



Issue 17 **Dec 2013 - Jan 2014**
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A Newsletter For The Research Community In Singapore



catalyst

ACCELERATING RESEARCH



SKIN Research



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Your Newsletter, Your Comments

Please send us your comments and feedback to
researchtraining@nhg.com.sg
(Attn: NHG Research Editorial Workgroup)

Dear Readers,

With the recent announcement on the formation of the Skin Research Institute of Singapore (SRIS), this exciting edition of Catalyst focuses on the on-going and future skin research and initiatives here.

SRIS, a partnership between A*STAR, National Skin Centre (NSC) and Nanyang Technological University (NTU), aims to be a global center of excellence for interdisciplinary skin research and innovation. Some early activities of SRIS included visiting centres of excellence in skin research in the U.S. to study how they operate and are funded, a skin workshop to bring the scientists, engineers and clinicians together to facilitate networking and exchanges of ideas as well as the launch of a jointly funded grant scheme by A*STAR, NHG and NTU to fund multidisciplinary projects aimed to improve diagnosis, treatment outcome for patients suffering from various skin disorders. It is indeed exciting times for skin research in Singapore.

The Singapore Health & Biomedical Congress (SHBC) 2013 Scientific Competition was a tremendous success. This year, we received a record of 436 abstracts which underwent rigorous review and judging process. Please find the listing of the winners of the oral and poster competition within. Thank you for your submissions and my heartiest congratulations to all winners.

In our continued effort to be the leader in research ethics, NHG, in collaboration with the Public Responsibility in Medicine and Research (PRIM&R), is organising the 3rd Asia Pacific Research Ethics Conference on 26-28th March 2014. The theme for the upcoming conference is "Research Ethics: Harmonising Global Principles with Asia Pacific Practices". For details on early bird specials and conference programme, do visit our website at www.aprec-nhg.com.sg.

Lastly, on behalf of the NHG Research Editorial Workgroup, I would like to take this opportunity to wish our research community, partners and friends, a very Happy New Year.

Here's to another exciting year for research in Singapore!

Till next time!

Yours Sincerely,

Farah Haniff
Editor-in-Chief



NHG Research Editorial Workgroup

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Advancing Mental Health



A/Prof Mythily Subramaniam
IMH, Research

Why do they start and why don't they quit: A qualitative study to explore risk and protective factors for tobacco use in youth

The decision to take up or turn down smoking is a position that most youths find themselves in as part of their transition into adulthood. The choice to start smoking however comes at more than a financial cost. Many of those who begin smoking in their youth become chronic smokers and a majority of these chronic smokers eventually develop smoking-related diseases. Since smoking-related diseases are avertible, prevention and cessation of smoking in youths are important public health goals. The IMH Research Division team, led by Principal Investigator Asst. Prof. Mythily Subramaniam, is currently conducting a series of focus group discussions with youths and parents to gain an expansive insight into the factors that influence youths' decision to start smoking, why they continue smoking and why other youths snub smoking altogether. The qualitative investigation also aims to explore participants' awareness of smoking prevention and cessation programs that are currently available.

Cognitive profiling and deep phenotyping in schizophrenia

Cognitive impairments are often associated with schizophrenia. In this study we hope to carry out comprehensive cognitive assessment on schizophrenia subjects that have been genetically, and clinically phenotyped. "Deeper" and more detailed cognitive phenotyping involves profiling our participants on gold standard neuropsychological batteries and experimental neuroscience tasks. We will also be conducting eye tracking paradigms on a subset of our participants, to gain understanding of how neurophysiological processes might also contribute to cognitive performances in schizophrenia patients. This is amongst the earliest attempts to apply such technology for research in schizophrenia locally. This endeavour would offer a glimpse into how biology, neurophysiology, neuropsychology, neuroscience and clinical profiling could help understand complex conditions such as schizophrenia. We also present this study as proof of concept of best practices in cognitive measurement for studying psychotic disorders. This study is led by Mr Max Lam Zhan Yang, Research Psychologist from Research Division, Institute of Mental Health. Max is currently also on a National Medical Research Council Fellowship, pursuing his PhD with Yong Loo Lin School of Medicine, National University of Singapore, focusing on understanding the genetic architecture of neuropsychological assessments.



Mr Max Lam Zhan Yang
IMH, Research



A/Prof Sim Kang
IMH, General Psychiatry

Elucidating structural and functional connectivity disturbances between resting state brain regions in schizophrenia: a multimodal imaging connectomics study

Schizophrenia has been considered a prototypical disorder of brain connectivity as evidenced by the presence of white matter pathology found in previous structural neuroimaging studies. The question remains about how these abnormalities of structural connectivity relate to disturbances of functional connectivity or lack thereof within patients with schizophrenia. Functional connectivity is defined as the temporal dependency of neuronal activation patterns of anatomically separated brain regions and recent studies support the employment of resting state fMRI to elucidate functional connectivity as well as their inter-relationships with structural white matter dysconnections. We hope to assess the state of disturbance in brain resting functional connectivity within patients with schizophrenia and relate them to white matter integrity changes within cortical and subcortical brain regions. The Principal Investigator of this study is A/Prof Sim Kang, Senior Consultant at the Institute of Mental Health.

Psychosis Symposium 2013

Ms Poon Lye Yin

Manager, Early Psychosis Intervention Programme (EPIP)
Institute of Mental Health

As a member of the Asian Network of Early Psychosis (ANEP), the Early Psychosis Intervention Programme (EPIP), Singapore joins other regional early programmes from Hong Kong, China, India, Indonesia, Japan, Korea, Malaysia, and Taiwan, in sharing our experiences and best practices in order to facilitate development of early intervention services in Asia. The ANEP also aims to promote research of first-episode psychosis in Asia, and encourage use of standardised instruments and assessment procedures for more comparable results.

This year, as part of the Institute of Mental Health's 85th anniversary celebrations, and supported by ANEP and our local community partners, EPIP organized a Psychosis Symposium, titled "Unique Challenges and Innovations in Delivering an Early Intervention Programme in Asia", in conjunction with the Singapore Mental Health Conference. Held on 26 Sept 2013, the Symposium brought together regional experts and local mental health professionals to share insights, exchange ideas and research findings, and present latest approaches to deal with current challenges in the management of psychosis. It also served as a platform for our dedicated care partners, our resilient patients and caregiver to share their unique experiences in early psychosis.

The Symposium was graced by Mrs Tan Ching Yee, Permanent Secretary of the Ministry of Health, Singapore, who also took the opportunity to view works from EPIP clients who had gone through a 10-week workshop that taught them to express their



feelings, thoughts about their lives and their journey of being associated with mental illness or being at risk of developing a mental illness through photography. The opening addresses were delivered by IMH CEO, A/Prof Chua Hong Choon, Chief of EPIP, A/Prof Swapna Verma and Mental Health Advocate, Ms Chan Lishan, followed by a launch of a book on case management, jointly edited by both the Hong Kong and Singapore early intervention teams.

The morning programme saw experts from the regional early intervention teams share their models of care and services: Hong Kong's Early Assessment Service for Young People with Early Psychosis (EASY) was represented by Professor Eric Chen, India's Schizophrenia Research Foundation (SCARF) was represented by Dr R. Mangala, Japan's Early Psychosis Unit "Il Bosco" was represented by Professor Masafumi Mizuno, while Singapore was represented by A/Prof Verma.

There were two afternoon break-out sessions: in one, our local care partners (Mr Ang Poh Hee from Singapore Association for Mental Health, Dr Radiah Salim from Club HEAL, Ms Porsche Poh from Silver Ribbon Singapore), as well as members of the EPIP team shared their challenges and triumphs in working with individuals with early psychosis in their unique settings, while the other saw Professors Eric Chen and Masafumi Mizuno and researchers from IMH (A/Prof Chong Siow Ann, Adj/Asst Prof Mythily, Ms Ang Suying and Dr Attilio Rapisarda) share their latest research findings.

The symposium was brought to a close with a short film screening, courtesy of Club Heal, followed by a panel discussion on the impact of mental health issues on individuals and families. This panel was represented by various care partners, and key stakeholders such as an EPIP client and a caregiver, who are officially appointed to provide support to EPIP clients and caregivers to promote recovery. The 150-strong audience participated in a lively discussion on the concept of resilience and the roles of caregivers.

Feedback from the audience showed that they had a better understanding of the challenges involved in the management of early psychosis after the symposium. The audience enjoyed the sessions by the speakers, whom they felt "were more than happy to share after the sessions". Another highlight was hearing the voices from a diverse pool of stakeholders, from researchers, to frontline professions, caregivers and clients which offered "a good mix of information" from research to application. The audience particularly enjoyed the film screening and panel discussion, describing it as "light-hearted and inspiring".

"[The symposium did well in] engaging professionals from different countries to give talks on illness and maintaining functional innovation. The symposium also helps me to strengthen myself on the knowledge on bio-psycho-social perspectives."

Feedback from an audience member



L-R A/Prof Verma, PS Mrs Tan, A/Prof Chua, Prof Eric Chen

We Are Hiring

The National Healthcare Group (NHG) is a leading public healthcare provider in Singapore. We manage: Two Hospitals — Tan Tock Seng Hospital and the Institute of Mental Health/Woodbridge Hospital; One National Centre — National Skin Centre; the NHGP chain of nine polyclinics in — Ang Mo Kio, Bukit Batok, Choa Chu Kang, Clementi, Hougang, Jurong, Toa Payoh, Woodlands, and Yishun; One Specialty Institute — NHG Eye Institute; and five Business Divisions — NHG 1-Health, NHG Diagnostics, NHG Pharmacy, Singapore Footcare Centre, and Primary Care Academy; and the Johns Hopkins Singapore International Medical Centre.



DSRB Assistant Analyst, Research & Development Office

All research conducted in NHG premises or involving NHG staff currently falls under the purview and ethical oversight of the Domain Specific Review Board (DSRB) of the Office of Human Research Protection Programme (OHRPP) at the NHG Research & Development Office.

Right now, DSRB is seeking a dynamic and meticulous Assistant Analyst to be part of this highly systematic team to ensure that the rights, safety and welfare of participants are protected by creating a culture of research that operates on high ethical standards.

As an Assistant Analyst, you will be instrumental in supporting the administrative functions of the DSRB operations.

Key responsibilities include:

- Ensuring investigators are informed of deadlines for continuing reviews and performing preliminary review of study renewals in consultation with the DSRB Analyst.
- Performing the administrative reviews of study amendments, non-compliances, UPIRISO, and other notifications to ensure completeness of submission and correctness of information.
- Serving as a resource for investigators regarding the adaptation and implementation of DSRB policies, procedures and forms.
- Preparing outcome letters and maintaining accurate records of the ethics reviews in the study folders and databases.
- Providing administrative support for the ethics review boards' meetings, including collating RSVPs, arranging for meeting logistics, book meeting room, presentation equipment, etc.
- Maintaining of the office equipment and resources.
- Assisting in organising research ethics seminars and training sessions.

Requirements

- "A" Level /Diploma of any discipline or equivalent.
- Preferably with experience as an Administrative Support Staff in the Healthcare Industry.
- Proficient in MS Office applications is essential. Preferably with experience using Databases (e.g. MS Access).
- Able to work independently and meticulously.
- Possess strong organisation and planning skills, and demonstrate strong written and verbal capabilities.
- Ability to handle extremely detailed and highly confidential information with tact and discretion.
- Performs well under pressure, meeting deadlines, and is detail-oriented.
- Willing to assume responsibilities as directed.

Interested candidates may apply for this position by submitting their resume through the NHG website: <https://corp.nhg.com.sg/Careers/Pages/Your-Career.aspx>

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Kick starting the healing of chronic wounds: The connexin connection



Professor David Becker

Professor of Cell Biology
Lee Kong Chian School of Medicine
Email: david.becker@ntu.edu.sg

The healing of an acute wound requires the coordinated activity of a wide variety of cell types in a series of overlapping processes. Haemostasis will see the formation of a fibrin clot, which will serve as a temporary barrier to the outside world. Signals released during this process triggers an inflammatory response, which results in leaky blood vessels releasing neutrophils into the wound bed to kill any bacteria in order to prevent sepsis. Keratinocytes will then start to proliferate and crawl forwards under the clot in order to join up the edges of the epidermis again. At the same time wound edge fibroblast proliferate and migrate into the wound bed to form new granulation tissue laying down a new extracellular matrix which then matures, contracts and remodels over time. Normally this happens without any problem but in the elderly and diabetics this process can fail and chronic wounds result.

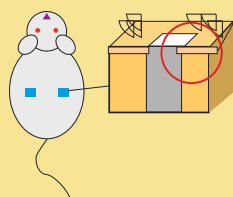
➔ We have found that gap junctions, a small intercellular channel, found in nearly every cell type in the body, plays a central role in the healing process. One particular gap junction protein Connexin 43 (Cx43) is a key player! In rodents, Cx43 down regulates in wound edge keratinocytes and fibroblasts in the first 24-48 hours after injury, which is key for them to become migratory. At the same time Cx43 levels increase in blood vessels as they become leaky and in neutrophils as they become activated. This inflammatory response is often greater than is required in our modern sterile world. We have developed an antisense gel, which can rapidly turn off



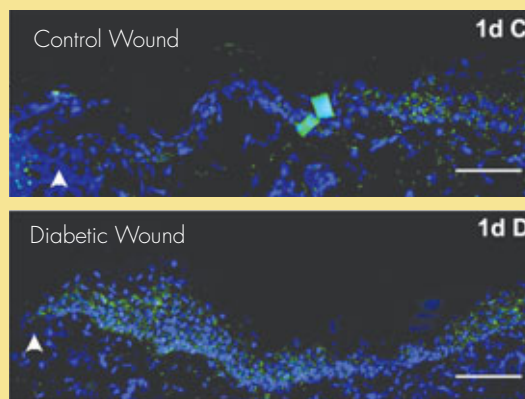
In these slides, Cx43 staining is the green spots whilst nuclei are in blue - we are looking at the epidermis with the wound edge to the left - arrow head. This is 1 day after wounding and the control epidermal wound edge you can see Cx43 is switching off as the cells thin out and become migratory. However, in the diabetic wound edge a thickened bulb of non-migratory cells forms and Cx43 is turned on not off.

