**NUCLEIC ACID THERAPEUTICS INITIATIVE (NATi)**

**HIT2LEAD PROGRAMME PROPOSAL FORM**

**Instructions**

* *Use the template below to prepare your application. All sections must be completed.*
* *Use Arial 10, single spacing throughout.*
* *Guiding instructions are provided in grey and italicised fonts, these can be eventually removed to provide more room for the proposal.*
* *All documents must be in Word or PDF format. Do not submit scanned PDFs except for signatories.*
* *Relevant privileged or confidential information should be disclosed to help convey a better understanding of the project. Such information should be clearly marked in the proposal.*
* ***The Director of Research (DOR) from the Lead Investigator's Host Institution must endorse the proposal submission****. The email endorsement must be attached to the application.*
* *All budgets are to be calculated in Singapore dollars.*
* *Submit completed applications to* [*enquiry@nati.sg*](mailto:enquiry@nati.sg) *by the deadline.*

|  |  |
| --- | --- |
| **Section** | **Description** |
|  | Project Title |
|  | Details of Applicants (Project Team) |
|  | Total Budget Requested |
|  | Duration of Project (Months) |
|  | Project Details |
|  | Proposal Summary |
|  | Target Product Profile |
|  | Competitive Landscape |
|  | Clinical and Commercial Feasibility |
|  | Mechanism |
|  | Research Proposal – Methods and Approaches |
|  | Deliverables – Proposed Milestones and Timeline for Hit2Lead |
|  | Path To Investigational New Drug (IND) Filing And Approval Within 3 Years |
|  | Key Performance Indicators and Tracking Indicators |
|  | Budget request |
|  | Declaration of Ethics |
|  | Undertaking |
|  | Background Intellectual Property (BIP) *(if applicable)* |
|  | Foreground Intellectual Property (FIP) *(if applicable)* |
|  | Other Funding Support |
|  | Curriculum Vitae (CV) |

1. **PROJECT TITLE**

|  |
| --- |
|  |
|  |
| **Proposal Call Code:** *e.g. A01* |

1. **DETAILS OF APPLICANTS (PROJECT TEAM)**

* *The Lead Investigator will coordinate research activities carried out by the project team. He/She will be responsible for all progress reporting on behalf of the project team.*
* *Team Leads will be the representative(s) leading the research at the Partner Institution.*
* *Co-Investigators(s) (Co-Is) will be the person(s) leading and managing a particular workstream in collaboration with the Lead Investigator or Team Lead within the same institution.*
* *Collaborator(s) refers to any company, institution or incorporated body who are engaged in the research in collaboration with the Lead Investigator or any Co-Is.*
* *Funding will be awarded to Singapore public sector research performers only. Collaborators do not receive funding.*

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| --- | --- | --- | --- | --- | --- |
| **Role** | **Name** | **Host Institution /Partner Institution/ Organisation** | | **Email Address** | **% Effort on project** |
| **Lead Investigator** |  |  |  | |  |
| **Team Lead** |  |  |  | |  |
| **Co-Investigator (Co-I)** |  |  |  | |  |
| **Collaborator** |  |  |  | |  |
|  |  |  |  | | 100% |

*Add rows as required.*

1. **TOTAL BUDGET REQUESTED**

*Ensure the budget numbers tally with the budget template. The project team is strongly advised to budget prudently and according to the needs of the proposed work.*

|  |  |
| --- | --- |
| **Direct cost** | S$ |
| **Indirect cost (30% of direct cost)** | S$ |
| **Total cost (Direct cost + Indirect cost)** | S$ |

1. **DURATION OF PROJECT (MONTHS)**

|  |
| --- |
|  |

1. **PROJECT DETAILS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stage of development** *(refer to info deck)* | | | | | |
| **Target Validation** | **Hit Generation** | **Hit-to-Lead** | **Lead Optimisation** | **Preclinical** | **Others** |
|  |  |  |  |  |  |
| **Primary Indication:** | | | | | |
|  | | | | | |
| **Target:** | | | | | |
| *E.g. HRH1* | | | | | |
| **Proposed Therapeutic Modality:** | | | | | |
| **mRNA** |  | **siRNA** |  | **ASO** |  |

1. **PROPOSAL SUMMARY**

*In* ***no more than 500 words****, provide a summary of the proposed research, including the target, evidence supporting therapeutic modulation of the target and the expected patient benefit.*

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1. **TARGET PRODUCT PROFILE (TPP)**

*In* ***no more than 1 page,*** *provide a preliminary TPP of the proposed therapeutic or product. Please address the following points where possible.*

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| --- |
| 1. **Indication (i.e. medical need)**   *Describe the target disease/indication or manifestation of a disease for which a drug can safely and effectively address an unmet medical need.*   1. **Population**   *What is the prevalence of the primary indication and addressable population, including secondary indications (if any)? Does this favour a specific subset of patients, or tackle a less explored pathway/a known pathway with a novel strategy? Which markets will the product be launched?*   1. **Safety and tolerability**   *Define the required safety profile as it compares to the standard of care. Define any specific adverse effects that need to be addressed.*   1. **Route of administration**   *What are the benefits to the patient in terms of use, the requirement for a delivery device, and when will that be developed?*   1. **Dosing frequency**   *What is the current Standard of Care, and the benefit of reduced frequency of dosing? What is the treatment duration (acute vs chronic)?*   1. **Stability**   *Any special storage requirements, and in-use stability?*   1. **Manufacturing challenges**   *How would this be scaled up; would these processes be available or require significant optimisation?*   1. *Competitive Landscape – Complete under Section 8.* 2. *Clinical Feasibility – Complete under Section 9.* |

