

Results of Applications for the 2019 Thematic Projects at Academia Sinica Announced

There is a total of 29 applications for the 2019 Thematic Projects (14 from Division of Mathematics and Physical Sciences; 13 from Division of Life Sciences; 2 from Division of Humanities and Social Sciences). The applications require a budget of NT\$260,181,000 in total (NT\$143,179,000 for Division of Mathematics and Physical Sciences; NT\$104,218,000 for Division of Life Sciences; NT\$12,784,000 for Division of Humanities and Social Sciences).

13 out of 29 applications were approved in the meetings of the Second-round Review and Budget Review, including 7 from Division of Mathematics and Physical Sciences, 5 from Division of Life Sciences, and 1 from Division of Humanities and Social Sciences. The total approved budget amounts to NT\$95,529,000 (NT\$50,500,000 for Division of Mathematics and Physical Sciences; NT\$41,029,000 for Division of Life Sciences; NT\$4,000,000 for Division of Humanities and Social Sciences). Please refer to the following table for detailed information. Approved projects may not be executed until budget plans are officially approved.

A. Division of Mathematics and Physical Sciences: (7 projects)

Project No.	Title of Thematic Project	(1) Project Director (2) Sub-project PI (3) Co-P	Institution
AS-TP-108-ML01	Applying Particle Physics Technology to Develop On-line Monitoring and Control System for Hadron Therapy	(1) Shih-Chang Lee	Institute of Physics, Academia Sinica
	ML01-1 Development of an In-Beam Time-of-Flight Positron Emission Tomography system using SiPMs and scintillating crystals	(2) Shih-Chang Lee (3) Chih-Hsun Lin (3) Ming-Lee Chu (3) Cheng-Ying Chou	Institute of Physics, Academia Sinica Institute of Physics, Academia Sinica Institute of Physics, Academia Sinica Bio-Industrial Mechatronics Engineering, National Taiwan University
	ML01-2 Development of detection systems for precision proton therapy	(2) Ji-Hong Hong (3) Chung-Chi Lee (3) Tsi-Chian Chao (3) Ei-Fong Chen	Radiation Oncology, Linkou Chang Gung Memorial Hospital Department of Medical Imaging and Radiological Sciences, Chang Gung University Department of Medical Imaging and Radiological Sciences, Chang Gung University Department of Physics, National Central University
AS-TP-108-ML03	AFM-based Electrochemical Probes for Monitoring Active Reaction Sites and Potential Distribution at the Electrolyte Interface of Solids and Cells	(1) Chii-Dong Chen	Institute of Physics, Academia Sinica

	ML03-1 Constructing an AFM-SECM system for studying the electrochemical properties on the surface of bio-FET sensors	(2) Chii-Dong Chen	Institute of Physics, Academia Sinica
	ML03-2 Active sites in electrocatalytic materials investigated by scanning electrochemical microscopy	(2) Yit-Tsong Chen	Institute of Atomic and Molecular Sciences, Academia Sinica
	ML03-3 Characterize the lipid raft compartmentations at the plasma membrane of neurons under physiological stimulations by scanning electrochemical microscopy	(2) Chien-Yuan Pan	Department of Life Science, National Taiwan University
AS-TP-108-M05	Investigation of Unconventional Electronic Properties in Complex Oxide Systems and Their Interfaces	(1) Wei-Li Lee (3) Shu-Jung Tang (3) Ming-Wen Chu (3) Yu-Chieh Wen	Institute of Physics, Academia Sinica Department of Physics, National Tsing Hua University Center for Condensed Matter Sciences, National Taiwan University Institute of Physics, Academia Sinica
	M05-1 Superconductivity and proximity effects in oxidebased systems	(2) Wei-Li Lee (3) Shu-Jung Tang (3) Ming-Wen Chu (3) Yu-Chieh Wen	Institute of Physics, Academia Sinica Department of Physics, National Tsing Hua University Center for Condensed Matter Sciences, National Taiwan University Institute of Physics, Academia Sinica
AS-TP-108-ML06	Exploring Sweet Interaction of Immune Cell Network and Neoplasm Microenvironment by Ultrasensitive Systems Glycobiology and Targeting Materials	(1) Yu-Ju Chen (3) Kuo-I Lin (3) Shang-Ju Wu	Institute of Chemistry, Academia Sinica Genomics Research Center, Academia Sinica Department of Internal Medicine, National Taiwan University Hospital
	ML06-1 Developing Ultrasensitive Micro(glyco)proteomics for Decoding Systems Glycobiology in Immune Cells and Tumor Microenvironment	(2) Yu-Ju Chen (3) Hsiung-Lin Tu	Institute of Chemistry, Academia Sinica, Institute of Chemistry, Academia Sinica,
	ML06-2 Fabrication of bispecific antibodies and synthesis of specific probes for sialoglycans and Siglec-7	(2) Chun-Cheng Lin (3) Shang-Ju Wu	Department of Chemistry, National Tsing Hua University Department of Internal Medicine, National Taiwan University Hospital

