Research Opportunities in Paediatrics
Collaboration between Countries with Differing Backgrounds and Expectations

Prof. Geoff Cleghorn
Director, Institute for Health & Biomedical Innovation – Centre for Children’s Health Research
你好
我很高兴能回到北京

Wǒ hěn gāoxìng néng huí dào běijīng
Collaboration
rather than colonization!

合作不是殖民
Hézuò bùshì zhímín
Collaboration (協作)

- Preferably should be a long term relationship rather than finite projects
- All parties must develop a sustained benefit from the project
  - Improved health care in the host country
  - Introduction of new techniques or treatments
  - Enhanced level of knowledge or skill in the local health care professionals
  - Opportunities for reciprocal visits and upskilling of individuals
Opportunities for Collaboration in Research

在科研合作機會
Home Country & Institution

- Population needs
- Local peculiarities
- Resource availability
- Resource allocation
- Ongoing commitment to:
  - Professional development
  - Equipment
  - Appropriate staffing

Host Country & Institution

- Needs of local trainees
- Resource availability
- Resource implications
- Moral & physical support
- Cultural sensitivities
Institute for Health & Biomedical Innovation (IHBI) at the Centre of Children’s Health Research (CCHR)
IHBI-CCHR

- Cough Asthma and Airways Research Group (止咳平喘)
- Centre for Burns and Trauma Research (燒傷和創傷)
- Respiratory Infections Outreach and Research (呼吸道感染)
- **Exercise and Nutrition Sciences** (運動與營養科學)
- Psychology and Counseling & Child Development (心理學和兒童發展)
- Centre for Accident Research and Road Safety Queensland (事故調查和道路安全)
- Paediatric Spinal Research Group (小兒脊柱研究)
- Pollen Research Group (花粉研究)
CCHR Paediatric Nutrition Research
兒科營養學研究

• QUT School of Exercise, Nutrition & Metabolism

• Children’s Nutrition Research Centre (CNRC)

• Lady Cilento Children’s Hospital, Department of Nutrition & Dietetics
QUT School of Exercise, Nutrition & Metabolism

- Obesity prevention programs (Nourish & PEACH)
  - Nutrition & feeding in infancy and early childhood
- Exercise Science
  - Physical activity & sedentary behaviour measurement
  - Community based interventions to promote physical activity
- Headed the scientific committee responsible for drafting the first children’s physical activity recommendations for Australian youth,
The CNRC is one of Australia's leading paediatric nutrition research centres with a global reputation for research achievement. Renowned for its studies in growth and development, body composition and energy metabolism, the CNRC has particular expertise in basic science, clinical nutrition research and public health nutrition.

**Key research themes are:**
- Growth, Development and Body Composition
- Infant Feeding
- Oncology
- Gastroenterology, Food Allergy and Intolerance
Whole Body Counter - Total Body Potassium (TBK)
$^{40}\text{K}$ is a naturally occurring isotope found in the active cells of the body. TBK can be used to predict body cell mass and thus nutritional status

Bod Pod® & Pea Pod®
The Bod Pod & Pea Pod use air displacement to measure body volume and then calculate percent fat. It is a preferred body composition method as it is quick, simple and non-invasive. The Pea Pod® uses a similar approach to the Bod Pod to assess body composition in infants.

Single and Multiple Frequency Bioelectrical Impedance Analysis (BIA)
BIA measures the impedance of the body tissues to the flow of a small electrical current. Impedance is proportional to total body water. From an estimate of total body water, fat free mass, fat mass and percent fat can be determined
Energy Expenditure

Resting Energy Expenditure (REE)
Inspired oxygen and expired carbon dioxide measurements are used to calculate energy expenditure and respiratory quotient while at rest.

Stable Isotope Methods

- **Total Body Water (TBW)**
  TBW can be measured using the stable isotope deuterium ($^2$H). The enrichment of this isotope in either urine or saliva is determined using isotope ratio mass spectrometry & can be used to estimate fat-free mass, fat mass, the hydration ability of fluid solutions and fluid balance.

- **Total Energy Expenditure (TEE)**
  $^{18}$O & $^2$H, are used to measure TEE. Determination of the decay rates of these isotopes by collection of saliva or urine and using isotope ratio mass spectrometry allows the total energy expenditure of free living individuals to be accurately determined.
CCHR Paediatric Nutrition Research

Key people

• Professor Geoff Cleghorn
  • Director, IHBI - CCHR
• Professor Lynne Daniels
  • Head, QUT School of Exercise, Nutrition & Metabolism
• Professor Peter Davies
  • Director, CNRC
• Professor Stewart Trost
  • QUT, School of Exercise, Nutrition & Metabolism
• Dr Melinda White
  • LCCH, Department of Nutrition & Dietetics
CCHR Paediatric Nutrition Research