Slide 2 upper panel shows another 1 day diabetic epidermal wound edge with bulb of cells and elevated Cx43. Beneath it is a diabetic wound treated with Nexagon antisense to Cx43, which prevents the abnormal turn on of Cx43 and you see the epidermal cells are thinner and flatter as they adopt a migratory phenotype. Beneath this we see H&E staining of 1 day wounds. The blue arrow shows the wound edge and the black arrow shows how far the tongue of cells has crawled. C is control and C+AS is control plus Cx43 antisense which has crawled twice as far. D is diabetic and you can see this has just formed a bulb of cells that have not gone anywhere. D+AS is diabetic Cx43 antisense treated and this has recovered healing to normal levels by preventing the abnormal turn on of Cx43.

Cx43 in STZ Rat Diabetic Wounds

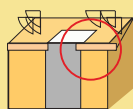


Discovered abnormal Cx43 regulation in response to wounding in STZ diabetic rats (FDA approved surrogate chronic wound model)

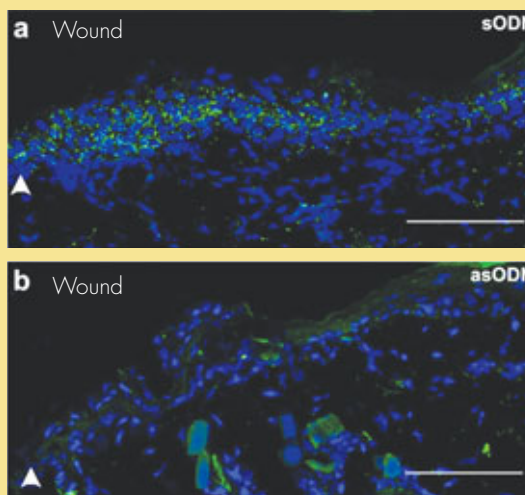


Wang et al., 2007 Diabetes

NEXAGON® Prevents Abnormal Cx43 Upregulation

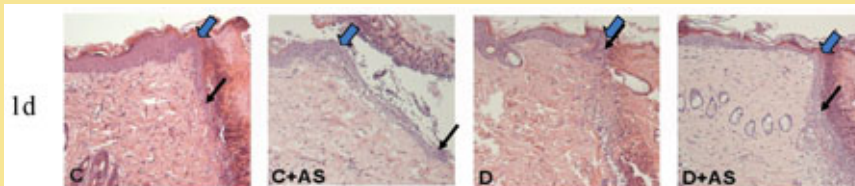


Diabetic Control



Diabetic Treated

Wang et al., 2007 Diabetes



Cx43 in wound edge fibroblasts and keratinocytes and prevent the turn on in blood vessels. This has the effect of speeding the proliferation and migration of keratinocytes and fibroblasts almost doubling the rate of healing whilst at the same time damping down the inflammatory response and neutrophil recruitment.

➔ Interestingly, in diabetic wounds, which are notoriously slow to heal, Cx43 turns 'on' instead of 'off' in wound edge keratinocytes and fibroblasts and they fail to migrate until it down-regulates. Preventing the abnormal turn 'on' of Cx43 in diabetic rats with the antisense gel rescues the rate of healing to normal or even better. Experiments in tissue culture showed that just increasing Cx43 a little would retard fibroblast migration but reducing it decreased cellular adhesion and speeded migration.

➔ Examining Cx43 expression in biopsies from a variety of human chronic wounds such as venous leg ulcers (VLU) diabetic foot ulcers (DFU) and pressure ulcers (PRU), we found a many fold over expression of Cx43 in all wound types in the epidermis and dermis, which could prevent their migration and stall the healing process.

With the increasing elderly population in Singapore, I would like to design ways to prevent the progression of pressure ulcers in older patients in care homes and geriatric wards.

➔ In 2006, we formed a small biotech company in San Diego, CoDaTherapeutics Inc. <http://www.codatherapeutics.com> in order to develop Nexagon™ the antisense gel. Six years later, we have completed GMP manufacture, toxicity testing, phase 1 safety and have positive results speeding the healing of venous leg ulcers in phase 2a and 2b clinical trials. A phase 2 trial treating diabetic foot ulcers is underway. We have already been given FDA Orphan Drug Status for Nexagon in the treatment of persistent epithelial defects to the cornea following burns.

➔ With the new Skin Research Institute of Singapore, I intend to work closely with engineers and clinicians in order to develop nanoparticle delivery of our drug and the bioactivation scaffolds to fill large wounds or burns. Cx43 is central to many other tissue injury and inflammatory conditions so I will work with engineers to produce new drug delivery methods to target them. I would also like to explore the effects of the bacterial biofilm that is often found in chronic wounds. With the increasing elderly population in Singapore, I would like to design ways to prevent the progression of pressure ulcers in older patients in care homes and geriatric wards.

Health Services Research Courses

(January – March 2014)

by Health Services & Outcomes Research (HSOR) Unit, National Healthcare Group

Topic	Tentative Date
Data analysis in HSR - Introduction to medical informatics, predictive modeling and methods of risk adjustment	10 Jan '14
Introduction to Qualitative Methods and Mixed Methods Research	13 Feb '14
Introduction to Economic Evaluation	TBA
Planning and Evaluating Health Services and Programs (Core)	Mar '14

For registration and full details, please email Cheryl Lobo at Ms Cheryl_lobo@nhg.com.sg

NHG Research Training Calendar

for January – February 2014

Date	Time	Training Programme	Venue
Ongoing	00:00 – 23:59	Proper Conduct of Research Online – Basic I & III (PC101 & PC103) Workshop Proper Conduct of Research – Basic II^ (PC102) Workshop	www.elearning.nhg.edu.sg
23 – 24 January 2014	09:00 – 18:00	Singapore Guideline for Good Clinical Practice	National University of Singapore, CRC Auditorium, Clinical Research Centre, MDII, Level 1, 10 Medical Drive, Singapore 117597
17 – 19 February 2014	09:00 – 18:00	Biostatistics Course (Basic & Intermediate)	To be advised
24 February 2014	09:00 – 18:00	Biostatistics Course (Advanced)	To be advised

For registration and full details, please visit www.research.nhg.com.sg (Training & Education → Register for a Course)

*Dates are subjected to changes without prior notice

^For more information, refer to www.research.nhg.com.sg (Training & Education → Proper Conduct of Research Courses)

Lymphocyte Signalling Research Laboratory at Lee Kong Chian School of Medicine



Dr Navin Kumar Verma

Lecturer, Dermatology & Skin Biology Research Programme
Lee Kong Chian School of Medicine

Immune-mediated skin diseases including psoriasis, atopic and allergic contact dermatitis, lichen planus, alopecia areata and vitiligo are among the most worrying causes of long-term morbidity and mortality, and significantly contribute to the health burden worldwide. For instance, psoriasis alone affects approximately 2-3% of the population¹ for which treatment options remain elusive. In Singapore, up to 50,000 people suffer from psoriasis² accounting one of the top 10 skin disorders and about 2,000 new cases are registered each year at The National Skin Centre². About 5-40% of patients with psoriasis also develop joint manifestations, referred to as psoriatic arthritis³. Increasing evidence links these skin diseases with several comorbidities, including cardiovascular disease, stroke, diabetes, depression, hypertension, osteoporosis and even cancer. As shocking as these numbers are, they cannot adequately reflect the physical and emotional devastation to individuals, families, and communities coping with such skin disorders that cause considerable functional impairment and immensely impact individual's general well-being, self-confidence and the quality of everyday life nor do they capture the enormous deleterious impact of these diseases on the economy.

Immune cells, in particular circulating T-lymphocytes, are key players in orchestrating extrinsic mechanisms of peripheral tolerance and tissue-specific autoimmunity. The localised recruitment of antigen-specific T-cells to sites of inflammation (e.g., inflamed skin) is critical to the immune surveillance as well as immunopathological reactions. This highly-coordinated process of T-lymphocyte migration is facilitated by a multifunctional molecular array including integrin-mediated adhesions and chemokine signals. The T-cell integrin LFA-1 interacts with intercellular adhesion molecules (ICAMs, in particular ICAM-1), expressed on the surface of high endothelial venules and inflamed tissue sites, and this interaction plays multifaceted roles in the context of leukocyte adhesion, locomotion and migration through

endothelial junctions into inflammation sites. An inappropriate or unregulated T-cell migration can cause the pathogenesis of a large variety of chronic inflammatory and autoimmune disorders, including skin manifestations.

There is great therapeutic interest in developing inhibitors of the LFA-1/ICAM-1 as immunosuppressive agents that can block unwanted T-cell trafficking. In fact, a number of drugs and biologics have been developed. However, issues such as efficacy, long-term safety, specificity, and several cases of side effects are driving detailed investigations of LFA-1-mediated signalling in T-cells at molecular levels in order to develop a strategy to immune targeting capable of being fine-tuned without causing harm.

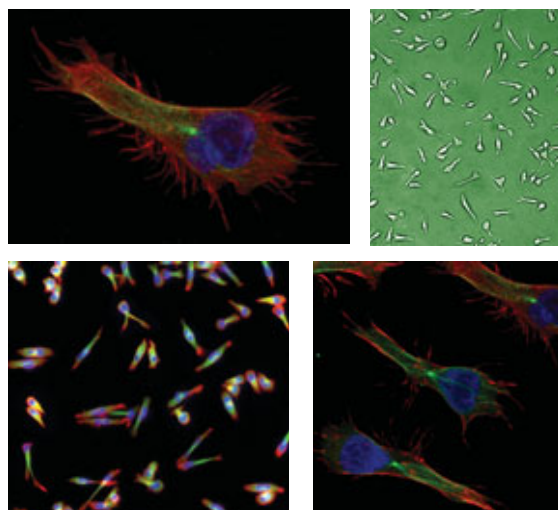
The long-term goal of the Lymphocyte Signalling Research Laboratory at NTU's Lee Kong Chian School of Medicine is to address an important question: how LFA-1 deploys downstream molecules to orchestrate a multitude of intracellular processes that must happen precisely in the right order to assure controlled migration of T-cells. The research team investigates the mechanisms by which LFA-1 signalling would influence functional properties of T-cells, which are incompletely understood. Delineation of these mechanisms will advance the knowledge about T-cells implicated in immune defence and disease development, add important information about the nature of T-cells in skin diseases and suggest appropriate strategies for early diagnosis, prevention and targeted therapeutics.

In order to address the above questions, my lab sets three main objectives. First, I will characterise the LFA-1 induced gene products and associated adaptor proteins in human and mouse T-cells and in dermal samples, which are key in the skin manifestations of diseases. Second, I will perform basic studies to dissect the elements of the LFA-1 signal involved in T-cell migration as distinct to immunomodulation and determine if these molecules modify T-cell phenotypes. As studies help to understand the process more precisely, my third aim is to probe whether inhibitors of the identified proteins affect the T-cell functioning. These

fascinating basis studies will be able to suggest more precise methods to block T-cell migration in the selected circumstances that cause problems, without crimping the essential immune responses to infections.

The study employs a well-characterised laboratory model of lymphocyte migration, whereby T-cells polarise and migrate on a ligand of the adhesion molecule LFA-1 (ICAM-1 or stimulating anti-LFA-1). This allows the study in detail of the subcellular changes occurring during the active process of T-cell locomotion. Utilising cutting-edge cell and molecular biology tools and imaging technologies, the study examines signalling aspects of leukocyte-endothelial cell interactions with particular emphasis on the role of the cytoskeleton systems and adaptor proteins in T-cell motility. The research team also plans to develop and employ animal model systems for specific studies.

These interdisciplinary studies will be performed by joint efforts of biologists, clinicians, biochemists, bioinformatics scientists, nanotechnologists, engineers, and other groups in Singapore and abroad. It is expected that this research would suggest new selective or "tunable" approaches to modulate the functioning of immune systems and provide exciting opportunities to develop worthwhile novel selective therapies, which have reduced toxicity and are more controllable than existing antibody-based therapeutics.



Migratory phenotype of human T-cells stimulated via LFA-1, displaying cellular cytoskeleton microtubule and actin.

Green - tubulin, Red - actin, Blue - nuclei

1. National Psoriasis Foundation. Population statistics. www.psoriasis.org/about/stats.
2. Channel News Asia. Psoriasis condition more than skin deep. news.xin.msn.com/en/singapore/article.aspx?cp-documentid=4705797.
3. Molteni S, and Reali E (2012) Psoriasis: Targets and Therapy. 2:55-66.



Dr Madeline Ho

Consultant

National Skin Centre

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In previous studies, modern techniques of molecular biology have enabled the discovery of mutations in keratin genes in several of these disorders.

COLLABORATIVE RESEARCH WITH A*STAR

Modern research entails a variety of skills, knowledge and resources. Researchers recognise the fact that collaborative research brings together the necessary range of skills that are required to produce a desired outcome. The National Skin Centre, Singapore is privileged to collaborate with the Agency for Science, Technology and Research (A*STAR) at Biopolis on several research studies. An example of this is the clinical and genetic study of patients with palmoplantar keratoderma at the National Skin Centre.

▶ Palmoplantar keratodermas (PPKs) are a heterogeneous group of disorders characterized by abnormal thickening of the palms and soles. PPK can be inherited or acquired and can occur as a part of a generalized disorder of cornification, following infection, trauma or internal malignancy. The prognosis of the condition and the therapeutic modality that is used to treat the manifestations may vary depending on the diagnosis.

▶ The treatment of keratodermas can be difficult as most treatment options only result in short term improvement and are compounded frequently by side effects.

The clinical patterns of PPK may also vary in different geographical settings within a country or region. In previous studies, modern techniques of molecular biology have enabled the discovery of mutations in keratin genes in several of these disorders. As this study aims to determine the prevalence, patterns, and other epidemiological parameters of PPK in Singapore as well as identify any keratin gene mutations, this will aid in the diagnosis and management of the patients with this rare condition.

▶ In this study, the diagnosis of palmoplantar keratoderma is confirmed by the dermatologist. Only the subjects with a diagnosis of hereditary palmoplantar keratoderma will be recruited into the study. It involves the collection of clinical data at the National Skin Centre and extraction of DNA from the subjects' saliva or blood. The control DNA will be obtained from the Singapore Consortium of Cohort Studies. The extracted DNA will be sent to Biopolis for analysis.

▶ This study highlights the benefits of collaborative research. The dermatologist will provide the clinical input and Biopolis will furnish the necessary scientific and technical expertise.



SKIN BIOLOGY RESEARCH at the Institute of Medical Biology

Prof Birgit Lane

Executive Director
Institute of Medical Biology

There are 14 teams of scientists working on skin research at IMB.

The Institute of Medical Biology (IMB) is one of the youngest of A*STAR's research institutes, with a strong emphasis on excellence in research at the interface between basic science and medicine.

► IMB's research focuses on stem cells, genetic diseases and skin biology, three areas with a lot of overlap and potential for collaboration. Together, we study the mechanisms underlying human diseases, collaborating closely with many clinical partners around Singapore.

