



SINGHEALTH DUKE-NUS ACADEMIC MEDICINE RESEARCH GRANT INITIATIVE FY2024

(For FY2024 Research Projects)

APPLICATION GUIDELINES

Closing date: 25 September 2023 (Monday), 5pm

A. BACKGROUND

1. The **SingHealth Duke-NUS Academic Medicine (AM)** Research Grant Initiative provides funding support to deserving translational and clinical research within the SingHealth Duke-NUS Academic Medicine Centre (AMC).

2. Types of grants available:

2.1 MAIN CATEGORY GRANTS.

Research supported under Main Category grants are Start-Up and Transition Projects in Clinical, Translational, Health Services and Clinical Trial research (*only Transition Projects are provided for this last category*).

2.1.1 Start-Up Grant

- This grant provides seed money to 'Early Stage' investigators to explore novel research ideas.
- Early Stage investigators are defined in this grant call as those with previous research funding (irrespective of funding source) of <S\$50,000 in total between the period 1 September 2021 to 31 August 2023.
- The award value is capped at S\$50,000 per successful application to be utilised over a period of 2 years.
- SMC/ SDC registered clinicians/ dentists whose ACP provides funding of >\$30,000 per PI per project, will not be eligible to apply for Start-Up Grant.

2.1.2 Transition Project Grant

- This grant is intended for established investigators who can demonstrate an excellent track record in their relevant areas of research, who have **the intent to apply for national funding in the next round**.
- The award value is capped at S\$150,000 per successful grant application to be utilised over a period of 2 years.

- The Transition Project Grant awardee must apply for an external grant *prior* to submission of the Final Progress Report and report therein accordingly.

2.2 SPECIAL CATEGORY GRANTS

Certain quanta of funding have been allocated for awards in special categories - applications for which will be reviewed by separate, platform-specific panels. These special category grants are:

1. Artificial Intelligence Research (AIR)
2. Health Services Research - HEARTS
3. Medical Technology
4. Regenerative Medicine and Cell Therapy (RMCT)

2.2.1 For **Artificial Intelligence Research (AIR)**: please ensure that you meet the relevant guidelines as detailed in **Annex 1**.

2.2.2 For **Health Services Research – HEARTS**: please ensure that you meet the relevant guidelines as detailed in **Annex 2**.

2.2.3 For **Medical Technology**: the relevant guidelines and documents for application are released through the SingHealth Duke-NUS AM & NHIC Joint MedTech Grant Call FY2023.

2.2.4 For **Regenerative Medicine and Cell Therapy (RMCT)**: please ensure that you meet the relevant guidelines as detailed in **Annex 3**.

3. Main Category (Start-Up and Transition Project) and Special Category: HSR - HEARTS and RMCT are talent development grants and therefore not transferable if Principal Investigator (PI) leaves SingHealth and/or her member institutions.

B. ELIGIBILITY

1. Only investigators/ researchers **primarily employed** in SingHealth and her member institutions are encouraged to apply provided the following criteria are fulfilled:
 - a) Upon award of the grant applied for, applicants **must not** have received funding to conduct their own research project which cumulatively exceeds \$300,000. This can be funding from any source e.g., internal, external, philanthropy or industry (*i.e., If applicant has already been awarded \$150,000 in research funding in the past, (s)he can only apply for less than \$150,000 of subsequent internal funding as the ultimate intent is for SingHealth researchers to win national or external funding*).
 - b) Residents in training programmes under SingHealth - who must obtain the appropriate endorsement from their HODs and ACP vice-chairs, may also apply, subject to all other terms and conditions of the specific grant-type.
 - c) Applicants must not have held any national grants or international grants as a PI/Co-PI prior to the award.
 - d) Association/ Affiliation with an Academic Clinical Programme (ACP):

