should seek ethical approval from other regulatory bodies such as the Human Fertilisation and Embryology Authority (HFEA) or the Gene Therapy Advisory Committee in the UK should also be sought where necessary, e.g. research involving human embryos may require a licence from the HFEA (please refer to www.hfea.gov.uk for more information). If your proposal involves research on gene therapy which requires regulatory approval, approval should be sought from your Local Research Ethics Committee, the University's Genetic Manipulation Committee, the Gene Therapy Advisory Committee and the Medicines and Healthcare products Regulatory Agency (MHRA).

Your host organisation must ensure that ethical approval is in place at all relevant times during the project. For research carried out at multiple sites, ethics committee approval must cover each site.

Where the research, or part of the research, is to be performed outside the UK, independent ethics review must be obtained. For research involving people living in low and middle income countries, see our website.

Who has, or will, review the ethics of the project and when? Detail any other regulatory approvals you have obtained, or will seek. We reserve the right to see relevant approval documents at any point during the lifetime of the grant, in accordance with our policy position on research involving human participants. We reserve the right to see relevant approval documents at any point during the lifetime of the grant, in accordance with our policy position on research involving human participants.

Do you propose to use facilities within the National Health Service (NHS) in the UK or to involve patients being cared for by the NHS?	

By agreeing to fund work which requires NHS support, the Wellcome Trust is agreeing to abide by the Statement of Partnership on Non-commercial R&D in the NHS in England (and the corresponding statements in Northern Ireland, Scotland, and Wales). Researchers must therefore meet the obligations of the Partnership and may not carry out any research until the NHS has given its consent.

The Research Governance Framework for Health & Social Care, published by the Department of Health in England can be downloaded from the Department of Health website http://www.dh.gov.uk/health/category/research. Please note that the Wellcome Trust cannot act as sponsor.

Is a formal sponsor required for the project, for example under the Medicines for Human Use (Clinical Trials) Regulations or the Research Governance Framework for Health and Social Care and equivalent guidance?	

Which organisation(s) has/have agreed to fulfil this role? The Wellcome Trust cannot act as sponsor.

Confirm you have in place, or you will seek, appropriate informed consent to use any potentially commercially exploitable results from tissues or samples derived from human participants.
Please answer 'not applicable' if no potentially commercially exploitable results (based on human tissues or samples) will be produced during the course of the proposed research.

Proposals involving animals

Select any of the following that apply to your proposed work: *(Proposal involves the use of animals, Proposal involves the use of animal tissue, Neither of the above)*
The following notes relating to 'Proposals involving animals' are intended to provide guidance and advice in completing the form, rather than a comprehensive review of the legal and regulatory environment in which the application is made. *Applicants must refer to the Wellcome Trust's policy on the use of animals in medical and veterinary research on the Trust's website.* *In all animal experiments we support, the principles of reduction, replacement and refinement will apply. In all experimental studies, applicants must actively consider:* • *the complete replacement of live animals with tissues derived from either animals or humans;* • *the possibilities of reducing the numbers of animals that need to be used;* • *refining the experimental design in order to obtain the maximum amount of information from the minimum number of animals.* *Refined methods in animal research are those which alleviate or minimise any adverse effects for the animals involved, and/or enhance animal welfare. Refinements may be applied at any stage in the life of an animal. Thus, refinement encompasses all aspects of a procedure, including:* • *the source, transport, husbandry and environment of the animals involved;* • *the experimental design (for example, the choice of species and the group size employed);* • *the techniques applied;* • *the end points of the procedures; and* • *care of the animals before, during and after a procedure.* *For further information regarding the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), see www.nc3rs.org.uk* *Monoclonal antibodies* *The use of ascitic animals for monoclonal antibodies (mAb) production in vivo should only be proposed when in vitro attempts at mAb production have failed or the use of animals is considered justified for specific diagnostic or therapeutic products. You must give a full explanation if in vitro production methods are not considered to be suitable.*

Select any of the following species you will use: *(Primate, Cat, Dog, Equidae, Pig, Genetically Altered Animals, Other animals)*
The NC3Rs will review all applications involving the use of primates, cats, dogs and equidae animals, or their tissue/data. *All proposed research projects involving genetically altered mice are expected to consider the principles of welfare assessment set out on the NC3Rs website: https://www.nc3rs.org.uk/generation-and-breeding-genetically-altered-mice.*

Select 'Add...' to enter the animal species and total numbers required (this may differ from the number to be purchased, maintained).		
Animal species	**Strain (if appropriate)**	**Total number required to carry out proposed work**
-		

Please provide details on any animal species which are to be used in the proposed project. Please provide the total number to be used (this may differ from the number to be purchased, maintained etc.)

Provide a justification of the proposed sample size alongside details of the planned statistical analyses. Describe experimental design, including any plans to reduce bias such as blinding or randomisation if appropriate. You must include power calculations if appropriate. (1,000 words max.)	

You may provide your answer to this question in the field provided (text entry format) or as a PDF attachment (upload format). If you are uploading your answer, the uploaded document must be in 11 point Arial font and portrait format.

For each species, you must ensure that adequate experimental detail is provided to justify both the use and number of animals. This should include:

- *definition of unit of analysis (i.e. N referring to animal or sample number);*
- *means of avoidance of bias (e.g. blinding or randomisation);*
- *statistical analysis to be used and explanation of how sample and/or group size was derived;*
- *where repeated measures are used, the number of time points;*
- *an indication of number of replications of each experiment to mitigate spurious non-replicable results.*

You may include tables and figures in this section to help justify animal numbers. You can find additional guidance on designing animal experiments through the NC3Rs Experimental Design Assistant: https://www.nc3rs.org.uk/experimental-design-assistant-eda

(1000 words max.)

