Queensland Cerebral Palsy and Rehabilitation Research Centre

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www.qcprrc.centre.uq.edu.au
QCPRRC Research Themes

**Pathogenesis of CP & Neuroscience**
- PROJECTS
- PPREMO/ PREBO— Baby connectome
- Exec Function & fMRI
- Genetic studies (with MRI)
- Stem cell therapies in mouse model

**Early Brain Development, Diagnosis of CP & Intervention**
- PROJECTS
- PPREMO/ PREBO
- PREMM
- REACH

**Surveillance of CP in Childhood**
- PROJECTS
- Muscle studies (FAST CP)
- PREDICT

**Novel Rehabilitation & Intervention Therapies**
- PROJECTS
- MiYoga
- FAST CP
- Participate Now

**Supporting Parents of Children with Disability**
- PROJECTS
- Prem Triple P
- PACT parenting Acceptance And Commitment Therapy (2015-2017)

**Clinical Translation & Implementation**
- PROJECTS
- RCT to improve translation (2014-17)
- Implementation of Early Detection CPG
Past QCPRRC MBBS Honors:

2 MPhil/PHDs concurrent with MBBS,
    Dr Henry Tsao, Dr Simon Scheck

12 MBBS honors students first author publications (1-2)

Fast track to specialty field post MBBS
    Evyn Arnfield Radiology, Alex Craven- Radiology, Simon Scheck- Obstetrics),
    Others to Neurosurgery, Neurology, Obstetrics, Paediatrics, Neurology, Orthopaedics, Neonatology, Rehabilitation and Neurosurgery,

Training in systematic reviews, meta-analyses, biostatistics.

Clinical experience.

Elective placements for MBBS students at Toronto Sick Children’s Hospital (Orthopaedics), The University of Pisa (Neurology) The University of Virginia.
Simon Scheck
MBBS graduated 2014, submitted PhD late 2015
Part time PhD (Started in Year 2 of MBBS)

- Motor, sensory and executive function networks in children with unilateral CP
- Published 4 papers,
- Expected finish of PhD end 2015 (PGY1-2)
- Progressing to Obs Gyne training in NZ
- Collaborations with neurologists and scientists from Italy, Netherlands (and Melbourne)
PREBO: Prediction of PREterm Brain Outcomes

Achieving earlier detection of CP
Earlier imaging at 30 wks
Advanced technology
Functional correlates

Fast track to early intervention
REACH: RCT Early Intervention

Recruitment between 3-6 months c.a.

**Inclusion:** Perinatal Stroke or Assym MRI or CUS (IVH IV),

**Modified Constraint Induced Movement Therapy (mCIMT)**

**Bimanual Therapy (BIM)**

**Uni vs Bimanual therapy**
Advanced neuroimaging in cerebral palsy

Prof. Stephen Rose, Dr Kerstin Panneck, Dr Jurgen Fripp

- Structural connectivity (new analysis pipelines)
- Evaluation of brain microstructure, cortical malformations, measures neuroplasticity

www.csiro.au

National Research Flagships Preventative Health
Imaging technology

- Diffusion MRI and tractography
  - Injury to WM pathways and neural networks

- fMRI driven diffusion tractography
  - Plasticity of motor pathways

- Cloud based quantitative radiological reporting for CP
  - Highlight how cortical morphometry and GM/WM lesion burden can predict clinical function
How muscles work during walking and running in children/adults with CP

**Aim:** Investigate calf muscle function during walking in CP and TD individuals

- Instrumented treadmill
- 3D motion capture
- B-mode ultrasound

Dr Lee Barber, PhD, PT
Dr Steve Obst, PhD, PT
Prof. Ros Boyd, PhD, PT
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http://www2.som.uq.edu.au/som/Research/ResearchCentres/qcprrc;

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Dr Steve Obst, PT, PhD Muscle mechanics and gait modelling
Dr Leanne Sakzewski, OT, NHMRC fellow Translation & Rehabilitation
Dr Koa Whittingham, Psychologist, Parenting and Mindfulness

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