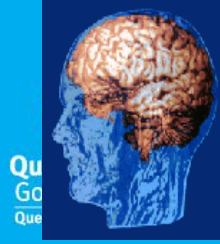


Queensland Cerebral Palsy and Rehabilitation Research Centre



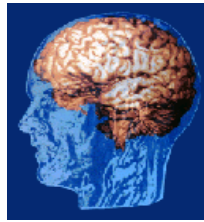
Roslyn N Boyd

Scientific Director, Professor of Cerebral Palsy Research
Childrens Health Research Centre, The University of Qld,
Queensland Paediatric Rehabilitation Service,
Lady Cilento Children's Hospital
www.qcprrc.centre.uq.edu.au



Queensland cerebral palsy & rehabilitation research centre

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.

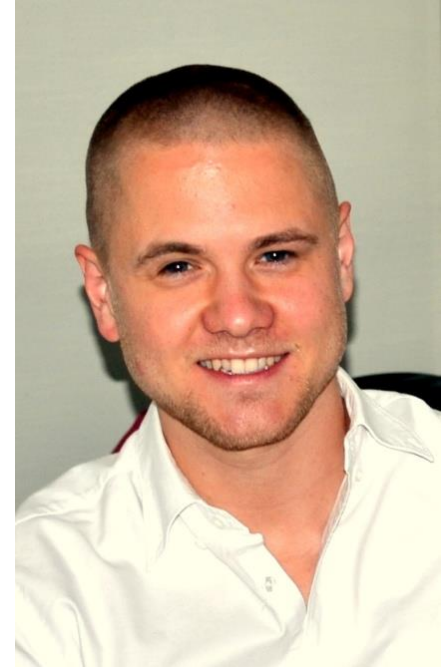


Simon Scheck

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)



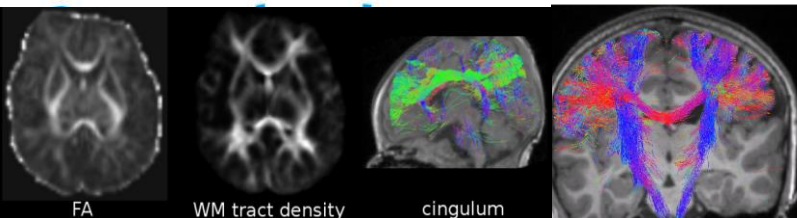
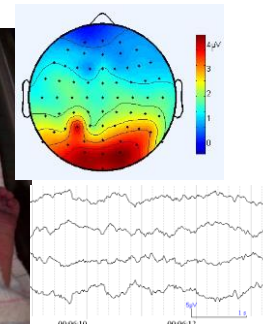
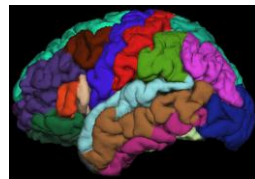
PREBO: Prediction of PREterm Brain Outcomes

CI's Roslyn Boyd, Paul Colditz, Stephen Rose, Joanne George,
Kerstin Pannek, Melissa Lai

NHMRC 2015-2019 \$1.6m UQCCR, QCPRRC, Monash

Relationship between brain structure and function of very preterm infants to predict neurodevelopmental outcome

Achieving earlier detection of CP
Earlier imaging at 30 wks
Advanced technology
Functional correlates
Fast track to early intervention

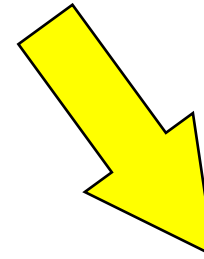
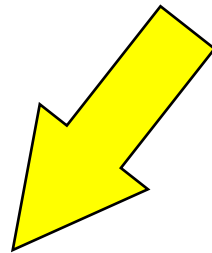


REACH: RCT Early Intervention

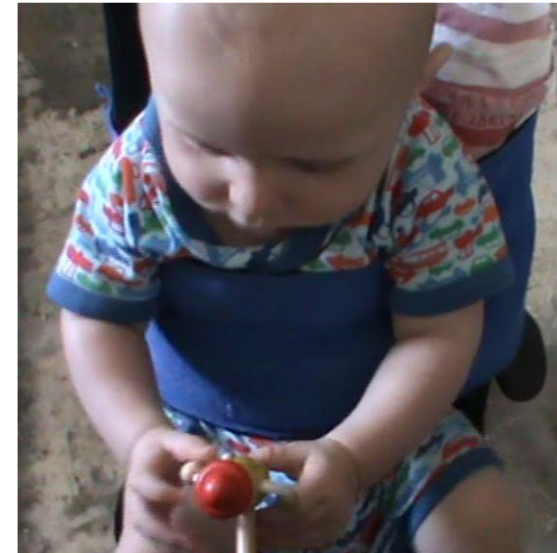
Recruitment between 3-6 months c.a.

