Overseas Summer Undergraduate Research Opportunities Programme in Science (UROPS) at Chang Gung University (CGU) 2026 (in-person)

Programme Overview

Chang Gung University (CGU) is offering FoS students the opportunity to take part in a summer research programme as part of FoS' Overseas Summer Undergraduate Research Opportunities Programme in Science (UROPS).

Students will get an opportunity to conduct research in Biomedical Sciences on topics such as molecular biology, cancer biology and immunology.

The list of projects available can be found at the end of this document.

Location

The programme takes place in Taoyuan, Taiwan.

Dates

The exact period of exchange should be negotiated between the student and the supervisor. Due to the minimum duration requirement and the NUS academic calendar, the period of exchange should be 10 to 12 weeks long and fall within the NUS Special Term: **11 May 2026 – 1 August 2026**.

Credit Transfer

This programme may be mapped to a 4-unit UROPS course code or a 4-unit department dummy exchange course code (counting towards unrestricted electives).

Refer to the course mapping instructions (with effect from AY26/27) and credit transfer policy (with effect from AY26/27) found on the FoS SEP website for information on course mapping and credit transfer. Do note that there is an exception for Overseas Summer UROPS regarding the number of credits that can be transferred.

Additional assessment may be required by the NUS department for transferring of credits. Not all UROPS course code can be counted towards major requirements. Please check which graduation requirement the UROPS will count towards and if you are unsure, please check with your department.

Students can transfer a total of 12 units from a maximum of 2 overseas summer/winter programmes without having to pay NUS tuition fee during their course of study. Any additional units mapped will be subjected to NUS Special Term fees.

Eligibility Criteria

NUS students must:

- Be a full-time Faculty of Science student, with a primary major in science
- Have a clean disciplinary record
- Have completed 4 – 6 semesters in NUS by the start of the programme (i.e. current Year 2 and Year 3 students)
- Have a minimum GPA of 3.0
- Not be intending to graduate at the end of AY2025/2026 Semester 2
- Not be called up for National Service during the programme dates. A deferment letter will not be provided.

An internal offer does not guarantee your placement in the programme. Your admission outcome is at the discretion of the partner institution.

Number of Places

There are 3 places available.

Programme Cost

Students do not need to pay NUS Special Term fees or tuition fees to CGU if they do not exceed the credits transfer limit stated under the section "Credit Transfer" above. However, students are responsible for their own airfare, accommodation, meals, personal expenses, etc.

Estimated cost (*Please note that the figures provided are only estimates*)

Item	Cost
Return Airfare	SGD500
Accommodation	SGD500
Food and Transport	SGD800

Financial Assistance

The financial aid available for this programme are the NASA Enhancement Bursary, the Science Student Overseas Exposure Fund (SSOEF), and the Opportunity Enhancement Grant (OEG). Students may also apply for the Overseas Student Programme (OSP) Loan. Refer to the respective links for more information.

Please note that application for NASA Enhancement Bursary should be done through EduRec, as mentioned in the page linked above. Do not apply for NASA Enhancement Bursary through the application form linked in the FoS Financial Assistance Schemes page.

Programme Application Procedure and Deadline

Login to EduRec and submit your application under External Study Type "Research Attachment/Internship/ Industrial Attachment", External Study Setup ID: **03684**. Please refer to the Guide for Student Programme Application before starting your application.

Application Deadline: **Tuesday, 27 January 2026, 11:59pm Singapore Time**

Documents required (upload into your online application in EduRec):

1. Latest NUS unofficial transcript
2. Curriculum Vitae – Highlight any prior research experience that you may have to support your application
3. Personal Statement – Indicate your choice of project, your area of research interest and why you are interested in the mentioned project

Note:

- Admission into the programme is at the discretion of CGU

If you face difficulties uploading the documents, submit the required documents via SCI UG Queries (category: SAP) by **27 January 2026, 11:59pm Singapore Time**.

Applications would be **deemed incomplete if the required documents are incomplete or not submitted** by the stipulated deadline, and therefore disqualified from the application.

To be fair to students who abide by the deadline, incomplete or late application will strictly not be considered.

Insurance

All students travelling overseas for activities or purposes approved, endorsed, organised, sponsored or authorised by NUS will be covered by the NUS Student Travel Insurance Policy. Click here for more information.

Exclusions to the NUS Student Travel Insurance may apply. Students are to ensure that they have sufficient travel insurance coverage, and may consider purchasing additional travel insurance if required.

Contact

If you have any questions, please submit your enquiry via SCI UG Queries (category: SAP).