- i. The PI must be under an ACP or contributing to the growth and development of research in/under an ACP through active collaboration. Justifications must be given to support these research contributions and activities.
 - Applicants will need to complete a self-declaration on the ACP to which their research has contributed and obtain acknowledgement from the respective ACP Vice Chair (Research).
 - ii. If the applicant is unable to fulfil the above condition (i), the applicant should have his/her proposal signed-off by the relevant ACP Vice Chair (Research) and have it endorsed by the ACP's Academic Chair while keeping the respective ACP Administrators informed. The signing-off in support and as endorsement of the proposal signifies that the applicant is associated to the ACP.
- e) The proposed research project must be conducted within the SingHealth Duke-NUS academic health system and the PI must be primarily employed by SingHealth or her member institutions, with exceptions described in 1(b) above. The PI must have an official employment (permanent/ contract) in a SingHealth institution throughout the effective grant period.
 - f) For proposals involving patients, the PI/ Team should be Singapore Medical Council (SMC) or Singapore Dental Council (SDC) registered, as appropriate; or be able to demonstrate ability to access patients through SMC or SDC registered team members.
 - g) For Start-Up grant, SMC/ SDC registered clinicians/ dentists whose ACP provides funding of >\$30,000 per PI per project, will not be eligible to apply.
 - h) Under the Translational Rese/arch category, the PI must be at least a PhD or MBBS or BDS. Specifically for PhD applicants, (s)he should be already at the PI level (e.g. running a lab or have other grants as PI) or aspiring to be a PI (where strong support and justification from HOD/ Mentor/ Host Institution/ ACP is to be provided with application submission).
 - i) Under the Clinical Trial category, PI must be at least an SMC registered Associate Consultant, or SDC registered (as appropriate; in compliance to HSA standards).
 - j) The project's aims and objectives, and/or the same protocol have not been funded by other funding agencies.
 - k) No outstanding reports from previous SHF-Foundation/AM grants.
2. Applications that do not fulfil the eligibility criteria will be automatically disqualified from the SingHealth Duke-NUS AM Grant Research Committee (AGRC)'s or the respective platform-specific panels' review.

C. APPLICATION PROCEDURES – COMPULSORY INFORMATION

1. All applications must be made using the prescribed form. Failure to comply with all the requirements will result in the grant application being disqualified from review.
2. Each eligible applicant can only submit **one** application per SingHealth Duke-NUS AM Research Grant Initiative as the PI (i.e. a PI can only apply for either '*SingHealth Duke-NUS*

AM & NHIC Joint MedTech Grant Call FY2024' or 'SingHealth Duke-NUS AM Research Grant Initiative FY2024').

3. Where an applicant has previously been awarded a SHF-Foundation/AM Research grants, subsequent grant applications from the same PI must differ substantially from previous awarded grants:
 - Within any single grant category or sub-category, project submissions from the same PI must be substantially and scientifically different (*e.g. a PI may be awarded a Start-Up grant in 2014 and a second Start-Up grant in 2016 only if the research ideas of the two grants differ*). Final arbitration will be made by the review committee.
4. Please indicate the category of research (e.g. Translational, Clinical and Special Categories) based on the nature and topic of research. Selecting the wrong category may result in the application being disqualified from review. Refer to **Annexes 4 and 5** for definitions of the various categories of research.
5. Applicants and Team members (in capacity of PI) must declare concurrent submission(s) (or with similar aims) to other funding agencies and provide the abstract(s).
6. The total number of Co-Investigator(s) and Collaborator(s) is limited to a maximum of five (5) and they should be directly involved in the project.
7. All Start-Up and Transition Project Grant applicants must have an appropriate mentor¹ and the mentor must be located in Singapore. A consideration for choosing a scientific mentor should include their relevant research expertise, and who could be experienced in paper publications, grant writing and mentoring. Role and responsibilities of a mentor are:
 - a) Where possible, the project should be conducted in the mentor's lab, or near the vicinity of the mentor's lab, if lab is required.
 - b) To provide assistance to the mentee in research career development, research design and statistics, research direction and proposal development such as writing a grant application that would garner success in getting national funding.
 - c) Mentoring activities may also include visits to the laboratory or research site during the project period and/ or to provide bench/ desk space for mentee to do his research project.
 - d) To provide a summary of the project and the progress of the mentee as required in the Yearly and Final Progress Report submitted to SingHealth Office of Research (OoR).
8. Applications that require sample size calculation, sampling methods, database design, data cleaning and statistical analysis must be reviewed by a qualified biostatistician prior to submission. A qualified biostatistician is a person with appropriate knowledge of, and experience with, generally accepted statistical and scientific principles and methods; a practicing (bio)statistician, as approved/ accepted by the PI's Head of Department (HOD), ACP or Institution.