► In the last two years, our research programme in skin biology has expanded substantially, putting us now in a key position to help build up skin biology research under the framework of the new Skin Research Institute of Singapore (SRIS).

► We have 14 IMB teams of scientists are currently engaged in research projects on skin, leading more than 60 researchers in skin biology this year. These teams work on topics ranging through skin cancer, skin development, genetic skin diseases, skin stem cells, wound healing, skin ageing and pigment defects, to skin barrier defects such as atopic dermatitis.

► Our group leaders come from very diverse fields, building up reputations in other research areas and now applying their unique skills and insights to understanding skin biology. This is different from the more usual model of a skin research centre evolving



out of clinical dermatology, and we believe that our starting point gives us some unique advantages, in these times of fast moving interdisciplinary technologies in biology.

► So why skin? Many reasons. Skin is our front line of defence against the environment: to keep us healthy, it must be very tough and mechanically strong. Skin needs to form a waterproof layer to stop our bodies losing water uncontrollably; it has to prevent micro-organisms from invading our body, and it even has an on-site hit squad of rapid response immune cells to mobilise the body's large-scale defences in case anything does get through.

► These are big demands on a tissue and we want to understand how nature has evolved a system to cope with all these challenges at once. Failure of any of these processes has consequences, ranging from mild irritation to life-threatening skin disease, so that skin biology is of great interest not only to medical science, but also to many pharmaceutical and consumer industries. Because skin is on

the outside of our body, skin diseases can be seen early (especially important in cancer), and disease progression and response to treatment can be monitored much more closely than is possible for internal tissues.

► And when skin cells become irreparably damaged, by mechanical, chemical or UV irradiation assaults, each cell is disposable and quickly replaceable. The whole epidermis of the skin is rapidly turning over, with new cells forming at the bottom and pushing out the old cells from the top layer. This constant turnover and frequent cell division in the outer layer of our skin (epidermis) make it one of the most proliferative tissues, and the most common site of cancer in our bodies.

► Fortunately most skin cancers are spotted and removed when they are still small, and thus in skin we can study very early stages of cancer formation. Skin is always new, and skin has many exciting new things to teach us.

Find out more about IMB at www.imb.a-star.edu.sg

Our group leaders come from very diverse fields, building up reputations in other research areas and now applying their unique skills and insights to understanding skin biology.





Dr Etienne Wang

Registrar

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I chose the specialty of Dermatology because it combined medical reasoning with surgical skills. As I progressed through the Dermatology Seamless Specialist Training Programme, I realised that there was a third discipline that permeated not only dermatology but also most of modern medicine – research.

I was first exposed to research in my third year of medical school, in Oxford University. After two years of pre-clinical studies, students were required to spend a year doing in-depth research and catch up with the basic science literature in a few chosen areas of medicine. This culminated in a thesis which

required several months of wet lab work. At that time, I found the whole process tedious and a detraction from my clinical pursuits.

This experience benefited me when I started my Dermatology residency, which had an emphasis on teaching basic science concepts. The lectures on cytokines, signalling pathways and advanced genetics came hard and fast, but thanks to my experience in Oxford, I managed to get a grasp of most of the concepts. But this theoretical knowledge from lectures and books were abstract and served no practical application.

Throughout my residency, I completed and published several projects that explored the clinical aspects of patient care. Among them, I have looked at treatments both medical and surgical, clinic systems and even behavioural surveys of doctors and patients. While these projects inform us on our current practice and may improve diagnosis and service for our patients, they do not contribute to scientific progress, which might lead to new and novel therapies. I have watched from afar the burgeoning research for diseases like psoriasis, which have ushered in the use of biological therapies, and have felt that there is so much more we can do to find novel therapies for other dermatological conditions.

To discover such new therapies, it is imperative that we understand the pathogenesis of the diseases at the most basic molecular levels. With the human genome deciphered, we need to master the tools that will help us understand how it contributes to disease, and how the complex genetic systems within the cell interact to produce disease. An excellent example is the recent genomic

My goal is to be a clinician who is able to think like a scientist, so that I may ask the right questions and conduct the most meaningful research that will benefit our patients.

analyses of Caucasian patients with alopecia areata, a potentially disfiguring autoimmune form of hair loss. This has led to translational work such as early trials of biological and small-molecule treatments for recalcitrant and extensive disease. Are the same genes similarly implicated in our Asian population? What about other forms of alopecia?

My chosen sub-specialty is in hair diseases. I chose to focus on this area of dermatology because of its mystery and lack of effective and satisfying treatments. I am currently enrolled in a PhD programme in Columbia University, where I hope to acquire the tools and insight to conduct research on the hair follicle.

My goal is to be a clinician who is able to think like a scientist, so that I may ask the right questions and conduct the most meaningful research that will benefit our patients. With this combination, perhaps the understanding and the treatment options for the various forms of alopecia in our patients can be expanded from its current state.

Research & the clinician - STRIKING A BALANCE





Dr Gan Yiping, Emily

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Pushing the frontiers of dermatological research

With the National Skin Centre as a key driving force in advancing dermatological research in Singapore and the growing interest in this field, it is immensely exciting to be actively involved in studies of the skin. My research mentor once told me, “Reach for the skies and always continue trying, no pain no gain”. Armed with that motivation and encouragement, as a young trainee in Dermatology, I have grasped many opportunities to gain a breadth of experience in several subspecialties of dermatological research.

From projects in common skin diseases like acne vulgaris and atopic dermatitis, to less common conditions such as vitiligo and melasma and to even rarer conditions like cutaneous metastases, lymphomatoid papulosis and livedo vasculopathy, my research profile has so far spanned a wide range of fields of interest within dermatology. With that invaluable experience I have gained and for which I have to thank all my supervisors, I have now decided to carve out my niche of interest in pigment research.

Firstly, diseases of both hyper- and hypopigmentation intrigue me. Objective, reproducible and standardized tools are needed to accurately diagnose, grade and monitor patients with different types of hyperpigmentary disorders, especially for common conditions such as melasma. These algorithms will be useful in assessing disease severity and treatment response more accurately. Besides developing and validating diagnostic tools, I also hope that our collaboration with the various research institutes in Singapore, such as A*STAR or Nanyang Technological University, can result in employment of the latest innovative technologies to create efficient and targeted drug delivery systems against melanocytes.

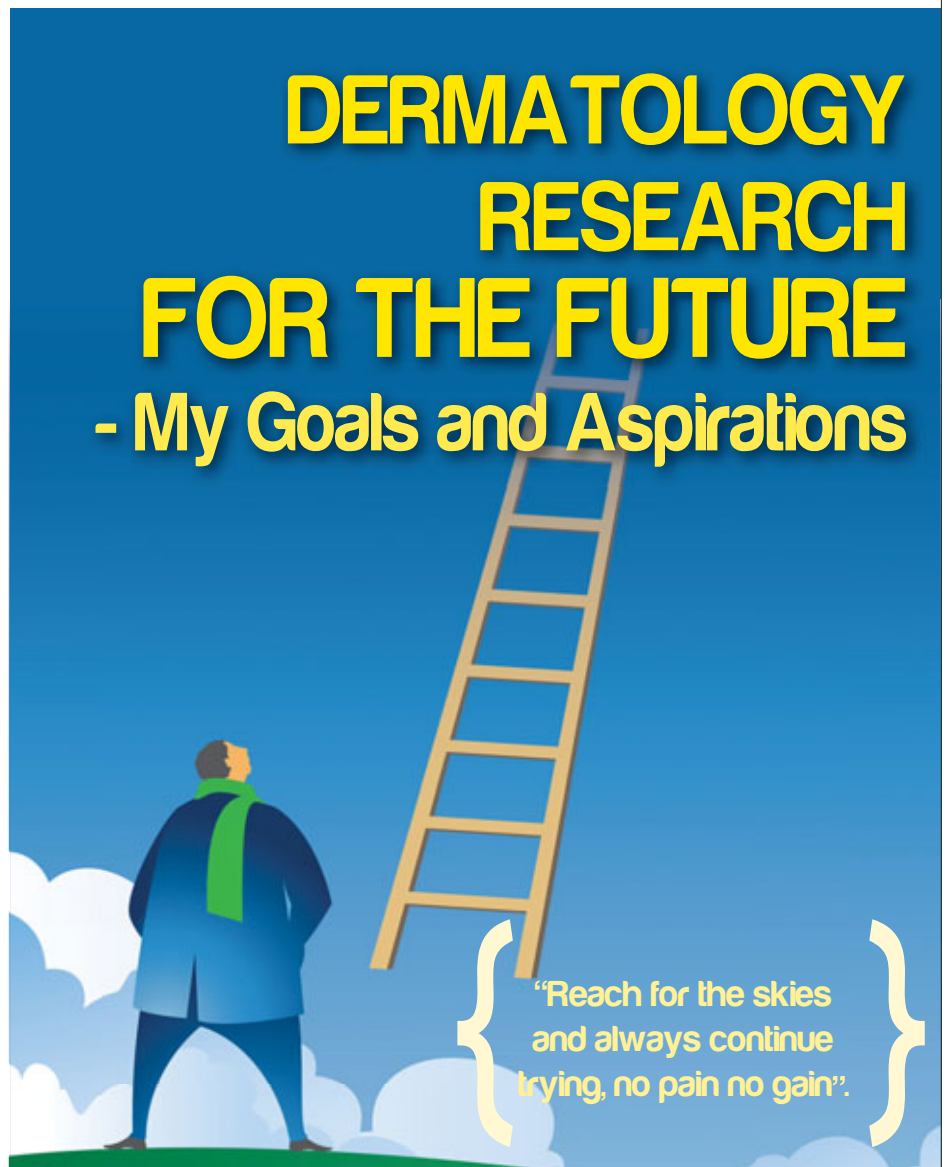
At the other end of the pigment spectrum, there is vitiligo, which affects 0.5-1

per cent of the population and has significant psychological impact on affected individuals. As such, the development of effective and durable therapies is satisfying for both the clinician and the patient. Noncultured cellular grafting is now an established method for vitiligo repigmentation. However, the exact mechanisms of repigmentation still remain unknown and I feel that in-depth research into this technique, down to the molecular level, can potentially allow us to understand and further refine the procedure, to benefit our patients.

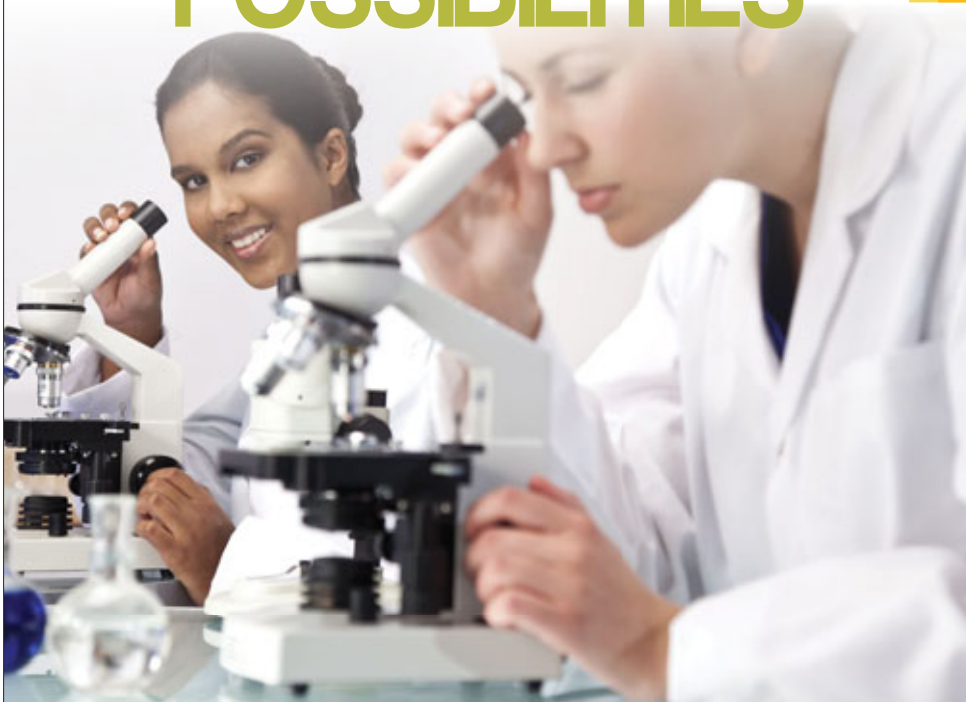
Besides pigment research, I think eczema research is also on the forefront. Atopic dermatitis is an extremely common chronic inflammatory skin condition, with a current abundance of bench-to-bedside studies and clinical research trials. There is a vast array of research opportunities in this field, ranging from allergies, disease pathogenesis, genetics and clinical immunology to therapeutics. Just as how biological therapy has kicked off in the management of psoriasis, I believe that a new era of biologic therapeutics may commence for atopic dermatitis. Adaptive

immunotherapy strategies such as allergen-specific immunotherapy towards allergen-specific T and B cells and biologics targeting the adaptive immune system, including the Th2, Th17 and Th22 pathways, increased IgE levels and the balance between the Th1 and Th2 cytokine response, hold promise for the future. I am currently involved in a project analyzing the differential regulation of microRNAs in atopic dermatitis, which will hopefully increase our understanding of the disease and may have therapeutic potential if modulators of microRNA activity can be developed for skin delivery. Therefore, I think that this is indeed an exciting field to venture into, as we seek to move forward with higher quality dermatological and skin immunology/allergy research.

In conclusion, I am looking forward to working with fellow colleagues and collaborators, in pushing the frontiers of dermatological research together and I sincerely hope that we will be part of that revolutionary wave which can bring the results on the bench closer to the bedside and to the clinic.



IN THE BEGINNER'S MIND THERE ARE MANY POSSIBILITIES



Dr. Amelie Clementine Seghers

Prior to joining Singapore, Amélie Seghers was a Clinical Research Fellow at the Department of Oncology, University Hospital Brussels, Belgium where she was involved in several melanoma trials. She was also a Clinical Fellow at the St. John's Institute of Dermatology, London from 2010 to 2011, where she worked in the area of paediatric dermatology and genodermatoses. She received her basic medical degree at the University of Leuven, Belgium in 2008 and a Masters in Clinical Dermatology from King's College, London in 2010.

As a clinician, I think research is about learning to ask the right questions on behalf of patients. About using scientific methods to shine a light on our practice and how it can and should change.

