

IBES Invited Talk 1

Optogenetic approaches to visual cortical prosthesis

Prof. Patrick Degenaar,

Newcastle University, Newcastle, UK



Visual prosthetics provide the potential to restore basic functional vision to the blind. There has been significant progress in recent years in the required underpinning technologies to achieve these objectives. But it still remains an exceptionally difficult challenge. Thousands of individual stimuli are required to restore a visual response. Furthermore, the implant must not damage the sensitive neural tissue, either on implantation or over the long term. This talk will therefore discuss optogenetic approaches to visual cortical prosthetics – the advantages, disadvantages and challenges.

Bio:

Patrick Degenaar is professor of neuroprosthetics at Newcastle University, with a special interest in visual prosthesis to restore sight to the blind. He holds BSc and MRes degrees from Liverpool University (UK) in applied Physics and a PhD in 2001 from the Japan Advanced Institute of Science and Technology. He obtained an RCUK fellowship and Lectureship in Imperial College in 2005, and then moved to Newcastle University in 2010, where he became a full professor in 2019. He has led or co-led a number of large interdisciplinary projects, most notably the £10M CANDO project 2014-2022. As a result, he has around 150 peer reviewed publications in conference and journals and a (non-medical) engineering spinout company.

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