

Artificial Intelligence in Cardiovascular and Respiratory Disease Diagnostics

Fellowship Opportunity

Guidance for Peer Review

Overview

This document guides you through the Medical Research Foundation's peer review process for this competition. If you have any question or concerns regarding the peer review process please contact the Research Team, at research@medicalresearchfoundation.org.uk or 020 4581 2402.

Please submit your peer review assessment via medicalresearchfoundation.flexigrant.com

Background to the Funder

The Medical Research Foundation is an independent charitable foundation. Formed by the Medical Research Council (MRC) over 100 years ago, we grow and nurture people and ideas wherever we see research opportunities with great potential.

The research we fund is only possible thanks to the incredible generosity of our donors.

Importance of Peer Review

Peer review ensures proposals for research funding are scrutinised by independent scientific experts who specialise in the areas of science covered in the proposal to assess, for example, the viability, quality, cost-effectiveness and impact of the science concerned.

External peer reviewers are experts in the field of research proposed in the application. When Expert Review Panels assess proposals, they draw on the external peer reviewers' comments and scores to make funding decisions.

The objectives of peer review are to:

- identify the best research addressing the most important and urgent questions,
- obtain value-for-money and ensure effective and efficient use of resources,
- identify the best scientists with the highest potential, working in the best environments.

There is an implicit contract between the applicant, the Medical Research Foundation and the reviewer. Effective review requires the commitment of all three. The Foundation outlines clear aims and assessment criteria for each of its schemes and calls. Proposals should fall within the criteria and explain clearly and comprehensively how they meet it.

Competition Background

The Medical Research Foundation invited applications from mid-career researchers who are making a transition to independence to support research that will increase understanding in the field of the use of Artificial Intelligence (AI) methods for diagnosis of cardiovascular or respiratory diseases.

Cardiovascular and respiratory diseases are leading causes of mortality, both in the UK and globally. In recent years, an enormous amount of health and healthcare-related data has been generated or recorded, including high-resolution imaging, genetic data, biosensor monitoring, and electronic health records. The possibility of using AI methods to capitalise on the information represented by this data is growing rapidly, with the potential for significant impact on the accuracy and efficiency of diagnostic processes. Applications were welcomed from researchers at all levels of seniority. We particularly welcomed collaborative grants led by the full spectrum of researchers working in the field, to allow multi-disciplinary and multi-professional projects. Expertise should be drawn from different research areas and professionals, allowing for

collaboration between basic scientists, clinicians, optometrists, orthoptists and other allied health professionals.

Applications within a broad field of either cardiovascular or respiratory disease were welcomed and we particularly encouraged applications involving pulmonary embolisms. Research may be exploratory or translational in nature, but must have relevance for diagnostics in these areas. Research focusing on upper respiratory infections and/or nasal/airway conditions is not within the scope of this competition. Research focusing on cancer diagnostics was also not considered in this competition.

Funding Available

Applicants may apply for a Fellowship of up to £300,000 to support their research, over a maximum of a 3-year period (pro-rata for part-time positions). There will be up to £900,000 available in this competition.

Integrity of Reviews: Declarations of Interest

Integrity between the applicant and reviewer is essential as is the relationship between the Medical Research Foundation, applicant and reviewer. Reviewers are asked to identify any possible **conflicts of interest** before they begin reviewing an application and to decline to review the application and state the reason why so this can be recorded.

Confidentiality

The proposal and any associated papers have been forwarded 'in confidence'. When undertaking to review a proposal, a reviewer commits to keeping all information confidential and never to use, retain or copy the information in the proposal. Reviewers must not make use of the research designs or research findings from a proposal under review and should not allow others to do so.

Reviewers accept and acknowledge that any comments submitted to the Medical Research Foundation may be provided to the applicant, on a confidential basis and in anonymised form, to allow an applicant to respond to issues raised as part of the peer review process and to benefit future proposals.. Reviewers should be careful not to include information in their review which compromises their anonymity. Applicants and Panel members are also required to maintain a similar duty of confidence as it is recognised that reviewers may, from time to time refer to ongoing research, either their own or other researchers for the purposes of comparison.

Reviewer Assessment: Evaluation Criteria

The proposal should be considered against the following four core criteria:

1. **Importance:** How important are the questions, or gaps in knowledge, that are being addressed?
2. **Scientific potential:** What are the prospects for good scientific progress?
3. **Leadership:** Do the applicants demonstrate strong leadership, within their own environment and within the field more broadly?
4. **Resources requested:** Are the funds requested essential for the work, and do the importance and scientific potential justify funding on the scale requested?

Reviewers should also identify any ethical issues or risks to human participants that need further attention.