➔ It was my experience in Belgium with BRAF-inhibitors for metastatic melanoma that inspired me to pursue dermatology research. BRAF-inhibitors are the perfect example of "translating" molecular knowledge about specific cancer cells into an effective, targeted therapy. However, inspiring research is not always about designing the next cancer drug and useful discoveries do not always come from the giant industrial laboratories of the "big" pharmaceutical industry.

➔ Since moving to Singapore I have taken the opportunity to become involved with exciting dermatological research in a variety of rapidly developing areas. At the National Skin Centre, studies evaluating non-cultured autologous cellular grafting for non-healing wounds are breaking new ground. Being involved with the enthusiastic teams behind these new developments has been exciting and inspiring.

➔ Refining and defining pathology is sometimes just as valuable as experimenting with treatment. My work this year defining atopic dirty neck (a well recognized, but poorly understood clinical feature of atopic dermatitis) reminds me that modern medicine started with good clinical descriptions. Dermatologists are famous (and sometimes teased) for their obsession with taxonomy, but in today's world of rapid whole genome sequencing, good phenotyping may well be the key to unlocking the world of personalised medicine.

➔ Finally, I am lucky to be involved in two collaborative projects with Florent Ginhoux's team at A*STAR. One aims to provide novel insights in the composition of antigen-presenting cell subsets in common inflammatory skin diseases such as atopic dermatitis, psoriasis and lichen planus. Using a novel flow cytometric immunoassay our group aims to quantify and characterize APCs with diagnostic, prognostic and therapeutic implications. A similar pilot study has been initiated to compare subtypes of antigen-presenting cells in young, aged and photo-aged skin. A better understanding of

the immunological changes in ageing skin will offer us insights into how our immune systems ages as a whole and perhaps, teach us one day how to protect it from degeneration.

➔ To be able to collaborate with clinicians, basic scientists, biostatisticians, bioengineers and pharmaceutical companies, has made research in Singapore a unique experience for me. Modern medicine is established as multidisciplinary but science now demands that it must also be multinational and multicultural. For me the research in Singapore meets these demands and surpasses them, offering the ideal environment for 21st century skin research.

Preventing the progression of AGE-RELATED MACULAR DEGENERATION



Dr Nakul Saxena

Research Analyst

Health Services & Outcomes Research
National Healthcare Group

Age-related macular degeneration (AMD) is one of the leading causes of blindness in the elderly populations around the world.

The stages of AMD are categorised as (i) early, when visual symptoms are inconspicuous; (ii) intermediate, where vision deterioration is beginning; and (iii) late, in which severe loss of vision is usual. Late stage AMD, also known as wet AMD, is a cause for poor visual function, anxiety, depression, falls, and impaired activities of daily living.

➔ A large randomised controlled clinical trial conducted by the Age Related Eye Disease Study (AREDS) Research Group showed that provision of high dose anti-oxidant vitamins and zinc (hereafter known as AREDS formulation) to certain AMD patients (categories 3 or 4) was clinically effective in preventing progression to wet

AMD. A recent report on the long-term follow up of the patients in the AREDS clinical trial also showed a decreased risk of developing wet AMD following long-term use of AREDS formulation. Further, studies have also shown that the AREDS formulation is cost effective in preventing the progression to late-stage AMD. However, both studies were conducted in Caucasian populations.

➔ Singapore has a rapidly ageing population with over 9 per cent of the resident population being aged 65 years or above in 2012. By 2030, it is estimated that one in five resident Singaporeans will be aged 65 years or above. As a result of this rapid ageing, the burden of ocular morbidity and visual disability due to age-related eye disorders in Singapore is set to increase.

➔ As a young researcher at the Health Services & Outcomes Research (HSOR) unit, the first study I was involved in aimed to determine if providing anti-oxidant vitamins and zinc in high doses to categories 3 or 4 AMD patients aged 40-79 years from Singapore is cost effective in preventing progression to wet AMD. Our study showed that prescribing high dose anti-oxidant vitamins and zinc to AMD patients was extremely cost effective in preventing progression to wet AMD especially if the associated costs for the approved treatment for wet AMD (ranibizumab and aflibercept – anti VEGF drugs) were taken into consideration. These findings have implications for intermediate AMD screening, treatment and healthcare planning in Singapore.

➔ I joined the unit as a Research Analyst after completing my doctoral studies at the School of Public Health, National University of Singapore (NUS). As a student at NUS, I had the good fortune of working with two fantastic researchers and mentors, Dr Mikael Hartman and Dr Helena Verkooijen. Epidemiology, my core subject at NUS, was new to me and I spent a lot of my initial time at NUS understanding concepts and learning new statistical terminology and analysis software.

➔ Moving from clinical epidemiology-based work at NUS to health services research at NHG was challenging, with a steep learning curve. I am thankful to my seniors, colleagues and collaborators for their continued guidance. I still have a long way to go before I am well-versed with the various concepts of health economics and health services research, and this study has helped me understand the nuances and intricacies involved in such research.

Late stage AMD, also known as wet AMD, is a cause for poor visual function, anxiety, depression, falls, and impaired activities of daily living.

CARDIO-METABOLIC CONDITIONS in Patients with Schizophrenia

High prevalence of cardio-metabolic risk factors such as smoking, obesity, hypertension, hyperglycemia and hyperlipidemia in schizophrenic patients.



About Ms Milawaty Nurjono

Ms Milawaty Nurjono graduated with a science degree with honours from the University of Melbourne and is currently a Senior Research Officer at the IMH Research Division. She spent the early days of her research endeavors in neurodegenerative disorders research and her research focus shifted to mental health research since she joined IMH in 2010. She works closely with Dr Jimmy Lee and has recently initiated a new study to examine the impact of obesity in patients with schizophrenia.

Throughout her employment at IMH, Ms Nurjono has presented research findings in local and international conferences and published widely in international journals. She has also received the Best Poster Award at 2012's Singapore Health and Biomedical Congress, conditional award for the NMRC fellowship and her research findings has recently been referenced on the local newspaper.

As part of her continual career development, she currently enrolled in her last semester of Master of Public Health (MPH) at the National University of Singapore (NUS). Building on her experiences and expertise, she hopes this degree will enable her to bridge the gap between research and delivery of evidence based efforts to improve the care of individuals with mental health problems.

Schizophrenia is associated with increased risks of metabolic abnormalities such as obesity, diabetes, hypertension, hyperlipidemia and metabolic syndrome. This elevated risk could be due to genetic vulnerability, exposure to antipsychotics, sedentary lifestyles and poor dietary habits. The higher rate of metabolic morbidity among this group of patients is particularly worrying as it results in poorer quality of life and shorter life expectancy from premature cardiovascular related mortality.

To improve the care of patients and reduce the burden and mortality as a result of these cardio-metabolic conditions, Dr Jimmy Lee and his team at the Institute of Mental Health embarked on a series of studies to better understand such conditions among patients with schizophrenia.

Findings of their studies

We found that patients with schizophrenia seeking treatment at IMH have a high prevalence of cardio-metabolic risk factors such as smoking, obesity, hypertension, hyperglycemia and hyperlipidemia. The prevalence of metabolic syndrome was 46 per cent - almost three-fold higher compared to the community (Lee, Nurjono et al. 2012).

Metabolic syndrome is a constellation of medical conditions which increases an individual's risk of developing diabetes and cardiovascular disease. We found that metabolic syndrome in our patients with schizophrenia was associated with increased cardiovascular risk (Tay, Nurjono et al. 2013).

These findings highlight the burden of cardio-metabolic conditions among patients with schizophrenia, and that there is an urgency to identify the conditions and their risk factors early so that appropriate interventions can be introduced to maximise health outcomes.

Therefore, we examined the predictive utility of routinely obtained measures in

the clinic to detect metabolic syndrome, and found that a BMI of $\geq 23 \text{ kg/m}^2$ to be an accurate and sensitive screener for among patients with schizophrenia (Nurjono and Lee 2013). Clinicians can use this cut-off as an indicator to screen for metabolic syndrome in patients with schizophrenia.

Future direction

While it is important to identify the cardio-metabolic conditions early, some risk factors such as smoking and obesity are especially challenging to manage. The rate of obesity in schizophrenia was found to be two-fold higher than the community (Lee, Seow et al. 2013). Therefore, it is important to study obesity, as it is highly predictive of metabolic abnormalities and potentially modifiable.

Building on our knowledge, and in collaboration with the Saw Swee Hock School of Public Health at NUS, and the nutrition division at Temasek Polytechnic, Ms Milawaty Nurjono and her team are currently engaged in a study to examine the impact of obesity on the quality of life and elucidate the risk factors of obesity in patients with schizophrenia. This is the first study of its kind in Singapore conducted to better understand the issue of obesity in patients with schizophrenia. The findings from this study will inform us of knowledge to guide interventions to reduce the adverse impacts of obesity.



Ms Milawaty taking the height and weight for her research participant

Publications:

Nurjono M, Lee J. Waist Circumference is a Potential Indicator of Metabolic Syndrome in Singaporean Chinese. *Ann Acad Med Singapore* 2013;42:241-5

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Nurjono M, Lee J. Predictive Utility of Blood Pressure, Waist Circumference and Body Mass Index (BMI) for Metabolic Syndrome in Patients with Schizophrenia in Singapore. *Early Intervention in Psychiatry* 2013; 7(2): 205-209

Lee J, Nurjono M, Wong A, Salim A. Prevalence of metabolic syndrome among patients with schizophrenia in Singapore. *Ann Acad Med Singapore* 2012; 41:457-62

Presentation:

Psychiatry Track, 3rd Singapore Health and Biomedical Congress, Singapore 2012: Schizophrenia and metabolic disorders.

References:

Lee, J., M. Nurjono, A. Wong and A. Salim (2012). "Prevalence of metabolic syndrome among patients with schizophrenia in Singapore." *Annals Academy Medical of Singapore* 41(10): 457-462.

Lee, J., C. Seow, S. Wong, A. Govindasamy, E. Quek, A. Pang, A. Su and H. Chua (2013). "Annual Review Clinic: A Chronic Disease Management of Care For Schizophrenia And Delusional Disorder in Singapore." *ASEAN Journal of Psychiatry* 14(1).

Nurjono, M. and J. Lee (2013). "Predictive utility of blood pressure, waist circumference and body mass index for metabolic syndrome in patients with schizophrenia in Singapore." *Early Intervention in Psychiatry* 7(2): 205-209.

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Skin Research Institute of Singapore (SRIS)

Ms Ong Siok Ming

Senior Officer
Strategic Partnerships
Biomedical Research Council (BMRC)
Agency for Science, Technology and Research (A*STAR)

The formation of the Skin Research Institute of Singapore (SRIS) was recently announced to foster and conduct high impact, inter-disciplinary skin research designed to translate into improved health outcomes and quality of life.



"Skin research has always been relatively underfunded, both locally as well as globally; as such, many patients suffering from skin disorders often suffer with limited cures in sight. With the setting up of Skin Research Institute of Singapore (SRIS), we hope to bring about better care for our patients through research. Our strength lies in our multidisciplinary approach, especially with the bioengineering and computational science component from Nanyang Technological University (NTU). The first activity since the setting up of SRIS was the Skin Thematic Grant Workshop we had in October 2013. The workshop brought together more than 200 scientists

and clinicians from the 3 parties looking at our strengths, knowledge gaps and the way ahead for common skin disorders. From the discussions generated and the projects proposed to address the gaps identified, I am certain that skin research is definitely taking off in a big way in Singapore and I am glad to be a part of this exciting development."

A/Prof Steven Thng

Head Pigment Clinic
Senior Consultant
National Skin Centre

Adj Associate Professor
Nanyang Technological University

Your skin is the largest organ of your body, separating the inside of your body from the outside world, with a key role in protecting you from bacteria and viruses that can cause infections. Unsurprisingly, skin disorders are extremely prevalent, afflicting one in three people worldwide. Many skin problems, such as acne, also affect your appearance and can be a source of emotional distress.

The formation of the Skin Research Institute of Singapore (SRIS) was recently announced to foster and conduct high impact, inter-disciplinary skin research designed to translate into improved health outcomes and quality of life. This is timely as research has shown in recent years that there are

significant differences between skin diseases in Asian and Western populations and how they respond to treatment. Hence, there is a clear need to step up skin research in Singapore to be able develop novel treatments and products for our population.

➔ With a commitment of close to S\$100million dollars by the Agency for Science Technology and Research (A*STAR), National Skin Centre (NSC) and Nanyang Technological University (NTU), the SRIS seeks to be a global centre of excellence for inter-disciplinary skin research and innovation. To help shape the SRIS, a delegation comprising representatives from the partners had visited various renowned skin disease research centers across the United States to better understand how these were structured, managed and funded. All the clinicians and scientists the delegation met were extremely positive about the vision for the SRIS and encouraged Singapore to develop something completely unique and carve out a niche for itself. The trip also provided the opportunity to discuss key trends that could potentially influence the future of skin research and dermatology – applying personal genomics in basic and translational skin research and applying bio-engineering to skin research – that SRIS could look at when developing its programmes.

➔ It was clear that SRIS' mission to conduct research that could be translated into products not only for better treatments but also for skin health and wellness was unique. The skin disease research centres visited had grown out solely from dermatology with strong disease focus. Apart from being situated in the heart of Asia, SRIS' differentiating factors also lay in the integration of the strengths of its founding members. Each was a world-class leader in its respective fields of basic, clinical and bioengineering research, and collectively, the partners would bring together their expertise in these fields to provide a holistic approach to translational research on skin.

➔ In the near future, SRIS will also develop a clinical trials unit to serve as the interface to develop and test new drugs, devices/diagnostic tools and technology. The unit will also build up a database of different skin phenotypes and healthy skin of different Asian ethnic groups, for genetic and epidemiologic studies and consumer product testing. Most importantly, SRIS has a strong focus on nurturing talent in skin research and is currently building programmes to provide clinicians, scientists and engineers the opportunities to develop expertise in skin research.

➔ SRIS has launched its inaugural joint skin research grant, the A*STAR-NHG-NTU Skin Research Grant (SRG) in October 2013. The main objective of the grant is to promote sharing of technological research that will be applicable to understanding of skin biology as well as ideas and solutions to clinical problems. The aim of the grant is to open new



frontiers in skin sciences research to innovate new technologies and products for better skin health. Through this grant, new knowledge and outcomes will also be generated from the collaborative projects and impact the diagnosis and management of skin diseases affecting the Asian population.

➔ To facilitate collaborations for the A*STAR-NHG-NTU SRG, a joint skin research workshop was also organised on 19 October 2013 at National Skin Centre.

