

Prof. Dr. Halina Machelska

Curriculum Vitae

- 2008 Professor, Klinik für Anaesthesiologie und operative intensivmedizin, Freie Universität Berlin and Charité-Universitätsmedizin, Campus Benjamin Franklin, Berlin.
- 1998-2008 Research associate, Klinik für Anaesthesiologie und operative intensivmedizin, Freie Universität Berlin and Charité-Universitätsmedizin, Campus Benjamin Franklin, Berlin.
- 1997-1998 Postdoctoral fellow, Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University, and Preclinical Pharmacology Laboratory, National Institute on Drug Abuse /National Institutes of Health, Baltimore, USA.
- 1989-1996 Ph.D. with honours, Department of Molecular Neuropharmacology, Institute of Pharmacology, Polish Academy of Sciences, Krakow, Poland.
- 1984-1989 M.Sc., Faculty of Biology, Jagiellonian University, Krakow, Poland.

Grants

DFG, MA 2437/2-1.

Principal Investigator of the project: "Opioid analgesia in inflammation: activation by catecholamines and inhibitors of opioid peptide-degrading enzymes". 2008 – 2011.

DFG, KFO 100/2 "Molecular mechanisms of opioid analgesia in inflammatory pain".

Principal Investigator of project 1: "Immune-derived opioids and neuropathic pain". 2005 - 2008.

Bundesministerium für Bildung und Forschung, "German-Polish Cooperation in Neuroscience".

Co-Principal investigator and coordinator of the project: "Peripheral analgesic effects of endomorphins in chronic inflammatory and neuropathic pain – mechanisms and therapeutic implications". 2003 -2006.

DFG, KFO 100/1 "Molecular mechanisms of opioid analgesia in inflammatory pain".

Principal investigator of project 1: "Adhesion molecules and peripheral opioid analgesia". 2001 - 2004.

Publications

Original articles

Labuz D, Schmidt Y, Schreiter A, Rittner HL, Mousa SA, Machelska H. Immune cell-derived opioids protect against neuropathic pain. **J Clin Invest** 2009, 119:278-286.

Labuz D, Mousa SA, Schafer M, Stein C, Machelska H. Relative contribution of peripheral versus central opioid receptors to antinociception. **Brain Res** 2007, 1160:30-38.

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, 445:206-209.

Labuz D, Berger S, Mousa SA, Zöllner C, Rittner HL, Shaqura MA, Segovia-Silvestre T, Przewlocka B, Stein C, Machelska H. Peripheral antinociceptive effects of exogenous and immune cell-derived endomorphins in prolonged inflammatory pain. **J Neurosci** 2006, 26:4350-4358.

Brack A, Rittner HL, Machelska H, Leder K, Mousa SA, Schäfer M, Stein C. Control of inflammatory pain by chemokine-mediated recruitment of opioid-containing polymorphonuclear cells. **Pain** 2004, 112:229-238.

Brack A, Labuz D, Schiltz A, Rittner HL, Machelska H, Schäfer M, Reszka R, Stein C. Tissue monocytes/macrophages in inflammation: hyperalgesia versus opioid-mediated peripheral antinociception. **Anesthesiology** 2004, 101:204-211.

Brack A, Rittner HL, Machelska H, Shaqura M, Mousa SA, Labuz D, Zöllner C, Schäfer M, Stein C. Endogenous peripheral antinociception in early inflammation is not limited by the number of opioid-containing leukocytes but by opioid receptor expression. **Pain** 2004, 108:67-75.

Brack A, Rittner HL, Machelska H, Beschmann K, Sitte N, Schafer M, Stein C. Mobilization of opioid-containing polymorphonuclear cells by hematopoietic growth factors and influence on inflammatory pain. **Anesthesiology** 2004, 100:149-157.

Machelska H, Brack A, Mousa SA, Schopohl JK, Rittner HL, Schäfer M, Stein C. Selectins and integrins but not platelet-endothelial cell adhesion molecule-1 regulate opioid inhibition of inflammatory pain. **Br J Pharmacol**, 2004, 142:772-780.

Machelska H, Schopohl JK, Mousa SA, Labuz D, Schäfer M, Stein C. Different mechanisms of intrinsic pain inhibition in early and late inflammation. **J Neuroimmunol** 2003, 141:30-39.

Machelska H, Mousa SA, Brack A, Schopohl JK, Rittner HL, Schäfer M, Stein C. Opioid control of inflammatory pain regulated by intercellular adhesion molecule-1. **J Neurosci** 2002, 22:5588-5596.

Mousa SA, Machelska H, Schäfer M, Stein C. Immunohistochemical localization of endomorphin-1 and endomorphin-2 in immune cells and spinal cord in a model of inflammatory pain. **J Neuroimmunol** 2002, 126:5-15.