• Using political science to progress public health nutrition: a systematic review
• Feeding Mode of Australian Infants in the First 12 Months of Life: An Assessment against National Breastfeeding Indicators.
• The relationship between appetite and food preferences in British and Australian children
• An Early Feeding Practices Intervention for Obesity Prevention.
• Maternal and paternal support for physical activity and healthy eating in preschool children: a cross-sectional study
• Obesity Status, and Blood Pressure in Preschool Children
• Validity of the OMNI rating of perceived exertion scale for children and adolescents with cerebral palsy.
• Sedentary and Active Time in Toddlers with and without Cerebral Palsy.
• Composition of Follow-Up Formula for Young Children Aged 12-36 Months: Recommendations of an International Expert Group Coordinated by the Nutrition Association of Thailand and the Early Nutrition Academy.
• Antenatal information sources for maternal and infant diet.
• Body composition of children with cancer during treatment and in survivorship.
• Back to basics: an audit of measurement of infant growth at presentation to hospital
IHBI-CCHR

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- Psychology and Counseling & Child Development
- Centre for Accident Research and Road Safety Queensland
- Paediatric Spinal Research Group
- Pollen Research Group
Cough Asthma and Airways Research Group
(Professor Anne Chang)

• Use of management pathways or algorithms in children with chronic cough: systematic reviews
• Respiratory bacterial culture from two sequential bronchoalveolar lavages of the same lobe in children with chronic cough
• Nasopharyngeal carriage and macrolide resistance in Indigenous children with bronchiectasis randomized to long-term azithromycin or placebo.
• Haemophilus influenzae: using comparative genomics to accurately identify a highly recombinogenic human pathogen
Centre for Burns and Trauma Research
Professor Roy Kimble & Dr Leila Cuttle
• The biochemistry of blister fluid from paediatric burn injuries: proteomics and metabolomics aspects.
• A novel porcine scald burn model
• Scar outcome of children with partial thickness burns: a 3 and 6 month follow up.
• Cost Effectiveness of a Randomized Controlled Trial Testing the efficacy of a Non-Pharmacological Intervention

Respiratory Infections Outreach and Research
Professor Kerry-Anne O’Grady & Dr Kirsten Spann
• The respiratory health of urban indigenous children aged less than 5 years: study protocol for a prospective cohort study
• Uptake of influenza vaccination in pregnancy amongst Australian Aboriginal and Torres Strait Islander women: a mixed-methods pilot study.
• Respiratory Syncytial Virus (RSV) Non-Structural Protein-1 Modifies miR-24 Expression via TGF-beta.
• Differential neutrophil activation in viral infections: Enhanced TLR-7/8-mediated CXCL8 release in asthma.
Psychology and Counseling & Child Development
Professor David Kavanagh & Professor Karen Thorpe

- Natural Recovery from Cannabis Use in People with Psychosis: A Qualitative Study
- Review and Evaluation of Mindfulness-Based iPhone Apps
- Subtypes of psychotic-like experiences are differentially associated with suicidal ideation, plans and attempts in young adults.
- Differences in parent regulation beliefs and maternal postnatal depressive symptoms in early weeks.
- Mandatory Naptimes in Child Care and Children's Nighttime Sleep.
- Napping, development and health from 0 to 5 years: a systematic review

Paediatric Spinal Research Group
Assoc. Prof Clayton Adam

- A semiautomatic method to identify vertebral end plate lesions (Schmorl's nodes)
- The effect of repeated loading and freeze-thaw cycling on immature bovine thoracic motion segment stiffness
Centre for Accident Research and Road Safety Queensland

Prof Narelle Haworth & Assoc Prof Kirsten Vallmuur

- Why do Queenslanders seek care in emergency departments? A population study
- Estimating under-reporting of road crash injuries to police using multiple linked data collections
- Injury narrative text classification using factorization model.
- Examining signs of driver sleepiness, usage of sleepiness countermeasures and the associations with sleepy driving behaviours and individual factors
- Using smartphones for cycling safety: A survey of riders preferences and interest in new technologies

The Centre for Accident Research and Road Safety – Queensland (CARRS-Q) is one of the leading centres in Australia dedicated to research, education and outreach activities in road safety, and is a vital player in the international pursuit of road safety.
Pollen Research Group

Assoc. Prof Janet Davies

• Do human rhinovirus infections and food allergy modify grass pollen-induced asthma hospital admissions in children?
• Induction of a Th1 immune response and suppression of IgE via immunotherapy with a recombinant hybrid molecule encapsulated in liposome-protamine-DNA nanoparticles in a model of experimental allergy.
• Trans-disciplinary research in synthesis of grass pollen aerobiology and its importance for respiratory health in Australasia.
• Specific IgE recognition of pollen allergens from subtropic grasses in patients from the subtropics.

A national aeroallergen monitoring network across eight Australian capital cities representing all states and territories to measure, report and forecast allergenic pollen counts and apply new innovative approaches to measure subtropical compared with temperate grass pollen sources and allergen content within pollen collected at each pollen monitoring site.
“World leaders have an unprecedented opportunity this year to shift the world onto a path of inclusive, sustainable and resilient development” - Helen Clark, UNDP Administrator.

At the United Nations Sustainable Development Summit on 25 September 2015, world leaders adopted the 2030 Agenda for Sustainable Development, which includes a set of 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030.
The world today is more interconnected than ever before. Improving access to technology and knowledge is an important way to share ideas and foster innovation. Coordinating policies to help developing countries manage their debt, as well as promoting investment for the least developed, is vital to achieve sustainable growth and development. The goals aim to enhance North-South and South-South cooperation by supporting national plans to achieve all the targets.
谢谢
保持联系
Thank you
Let us stay in touch