¹ Mentor could be Head of Department

9. Association/Affiliation with an Academic Clinical Programme (ACP)
 - a) For PIs who are under an ACP or already contributing to the growth and development of research in/under an ACP through active collaboration, applications must be acknowledged by ACP Vice Chair (Research).
 - b) If the applicant is unable to fulfil the above condition (a), the applicant should have his/her proposal signed-off by the relevant ACP Vice Chair (Research) and have it endorsed by the ACP's Academic Chair while keeping the respective ACP Administrators informed. The signing-off in support and as endorsement of the proposal signifies that the applicant is associated to the ACP.
10. Applications that focus on setting up a data/ tissue repository or setting up a new laboratory with new equipment will not be supported.
11. Application must be endorsed by the applicant's Head of Department (HOD). If the HOD is involved in the project (as PI, Co-I or Collaborator), the HOD's supervisor is required to endorse the application instead.
12. The completed soft copies of the application form and all accompanying documents must be submitted through the Host Institution's Research Office to SingHealth OoR.
 - a) (i) A single Microsoft word document without signatures, and (ii) a single PDF document with signature.
 - b) Please name the documents in the following format:
Category of Grant_Category of Research_Host Institution_PI's Name
13. Incomplete or late applications will automatically be disqualified from review.

D. BUDGETING & SUPPORT

1. The SingHealth Duke-NUS AM Research Grant Funding Guidelines is attached as **Annex 1** in the application form.
2. For projects that will use the SingHealth Core Platforms, Strategic Programmes & Supporting Centres, please contact the relevant staff for the appropriate costings:
Weblink: <http://infopedia/SingHealth/Departments/Group%20Research/Pages/AMRI.aspx>
 - a) Advanced Molecular Pathology Laboratory (AMPL) @ SingHealth
General Enquiries: ampl@singhealth.com.sg
 - b) SingHealth Advanced Bio-imaging
General Enquiries: bioimaging@singhealth.com.sg
 - c) SingHealth Experimental Medicine Centre (SEMC)
General Enquiries: shs.semc@singhealth.com.sg
 - d) SingHealth Flow Cytometry
General Enquiries: flow@singhealth.com.sg
 - e) SingHealth Health Services Research Centre (HSRC)

General Enquiries: hsr@singhealth.com.sg

f) SingHealth Investigational Medicine Unit (IMU)

General Enquiries: imu@singhealth.com.sg

g) SingHealth Tissue Repository (STR)

General Enquiries: tissue.repository@singhealth.com.sg

3. For support from Division of Information and Transformation, please contact the relevant staff:

a) SingHealth Medical Technology Office (MTO)

General Enquiries: mto@singhealth.com.sg

4. Contact your Host Institution's Research Office or Research Finance for accurate budgeting of your manpower and other services.

E. SELECTION PROCESS/ CRITERIA

1. Grants are evaluated based on the importance, significance and scientific merit of the proposal, innovation, extent to which research addresses important issues affecting human health, justification of the budget, potential to develop into a national-level type project, and other relevant factors (power calculations, etc). Proposals without clear hypothesis or primarily for setting up databases and registries will not be funded.

