National Science and Technology Council (NSTC)
Department of Life Sciences
2026 "Healthy Taiwan – Metabolomic Medicine Research" Program
Call for Proposals

Date: December 2025

I. Program Description and Objectives

Metabolism, in a broad sense, refers to all chemical reactions within the body. Beyond the medical context of drug metabolism, it is intricately linked to major health issues such as obesity, diabetes, and cardiovascular-kidney-metabolic syndrome. Metabolomics explores the concentration changes of all small-molecule metabolites within a living organism. Analysis results can reveal metabolite participation in biochemical reactions of major metabolic pathways, providing indicators that are closer to physiological and pathological conditions. Integrating metabolomics with other multi-omics data (e.g., genomics and proteomics) significantly enhances the ability to interpret physiology and pathology.

In recent years, advancements in detection technologies—such as mass spectrometry, cell metabolic flux, and single-cell technologies—have accelerated emerging metabolomics research and the development of metabolism-related drugs. In the industry, both domestic and international sectors have invested in specialized metabolic testing and the development of metabolites as therapeutic drugs. Regarding tumor metabolism, new imaging detection methods and therapies are being developed. As such, metabolomics has become a key technology for implementing precision medicine and represents a field with high potential for drug development in the post-genomic era.

The Department of Life Sciences of the National Science and Technology Council (NSTC) plans to launch the **"Healthy Taiwan – Metabolomics Medicine Research"** project. This initiative aims to develop metabolomics research fields with specific Taiwanese niches and characteristics. By establishing metabolomic testing and validation platforms and integrating R&D capacities across industry, academia, research, and medical sectors, the project seeks to accelerate and enhance Taiwan's international competitiveness in metabolomics medicine research.

II. Key Areas of Solicitation

This project focuses on addressing the increasing prevalence of metabolism-related diseases in Taiwan. The core objective is to realize the development of specific metabolites or novel metabolic markers for applications in the early diagnosis and treatment of metabolism-related diseases. Through forward-looking technological integration and policy recommendations, the project aims to improve national health standards and promote the development of the biotechnology industry. The solicitation covers the following two main themes:

(I) Sub-project 1: " Metabolomic Precision Measurement"

This sub-project focuses on metabolism-related diseases and aims to establish effective metabolite detection platforms for biomarker and drug target identification to inform precision prevention strategies. By establishing a **Metabolomic Precision Measurement Consortium**, the project aims to comprehensively upgrade metabolomics assay technologies in the post-genomic era, serving as the scientific foundation for disease exploration, detection, and treatment.

- **The Consortium:** (1) Establishment and development of **Untargeted Metabolomics** analysis platforms; (2) **Targeted Metabolite Analysis** and **Stable Isotope Tracer Analysis**; (3) Metabolomic data analysis and the construction of a Taiwan Metabolomics Database, structuring a cloud-based metabolomics platform to drive a new paradigm in biomedical research.

- **Sub-project Description:** Integrate domestic metabolomic laboratory capacities with the goal of establishing **NSTC Metabolomics Core Facility Laboratories**. Establish Standard Operating Procedures (SOPs) for specimen collection, pre-processing, and detection workflows to ensure reproducibility and data comparability across different laboratories. Additionally, build an interoperable Taiwan Metabolomics Database. The aim is to integrate multi-omics data for AI model analysis, establishing clinical decision support models for the detection, diagnosis, and treatment of diseases in the Taiwanese population, as well as directions for therapeutic targets and drug development.

(II) Sub-project 2: "Development of Emerging Metabolic Medicine Research"

Through the development of novel metabolomics-related disease models, this sub-project aims to develop novel metabolic targets and biomarkers for downstream translational applications. This sub-project seeks to develop early diagnostic biomarkers and precision treatment strategies to reduce the burden on the National Health Insurance system and enhance medical efficiency.

- **Focus Areas:** This project focuses on: (1) Metabolic fatty liver disease and tissue fibrosis;

(2) Geriatric sarcopenia and cancer cachexia; (3) Development of metabolic imaging tumor targets and metabolism-related nuclear medicine drugs; (4) Metabolomics research on cancer diagnosis and treatment; (5) Metabolic regulation and therapeutic strategies for neurodegenerative diseases; (6) Application of mitochondrial metabolism in diet/exercise interventions, pharmacological interventions, or as new disease/drug targets.

