**SINGAPORE THERAPEUTICS DEVELOPMENT REVIEW 2025 (FEB)**

**PRE-PILOT STREAM 1 (TARGET VALIDATION)**

**– CALL FOR FULL PROPOSAL**

**I. KEY INFORMATION**

**Project Title**:

*(Please note that the project title should be non-confidential as it might be shared publicly if your project is awarded for funding)*

**Total funds requested: S**$     

**Principal Investigator (PI) (contact point)**:

Name :

Title :

Institution(s)\* :

Appointment(s)\*\* :

Percentage FTE# :

Email :

Phone :

Assistant Email :

*\* Please list primary institution, followed by other affiliated institutions*

*\*\* Please list primary appointment, followed by others*

*# Please submit a waiver request if total appointment time in public research institutions is <70%*

### Other Team Members

|  |  |  |  |
| --- | --- | --- | --- |
| **Role** | **Name** | **Institution/Department/Lab\*** | **Business Email** |
| Co-I 1 |  |  |  |
| Co-l 2 |  |  |  |
| Collaborator\*\* |  |  |  |

*\*Department / lab / institution that will be managing grant   
\*\*Collaborators should not require grant funding*

|  |  |  |  |
| --- | --- | --- | --- |
| **Lead PI type** | PhD Scientist | Clinician | Clinician-Scientist |
| ***For PI who is a PhD Scientist*** | Do you have a clinical collaborator for this project?  Yes  No: Would you like to be linked up with a potential clinical collaborator, or a clinician to provide insights from a treatment perspective? **Yes/No** \* | | |
| ***For PI who is a Clinician/ Clinician-Scientist*** | Do you have a basic science collaborator for this project?  Yes  No: Would you like to be linked up with a potential PhD scientist collaborator, or a scientist who can provide insights from a basic biology perspective? **Yes/No** \* | | |

**Resubmission Status**

Please note that this will not affect the outcome of your proposal. This information would allow us to note the improvements you have made if this is a resubmission.

Is this your first submission to the STDR, Target Translation Consortium (TTC) or Platform Development (SMART) programmes? **YES / NO**

If No, which programme have you applied for previously: **TTC / SMART / STDR**

**II. INFORMATION FOR APPLICANTS**

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| --- | --- |
| **Background** | This application form is for the STDR’s Pre-Pilot Grant programme for Stream 1 (Target Validation)\*.  • The applicant should have preliminary data supporting the implication of a target in a given disease indication – this can be new data generated by the applicant and/or key published experiments reproduced by the applicant.  • The target needs to be novel for the indication chosen by the applicant.  • Note that large scale screening campaigns for Hit Generation, Hit-to-Lead or Lead Optimization of small or large molecule compounds cannot be supported in this Pre-Pilot stage. These areas are supported by the STDR Pilot stage.  • In addition to grant funding, a Drug Discovery Specialist (DDS) will be appointed to each project to work with the investigator to design key experiments needed for target validation.  *\* The* [*Target Translation Consortium*](http://WWW.TARGETTRANSLATION.SG) *(TTC) had previously launched an annual “Call for Targets” in 2019 and 2020. From 2021, this Call was integrated with the STDR, and the TTC now provides its support for the preclinical validation of promising, putative drug targets through this Pre-Pilot Stream 1 programme instead.* |
| **Instructions** | * All text should be in Arial font, size 10, with single spacing. * Please submit your proposal as a PDF. Keep sections 1-10 to a maximum of 10-pages, *excluding* references, undertaking, Annex A (data and figures) and Annex B (Budget table). * It is mandatory for all applications to be submitted to, and endorsed by, the Host Institution's Innovation & Enterprise Office (IEO) and Director of Research (DOR). * **Completed forms should be submitted electronically via iGrants** to the “Singapore Therapeutics Development Review 2025 (Feb) Pre-Pilot” between **4 Feb 2025** and **20 Mar 2025, 1700 hrs.** |
| **Eligibility Criteria** | * Applicants are required to fulfill the following criteria at the point of application:   The Lead Principal Investigator (PI) should:   1. Hold at least a 0.7 FTE primary appointment in a Singapore publicly funded research or tertiary institution\*; 2. Have the relevant scientific/technical background and necessary experience to direct the project being supported by the grant\*\*  * Exceptions to eligibility criteria will be considered on a case by case basis with the submission of a waiver request. Please write to the grant secretariat **before** the submission of your application, at least 7 days before the grant deadline on 20 Mar 2025, i.e. 13 Mar 2025.   *\*For joint appointees, total appointment time in Singapore publicly funded research or tertiary institutions should be at least 0.7 FTE.*  *\*\* Post-doctoral researchers who wish to apply for STDR should submit a letter from their supervisor, as part of the application submission on iGrants, declaring that*   1. *The supervisor supports the post-doctoral researcher's STDR application,* 2. *The contract of the post-doctoral researcher covers the entire STDR grant period, and* 3. *The grant body that is funding the post-doctoral researcher is agreeable to their application for STDR grants (if relevant).* |
| **Confidential Information** | Relevant privileged or confidential information should be disclosed if necessary, to convey a better understanding of the project. However, such information must be clearly marked as “Confidential” in the proposal and if so, will be handled as confidential information by the grant administrators. |

