

Slide 1



Year 1 MBChB –
Gastrointestinal system

How the gut protects itself.... 'practising safe digestion'.

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School of Medicine

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Slide 2

Learning Outcomes:

- **LO1** - Describe the defensive role of the mucosal barrier in response to attack/digestion and the consequences for the gut when protection fails
- **LO2** - Describe the mucus-bicarbonate barrier
- **LO3** - Explain the role of prostaglandins in the GI tract
- **LO4** - Define how the gastrointestinal epithelium responds when insult leads to injury
- **LO5** - Explain the processes restitution and cell migration in response to gut injury
- **LO6** - Describe how immune competent tissue monitors intestinal bacteria populations and prevents growth of pathogenic bacteria in the intestine
- **LO7** - Define the mechanisms to sense and remove damaged cells (e.g. apoptosis [programmed cell death and epithelial shedding])
- **LO8** - Define the vomiting reflex

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LO1

Attack and defence in the gut

Damaging

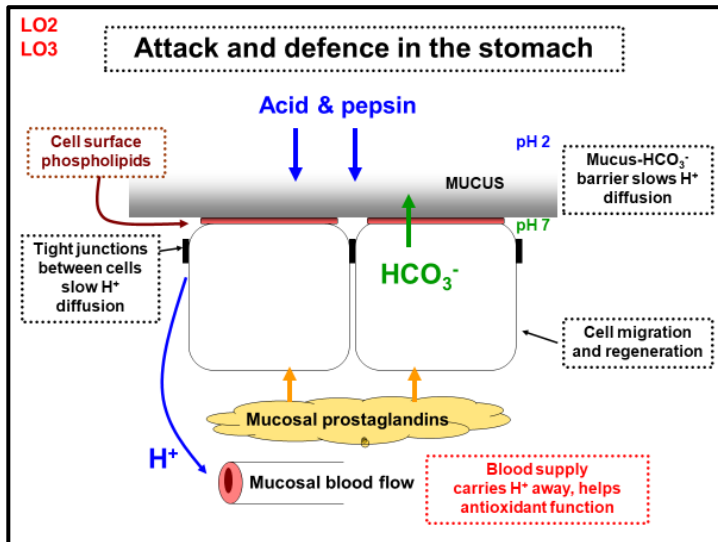
- Acid and pepsin
- Ingested drugs (alcohol, aspirin)
- Refluxed bile
- Smoking
- Micro-organisms (e.g. *H.pylori*)
- Ischemia (oxidative stress)
- Food allergens



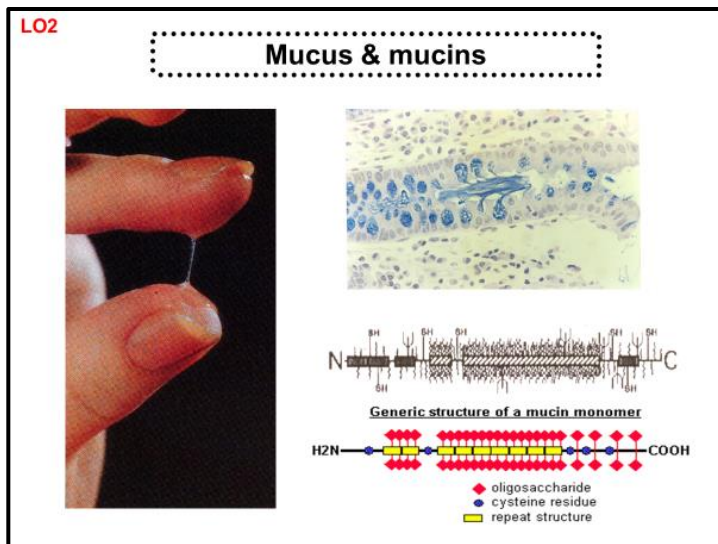
Protective

- Mucus-HCO₃
- Cell membrane
- Cell migration and renewal
- Mucosal blood flow
- Prostaglandins
- Immune system
- Acid inhibition
- Programmed cell death

