

**Press Release – Embargoed until midday Thursday 4th June, 2009**

***Dr Jane Butler from NSW wins the prestigious 10<sup>th</sup> Annual AMGEN Medical Researcher Award***

### **Breathing new life into respiratory muscle research**

**Dr Jane Butler**, NHMRC Senior Research Fellow at the Prince of Wales Medical Research Institute has won the 2009 AMGEN Medical Researcher Award. Her work has focused on how human respiratory muscles are controlled by motoneurons. Dr Butler has been able to translate what she has learnt about healthy muscles and motoneurons into what occurs during disease, providing novel insights and potentially therapeutic solutions.

“Our Laboratory was the first to pioneer recordings of single motor units within the diaphragm and other specialized muscles used in breathing,” Dr Butler describes.

Motoneurons are nerve cells that convey impulses from the spinal cord or brainstem away from the central nervous system toward a muscle. A motor unit is the term encompassing a single  $\alpha$ -motoneuron and the muscle fibres that it activates.

“We’ve established that the pool of motoneurons that innervates a muscle is organized so that it can be activated in different patterns depending on the task. If a particular muscle needs to move in a certain way in order to perform a task, then the appropriate motoneurons are specifically recruited to optimize the mechanical efficiency of the task,” explains Dr Butler. “We have demonstrated this for the human respiratory muscles.”

Dr Butler has applied the information she has gleaned from studying normal motor control into trying to better understand what happens with patients with certain respiratory disorders, such as chronic obstructive pulmonary disease (COPD), asthma and obstructive sleep apnoea.

Obstructive sleep apnoea is a condition where patients have periods when they stop breathing during sleep. Dr Butler’s studies have significantly advanced the understanding of how an important upper airway muscle functions with obstructive sleep apnoea, and the hope is that her research could lead to new treatment concepts for this disease.

Dr Butler is also making important advances in understanding some of the neurological consequences of high spinal cord injury. In particular, she has been investigating ways of electrically inducing an effective cough. “Respiratory infections are a major problem for patients with spinal cord injury and one of the main reasons for this is that they have weak cough and thus find it difficult to clear secretions” Dr Butler outlines. This work also has the potential for commercial applications in the future.

The *AMGEN Medical Researcher Award*, proudly supported by AMGEN Australia Pty Ltd and presented during ASMR Medical Research Week® is awarded to an Australian postdoctoral scientist for excellence in medical research in translational studies.

**Media contacts :** Catherine West 0415 928 211 or Dr Kristen Nowak 0431 568 651

---

The Australian Society for Medical Research ACN 000599235 - ABN 18 000599235 145 Macquarie Street, Sydney, 2000 Ph: (02) 9256 5450,

Fax (02) 9252 0294 Email: [asmr@world.net](mailto:asmr@world.net), Website: [www.asmr.org.au](http://www.asmr.org.au) Snr Executive Officer: Catherine West