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New Molecular Factors in The Pathogenesis of Pancreatic Diseases

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Pancreatic cancer (PC) and its potential precursor lesion, chronic pancreatitis (CP), are two debilitating diseases with a poor prognosis and unknown causes. In asmuch as many research studies correlating the patho-physiological processes of PC and CP with the de-regulation of growth factors and their receptors, tumor suppressor genes, endocrine hormones, and others, in our studies, we focused on some newly identified factors that have a high potential in the development of these two diseases. For the first time, utilizing variable basic cellular and molecular biology tools, we could demonstrate, the localization, regulation and possible role of Indian hedgehog (Ihh) and its receptors Patched (Ptc) and Smoothened (Smo) as well as meningioma-associated protein (MAC30) in the pathogenesis of CP and PC. Also, we could demonstrate morphologically the exact cellular localization of cholecystokinin receptors (CCKR) in normal and diseased pancreatic tissues. This finding may end the debate raised by many other studies that only demonstrated the expression of these receptors by non-morphological methods in the human pancreas. Furthermore, we show the possible involvement of nerve growth factor (NGF) and its receptors in PC cell proliferation, tumorigenesis, and invasiveness. We believe that our cumulative results will add new data supporting, and explaining the involvement of such molecular factors in the process of CP and PC pathogenesis, and provide some possible new therapeutic insights for treating these patients.