Universität Basel

Research Project

Pradel Research Award

Third-party funded project

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Principal Investigator(s) Arber, Silvia ;
Organisation / **Research unit**
Departement Biozentrum / Cell Biology (Arber)
Friedrich Miescher Institut FMI
Department
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Arber, one of the world's most prominent neurobiologists, is a leading figure in the study of neuronal circuitry controlling motor behavior. Her research on the assembly, structure, and function of motor circuits has resulted in fundamental contributions to our understanding of the organizational principles of the motor system including the spinal cord and the brainstem.

Arber's early work focused on the molecular mechanisms responsible for the formation of appropriate connections in sensory-motor circuits of the spinal cord. Since then she has turned her attention to the wider circuits of the motor system, with particular emphasis on the functional organization of brainstem nuclei with connections to specific neuronal populations in the spinal cord. Her work combines multiple research approaches, including state-of-the-art mouse genetics, the development and implementation of viral technologies, quantitative behavioral analysis, electrophysiology and gene expression profiling. Some of her lab's most recent research unraveled highly specific bidirectional communication pathways between higher brain centers and the spinal cord. This work demonstrated the existence of molecularly and functionally defined brainstem motor control hubs for diverse actions.

Collectively, Arber's work not only reveals the functional organization of circuits at the core of motor control but has the potential to improve recovery in people and animals that have lost or attenuated motor function.

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