

*A Walk Through the Gut:
Unique Environment,
Complex Sensors & Chemical
Reactors*

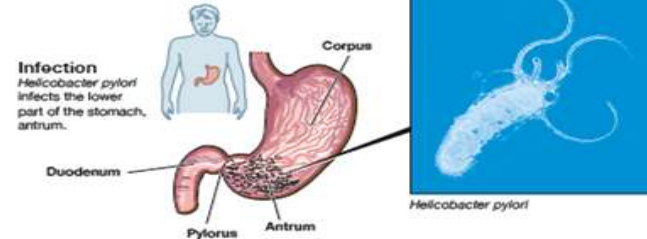
Arun Chaudhury, MD

Gut: In the news

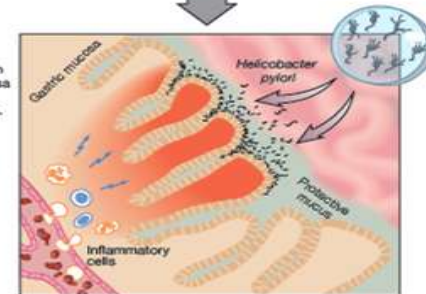


Helicobacter pylori

— the bacterium causing peptic ulcer disease



Inflammation
Helicobacter pylori causes inflammation of the gastric mucosa (gastritis). This is often asymptomatic.

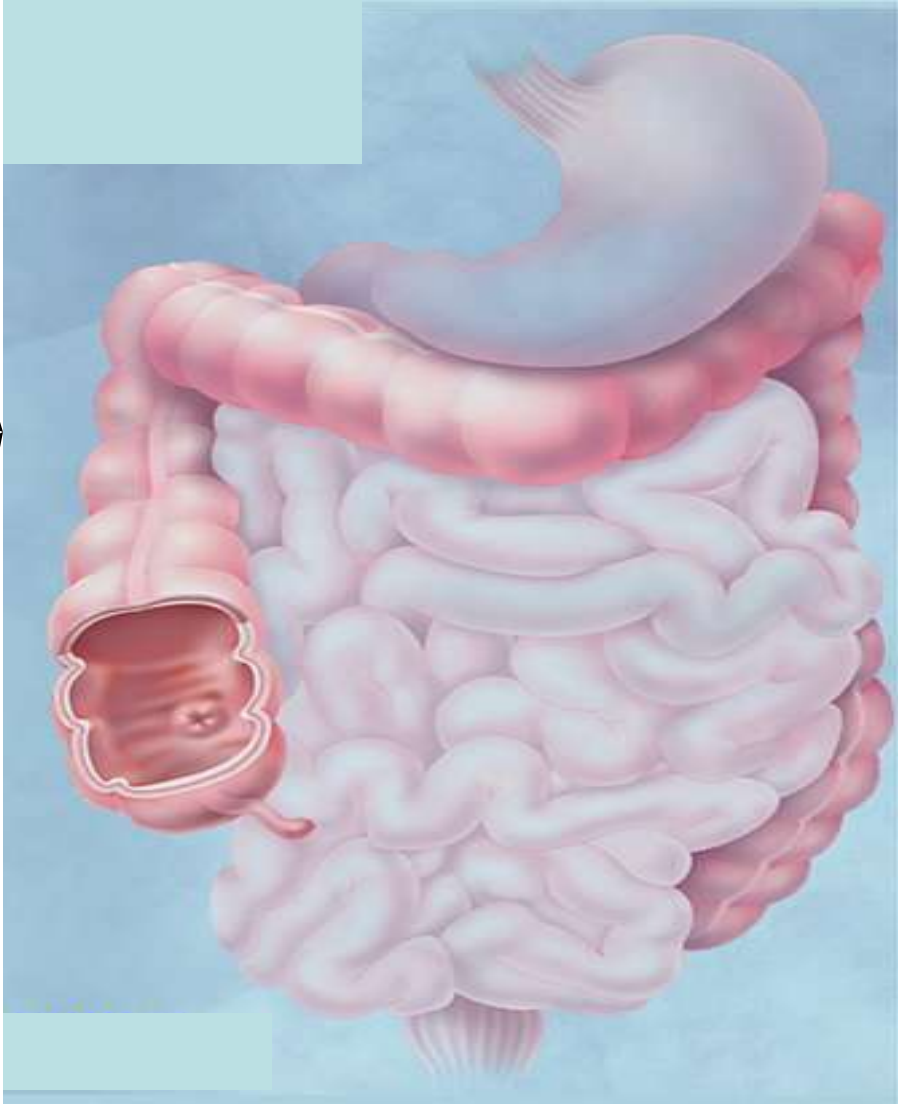


Ulcer
Gastric inflammation may lead to duodenal or gastric ulcer. Severe complications include bleeding ulcer and perforated ulcer.