Workshop speakers:

Speaker	Topic
Dr Tey Hong Liang (NSC)	Overview, Neurodermatology
Prof Birgit Lane (IMB)	Lessons from Genetic Skin Diseases
Asst Prof Andrew Tan (SBS)	Development of a Multi-Modal Treatment for Diabetic Wounds: Drugs, Proteins and Scaffold
Dr Joyce Lee SS (NSC)	Dermatopathology
Asst Prof Florent Ginhoux (SIgn)	Cutaneous Immune System in Health and Disease
Prof Ser Wee (EEE)	Skin Imaging Research at NTU
Assoc Prof Steven Thng TG (NSC)	Pigmentary Disorders
Assoc Prof Walter Hunziker (IMCB)	Zonula Occludens Tight Junction Proteins in Epidermis: So Much More Than Simple Barrier Components
Prof Artur Schmidtchen (LKCMed)	Basic and Translational Studies of Innate Immunity
Dr Lim Yen Loo (NSC)	Immunodermatology, Drug Eruptions
Dr Oliver Dreesen (IMB)	Nuclear Lamina Remodeling in Aging Human Skin
Prof David Becker (LKCMed)	Connexins as a Novel Target in Wound Healing
Dr Hazel Oon HB (NSC)	Psoriasis, Photodermatology
Asst Prof Prabha Sampath (IMB)	A Defective Switch Impedes Healing of Chronic Wounds
Asst Prof Ng Kee Woei (MSE)	Skin Engineering: Regeneration, Testing and Delivery of drugs
Assoc Prof Paul Bigliardi (IMB)	CRUSAR: A New Translational Platform to Link Basic and Clinical Research
Prof Phil Ingham (LKCMed)	Unravelling the Hedgehog Pathway

Making a difference

in allergy testing:

PhD in acrylate allergy



Recommendations from his research for his PhD degree are adopted by patch test centres worldwide.

Dr Anthony Goon, a Senior Consultant dermatologist in National Skin Centre (NSC), obtained his Doctor of Philosophy (PhD) in Medical Science on the subject of Clinical Medicine with a focus on Dermatology from Lund University, Sweden. He successfully defended his thesis, 'Contact Allergy to Acrylates', in public in Malmö, Sweden on 11 November 2010. Dr Goon worked towards this degree on a part-time basis for more than four-and-a-half years while working full-time in NSC.

When he first went on the second part of his HMDP fellowship for two months in Malmö, Sweden in 2002, little did he expect that this would lead him to be the first dermatologist working in Singapore to receive a PhD degree.

It was an arduous process requiring the publication in peer-reviewed journals of five related articles on the topic, attendance in several compulsory courses in Lund University, a mid-course examination, and multiple work attachments in the laboratory of the Department of Occupational and Environmental Dermatology, Malmö University Hospital, Sweden; requiring at least seven trips to Sweden, sometimes for as long as three weeks.

This ultimately ended with the publication of a thesis consolidating the work from all the articles, with the five original articles appended at the end of the thesis; and a public defence of the final thesis. In Nordic countries, all PhD theses are defended in public, where, in addition to the designated

main opponent and examiners, any member of the public may attend and question the PhD candidate.

Patch testing for allergy to acrylates and methacrylates

The research was aimed to further understand contact allergy to acrylates and methacrylates, and to advance the practice of patch testing with these allergens. Acrylates and methacrylates are polymers made from esters of acrylic or methacrylic acid which have a variety of useful properties that have led to increasing and widespread use worldwide. They are used in the manufacture of Perspex (polymethyl methacrylate or PMMA); water absorbent materials e.g. in diapers; adhesives – orthopaedic, dental, industrial; paints, tattoo ink, UV-cured inks; artificial nails; laser discs & DVDs; musical instruments e.g. guitars, drums; and optical fibers.

In the first and second studies, common allergens among the acrylates / methacrylates in various situations were identified; e.g. among dental workers, dental patients, patients who had contact with acrylic artificial nails and patients with occupational exposure to acrylates / methacrylates. These were retrospective studies of patients seen in the clinic in Malmö, Sweden. Additionally, combinations of patch test allergens which would be most likely to detect all the patients in those populations were determined.

From the first two studies, five allergens which had the highest pick-up rate and were most representative of the various exposure scenarios, were selected and tested on the entire patch tested population in Malmö and Singapore for at least two years. From this data, the prevalence of acrylate / methacrylate allergy in these populations was found to be 1.4 per cent in Malmö and 1.0 per cent in Singapore.

The final two articles were lab-based studies, where analysis with high performance liquid chromatography (HPLC), showed that patch test preparations of the more volatile allergens obtained from various dermatology departments worldwide had less than 80 per cent of the concentration stated on the labels. Allergen concentration in patch test preparations was also found to decrease over time – most rapidly in syringes stored at room temperature, followed by those stored in the refrigerator and the freezer. Furthermore, the concentration of allergens in IQ chambers decreased at a more rapid rate than in syringes.

Recommendations put in PRACTICE WORLDWIDE

These findings had major repercussions in the practice of patch testing in many centres, where common practice had been to preload patch test preparations into the test chambers the day before testing, and especially so in centres which practised allergen banking, where patch test preparations were mounted onto test chambers from a patch testing dermatology centre and mailed to doctors in the patients' home towns for patch testing.

The studies had proven that for the more volatile allergens, the actual allergen concentration in the chambers was very much decreased by the time the chambers would have been applied on the patients' backs, leading to increased incidence of false negative patch tests in these patients. Since the publication of the thesis, many centres have stopped preloading the more volatile allergens and the practice of allergen banking has been modified with the introduction of newly-designed airtight chambers which minimized loss of allergen concentration during transport.

The PhD journey had been a very fulfilling one for Dr Goon, as the findings of his studies have made a difference in the practice of the subspecialty of contact dermatitis, with the recommendations being adopted by patch test centres worldwide. Furthermore, the methods used in the published articles have also been adopted by other research groups in Europe and North America, who have either followed or modified these methods for their own studies in related fields.

Learning from the experts at the Centre of Studies in Family Medicine at the University of Western Ontario.

Dr Lee Eng Sing

Family Physician, Consultant
Head, Hougang Polyclinic
Deputy Head, Clinical Research Unit,
NHG Polyclinics

The Centre of Studies in Family Medicine (CSFM) is part of the Family Medicine Division in the University of Western Ontario (UWO). It is in the city of London in the province of Ontario. When I arrived in March 2013, London was still covered in snow. It was not a particularly cold winter, but it was one of the longest winters they had in a century. The temperature continued to hover around 0° C till the third week of April. But it was a wonderful harvesting year for the maple syrup farmers as this temperature is optimal for the sap from the maple trees to ooze out.

Prof Ian McWhinney (11 Oct 1926 - 28 Sep 2012) also known as the “Father of Family Medicine” was the person who started the CSFM in the 1970s. In 1989, Prof McWhinney published the first edition of Textbook of Family Medicine. It is now in its third edition.

When Prof McWhinney was the Chair of the Family Medicine Division of UWO, he and his colleagues created the Master of Clinical Science Program (Family Medicine) in 1977. The Master’s programme emphasises on patient-centred care, teaching and learning, as well as research. Many of the pioneer teachers and graduates of the program are still teaching the course. The course helps to produce a constant pool of family physicians for the faculty as well as researchers for CSFM. During my visit, I met with many of the prominent researchers and faculty members of the CSFM and Family Medicine Department. I shadowed Dr Wetmore (Chair of the Family Medicine Division) and Dr Freeman (Ex-Chair and second author of the 2nd & 3rd edition of the Textbook of Family Medicine) in their respective family medical centres to have a glimpse of what

family medicine is like over there. I was also invited to be the international observer for the 10th Transdisciplinary Understanding and Teaching Of Research in Primary Health Care (TUTOR-PHC) programme that is held annually.

Enhancing family medicine and primary health care

The CSFM’s over-arching goal is to enhance family medicine and primary health care through research strategically designed to have a positive impact on the health system and on patients’ health and well-being. The research and development process of the CSFM encompasses five steps:

- Pursue curiosity-driven research
- Develop new research methods
- Foster research partnerships
- Use diverse research methodologies
- Put research into practice

The new Director of CSFM, Dr Merrick Zwarenstein, is a family physician himself but is currently doing research-related activities full-time. The CSFM is unique in that it relies heavily on scholars from epidemiology, social science, psychology, and public health. As rightly described by one of the researchers, these scientists are agnostic. The methodology of research are the same, these scholars can adapt and use their skills to contribute to any discipline. As such, the CSFM was started when Prof McWhinney engaged them to help and guide the family physicians in their research work as the doctors are usually so busy with teaching and clinical care. I saw a few graduate students of epidemiology (doing their PhD) working closely on their own research projects with the family physicians when I was at the Centre.

The manager of the CSFM is a social scientist herself who also teaches in the University. She runs the Centre by taking care of the administrative work and human resource issues (the Centre has close to 30 staff). In addition, she organises the research incubation meetings (bi-weekly to monthly), guides the research facilitators in the Family Medicine faculty as well as the family physicians in the community. She does her own research and publishes her own work as well.

Not many centres can grow to be so independent and large because the research

coordinators will move on. However, the CSFM has been so good with research that it has been getting national grants regularly and these research coordinators stayed and stable careers were carved out for them.

One of the senior research managers I spoke to has been around for 15 years and she started off as a research coordinator. Now, she manages research projects and when one of them is about to complete, she starts planning and looking out for the next grant application. Because of her experience, she also helps to come up with research ideas and questions, drafts grants and manuscripts for Dr Stewart Harris who is a family physician that does a lot of diabetes research with the aboriginal population.

In 2013, the CSFM was successful for three out of four Canadian Institutes of Health Research (CIHR) grant applications. There were only 11 awarded for the year.

How did the CSFM continue to get CIHR grants in an ever-increasing competitive environment?

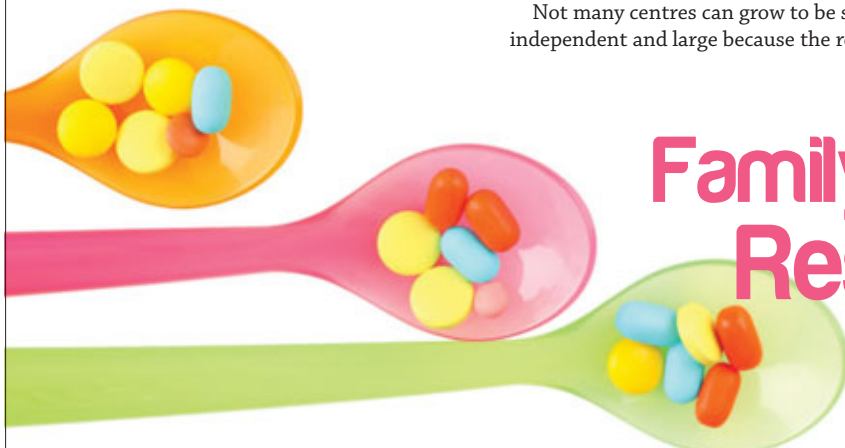
I suspect that the main reason is because they have a team of very experienced researchers who have been with the Centre since its inception. And because the team has been working together for so long in so many different research projects, they have developed into a highly-sophisticated team that continually craft out good research questions backed by robust methodologies and excellent research implementation skills. They are currently working on these research programmes:

- Patient Diabetes Care
- Child Health
- Integrated and Interdisciplinary Care
- Information Technology in Primary Health Care
- Access to Care
- Patient-centred Clinical Method

Carole Bland and her colleagues described the common attributes of excellent research centres in the book entitled “The Research-Productive Department” (2005). The CSFM has a lot of these attributes that they described – these include faculty recruitment and selection, positive group climate and culture, mentoring, interdisciplinary collaboration, teaching, resources, time, leadership and governance.

The Centre of Studies In Family Medicine is an exemplary Family Research Centre that National Healthcare Group Polyclinics can hopefully learn from and emulate.

Family Medicine Research Centre of Excellence



Peer-led Intervention for Recovery in MENTAL HEALTH PATIENTS



Ms Li Ziqiang is a registered mental health nurse at the Institute of Mental Health (IMH). She was awarded the Health Manpower Development Programme (HMDP) scholarship in 2010 to pursue her PhD in Nursing at the National University of Singapore (NUS). As part of her research portfolio, she embarked on a project titled 'Effectiveness of Peer-led Self-Management Programmes for Adults with Schizophrenia and other Psychotic Disorders: A Systematic Review'. This research won the Best Poster Award (Gold) at the Singapore Health and Biomedical Congress (SHBC) in September 2012.

A trained mental health nurse, Ms Li has been caring for patients with schizophrenia who are struggling in their attempts to come to terms with the destructive effects of their illness, as well as learning on how to cope with their conditions on a social and psychological level. Thus far, evidence from continuing research on schizophrenia has confirmed that this mental illness not only has a poor prognosis, but a progressive deterioration that demands long-term treatment. These, along with recurring hospitalization, have a detrimental effect on the patients' confidence – and hence, contribute to their sense of despair and hopelessness in seeking full or even partial recovery.

Not one to sit back and accept facts as they are, Ms Li is resolved to overcome the ripple consequences of schizophrenia – if not, to offer an alternative methodology of treatment altogether. By reading up related literature on the subject, specifically about the recovery movement in other countries, she discovers that 'recovery' should not be translated to the patient being 'symptom-free'.

The definition of 'recovery' encompasses all factors and elements associated with the personal goals of individuals with mental illness. Such renewed definition subverts the conventional focus of recovery – the aim is now to assist the schizophrenia patients in re-building their skills and re-assessing their value, attitude and roles in life. Working closely with both Professor Sally Chan Wai-Chi and Dr Piyannes Yobas from Alice Lee Centre for Nursing Studies, NUS, she has successfully completed a systematic review on the effectiveness of peer-to-peer intervention for people with schizophrenia.

The pursuit of one research project eventually leads to the development of another. The evidence gained from the systematic review of the peer-to-peer intervention programme leads to the design of a randomised controlled trial that examines the effectiveness of a peer-led self-management program on empowerment, perceived recovery, medication adherence, social support and reduced symptom severity in schizophrenia patients. This proposed trial has not only received grant funding from the Ministry of Health Nursing Research Committee, but its poster has also won the Best Poster Award (First Place) at the 1st NUS-NUH International Nursing Conference.



Ziqiang facilitating peer-led self-management program

Peer-led self-management programme



In March 2012, the peer-led self-management programme was successfully launched in three mental health step-down care facilities under Singapore Anglican Community Services. Since then, positive feedback has been received from patients who are in the program. This has inspired Ziqiang further – she goes on to collaborate with Dr Xie Huiting, a Senior Staff Nurse at IMH, on another research titled 'A Study to examine the Uses of Personal Strength for Mental Health Recovery in Adults with Serious Mental Illness' in the year 2013.

