## Abstract

This project was focused on studies of the location and function of selected purinergic receptors in the rat urinary bladder. Its special concerns are on adenosine $P1A_1$ purinoceptors and on their expression in healthy and inflamed urinary bladders of the rat.

It was found that both $P2X_1$ and $P1A_1$ receptors are expressed in urinary bladder. The quantity of $P1A_1$ receptors is decreased in the inflamed bladder. Functional studies based on an agonist stimulation (adenosine) showed importance of $P1A_1$ receptors for relaxation of the tissue. During the cystitis this effect was reduced. Electric field stimulation (EFS) pointed out the difference between the response to a stimulus affecting just postsynaptic receptors (adenosine stimulation) and responses to nerve stimulation including both post- and presynaptic effects.