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# **New perspectives on microbiome-dependent gut-brain pathways for the treatment of depression with gastrointestinal symptoms: from bench to bedside**

**Key words:** Depression; Gastrointestinal disorders; Gut-brain axis; Pathomechanism; Treatment

# Research Summary

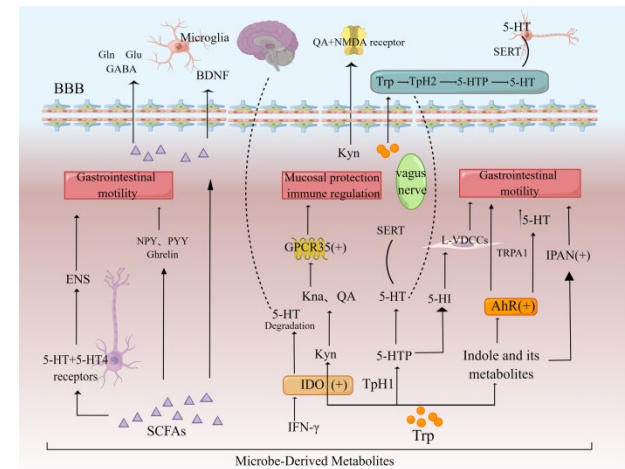
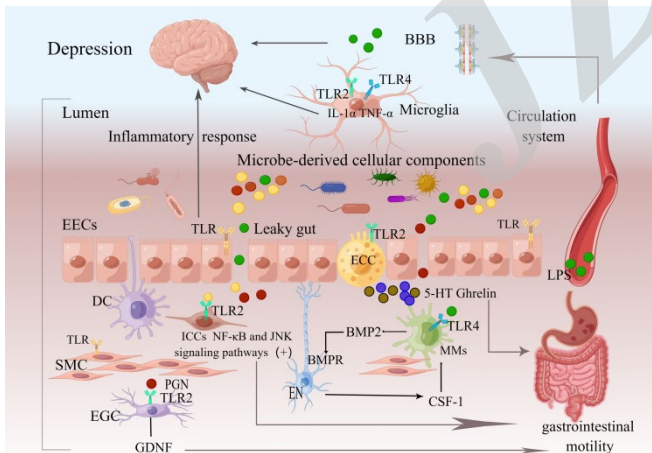
In this review, we combine preclinical and clinical evidence to summarize the role of the microbial-regulated GBA in emotions and GI function, and summarize potential therapeutic strategies to provide a reference for the study of the pathomechanism and treatment of depression in combination with gastrointestinal symptoms.

## ★ key pathogenesis

Microbiome-dependent abnormalities in the gut-brain pathway

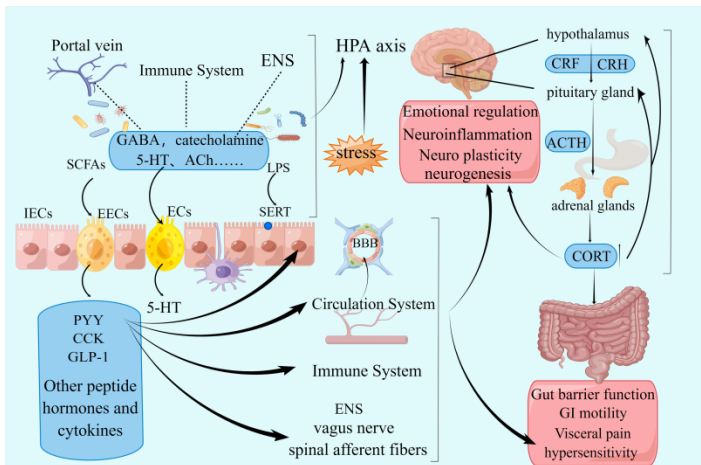
- **Microbial derivatives**

Microbe-derived cellular components



**Microbe-derived metabolites**  
**SCFAs**  
**Trp metabolites**

# Research Summary



- **Endocrine pathway**

**Microbial endocrine**

**Gastrointestinal endocrine system**

**HPA axis**

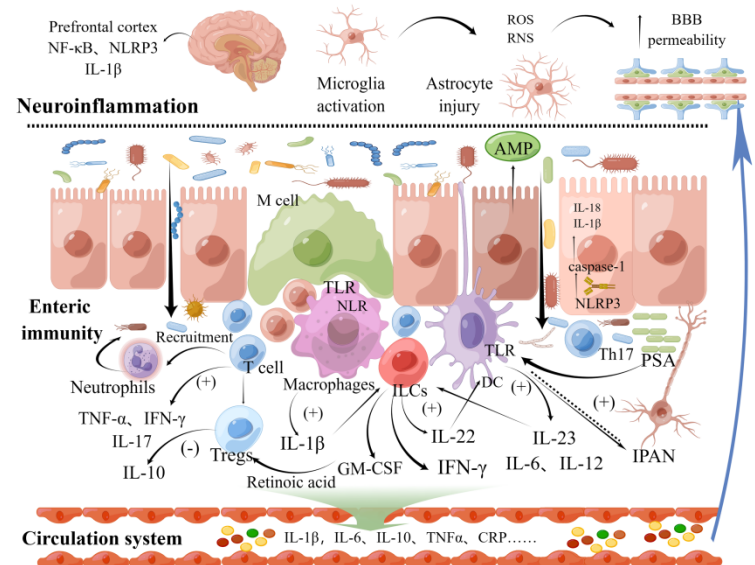
- **Immunization pathway**

**Enteric immune response**

**Systemic inflammatory response**

**Neuroinflammation**

- **Neural pathway**



# ***Clinical implications***

- **Dietary strategies to regulate microbiota**

Dietary fiber, Probiotics, Prebiotics, Synbiotics.....

- **Traditional drugs and ingredients for regulating microbiota**

Xiaoyao pills, Chaihu shugan San, Tiansi Liquid, Kai-Xin-San

Semen Cuscutae, Morinda officinalis oligosaccharides

Coniferyl ferulate, Crocetin

- **Other therapeutic methods to regulate microbiota**

Rifaximin, COX-2 inhibitors, Electroacupuncture treatment