How do you move on from a rejection?
A. I think it is almost the same as failing a school examination! When the initial disappointment and sadness go away, looking at the reviewers’ comments is often very useful to write the next ‘hopefully better’ proposal. I have personally found the pre-review of the grant proposal by clinical and quantitative reviewers especially helpful.

Q. What fuels your passion for research?
A. Clinical research is an extension of our bedside practice. It can improve clinical care and patient outcomes through a better understanding of the disease process, its treatment, and the delivery of care.

Q. How do you develop a hypothesis for your research?
A. I think it is important to have an inquisitive mind to spot the gaps in knowledge in our clinical practice. At SingHealth, we are fortunate to have the Academic Medicine Research Institute (AMRI) research rounds. They provide an open platform for constructive criticism, quantitative experts to help sharpen our research and specific feedback from research and quantitative experts to help sharpen our focus in developing a hypothesis.

Q. What are the top three challenges in research and what have you learnt from them?
A. 1. Finding the time and knowledge to perform meaningful research. Often this involves sacrificing some family time and strict time management. I have found attending the Master’s of Clinical Investigation very helpful, especially for scientific and grant proposal writing.

Q. Picking the research question to be clinically meaningful and feasible. I prioritise those that can potentially have an impact on our understanding of the disease process or change clinical practice to benefit our patients.

Q. Finding expert collaborators. Research is a team effort and it can be challenging to find like-minded collaborators who share your vision and are able to add value to the research. Joining the AMRI research rounds is a great way to find collaborators.

Q. Any words of advice for budding researchers?
A. I think research is an integral part of our pursuit of Academic Medicine. For those who have an interest or are just starting out, they may want to join the AMRI research rounds. The ‘incubator’ sessions are very educational. I always learn something new from the expert discussions and the invited speakers help me refine my knowledge.

Q. I have personally found the pre-review of the grant proposal by clinical and quantitative reviewers especially helpful.
A. "Laboratory space is precious, important and much sought after. I realise that the Transition and Clinical Scientist Awards are platforms that will help create visibility for my work so I can achieve my goal of gaining the much needed lab space that I want," said Dr Kwa, who wants to tackle "the glaring and urgent gaps in the research landscape for infectious diseases".

Progressing in research
Another barrier Dr Kwa had to overcome was that people not involved in research often have misconceptions and unrealistic expectations about a clinical researcher’s ability to manage research and clinical practice concurrently.

Dr Kwa said that being patient when trying to convince people, including her bosses, of the value of her research, as well as showcasing her passion for saving lives through her work, are strategies that enabled her to progress.

Being a researcher is all about building relationships. Researchers must know how to network. Researchers must know how to network.

Building relationships in research
Applying for the TA was challenging for Dr Kwa. Her application was subjected to rigorous scrutiny; she needed to find supportive mentors, hold a faculty position and have a PhD.

Her savours were Professor John Rush, previous Vice Dean of Clinical Sciences, Duke-NUS Graduate Medical School Singapore, and Professor Wang Lin-fa, Director of the Emerging Infectious Diseases programme at Duke-NUS, who helped to facilitate her application by offering a faculty position and countless networking opportunities. Prof Wang also became her mentor.

"People who usually succumb to infectious diseases are those who are already sick. I hope to first cure their acute illness so they have the option to go for further treatments for their existing illness," said Dr Kwa.

Human factors in research
From her years of experience as a researcher, Dr Kwa recognises that to carry out meaningful research, you need an inquisitive mind and substantial clinical experience.

