

André Marques-Smith

Society for Neuroscience Annual Conference 2013, USA

I am delighted to have recently been awarded a Society of Biology Travel Grant, to support my attendance of the Society for Neuroscience Annual Conference, in San Diego California, where I presented a poster.

The mammalian sensory cortex receives most sensory-related information via inputs arriving from the thalamus, a rich hub of nuclei buried deep in the brain. Early in development, it is thought that sensory inputs arriving via the thalamus play a major role in regulating patterns of connectivity, gene expression and area identity of neurons in the cerebral cortex. Despite this important role and the fact that thalamic inputs are likely to have a widespread influence on many layers and cell types in the cortex, scientists have mostly focused on the development of thalamic inputs onto excitatory and inhibitory neurons of cortical layer 4, the main target of thalamocortical axons.

In our work, we identified a cohort of deep-layer inhibitory neurons which receives direct input from the thalamus and sends a projection to cortical layer 4. Early in development, layer 4 excitatory neurons send a feedback excitatory projection to this inhibitory deep layer population. Interestingly, both these connections disappear over the course of development.

We believe this circuit could be important for supporting early patterns of activity in the cortex, which are important for the formation of correct circuits between layers in one area, and between different areas. Moreover, our work illustrates the complexity of early interactions between the thalamus and the cortex, beyond what is known about thalamic inputs onto layer 4.

We are currently preparing for submission a manuscript based on this work, and as such my motivation to go to the SfN conference was to present this work and get feedback from experts in the field. I applied for a prestigious Society of Biology Travel Grant to support the high financial cost of travel and accommodation in San Diego. I gained a lot from attending this conference, not only in terms of the useful feedback and positive reactions to my poster, but also in terms of improving my presentation skills. I was also able to attend several talks and poster presentations, in order to stay afloat of developments in my field, and hold meetings with groups doing similar work to ours. For this reason, I am truly grateful for the Society of Biology's support. I feel attending SfN this year really furthered my career.