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7<sup>th</sup> Aug, 2017 (Mon) 14:00-15:30  
2017年8月7日 (月) 14:00-15:30

Pharmaceutical Sciences Building, 2F, Lecture Room (205)  
創薬科学研究館 2 階講義室(205)

### **Forelimb and hindlimb motor control is mediated by V2a interneuron subtypes arrayed in counter gradients along the spinal cord**

The spinal cord contains neural networks that enable regionally-distinct motor outputs along the body axis. Nevertheless, it remains unclear how segment-specific motor computations are processed because the cardinal interneuron classes identified with developmental markers appear uniform at each level of the spinal cord. Here we identify two subpopulations of V2a interneurons that emerge during development: Type-I V2a cells marked by high Chx10 form recurrent networks with neighboring spinal neurons, and Type-II V2a cells that downregulate Chx10 and project to supraspinal structures. Although the total number of V2a neurons is relatively constant at cervical and lumbar levels, Type-I/II subsets form a counter-gradient with each other along the rostrocaudal axis. Rather than creating segmentally-discrete neural architectures, our findings reveal a ratiometric design strategy for controlling the specialized processing demands of forelimb and hindlimb movements based on the graded distribution of two circuit units arrayed along the spinal axis.

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