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ATA Scientific – Travel Award Winner 2011

What I consider the most interesting or significant discovery/development during the 12 months in the field of science that I work.
By Amelia Edington (PhD student, University of Sydney).

A vacuum cleaner has captivated my interest. This is no ordinary vacuum. You won't find it at Bing Lee but you can find it in a special place called the brain. It is known as a neurotransmitter transporter. It sucks up neurotransmitters such as dopamine, serotonin, glycine or GABA from the synapse collecting them into neurons. Modulation of these transporters can be useful for treating diseases such as depression, schizophrenia, and chronic pain. Transporters can be blocked by applying an inhibitor. An inhibitor may act in similar way as a sock when it gets caught in your vacuum preventing dirt moving from one side to the other. Inhibition is quite well understood however the mechanism of stimulation is not. I have recently been working on the leucine transporter, $LeuT_{Aa}$, a bacterial homologue of the neurotransmitter transporter family. $LeuT_{Aa}$ has previously been crystallised alone and in the presence of a number of inhibitors however there are no known stimulators, until now. We have found a stimulator of $LeuT_{Aa}$ which increases the rate of alanine uptake and we are currently investigating the mechanism of its action.

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ATA Scientific Travel Award winner 2011 - Amelia Edington (PhD student, Pharmacology, Uni Sydney) with supervisors A/Prof Renae Ryan and Prof Robert Vandenberg.