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Research Interests

The current research interests in my laboratory involve the molecular mechanisms underlying normal and neoplastic epithelial cell growth in the luminal gastrointestinal tract (GI). Three interrelated projects form the core of our efforts and include the regulation of gastrin gene expression, mechanisms of *H. pylori* pathogenesis, and role of ZBP-89 in inflammation and neoplasia.

The GI tract abundantly expresses growth factors, many of which bind and activate the EGF receptor present on mucosal cells. We identified a GC-rich element that mediates EGF responsiveness to the gastrin promoter. Recently, we have found that *H. pylori* infection, via release of interferon gamma, is a potent regulator of gastrin gene expression. In addition to demonstrating that the transcription factor Sp1 binds to the gastrin EGF response element, we cloned a zinc finger protein (ZBP-89) that binds to the same DNA element. The full-length protein functions as a repressor of growth factor signals regulating the gastrin promoter. Several other growth-related promoters are also regulated by ZBP-89. ZBP-89 regulates growth in part by stimulating the cyclin-dependent kinase inhibitor, p21waf1, in a butyrate-dependent manner through the recruitment of the histone acetyl transferase p300. In addition, ZBP-89 triggers p53-dependent growth arrest by preventing the nuclear export of p53. ZBP-89 also induces p53-independent apoptosis.

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