# Abstract

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**Title of diploma thesis**: Preparation of genetically modified cell line as a model for accumulation studies

The studied megalin transporter belongs to the group of lipoprotein receptors, namely low density lipoprotein receptor-related protein 2 (LRP2). It is a transporter capable of transporting large organic molecules into the cell through the receptor - mediated endocytosis. Huge variety of peptide compounds including albumin, hemoglobin, vitamins, hormones as well as the amoniglycoside antibiotics (e.g. gentamicine), polymixin B, cadmium and other substrates belong among its substrates.

This theses is focused on the creation of cell models for the study of the transport of large organic molecules across the cell membranes. I am dealing with reducing megalin expression in two model cell lines using siRNA against *LRP2* gene. The inhibition of expression was determined using the RT-PCR method and subsequently verified on the functional level using known megalin substrate gentamicine. It is an aminoglycoside antibiotic with nephrotoxic action. The principle of these validation experiments was to reduce gentamicine toxic effects in cells with reduced *LRP2* expression.

Overall, we can say we have succeeded in introducing a new method of reducing gene expression to our laboratories and in introducing new models for the study of the transport of large organic compounds.