

**brainbox**  
initiative





# Dr Helen Nuttall

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Conference Chair

Over the last few years, the Brainbox Initiative has created numerous training and research opportunities for early-career researchers working in neuroscience and related disciplines. I was lucky enough to be awarded the inaugural Research Challenge Prize in 2016, and then to present at the first Brainbox Conference the following year. It has been fantastic watching the Brainbox community grow since then. A particular highlight for me has been the annual Brainbox Conference and hearing about the fascinating work being conducted by talented early-career researchers around the world. Whilst 2021 finds the conference online once again, the benefit of this is we have an incredible range of international speakers who are kindly joining us to share their fascinating work. I encourage you to ask questions, be curious, and interact with presenters and audience members. The presenters and the audience that contribute to the conference make it the exciting, dynamic meeting that I know it is today. We do look forward to welcoming you all back to London in 2022 and discussing research with you in person. But until then, I hope the 2021 meeting leaves you feeling enthused, engaged, and inspired!

## Welcome Address



# Andrew Thomas

Brainbox Ltd  
Managing Director

It is my great pleasure to welcome you to the Brainbox Initiative Conference 2021.

This year's Conference, now the 5th, is once again a virtual event. It was originally planned to be held in our regular location of the Wellcome Collection in London. However, arrangements changed due to the uncertainty and limitations placed at the time on face-to-face events during the continuing Covid pandemic. In the words of Freddie Mercury, "the show must go on".

With that in mind, I appreciate that virtual conferences are not the same as in-person events particularly regarding social interaction between delegates, however I can promise that this year's conference will be no less ambitious than previous conferences, both in-person and virtual.

I'm especially excited about this year's conference, put together with the valuable help and support from everyone, this year's programme is packed full of a fantastic selection of speakers presenting the latest developments in their respective fields.

## Welcome Address

Thanks to some advanced ‘giggery pokery’ we are trying to offer a greater and richer opportunity to meet, chat and discuss with delegates, speakers, poster presenters and the Scientific Committee and experience a genuinely interactive and engaging virtual conference.

The success of the Brainbox Initiative Conference is only made possible with support and steer of the Scientific Committee. It is with their commitment to encourage and embolden early career researchers that we can ensure the conference programme truly delivers on its aims.

Additionally, I would like to thank all the speakers who have given their time to attend and support the conference and of course, the team at Brainbox Limited who have worked tirelessly over the last year to organise this year’s event. We hope to be back to delivering an in-person conference in 2022, the venue is booked and the dates set and we will let you know more during this year’s event.

In the meantime, I look forward to meeting you and wish you a stimulating and successful conference.

Thank you.

# Welcome Address



- 12:00** **Conference Open & Welcome**
- 12:15** **Professor Kate Hoy, Monash University**  
Keynote Talk: Stimulating Change: Developing Brain Stimulation Therapeutics for Cognitive Disorders
- 13:05** **Break**
- 13:25** **Poster Pitches**
- 13:55** **Dr Mirja Steinbrenner, Kings College London**  
Research Challenge 2018 Updates
- 14:20** **Break**
- 14:40** **Matthew Weightman, University of Birmingham**  
Timing is Everything: using an event-related TDCS (er-TDCS) protocol to modulate motor adaptation
- 15:05** **Professor Richard Ivry, UC Berkeley**  
A new non-invasive kilohertz magnetic stimulation process to modulate cortical excitability
- 15:30** **Dr Davinia Fernández-Espejo, University of Birmingham**  
tDCS modulates effective connectivity during command-following; a potential therapeutic tool for disorders of consciousness
- 15:55** **Conference Day One Close**



- 12:00**    **Conference Open & Welcome**
- 12:15**    **Dr Roisin McMackin, Trinity College Dublin**  
A Novel, Automated Method of Threshold-Tracking TMS applied in the search for Amyotrophic Lateral Sclerosis Biomarkers
- 12:40**    **Dr David Pitcher, University of York**  
Defining the Visual Pathway for Social Perception using TMS and fMRI
- 13:05**    **Shanice Janssens, Maastricht University**  
Calibrating non-invasive brain stimulation protocols to individual oscillatory markers
- 13:30**    **Break**
- 13:50**    **Poster Pitches**
- 14:20**    **Young Investigator Award 2021**
- 14:50**    **Break**
- 15:10**    **Dr Juha Silvanto, University of Surrey**  
Keynote Speech: Transcranial magnetic stimulation in the study of behaviour:  
The state we are in
- 16:00**    **Virtual Poster Presentation Hall: Gather.Town**
- 19:00**    **Conference Day Two Close**



- 12:00** **Conference Open & Welcome**
- 12:15** **Umair Hassan, LIR Mainz**  
BEST Toolbox: Brain Electrophysiological recording & STimulation Toolbox
- 12:40** **Professor Dr Alexander Sack, Maastricht University**  
The State is the Art: Using simultaneous TMS-EEG-fMRI to assess oscillatory brain state-dependent gating of cortico-subcortical TMS network activity
- 13:05** **Dr Kristen Warren, NINDS**  
State-of-the Network: Influences of task state on the expression and generation of network plasticity
- 13:30** **Break**
- 13:50** **Poster Pitches**
- 14:20** **Research Challenge Award 2021 Presentation**
- 14:50** **Break**
- 15:10** **Professor Gregor Thut, University of Glasgow**  
Keynote Speech: EEG/MEG-guided brain stimulation: targeting oscillatory brain activity
- 16:00** **Virtual Poster Presentation Hall: Gather.Town**
- 19:00** **Conference Day Three Close**



