

Regulation and pharmacological modulation of TRP ion channels and their (patho)physiological role in the human skin (Bíró-lab)

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Our skin is not only a barrier protecting our body from the external world but it serves as our biggest sensory organ, as well. Its dense innervation is ensured by sensory fibers originated from the dorsal root or trigeminal ganglia coding vital information, like pain, itch or temperature sensation and forwarding those toward the central nervous system. Processing of the sensory information starts already in the interaction of the sensory fibers and the local environment than it will be further processed in the neural networks in the dorsal column of the spinal cord via the central projections of the sensory fibers. Transient receptor potential (TRP) ion channels expressed both in sensory fibers and their local environment play a central role in this primary information processing.

During our research activities we are studying the molecular and cellular regulation of multimodal sensory TRP channels, as well as their role in processing sensory information from the skin. We are investigating skin derived primary cells and cell lines, sensory neurons, co-cultures and recombinant systems, as well. We influence the expression and function of TRP channels and the regulating signaling pathways using pharmacological and molecular biological tools and study ion channel functions using electrophysiological and fluorescent (e.g. intracellular Ca^{2+} imaging) techniques. During our projects, we pay an extra attention for investigation of pharmacological modulation of TRP channels and their exploitation as potential pharmacological targets