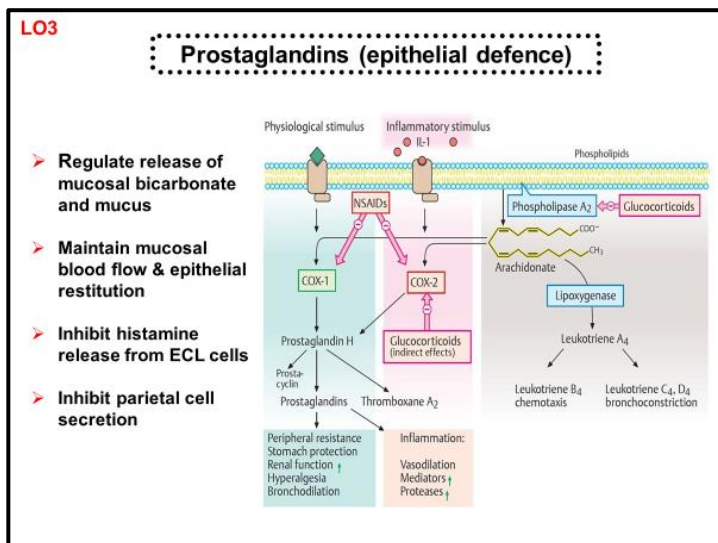
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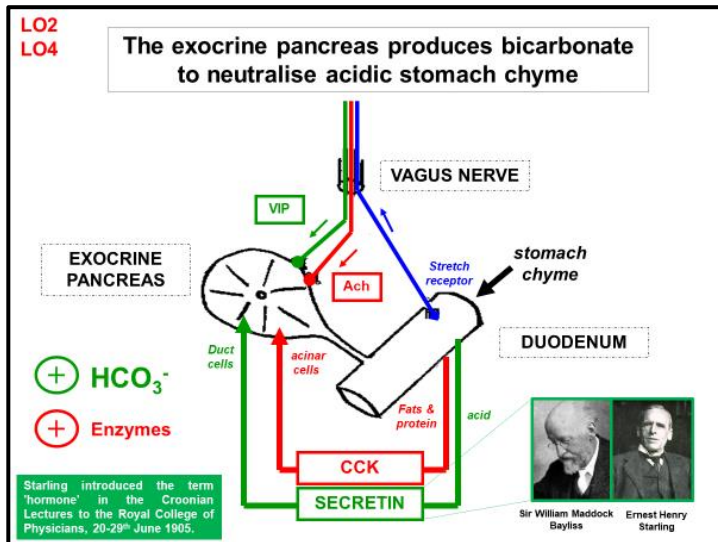
Slide 5



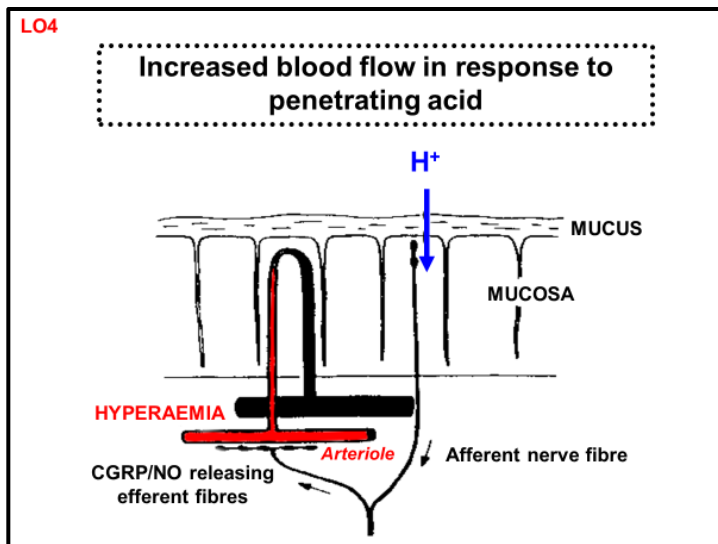
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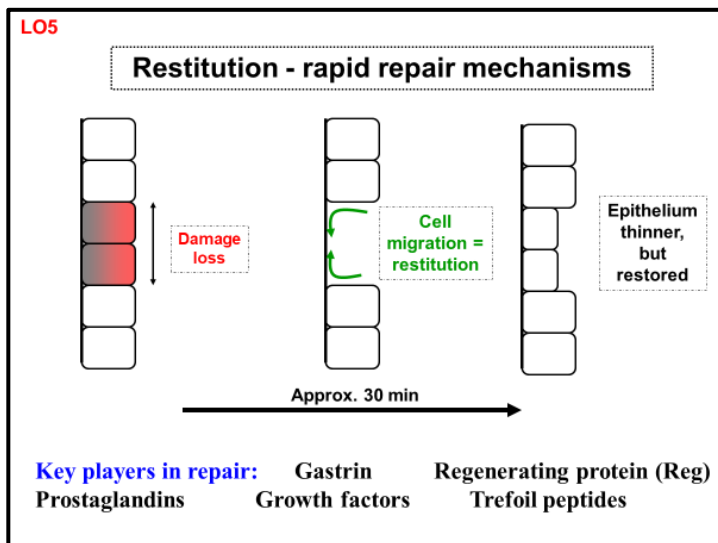
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Slide 8



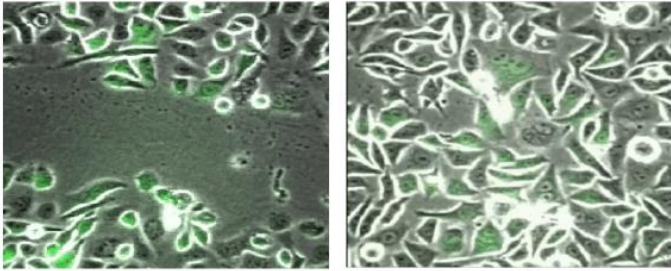
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LO5

