Gary Lewin

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Molecular Physiology of Somatic Sensation
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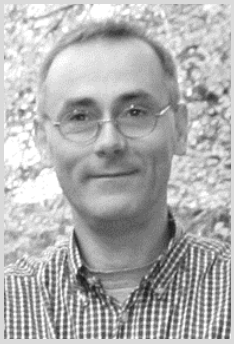

Curriculum vitae

since 2008	Associate faculty member, Bernstein Center for Computational Neuroscience, Berlin
2003	Group leader, Max Delbrück Center for Molecular Medicine Professor (W3), joint appointment, Charité - Universitätsmedizin Berlin
1996	Independent group leader, Department of Neuroscience, Max Delbrück Center for Molecular Medicine Berlin-Buch
1994	Max Planck Researcher, Department of Neurobiochemistry, Max Planck Institute for Psychiatry, Munich
1993	Visiting Alexander von Humboldt research fellow, Department of Neurobiochemistry (Prof. Yves-Alain Barde), Max Planck Institute for Psychiatry, Munich
1992	Research Assistant Professor, Department of Neurobiology and Behavior, SUNY at Stony Brook. Awarded first peer-reviewed grant, American Paralysis Society
1990	Postdoctoral research associate, Department of Neurobiology and Behavior (Laboratory of Prof. Lorne Mendell), SUNY Stony Brook, New York

Research fields

Sensory neurons of the dorsal root ganglia allow us to detect stimuli to the body surface that lead directly to the sensations such as touch and pain. We explore the genes that allow these neurons to transduce different types of stimuli. Sensory neurons can, for example, detect changes in temperature of the skin in non-noxious (not painful) as well as noxious ranges (painful heat or cold). They can also detect gentle movement of the skin as well as intense mechanical stimulation of the skin that is normally harmful. The nature of the transduction molecules involved together with the developmental events that lead to specification of the appropriate sensory neuron sub-types are actively investigated in my lab.

Activities in the scientific community, honors, awards

2008	Elected member, European Molecular Biology Organization (EMBO)
2007	Speaker “MolNeuro” Research School
1996	Young Investigator Prize of the International Society for the Study of Pain (IASP)
1993	Alexander von Humboldt fellowship to travel from the US to Germany to perform research at the Max Planck Institute for Psychiatry, Martinsried, Munich
1991	NATO traveling fellowship to carry out further experimental studies, in collaboration with Stephen McMahon

Selected publications

Frank JA, Moroni M, Moshourab R, Sumser M, Lewin GR, Trauner D. Photoswitchable fatty acids enable optical control of TRPV1. Nat Commun. 2015;6:7118.

Ranade SS, Woo SH, Dubin AE, Moshourab RA, Wetzel C, Petrus M, Mathur J, Begay V, Coste B, Mainquist J, Wilson AJ, Francisco AG, Reddy K, Qiu Z, Wood JN, Lewin GR, Patapoutian A. Piezo2 is the major transducer of mechanical forces for touch sensation in mice. Nature. 2014;516(7529):121-5.

Milenkovic N, Zhao WJ, Walcher J, Albert T, Siemens J, Lewin GR, Poulet JF. A somatosensory circuit for cooling perception in mice. Nat Neurosci. 2014;17(11):1560-6.

Heidenreich M, Lechner SG, Vardanyan V, Wetzel C, Cremers CW, De Leenheer EM, Aranguez G, Moreno-Pelayo MA, Jentsch TJ, Lewin GR. KCNQ4 K(+) channels tune mechanoreceptors for normal touch sensation in mouse and man. Nat Neurosci. 2012;15(1):138-45.

Frenzel H, Bohlender J, Pinsker K, Wohlleben B, Tank J, Lechner SG, Schiska D, Jaijo T, Ruschendorf F, Saar K, Jordan J, Millan JM, Gross M, Lewin GR. A genetic basis for mechanosensory traits in humans. PLoS Biol. 2012;10(5):e1001318.

Smith ES, Omerbasic D, Lechner SG, Anirudhan G, Lapatsina L, Lewin GR. The molecular basis of acid insensitivity in the African naked mole-rat. Science (New York, NY. 2011;334(6062):1557-60.

Chiang LY, Poole K, Oliveira BE, Duarte N, Sierra YA, Bruckner-Tuderman L, Koch M, Hu J, Lewin GR. Laminin-332 coordinates mechanotransduction and growth cone bifurcation in sensory neurons. Nat Neurosci. 2011;14(8):993-1000.

Hu J, Chiang LY, Koch M, Lewin GR. Evidence for a protein tether involved in somatic touch. Embo J. 2010;29(4):855-67.

Lechner SG, Frenzel H, Wang R, Lewin GR. Developmental waves of mechanosensitivity acquisition in sensory neuron subtypes during embryonic development. Embo J. 2009;28(10):1479-91.

Wetzel C, Hu J, Riethmacher D, Benckendorff A, Harder L, Eilers A, Moshourab R, Kozlenkov A, Labuz D, Caspani O, Erdmann B, Machelska H, Heppenstall PA, Lewin GR. A stomatin-domain protein essential for touch sensation in the mouse. Nature. 2007;445(7124):206-9.