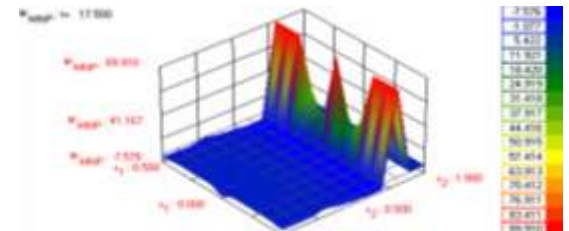
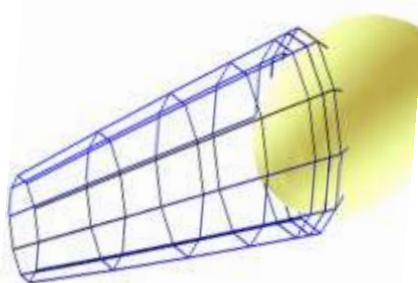
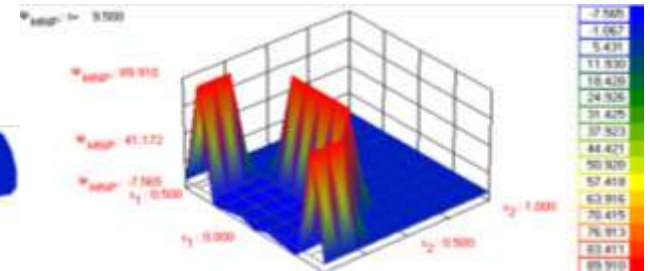
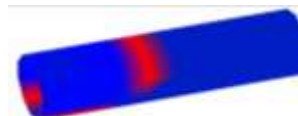
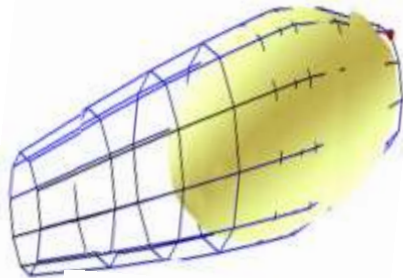
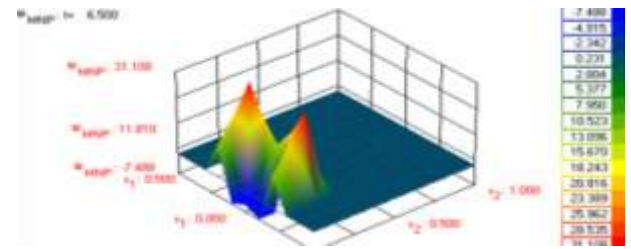
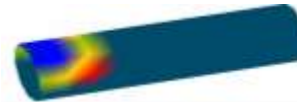
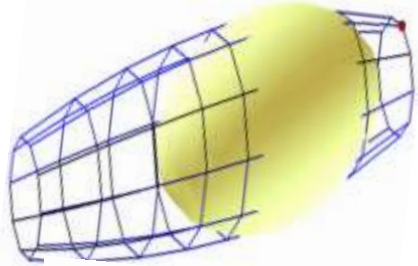
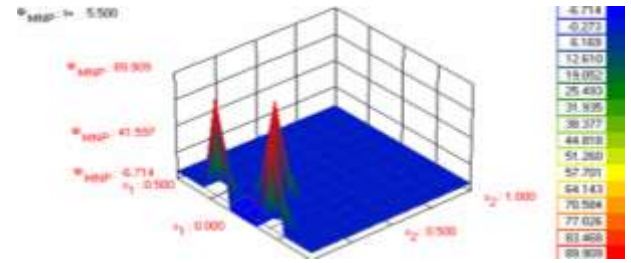
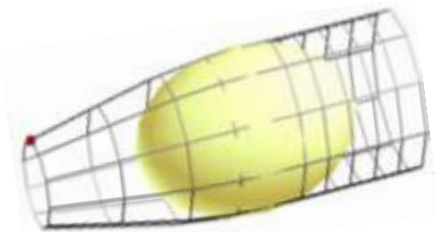