- 12:00**    **Conference Open & Welcome**
- 12:15**    **John Rothwell Award Presentation**
- 12:50**    **Dr Elly Martin, University College London**  
Quantifying acoustic pressure in the brain
- 13:15**    **Benjamin Kop & Sjoerd Meijer, Donders Institute**  
Safety metrics and considerations for TUS & TUS Demonstration
- 13:40**    **Break**
- 14:00**    **Dr Siti Yaakub**  
Pseudo-CTs from T1w MRI for planning of low-intensity focused ultrasound
- 14:25**    **Dr Wynn Legon, Virginia Tech**  
FUS for human applications: Towards clinical translation
- 14:50**    **Break**
- 15:10**    **Professor Kim Butts Pauly, Stanford University**  
Transcranial Ultrasound Stimulation: Modulating the Auditory Confound
- 16:00**    **Poster Presentation Awards**
- 16:10**    **Conference Closing Remarks**





# Poster Presentations

## 1. Vonne Van Polanen

The role of the dorsal premotor cortex in learning associative cues during object lifting

## 2. Cecilie Lolansen

Investigating Individual Characteristics and the Impact of COVID-19 on Perceptions of TMS and Willingness to Participate in TMS Research Studies

## 3. Talitha Boardman

Presurgical language mapping using Transcranial Magnetic Stimulation is effective in surgical planning and preserving language function in a predominately pediatric cohort with epilepsy or brain tumor

## 4. Giacomo Bertazzoli

On the Network Specificity of the TMS-Evoked Potentials

## 5. Anneliese Braden

Transcranial Magnetic Stimulation is Safe in Pediatric Clinical Populations

## 6. Nabila Brihmat

Functional and Electrophysiological Effects of High-Frequency rTMS Administered at Different Suprathreshold Intensities - A Case Study.

## 7. Kate Slade

The role of the Speech Production System in Auditory Working Memory: A TMS Study

## 8. Marta Bortoletto

Corticospinal excitability while acting jointly: A registered TMS study



## 9. Ikko Kimura

The microstructural changes in human brain induced by intermittent theta burst stimulation

## 10. Natalia Zhozhikashvili

Recurrent Neural Pathways in Motion and Shape Visual Perception: a TMS Study

## 11. Brandon O'Hanlon

Short-Term Immobilization Promotes a Rapid Loss of Motor Evoked Potentials and Strength That Is Not Rescued by rTMS Treatment

## 12. Adriana Farcas

Findings, limitations and new directions in tACS studies in schizophrenia research: a scoping review

## 13. Samantha Booth

The effects of transcranial alternating current stimulation on memory performance in healthy adults: A systematic review

## 14. Chiara Bagattini

Age-related difference in tDCS modulation of episodic memory: evidence from behavioral and neurophysiological measures

## 15. Syanah Wynn

How to use tACS to change your memory confidence

## 16. Chanchal Chaudhary

Effect of Extended Duration of Cortical Stimulation in Adults who Stutter (AWS)- A Preliminary Study



## 17. Andrew Fukuda

Astrocyte Protein Levels Show Differential Changes Based on Clinical Outcome in Depression: Could Astrocytes be the New Star of the Show for Transcranial Magnetic Stimulation?

## 18. Janne Luppi

Model-guided and MEG-controlled tDCS strategy optimisation in Alzheimer's disease

## 19. Silke Coemans

A Systematic Review on Transcranial Direct Current Stimulation in Primary Progressive Aphasia: Methodological considerations

## 20. Miles Wischnewski

A novel electric field modeling meta-analysis method to identify prefrontal tDCS-related working memory improvement.

## 21. Jordan Beaumont

Modulating eating behaviour with transcranial direct current stimulation (tDCS): A systematic literature review on the impact of eating behaviour traits

## 22. Mareike Gann

Prefrontal stimulation alters hippocampo-striatal responses during motor memory acquisition and consolidation

## 23. Colin Simon

A wireless, wearable Brain-Computer Interface for in-home neurorehabilitation

## 24. Weronika Potok

Modulation of visual contrast sensitivity with individualized transcranial Random Noise Stimulation is time-dependent and specific for the primary visual cortex

## 25. Stephen Lee

Focused ultrasound peripheral neuromodulation for pain suppression

## 26. Maria Miscouridou

Transcranial ultrasound simulation using a learned mapping from MR to pseudo-CT images



## 27. Kianoush Banaie Boroujeni

Transcranial Ultrasound Stimulation in Anterior Cingulate Cortex Impairs Information Sampling and Learning in Loss Contexts

## 28. Ke Zeng

Induction of Human Motor Cortex Plasticity by Theta Burst Transcranial Ultrasound Stimulation

## 29. Morteza Mohammadjavadi

Sonication of thalamic circuits changes brain oscillations during non stimulus conditions in a way analogous to changes in anesthetic level