The Medical Research Foundation uses the Résumé for Researchers as an alternative to the traditional CV format. The Résumé for Researchers was originally developed by The Royal Society as a tool to more

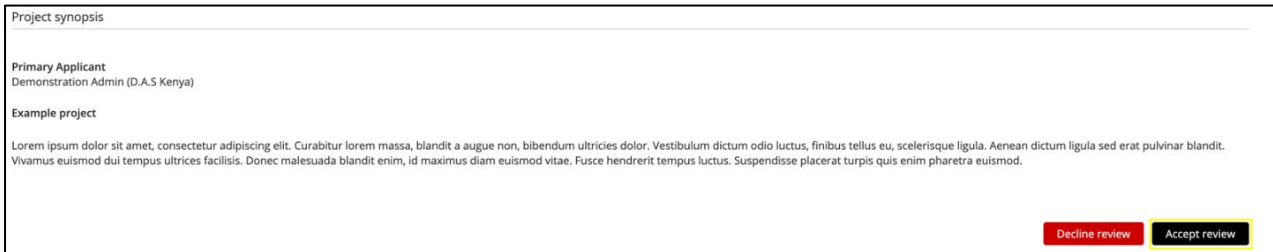
broadly evaluate researchers, particularly at the early career stages. The template has been adopted and adapted by the Medical Research Foundation as it supports the Foundation's approach of considering a wider view of contribution to the research landscape, at all career stages, not based solely on publication record.

Reviewers should consider the details provided by the applicant contained within the Résumé for Researchers when evaluating criteria such as the applicant's scientific impact, collaborative and leadership qualities.

Online Review Process

Peer review will be completed through our online grant management system, Flexi-Grant. You will receive a link to this via email. Once you have clicked the link, you will be prompted to create an account should you not already have one. You will then be directed to the online review form and the application.

To access to the full application, please ensure that you have selected 'Accept review' as shown below.



Project synopsis

Primary Applicant
Demonstration Admin (D.A.S Kenya)

Example project

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Decline review Accept review

Reviewers are asked to complete a reviewer assessment form in Flexi-Grant using the headings below. The questions under each heading are provided as a guide and it is not necessary to answer each one.

Summary of assessment

- Overall, what is the quality of the proposal?
- How significant is the proposed study in terms of its potential impact?
- To what extent will the proposed study extend the base of knowledge?

Detailed assessment of proposed programme and applicant

- Is the proposal realistic in its timeframes and resources?
- How convincing and coherent is the overall proposed approach? Is the methodology appropriate?
- How original or innovative are the proposals?
- Has the work already been done or is it being done elsewhere?
- How good is the prospect for significant scientific advance?

Applicants' contribution to knowledge generation (publication record and wider contribution to research field)

- Does the applicant have the expertise and skill-set to carry out the proposed study?
- Is the applicant's track record and achievements to date good?
- What is the applicant's current research standing?
- Is the applicant's proposed time commitment to the work appropriate and sufficient?

- Where there is a request to fund personal salaries are the requests in each case reasonable?

Applicants' contribution to the training and development of individuals

Has the applicant contributed to the development of others?

Applicants' contribution to the wider research community

Has the applicant contributed to the wider research community and culture?

Applicants' contribution to broader society

Has the applicant made a wide contribution to the research field, outside of their publication record?

Research environment and collaborators

- Is the proposed environment(s) suitable and does it have the variety of expertise and disciplines to support the research?
- Have the host institutions demonstrated a clear commitment to the proposed research for the duration of the grant?
- Are any collaborators well chosen?
- Does the environment provide appropriate opportunities for career development of personnel supported on the grant?
- Are there any dependencies on other organisations or funding of which Medical Research Foundation should be made aware?

Value for money

- Does the study represent good value for money in respect of the resources being requested from the Medical Research Foundation?
- Are the proposed resources fully justified in terms of the proposed science?
- Will the expected benefits of the research justify its cost to the Medical Research Foundation?

Ethics and other implications

- Is the work ethically acceptable?
- Are there any ethical issues that need separate consideration?
- Where applicable, is the use of animals appropriate and in line with the Medical Research Foundation guidelines?
- Are the ethical review and research governance arrangements clear and acceptable?
- Where applicable, is the use of human participants or human tissue appropriate and in line with the Medical Research Foundation guidelines?
- Are there any other implications which could put the Medical Research Foundation, participants in the research, or the applicant at risk?
- Are there any risks that the Medical Research Foundation should be taking into account when deciding whether to fund this research?

