MEDIA RELEASE

1 March 2017

Research to reverse the cause of schizophrenia

Researchers from the University of Wollongong have developed a potential new treatment for schizophrenia that targets its underlying cause.

ARC Centre of Excellence for Electromaterials Science (ACES) Director Prof Gordon Wallace joined forces with the Illawarra Health and Medical Research Institute's Prof Xu-Feng Huang to explore options for treating a recently discovered neural connection deficit that causes schizophrenia.

Their findings were published last week in *Scientific Reports*.

Professor Wallace said the pair saw an opportunity to apply a biocompatible polymer and protocol developed previously by ACES for Cochlear implant studies to address the neural connection deficit.

"The polymer we developed promotes neurite outgrowth using electrical stimulation, and in parallel there was mounting evidence linking a lack of neural connectivity and schizophrenia," he said.

Prof Huang said the polymer and its protocol could help to recreate those connections.

"In diseased brain cells, we see a reduction in the surrounding network of cells called neurite that facilitate communication between cells," Prof Huang said.

"We now know that this deficit is the primary pathology underlying schizophrenia, leading to symptoms like psychosis, social withdrawal or cognitive dysfunction," he said.

With the help of a National Health and Medical Research grant, the two teamed up to look at the effectiveness of the ACES electrical stimulation method on diseased schizophrenia cells from mice.

The paper's lead author who works across all three organisations, Dr Qingsheng (Kiefer) Zhang, said the study involved delivering electrical stimulation to brain cells from mice of three genotypes.

"We applied electrical stimulation to brain cells from healthy mice and mice with two different kinds of diseased genes which are known to be linked to schizophrenia," Dr Zhang said.

"First, we found that the diseased cells indeed have a reduced neurite outgrowth and a reduced capacity for communication compared to the healthy cells.

"We also found that using conductive polymer mediated electrical stimulation can regenerate the neurite network and synapses responsible for communication between cells," he said.

Prof Huang said the research could be significant for the some 200,000 Australians living with schizophrenia.

"People living with schizophrenia rely on a limited number of drugs—with a range of debilitating side effects—to treat the symptoms of the disease without targeting the underlying cause."

"This early stage research is a step in the right direction for treating its cause," he said.

Prof Wallace said he thought it poignant that a collaboration or "connectivity in research" might help a connectivity problem at a cellular level.

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Media opportunity

Prof Gordon Wallace is available for interview via Natalie Foxon Phillips nfoxon@uow.edu.au

Prof Xu-Feng Huang is available for interview via Lyndel Hayes on 02 4221 5432.

Photos are available of Profs Wallace and Huang in the laboratory via Natalie on **nfoxon@uow.edu.au**