Caltech | Funding Memo

Title: Sanofi iDEA-iTech pre-proposal

Funding Agency: Sanofi iAwards

External Deadline(s):

12/16/2022 12:00 PM PST (Pre-Proposal)

Cognizant Office: OTTCP/OSR

Description:

The Sanofi iDEA-iTECH Awards initiative is designed to innovate through collaborations, with a focus on cutting-edge digital and data tools and new technologies for R&D applications. The goal is to:
• Identify new collaborative projects from key academic institutions and start-ups aligned to Sanofi's strategic areas of interest
• De-risk cutting-edge science and technologies that can bring high potential value to R&D
• Build strong relationships with new partners that can lead to longer-term partnerships

Frequency: Typically annual

Total Award: $150,000

Each selected Investigator will receive up to $150K USD, have a dedicated Sanofi scientific expert assigned to the project for 1-year and gain privileged access to developing an extended collaboration.
Sanofi's main objectives in creating the iDEA-iTECH Awards program are to rapidly start one-year projects that maximize the opportunity for continued collaborations of mutual interest.

Projects will be prioritized through a 2-step selection process.

Step 1: The first step involves the evaluation of the 2-page pre-proposal form (enclosed template), which was designed to be easy to populate and review. Please note that there is no requirement around the level of maturity for each project at this stage. However, the Investigator must provide clear objectives and a concrete work-plan that achievable within 12 months. Pre-proposals should also address one or several of the priority areas of interest described below under the "scope of the call".

Step 2: Selected pre-proposals will need to be developed further in the form of a detailed proposal (8 to 10-pages document) and reviewed for final selection by the Sanofi Steering Committee, scheduled on May 11, 2023. Based on the feedback the Investigator may be asked to work with a Sanofi Champion to refine their proposal.

Indirect Costs:

- **If invited to submit a proposal, and your proposal is ultimately selected, Caltech's minimum overhead rate is based on the award's annual gross funding.**

Duration: 12 Months

Discipline(s): Biology and Biological Engineering; Chemistry and Chemical Engineering

Eligibility: Research Staff, Tenure-Track Faculty, Tenured Faculty

Caltech researchers other than tenure-track and tenured faculty will need to obtain approval from the Division Chair and Vice Provost for Research prior to submitting an application. Pre-proposal template attached.

Research Areas of Interest:

LMR - Large Molecules Research
• Brain or tissue specific delivery of biologics
• Intracellular delivery of biologics
• Oral delivery of biologics
• Biologics based theranostics
• Topical delivery of biologics
• Digital biologics

DDS - Data & Data Sciences R&D
AI/machine learning approaches, simulations, predictive modeling

GMU - Genomic Medicine Unit
• Gene therapy delivery of nanobodies
• Non-viral gene therapy (lipids nanoparticles, polymer-based)
for CNS and/or muscle delivery
• Gene editing (base editing, repair/insertion/deletion)
• Small molecule splicing modulators for gene regulation

RWE - Real World Evidence Development
• Prioritization of indications where an asset could drive differentiated outcomes
• Identify responder populations and bridge to disease endotypes
• Prediction models to prioritize drug combinations using patient RWD
• Model disease progression and correlations to clinical endpoints, RW outcomes.
• Selection of patient cohorts for trials

Sanofi Vaccines - Innovation and Emerging Science
• Small blood/sera volume sampling and readouts for Immunology testing
• Novel high throughput Multiplex biological assays to do more with a single sampling
• Development of targeting systems for guided cell targeting in vaccines development (mAb helped technologies, bi or Tri specific mAb)
• Improving live-attenuated vaccines by Targeted Protein Degradation (TPD) technologies (ex. PROTAC)
• Microbiome-mediated immunomodulation strategies

IDD - Integrated Drug Discovery
• Drug discovery micro-laboratory for chemical synthesis and biological testing based on microfluidics technology

- Macrocycle screening of targets by phage display, arrayed libraries
- Build out a degrader library
- Development of optodroplet screening assay
- Boron containing heterocycles for medicinal chemistry optimization
- AI/Machine learning approaches for micro-laboratory to guide the optimization of chemical reactions
- New and efficient approaches to interpret Structure–Activity Relationships in Real-World Drug Design Data Sets Using Explainable Artificial Intelligence
- Biological evaluation, once new products are optimized
- Targeted Drug Delivery: antibody-/small fragment-drug conjugates, lipid nanoparticles, technologies enabling high drug loading for conjugates, new conjugation technologies, payload with new MoA

DMPK - Drug Metabolism and Pharmacokinetics
- Development of translational PBPK (Physiological Based Pharmacokinetic) model framework for ADC (Antibody Drug Conjugated) & NDC (Nanobody Drug Conjugated) to predict PK profiles in cancer patients
- Development of translational PBPK (Physiological Based Pharmacokinetic) model framework for conditional biologics to predict PK profiles in cancer patients, for guiding the design of molecules that will meet the target product profile
Different types of conditional biologics should be considered ie. XTEN masks, peptide conjugates, etc.

PMCB – Precision Medicine Computational Biology
- Single cell proteomics for novel target discovery in tumor infiltrated myeloid cells
- A machine-learning framework for symptoms-driven target discovery and drug positioning in rare disease
- Disease data- and AI/ML-driven approaches to discover disease endotypes and use them to stratify patients in immunology and neurodegenerative disorders
- Development of ML/AI frameworks on single cell transcriptomics to (1) establish gene programs driving clinical biomarkers and (2) stratify patients
- Digital biomarkers – physiological and behavioral measures collected via wearable digital devices in real-life setting and application to patient stratification/back-translation for target discovery
- A Digital pathology ML/AI driven tool to automatically segment and quantify all cell types from H&E Whole Slide Images of inflammatory tissues using either pathologist annotations or multiplex / highplex IHC images as ground truth

Precision Oncology
- Methods for the analysis of high-dimensional spatial transcriptomic and proteomic datasets.
- Identification of mechanisms of resistance to immunotherapy by analyzing patient tumor data.
- Characterization of effects of targeted anti-tumor therapies on the tumor microenvironment.

CMC - Chemistry Manufacturing and Control
- Genomic Medicine Unit CMC
- Drug Substance (Mammalian & microbial platform)
- Drug Substance (Synthetics)
- Drug Product Synthetics
- Drug Product (BioDPD)

More details please see attached PDF

Post-Award Obligations:

TBD

Guidelines & Other Information:

Before submitting, please contact Nick Hooper (nhooper@caltech.edu) with the Corporate Partnerships team to make sure that your pre-proposal is aligned with the scope and fulfills the application criteria of the call. Pre-proposals that are not reviewed by OTTCP or do not fit with the guidelines (format, timeline, etc.) will not be evaluated.

iDEA-iTECH initiative: https://www.sanofi.com/en/science-and-innovation/collaboration-and-awards/north-america/idea-itech

Please use the attached pre-proposal template, submitted via the following portal: https://app.smartsheet.com/b/form/b9163440077d4c8aa70447503e944665

Pre-proposal template attached.

Detailed Call for Pre-Proposals PDF attached.

Documents:

[Pre Proposal Template](#)
[Pre Proposal Instructions](#)

Opportunity ID: 1347