Rittner HL, Brack A, Machelska H, Mousa SA, Bauer M, Schäfer M, Stein C. Opioid peptide expressing leukocytes - identification, recruitment and simultaneously increasing inhibition of inflammatory pain. **Anesthesiology** 2001, 95:500-508.

Binder W, Machelska H, Mousa SA, Schmitt T, Riviere PJM, Junien J-L, Stein C, Schäfer M. Analgesic and anti-inflammatory effects of two novel kappa opioid peptides. **Anesthesiology** 2001, 94:1034-1044.

Mousa SA, Machelska H, Schäfer M, Stein C. Co-expression of β -endorphin with selectins and PECAM-1 in a model of inflammatory pain. **J Neuroimmunol** 2000, 108:160-170.

Przewlocka B, Mika J, Capone F, Machelska H, Pavone F. Intrathecal oxotremorine affects formalin-induced behavior and spinal nitric oxide synthase immunoreactivity in rats. **Pharmacol Biochem Behav** 1999, 62:531-536.

Machelska H, Pflüger M, Weber W, Piranvisseh-Völk M, Daubert JD, DeHaven R, Stein C. Peripheral effects of the kappa-opioid agonist EMD 61753 on pain and inflammation in rats and humans. **J Pharmacol Exp Ther** 1999, 290:354-361.

Machelska H, Pavone F, Capone F, Przewlocka B. Antinociception after both peripheral and intrathecal injection of oxotremorine is modulated by spinal nitric oxide. **Eur J Neuropsychopharmacol** 1999, 9:213-217.

Machelska H, Przewlocki R, Radomski MW, Przewlocka B. Differential effects of intrathecally and intracerebroventricularly administered nitric oxide donors on noxious mechanical and thermal stimulation. **Pol J Pharmacol** 1998, 50:407-415.

Machelska H, Cabot PJ, Mousa SA, Zhang Q, Stein C. Pain control in inflammation governed by selectins. **Nature Med** 1998, 4:1425-1428. Comment in: **Nature Med** 1998, 4:1359-1360.

Labuz D, Toth G, Machelska H, Przewlocka B, Borsodi, Przewlocki R. Antinociceptive effects of isoleucine derivatives of deltorphin I and deltorphin II in rat spinal cord: a search for selectivity of delta receptor subtypes. **Neuropeptides** 1998, 32:511-517.

Lason W, Turchan J, Przewlocka B, Labuz D, Machelska H, Przewlocki R. Effects of pentylentetrazol on glutamate receptor genes expression in the rat hippocampus. **Brain Res** 1998, 785:355-358.

Machelska H, Ziolkowska B, Mika J, Przewlocka B, Przewlocki R. Chronic morphine increases biosynthesis of nitric oxide synthase in the rat spinal cord. **Neuroreport** 1997, 8:2743-2747.

Machelska H, Labuz D, Przewlocki R, Przewlocka B. Inhibition of nitric oxide synthase enhances antinociception mediated by mu, delta and kappa opioid receptors in acute and prolonged pain in the rat spinal cord. **J Pharmacol Exp Ther** 1997, 282:977-984.

Lason W, Turchan J, Przewlocki R, Machelska H, Labuz D, Przewlocka B. Effects of pilocarpine and kainate-induced seizures on N-methyl-D-aspartate receptor gene expression in the rat hippocampus. **Neuroscience** 1997, 78:997-1004.

Ziolkowska B, Przewlocka B, Bilecki W, Machelska H, Przewlocki R. Regulation of proenkephalin gene expression by transcription factors fos and CREB: an antisense oligonucleotide approach. **Biotechnologia** 1996, 4:167-172.

Przewlocka B, Turchan J, Machelska H, Labuz D, Lason W. Nitric oxide synthase inhibitor L-NAME prevents amphetamine-induced prodynorphin gene expression in the rat. **Prog Neuropsychopharmacol Biol Psychiatry** 1996, 20:1229-1237.

Przewlocka B, Machelska H, Rekowski P, Kupryszewski G, Przewlocki R. Intracerebroventricular galanin and N-terminal galanin fragment enhance the morphine-induced analgesia in the rat. **J Neural Transmis** 1995, 102:229-235.

Przewlocka B, Lason W, Machelska H, Van Luijtelaa ELJM, Coenen NA, Przewlocki R. Kappa opioid receptor agonists suppress absence seizures in WAG/Rij rats. **Neurosci Lett** 1995, 186:131-134.

Przewlocka B, Lason W, Machelska H, Przewlocki R. The effects of cocaine-induced seizures on the proenkephalin mRNA level in the mouse hippocampus: a possible involvement of the nitric oxide pathway. **Neurosci Lett** 1994, 168:81-84.