- **Sub-project Description:** By developing specific metabolites or novel metabolic markers, apply them to the early diagnosis and treatment of metabolic diseases, or use metabolite data to guide intervention strategies such as diet, exercise, or medication. Furthermore, combine metabolomics with other multi-omics approaches to develop innovative metabolic targets and therapeutic drugs. Integrate national health big data with AI machine learning to mine risk factors for metabolic diseases and propose science-based prevention and treatment plans, thereby optimizing the clinical and industrial application of metabolism-related disease monitoring and targeted therapy.

(III) Special Considerations for Solicitation:

1. **Phase I (Years 1-2):** If Sub-project 2 utilizes an analysis platform, please specify the analysis platform unit and the estimated service charge.

2. **Phase II (Years 3-4):** It is recommended that Sub-project 2 commission the team from Sub-project 1 to conduct metabolomics validation analysis, and the necessary funding should be budgeted accordingly.

3. **Member Restrictions:** Team members of Sub-project 1 cannot be listed as Co-Principal Investigators (Co-PIs) of Sub-project 2; they may only be listed as Co-Investigators.

III. Project Type, Funding Scale, and Duration

1. Project Type:
   The project is promoted as a Single Integrated Research Project. Researchers are encouraged to form research teams through cross-disciplinary, cross-institutional, or cross-unit collaborative models to submit applications.
2. **Funding Scale:**
   - **Year 1:** Funding for Sub-project 1 is capped at **NT$ 5 million**; funding for Sub-project 2 is capped at **NT$ 8 million**.

   - **Years 2-4:** Budget according to actual project needs (must include funding required for metabolomics validation analysis).

- *Note:* Actual funding is subject to NSTC approval. If the annual budget for the project is not approved by the Legislative Yuan or is partially reduced, the NSTC may reduce the subsidy amount based on the deliberation results and handle the matter in accordance with Article 54 of the Budget Act.

3. Execution Period:

   This project is limited to a four-year single integrated project application. The execution period begins on June 1, 2026 (actual start date subject to official approval).

IV. Eligibility of Applicant Institution and Applicant (Principal Investigator)

1. **Applicant Institution:** Must be an institution eligible for NSTC thematic research project subsidies.

2. **Application Limit:** The Principal Investigator (PI) is limited to applying for **one** project.

   - **Sub-project 1 ("Metabolomics Precision Measurement"):** Each institution may submit **at most one** application.

   - **Sub-project 2 ("Development of Emerging Metabolic Medicine Research"):** There is **no limit** on the number of applications per institution.

3. **Applicant:** The qualifications of the Principal Investigator and Co-Principal Investigators must comply with the "NSTC Operational Guidelines for Subsidizing Thematic Research Projects." The Principal Investigator is responsible for the overall planning, coordination, progress monitoring, and outcome management of the team research project and must substantially participate in the project's execution.

V. Application and Writing Instructions

1. The Principal Investigator shall submit a **Single Integrated Project Proposal** according to the format provided in the solicitation announcement. Experts and scholars in relevant fields may be invited to participate as Co-Principal Investigators. For projects executed via cross-disciplinary, cross-institutional, or cross-unit collaboration, in addition to emphasizing originality and significance, the proposal must demonstrate good integration, cooperation, and complementarity. The research team must propose concrete methods for the specific targets planned and the problems to be solved, and plan the progress of output, timeline, and industrial/social benefits year by year.

2. **Proposal Content Format (Forms CM03, CM04):** Please **download the specific attachments** from the "Download Attachments" section at the bottom of this solicitation announcement webpage, complete them, and upload them.
   - **Form CM03:** Maximum **40 pages**.
   - **Form CM04 (Integrated Research Project Key Description):** Must completely and clearly explain the project's key points. Maximum **15 pages**. Parts exceeding the page limit will not be reviewed.

   - *Note:* You **MUST** use the **exclusive Forms CM03 and CM04** corresponding to the specific Sub-project you are applying for. **Do not use the general thematic research project CM03 template.** Applications with incorrect formatting will not be reviewed.

3. **Online Application:** The project proposal uses an online application process. The PI should follow the NSTC's general thematic research project application procedure, log in to the "Academic Research Service Portal," select "Thematic Research Project" under "Online Application," and complete the proposal.