Updated: 16 January 2026

Summary of Available Projects

	PI Name	Title of Project	Email Address	Vacancies
1	Robert YL Wang	Enterovirus A71 infection uses the host protein IQGAP1 to influence the closure of the autophagosome and regulate the mechanism of non-lytic viral release	yuwang@gap.cgu.edu.tw	1
2	Ming-Chih Lai	Exploring the regulatory roles and molecular mechanisms of DDX24 in cardiac myogenesis and heart development	mclai@mail.cgu.edu.tw	1
3	Bertrand Tan, Chung-Pei Ma	Identification and functional characterization of tumor-associated non-coding RNAs	btan@mail.cgu.edu.tw	1
4	Scott C. Schuyler	Validation and optimization of small molecules that sensitize cancer cells to anti-cancer and anti-cellular aging drugs	schuyler@mail.cgu.edu.tw	1

DBS Committee On Research Exchange

STUDENT RESEARCH EXCHANGE PROJECT FORM

(Project Form 2026)

General Information

Name of the research project (highly specific):

Enterovirus A71 infection uses the host protein IQGAP1 to influence the closure of the autophagosome and regulate the mechanism of non-lytic viral release

Name of the department:

Department of Biomedical Sciences, CGU

University Tutor (PI): Robert Y.L. Wang

E-mail: yuwang@gap.cgu.edu.tw

Phone: +886-3-2118800 ext 3691

Description of the project

Please, provide project background information for the interested students:

Human enterovirus A71 (EV-A71) is known to infect host cells, replicate, and assemble progeny virions, following by predominantly released via cell lysis. However, previous studies have demonstrated that EV-A71 can also be released from cells through **non-lytic pathways**. Our recent publication in the *Journal of Medical Virology (2005, DOI: 10.1002/jmv.70714)* further showed that EV-A71 exploits an interaction between its 3D polymerase and the host scaffold protein IQGAP1 to promote closure of virion-containing phagophores, thereby generating fully sealed, virus-containing autophagosomes and ultimately facilitating non-lytic viral release. This research project focuses on elucidating how EV-A71 hijacks host IQGAP1 to preferentially engage the "autophagosome closure and extracellular vesicle release" pathway for non-lytic egress.

What is the aim of the project?

(1) we will examine whether EV-A71 3D polymerase forms a complex with IQGAP1 that in turn interacts with other host factors, such as, ATG9A and ESCRT components, thereby driving autophagosome closure and promoting the non-lytic release of virion-containing extracellular vesicles. (2) By modulating IQGAP1 expression levels in cells (overexpression and gene silencing), we will analyze the relative proportions of EV-A71 particles released via non-lytic versus lytic pathways and assess the feasibility of targeting the "closure and extracellular vesicle release" axis as a host-directed antiviral strategy.

Type of the project (check only one option)

□ Basic Science □ Clinical Research without lab work □ Clinical Research with lab work

How many exchange students can you accept to the project ?

(1) NUS Summer research exchange program: _____1_____

(2) CityU Summer research exchange program: _____1_____

Special remarks: _____
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Thank you for your contribution!

DBS Committee On Research Exchange

STUDENT RESEARCH EXCHANGE PROJECT FORM

(Project Form 2026)

General Information

Name of the research project (highly specific):

Exploring the regulatory roles and molecular mechanisms of DDX24 in cardiac myogenesis and heart development

Name of the department:

Department of Biomedical Sciences, CGU

University Tutor (PI): Ming-Chih Lai

E-mail: mclai@mail.cgu.edu.tw

Phone: 886-3-2118800#3354

Description of the project

Please, provide project background information for the interested students:

The DEAD-box RNA helicase DDX24 is a multifunctional protein involved in diverse aspects of RNA metabolism, including ribosome biogenesis, transcription, and mRNA stability, and has been implicated in multiple biological processes such as cell growth, innate immunity, vascular development, and oxidative stress responses. Dysregulation of DDX24 has been associated with human diseases, particularly cancer and vascular malformations; however, its role in cardiac myogenesis and cardiomyopathy remains largely unexplored. Our preliminary RNA sequencing (RNA-Seq) analysis following DDX24 knockdown in human HEK293T cells identified multiple DDX24-regulated genes enriched in pathways related to cardiomyopathy and cardiac muscle contraction.

What is the aim of the project?

(1) validate candidate DDX24-regulated genes associated with cardiomyopathy and cardiac muscle contraction; (2) elucidate the molecular mechanisms by which DDX24 regulates ANKRD1 transcription; (3) assess the role of DDX24 in cardiac myogenesis using H9c2 rat cardiomyoblast cells; and (4) investigate the role of DDX24 in cardiac myogenesis and cardiomyopathy using transgenic zebrafish.