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

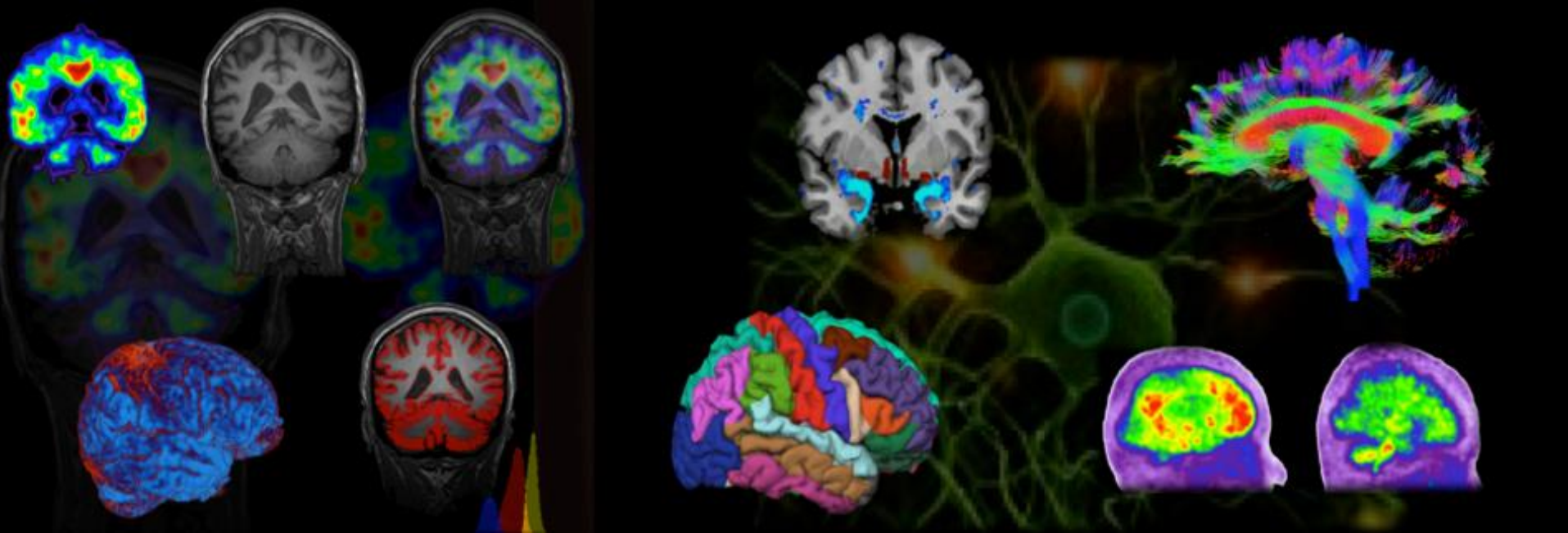
**Modified Constraint
Induced Movement
Therapy (mCIMT)**



**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



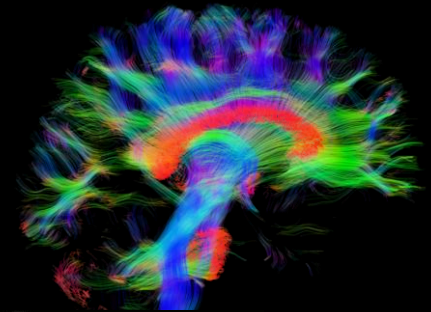
National Research
FLAGSHIPS
Preventative Health



Imaging technology

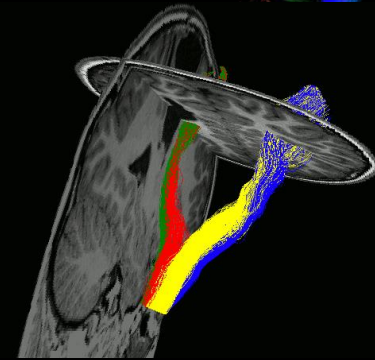
➤ Diffusion MRI and tractography

- 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



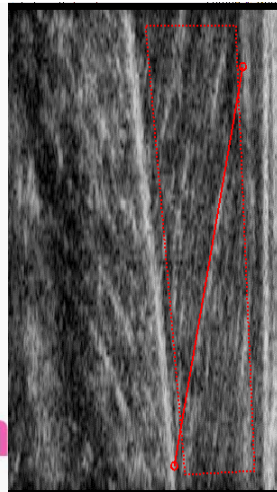
How muscles work during walking and running in children/adults with CP



Dr Lee Barber, PhD, PT
Dr Steve Obst, PhD, PT
Prof. Ros Boyd, PhD, PT

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

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



& reh res
Centre



QCPRRC Acknowledgements

<http://www2.som.uq.edu.au/som/Research/ResearchCentres/qcprrc;>

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Clinical Director Dr Priya Edwards, Dr Lynne McKinlay

Research Manager Dr Susan Sullivan

Postdoctoral Fellows

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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

Funding support

Australian Research Council

Children's Health Foundation Queensland

Financial Markets Foundation for Children

Merchant Charitable Foundation

National Health and Medical Research Council

Perpetual Trustees

Queensland Government Smart Futures Scheme

Research Foundation of Cerebral Palsy Alliance

Cerebral Palsy International (CIHR)

The University of Queensland

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