2. Grants may be peer reviewed by experts outside of the SingHealth Duke-NUS AMC.

3. Applications will be assessed on the basis of selection criteria and by the Grant Committee. SingHealth OoR reserves the right not to award the grants should it be decided that the applicants do not meet the eligibility/ selection criteria or the intent of the SingHealth Duke-NUS AM Research Grant Call.

4. Applications for Special Category grants will be reviewed **separately** by the respective platform-specific panels.

F. DISQUALIFICATIONS

Proposals may be disqualified from review or not approved for funding under the following circumstances:

1. PI leaves the Institution prior to the approval of the grant.

2. PI will be on leave (personal or otherwise) for such an extended period of time that the completion of the project by the specified time is severely affected.
Example: Health Manpower Development Programme (HMDP) or long unpaid leave

3. Exceptions will be considered on a case-by-case basis with valid explanations written by the Investigator.

4. Applicant did not meet the criteria stated for application.

G. ETHICS APPROVAL

1. Successful proposals must submit supporting documents of ethics approval granted by the relevant Ethics Committee for studies involving human subjects, human tissues/cells and/ or animals within 5 months from grant approval letter through the Host Institution's Research Office, prior to the release of funds.
2. **PI must ensure that PI's name and Project title used to apply for the research grant and relevant ethics approval (upon grant approval) are the same.**
3. Exceptions will be considered on a case-by-case basis with valid explanations written by the Investigator and endorsed by the Host Institution. Subsequent ethics renewal must be submitted to SingHealth OoR through Host Institution's Research Office.

H. EXTENSION OF GRANTS

Awardees will only be granted one (1) additional year of grant extension, upon request. No further extension beyond 1 year will be supported.

I. EXPENDITURE OF AWARD

The funds can be used for any category of research expenditure (i.e. Manpower, Capital Equipment and Other Operating Expenses). Allowable costs will follow the guidelines outlined in the SingHealth Duke-NUS AM Research Grant Funding Guidelines (Annex 1 of the prescribed application form). Every attempt should be made to adhere to the approved budget plan as stated in the Letter of Award. Variations from different categories are permitted only with written approval from the SingHealth OoR and endorsement from the Host Institutions' Research Offices.

J. REPORTING

The Award Holder must submit Yearly Progress reports on the progress of the research funded by the grant using the prescribed forms. PI must also submit a Final Report within three months after the grant period expires.

K. ENQUIRIES

Please contact your Host Institution's Research Office OR

SingHealth Office of Research

1. Ms Tan Yi Mei at tan.yi.mei@singhealth.com.sg
2. Ms Ang Shu Wei at ang.shu.wei@singhealth.com.sg
3. Dr See Jie Yang at see.jie.yang@singhealth.com.sg

ANNEX 1 - Artificial Intelligence Research (AIR)

This grant provides funding to SingHealth researchers to transform the future of health care using Artificial Intelligence ideas, technologies and methodologies. The potential benefits of AI include improved patients' care with improved efficiency of clinical workflow and decision-making process; while re-defining and focusing the manpower needs to the patients who require closer examination and surveillance.

This grant call provides seed funding for deserving investigators to explore novel research ideas in (AI), support exploratory efforts for early-stage AI projects that involve an unmet clinical need and show potential for further development with the next stage of Proof of Concept (POC) funding.

In addition, it also aims to position successful awardees to compete successfully for national funding and/or the development of their research to front-line clinical care and/or implementation.

Projects in this category should aim for one of the following:

- The end deliverable should be an AI solution, potentially applicable in SingHealth Duke-NUS Academic Medicine Centre (AMC) and optimally, across other healthcare institutions; and/or show potential for patent, know how or copyright protection;
- Projects should aim towards securing follow-on AI funding (such as NHIC, SMART, SPRINT, AI-SG, DXD and NMRC grants) or take other concrete steps to develop the technology towards commercialization, at the end of the project and/or;
- Publications that advance scientific knowledge and understanding in the AI field

The award value is capped at S\$80,000 per successful application to be utilised over a period of 2 years.