**III. CONTACT PERSONS FOR QUERIES**

The Pre-Pilot Stream 1 is managed by the [**Target Translation Consortium**](http://www.targettranslation.sg)**.**

**Write to** [**chia\_hsin\_ee@eddc.sg**](mailto:chia_hsin_ee@eddc.sg)and/or[**Christophe\_Bodenreider@eddc.sg**](mailto:Christophe_Bodenreider@eddc.sg) **for** **a pre-submission consultation** if you have questions on your project’s suitability for the grant, or regarding considerations in target validation.

For administrative questions, please contact your institution’s representative below.

|  |  |  |
| --- | --- | --- |
| **Institution** | **Contact Person** | **Email** |
| Duke-NUS | **Zou Changji**, Associate Director, CTeD | Changji.zou@duke-nus.edu.sg |
| SingHealth | **Lye Whye Kei**, Director, SingHealth Intellectual Property  **Jenefer Alam**, Assistant Director, SingHealth Intellectual Property | [lye.whye.kei@singhealth.com.sg](mailto:lye.whye.kei@singhealth.com.sg)  [jenefer.alam@singhealth.com.sg](mailto:jenefer.alam@singhealth.com.sg) |
| LKC Medicine | **Yen Choo**, Executive Director, Co11ab Novena  **Kevin Pethe**, Assistant Dean (Research) | [yen.choo@ntu.edu.sg](mailto:yen.choo@ntu.edu.sg)  [kevin.pethe@ntu.edu.sg](mailto:kevin.pethe@ntu.edu.sg) |
| NHG | **Louis Ang**, Director, Group Research | [TRO@nhg.com.sg](mailto:TRO@nhg.com.sg) |
| NTU | **Michelle Zhang**, Director, Future Healthcare, NTUitive | michelle.zhang@ntu.edu.sg |
| NUS | **Lim Liting**, Technology Commercialization Lead, Technology Transfer & Innovation | liting.lim@nus.edu.sg |
| NUHS | **Koh Shuwen**, Director, Innovation Transfer Office | [partnership@nuhs.edu.sg](mailto:Shuwen_koh@nuhs.edu.sg) |
| A\*STAR | **Neo Kah Yean**, Senior Director, I&E  **Kristal Kaan**, Acting Deputy Director, I&E | [neo\_kah\_yean@hq.a-star.edu.sg](mailto:neo_kah_yean@hq.a-star.edu.sg)  [kristal\_kaan@hq.a-star.edu.sg](mailto:kristal_kaan@hq.a-star.edu.sg) |

1. **Executive Summary (Non-confidential)**

***NOTE: Do not disclose any proprietary information in this executive summary.***

Briefly describe the problem to be solved, the shortcomings of existing treatments and your proposed approach. Do not focus on the technical details. Assume minimal knowledge in the field or industry. ***Keep within*** ***250 words*.**

