PROF. MIKLOS SAHIN-TOTH

Prof. Miklos Sahin-Toth is a prominent, internationally recognized translational researcher, a renowned representative of his chosen field of research. He made seminal discoveries in the characterization of pancreatic digestive enzymes and the genetic risk factors for chronic pancreatitis. His long-term objectives are to understand the molecular mechanisms of human pancreatitis, using genetically determined pancreatitis (e.g. hereditary pancreatitis) as a biochemical model. His laboratory was the first to identify that mutations in the digestive proteases chymotrypsin C and carboxypeptidase A1 are strongly linked with the development of chronic pancreatitis. These groundbreaking discoveries were published in Nature Genetics.

He published 133 peer-reviewed scientific articles; 18 of these in journals with impact factors above 10. Presently, the following specific projects are studied in his laboratory: (1) The role of human mesotrypsin in pancreatitis. Mesotrypsin is a unique protease specialized for the degradation of trypsin inhibitors. Premature mesotrypsinogen activation might lower protective pancreatic secretory trypsin inhibitor (SPINK1) levels in the pancreas and contribute to the pathogenesis of pancreatitis. (2) Characterization of pancreatitis-associated cationic trypsinogen (PRSS1) mutants. Identification of novel mutation-dependent biochemical defects that lead to hereditary pancreatitis (3) Functional analysis of anionic trypsinogen (PRSS2) mutants that afford protection against pancreatitis. The concept that loss-of-function trypsinogen mutations can protect against pancreatitis provides independent evidence for the central role of trypsin in this disease. (4) Identification of the disease-causing biochemical defects in pancreatitis-associated SPINK1 mutants.

He is a council-member and the 2017 president of the American Pancreatic Association.

Prof. Sahin-Toth has had strong collaborative ties with the Department of Medical Chemistry, Molecular Biology and Pathobiochemistry at the Faculty of Medicine of the Semmelweis University for the past 15 years. He offered the opportunity for eight young researchers from the Semmelweis University to work and study in his laboratory at Boston University; three of the eight students used this research experience toward their PhD thesis work. He published 30 articles jointly with the students and researchers visiting his laboratory from the Semmelweis University.