	ML06-3 Unraveling the roles of sialoglycans in the immune ecosystem of neoplastic processes and treatment responses of B cell malignancies	(2) Kuo-I Lin (3) Takashi Angata	Genomics Research Center, Academia Sinica Institute of Biological Chemistry, Academia Sinica
	ML06-4 Targeting Siglec-7 ligands on B cell chronic lymphocytic leukemia for diagnosis and therapy	(2) Takashi Angata	Institute of Biological Chemistry, Academia Sinica
AS-TP-108-ML07	Structural Studies on the Functional Particulate Methane Monooxygenase (pMMO) from <i>Methylococcus Capsulatus</i> (Bath)	(1) Sheng-Fa Yu	Institute of Chemistry, Academia Sinica
	ML07-1 Purification, biochemical characterization and co-crystallization of the functional pMMO with methanol dehydrogenase	(2) Huang-Chou Chen	Department of Applied Chemistry, National Pingtung University
	ML07-2 Overexpression of recombinant membrane-bound pMMO and the preparation of monoclonal antibodies to the recombinant pMMO variants	(2) Sheng-Fa Yu	Institute of Chemistry, Academia Sinica
	ML07-3 Cryo-EM analysis of functional particulate methane monooxygenase (pMMO) from <i>Methylococcus capsulatus</i> (Bath)	(2) Wei-Hau Chang	Institute of Chemistry, Academia Sinica
	ML07-4 High-resolution crystal structures of the active pMMO with full complements of the copper factors in various states: wild type, mutants, pMMO/MDH and pMMO-antibody complexes	(2) Chun-Jung Chen	Scientific Research Division, National Synchrotron Radiation Research Center
AS-TP-108-M08	Understanding the Landslide and Erosion Processes: Multidisciplinary Research on Landslide Detection, Slope Failure, and Sediment Transport	(1) Yu-Chang Chan	Institute of Earth Sciences, Academia Sinica
	M08-1 Determining landslide parameters and locations with seismic network and automated InSAR monitoring	(2) Yunung Lin (3) Cheng-Horng Lin	Institute of Earth Sciences, Academia Sinica Institute of Earth Sciences, Academia Sinica
	M08-2 Analyzing landslide slip characteristics and topography effects with geophysical monitoring and seismic wave simulation	(2) Hsin-Hua Huang (3) Shiann-Jong Lee	Institute of Earth Sciences, Academia Sinica Institute of Earth Sciences, Academia Sinica

	M08-3 Characterizing physical erosion and sediment transport processes at short-term and geological time scales	(2) Yu-Chang Chan (3) Wei-An Chao (3) J. Bruce H. Shyu	Institute of Earth Sciences, Academia Sinica Department of Civil Engineering, National Chiao Tung University Department of Geosciences, National Taiwan University
	M08-4 Exploring chemical weathering and sediment transport processes using isotope geochemistry	(2) Kuo-Fang Huang (3) Li-Hung Lin	Institute of Earth Sciences, Academia Sinica Department of Geosciences, National Taiwan University
AS-TP-108-M12	Tunable Metasurfaces	(1) Din Ping Tsai	Research Center for Applied Sciences, Academia Sinica

B. Division of Life Sciences : (5 projects)

Project No.	Title of Thematic Project	(1) Project Director (2) Sub-project PI (3) Co-PI	Institution
AS-TP-108-L01	Impact of mRNA Maturation and Selective Translation on Plant Reproduction	(1) Guang-Yuh Jauh	Institute of Plant and Microbial Biology, Academia Sinica
	L01-1 Impact of pre-mRNA 3'-end processing and selective translation on plant sexual reproduction	(2) Guang-Yuh Jauh	Institute of Plant and Microbial Biology, Academia Sinica
	L01-2 Dynamic interactions between RNA-binding proteins and RNA in plant reproduction	(2) Shih-Long Tu	Institute of Plant and Microbial Biology, Academia Sinica
	L01-3 The roles of cytoskeletons and selective translation in intracellular trafficking of mobile mRNAs	(2) Tien-Shin Yu	Institute of Plant and Microbial Biology, Academia Sinica
AS-TP-108-L07	Homology Directed Repair and Recombination: Mechanisms, Regulation and Evolution	(1) Ting-Fang Wang	Institute of Molecular Biology, Academia Sinica
	L07-1 Comparative analyses of homology directed repair and recombination in meiosis of <i>Saccharomyces cerevisiae</i> and <i>Trichoderma reesei</i>	(2) Ting-Fang Wang	Institute of Molecular Biology, Academia Sinica
	L07-2 The role of chromatin structure in DNA damage repair during cell cycle and in response to replication fork stalling	(2) Cheng-Fu Kao	Institute of Cellular and Organismic Biology, Academia Sinica