1. **Target Biology**
2. What is the normal function of the target?
3. What is the knock-out phenotype?
4. What are the target’s expression pattern and tissue distribution? Is it selectively distributed (e.g. in diseased tissue only)?
5. Is the target evolutionarily conserved (e.g. in rodents, non-human primates, humans)?
6. **Rationale *(Why Do You Believe This Target Is Worth Pursuing)***
7. Which disease indication are you proposing to modulate this target for?   
   [Describe one, at most two target indications]
8. How is this target implicated in this disease? Is it also implicated in other diseases?
9. What evidence/data do you have to show the causative role of this target in the disease [this can be from literature and/or your own data]. Highlight any use of relevant or human/patient-derived tissue/models in these studies. *Please annex any relevant figures and tables in Annex A. Data will be evaluated for robustness, so please indicate or elaborate on the following for any key experiments:* 
   1. *The number of repeats/replicates performed,*
   2. *Statistical significance between cohorts.*
   3. *If a variety of conditions (multiple cell lines, range of buffer conditions, etc) had been used*
   4. *Any heterogeneity encountered in your study of this target or pathway*
10. What are the available preclinical models (*in vitro* and *in vivo*) for this disease? Please elaborate on how well these models predict the disease in the human context. Do specify if therapeutic molecules have been tested on these in vitro/in vivo models with similar results obtained in clinical trials (i.e. results from testing of therapeutic molecules on these models are translatable to the clinic).
11. Are there any potential safety implications if this target is modulated?

Do you have any information about potential safety implications associated with inhibiting or activating the target? For example, did any previous drug used to modify the target or related pathway result in toxicity?

1. Do you know of any contrary data (e.g. publications from other labs)?

If so, how is your proposed approach better? What does this tell you about the target in the disease?

1. **Unmet Medical Need *(Why Should We Develop a Therapy for this Indication?)***
2. What is the current standard of care for the proposed disease indication?
3. What is the unmet need this proposal seeks to address? [e.g. no therapies are available, therapies available are not sufficiently efficacious or are toxic, a subset of patients do not respond to therapy, resistance to existing therapy, etc] Is there a difference in disease prevalence, phenotype/genotype or response to standard of care in Asian populations?

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| --- | --- |
| 1. **Target Class and Therapeutic Modality Proposed (Druggability)** | |
| **a. What is the target class?**  Enzymes  Receptors  Transcription factors  Ion Channels  Transport proteins  Protein–protein interactions  Nucleic acids Please specify  Substrates and metabolites  Others Please specify | 1. **What is the cellular location of the target?**   Nuclear  Cytosolic  Intra-membrane  Cell surface receptor  Secreted protein  Others: Please specify |
| **c. How can this target be modulated to improve the disease condition?**  Activation  Inhibition  Other: Please specify | **d. Are you proposing to repurpose a therapeutic?**  Yes: Please specify  No |
| **e. What therapeutic modality would you propose for this target?**  Small molecule  Monoclonal antibody  Peptide  Other biologic: Please specify  Cell therapy  Gene therapy  Other modality: Please specify | **f. Is there a tool compound / modulator available in the market or under clinical development?** *[A tool compound is usually a small molecule/protein-based modulator that binds directly with the target and has a known mechanism of action versus the target]*  Yes: *For small molecule tool compounds, please specify and attach any available reports of the biological activities of the tool compounds (from Pubchem, Scifinder, etc.), molecular weight and clogP in Annex A. For protein/antibody-based tool compounds, please specify and attach information on the specificity, monoclonality, and proposed applications (eg. IHC, Western blots, Flow sorting) in Annex A*  No |
| **g. Is the target’s sequence or a homologous sequence available?**  Yes: Please specify  No | **h. Is structural information of the target available?** *[The availability of a crystal structure of the protein will enable structure-based drug design]*  Yes: Please specify e.g. PDB ID  No |

|  |  |
| --- | --- |
| **i. Do you know if binding domains are available for binding of a small molecule or protein therapeutic?**  Yes: Please specify/annex  No  Don’t know | **j. Is in-silico modeling data available?** *[this can range from target prediction, validation, tool compound identification and prediction of off- target effect]*  Yes:  No |
| **k. Have you performed any target engagement assays?** *[assays that measure the interaction of a ligand with the intended target protein in intact cells]*  Yes: Please specify the experiments and add the data to Annex A  No | |
| **l. Have you identified any downstream markers of target engagement?**  Yes: Please specify the experiments and add the data to Annex A  No | |
| **m. Is a cell-based assay with functional read-outs available? How robust is the assay?**  Yes: Please specify the experiments and add the data to the Annex  **Is the assay optimized to be carried out in assay plates-24 wells / 96well / 384 wells or others? Yes/No**: if yes – please specify  No | |

1. **Biomarkers**
2. Have you/Have other groups identified any biomarkers that are associated with your target and/or the specified disease indication?