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Gastrointestinal tract: Interface of *milieu interne* with external world

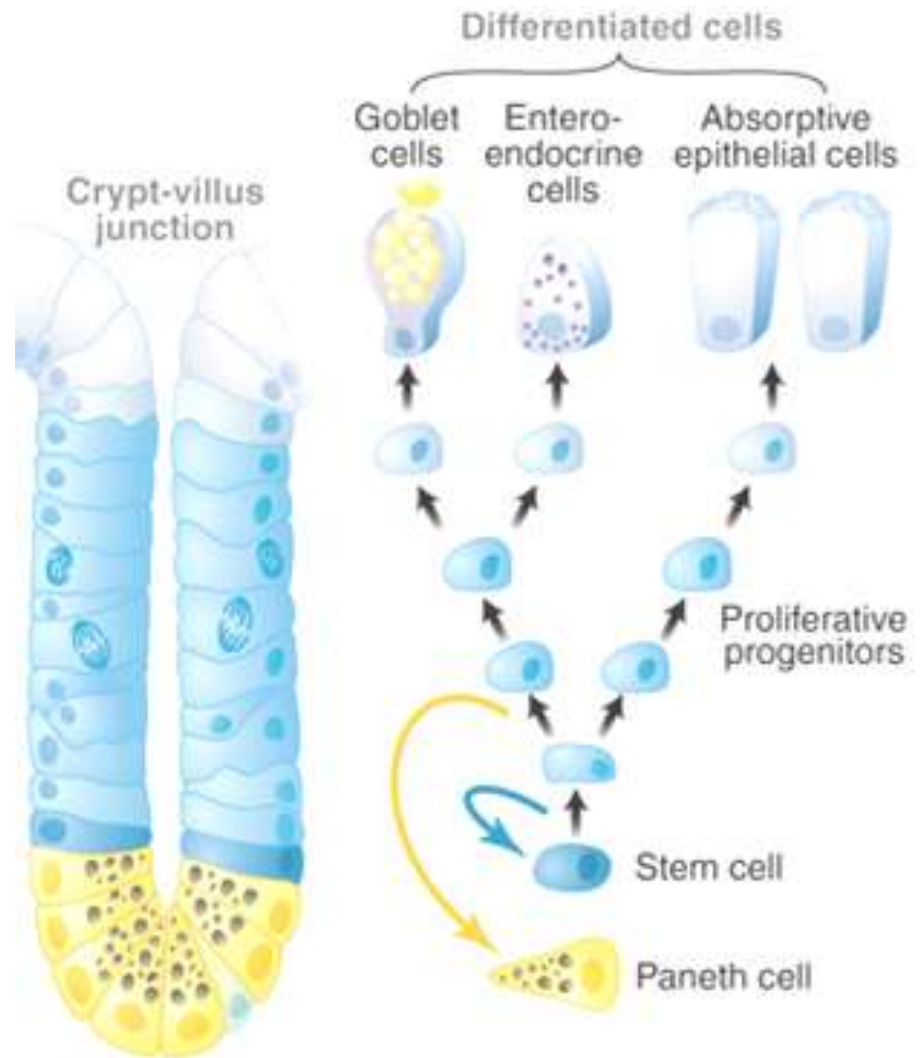
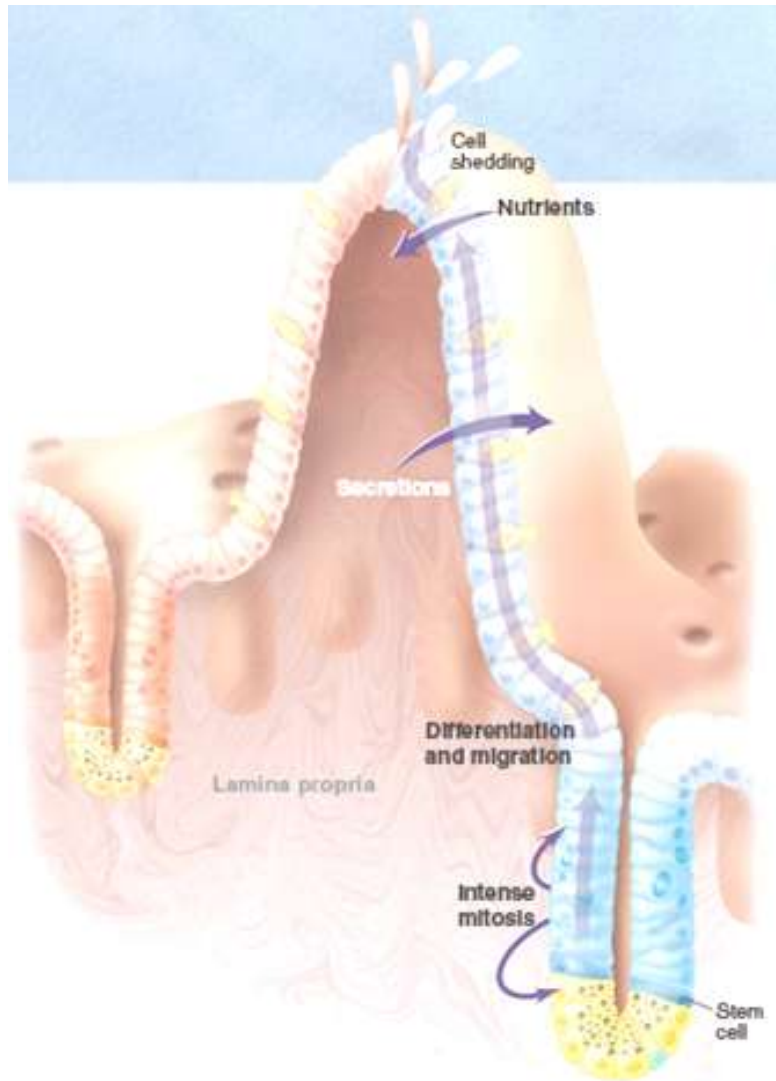