Her advice to budding researchers? "Keep your eyes, ears and mind open during your clinical work. Be reliable and trustworthy. Think beyond boundaries and network."
<table>
<thead>
<tr>
<th>Award</th>
<th>Closing Month(s)</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NATIONAL TALENT DEVELOPMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NMRC Singapore Translational Research (STAR) Investigator Award</td>
<td>Jun &amp; Dec</td>
<td>$800K p.a. + Research grant support ($850K) + Start-up fund ($500K)</td>
</tr>
<tr>
<td>NMRC - Clinician Scientist Award (CSA)</td>
<td>Jun &amp; Dec</td>
<td>$800K p.a. + Research grant support ($850K) + Start-up fund ($500K)</td>
</tr>
<tr>
<td>NMRC - Senior Investigator (SI)</td>
<td>Jun &amp; Dec</td>
<td>$800K + Research grant support ($850K) + Start-up fund ($500K)</td>
</tr>
<tr>
<td>NMRC - Transition Award (TA)</td>
<td>Jun &amp; Dec</td>
<td>$800K + Research grant support ($850K) + Start-up fund ($500K)</td>
</tr>
<tr>
<td>NMRC - Clinician Investigator Salary Support Programme (CISSP)</td>
<td>Jun &amp; Dec</td>
<td>$500K + $800K</td>
</tr>
<tr>
<td>NMRC - Research Training Fellowship</td>
<td>Jun &amp; Dec</td>
<td>$500K (inclusive of salary support &amp; tuition fees for part/full-time MSc/PHD and/or overseas training)</td>
</tr>
<tr>
<td>NMRC - Singapore Master of Clinical Investigation (MCI) Programme</td>
<td>Mar</td>
<td>NMRC scholarship</td>
</tr>
<tr>
<td>MCH Healthcare Research Scholarship</td>
<td>Jun &amp; Dec</td>
<td>Research grant support ($850K)</td>
</tr>
<tr>
<td>Singapore NRF Fellowship</td>
<td>Mar</td>
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<tr>
<td><strong>RESEARCH GRANTS</strong></td>
<td></td>
<td></td>
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<tr>
<td>SingHealth Foundation Research Grant</td>
<td>Sap</td>
<td>$50K (Start-up) $150K (Transition Project)</td>
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<tr>
<td>Khoo Mentored Research Award (KMRA)</td>
<td>Year-round</td>
<td>$300K</td>
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<tr>
<td>Khoo Pilot Award</td>
<td>Year-round</td>
<td>$300K</td>
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<tr>
<td>Khoo Student Research Award (KSRA)</td>
<td>Jun</td>
<td>$10K</td>
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<tr>
<td>SingHealth/SMU Collaborative Funding</td>
<td>Mar</td>
<td>TBA</td>
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<tr>
<td>MCH Communicable Diseases - Public Health Research Grant (CD-PHRG)</td>
<td>Dec</td>
<td>$5M</td>
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<tr>
<td>MCH Health Services Research Competitive Research Grant (HSR-CRPG)</td>
<td>Jun</td>
<td>$200K &amp; $1M (two categories)</td>
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<tr>
<td>MCH Health Services Research New Investigator Grant (HSR-NG)</td>
<td>Dec</td>
<td>$100K</td>
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<tr>
<td>MOH Industry Alignment Fund (IAF)</td>
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<tr>
<td>Category 1</td>
<td>Year-round (Cat 1): Jan (Cat 2)</td>
<td>$500K, $3M, $1.5M (Cat 1: three subcategories) $850K (Cat 2)</td>
</tr>
<tr>
<td>Category 2</td>
<td></td>
<td>$850K (CS-IRG) $200K (CS-IRG-NIG)</td>
</tr>
<tr>
<td>NMRC - Clinician Scientist (CS)</td>
<td>Jun &amp; Dec</td>
<td>$1.5M (CS-IRG) $850K (CS-IRG-NIG)</td>
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<tr>
<td>NMRC - Cooperative Basic Research Grant (CBRG)</td>
<td>Dec</td>
<td>$1.5M (CBRG) $200K (CBRG-NIG)</td>
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<tr>
<td>NMRC - Backed &amp; Bench (BB&amp;R) Grant</td>
<td>Oct</td>
<td>$1.5M (CS-CoP)</td>
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<tr>
<td>NMRC - Singapore Clinical Trials Grant (CTG)</td>
<td>Year-round (Co-D)</td>
<td>$1.5M (Co-D) $0.5M (C-II)</td>
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<tr>
<td>NMRC - Investigator Initiated Trials (IT)</td>
<td>June &amp; Dec (IT)</td>
<td>$1.5M (IT) $1.5M (IT)</td>
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<tr>
<td>NFRC Competitive Research Programme (CRP)</td>
<td>Apr &amp; Oct</td>
<td>$10M</td>
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<tr>
<td>NFRC Proof of Concept (POC) Grant</td>
<td>Feb &amp; Aug</td>
<td>$250K</td>
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<tr>
<td>BMRC - SERC Biomedical Engineering Programme (SEP)</td>
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<tr>
<td>POI</td>
<td>Jan</td>
<td>$500K (POC)</td>
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<tr>
<td>BMRC - Proof of Value (POV)</td>
<td></td>
<td>$1.5M (POC)</td>
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<tr>
<td>SJR/AMRC Health Research Grant</td>
<td>Aug</td>
<td>$500K</td>
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<tr>
<td>Singapore Heart Foundation Research Grant</td>
<td>Dec</td>
<td>$500K &amp; $800K (two categories)</td>
</tr>
<tr>
<td>Singapore Sports Science &amp; Technology Research Grant (SSSTRG)</td>
<td>Nov</td>
<td>$500K + $100K + $800K + $800K (four categories)</td>
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<tr>
<td>Venerable Yen Pei-Foundation Research Fund</td>
<td>Mar</td>
<td>$150K</td>
</tr>
</tbody>
</table>