Pharmacodynamic biomarker (please fill in **6b** below)

Diagnostic biomarker (please fill in **6c** below)

No biomarkers identified (**skip** 6b and 6c)

1. Pharmacodynamic Biomarker

* What is the biomarker identified? Does the biomarker correlate with pre-clinical outcomes?
* Is there a pharmacodynamic *(response of the body to modulation of the target)* biomarker directly linked with target activity?
* Are there commercially available assay kits or in-house assay methods to detect the pharmacodynamic biomarker?

1. Diagnostic Biomarker

* What is the biomarker identified? Does the biomarker change with disease severity?
* Does the biomarker correlate with clinical outcomes?
* Are there marketed assays to detect the biomarker? What are the advantages of your developed assay compared to the marketed assays?

1. **Repurposing   
   *(SKIP THIS if your proposal does not include any repurposing approaches)***
2. Describe the drug(s) you are proposing to re-purpose. What are the disease indications that these drugs are currently approved for? What are the drugs’ activities in the human body for the approved indications?
3. Why do you think these drugs will be effective against your target in the proposed disease indication? Also explain how you arrived at your hypothesis *e.g. Did you do literature reviews only or did you analyse transcriptomic, GWAS, or clinical data?*
4. What are the known side effects of these drugs?
5. **Critical Go/No Go experiments**
6. What are the current gaps in the validation of your target? Please list in sequential order and provide a brief description of the critical experiments you would propose to further validate your target’s role in the proposed indication and/or to show that modulation of your target leads to the desired pharmacological effect in the disease. Include go/no-go points if possible. *[Note that the available budget for manpower, services and consumables is about S$250,000, do ensure that your proposed experiments can fit within this budget]*
7. What capabilities/platforms/expertise would you need to do the above, which you currently do **not** have access to?
8. Please provide an outline of the budget you require in **Annex B**. Considering the one-year timeline for the grant, we encourage teams to consider outsourcing parts of the work, where feasible. Outsourcing costs can be funded.

**Please note that alternative experiments may be identified for shortlisted projects. This could be based on review feedback received or through consultation with the designated Drug Discovery Specialist.**

1. **Competitor and Novelty**
2. Is the target already pursued by others in the proposed indication, or in other indications? If there are such direct competitors, what is the stage of development of the competitor’s programme?
3. What therapeutics are currently under clinical development for
   * The same disease indication?
   * The same target in the same disease indication?
   * The same target in a different disease indication?

You can provide this as a list in **Annex A** if needed.

1. ***For repurposing approaches only (SKIP if irrelevant)*** – are the named drugs already protected for the proposed new indication/target? Is there commercial viability for the drug to be developed into a new product/for a new indication?
2. **Reviewers**
3. Your proposal will be circulated to *Singapore-based* subject matter experts. Please indicate if there are any individuals you would **NOT** want to review your proposal OR if there are researchers in your field whom you have direct Conflict of Interest with (e.g. supervisor-staff or family relationship, co-Principal Investigators on funded projects)
4. **References** *(this section is excluded from the 10-page limit)*

**UNDERTAKING**

**A. Undertaking by Principal Investigator and Co-Principal Investigators**

In acknowledging this Grant Application, the Principal Investigator and Co-Investigators [on behalf of the team] UNDERTAKE, on any Grant Award to:

* Declare that all information is accurate and true.
* Ensure that approval from the funding agency has been obtained before engaging in any commercial activity that will exploit the finds of the research funded by the funding agency
* Read, support and agree to this proposal being carried out in the Institution(s)
* Be actively engaged in the execution of the research and ensure that the study complies with all laws, rules and regulations pertaining to animal and human ethics, including the Singapore Good Clinical Practice Guidelines
* Not send similar versions or part(s) of this proposal to other agencies for funding.
* For Biomedical Science proposal, submit supporting documents of ethics approval obtained from the relevant Institutional Review Board (IRB) and Animal Ethics Committee for studies involving human subjects/human tissues or cells, and animal/animal tissues or cells respectively.
* Ensure that all necessary licenses and approvals have been obtained or are being sought
* Ensure that funding agency is acknowledged in all publications.
* Ensure that all publications arising from the research is deposited in the Institution’s open access repository (or any other institutional/subject open access repository), in accordance to the Institution’s open access policy.
* Ensure that the requested equipment/resources are not funded by another agency or research proposal.
* Ensure that there is a reasonable effort in accessing available equipment/resources within the Institution(s) or elsewhere within Singapore.
* Ensure that there is no financial conflict of interest
* Adhere to the funding agency's Grants Terms & Conditions (T&Cs) and Funding Guidelines, as well as all other applicable guidelines, policies and procedures adopted by the funding agency, which may be amended or varied from time to time;
* Comply with the provisions of any relevant laws of the Republic of Singapore, statutes, regulations, by-laws, rules, guidelines and requirements applicable to it; and
* Agree to hold primary responsibility for the responsible conduct of research, and shall abide and comply with the ethical, legal and professional standards relevant to research, in accordance to the research integrity policy of the Institution(s).