This chain of ongoing researches clearly reflects Ms Li's determined desire to provide a ray of light in the otherwise darkened abyss of her patients' lives. She hopes, eventually, that the results gained from these researches would be able to provide a glimpse of hope in the road to recovery not only to patients in the local mental care domain, but internationally as well.

**Write-up of Li Ziqiang prepared by:
Dr Xie Huiting, SSN, IMH Nursing Training**



Discharge Planning Helps Psychiatric Patients Adjust To Community

Comprehensive rehabilitation programme and structured discharge plan promotes reintegration into society and reduces readmissions.

Mr Md Saifudin Maarof

Senior Case Manager
Inpatient Psychiatric Rehab Services
and Case Management Unit
Institute of Mental Health

Persons with psychiatric conditions experience difficulties in adjusting to community living upon discharge because of the debilitating effects of the disease on their mental faculties. Therefore it is vital to utilize discharge planning tools on the rehabilitation unit, which can promote and enhance the patient's ability to reintegrate into the community living, thus reducing their chances of illness relapses and readmissions.

Medicare* definition of discharge planning: A process used to decide what a patient needs for a smooth move from one level of care to another.

IMH rehabilitation programme

Discharge planning is a process used to decide what a patient needs for a smooth transition from one level of care to another.

IMH's inpatient rehabilitation programme is designed to help patients meet their individual needs, recover from their mental illnesses and equip them with the life skills they need to reintegrate into the community. Patients go through a structured daily programme each week. Topics covered include:

- Basic Conversation Skills
- Friendship-building
- Management of Emotions
- Job Preparation

The Discharge Planning tools used in the inpatient rehabilitation programme are:

- University of California Los Angeles Core Modules: Symptoms Management
- Medication Management and Basic Communication Skills.
- Clinical Pathway: A tool that describes the MDT care plan and interventions over three phases.
- Family Sessions
- Post-Discharge Telephonic Support by a case manager.
- Use of IT for monitoring

Using the Rehabilitation Programme and the discharge planning tools, a study was



Case Management Unit (from left) Principal Case Manager Rosemary Tan, Senior Case Manager Md Saifudin Maarof, Head of General Psychiatry Dr Alex Su, Senior Case Manager Raymond Vamadevan and Head of Case Management Unit, Margaret Hendriks



Rehabilitation Team (front row) from left SN Elizabeth, MSW Leaticia Elise, Senior Case Manager Md Saifudin Bin Maarof, Senior Consultant Dr Eu Pui Wai Led by Dr Eu Pui Wai, Senior Consultant, Md Saifudin Bin Maarof and Dr Gao Hui. (Back row) Occupational Therapist Desiree Ng and SN Khairiyah

Planning starts on admission

Discharge planning should commence early at admission. It requires a multi-disciplinary approach and involves patient and their family. Necessary information of the community services providing skills training such as medication management, symptoms management, job preparation, community living and support for the patient and family is crucial.

Mr Md Saifudin Maarof is a nurse by training with a graduate diploma in psychiatric nursing and advance diploma in case management. He has undergone further training in case management at Jackson Memorial Hospital, Miami Florida, USA for two months in 2003. He is currently an Executive Committee member of the Case Management Society of Singapore and Club Heal.

conducted at IMH involving 109 patients who underwent and completed the eight week Inpatient Rehabilitation Programme from January 2011 to December 2011. A one-year followup post discharge from the programme was conducted to observe the patients' compliance with appointments, defaults and admission rates.

The results shows that 82 percent of the patients were discharged home and 18 percent to step-down care. Out of 1445 schedules appointments, 90 percent compliance rates was achieved with 74

percent reduction in readmission rates as compared to one year before to one year after attending the rehabilitation programme.

The results of this survey indicate that a comprehensive rehabilitation programme and structured discharge planning helps to promote patients' reintegration into community living, while reducing their readmissions.

This project won the Silver Award at the recent Singapore Health and Biomedical Conference (SHBC 2013), under the Allied Health Award Category.

Rehab Work Flow/Process



Discharge planning tools



IT Support

IPACE, Cdoc, Ipharm

Outcomes
Rates, Hosp
Days Default
Rates

Rehabilitation's Unit's Workflow/Process utilising the discharge planning tools

Bridging the left and right brain

Corpus callosum morphology in first episode and chronic Schizophrenia: A combined MRI and DTI study



About Dr Geoffrey Tan

*Dr Geoffrey Tan is a clinician-scientist resident at the Institute of Mental Health. He was first introduced to research through a project in junior college with Professor Barry Halliwell on mitochondria. He was awarded a scholarship from A*STAR when he submitted this project for the National Science Talent Search. He pursued an MBBS-PhD at Imperial College and University College London, where he discovered his passion for neuroscience and psychiatry. His doctorate at the Wellcome Trust Centre for Neuroimaging at UCL focused on understanding how genetic variation can cause individual differences in the brain, personality and cognition. Opportunities through volunteering on student and mental health helplines and a student psychotherapy scheme helped to fuel an appreciation for the importance and pervasiveness of mental health issues. He is currently interested in ways of using computational methods and modelling in psychiatry and psychosis and hopes to translate neuroscientific discoveries into improvements in patient care and the mental health of the population.*



This project by Dr Geoffrey Tan, a resident at the Institute of Mental Health won the bronze award in the Singapore Clinician Investigator Award (SG-CIA) category, during the recent Singapore Health & Biomedical Congress (SHBC) 2013, Scientific Competition.

About the project

The corpus callosum is the bridge connecting the left and right hemispheres of the brain. It allows integration of information between hemispheres as well as the development of specific functions on one side known as lateralisation. A/Prof Sim Kang and his study team measured corpus callosum size in terms of its volume, cross-sectional area and the integrity of white matter with diffusion imaging. And they found that the corpus callosum gets smaller in patients with chronic schizophrenia.

However, when a patient with psychosis has his first episode, there is no difference in the size of the corpus callosum from healthy controls. This suggests that the corpus callosum abnormalities we observe in schizophrenia reflect a disease process that impacts on the ability of the right and left brain to communicate with each other over time rather than a developmental process that occurs from young.

The finding of corpus callosum abnormalities may also help provide some clues to explain why patients with schizophrenia have fewer differences between the left and right hemispheres of the brain than healthy controls. Identifying this problem with the corpus callosum could help us to develop training programmes that focus on improving these connections or form the basis for cognitive tests to monitor deterioration over time.

The finding of corpus callosum abnormalities may also help provide some clues to explain why patients with schizophrenia have fewer differences between the left and right hemispheres of the brain than healthy controls.

Responsible Conduct of Research

Mentor & Trainee Relationships

We have come to the final instalment of the 8 components of Responsible Conduct of Research. This component is on Mentor & Trainee Relationships. Here is a summary of the previous components:

- Research Misconduct
- Protection of Human Subjects
- Conflicts of Interests & Commitment
- Data Management Practices
- Collaborative Research
- Authorships & Publications
- Peer Review (includes responsibilities of the institutions, peer reviewers and researchers)

Role of a Mentor

As one of the foundations of research, the role of mentors is an integral part of scientific education and training. A mentor is usually a senior researcher who supervises a number of aspiring trainees (future researchers). Apart from providing trainees with the necessary knowledge, teachings and advice, mentors are role models who guide their trainees by example.

One crucial role of a mentor is to assist the trainee in understanding and adhering to the standards of conduct within his / her profession. A good mentor will act with a sense of responsibility and commitment to the future career development of the trainee.



The Mentoring Process

Role of the Institution

Regardless of whether the individual is a formal employee of the institution or an exchange student, the institution should ensure that each research trainee is assigned to an appropriately qualified supervisor. Standards for supervision and mentorship should be adequately established.

Take an active role in helping to train the next generation of researchers.

Role of the Mentor

Adviser, teacher, role model, friend and advocate. The mentor should help trainees develop themselves as capable and independent researchers.

- Be available.
- Listen empathetically.
- Allow for differences (in personalities and opinions).
- Let trainees make decisions.
- Teach by setting examples
- Keep up to date about effective mentoring techniques.

Role of the Trainee

Aspiring research novice (e.g. undergraduate, graduate or post-doctoral students, junior-level professors).

Seek guidance, identify career plans and take an active role in identifying and communicating needs and expectations as a professional-in-training.

The Mentor-Trainee Relationship

The best approach to addressing problems between mentors and trainees is based on understanding existing procedures and guidelines in advance of encountering them. Adequate communication channels between the mentor and the trainee should be established to prevent problems from arising. If external assistance or intervention is required, the trainee should ascertain whether appropriate institutional channels are available for the resolution of such issues. While each situation and individual may be unique, problems may be best dealt with within the department, and subsequently escalated to higher authorities or appropriate department(s) within the institution as the situation demands.

Ms Valerie Wee

Senior Executive
Responsible Conduct of Research (RCR)
National Healthcare Group

Qualité

The program with a mission to ensure and enforce the responsible conduct of research meeting high ethical standards.

The Research Education Unit

The Research Education unit was formalised to provide educational support to researchers

The Research Education (RE) unit is a functional branch of the Office of Human Research Protection Programme (OHRPP), with its organisational designation formalised in May 2013. Fueled by the burgeoning demand for educational initiatives to support new and experienced researchers alike, the formal appointment of the RE unit was a logical development, subsuming under it the RTS and RCR sub-unit functions.

Researchers' Training and Support (RTS)

The role of RTS may be aptly described as the brains behind the brawn. Unlike its more visible counterpart – the Research Training and Development Unit (RTDU) – which organises and fronts training courses for researchers, a substantial portion of RTS' work takes place behind the scenes.

New clinical research coordinators may be familiar with previous Proper Conduct of Research workshops they have attended, while new investigators may recall research techniques imparted during a Research Ethics course. These are courses for which the contents and curriculum were either partially or wholly conceived by RTS, in consultation with relevant stakeholders and / or subject matter experts. In addition, RTS also conducts regular reviews of the contents for the Singapore Guideline for Good Clinical Practice (SGGCP) course – a "rite of passage" training that investigators are strongly encouraged to complete before embarking on their research endeavours.

The Qualite newsletter, embedded within the quarterly NHG Catalyst publication and distributed to NHG and its partner institutions, is another means of outreach utilised by RTS to educate the research community. RTS makes regular contributions to Qualite, exploring various topics of interest to investigators and featuring best practices investigators can adopt to systematically improve the management of their research studies.

Beyond the borders of NHG and on a wider platform, RTS is involved in the organisation of educational events, including Clinical Research Coordinator Society (CRCS) forums and investigator forums that reach out to their respective communities. In response to formal requests, RTS also provides consultation services to new principal investigators seeking to initiate research studies for the first time, as well as conducts research-related training for clinical research units, principal investigators, study coordinators and other stakeholders.

Responsible Conduct of Research (RCR)

Conceptualised in 2010, the RCR sub-unit is the main driver behind the propagation of an ethically responsible culture within the NHG research community. Its aims are noble and synergistic with that of RTS' – that is, to equip researchers with the know-how to maintain the integrity of their research projects, particularly in delicate situations that may challenge personal values. RCR principles ubiquitously pervade all aspects of research conduct, including authorships, management and utilisation of data, managing conflicts of interests, handling misconduct, peer review, mentor and trainee relationships, protection of human subjects, as well as collaborative research.



As part of its efforts to impart knowledge and promote the RCR culture, RCR has launched a manual detailing best practices that institutions can use as a reference to develop their own RCR guidelines and policies. An avenue for the reporting of research misconduct events has also been created, by means of the Research Misconduct Event Report Form for Institutions. Like RTS, RCR also makes regular contributions to the NHG Catalyst newsletter in the form of a discursive column on RCR issues. Another aforementioned collaborative initiative with RTS is the conduct of research-related training for Clinical Research Units and investigators, initiated since July this year.

Interested readers who wish to obtain more information about RCR may visit the following page on the NHG research website: <http://www.research.nhg.com.sg/wps/wcm/connect/romp/nhgromp/hspp/responsibleconductofresearch/responsibleconductofresearch>

Both the NHG RCR manual and the Research Misconduct Event Report Form for Institutions are also available for download at the above link.

Research education is niche yet dynamic, with a scope that is constantly evolving to meet the demands of the research fraternity. This iterative process can only be effective in achieving its educational objectives with the valued inputs of researchers on the receiving end of the training. The results of prudent research education are potentially far-reaching, and will allow researchers to reap benefits associated with higher standards of research quality, greater subject protection and assured data credibility across the community.

Ms Lim Boon Hwee & Ms Valerie Wee

Senior Executives
Research Education (RE) Unit
Office of Human Research Protection Programme (OHRPP)
Research & Development Office
National Healthcare Group

Clinical Research Coordinator Society (CRCS) Forum

The CRCS faculty, in collaboration with the Clinical Research Professional (CRP) committee, successfully ran the Combined CRCS-CRP forum on 23rd August 2013. Held at the CRC auditorium at the National University of Singapore (NUS), the educational forum attracted 200 interested participants from public institutions and private organisations.



A/Prof Sim Kang

Dr Yeo Jing Ping (chairperson, CRP) and Ms Doreen Lim (chairperson, CRCS) delivered the welcome address by introducing their respective committee / faculty members, as well as shared pertinent updates from the CRP and CRCS communities respectively.

Each invited speaker came from a different stakeholder group in the clinical research community – namely a pharmaceutical company, an institutional review board (IRB) and a public institution. They shared useful insights from their experiences on the theme of “Ensuring Quality and Compliance in Your Research Venture”.

Importance of Healthcare Compliance on the Clinical Trial Environment – the Pharma Perspective

~Dr Abdul Luheshi

Vice-President for Healthcare Compliance, Johnson & Johnson~

Dr Abdul Luheshi presented his case on why healthcare compliance was crucial for pharmaceutical companies. While most people understood the need for internal regulation, Dr Luheshi furthered the case for healthcare compliance as a means of value generation for the company. To achieve corporate compliance, the resources for monitoring and audit had to be strongly supported by competent leadership at the top of the hierarchy.

He cited the potential risks that could potentially undermine healthcare compliance in the clinical research framework, from site selection to the hiring of a Contract Research Organisation (CRO) to run studies. Concluding the presentation, he emphasised that good ethics made for good business, hence qualifying the value of healthcare compliance in the pharmaceutical industry.