1. See NMRC website for salary support cap
2. For non-clinically qualified applicants, such as PhD holders, exception will be made on a case-by-case basis, subject to NMRC approval
3. Requires collaboration between clinical PI and industry partner
4. For clinically qualified applicants, such as MBBS/MD/RSOs holders, exception will be made on a case-by-case basis, subject to NMRC approval
5. Represents collaboration between clinical PI and basic science PI

**MOH/NMRC MAY GRANT CALLS**

**Deadline for PIs to submit full proposals (through institutional RDO to Gisurf/AMR) for pre-review by external parties**

**Deadline for PIs to submit project title & 300-word abstract (through institutional RDO to Gisurf/AMR) to identify external reviewers**

**Deadline for PIs to submit project title & 300-word abstract (through institutional RDO to Gisurf/AMR) to identify external reviewers**

**Deadline for PIs to submit full proposals (through institutional RDO to Gisurf/AMR) to institutional RDO for pre-review by external parties**

For regular updates on new and upcoming grant calls, closing dates and other information, log on to http://research.singhealth.com.sg or look out for the weekly SingHealth Grnt e-bulletin issued every Tuesday. For support with grant applications or to be side.
<table>
<thead>
<tr>
<th>Funding [Years]</th>
<th>Citizenship</th>
<th>Eligibility Criteria</th>
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<tbody>
<tr>
<td>3 - 5</td>
<td>S, PR, F</td>
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</tr>
<tr>
<td>3 (NM) 5 (B)</td>
<td>S, PR, F</td>
<td>I</td>
</tr>
<tr>
<td>3 (must be PR at point of award)</td>
<td>S, PR, F</td>
<td>I</td>
</tr>
<tr>
<td>5 (must have scientific training at MS/PHD level)</td>
<td>S, PR, F</td>
<td>I</td>
</tr>
<tr>
<td>0.5 - 1</td>
<td>S, PR, F</td>
<td>I</td>
</tr>
</tbody>
</table>