Peristalsis of a bolus in gut

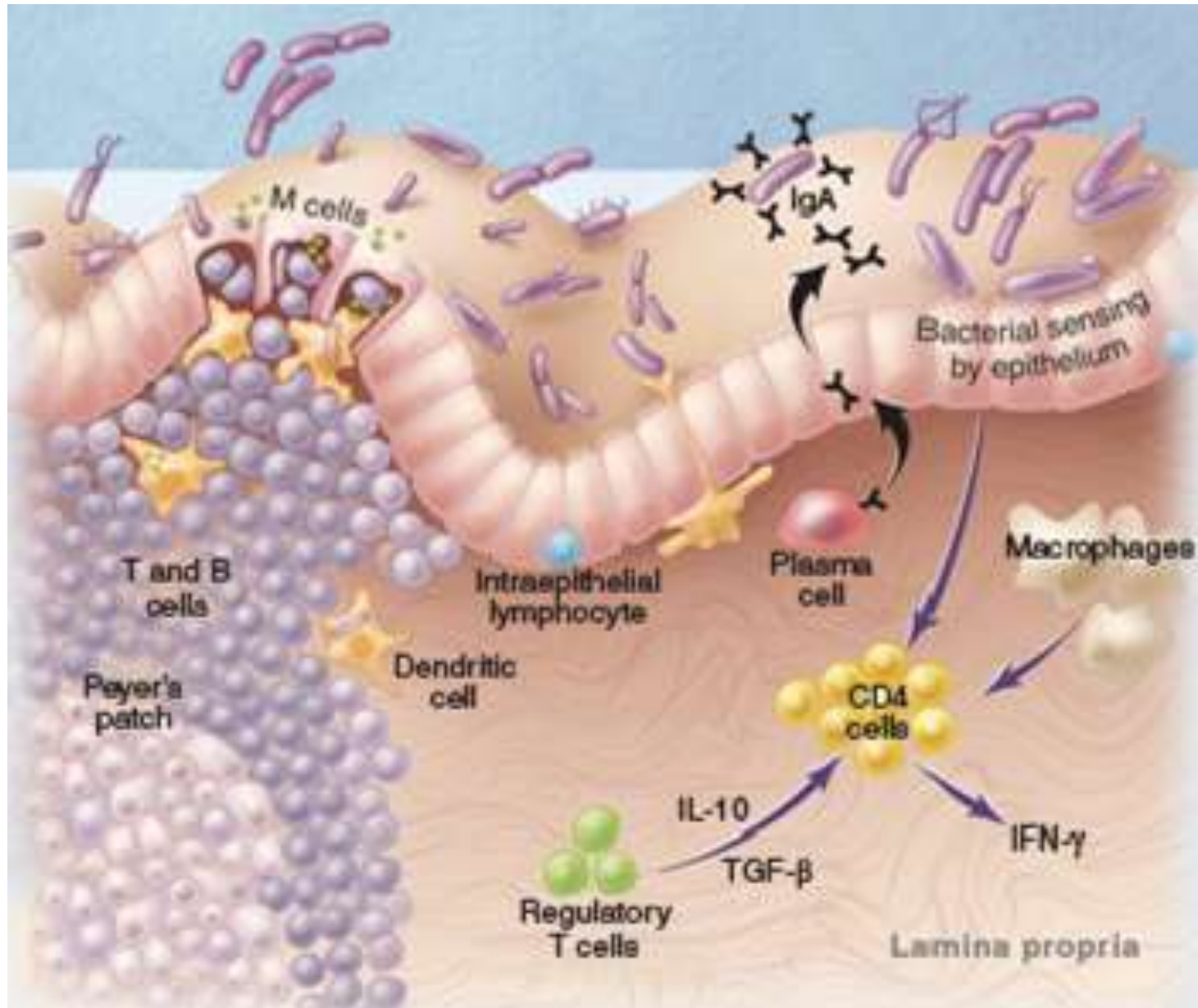


Electrical wave in myenteric plexus

Self-renewal & cancer of the gut: 2 sides of a coin



Complex microenvironment of GI tract



