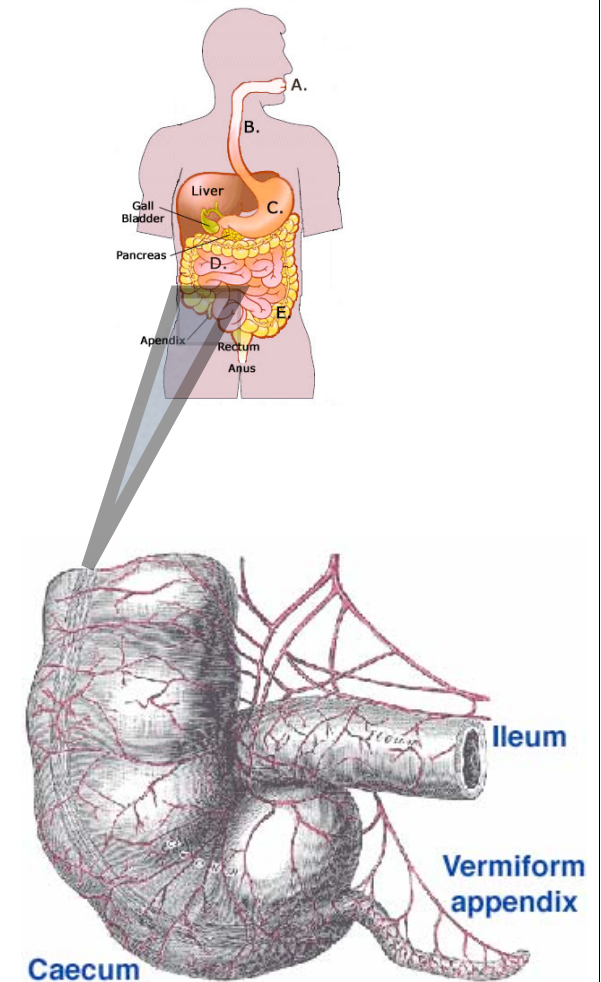


APPENDIX: *vermí*
Function or *Vestíge?*

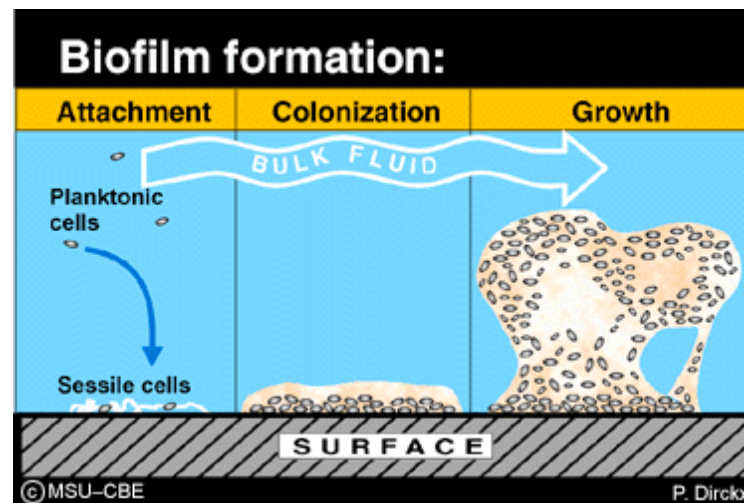
Appendix A&P 101

- Worm shaped structure extending from the cecum near the beginning of the human large intestine.
- Well known, due that appendicitis is most common acute surgical condition of abdomen (Liu, 1997).
- Long considered a vestige from evolutionary development.
- No consensus on what constitutes an appendix in order to make phylogenetic comparisons (Fisher, 2004).
- True function unknown, but is thought to play role in immune function; associated with lymphatic tissues.
- Predicted putative function is to provide inocula for large intestine after loss of flora due to disease.