**SingHealth, Duke-NUS, Others**

**Singapore Sports Science & Technology Research Grant (SSSTRG)**
- Nov

**Singapore Heart Foundation Research Grant**
- Dec

**SATA CommHealth Research Grant**
- Aug

**N.R.F.**
- (II) Proof of Value (POV)
- (II) Investigator-Initiated Trials (IIT)

**NMRC**
- NMRC Clinical Trials Grant (CTG)
- NMRC Bedside & Bench (B&B) Grant
- (I) NMRC Cooperative Basic Research Grant (CBRG)
- (II) Category 2
- MOH Communicable Diseases - Public Health Research Grant (CD-PHRG)
- SingHealth/Duke-NUS Collaborative Funding
- Khoo Mentored Research Award (KMRA)

**Research Grants**
- Singapore NRF Fellowship
- MOH Healthcare Research Scholarship
- NMRC NUS Master of Clinical Investigation (MCI) Programme
- NMRC Research Training Fellowship
- NMRC Transition Award

**SAR**
- (I) Investigator (INV)
- NMRC Clinician Scientist Award (CSA)

**MOH/NMRC**
- Industry-Aligned Funds
- Industry-Aligned Funds

**LEGEND**

- AIA: Agency for Science, Technology and Research
- AMR: Academic Medical Research
- AMRI: Academic Medicine Research Institute
- AMC: Academic Medical Centre
- AP: Associate Professor
- AR: Assistant Researcher
- BMRC: Biomedical Research Council
- BBS: Biomedical Science
- BST: Basic Specialist Training
- BS: Bachelor of Science
- C: Candidate
- C-Inst: Centre-Institutional
- Co-D: Co-Development Scheme
- CS: Clinician Scientist
- CRP: Competitive Research Programme
- CRP-St: Clinical Research Programme
- CRM: Clinical Research Manager
- D: Doctorate
- Dr: Doctor
- E: Engineer
- F: Faculty
- FTE: Full-time equivalent
- IAF: Industry Alignment Fund
- I: Investigator
- INV: Investigator
- IP: Intellectual Property
- M: Master
- MCI: Master of Clinical Investigation
- MDR: Management Development Research
- MSc: Master of Science
- MS: Master's degree
- MUBS: Medical University of Basel - School
- NMRC: National Medical Research Council
- OoR: Office of Research
- PhD: Doctor of Philosophy
- P: Associate Professor
- P.A.: Per annum
- PI: Principal Investigator
- POC: Proof of Concept
- PR: Professor
- RDO: Research Development Office
- RIE: Research and Innovation Exchange
- RMO: Research Management Office
- RRO: Research Review Office
- RSD: Research Service Director
- RSP: Research Service Platform
- S: Senior
- S, PR, F: Senior, Professor, Faculty
- SI: Scientist-Investigator
- Sr: Senior
- TA: Transition Award
- T: Teacher
- TA: Transition Award
- TGS: Translational Grant Scheme
- UEM: University of Economics, Business and Management
- UTM: University of Technology, Malaysia
- UQ: University of Queensland
- UWA: University of Western Australia
- WCU: Western Cape University
- X: Exchange
- Y: Young
- Z: Zentrum

**MOH/NMRC NovemberGrant Call**

<table>
<thead>
<tr>
<th>Grant Call</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 S, PR, F</td>
<td>Mentor (PI) must be Duke-NUS adjunct/regular-rank member; Co-I must be Duke-NUS medical student</td>
</tr>
<tr>
<td>2 S, PR, F</td>
<td>Bond duration 0.5 - 1 FTE in research</td>
</tr>
<tr>
<td>1 S, PR, F</td>
<td>Must hold NMRC membership &amp; adjunct/regular-rank appointment with Duke-NUS upon award</td>
</tr>
</tbody>
</table>

**Institutional RDO**

Deadline for PI to submit full proposal through institutional RDOs to OoR/AMRI for pre-review by external parties.

Institutional RDO receives pre-review feedback from external reviewers.