1. **COMPETITIVE LANDSCAPE**

*Why is this an attractive target or approach? Would this be a first-in-class approach? If not, who else is working in the field, and what are the alternatives or competing technologies? Provide the competitive landscape of your approach and differentiation between direct (same target, different compound) and indirect competition (different pathway, or different approach) for treating the disease. Elaborate on how your proposed approach is superior to existing technologies or those in development (e.g. in terms of efficacy, safety, or cost).*

1. **CLINICAL AND COMMERCIAL FEASIBILITY**

*In no more than 2 pages:*

1. *Provide comments on the unmet need and clinical feasibility of the proposed approach. What are the deficiencies in the current standard of care, and how does your approach address them? Define objective efficacy endpoints with clear measures of success. Define primary vs secondary endpoints. What would constitute a significant benefit over existing treatments?*
2. *If this project is successful, how would you commercialise this product? How would the team plan to secure further funding for licensing or spin-off?*
3. **MECHANISM**

*In* ***no more than 2 pages,*** provide details on the target and mechanism of action (MOA).

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| 1. **Provide details of the molecule or mechanism being targeted (e.g. kinase, ion channel, receptor, transcription factor etc.).**   *Include information on where the target is expressed or present in healthy vs. diseased patients, and to which tissue and cellular compartment a therapeutic would be delivered (Is there any uncertainty regarding the mechanism of action?).*   1. **What evidence do you have that modulating the target would have a functional/therapeutic effect to the disease?** 2. *Please also describe the methods by which the target is validated as a driver of disease. These methods could include:*    1. *RNA/protein expression data showing a correlation with the disease.*    2. *Effect from target depletion/overexpression in vitro and in vivo (e.g. tissue specific KO animal models available.)*    3. *Pharmacological modulation of the target shown in cell-based assays and/or animal disease models.*    4. *Kaplan Meier survival data available correlating target expression and/or modulation.*    5. *Human genetic linkage with disease through GWAS / SNP association.* |

1. **RESEARCH PROPOSAL – METHODS AND APPROACHES**

*In 2 pages provide a summary of the hypotheses and methodologies, highlighting the novelty and originality of the concepts or approaches and the criticality of the experiment. Supporting data may be provided in an annex.*

1. **DELIVERABLES - Proposed Milestones and Timeline for HIT2LEAD**

*Using the template below as an example of a Gantt chart, propose workstreams leading to measurable deliverables by shading the relevant boxes. One or a few workstreams converge at a stage gate where NATi, the Lead Investigator, relevant Team Leads and relevant Co-Investigators will convene to assess the collective effectiveness of the deliverables to determine if the project should proceed to the next stage.*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Month** | | | | | | | | | | | |
| **Deliverables** | **Party responsible** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| Stage 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream/Deliverable 1.1 *e.g. hit design and synthesis* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream/Deliverable 1.2 *e.g.. high through put hit screening* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Stage Gate 1: In vitro efficacy** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Stage 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream/Deliverable 2.1 *e.g tool compound synthesis* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream/Deliverable 2.2 *e.g in vitro toxicity assay* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Stage Gate 2: In vitro toxicity** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Stage 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream/Deliverable 3.1 *e.g in vivo validation* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mid-Term Report (if applicable) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Final Report |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| --- | --- | --- |
| **Stage Gate** | **Go/No-Go Criteria** | **Stage Gate Committee (research team)** |
| **Stage Gate 1** | 1. *E.g. In vitro efficacy: what are the expected experimental outcomes* |  |
| **Stage Gate 2** | 1. *E.g. In vivo efficacy: what are the expected experimental outcomes* 2. *E.g. In vitro toxicity* |  |
| **Stage Gate 3** |  |  |

1. **PATH TO INVESTIGATIONAL NEW DRUG (IND) FILING AND APPROVAL WITHIN 3 YEARS**

*Please provide a plan to IND filing and approval within 3 years by listing down below the hypothetical workstreams* ***after*** *the completion of the proposed project. Add/delete columns and rows as necessary*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Y1** | | | | **Y2** | | | | **Y3** | | | | |
| **Deliverables** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** |
| Workstream |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream *e.g. process development* |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream e.g. *GMP manufacturing* |  |  |  |  |  |  |  |  |  |  |  |  |
| Workstream *e.g.* *IND filing* |  |  |  |  |  |  |  |  |  |  |  |  |
| **Lead2IND final report** |  |  |  |  |  |  |  |  |  |  |  |  |

1. **KEY PERFORMANCE INDICATORS AND TRACKING INDICATORS**

Include proposed key performance indicators and tracking indicators where applicable.