Microbial melting pot: unique environmental engineering in colon

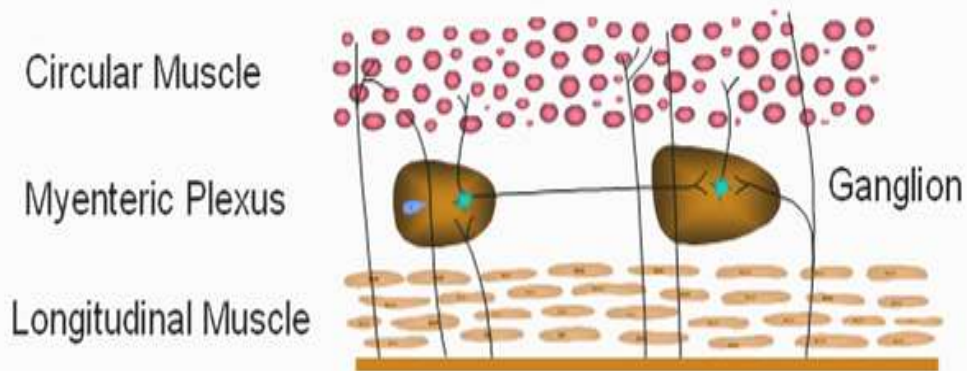
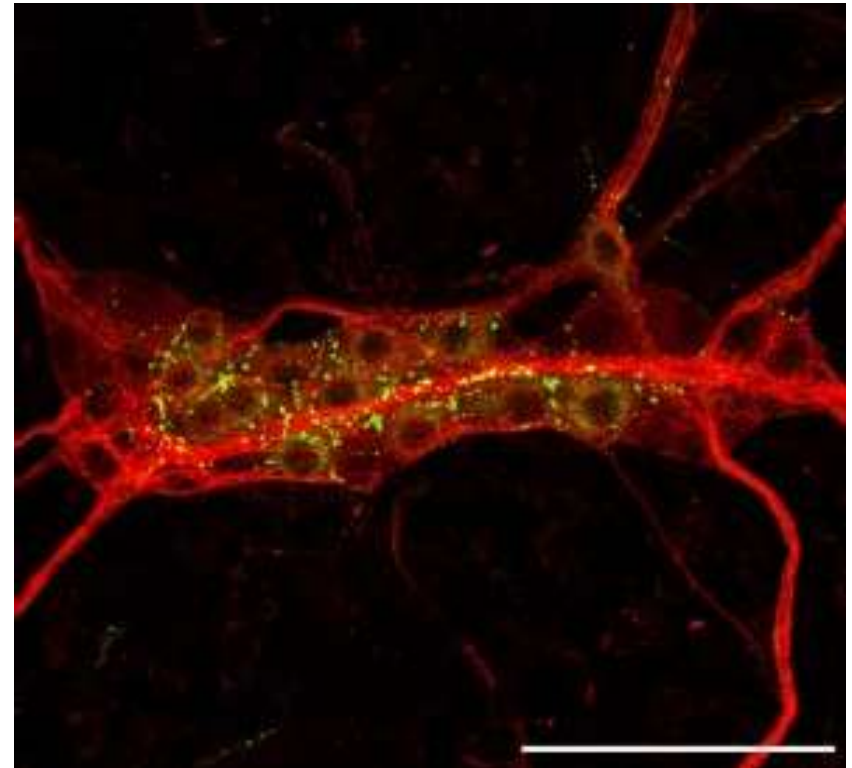
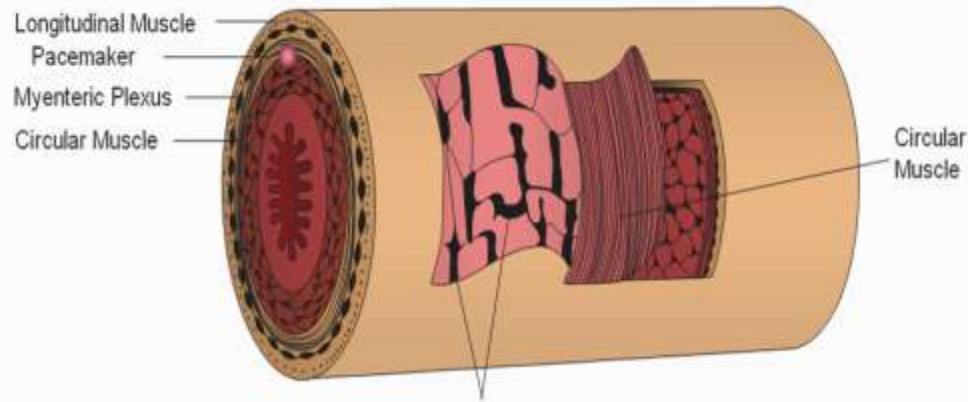