Why are the species to be used the most appropriate? (250 words max.)

It is particularly important to justify the species when an animal is being used as a model for a human physiological or pathological condition.

Does your proposal include procedures to be carried out on animals in the UK which require a Home Office licence? Your organisation must ensure that research involving the use of animals complies at all times with UK laws and regulations.	

Is there a current Home Office Personal Project Licence (PPL) that authorizes the proposed procedures to be carried out in the UK?	

Provide the name of the licence holder and the PPL number.

Detail your plans and timelines for acquiring the appropriate licence.

If your proposal involves the use of animals, what would be the severity of the procedures? You can find guidance on assessing the severity of a procedure on the Home Office website.

Provide details of any moderate, severe or non-recovery procedures (250 words max.)

Does your proposal involve the use of animals or animal tissue outside the UK?	

Confirm that the proposed animal work outside of the UK will comply with the principles of UK law. Animal research conducted outside the UK must, as a minimum standard, be carried out in accordance with the principles of UK law and regulation. (1000 words max.)
Law and regulatory standards often vary from country to country. If experiments are to be carried out on animals outside the UK, the experiments proposed must be performed to standards which accord with the principles of UK legislation. Furthermore, the housing and care of animals must similarly accord with the standards and principles of UK legislation. *You should refer to NC3Rs guidance on carrying out work abroad and choosing contractors: https://www.nc3rs.org.uk/news/choosing-contractors-animal-research*

Why is animal use necessary: are there any procedures of less severity that could be used? (250 words max.)

Non-human primates If you are exclusively using already generated tissue or data in the proposed experiments please answer all relevant questions as thoroughly as possible, in particular the questions relating to housing and procedures. If a question is not relevant you can answer 'N/A', but we may request additional information if necessary for assessment.

Do the facilities and practices, and the proposed research comply with the principles set out in the 'National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs) Guidelines: Primate accommodation, care and use' ?	

Explain why notIA

Will it be necessary to transport the non-human primates (i.e. from breeding facility and within the host organisation environment)?	

Indicate approximate journey times and the measures that will be taken to minimise the potential stress during transport.

Provide details of the housing for the animals, e.g. enclosure size, environmental enrichment.
See the NC3Rs guidance on animal housing and husbandry for further details

Will single housing of the non-human primates be necessary at any time?	

Provide a justification for single housing, its duration, and explain what additional resources you will provide to the animals to minimise the impact on animal welfare.

Describe the experimental procedures involved and how any pain, suffering, distress and/or lasting harm will be minimised. Have the procedures been recently reviewed by the Named Veterinary Surgeon (NVS), Named Animal Care and Welfare Officer (NACWO) and Animal Welfare and Ethical Review Body (AWERB)?

Will any of the experimental procedures involve food and/or water restriction?	

Justify why this is necessary and outline what alternatives have been considered.

Will any of the experimental procedures involve restraint?	

What alternatives have been considered? Describe the nature of the restraint, its duration and frequency, and what will be done to avoid distress.

What prior experience and training in non-human primate use, care and welfare will you require of the staff named in the application? What provision are you making for continuing professional development in these areas?

Will any of the staff involved require specific training for any of the procedures concerned?	

Provide details of the training needed and where it will be undertaken.

Cats, Dogs, Equidae and Pigs If you are exclusively using already generated tissue or data in the proposed experiments please answer all relevant questions as thoroughly as possible, in particular the questions relating to housing and procedures. If a question is not relevant you can answer 'N/A', but we may request additional information if necessary for assessment.

From where will the animals be sourced?

Will it be necessary to transport the animals?	

Indicate approximate journey times and the measures that will be taken to minimise the potential stress during transport.

Are animals to be imported?	

Where animals are to be imported, what journey times have been agreed with the Home Office? Describe the conditions for the animals at the breeding establishment and how the potential stress during transport will be minimised.

Provide details of the housing for the animals, e.g. enclosure size, environmental enrichment.
Please see the NC3Rs guidance on animal housing and husbandry for further details: https://www.nc3rs.org.uk/3rs-resources/housing-and-husbandry

Will single housing of the animals be necessary at any time?	

Provide a justification for single housing, its duration, and explain what additional resources you will provide to the animals to minimise the impact on animal welfare.

Describe the experimental procedures involved and how you will minimise any pain, suffering, distress and/or lasting harm. Have the procedures been recently reviewed by the Named Veterinary Surgeon (NVS), Named Animal Care and Welfare Officer (NACWO) and Animal Welfare and Review Body (AWERB)?

What adverse effects might the animals experience? List the clinical and other signs that will be monitored, the frequency of monitoring and, where relevant, the humane endpoint criteria established for the study. (1000 words max.)

Will any of the experimental procedures involve restraint?	

What alternatives have been considered? Describe the nature of the restraint, its duration and frequency, and what will be done to avoid distress.

What prior experience and training in animal use, care and welfare will you require of the staff

named in the application? What provision are you making for continuing professional development in these areas?

Will any of the staff involved require specific training for any of the procedures concerned?	

Provide details of the training needed and where it will be undertaken.

Wellcome Trust supported facilities

Will the project be based in one of the following Wellcome Trust supported facilities: • the Wellcome Trust Sanger Institute • a Wellcome Trust Centre • an Africa and Asia Programme • the Francis Crick Institute?	

Specify

Synchrotron radiation sources

Will you need access to a synchrotron source?	
We collect data on access to synchrotron sources for information purposes. *Apply directly to the synchrotron facility you want to use.*	

Which source(s) will you be applying to? (Select all that apply)

Specify: