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Research profile

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Qualifications

Neuroscience, PhD, Spinal and Supraspinal Sensitization in Chronic Pain – Chasing Mechanisms, University of Zurich
Award Date: 28 Aug 2023

Biomedicine, Master of Science, The Effect of Conditioned Pain Modulation on Temporal Summation of Pain Evoked by Tonic Heat, University of Zurich
Award Date: 1 Oct 2018

Biology, Bachelor of Science, University of Zurich
Award Date: 29 Feb 2016

Employment

Post.Doc

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15 Oct 2024 → 31 Dec 4712

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Co-Chair, IASP Early Career Network Communication Committee

International Association for the Study of Pain (IASP)
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Research outputs

The role of biopsychosocial factors in classifying pain intensity across various chronic pain conditions

Schoenmacker, I. D., Monzón, M., Sirucek, L., Scheuren, P. S., Lütolf, R., Gorrell, L., Brunner, F., Curt, A., Rosner, J., Schweinhardt, P., Hubli, M. & Jutzeler, C. R., 29 May 2026, (E-pub ahead of print) In: *Scientific Reports*.

Challenging deficient inhibitory conditioned pain modulation as common chronic pain feature and detectable subgroup characteristic

Sirucek, L., Schoenmacker, I. D., Gorrell, L. M., Luetolf, R., Langenfeld, A., Brunner, F., Rösner, J., Baechler, M., Wirth, B., Hubli, M. & Schweinhardt, P., 3 May 2026, medRxiv, 48 p.

Intact endogenous pain inhibition in complex regional pain syndrome type 1

Allmendinger, F., Sirucek, L., De Schoenmacker, I., Scheuren, P. S., Brunner, F., Schweinhardt, P. & Hubli, M., Dec 2025, In: *Pain Reports*. 10, 6, e1358.

The periaqueductal gray in chronic low back pain: dysregulated neurotransmitters and function

Sirucek, L., De Schoenmacker, I., Gorrell, L. M., Lütolf, R., Langenfeld, A., Baechler, M., Wirth, B., Hubli, M., Zölch, N. & Schweinhardt, P., 1 Jul 2025, In: *Pain*. 166, 7, p. 1690-1705 16 p.

What a Sham(e): Sham-Controlled Conditioned Pain Modulation Effects on Pressure but Not Heat Pain Thresholds in Healthy Volunteers

Hau, M., Sirucek, L., Schoenmacker, I. D., Lütolf, R., Gorrell, L., Hubli, M. & Schweinhardt, P., 1 Jul 2025, In: *European Journal of Pain*. 29, 6, e70067.

Latent Class Analysis Reveals Subgroups of Inhibitory Conditioned Pain Modulation Across Patient Cohorts and Controls

Sirucek, L., De Schoenmacker, I., Gorrell, L., Lütolf, R., Langenfeld, A., Brunner, F., Baechler, M., Wirth, B., Schweinhardt, P. & Hubli, M., Apr 2025, *Abstract Book 14th Congress of The European Pain Federation EFIC : Comorbidity of Chronic Pain and Mental Health Disorders: Breaking the Cycle*. p. 257

Shape Matters: Comparing Hemispherical and Cylindrical Algometer Tips for Pressure Pain Threshold Assessment

Sirucek, L., Inderbitzin, S. & Schweinhardt, P., Apr 2025, *Abstract Book 14th Congress of The European Pain Federation EFIC : Comorbidity of Chronic Pain and Mental Health Disorders: Breaking the Cycle*. p. 388

Spinal and Supraspinal Components of Central Sensitization: Does Your Brain Differentiate?

Hau, M., Sirucek, L., Beckman, C. & Schweinhardt, P., Apr 2025, *Abstract Book 14th Congress of The European Pain Federation EFIC : Comorbidity of Chronic Pain and Mental Health Disorders: Breaking the Cycle*. p. 155

The Role of BioPsychosocial Factors in Classifying Chronic Pain Intensity Across Various Chronic Pain Conditions

De Schoenmacker, I., Monzon, M., Sirucek, L., Scheuren, P. S., Lütolf, R., Gorrell, L., Brunner, F., Curt, A., Rosner, J., Schweinhardt, P., Hubli, M. & Jutzeler, C., Apr 2025, *Abstract Book 14th Congress of The European Pain Federation EFIC : Comorbidity of Chronic Pain and Mental Health Disorders: Breaking the Cycle*. p. 159-160

Identification of two biological subgroups of complex regional pain syndrome type 1 by transcriptomic profiling of skin and blood in women

Pérez Vertti Valdés, M., Jüngel, A., Bitterli, P., Devan, J., Rehrauer, H., Opitz, L., Sirucek, L., Schweinhardt, P., Catanzaro, S., Distler, O., Brunner, F. & Dudli, S., 12 Mar 2025, In: *Molecular Medicine*. 31, 1, 94.

Identification of Two Biological Subgroups of Complex Regional Pain Syndrome Type 1 by Transcriptomic Profiling of Skin and Blood

Valdés, M. P. V., Jüngel, A., Bitterli, P., Devan, J., Rehrauer, H., Opitz, L., Sirucek, L., Schweinhardt, P., Catanzaro, S., Distler, O., Brunner, F. & Dudli, S., 9 Dec 2024.

Understanding inter-individual variability of experimental pain habituation and conditioned pain modulation in healthy individuals

De Schoenmacker, I., Scheuren, P. S., Sirucek, L., Lütolf, R., Gorrell, L. M., Rosner, J., Curt, A., Schweinhardt, P. & Hubli, M., Dec 2024, In: Scientific Reports. 14, 1, 22070.

Indication for spinal sensitization in chronic low back pain: mechanical hyperalgesia adjacent to but not within the most painful body area

Sirucek, L., De Schoenmacker, I., Scheuren, P. S., Lütolf, R., Gorrell, L. M., Langenfeld, A., Baechler, M., Rosner, J., Wirth, B., Hubli, M. & Schweinhardt, P., Aug 2024, In: Pain Reports. 9, 4

Improving magnetic resonance spectroscopy in the brainstem periaqueductal gray using spectral registration

Sirucek, L., Zoelch, N. & Schweinhardt, P., Jan 2024, In: Magnetic Resonance in Medicine. 91, 1, p. 28-38 11 p.

Sensory phenotypes in complex regional pain syndrome and chronic low back pain—indication of common underlying pathomechanisms

Schoenmacker, I. D., Sirucek, L., Scheuren, P. S., Lütolf, R., Gorrell, L. M., Brunner, F., Curt, A., Rosner, J., Schweinhardt, P. & Hubli, M., Dec 2023, In: Pain Reports.

Central sensitization in CRPS patients with widespread pain: a cross-sectional study

De Schoenmacker, I., Mollo, A., Scheuren, P. S., Sirucek, L., Brunner, F., Schweinhardt, P., Curt, A., Rosner, J. & Hubli, M., 1 Aug 2023, In: Pain Medicine.

The periaqueductal grey in chronic low back pain: dysregulated metabolites and function

Sirucek, L., Schoenmacker, I. D., Gorrell, L., Lütolf, R., Langenfeld, A., Baechler, M., Wirth, B., Hubli, M., Zölch, N. & Schweinhardt, P., 5 Jun 2023.

Central Sensitization and the Curse of Ambiguous Terminology: An Opinion

Sirucek, L., 16 Sept 2022

Anti- and Pro-Nociceptive mechanisms in neuropathic pain after human spinal cord injury

Lütolf, R., Schoenmacker, I. D., Rosner, J., Sirucek, L., Schweinhardt, P., Curt, A. & Hubli, M., 24 Aug 2022, In: European Journal of Pain.

