

## Novel IL-1 family cytokines: Role in gut inflammation

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In the last two decades human genome sequence analysis has helped to identify six new members of IL-1 family. IL-36  $\alpha$ ,  $\beta$ , and  $\gamma$ , previously known as IL-1F6, IL-1F8, and IL-1F9 respectively, these ligands bind to a heterodimeric receptor IL-36 receptor (IL-36R, also known as "IL-1 receptor-related protein 2") and then recruit IL-1R accessory protein (IL-1RAcP) there by activating NF- $\kappa$ B and mitogen activated protein kinase (MAPK) pathway.(Dinarello et al., 2010, Towne et al., 2004) Epithelial cells express IL-36 and recent studies suggest important inflammation regulatory role for these novel cytokines in gut inflammation and psoriasis although there is ambiguity regarding the ability of IL-36 ligands to induce Th1, Th2 or Th17 immune response (Towne et al., 2004, Ramadas et al., 2012, Johnston et al., 2011). Recent data suggests increased IL-36 $\alpha$  expression in eosinophilic esophagitis and Ulcerative colitis indicating a possible role in Th2 type immune response. Other reports show IL-36 signaling, induce Th1 polarization of naïve CD4+ T cells (Vigne et al., 2012) and induction of Th-17 immune response in lung disease and Psoriasis. (Gresnigt et al., 2012, Ramadas et al., 2011) IL-36 Receptor antagonist (previously IL-1F5) and IL-38 (IL-1F10) also binds to IL-36 R and act as an antagonist for the biological activities of IL-36. (Towne et al., 2004, van de Veerdonk et al., 2012, Dinarello et al., 2010, Blumberg et al., 2007) IL-37 (IL-1F7) is the newest member of the IL-1 family with potent anti-inflammatory role in gut and liver. IL-37 is expressed in tonsils, skin, esophagus, and placenta as well as carcinomas of the breast, prostate, colon, skin and lung. (Kumar et al., 2002) Mice with IL-37 expression are protected from DSS induced colonic inflammation indicating a potential role in inflammatory bowel disease. (McNamee et al., 2011). The novel members of IL-1 family are an area of active investigation and we anticipate new data regarding their role in gut homeostasis and intestinal inflammation in near future, with potential therapeutic implications.

### Biography

Chowdhry completed his MBBS from Rajasthan University, India in 2004. He is trained and board certified in Internal Medicine and Gastroenterology. Currently working as an Assistant Professor at Case Western Reserve University- School of Medicine. He has published multiple papers in reputed Gastroenterology and Hepatology journals.

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