Specific Eligibility Criteria

- Eligible applicants must be able to show demonstrable interest, understanding of the AI space in their application, secured datasets, and initial pilot data, and seek to translate or implement AI technologies into health applications that benefit multiple health disciplines/areas.
- Collaborations across disciplines/ACPs/Departments/Institutions/AMC are essential/ encouraged with a long-term view to the integration of disciplines in a translational perspective.
- The project must not be or have been funded in its current form.
- The above criteria are on top of all criteria in the main category under Section B Eligibility 1(a) to (f), (j) and (k).

ANNEX 2 - Health Services Research - Health Services Research and Analytical Technologies for SingHealth (HEARTS)

The new MOH RIE 2025 continues to emphasize improving healthcare outcomes for Singapore's population and improving value for money in health services. Clinician scientists with enhanced skills in health services research are also a priority.

This HSR - HEARTS grant round and the funded projects will be managed by the Health Services Research Institute (HSRI). This virtual centre is designed to improve the performance of health services and serves as a bridge between the data science capabilities of SingHealth embodied by Health Services Research Centre (HSRC) and the Duke-NUS Programme in Health Services and System Research (HSSR) groups. It is a place where good ideas for innovation led by SingHealth clinicians can be brought to life with high quality research methods and outputs.

This funding opportunity will require collaboration with a relevant Duke-NUS faculty member.

HSRI invites **any** idea for a health services innovation that meets the following four criteria:

1. The research will demonstrate how improvements to the performance of health services can be achieved. Some examples of improved performance are:
 - a. Improved patient outcomes
 - b. Improved use of resources
 - c. Improved access to services
2. The idea is relatively simple and has a clear path to impact.
3. The number of patients who might benefit is reasonably large.
4. A Duke-NUS faculty member must be a named team member on the application, either as Co-Investigator or Collaborator, whose role it is to provide support for methods and writing publications.

Preference will be given to applicants who propose to harvest existing data sets, rather than exclusively collect new data. Although, some collection of new data would be expected in many cases. We also prefer 'good ideas' with 'potential large impact' over a strong research track record. Emerging researchers are encouraged to apply and demonstrate how they will learn new HSR skills.

Successful applicants will have access to data scientists; health economists and implementation scientists via HSRI. You can write about how you plan to use these resources for the design and conduct of your research.

We additionally offer access to 'Research Information Systems and Data Analytics Core' at Health Services Research Centre (HSRC). There will be manpower support to help you obtain and use existing data sets held by SingHealth for the benefit of your research.

The project design should entail outcomes with potential adoption by the healthcare system, or that may be leveraged for follow-on competitive grant funding at the national level by agencies such as National Medical Research Council (NMRC) or National Research Foundation (NRF).

Questions related about possible projects should be directed to Prof Nicholas Graves at n.graves@duke-nus.edu.sg.

The award value is capped at S\$65,000 per successful application to be utilised over a period of 2 years.

Specific Eligibility Criteria:

The above criteria are on top of all criteria in the main category under Section B Eligibility 1(a) to (f), (j) and (k).

ANNEX 3 - Regenerative Medicine and Cell Therapy (RMCT)

This grant provides support to SingHealth researchers in the field of Regenerative Medicine and Cell Therapy. The researchers may be involved in related basic, translational and clinical research, from establishment of databases or tissue banks, studies of signaling pathways in cell states, to translational / clinical studies of novel approaches for cellular and regenerative therapeutics. Examples of eligible research proposals will seek to:

- understand developmental processes relevant to regeneration
- understand the mechanisms of self-renewal or reprogramming, or understand the factors that drive differentiation of stem or progenitor cells down a particular lineage
- develop tools and technologies, for example for disease modelling or bioengineering
- undertake early pre-clinical investigations into potential regenerative therapies, including tissue repair strategies or mechanisms to enhance endogenous repair

The Regenerative Medicine and Cell Therapy field, while still in its embryonic stage in many aspects, holds tremendous promises for future medicine, from treating patients with common diseases (e.g., cancer, cardiovascular diseases) to replacing worn, dysfunctional and diseased tissues / organs, especially in our aging populations.