Diffuse noxious inhibitory controls and conditioned pain modulation: a shared neurobiology within the descending pain inhibitory system?

Sirucek, L., Ganley, R. P., Zeilhofer, H. U. & Schweinhardt, P., 17 Jun 2022, In: Pain.

Inclusive Trial Designs in Acute Spinal Cord Injuries: Prediction-Based Stratification of Clinical Walking Outcome and Projected Enrolment Frequencies

Cathomen, A., Sirucek, L., Killeen, T., Abel, R., Maier, D., Weidnet, N., Rupp, R., Hothorn, T., Steeves, J., Curt, A. & Bolliger, M., 14 Feb 2022, In: Neurorehabilitation and Neural Repair.

Endogenous opioids contribute to the feeling of pain relief in humans

Sirucek, L., Price, R. C., Gandhi, W., Hoeppli, M.-E., Fahey, E., Qu, A., Becker, S. & Schweinhardt, P., Dec 2021, In: Pain.

Pathophysiological Assessment of Non-Specific Back Pain: IASP 2021 Global Year About Back Pain - Fact Sheet

Schweinhardt, P., Baechler, M., Becker, S., Nyiroe, L. & Sirucek, L., 9 Jul 2021

The Effect of Conditioned Pain Modulation on Tonic Heat Pain Assessed Using Participant-Controlled Temperature

Sirucek, L., Jutzeler, C. R., Rosner, J., Schweinhardt, P., Curt, A., Kramer, J. L. K. & Hubli, M., 16 Mar 2020, In: Pain Medicine.

New life for an old idea: Assessing tonic heat pain by means of participant controlled temperature

Jutzeler, C., Sirucek, L., Scheuren, P. S., Tong, B., Anenberg, E., Ortiz, O., Rosner, J., Hubli, M. & Kramer, J. L. K., 1 Jun 2019, In: Journal of Neuroscience Methods.

Normative data of contact heat evoked potentials from the lower extremities

Rosner, J., Hostettler, P., Scheuren, P. S., Sirucek, L., Rinert, J., Curt, A., Kramer, J. L. K., Jutzeler, C. & Hubli, M., 20 Jul 2018, In: Scientific Reports.

My lifelong fascination with the human body led me to study Biology at the Bachelor's level. My own body withstood a great deal throughout my career as a professional volleyball player, until after a series of injuries, I chose to refocus on another passion. I vividly recall the first time I witnessed a brain response being recorded during peripheral heat stimulation in my Bachelor's. This moment sparked my interest in neural pain processing assessments in humans. Consequently, I performed my Master's thesis in Biomedicine at the Spinal Cord Injury Research Center at Balgrist University Hospital. There, I gained experience with neurophysiological methods, like heat-evoked potentials recorded via single-electrode electroencephalography, as well as psychophysical pain assessments in pain-free volunteers. I also became acutely aware of the clinical relevance and societal impact of chronic pain, resonating with personal childhood experiences of a close relative suffering from cancer pain. Combined with the fascinating complexity of the nociceptive system, this fueled my desire to pursue a PhD in the pain field. I was recruited by Prof. Petra Schweinhardt, former Head of Research and current Head of the Department of Chiropractic Medicine at Balgrist University Hospital, for a PhD project on sensitization processes in the central nervous system of patients with chronic low back pain. My PhD deepened my psychophysical expertise and expanded my methodological repertoire to include magnetic resonance techniques. Together, my Master's and PhD studies have provided me with a strong foundation in both the theoretical and practical aspects of investigating the human central nervous system in health and disease. During my first postdoctoral fellowship, I gathered additional experience in functional magnetic resonance imaging and PhD student co-supervision, and started my first collaborations independent from my supervisor. In October 2024, I started a second postdoctoral fellowship at the Center for Neuroplasticity and Pain (CNAP) at Aalborg University, Denmark, continuing my research on chronic pain-related neuroplasticity.