**Deadline for PIs to submit full proposal through institutional RDOs to OoR/AMRI for pre-review by external parties**

**MOH/NMRC November Grant Call**

<table>
<thead>
<tr>
<th>Grant Call Closes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 Sep</td>
<td>37 Oct</td>
</tr>
</tbody>
</table>

**GRANT CALL CLOSURES**

**GRANT CALL OPENS**

**To our research mailing list, please contact us at 65/514/515/5121 or email us at office.research@singhealth.com.sg.** The calendar is accurate as of December 2013.
About singhealth core platforms and programmes at SingHealth

SINGHEALTH INVESTIGATIONAL MEDICINE UNIT (IMU)

Director: Clinical: Assoc Prof Darren Lim
Director: Administration: Ms Sue Tan Yaw
IMU is a dedicated early phase clinical research unit, which supports the research of industry-sponsored and investigator-initiated trials.

IMU provides services for:
- Proof of concept, “first-in-man” or early stage clinical development of investigational drugs, vaccines and devices.
- Validation and calibration of novel disease biomarkers.
- Support for preclinical, pharmacodynamic, toxicology, and early phase studies.
- Healthy volunteer trials.

SINGHEALTH ADVANCED BIO-IMAGING

Director: Assoc Prof Antonius Van Dongen
The SingHealth Advanced Bio-imaging core will support factors in March offering several state-of-the-art imaging platforms for electron and optical microscopy. Experienced staff will be available for advice and training. At this core facility, a wide range of samples will be studied. Facilities include fluorescence imaging, confocal microscopy, as well as transmission electron microscopy (TEM),

SINGHEALTH EXPERIMENTAL MEDICINE CENTRE (SEMCC)

Director: Dr Tan Yun-Long
SEMCC is Singapore’s most comprehensive animal-based research facility and was licensed by the Agri-Food and Veterinary Authority (AVA) of Singapore. It was the first in Singapore to be fully accredited by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) International, which certifies that a centre’s commitment and adherence to the highest standards of humane care and use of research animals. It is currently the largest centre in Singapore capable of carrying out large animal research. With direct access to A*Star experiences, SEMCC has highly specialized animal care and support systems in place to support research projects meeting the highest international standards.

SINGHEALTH FLOW CYTOMETRY

Director: Dr Tee-Yap
The SingHealth Flow Cytometry facility will provide fluorescence activated cell sorting (FACS) and analysis services. SingHealth’s Flow Cytometry facility accepts sorting of most biological samples, including the enumeration of live or fixed, stained or fluorescent samples. The facility offers services that are competitive alternatives to currently available ones.

SINGHEALTH BIOCARTOGRAPHY (BC)

Director: Prof T. Escalona
BC offers high-voltage electron microscopy, sputter, and ion beam sample preparation, and transmission electron microscopy of tissue samples.

SINGHEALTH INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)

Director: Prof Balram Chowbay
The IACUC is a facility that oversees and monitors all research involving animals. It is the responsibility of the IACUC to ensure that the rights, health, and well-being of all experimental animals are protected.

SINGHEALTH TRANSITIONAL IMMUNOLOGY & INFILTRATION CENTRE (STIC)

Director: Prof Salvatore Albani
STIC addresses the need for substantial translational clinical research initiatives in immunology and inflammation within SingHealth. The centre will focus on important unmet medical needs. Operationally, it will be supported by research and clinical staff. SingHealth is developing individual translational research projects in several clinical areas. The centre aims to leverage the synergies between clinicians and basic scientists, as well as nurture translational scientists. STIC will be fully operational from October.

SINGHEALTH TISSUE REPOSITORY (STR) & ADVANCED MOLECULAR PATHOLOGY LABORATORY (AMPL)

Director: Assoc Prof Tan See Yong
Administrators: Dr Foo Woei Kye
STR and AMPL, facilitates the conduct of basic, translational and clinical research at SingHealth. STR is the largest human tissue biobank in Singapore, whose work is supplemented by AMPL, an integrated research service platform set up by SingHealth and the Institute of Molecular & Genetic Biology (IMGB).

