Universität Basel

Research Project

Brainstem Circuits Controlling Movement

Third-party funded project

Project title Brainstem Circuits Controlling Movement
Principal Investigator(s) Arber, Silvia ;
Project Members Gunapala, Keith ; Neves Ferreira Pinto, Manuel Joao ; Yang, Wuzhou ; Schina, Riccardo ; Sridharan, Madhav ; Thornton, Staci ; Costa Afonso, Ana Rita ;
Organisation / Research unit
Departement Biozentrum / Cell Biology (Arber)
Friedrich Miescher Institut FMI
Department
Project Website https://p3.snf.ch/project-179403
Project start 01.04.2018
Probable end 31.03.2022
Status Completed

One of the most important tasks of the nervous system is the generation of specific forms of movement as behavioral output, allowing animals or humans to interact with their surroundings appropriately according to motor plans and/or in response to influence from the environment. The motor system is broadly distributed across the nervous system, including areas close to actual motor program execution in the spinal cord, all the way up to regions of the nervous system involved in decision making and planning of motor acts. The brainstem is a key intermediary structure between higher motor centers and spinal circuits, and we have hypothesized that distinct subpopulations of brainstem neurons mediate selective motor programs. The goal of this work is to unravel key defining features of brainstem neurons involved in the regulation of diverse forms of movement, and to understand how a particular behavior is chosen over others. Our project will contribute to uncovering organizational principles of neuronal circuits in the motor output system of mice, as well as the contributions of these circuits to behavioral function.

Keywords Motor control; Neuronal circuits; Mouse genetics
Financed by
Swiss National Science Foundation (SNSF)

Add publication

Published results

4500774, Takeoka, Aya; Arber, Silvia, Functional Local Proprioceptive Feedback Circuits Initiate and Maintain Locomotor Recovery after Spinal Cord Injury, 2211-1247, Cell reports, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

2690387, Pecho-Vrieseling, Eline; Rieker, Claus; Fuchs, Sascha; Bleckmann, Dorothee; Esposito, Maria Soledad; Botta, Paolo; Goldstein, Chris; Bernhard, Mario; Galimberti, Ivan; Müller, Matthias; Lüthi, Andreas; Arber, Silvia; Bouwmeester, Tewis; van der Putten, Herman; Di Giorgio, Francesco Paolo, Transneuronal propagation of mutant huntingtin contributes to non-cell autonomous pathology in neu-

rons, 1097-6256, Nature neuroscience, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4483836, Pecho-Vrieseling, Eline; Rieker, Claus; Fuchs, Sascha; Bleckmann, Dorothee; Esposito, Maria Soledad; Botta, Paolo; Goldstein, Chris; Bernhard, Mario; Galimberti, Ivan; Müller, Matthias; Lüthi, Andreas; Arber, Silvia; Bouwmeester, Tewis; van der Putten, Herman; Di Giorgio, Francesco Paolo, Author Correction: Transneuronal propagation of mutant huntingtin contributes to non-cell autonomous pathology in neurons, 1546-1726, Nature neuroscience, JournalItem (Kommentare, Editorials, Rezensionen, Urteilsanmerk., etc. in einer wissensch. Zeitschr.

4484296, Heindorf, Matthias; Arber, Silvia; Keller, Georg B., Mouse Motor Cortex Coordinates the Behavioral Response to Unpredicted Sensory Feedback, 0896-6273 ; 1097-4199, Neuron, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4500776, Heindorf, Matthias; Arber, Silvia; Keller, Georg B., Mouse Motor Cortex Coordinates the Behavioral Response to Unpredicted Sensory Feedback, 0896-6273 ; 1097-4199, Neuron, JournalItem (Kommentare, Editorials, Rezensionen, Urteilsanmerk., etc. in einer wissensch. Zeitschr.

4486888, Ferreira-Pinto, Manuel J.; Ruder, Ludwig; Capelli, Paolo; Arber, Silvia, Connecting Circuits for Supraspinal Control of Locomotion, 1097-4199, Neuron, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4482573, Arber, Silvia; Costa, Rui M., Connecting neuronal circuits for movement, 0036-8075 ; 1095-9203, Science, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

Add documents

Specify cooperation partners