|  |  |  |
| --- | --- | --- |
| **S/N** | **Key Performance Indicators** | **Proposed Target** |
| 1. | No. of Singapore-developed RNA pre-clinical candidate assets |  |
| 2. | No. of talent trained in pre-clinical RNA drug development |  |
| **S/N** | **Tracking Indicators** | **Proposed Target** |
| 1 | Number of out-licensing deals |  |
| 2 | Follow on funding |  |
| 3 | Number of patents filed |  |
| 4 | Number of tech disclosures |  |

1. **BUDGET REQUEST**

*Add columns as required.*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Institution:** | **Institution:** | **Institution:** |
| **EOM** |  |  |  |
| **OOE** |  |  |  |
| **EQPT** |  |  |  |
| **OT** |  |  |  |
| **Direct Cost** |  |  |  |
| **Overheads (30%)** |  |  |  |
| **Grand Total** |  |  |  |

1. **DECLARATION OF ETHICS**

*Using the template below, indicate if the research involves ethical considerations. Note that the approval of the proposal is subject to the necessary ethics approvals.*

|  |  |  |  |
| --- | --- | --- | --- |
| *Please check the box Yes or No if the programme involves any of the following:* | | | Please declare the participating institution(s) where the study requiring ethics approval is/are conducted: |
| a) | Human Subject | Yes  No |  |
| b) | Use of Human Tissues or Cells | Yes  No |  |
| c) | Animal Experimentation | Yes  No |  |
| A copy of the ethics approval is attached | | Yes  No |  |

1. **UNDERTAKING**

In signing this application form, the project team undertakes to:

1. Declare that all information provided is accurate and true to the best of their knowledge
2. Ensure that there is no financial conflict of interest
3. Be actively engaged in the execution of the research and ensure that the associated activities comply with all laws, rules and regulations pertaining to animal and human ethics
4. Ensure that all necessary licenses and approvals have been obtained or are being sought
5. Adhere to the prevailing Grant Terms and Conditions and Guidelines of the funding agency which may be amended from time to time
6. 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 with the research integrity policy of the respective Institutions
7. Avoid sending similar versions or parts of this application/proposal to other agencies for funding
8. Ensure that the requested equipment/resources are not funded by another agency or proposal
9. Ensure that the funding agency is acknowledged in all publications

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Name** | **Institution** | **Signature** | **Date** |
| **Lead Investigator** |  |  |  |  |
| **Co-Investigator** |  |  |  |  |

*Add rows as required.*

*Electronic signatures are acceptable.*

**ANNEX A**

1. **BACKGROUND INTELLECTUAL PROPERTY (BIP) *if applicable***

*List the relevant patents, publications and technology disclosures which constitute BIP and Background Know-How which may potentially be required for the use, licensing or commercialisation of Foreground Intellectual Property or Foreground Know-How. Highlight any potential encumbrance or limitation in freedom to operate. Include any existing or planned licensing agreements with industry collaborators or others.*

|  |  |  |
| --- | --- | --- |
| **S/N** | **BIP** | **Details** |
| 1. |  |  |
| **S/N** | **Background Know-How** | **Details** |
| 1. |  |  |

*Add rows as required.*

1. **FOREGROUND INTELLECTUAL PROPERTY (FIP) *if applicable.***

*List the potential FIP or commercialisation activities which will be generated through this project. Attach any licensing agreements/options for FIP.*

|  |  |  |
| --- | --- | --- |
| **S/N** | **Potential FIP** | **Details** |
| 1. |  |  |
| **S/N** | **Potential Commercialisation Activities** | **Details** |
| 1. |  |  |

*Add rows as required.*

1. **OTHER FUNDING SUPPORT**

*Using the template below, provide the details for all currently held or applied grants over the last 3 years preceding this application by the project team which are relevant to the proposed research. Highlight any potential overlap of funds with this application and mitigating measures. Note that double-dipping is not allowed.*

|  |  |  |
| --- | --- | --- |
| ***Currently held grants (Name of PI)*** | | |
| 1. | Project Number/ID |  |
| Funding Agency |  |
| Project Title |  |
| Project Scope |  |
| Project Progress (%) |  |
| Total Amount Awarded |  |
| Project Start/End Date |  |
| Project Role |  |

*Add table as required.*

|  |  |  |
| --- | --- | --- |
| ***Grant applications pending outcome (Name of PI)*** | | |
| 1. | Funding Agency |  |
| Project Title |  |
| Project Scope |  |
| Total Amount Applied |  |
| Project Start/End Date |  |
| Project Role |  |

*Add table as required.*

1. **CURRICULUM VITAE (CV)**

*Attach the CVs of all Investigators and Collaborators using the template below. Each CV should not exceed 1 page.*

|  |  |
| --- | --- |
| Name |  |
| Current position/appointment(s)/affiliation(s) |  |
| ORCID |  |
| Position(s) in a company/companies |  |
| Employment history | |
| Academic qualifications | |
| Relevant publications (list up to 10 with corresponding journal impact factor) | |
| Relevant project management experience | |
| Key research achievements (licenses, awards, spin-off companies, external consultancy, etc) | |
| Patents held | |