SINGHEALTH PERSONALISED OMIC LATTICE (POLARIS)

Director: Assoc Prof Tony Lim Kiat Hon
POLARIS, an initiative focused on stratified medicine that aims to deliver better patient outcomes through research, is a collaboration between A*Star’s Genome Institute of Singapore (GIS) and SingHealth. The team is currently developing a clinical assay for derived xenografts, supported by clinical histopathologists. POLARIS aims to support researchers by exploring, designing and developing individual translational research projects meeting the highest international standards.

SINGHEALTH ADVANCED BIONANOMEDICINE

Director: Prof. Darren Lim
Advanced Bionanomedicine is a research initiative that aims to support the development of innovative biological diagnostic and therapeutic technologies.

Useful contacts

OoR – Grant Administration

Dr Shi Hoe Sen Ling 6376 7012 shihoe.senling@singhealth.com.sg
Ms Ten Yi Mei 6376 7013 ten.yimei@singhealth.com.sg
Ms Iris Goh 6376 7041 iris.goh@singhealth.com.sg

OoR – Compliance & Ethics

Centralised Institutional Review Board (CIRB)

General enquiries 6333 7575 cirob@singhealth.com.sg

Institutional Animal Care and Use Committee (IACUC)

Ms Serena Lee 6333 7575 iacuc@singhealth.com.sg

Institutional Biosafety Committee (IBC)

Ms Cindy Goh 6376 5533 cindy.goh@singhealth.com.sg

Research Programmes

SingHealth Translational Immunology & Inflammation Centre (STIC)

General enquiries 6376 7154 stic@singhealth.com.sg

Personalised OMIC Lattice for Advanced Research and Improving Stratification (POLARIS)

General enquiries polaris@singhealth.com.sg

SINGHEALTH CLINICAL PHARMACOLOGY CORE

Director: Prof Bahram Choobey
The Clinical Pharmacology Core will provide clinical pharmacology services to SingHealth’s institutions and pharmaceutical companies engaged in conducting early phase drug development.

SINGHEALTH EXPERIMENTAL MEDICINE CENTRE (SEMCC)

Director: Dr Tan Yun Long
SEMCC is Singapore’s largest centre in Singapore capable of carrying out large animal research. With almost three decades of experience, SEMCC has highly skilled personnel and state-of-the-art facilities.

About SingHealth Office Of Research (OoR)

Reporting to SingHealth’s Group Director of Research, SingHealth OoR works closely with institutional research administration offices and relevant partners to support research undertakings within the Group. The most recent initiative from SingHealth OoR is the grant pre-review process that was introduced in collaboration with AMRI. SingHealth OoR supports the research community with dedicated teams that provide advice on grant management, finance operations, facilities management, policy and communications, collaboration, project management and Institutional Animal Care and Use Committee (IACUC) activities.

Core Platforms

SingHealth Investigational Medicine Unit (IMU)

General enquiries imu@singhealth.com.sg
Ms Robyn Yip (for charges) 6323 7532 / 6323 7552 robyn.yip@yahoo.com.sg

SingHealth Experimental Medicine Centre (SEMCC)

Director: Prof. Darren Lim
General enquiries semcc@singhealth.com.sg

SingHealth Tissue Repository (STR) & Advanced Molecular Pathology Laboratory (AMPL)

Centralised Institutional Review Board (CIRB)

General enquiries tissue.repository@singhealth.com.sg

Institutional Animal Care and Use Committee (IACUC)

Ms Balaram Kish 6376 7303 balaram.kish@singhealth.com.sg

Research Programmes

SingHealth Translational Immunology & Inflammation Centre (STIC)

General enquiries 6376 7154 stic@singhealth.com.sg

Personalised OMIC Lattice for Advanced Research and Improving Stratification (POLARIS)

General enquiries polaris@singhealth.com.sg

SingHealth Advanced Bio-imaging

General enquiries bio-imaging@singhealth.com.sg

SingHealth Clinical Pharmacology Core

General enquiries cpcore@singhealth.com.sg

This research special is brought to you by SingHealth Office of Research.