Large intestine is an anoxic bioreactor

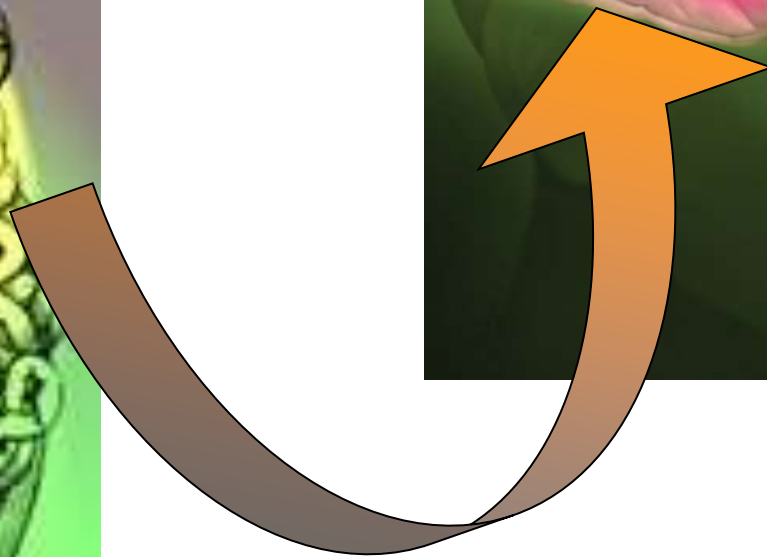
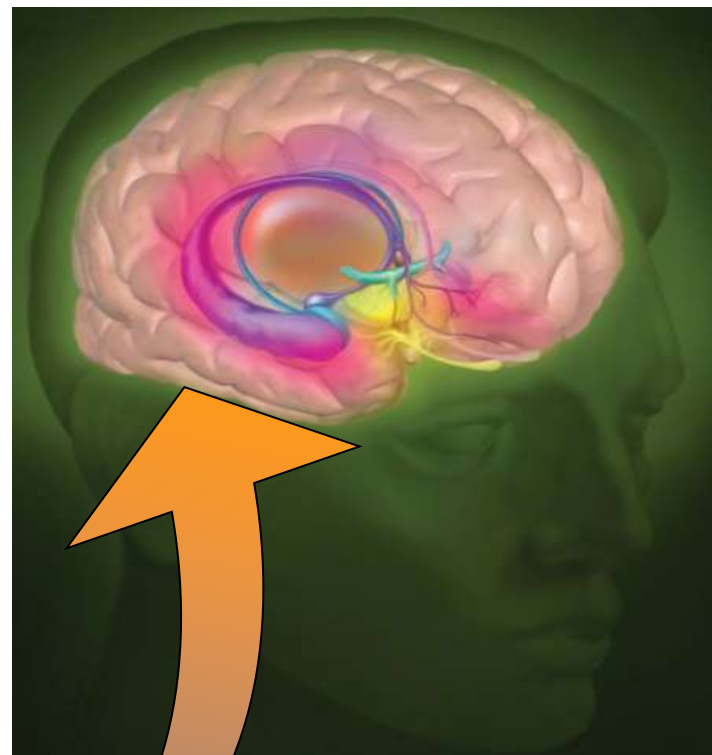
Gastrointestinal diseases severely affect quality of life



