It was presented that one of the pancreatic enzymes, trypsin, modulates many biological processes by acting on specific proteinase-activated receptor 2 (PAR-2). PAR-2 belongs to a family of G protein coupled receptors activated by tethered ligand sequences within the N-terminal, which is made accessible after the site-specific cleavage of the protein. Trypsin activates PAR-2 by the mediation of a unique process inhering in the recognition of the receptor by enzyme, subsequent c1eavage at the specific site ofNH2-terminal and presentation of a new NH2 terminal, which behaves as a tethered ligand. This ligand interacts with the extracellular doma in of receptor molecule. Thus, P AR-2 is a receptor, whose I igand is a physical part of the receptor molecule. This receptor was previously described on norma I as well as ma lignant immunocompetent cells, on endothelial and muscle cells of major as well as minor vessels. Its presence was also immunohistochemically demonstrated on intestinal epithelial cells, epithcl ial cells of exocrine organs, keratinocytes, fibroblasts and other cell types in stomach, small intestine, colon, liver and kidney. PAR-2 is expressed on various cells with a wide spectrum of cellular responses after activation. ln the firs t part of th is work we focused on the role of PAR-2 dUl·ing the process of acute pancreatitis. An animal model of acute pancreatitis induced by taurocholate injection to ductus choledochus of Wistar rats was used. Much highcr positivity for PAR-2 on acinary duct cells was observed in APL induced animals than in controls. Similar findings were noticed on arterial smooth muscle cells. Surprisingly, paral\el to the cxocrine pancreas and vesscl findings, enhanccd Langerhans' islcts cell positivíty was observcd in expcrimental animals.