



2024 Annual Conference

5 – 6 September

Great Hall, Strand Campus
King's College London

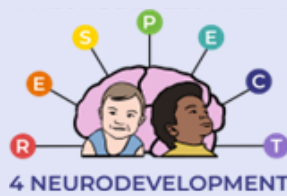
Programme



Engineering and
Physical Sciences
Research Council



Medical
Research
Council



Thursday 5th September

9.30 **Registration and Coffee**

10.00 **Welcome and Introduction to Respect 4
Neurodevelopment**
Prof Eva Loth, King's College London

Session 1: Keynote

10.15 **Understanding Cognitive Development in Infants
with Awake fMRI**
Professor Rhodri Cusack
Trinity College, Dublin

Session 2: The 4 Pillars of Respect 4 Neurodevelopment (Chair: Dr Amy Goodwin)

11.00 **Responsible Neurotechnology,**
Prof Eva Loth, King's College London

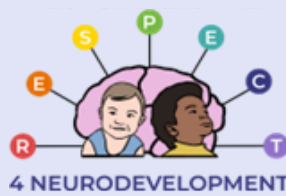
11.10 **Reliable Neurotechnology,**
Prof Ilias Tachtsidis, University College London

11.20 **Scalable Neurotechnology,**
Prof Tomoki Arichi, King's College London

11.30 **Personalised Neurotechnology,**
Prof Emily Jones, Birkbeck University

11.40 **Discussion**

12.00 **Lunch Break**
Posters and Industry Booth



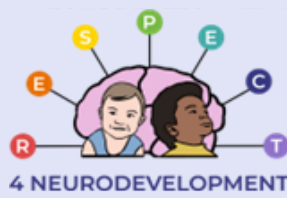
Thursday 5th September

Session 3: Update from R4N funded pilot studies 2023 (Chair: Prof Tomoki Arichi)

- 13.15 **Combining wearable diffuse optical tomography and immersive virtual-reality for the reliable study of neurodevelopmental conditions: a proof-of-principle study to open new avenues of research on neurodiversity**
Dr Chiara Bulgarelli, Birkbeck, University of London
- 13.30 **Immersive Virtual Reality for MRI scanning of awake young children with neurodevelopmental conditions.**
Prof Jo Hajnal, King's College London
- 13.45 **Developing low-cost wearables to track early home environments in neurodivergent children**
Prof Sam Wass, University East London
- 14.00 **Comfortable conformal coils for children**
Dr Tobias Wood, King's College London
- 14.15 Discussion Panel

Session 4: Participatory Research Perspectives (Chair: Prof Emily Jones)

- 14.30 **Positioning ourselves in Autistic SPACE: Leveraging Insider Perspectives for Community Benefit**
Dr Mary Doherty, Brighton & Sussex Medical School
- 14.50 **Panel Session: Sensory Divergence: Have we got it Wrong?**
Dr Nick Puts (Chair), Pierre Violland, Sarah Douglas, Dr Mary Doherty, Anjuli Ghosh
- 15.20 Discussion
- 15.45 **Coffee Break**



Thursday 5th September

Session 5: Industry perspectives (Chair: Prof Ilias Tachtsidis)

- 16.15 **Enquiry and Exploration: Market needs, Mentorship and how Multiple can Support Researchers in Commercializing Technology from Day 1.**
Dan Feshbach, Founder/ Executive Board Chairman of Multiple & Keevin O'Rourke, CEO of Multiple
- 16..45 **Panel Discussion**
Prof Nicolas Huber, Prof Matthew Goodwin, Dr Robert Cooper, Pierre Violland, Tracy Warbrick
- 17.30-20.00 **Drinks Reception on Thames Terrace & Bar**



Friday 6th September

9.30 **Registration and Coffee**

Session 6: Keynote

10.00 **Brain-Computer-Interfaces and Neuromodulation Devices for Children: Lessons Learned and Future Opportunities**
Professor Tim Denison, University of Oxford

Session 7: Overview of R4N funded Pilot Studies 2024

10.45 **Through Their Eyes: Empowering Neurodivergent Perspectives with Eye-Tracking**
Teresa Del Bianco, London Metropolitan University & Birkbeck, University of London

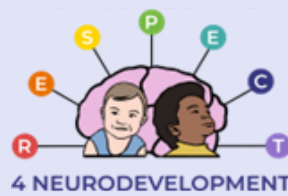
11.00 **W.I.S.E Wheelchair Integrated Sensory Education**
Julia Foecker, University of Lincoln