	L07-3 The mechanistic study on the impact of phosphorylation and mismatch tolerance between recombinases	(2) Hung Yuan (Peter) Chi	Institute of Biochemical Sciences, National Taiwan University
	L07-4 Single-molecule, multi-color characterization of recombination dynamics: effect of recombinase phosphorylation and chromatin	(2) Hung-Wen Li	Department of Chemistry, National Taiwan University
AS-TP-108-L08	Organoid as a Model to Study the Molecular Basis of Primate/human Brain Development and Related Diseases	(1) Tang K. Tang	Institute of Biomedical Sciences, Academia Sinica
	L08-1 The roles of centriole in developing human cerebral organoids and microcephaly	(2) Tang K. Tang	Institute of Biomedical Sciences, Academia Sinica
	L08-2 Organoid-Based Approach to Explore the Functional Role of the Species-Enriched novel exon/Alternative Splicing Variants in Primate Brain Development and Evolution	(2) Hung-Chih Kuo	Institute of Cellular and Organismic Biology, Academia Sinica
AS-TP-108-L09	Targeting Humoral Immunity to Cure Chronic Hepatitis B Infection	(1) Mi-Hua Tao	Institute of Biomedical Sciences, Academia Sinica
	L09-1 B-cell Depletion Therapy in Lymphoma Patients and Hepatitis B Reactivation: Mechanism and Therapeutic Implication	(2) Pei-Jer Chen	Graduate Institute of Clinical Medicine School of Medicine, National Taiwan University
	L09-2 Exhaustion and restoration of CD4+ T helper functions in chronic hepatitis B	(2) Mi-Hua Tao	Institute of Biomedical Sciences, Academia Sinica
	L09-3 Seromarkers related to immune checkpoints in natural history and treatment of chronic hepatitis B	(2) Hwai-I Yang	Genomics Research Center, Academia Sinica
	L09-4 Functional significance of human and mouse soluble PD1 in chronic hepatitis B	(2) Chiaho Shih	Institute of Biomedical Sciences, Academia Sinica
AS-TP-108-LM14	Impact of Climate Change and Coral Reef Governance: A Holistic Approach Using the Green Island as Model System in Taiwan	(1) Chaolum Allen Chen	Biodiversity Research Center, Academia Sinica

	LM14-1 Coral Reef Functional Ecology and Coral Reef Fishery in the Green Island Under Impact of Climate Change	(2) Chaolum Allen Chen (3) Colin Wen	Biodiversity Research Center, Academia Sinica Department of Life Science, Tunghai University
	LM14-2 Ocean Circulation and Hydrography around the Green Island in a Changing Climate	(2) Yi-Chia Hsin	Research Center for Environmental Changes, Academia Sinica
	LM14-3 Spatial System Dynamic Modeling and Scenario Simulation for Landscape and Seascape Change and Interaction in Green Island	(2) Chun-Lin Lee (3) Chi-Ru Chang (3) Hsing-Sheng Tai (3) Yun-Ju Chen (3) Chun-Hung (Jeb) Lee	Department of Landscape Architecture, Chinese Culture University Department of Landscape Architecture, Chinese Culture University Department of Natural Resources and Environment, National Dong Hwa University Department of Applied Economics, National Chung Hsing University Department of Natural Resources and Environmental Studies, National Dong Hwa University

C. Division of Humanities and Social Sciences: (1 project)

Project No.	Title of Thematic Project	(1) Project Director (2) Sub-project PI (3) Co-P	Institution
AS-TP-108-H01	Why Shentigan Matters and How It Works?	(1) Shuenn-Der Yu	Institute of Ethnology, Academia Sinica.
	H01-1 The search for “umami” in cabbage and “fresh and fragrant” in tea: A new approach of shentigan in studying technology and food culture	(2) Shuenn-Der Yu	Institute of Ethnology, Academia Sinica
	H01-2 Making “Q” rice: Exploring the co-evolution of rice breeding, cooking technology and changing sensory evaluation in Taiwan from the Shentigan perspective	(2) Yu-Jen Chen	Department of Taiwan Culture, Languages and Literature, National Taiwan Normal University
	H01-3 The co-evolutional process between Mazu believers’ body experiences/body techniques and social-cultural modernization development in Taiwan	(2) Hsun Chang	Institute of Ethnology, Academia Sinica

	H01-4 Practiced beauty and strange ugliness : Shentigan of calligraphy in Qing Dynasty	(2) Liang Ting	Department of Chinese Literature, National Taiwan University
	H01-5 How presence co-evolves with technology? - The mediated shenanigan	(2) Fabia Ling-Yuan Lin	College of Communication, National Chengchi University
	H01-6 "Void," "Lightness," and "Looseness": The Co-evolution of Body Techniques and Shentigan in Daoism and the Physicians School Since the Song Dynasty	(2) Bi-Ming Tsai	Department of Chinese Literature, National Taiwan University