Gastrin stimulates migration



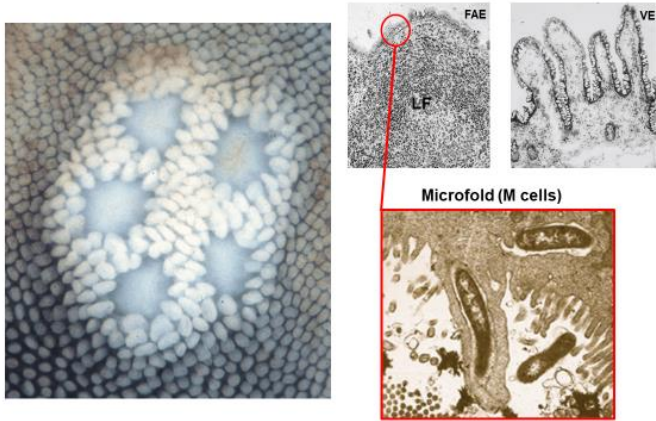
1h post addition of gastrin

Noble PJ *et al.*, Am J Physiol Gastrointest Liver Physiol. 2003; 284(1):G75-84.

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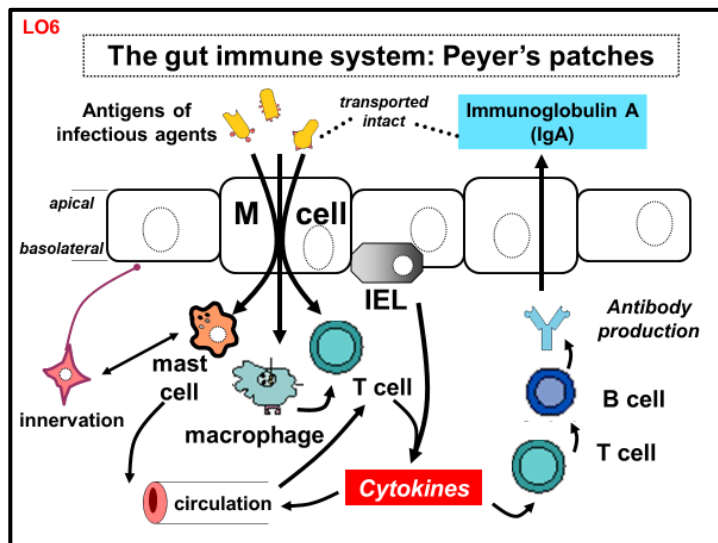
LO6

The gut immune system: Peyer's patches

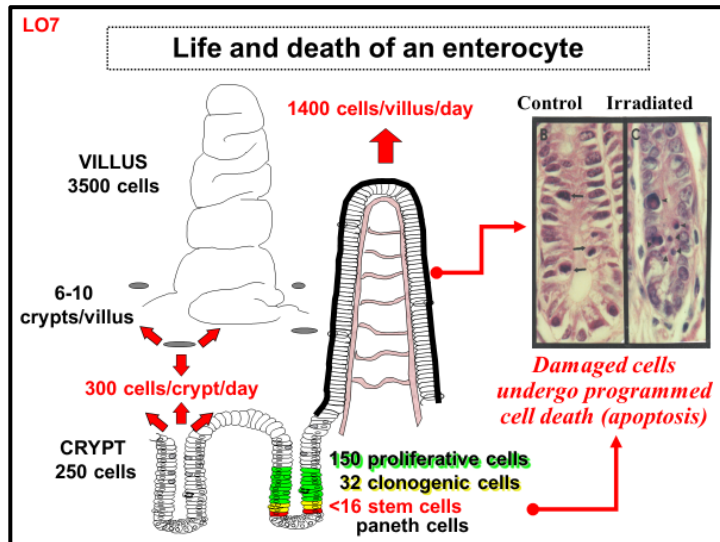


Microfold (M cells)

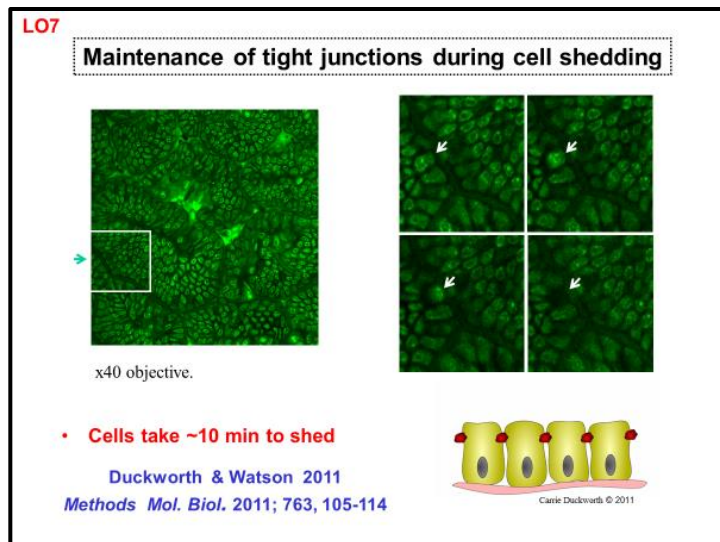
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