

BRAIN RESEARCHERS TO DEVELOP NEW CLASS OF DRUGS TO REPAIR PSYCHIATRIC DISORDERS

"Smart" drugs capable of targeting specific brain cells to control psychiatric disorders such as autism and schizophrenia may be ready for early clinical trials within three years, with the launch of a \$1.5 million project to take place at the Brain Research Centre (BRC), a partnership of the University of British Columbia and Vancouver Coastal Health Research Institute (VCHRI).

The new drugs would be the first significant change in decades to medications used to treat psychiatric disorders, says neuroscientist and team leader Yu Tian Wang, a UBC professor of Medicine and BRC member.

"We're designing a whole new generation of medications that will work only on brain cells in areas that need to be repaired," says Wang. "This new type of drug will correct abnormal brain functions in a targeted way, so patients don't experience the side effects found in existing medications that affect the whole brain."

One of only three investigations funded in NeuroScience Canada's new Brain Repair Program, the project brings together five researchers from across Canada, including three investigators from the BRC at UBC Hospital.

Healthy brain functioning relies on a balance between the chemical messengers that stimulate brain cell activity (excitatory neurotransmitters) and those that diminish activity (inhibitory neurotransmitters.)

When balance is disrupted, the flow of information among brain cells in certain areas becomes confused. The result is impairments in perception, thought and behaviour seen in patients with brain disorders ranging from Autism to major psychoses including schizophrenia and depression.

Using sophisticated equipment to view, study and manipulate brain messaging at the cellular level, the team will test their design of a type of drug that can fine-tune communication between brain cells and bring excitatory and inhibitory activity into a healthy balance.

Existing anti-psychotic drugs adjust communication on cell surfaces throughout the brain. Balance is restored in affected areas, however, the drugs may cause imbalance in normal, unaffected areas, leading to negative side effects. Side effects can range from sluggishness, insomnia and anxiety to severe psychoses, and limit prolonged use of these medications.

The new generation of "smart" drugs will target only the cells where communication balance is impaired, leaving healthy areas of the brain unaffected.

Wang estimates the new type of drug could be available to patients within five to 10 years. Brain and nervous system disorders affect one in five Canadians and are among the leading causes of death in this country and are the leading cause of disability. Health Canada has estimated the economic burden of these disorders at \$22.7 billion and costs are expected to rise significantly as the population ages.

Other team members are: (in alphabetical order) Assistant Prof. Alaa El-Husseini, UBC Dept. of Psychiatry and BRC; Associate Prof. Stephen Ferguson, University of Western Ontario; Assistant Prof. Ridha Joobar, McGill University; Professor Anthony Phillips, UBC Dept. of Psychiatry and BRC.

Note to editors: Moving and still colour images of brain cell-to-brain cell communication are available.

The Brain Research Centre, located at UBC Hospital, comprises more than 160 investigators with multidisciplinary expertise in neuroscience research ranging from the test tube, to the bedside, to industrial spin-offs.

NeuroScience Canada's Brain Repair Program is an \$8-million program that has received major support from the Canadian Institutes of Health Research (CIHR) to support Canada's world-class neuroscience researchers. Further information about the NeuroScience Canada awards may be found at www.neurosciencecanada.ca.

NeuroScience Canada was founded in 1988 and uses private, corporate and government funding to support research on mechanisms that protect and repair the brain and nervous system.

CIHR is the Government of Canada's agency for health research.

VCHRI is a joint venture between UBC and Vancouver Coastal Health that promotes development of new researchers and research activity.

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CONTACT: Hilary Thomson, UBC Public Affairs
Tel: 604.822.2644 Cell: 604.209.3048
[e-mail: hilary.thomson@ubc.ca](mailto:hilary.thomson@ubc.ca)