

Plasticity of the Mucosal Barrier: Insights into Regulation of Epithelial Homeostasis and Repair

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The gastrointestinal epithelium serves as a highly regulated protective barrier against luminal antigens and microbes. Barrier properties are achieved by a series of intercellular junctions that function in concert to control movement of molecules across the epithelium. These homeostatic mechanisms are perturbed in inflammatory disorders such as inflammatory bowel disease, resulting in epithelial barrier defects and erosions/wounds. In response to injury, epithelial cells have a remarkable capacity to orchestrate signaling events that facilitate repair of cell-cell junctions and wounds in order to restore the critical barrier. These reparative events are orchestrated by a spatiotemporal crosstalk between epithelial cells (IECs), infiltrating and resident mucosal cells that include neutrophils, monocytes, macrophages and stromal cells. Our studies are investigating molecular mechanisms and signaling mediators that control epithelial barrier function and mucosal repair in inflammatory states.