Mark Zylka, Ph.D.

Associate Professor, Department of Cell Biology and Physiology & Member, UNC Neuroscience Center at UNC-Chapel Hill
Chapel Hill, NC, US

Professor Zylka's research explores the management of chronic pain

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Dr. Zylka received his B.S. in Biochemistry from Virginia Tech, spent three summers at the NIH as an IRTA student in Dr. David Klein?s lab and then completed his Ph.D. in Neurobiology from Harvard. While in graduate school with Dr. Steven Reppert, he identified several of the core circadian ?clock? genes and determined at a mechanistic level how these genes contribute to circadian rhythms in mammals. He then did his postdoctoral work at Caltech in Dr. David Anderson?s laboratory. While at Caltech, Dr. Zylka co-discovered a large family of G protein-coupled receptors called Mrgprs that are exclusively found in sensory neurons of rodents and humans. These receptors are now being studied as therapeutic targets for pain and itch. Half of Dr. Zylka?s lab at UNC is focused on identifying and studying a number of new molecules for the treatment of chronic pain. As examples, his lab found that Prostatic acid phosphatase (PAP) and ecto-5?-nucleotidase (NT5E, CD73) were expressed in pain-sensing neurons and function outside the cell to rapidly generate adenosine from AMP. His lab also found that purified versions of PAP and NT5E have potent and long-lasting antinociceptive effects in animal models of chronic pain. These antinociceptive effects are entirely due to activation of adenosine receptors. Future studies are aimed at using recombinant PAP protein and adenosine receptor agonists as analgesics, as well as to validate several other molecular targets for the treatment of chronic pain. Lastly, Dr. Zylka, in collaboration with Drs. Ben Philpot and Bryan Roth, found that topoisomerase inhibitors epigenetically unsilence Ube3a?a gene that is mutated in Angelman syndrome. Dr. Zylka?s research has expanded to include a heavy focus on autism and neurodevelopmental disorders, including the identification of what could be a unifying transcriptional mechanism for autism. Dr. Zylka's lab is also using transcriptional approaches to identify chemical risk factors for autism and other brain disorders.

Education/Learning, Research

Cell Biology, Angelman Syndrome, Chronic Pain, Ectonucleotidases in Nociceptive Circuits, Neural Circuit-Based Approaches, Autism, Autism Genetics, Environmental Risk Factors for Autism

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Member UNC Neuroscience Center, Member Intellectual & Developmental Disabilities Research Center at UNC, Adjunct Assistant Professor Division of Medicinal Chemistry and Natural Products UNC, Associate Professor Cell and Molecular Physiology University of North Carolina Chapel Hill, American Association for the Advancement of Science, Society for Neuroscience, International Association for the Study of Pain, Senior Editor of The Open Pain Journal, Rita Allen Foundation Scholars Planning Committee, International Association for the Study of Pain (IASP) Presidential Task Force ? to make recommendations on the future directions of IASP

Harvard Medical School
Ph.D. Neurobiology

Virginia Tech
B.S. Biochemistry

Virginia Tech Distinguished Alumnus Award
2010

Rita Allen Foundation-Milton E. Cassel Scholar
2007 - 2010

Searle Scholar
2007 - 2010

Klingenstein Fellowship Award in the Neurosciences
2006 - 2009

Alfred P. Sloan Research Fellowship
2006 - 2008

National Institutes of Health Pioneer Award
The Pioneer Award program supports individual scientists of exceptional creativity who propose pioneering and highly innovative approaches with the potential to produce an unusually high impact on biomedical or behavioral research.