Majeed NH, Przewlocka B, Machelska H, Przewlocki R. Inhibition of nitric oxide synthase attenuates the development of morphine tolerance and dependence in mice. **Neuropharmacology** 1994, 33:189-192.

Przewlocki R, Machelska H, Przewlocka B. Modulation of morphine and cocaine effects by inhibition of nitric oxide synthase. **Regul Pept** 1994, 54:233-235.

Przewlocka B, Machelska H, Lason W. Kappa opioid receptor agonists inhibit the pilocarpine-induced seizures and toxicity in the mouse. **Eur J Neuropsychopharmacol** 1994, 4:527-533.

Przewlocki R, Machelska H, Przewlocka B. Inhibition of nitric oxide synthase enhances morphine antinociception in the spinal cord. **Life Sci** 1993, 52:1-5.

Reviews/Editorials

Machelska H. Targeting of opioid-producing leukocytes for pain control. **Neuropeptides** 2007, 41:285-293.

Rittner HL, Machelska H, Schafer M, Stein C, Brack A. Comment on "Neutrophils: are they hyperalgesic or anti-hyperalgesic?". **J Leukoc Biol** 2006, 80:729-730.

Machelska H, Stein C. Leukocyte-derived opioid peptides and inhibition of pain. **J Neuroimmune Pharmacol** 2006, 1:90-97.

Rittner HL, Machelska H, Stein C. Leukocytes in the regulation of pain and analgesia. **J Leukoc Biol** 2005, 78:1215-1222.

Stein C, Schäfer M, Machelska H. Attacking pain at its source: new perspectives on opioids. **Nature Med** 2003, 9:1003-1008.

Machelska H, Heppenstall PA, Stein C. Breaking the pain barrier. **Nature Med** 2003, 9:1353-1354.

Machelska H. Functional evidence of pain control by the immune system. **Adv Exp Med Biol** 2003, 521:88-97.

Stein C, Machelska H, Schäfer M. Peripheral analgesic and anti-inflammatory effects of opioids. **Z Rheumatologie** 2001, 60:416-424.

Stein C, Machelska H, Binder W, Schäfer M. Peripheral opioid analgesia. **Curr Opin Pharmacol** 2001, 1:62-65.

Machelska H, Stein C. Pain control by immune-derived opioids. **Clin Exp Pharm Physiol** 2000, 27:533-536.

Machelska H, Stein C. Pain control and the immune system. **Curr Opin Anaesthesiol** 1999, 12:579-581.

Machelska H, Stein C. Peripheral nociceptive integration. **Pain Forum** 1998, 7:87-89.

Book

Machelska H, Stein C. (Eds.) Immune mechanisms of pain and analgesia. Landes Bioscience/Eurekah.com, Georgetown, Texas, USA and Kluwer Academic/Plenum Publishers, New York, New York, USA, 2003.

Book chapters

Rittner HL, Machelska H, Stein C. Immune system, pain and analgesia. In: The Senses: A Comprehensive Reference; Vol. 5. Pain, Eds. Bushnell MC, Basbaum AI. Academic Press, San Diego 2008, pp. 407-428.

Machelska H, Stein C. Analgesic effects of immune cell-derived opioids. In: Immune and Glial Regulation of Pain. Eds. DeLeo JA, Sorkin LS, Watkins LR. IASP Press, Seattle 2007, pp. 107-120.

Machelska H, Stein C. Immune-derived opioids: production and function in inflammatory pain. In: Psychoneuroimmunology IV. Eds. Ader RA, Dantzer R, Glaser R, Heijnen CJ, Sheridan JF, Irwin M. Academic Press, Amsterdam, 2006, Vol. 1:159-169.

Machelska H, Stein C. Peripheral analgesic and anti-inflammatory effects of opioids – neuro-immune crosstalk. In: Mind over Matter – Regulation of Peripheral Inflammation by the CNS. Eds. Schäfer M, Stein C. Birkhäuser Verlag AG, Basel, Switzerland, 2003, pp. 137-148.

Machelska H, Stein C. Peripheral opioid analgesia: neuro-immune interactions and therapeutic implications. In: Pain: Current Understanding, Emerging Therapies, and Novel Approaches to Drug Discovery. Eds. Bountra C, Munglani R, Schmidt WK. Marcel Dekker, New York, Basel, 2003, pp. 427-434.

Machelska H, Mousa SA, Stein C. Pain and immune function. In: Psychoneuroimmunology, Third Edition, Vol. 2. Eds. Ader R, Cohen N, Felten D. Academic Press, San Diego, 2001, pp. 111-121.

Machelska H, Binder W, Stein C. Opioid receptors in the periphery. In: Opioid sensitivity of chronic non-cancer pain. Eds. Kalso E, McQuay HJ, Wiesenfeld-Hallin Z. IASP Press, Seattle, 1999, pp. 5-58.