IRB Reviews and Your Research Protocol

~A/Prof Sim Kang, Chairperson, Domain Specific Review Board (DSRB) Domain A, NHG Research & Development Office~

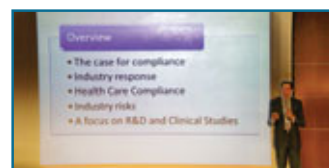
A/Prof Sim Kang expounded on the role of an IRB in research compliance. He first debunked the myths of IRBs being an “ethical police” or a “rubber stamper” for research protocols, and introduced the seven elements constituting the systematic and coherent framework for determining ethical requirements in clinical research. While the material was didactic, A/Prof Sim’s presentation was all but monotonous; the audience interest was buoyed by Jesse Gelsinger’s story, a poignant video clip of the Tuskegee syphilis experiment,



Participants of the Forum



(from left) CRP Founder Ms Angie Sim, CRP Committee members Ms Ally Kim and Ms Katherine Lee, Dr Yeo Jing Ping, Ms Doreen Lim and CRP Committee member Ms Eung Jin Cho



Dr Abdul Luheshi

and A/Prof Sim’s make-believe research study sporting numerous non-compliances to which he sought the audience’s opinions. His presentation was informative and entertaining as well as thought-provoking. It gave forum participants a deeper understanding on how the IRB could value add in the protocol review process.

Best Practices in Clinical Research Quality and Compliance – the Institution’s Perspective

~Ms Joanne Chio, Head, Clinical Trials, Haematology-Oncology Research Group (HORG), Department of Haematology-Oncology, National University Cancer Institute, Singapore (NCIS), National University Hospital~

Ms Joanne Chio’s commitment to delivering clinical trials of respectable quality was evident from her reiterations on the importance of maintaining meticulous control over internal processes. While she shared useful pointers on how some common findings had been addressed, what came through most prominently was HORG’s commitment to conducting routine internal audits as the first point of control in ensuring quality. Ms Chio introduced the HORG’s “Audit Competition”, which featured a demerit point system similar to that used for road traffic offences, as a quantitative indicator of the quality of ongoing clinical trials at HORG. It was precisely this “quality culture” that HORG had inculcated in its staff that had been pivotal allowing the team to ace audits and inspections from independent external parties.

Join the CRCS Mailing List!

The CRCS forum is organised three times a year, as an educational platform for sharing updates, learning best practices and exchanging new ideas across the clinical research community. Forum attendance is free of charge, and all in the clinical research community are strongly encouraged to participate in this learning experience.

If you have missed out on previous forums and would like to receive future updates from us, please drop us an email at researchcoord@nhg.com.sg, indicating your name, institution, job designation, contact and request to join the CRCS mailing list.

We look forward to seeing you at our next forum!

Ms Lim Boon Hwee

Senior Executive
Researchers’ Training and Support (RTS)
Office of Human Research Protection Programme (OHRPP)
Research & Development Office
National Healthcare Group

Non-Compliance Report – Importance of the Study Responsibility Log and Training Log

Aim of reviews to protect the right and safety of trial subjects

The National Healthcare Group (NHG) Research Quality Management (RQM) team conducts regular and random study reviews on ongoing clinical research studies carried out in NHG and its partner institutions under the oversight of the NHG Domain Specific Review Board (DSRB).

The purpose of these study reviews is to increase awareness among investigators and their study staff on proper research practices and documentation techniques; to safeguard the rights, safety and well-being of trial subjects.

Findings & Implications

At recent study reviews, the RQM team noted that research staff delegated to perform study duties were inadequately trained. In addition, both the study responsibility and training logs were either incomplete or missing. Findings included:

- Start / Stop dates of study team members and PI's signatures to approve and delegate staff responsibilities were missing on the study responsibility log.
- There was no documentation of the study team members involved in significant study duties on the study responsibility log.
- The PI had assigned three study team members as alternate PIs.
- The roles and responsibilities of the lab staff / clinic staff were not indicated on the study responsibility log.
- Clinic nurses who had been collecting study specimens from research subjects had not been trained on the protocol. Their roles and responsibilities had not been delegated by the PI as well.
- No training log was filed at the research site.
- There was no documentation of any protocol-related training, and meeting minutes were also not filed.

Prevention Tips & Recommendation

In relation to the above case, we would like to share with you some information and practical tips to avoid similar mistakes in your research study:

a. Understand the Purpose of the Study Responsibility Log

The purpose of the study responsibility log is to maintain a formal list of the appropriately qualified members to whom the investigator has delegated study-related responsibilities to. The document should capture the study team members' signatures as acknowledgement of their delegated tasks, as well as their date of joining and leaving the study team, to provide a comprehensive account of their involvement in the study. The study responsibility log also serves as a reference for which the signatures of the respective study team members on other essential documents can be verified against.

WRITE IN TO US!

Confused about what essential documents you need to maintain for your research study? Puzzled about how certain study procedures should be carried out? Clueless about the local regulations and guidelines governing research? Wondering where you can find information and resources to aid your research? Unsure about what proper conduct of research entails?

b. Appropriate Delegation of Study Related-Tasks

It is the PI's responsibility to know what the roles and responsibilities to be delegated are, and ensure that these roles and responsibilities are assigned appropriately. The PI should ensure that any individual to whom a task is delegated is qualified by education, training, and experience to perform the delegated task. Tasks assigned to study staff may include screening for potential study candidates, determining eligibility, obtaining informed consent, performing clinical procedures, maintaining investigational product accountability, dispensing the investigational product, reviewing lab reports, assessing potential adverse events, performing data entry, submitting safety data, conducting patient education, managing specimen collection, data analysis, communicating with the DSRB / regulatory authority, etc.

Study members should only commence study activities after the PI has signed and dated on the study responsibility log.

c. Accountability for Study Responsibilities and Staff Training

While the study is ongoing, the PI has to ensure that there is adequate supervision of the team members involved in study conduct. More importantly, the PI is ultimately accountable for any regulatory violations resulting from inadequate supervision. It is also the PI's responsibility to ensure that there is adequate training for all staff involved in conduct of the study, including appropriate handovers for staff leaving the study team and training of newly-hired staff who have joined the study team after the study has been initiated.

The study responsibility log should be updated throughout the course of the research study. The site should also keep documentation of training modules that have been completed by each staff member. Training logs may include:

- Training(s) that must be completed by new members of the research team.
- Ongoing training(s) that must be maintained by the entire research team.
- Standard operating procedures (SOPs) that address training requirements can also be used to document the process and ensure its sustainability.

Maintaining an adequately-trained research team is essential to the success and quality of a research study. No single individual can expect to fulfill all of these tasks in lone effort. Effective management requires a shared commitment towards excellence, mutual respect for each team member's role, and effective communication within the team. Once staff members are trained and data management systems implemented, this infrastructure has to be maintained and refreshed continually. Ultimately, the PI as a leader of an effective research program must acknowledge the value of each team member, and promote a culture of teamwork and commitment to deliver high-quality research care to patients.

Ms Suzanne Ho

Senior Executive
Research Quality Management
Office of Human Research Protection Programme (OHRPP)
Research & Development Office
National Healthcare Group

If you have a research-related question you are unsure about, you are invited to write in to us at researchcoord@nhg.com.sg. Your questions, together with our recommendations, may be selected for feature in subsequent issues of Qualite. In your email, please include your name, job designation, institution and contact information, together with your query.

Remember, other readers facing similar issues may benefit from the questions you ask. We look forward to hearing from you!



SHBC 2013 Research Ethics Track Speakers

(From left) A/Prof Chin Jing Jih, A/Prof Sim Kang, Ms Rebecca Chew and Mr Chan Tuck Wai

Research Ethics

The National Healthcare Group Office of Human Research Protection Programme (OHRPP) championed the Research Ethics track at the Singapore Health and Biomedical Congress (SHBC) for the second year running. Held on 28 September 2013, the track was attended by 60 delegates.

Spearheaded by Associate Professor Chin Jing Jih (Chairman of the NHG Research Ethics Committee and Divisional Chairman of the Integrative and Community Care at Tan Tock Seng Hospital), the Research Ethics track entitled “Current Challenges in Research Ethics” hosted experienced Institutional Review Board (IRB) speakers who highlighted the considerations and dilemmas that ethics reviewers faced during closed-door Institutional Review Board (IRB) meetings. The impact of recently-implemented regulations such as the Personal Data Protection Act (PDPA) on the conduct of research was also discussed.

The track started with A/Prof Chin sharing with the delegates how the ethics committee uses proportionality as an ethical principle to weigh the risk and benefit ratio in a research application.

This was followed by A/Prof Sim Kang’s [Chairman of Domain Specific Review Board (Domain A) and Deputy Chief of Institute of Mental Health] discussion on the considerations and processes required to obtain informed consent from vulnerable populations.

The third speaker, Ms Rebecca Chew [Member of Domain Specific Review Board and Partner of Rajah & Tann Advocates & Solicitors] presented on the recently-passed PDPA and how it would impact the conduct of clinical research.

The track ended with a panel discussion, helmed by the three track speakers together with Mr Chan Tuck Wai [Senior Associate Director and Human Protection Administrator of the NUS IRB]. The panel discussed research ethics issues such as how PDPA would impact the consent process for a third party to access subjects’ personal information. The panel recommended that additional consent should be taken to allow access and subjects would have the right to not allow access to their information by a third party.

In view of the trend towards targeted therapies, another question raised for discussion was with regards to research on biomarkers and target molecules from patient tissue samples. The panel discussed the access rights of an individual to his or her personal data under the PDPA and also weighed in on the impact that such research data may have on the individual given that research data may not have the same standards as results from clinical investigations.

Overall, the track provided a good platform for substantial research ethics discussion with active participation from delegates across different institutions and clusters in Singapore.

Ms Sia Su Ghim

IRB Analyst

Office of Human Research Protection Programme
Research & Development Office
National Healthcare Group



Certification Program for Clinical Research Professionals - 2014

Following the success of the SoCRA CCRP certification programme held in conjunction with the 2nd Asia Pacific Research Ethics Conference in March 2012, the NHG Office of Human Research Protection Programme (OHRPP) is proud to announce that the 3rd SoCRA CCRP Certification Programme will be hosted on the following dates:

Date : 17 Mar 2014 (Monday, Full day Preparatory Course)
: 18 Mar 2014 (Tuesday, Half day Certification Examination)
Venue: NUSS Kent Ridge Guild House

The Society of Clinical Research Associates (SoCRA) is one of the global leaders supporting the professional development of clinical research associates internationally. It establishes and conducts the Certification in Clinical Research Professional (CCRP) for Clinical Research Professionals (CRPs) to develop an internationally accepted level of knowledge, education and experience to support in the area of medical research.

The SoCRA CCRP certification curriculum focuses on U.S Food and Drug Administration (FDA) regulations. As some research studies conducted in Singapore require compliance with either International Conference on Harmonization Good Clinical Practice (ICH GCP) guidelines and / or the U.S. FDA guidelines, it would be beneficial for CRPs involved in such studies to obtain accreditation with SoCRA.

The learning objectives of the 3rd SoCRA CCRP Certification Programme include the following:

1. Discuss the basic requirements necessary to meet the demands of a CRP in clinical practice
2. Outline concepts for Good Clinical Practice (GCP)
3. Explain the elements of informed consent
4. Explain the rules and reporting requirements for adverse events and serious adverse events
5. Explain the study closure procedures and record retention guidelines
6. Outline the reasons for monitoring, audits and site visits
7. Discuss the importance of investigational drug accountability
8. Discuss Quality Assurance including Monitoring and Auditing

The SoCRA proctor and presenter for the preparatory course, certification and examination will be Ms. Carolyn E. Rugloski, a Senior Project Manager at Clinipace Worldwide. She has more than 25 years of clinical trial research experience in providing managerial leadership in data management, monitoring, training project management, quality assurance and business development. Recognised internationally as a Good Clinical Practice (GCP) Trainer subject matter expert, Ms. Rugloski will be able to share her experiences and provide valuable insights into day-to-day issues faced in clinical research.

Following the half-day SoCRA certification examination, Ms. Rugloski will be speaking at the 25th Clinical Research Coordinator Society (CRCS) forum that will be held in the afternoon of 18 March 2014.

For clinical research coordinators and professionals with at least 2 years of relevant experience in clinical research, we welcome you to register for this highly anticipated 3rd SoCRA CCRP Certification Programme!

For enquiries, please email us at researchcoord@nhg.com.sg or visit www.socra.org for more information.

Ms Valerie Wee

Senior Executive

Research Education (RE)
Office of Human Research Protection Programme
Research & Development Office
National Healthcare Group

Research Grant Calls and Human Development Programmes

Medical Research Council (NMRC)

More details at <http://www.nmrc.gov.sg>

	Grant Description	Funding Quantum
NMRC Clinical Trial Grant (CTG)	The CTG aims to support clinicians in carrying out clinical trial studies for the development of novel therapies for healthcare needs. There will be three schemes under the CTG program, namely the (i) Co-Development Scheme which supports clinicians who wish to collaborate with the industry, and the Investigator-Initiated Trials - (ii) Early Phase and (iii) Late Phase Schemes which support clinicians who wish to conduct clinical trial studies on therapies of their own interest. These will help to develop the next generation of clinical investigators, promote translational and clinical research studies, and move promising ideas from bench to bedside.	<p><u>The Co-Development Scheme:</u> Co-investment of cash or in-kind is required from an industry partner (50% or more of the total project costs). A maximum of S\$5million for 3 years, inclusive of 20% indirect costs, could be provided for expenditure incurred by the lead PI and institutions.</p> <p><u>PI-Initiated Scheme(Early Phase Trials):</u> Maximum of S\$5million for 3 years inclusive of 20% indirect costs.</p> <p><u>PI-Initiated Scheme(Late Phase Trials):</u> Maximum of S\$2million for 3 years inclusive of 20% indirect costs.</p>
<p>Application Deadline: <u>The Co-Development Scheme:</u> Open throughout the year</p> <p><u>PI-Initiated Schemes:</u> Launch date to be advised again by NMRC.</p>		
MOH Industry Alignment Fund Category 1 (MOH IAF Cat 1)	<p>The MOH IAF aims to facilitate partnerships between clinicians and industry in pre-clinical and clinical studies to encourage commercially relevant research, foster new directions in translational biomedical research and support multi-disciplinary and multi-institutional collaborations which will bring new perspectives to the field.</p> <p>MOH IAF Category 1 is aimed at supporting partnerships that are important for the development of the biomedical cluster in Singapore. They can be composed of:</p> <ul style="list-style-type: none"> (i) Multiple individual projects involving multiple local research partners and multiple industry partners, forming comprehensive, long-term collaborations with a high probability of leading to substantive R&D programs or impactful outcomes. (ii) Individual projects that are of significance to the national Biomedical Sciences (BMS) research agenda and industry relevance. 	<p>MOH IAF Category 1 will cover up to 30% of the Total Project Costs, and the remaining 70% of project costs must be contributed (cash or in-kind) by the industry partner. For projects where the industry partner has agreed to contribute more than 70% of costs, MOH IAF Category 1 will cover the remaining project costs.</p> <p>Funding support from MOH IAF Category 1 will be capped at (inclusive of 20% indirect costs):</p> <ul style="list-style-type: none"> (i) S\$500,000 per project for pre-clinical projects; (ii) S\$1 mil for clinical projects; (iii) In the case of translational projects involving both pre-clinical and clinical elements, a cap of S\$1.5mil will apply.
<p>Open throughout the year</p>		

Tan Tock Seng Hospital Pitch-for-Fund: Research Ideas Pitched and Awards Won



Kavitha Mallavarapu

Medical Writer
Clinical Research, CRIO
Tan Tock Seng Hospital

I refer to a quote on the internet by Frederick Sanger, 'Scientific research is one of the most exciting and rewarding occupations.' While I cannot confirm the authenticity of a quote found on the internet, the essence of this sentence is relevant to the winners of the third Pitch-for-Fund program organized by Tan Tock Seng Hospital (TTSH). This fund program began in September 2011, making this the third time the Clinical Research and Innovation Office (CRIO) has hosted this event on behalf of TTSH.

