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## McGill research offers hope for better treatment of epilepsy

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Researchers at McGill University have made an important discovery about how brain cells communicate that could lead to new drugs to treat neurological diseases such as epilepsy with fewer side effects.

For the past 50 years, the "golden rule" of pharmacology has been that only small chemicals, often amino acids such as glutamate, signal information from one brain cell to another, says Dr. Derek Bowie, a Canada Research Chair in the Department of Pharmacology and Therapeutics.

Dr. Bowie and his team — Dr. Adrian Wong and McGill graduate student Anne-Marie Fay — have discovered that much smaller electrically charged particles called ions do the same job as larger chemical neurotransmitters. This creates a smaller target for drugs to home in on in the treatment of neurological diseases such as epilepsy as well as neuropathic pain resulting from burns or other trauma. The team's findings are to be published in the May 24 edition of the *Journal of Neuroscience*.

"What we found is that only a subtype of the brain's main signaling receptors for glutamate is co-activated by ions," Dr. Bowie explains. "By targeting these binding sites, we open the door to developing a new family of drugs that target only specific functions of the brain such as those involved in epilepsy, so we can anticipate that any side effects will be fewer and less pronounced." These new drugs could be identified within the next five to ten years, he says.

The \$1-million research project is funded by Dr. Bowie's Chair in Receptor Pharmacology, grants from the Canada Foundation for Innovation, the Fonds de la recherche en santé du Québec and the Canadian Institutes of Health Research, as well as McGill University fellowships.

**On the Web:**

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