4. **Project Category Selection:**
   - Project Category: Check "Thematic Category - Reviewed upon Receipt" (專題類-隨到隨審計畫).
   - Project Type: " General Strategic Project" (一般策略專案計畫).
   - Research Type: Check "Integrated" (整合型).
   - Project Department: Check "Department of Life Sciences" (生科處).
   - Discipline Code: Check "B90- Project" (B90-專案).
   - Sub-discipline Code: Check "**B90A017-Metabolomic Medicine Research Project**" (B90A017-代謝體醫學研究計畫).

5. **Submission Deadline:** The Principal Investigator must generate the relevant documents online in accordance with the "NSTC Operational Guidelines for Subsidizing Thematic Research Projects" and complete the online submission. The applicant institution must consolidate the applications, prepare a list of applications (2 copies), verify and stamp them, and send them to the NSTC by **Tuesday, March 3, 2026** (official document arrival date). Late submissions will not be accepted.

6. **Ethical Approvals:** If the research project involves matters requiring institutional approval (e.g., IACUC approval, Recombinant DNA experiment consent, IRB approval, etc.), and the approval documents cannot be submitted at the time of application, proof of submission for review must be provided first. The final approval documents must be submitted by the **end of May 2026**.

VI. Project Review, Reports, and Performance Evaluation

1. **Review Method:** The NSTC will invite experts and scholars in relevant fields to form a review committee to handle proposal reviews. If necessary, the Principal Investigator may be asked to report to the NSTC. Subsidized projects are approved on a multi-year basis with annual confirmation.

2. **Evaluation, Management, and Reporting:** The PI must comply with project evaluation and management requirements and submit relevant execution reports within the deadline notified by the NSTC. Content should include execution progress, achievement of performance indicators, etc. If necessary, oral reports or physical outcome demonstrations may be arranged. Additionally, annual progress reports or outcome reports must be submitted online according to the actual execution schedule. The NSTC will invite experts to review or convene meetings to evaluate the annual research report of each project. Based on the results, the NSTC will decide whether to continue funding and whether to adjust the project content and funding (including merging project teams, adjusting members, adjusting execution content, or reducing funding). Projects that fail to meet planned checkpoints and phase objectives may have their funding terminated.

3. **Outcome Tracking:** During and after the project execution period, the project team must cooperate with the NSTC for outcome tracking, audits, evaluations, and presentation meetings. The project proposal and reports will be provided to relevant management units for assessment. The NSTC may also request the PI to provide relevant research results or data as needed for business purposes.

VII. Other Important Notes

1. Please stay updated with the latest announcements on the NSTC Department of Life Sciences webpage regarding this solicitation.

2. A Principal Investigator is limited to applying for **one** project under this special program. Funded projects will count towards the NSTC's research project quota. Projects with identical or similar titles/content that have already received funding from other units or similar applications may not be submitted to the NSTC again.

3. If the number of projects executed by the PI exceeds the limit, or if the application does not comply with the relevant regulations listed in this project, and this is confirmed through the

NSTC's administrative procedures, the application will be rejected without review.

4. This is a special project and **no appeal mechanism** is available.

5. Except for special circumstances, requests to change the Principal Investigator or cancel the project are not permitted during the execution period.

6. Matters regarding signing, disbursement, extension, changes, expense reimbursement, and report submission not covered here shall be handled in accordance with the "NSTC Operational Guidelines for Subsidizing Thematic Research Projects," "NSTC Principles for Handling Thematic Research Project Funding," the "Thematic Research Project Subsidy Contract," "Execution Consent Form," and other relevant regulations.

VIII. Contact Information

1. **Project Convenor:**
   - **Dr. Chih-Hao Lee**, Director, Genomics Research Center, Academia Sinica
   - E-mail: clee2023@as.edu.tw

2. **Program Manager:**
   - **Dr. Ying-Hsiu Lin**, Department of Life Sciences, NSTC
   - E-mail: yhlin019@nstc.gov.tw

3. **Online System Inquiries:**
   - For questions regarding the online application system, please contact the NSTC IT System Service Hotline.
   - Phone: 0800-212-058, (02) 2737-7590, 7591, 7592.