The gut has a mind of its own



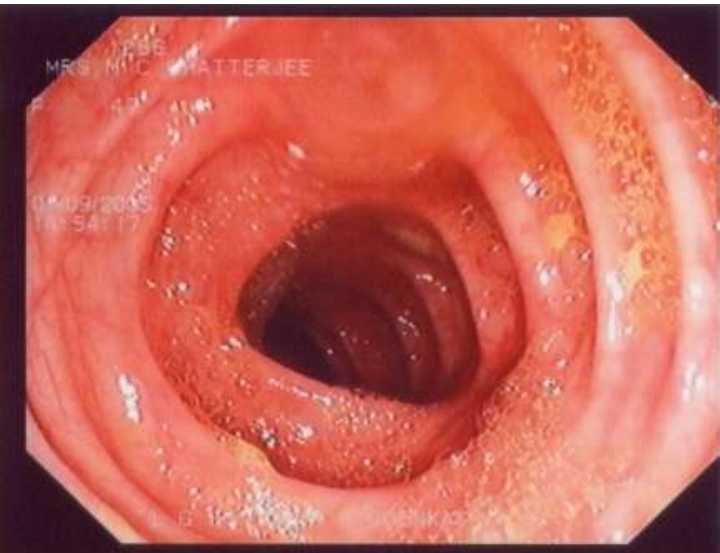
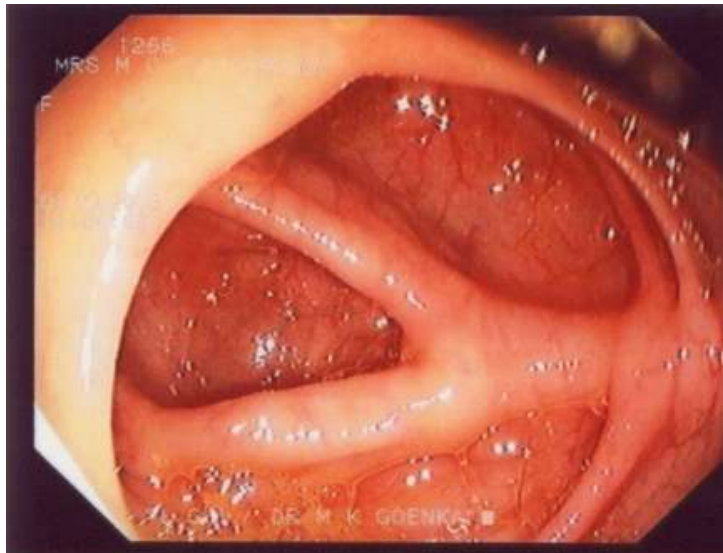
Constant dialogue between GI tract & brain



Irritable bowel syndrome

- Chronic functional disorder characterized by abdominal pain or discomfort with alterations in bowel habits
- Symptoms usually begin in late teens to early twenties
- Diagnosis difficult
- Complete relief of symptoms not achieved

How to look at an irritable gut?



Mechanisms of hypersensitive afferent gut signaling

Study afferent signaling using single unit & multi-unit recordings from intestinal nerves in animal models of irritable bowel syndrome



Welcome to the world of
Nerve Pop!