11.15 **The Effect of Early Adversity on Neurodevelopment: Defining a Biological Poverty Line through Social Brain Fingerprinting**
Borja Blanco, University of Cambridge

11.30 **SleepySTAARS: Measuring sleep in infants enriched for autism in the home: a feasibility study**
Dr Jannath Begum Ali, Birkbeck University

11.45 **Discussion**

12.00 **Lunch break**
Poster viewing and industry booths



Friday 6th September

Session 8: Showcasing Early Career Research (Chair: Dr Liz Burchell)

13.00 **Early Career Research Network**
Dr Rianne Haartsen & ECR Committee

13.15 **Rapid Fire Presentations**

- **Baby FlexEEG: AI-Enabled Neurotechnology for Neurodevelopment Research and Intervention**
Massoud Khodadadzadeh, University of Bedfordshire
- **Examining the Utility of Cross-domain Cognitive Profiles as Prognostic Markers for Co-occurring ADHD in Autistic Preschoolers**
Julia Koziel, King's College London
- **Developing a Research Process Guidance for Neurodivergent Participants: Autistic led and Co-creative Research and Design**
Eleonora Tilkin-Franssens, KU Leuven
- **Investigating Potential Sensory Determinants of Cortical Activity in Acutely Unwell Infants**
Aristeta Boman-Markaki, King's College London

13.45 **Poster awards**

Session 9: Strategic Road Map for co-produced neurotech for neurodivergent infants and children

14.00 **Panel Discussion**
Moderator: Prof Ilias Tachtsidis

15.00 **Meeting close and informal networking**



Keynote Speaker

Professor Rhodri Cusack,
Trinity College Dublin



Understanding Cognitive Development in Infants with Awake fMRI

ABSTRACT

Awake fMRI is providing a new window onto infant neurodevelopment. We have acquired the largest cohort of infants to date (N=133 at 2 months and N=65 at 9 months) to characterise how early cognition develops. We found that with engaging panoramic in-bore visual stimulation, 2-month-olds participated with a high success rates (97%), typically for 20 minutes of fMRI. We found that even 2-month-olds have rich visual categories. These propagate from higher to earlier visual regions through development, suggesting an unexpected interplay between an innate category template and experience-driven learning.

BIO

Rhodri Cusack is the Thomas Mitchell Professor of Cognitive Neuroscience at Trinity College Dublin, and Director of the Trinity College Institute of Neuroscience. His team studies how the brain and mind develop in infants using neuroimaging and online testing. The goals are to understand healthy development and to provide tools for earlier diagnosis in the neonatal intensive care unit.

Rhodri studied physics at Pembroke College, Cambridge, and then obtained a PhD in psychology from the University of Birmingham. He was then a postdoctoral fellow and subsequently group leader at the MRC Cognition and Brain Sciences Unit in Cambridge, and then an Associate Professor at the Brain and Mind Institute of the University of Western Ontario. He joined Trinity College in 2017.

His research has been funded by the ERC, SFI, IRC, MRC, Wellcome Trust, BBSRC, EPSRC, CIHR, and NSERC. He has 136 peer-reviewed publications. Learn more about the team and its research at www.cusacklab.org

Keynote Speaker

Professor Tim Denison,
University of Oxford



Brain-Computer-Interfaces and Neuromodulation Devices for Children: Lessons Learned and Future Opportunities

ABSTRACT

This talk will discuss paediatric brain-computer interfaces (BCIs) and the unique challenges inherent in this population, such as the dynamic nature of children's neural development and their diverse cognitive abilities. Developing BCIs for paediatric use requires careful consideration of factors like safety, usability, and ethical concerns to ensure optimal outcomes and minimize potential risks. Challenges arise in adapting BCI technology to accommodate children's evolving neurophysiological profiles and individual needs, highlighting the importance of interdisciplinary collaboration and ongoing research efforts in this field. We will discuss recent design efforts that aim to enhance the quality of life for paediatric patients with neurological conditions such as epilepsy and dystonia.

BIO

Professor Tim Denison explores the fundamentals of physiologic closed-loop systems and how to apply this understanding to the treatment of disease. Tim serves also as an advisor to several governments and industry boards helping to define strategies for mapping scientific discovery to product development roadmaps within the regulatory and economic constraints of medical systems. Prior to joining Oxford, Tim was a Technical Fellow at Medtronic, where he helped oversee the design of next generation neural interface and algorithm technologies for brain machine interfaces. He has an MS and PhD from MIT in electrical engineering, an AB in Physics and MBA from the University of Chicago.