We declare that the facts stated in this application and the accompanying information are true. This is an original and latest version of the proposal. We also declare that no other versions of this proposal (or parts thereof) with similar objectives, scope, deliverables or outcomes have been or will be submitted to any other funding bodies.

**Principal Investigator (PI):**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name:** |  | | |
| **Designation:** |  | **Institution:** |  |
| **Signature\*:** |  | **Date:** |  |

*\* Electronic signatures are acceptable*

**Co-Investigator(s):**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name:** |  | | |
| **Designation:** |  | **Institution:** |  |
| **Signature\*:** |  | **Date:** |  |

*\* Electronic signatures are acceptable*

**Collaborator(s):**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name:** |  | | |
| **Designation:** |  | **Institution:** |  |
| **Signature\*:** |  | **Date:** |  |

*\* Electronic signatures are acceptable*

|  |  |  |  |
| --- | --- | --- | --- |
| **Name:** |  | | |
| **Designation:** |  | **Institution:** |  |
| **Signature\*:** |  | **Date:** |  |

*\* Electronic signatures are acceptable*

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| **B. ENDORSEMENT BY INNOVATION & ENTERPRISE OFFICE(s) (IEO)**  To be completed by the Innovation & Enterprise Office(s) (IEO) (or equivalent) of the institution(s) of the **Principal Investigator (PI).**   |  | | --- | | **Specific Comments (if any)**: | |  |   **The PI’s Institution Innovation & Enterprise Office (IEO) supports this proposal.**   |  |  |  |  | | --- | --- | --- | --- | | **Name:** |  | **Email:** |  | | **Designation:** |  | **Institution:** |  | | **Signature\*:** |  | **Date:** |  |   *\* Electronic signatures are acceptable* |

**C. UNDERTAKING BY head of LEAD institution**

To be completed by the Director of Research (or equivalent) of the institution:

|  |
| --- |
| **Specific Comments (if any)**: |
|  |

**In signing this Application, the Host Institution undertakes to:**

* Confirm the accuracy and completeness of the information submitted.
* Ensure that the applicant is independently salaried by the institution for the entire period of the grant.
* Ensure that the budget is appropriate and reasonable (e.g., no double funding/excessive purchase of equipment), and is aligned with the Host Institution’s HR and other policies.
* Ensure that the proposed research will be conducted in the Host Institution.
* Provide adequate resources to the applicant for the entire grant period (e.g., lab spaces, mentorship and career development support).
* Ensure that the funds provided are used for appropriate purposes.
* Ensure that the study complies with all laws, rules and regulations pertaining to national and the institution’s research operating procedures and guidelines.

**The Institution supports this proposal.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name:** |  | | |
| **Designation:** |  | **Institution:** |  |
| **Signature\*:** |  | **Date:** |  |

*\* Electronic signatures are acceptable*

**Annex A: Data and Figures**

**Annex B: Budget Table**

Please note that

* The STDR Pre-Pilot Grant will provide support for up to 12 months. While the total maximum grant amount is S$325,000, the estimated research funding available to the investigator is about S$250,000 after deducting institutional overheads.
* Equipment purchases are not fundable.
* The budget below is indicative and may be revised depending on the final workplan defined for projects selected for funding.

|  |  |
| --- | --- |
| **Category** | **Budget for 12 months** |
| **Manpower** | (Please list position and duration for hire. Note that PI’s salary is not supportable) |
| **Other Operating Expenses** | Consumables:  Services (outsourced services are allowed):  Others: |
| **TOTAL** | (Should not exceed S$250,000)  S$\_\_\_\_\_\_\_\_\_\_\_\_\_ |