Type of the project (check only one option)

■ Basic Science □ Clinical Research without lab work □ Clinical Research with lab work

How many exchange students can you accept to the project ?

(1) NUS Summer research exchange program: _____1_____

(2) CityU Summer research exchange program: _____1_____

Special remarks: _____
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Thank you for your contribution!

DBS Committee On Research Exchange

STUDENT RESEARCH EXCHANGE PROJECT FORM

(Project Form 2026)

General Information

Name of the research project (highly specific):

Identification and functional characterization of tumor-associated non-coding RNAs.

Name and address of the department:

Department of Biomedical Sciences, Chang Gung University

Head of the department:

Professor Bertrand Tan

Tutor(s): Professor B. Tan & Dr. Chung-Pei Ma

E-mail: btan@mail.cgu.edu.tw

Phone: 886-939596043

Description of the project

Please, provide project background information for the interested students:

My laboratory has devoted extensive efforts to the mechanistic understanding of various aspects of mammalian gene regulation, particularly focusing on roles of RNA editing and regulatory RNAs:

Decoding the hidden message of RNA editome. We are one of the earliest groups that exploit the high-throughput sequencing approach in demarcating the widespread A-to-I RNA editing events, which constitute an integral step in generating primate transcriptome diversity. We established a computational pipeline to extensively archive transcriptome-wide RNA editing events (Nat. Biotechnol. 2012, 30:253), which paved the way for large-scale studies and for advancing our understanding of this gene regulatory process in human. As a proof of principle, we reported quantitative tissue-specific RNA editome profiles for rhesus macaque, a close relative of human (PLoS Genet. 2014, 10:e1004274), and more recently a new mechanism for the functionality of RNA editing – a crosstalk with piRNA biogenesis – by deciphering RNA editome across the piRNA species (Mol Biol Evol. 2015, 32:3143). The expression of these editing-bearing piRNA variants (epiRNAs) illustrates the contribution of primate RNA editing to the diversification of the piRNA repertoire. In a more functional context, ADAR1 was found to mediate 3' UTR editing and

expression control of antiapoptosis genes, thus fine-tuning cellular apoptosis response (Cell Death and Disease 2017, 8:e2833). More recently, we reported a functional coordination between ADAR1 and an antisense non-coding RNA in the regulation of HIF-1α expression, with significant implications in maintaining robust hypoxia signaling and controlling tumor progression (EMBO Reports 2019, 20:e47107).

"Non-coding" RNAs with big impact in cell biology. Regulatory RNAs such as microRNAs and lncRNAs are known to impart post-transcriptional regulation to critical factors in various cellular signaling and functional networks. Our recent works have broadened the realm of ncRNA biology by functionally delineating several microRNA-centric regulatory axes: 1) Our studies uncovered two distinct circuitries that underlie proper progression of skeletal myogenesis – the miR-546-Mybbp1a (EMBO J. 2012, 31:1739) and miR-1/206-ADAR1 (Cell Death Differ. 2014, 21:707), both of which contribute to the scheduled gene program transitions. 2) We also discovered that nucleolar size and rRNA pool in Caenorhabditis elegans is under the tight control of a novel genetic cascade, let-7-ncl-1-fib-1 (PLos Genet. 2015, 11:e1005580). 3) A miR-31-5p-ACOX1-PGE2 pathway was delineated that underpins overall cellular lipidome profiles as well as the migratory and invasive abilities of oral cancer cells (Theranostics 2018, 8:486).

What is the aim of the project?

To mechanistic dissect the functional relevance of non-coding RNAs in tumor progression.

What techniques and methods will be used?

General molecular biology techniques (cloning, PCR, RT-PCR, Western blot assay, etc.), cell culture (including proliferation and cell death assays).

Type of the project (check only one option)

■ Basic Science □ Clinical Research without lab work □ Clinical Research with lab work

Will there be any theoretical teaching provided (preliminary readings, lectures, courses, seminars etc)?

Students will participate in laboratory seminar/journal club, and summer courses if available.

What is the role of the student and what is expected from him/her during the research exchange?

Student will be part of a team with a particular research focus. He/she will learn the basic techniques at the beginning, and upon becoming familiar, will independently design and carry out experiments under the supervision of the team leader. He/she will be assigned with certain tasks that are related to the overall research direction, and will be responsible to carry out experiments and/or generate the necessary reagents.

What should be the outcome of the student's participation on the research exchange project (paper, poster etc)?

Student will write a research report summarizing the background and rationale of the study, as well as the data and discussion of the results. There will also be opportunity to give oral presentation of the report.

What are the practical skills and the knowledge the student will acquire during the exchange program?