This Pitch-for-Fund program is open to TTSH staff and allows them to quickly obtain a fund of S\$10,000 for a period of one year to conduct a small research project and in turn use the preliminary data while applying for a national level grant. This award funds only new research ideas not funded by another grant.

CRIO received 32 applications this year. The judging process consisted of two steps. The proposals were first assessed by members of the Hospital's Clinical Research Committee. Thirteen shortlisted (there was a tie for the twelfth place) candidates were asked to present to a panel of 3 judges on the 9th of October 2013. The judges were: A/Prof Goh Yeow Tee, Senior Consultant (Department of Haematology) & Director for the Department of Clinical Trials and Resource Centre and the Clinical Research, Singapore General Hospital, A/Prof Arul Earnest, Director, Centre for Quantitative Medicine, Duke-NUS Graduate Medical School and Adjunct A/Prof Timothy Barkham, Senior Consultant, Laboratory Medicine, Tan Tock Seng Hospital.

The proposals pitched ranged from a pilot study that hoped to compare topical steroids and non-steroidal agents with anti-cytomegalovirus (CMV) therapy in CMV anterior uveitis to Individualizing radiotherapy treatment for advanced breast cancer. The eight individuals to win this grant are listed in alphabetical order below:

Exploring the trends and factors contributing to unscheduled return of elderly patients to ED: A pilot study

Dr Ooi Chee Keong

(presented by Dr Mary Lim, Senior Resident)
Emergency

Identifying therapeutic targets for the treatment and prevention of post-electroconvulsive therapy cognitive impairment

Dr Kwan Yuxin

Psychological Medicine

Use of cerebral oximetry for detection of vasospasm and delayed cerebral ischaemia in patients with aneurysmal subarachnoid hemorrhage

Dr Beatrice Lim

Anaesthesiology, Intensive Care & Pain Medicine

Is there a significant difference in reported anxiety and satisfaction levels among patients' relatives who received intraoperative progress information by Short Message Service (SMS) communication and those who do not?

Ms Phang Lai Yee

Operating Theatre Services

Individualising Radiotherapy Treatment For Advanced Breast Cancer

Dr Tan Ern Yu

General Surgery

Higher intracellular uptake and cytotoxicity via carbonate apatite delivery system in HCC cells, potentially enhancing doxorubicin therapy in patients with HCC

Dr Tan Cher Heng

Diagnostic Radiology

Instillation of adjuvant/topical therapy to upper urinary tract – Which is the best method? An evaluation of three techniques in an in vivo porcine model

Dr Tan Yung Khan

Urology

A pilot study comparing topical steroids and non-steroidal agents with anti-cytomegalovirus (CMV) therapy in CMV anterior uveitis

Dr John Wong

Ophthalmology

The award ceremony was held on the 29th of November 2013 and the beaming awardees received their certificates from A/Prof Thomas Lew, Chairman, Medical Board, Tan Tock Seng Hospital.

Annals, Academy of Medicine Best Publication Silver Award 2012

We are pleased to announce that a paper: A population-based survey of mental disorders in Singapore published by Annals in 2012 has been given the Silver Award. The Annals is the official medical journal of the Academy of Medicine, Singapore. Every year, the Annals Editorial Board shortlists the best papers published within the previous year and votes for the top 3 papers based on clinical impact, study design and research methodologies, data analysis and quality of data interpretation and balanced discussion. This paper is among the first of a large series of publications from the Singapore Mental Health Study (SMHS) which was spearheaded by a group of researchers

in Institute of Mental Health (IMH) led by Associate Professor Chong Siow Ann and Assistant Professor Mythily Subramaniam. Others in the team are Ms Janhavi Vaingankar, Dr Edimansyah Bin Abidin, Ms Louisa Picco, and Mr Chua Boon Yiang and who are all from the Research Division of IMH.

The SMHS, a landmark study of the mental health status of the country, has contributed important information to policymakers, service providers, patients, caregivers, and raised the awareness of mental health in the general public. We are confident that this team will continue to take research in mental



Assistant Professor Mythily Subramaniam, Director, IMH Research Division, receiving the award from Professor Tan Eng King, Chief Editor, Annals Academy of Medicine, Singapore

health and illness to greater heights and wish them continued success in the Well being of the Singapore Elderly (WiSE) survey which is currently ongoing.

29 – 30 August 2013

8th Public Health and Occupational Medicine Conference
Sheraton Towers Singapore

DR SUN YAN

Best Oral Presentation (Open Category)
Risk stratification model for population management
in Central Region

Results for FY2013 NHG Clinician Scientist Career Scheme (CSCS)

The NHG Clinician Scientist Career Scheme (CSCS) aims to develop research capabilities of our clinicians to enable them to compete successfully for NMRC's Transition Award (TA) or Clinician Scientist Award (CSA) in the next 2-3 years.

The long term aim of the scheme is to develop clinician scientists to be Key Opinion Leaders (KOLs) in NHG who will contribute to excellence in research innovation and improvement in patient care, delivery and outcomes. The first CSCS was launched in 2012 and is now into its second year running.

For FY2013 CSCS grant call, we are pleased to announce the following awardees for the junior category:

A Multi-modal Blood Biomarker Approach examining Immune-Endocrine Dysregulation in the Pathogenesis of Frailty amongst Community-Dwelling Older Adults with Mild Cognitive Impairment and Mild-moderate Alzheimer's Disease

**Dr Tay Bee Gek
Laura**
TTSH, Geriatric Medicine

Dr Ho Eu Chin
TTSH, Otorhinolaryngology

Hearing impairment and hearing aid usage in the Singapore population



Mind Matters

The Research Division at IMH has recently been awarded \$1 Million in funding by the Ministry of Health – Health Services Research Competitive Research Grant (HSR CRG) to undertake a study entitled “Mind Matters: A Study of Mental Health Literacy”. This national study aims to assess recognition and beliefs pertaining to causes, treatment options and outcomes for major depressive disorder (MDD), obsessive compulsive disorder (OCD), alcohol abuse, schizophrenia and dementia in Singapore, via a cross-sectional survey of Singapore Citizens and Permanent Residents aged 18-65 years. The survey aims to achieve 3000 completed interviews and is expected to start in February 2014 and continue through until December 2014. This is the first community based, national study relating to mental health literacy in Singapore and will provide actionable knowledge that will identify and help prioritize mental illnesses to be targeted for mental health promotion and identify gaps in mental health literacy as well as certain subgroups in the population that are particularly lacking in mental health literacy and/or have particularly negative perceptions towards mental illness.

Results for Singapore Health & Biomedical Congress 2013 Scientific Competition

The Scientific Competition is part of Singapore Health & Biomedical Congress (SHBC) 2013's efforts to provide a platform for medical professionals and researchers to showcase their work, thereby recognising outstanding scientific and medical research. It is open to all local and overseas researchers and medical professionals.

This year, a record-breaking total of 436 abstracts were received. All abstracts were reviewed and ranked by independent reviewers,

who were nominated based on their expertise in their respective fields by the SHBC 2013 Scientific Committee.

Judging for the oral and poster competitions took place from the 10th to 12th September at the National Skin Centre and Tan Tock Seng Hospital respectively. The competition was organised by NHG Research & Development Office (RDO).

We are pleased to announce the following winners for the respective categories:

Oral Presentation

Singapore Clinician Investigator Award (SG-CIA)	 Dr Lim Chwee Ming National University Hospital	 Dr Colin Tan Tan Tock Seng Hospital	 Dr Angela Chow Tan Tock Seng Hospital
	 Dr Tan Chern-Yee Geoffrey NHG HQ	 Dr Cheong Kai Xiong Tan Tock Seng Hospital	
Singapore Allied Health Award (SG-AH)	 Ms Lim Su Lin National University Hospital	 Mr Ma'arof Md Saifidin Institute of Mental Health	 Mr Heng Shi Thong Tan Tock Seng Hospital
Singapore Nursing Award (SG-NA)	 Ms Isabel Ng Hui Leng Tan Tock Seng Hospital	 Dr Tiew Lay Hwa National University Hospital	 Dr Rajaram Sujata Khoo Teck Puat Hospital
Singapore Young Investigator Award - Basic Science / Translational Research (YIA-BSTR)	 Dr Colin Tan Tan Tock Seng Hospital	 Dr Abdul Jalil Rufaihah National University of Singapore	 Mr Bi Chonglei National University of Singapore
Singapore Young Investigator Award - Clinical Research (YIA-CR)	 Ms Goh Jia Ying National University Hospital	 Ms Sum Min Yi Institute of Mental Health	 Dr Zhang Junren Tan Tock Seng Hospital
Singapore Young Investigator Award - Quality, Health Services Research (YIA-QHSR)	 Ms Sabrina Lau National University of Singapore	 Mr Esmond Seow Lee Seng Institute of Mental Health	 Ms Loh Yi Bing National University of Singapore
Health Professions Education Research Investigator Award (HPE-RI)	 Dr Lim Wee Shiong Tan Tock Seng Hospital	 Mr Eugene Teoh Yen Tjun Tan Tock Seng Hospital	 Ms Serena Cheong Tan Tock Seng Hospital
Singapore Primary Care Research Award (SG-PCR) - Oral Category	 Dr Lee Kwang How NHG Polyclinics	 Dr Darren Seah NHG Polyclinics	 Ms Chan Cheuk Ying NHG Polyclinics
Poster Presentation			
Best Poster Award - Allied Health (BP-AH)	 Dr Sherry Ho Sze Yee National University Hospital	 Dr Leong Sai Mun National University Hospital	 Mr Kenny Cheong James Cook University
Best Poster Award - Basic Science/ Translational Research (BP-BSTR)	 Dr Nurulhuda Mustafa National University of Singapore	 Mr Viknesvaran Selvarajan National University of Singapore	 Assoc. Prof. Lim Su Chi Khoo Teck Puat Hospital
Best Poster Award - Clinical Research (BP-CR)	 Assoc. Prof. Stacey Tay National University Hospital	 Assoc. Prof. Robert Hawkins Tan Tock Seng Hospital	 Dr Quan Wai Leong Tan Tock Seng Hospital
Best Poster Award - Health Professions Education (BP-HPE)	 Mr Lim Junhong Tan Tock Seng Hospital	 Asst. Prof. Liaw Sok Ying National University of Singapore	 Dr Endean Tan Tan Tock Seng Hospital
Best Poster Award - Nursing (BP-NA)	 Ms Chan Ee Yuee Tan Tock Seng Hospital	 Ms Mok Wen Qi National University of Singapore	 Ms Shahrudin Rashidah Universiti Teknologi Mara, Malaysia
Best Poster Award - Quality, Health Services Research (BP-QHSR)	 Prof. Suishu Chizuko Wakayama Medical University	 Dr Kewin Siah Tien Ho National University Hospital	 Ms Saleha Shafie Institute of Mental Health
Singapore Primary Care Research Award (SG-PCR) - Poster Category	 Dr Karen Ng NHG Polyclinics	 Mr Gavin Cheah Jia Sheng NHG Pharmacy	 Dr Richard Lee Meng Kam NHG Polyclinics



Scientific Competition Secretariat (NHG Research & Development Office):

Farah Haniff, Nursaleha Razelan, Chung Jie Ming, Kristen Guo, Krishnaveni Rajagopal, Clara Lim, Valerie Yeo, Yeo Kian Wah, Noorul Ameen, Hu Liqin, Tan Kee Peck, Maryani Mohamed
For full information on the competition, please visit www.shbc.com.sg.

Asia Pacific's Leading Research Ethics Conference

Research Ethics: Harmonising Global
Principles With Asia Pacific Practices



Calling all healthcare and clinical research professionals!

26-28 March 2014
Grand Copthorne Waterfront Hotel

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discounts of up to 15%**

Early bird rate II registration ends 31 January 2014

The Asia Pacific Research Ethics Conference (APREC) is the only Asia Pacific platform focusing on Human Research Subject Protection. Come join us at the research ethics conference of the year!

Two Pre-Conference Workshops to choose from on 26 March 2014:

i) Institutional Review Board (IRB) 250

IRB 250 is designed for those seeking to learn strategies for enhancing their institution's Human Research Protection Program (HRPP)/IRB operations. The workshop comprises five modules:

- Criteria for the Review of Research
- Case Studies in Biomedical Research and/or Social, Behavioral, and Educational Research
- Internet Research
- Research on Biological Specimens
- Research Involving Children: Framing and Applying Additional Protections

Faculty:



Dr Susan Fish

*Professor of Biostatistics and Epidemiology
Boston University School of Public Health
USA*

ii) Consent: Processes, Criteria, and Considerations for Obtaining Informed Consent

This workshop will enable participants to comprehend the difference between the process of informed consent and consent form documentation requirements. Special topics to be addressed include parental permission, assent of research participants, exceptions to informed consent, and cross-cultural issues.

Faculty:



Dr Jeremy Sugarman

*Harvey M. Meyerhoff Professor of
Bioethics and Medicine
Deputy Director for Medicine,
Johns Hopkins Berman Institute of Bioethics
USA*



Dr Elizabeth A. Bankert

*Assistant Provost, Dartmouth College
Parkhurst Hall, Hanover
USA*

Find out more at www.aprec-nhg.com.sg

Questions? Email us at enquiries@aprec-nhg.com.sg

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