This grant call provides seed funding for deserving investigators to establish foundational science in the Regenerative Medicine and Cell Therapy field as well as those who wish to explore translating their existing studies into clinical applications and leveraged for follow-on competitive grant funding at the national level by agencies such as National Medical Research Council (NMRC). The research should demonstrate how improvements in the areas of Regenerative Medicine and Cell Therapy can be achieved, including but not limited to:

- Improved Science of Regenerative Medicine
- Improved patient outcomes
- Improved use of resources
- Improved access to services

The award value is capped at S\$80,000 per successful application to be utilised over a period of 1 - 2 years.

Specific Eligibility Criteria:

- Eligible applicants must be able to show demonstrable interest, understanding and existing related works in the field of Cell Therapy and Regenerative Medicine in their application with the ultimate goal of translating them into clinical and economy impacts.
- Collaborations across disciplines/ACPs/Departments/Institutions/AMC are encouraged.
- The project must not be or have been funded in its current form.
- The above criteria are on top of all criteria in the main category under Section B Eligibility 1(a) to (f), (j) and (k).
 - Specifically, for criterion 1(a), applicants ***must not*** have received funding to conduct their own research project which cumulatively exceeds \$300,000 ***in the field of Regenerative Medicine and Cell Therapy.***

ANNEX 4

| Terminology | Definition |
|------------------------|---|
| Translational Research | Research activities standing between basic research (where discoveries at molecular level are made) to the bedside (where discoveries are tested in humans for its efficacies). Tests may be conducted on animals and/ or via in vitro studies that utilises human tissues that cannot be linked to a living individual to establish efficacies. |
| Clinical Research | Research conducted with human subjects (or on material of human origin such as tissues, specimens and cognitive phenomena) for which an investigator (or colleague) directly interacts with human subjects. Excluded from this definition are in vitro studies that utilize human tissues that cannot be linked to a living individual. Patient-oriented research includes: (a) mechanisms of human disease, (b) therapeutic interventions, (c) clinical trials, and (d) testing of new technologies. |
| Clinical Trial | Under the umbrella of Clinical Research. Investigators enroll healthy volunteers and/ or patients into small pilot studies initially, followed by larger scale studies in patients that often compare the new product with the currently prescribed treatment. As positive safety and efficacy data are gathered, the number of patients is typically increased. |

ANNEX 5**Background Information on Health Services Research**

Health services research is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations.

--Academy Health, 2000

Health services research could be undertaken by clinicians, economists, social scientists, biostatistics, clinical sciences, economics, epidemiology, political science, psychology, sociology, and statistics.

Such HSR projects could be studies involving:

- Costs, cost-effectiveness, cost-benefit and other economic aspects of healthcare
- Patient and population health status/quality of life
- Outcomes of healthcare technologies/interventions
- Practice patterns and diffusion of technologies/interventions
- Quality assurance programs /techniques designed to test generalizable attributes
- Guidelines, standards and criteria for healthcare
- Patient compliance with treatment
- Need and demand for healthcare
- Availability and accessibility of healthcare
- Utilization of healthcare
- Patient preferences for treatments, providers, settings, etc.
- Organization and delivery of healthcare (e.g., managed care vs. fee-for-service)
- Healthcare workforce
- Financing of healthcare (e.g., public and private third-party payment, capitation)
- Healthcare administration and management
- Health education and patient instruction
- Health professions education
- Health planning and forecasting
- Legal and regulatory changes affecting the healthcare system (e.g., anti-trust laws)
- Data and information needed for health care decision making (e.g., report cards)
- Studies of whether new healthcare technologies/interventions (including RCTs) can produce a desired outcome in "real world settings" of general or routine clinical practice

Exclusion criteria:

- Projects that do not involve some component of research or evaluation (e.g., demonstration projects or health services delivery projects that do not involve evaluation)
- Studies involving animals