Student will learn hands-on skills in the molecular and cell biology experiments and become knowledgeable in the field of non-coding RNAs. Student will also learn how to present and communicate scientifically, and become familiar with working in a laboratory.

Requirements

What skills are required? Is there any special knowledge or certain level of studies needed? Are there any legal limitatons in the student's involvement in the project?

The student should have already taken courses in general biology and molecular biology. Experiences in laboratory techniques are preferred, but not required. There are no legal limitations in the student's involvement in the project.

For the use of students considering participating in the project, further information can be found from the following articles:

1. Chen YT, Kan CH, Liu H, Liu YH, Wu CC, Kuo YP, Chang IY, Chang KP, Yu JS, Tan BC*. Modular scaffolding by lncRNA HOXA10-AS promotes oral cancer progression. **Cell Death Dis.** 2022 Jul 20;13(7):629. doi: 10.1038/s41419-022-05071-6.

2. Chen YT, Chang IY, Kan CH, Liu YH, Kuo YP, Tseng HH, Chen HC, Liu H, Chang YS, Yu JS, Chang KP, Tan BC*. circRNAome Profiling in Oral Carcinoma Unveils a Novel circFLNB that Mediates Tumour Growth-Regulating Transcriptional Response. **Cells.** 2020 Aug 10;9(8):1868. doi: 10.3390/cells9081868.

Language(s): Which languages are required or accepted? (Include English)

Required: English

Accepted: Mandarin Chinese

Special remarks: _____

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Thank you for your contribution!

DBS Committee On Research Exchange

STUDENT RESEARCH EXCHANGE PROJECT FORM

(Project Form 2026)

General Information

Name of the research project (highly specific):

Validation and optimization of small molecules that sensitize cancer cells to anti-cancer and anti-cellular aging drugs

Name of the Department: Department of Biomedical Sciences, CGU

University Tutor (PI): Scott C. Schuyler

E-mail: schuyler@mail.cgu.edu.tw

Phone: +886-03-211-8800 x3596

Description of the project

Cancer has been the leading cause of death in Taiwan for more than 40 years. Most cancer cells are aneuploid, which leads to imbalances in protein production levels resulting in an increased level of unfolded proteins, known as proteotoxic stress. In most animal cells, the cell volume is a direct reflection of the amount of protein the cell produces during cell growth. We have identified a synthetic peptide that alters the cell division cycle in order to force cells to increase their cell volume prior to cell division in breast, esophageal and cervical cancer cell lines, as observed by time-lapse video microscopy. We hypothesized that forced protein over-production should result in increased levels of proteotoxic stress specifically in aneuploid cancer cells. Because normal healthy diploid cells can maintain balance of overproduced proteins, not leading to unfolded proteins or proteotoxic stress. In support of this hypothesis, we have observed that our synthetic peptide sensitizes aneuploid MDA-MB-231 breast cancer cells to co-exposure with heat-shock protein 90 (HSP90) inhibitor pimitespib (TAS-116), an approved stomach cancer drug by Japan-PMDA. Our synthetic peptide also increased the sensitivity of the MDA-MB-231 cells to a wide variety of anti-cancer agents including paclitaxel, eribulin, vinorelbine, sovilnesib (AMG 650), and the anti-cellular aging senolytic agent navitoclax (ABT-263), as observed by increased apoptosis using fluorescence activated cell sorting (FACS) analyses. These drug-induced cell death effects were not observed in the RPE-1 diploid control cells. Based on this knowledge, we have initiated a collaboration with Prof. Hsieh, Pei-Wen (謝珮文) in the School of Traditional Chinese Medicine at Chang Gung University to discover a combination of small molecules that can enhance similar anti-cancer and anti-cellular aging drug bioactivities. Thus far we have successfully identified a pair of small molecules discovered as part of a currently funded artificial intelligence (AI)-driven drug discovery pilot program NSTC grant with Prof. Hsieh that sensitize MDA-MB-231 breast cancer cells to the HSP90-inhibitor pimitespib (TAS-116), and also sensitize them to the anti-cellular aging molecule navitoclax (ABT-263) by promoting apoptotic cell death.

What is the aim of the project?

Our goal is to continue the collaboration with Prof. Hsieh to further identify and characterize a mixture of potent small molecules with enhanced anti-cancer and anti-cellular aging bioactivities.

Type of the project (check only one option)

X Basic Science ☐ Clinical Research without lab work ☐ Clinical Research with lab work

How many exchange students can you accept to the project?

(1) NUS Summer research exchange program: _____1_____

(2) CityU Summer research exchange program: _____1_____

Special remarks: __none_____

Thank you for your contribution!