Biofilms

- Secretions of carbohydrates, glycoproteins & proteins by bacteria that results in the formation of a microenvironment on a substrate.
- Can be both beneficial and detrimental.
 - Plaque
 - Biofilters



Mammalian Bowel Biofilms I

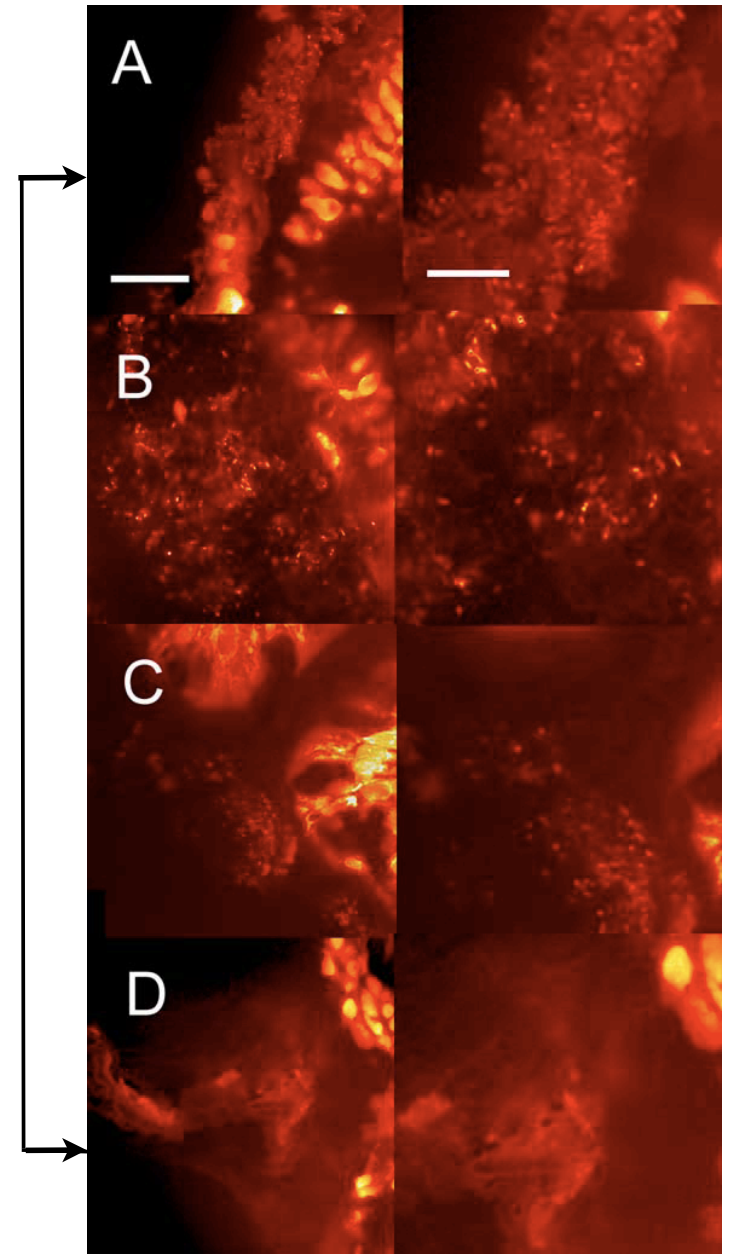
- Postulated that biofilms should be part of normal flora
 - studies of extracellular proteins involved in adhesion from normal gut bacteria.
 - Buck et al. demonstrated importance of adhesion proteins in *Lactobacillus acidophilus*, a common inhabitant of GI tract.
 - studies of plasmid transfer rates in intestinal environment (Licht et al., 1999)
- Biofilms have been difficult to observe due to tissue fixation techniques
 - disruption of carbohydrate cell surface coats can result in loss of mucus layer where biofilm matrices

Mammalian Bowel Biofilms II

- Observed in normal large intestine of common lab animals and humans.
 - Observed on human appendices mucosal epithelium.
 - Propagate within mucus lining of intestinal tract.
 - Associated with secretory IgA.
- Proposed they are in constant state of cycling like the intestinal epithelium.
- Proposed that it improves viability of normal enteric flora as well as excluding pathogens.

Colonic Biofilm

- Most prominent in the appendix.
- Biofilm presence decreases from the cecum to distal portion of the colon.
 - results consistent with that seen in rats (Palestrant et al., 2005)



Commensal Store Room ?

- Presence of commensals & biofilm in appendix
- Biofilm advantages for bacteria
- Colonic structure & physiology
 - placement of appendix
 - narrow lumen of appendix
- Association of appendix with lymphatic tissue & evidence that IgA and mucin support biofilm formation

IBD Case Study

- IgA production increase correlates with increased biofilm production (Table 2, p. 20)

Conclusions

- Proposed function may not impact industrialized nations.
- Appendix may rather serve as a detriment to some of the population.