Reviewer Assessment: Scoring

Please score the proposal between 0 and 6, using whole numbers only. Please see the summary table below and use detailed descriptions of the scores in Annex 1 to allocate a numerical score to the application. Reviewers should ensure their comments justify the score awarded. Scores will be taken into consideration during the Expert Review Panel meeting

6	Exceptional. Top international programme, or of exceptional national strategic importance
5	Excellent. Internationally competitive and leading edge nationally, or of national strategic importance
4	Very High Quality. Internationally competitive in parts
3	High Quality
2	Good Quality
1	Poor Quality
0	Ineligible for funding

Scoring Matrix for Reviewers

Score Indicators	Score
Exceptional – Top international programme, or of exceptional national strategic importance	
<ul style="list-style-type: none"> ■ Scientific Quality and Impact <ul style="list-style-type: none"> – Crucial scientific question or knowledge gap or area of strategic importance to the UK – Original and innovative; novel methodology and design – Potential for high health and/or socioeconomic impact ■ Scientific Leadership <ul style="list-style-type: none"> – Excellent potential for research leadership (track record, team, environment, and collaborators) ■ Justification of Resources <ul style="list-style-type: none"> – Potential for high return on investment (resources requested, likelihood of project delivery, anticipated knowledge generation) – Appropriate staff time allocated to deliver project (Principal investigators and co-investigators) ■ Other: Ethical and/or governance issues are fully considered 	6
Excellent – Internationally competitive and leading edge nationally, or of national strategic importance	
<ul style="list-style-type: none"> ■ Scientific Quality and Impact <ul style="list-style-type: none"> – Crucial scientific question or knowledge gap or area of strategic importance to the UK – Original and innovative; novel methodology and design – Potential for high health and/or socioeconomic impact ■ Scientific Leadership <ul style="list-style-type: none"> – Excellent potential for research leadership (track record, team, environment, and collaborators) ■ Justification of Resources <ul style="list-style-type: none"> – Potential for high return on investment (resources requested, likelihood of project delivery, anticipated knowledge generation) – Appropriate staff time allocated to deliver project (Principal investigators and co-investigators) ■ Other: Ethical and/or governance issues are fully considered 	5
Very High Quality – Internationally competitive in parts	
<ul style="list-style-type: none"> ■ Scientific Quality and Impact <ul style="list-style-type: none"> – Crucial scientific question or knowledge gap or area of strategic importance to the UK – Robust methodology and design (innovative in parts) – Potential for high health and/or socioeconomic impact ■ Scientific Leadership <ul style="list-style-type: none"> – Excellent potential for research leadership (track record, team, environment, and collaborators) ■ Justification of Resources <ul style="list-style-type: none"> – Potential for significant return on investment (resources requested, likelihood of project delivery, anticipated knowledge generation) – Appropriate staff time allocated to deliver project (Principal investigators and co-investigators) ■ Other: Ethical and/or governance issues are fully considered 	4
High Quality	

<ul style="list-style-type: none"> ■ Scientific Quality and Impact <ul style="list-style-type: none"> – Worthwhile scientific question or knowledge gap or a valuable scientific resource – Methodologically sound study – Potential for significant health and/or socioeconomic impact ■ Scientific Leadership <ul style="list-style-type: none"> – Strong potential for research leadership (track record, team, environment, and collaborators) ■ Justification of Resources <ul style="list-style-type: none"> – Potential for significant return on investment (resources requested, likelihood of project delivery, anticipated knowledge generation) – Appropriate staff time allocated to deliver project (may be scope strengthen management of the project) ■ Other: Ethical and/or governance issues are well considered 	3
Good Quality	
<ul style="list-style-type: none"> ■ Scientific Quality and Impact <ul style="list-style-type: none"> – Worthwhile scientific question or knowledge gap or a valuable scientific resource – Methodologically sound study but areas require revision – Likelihood of successful delivery ■ Scientific Leadership <ul style="list-style-type: none"> – Strong potential for research leadership (track record, team, environment, and collaborators) ■ Justification of Resources <ul style="list-style-type: none"> – Potentially more limited return on investment (resources requested, likelihood of project delivery, anticipated knowledge generation) – Resources broadly appropriate to deliver the proposal ■ Other: Ethical and/or governance issues are adequately considered 	2
Poor Quality	
<ul style="list-style-type: none"> ■ Scientific Quality and Impact <ul style="list-style-type: none"> – Poorly defined question – Methodologically weak study – Limited likelihood of new knowledge generation ■ Scientific Leadership <ul style="list-style-type: none"> – Poor research leadership potential ■ Justification of Resources <ul style="list-style-type: none"> – Potentially poor return on investment ■ Other: Ethical and/or governance issues are not adequately considered 	1
Ineligible for funding	
0	