Sex, Drugs, and Salmonella: Rendezvous in the Colon

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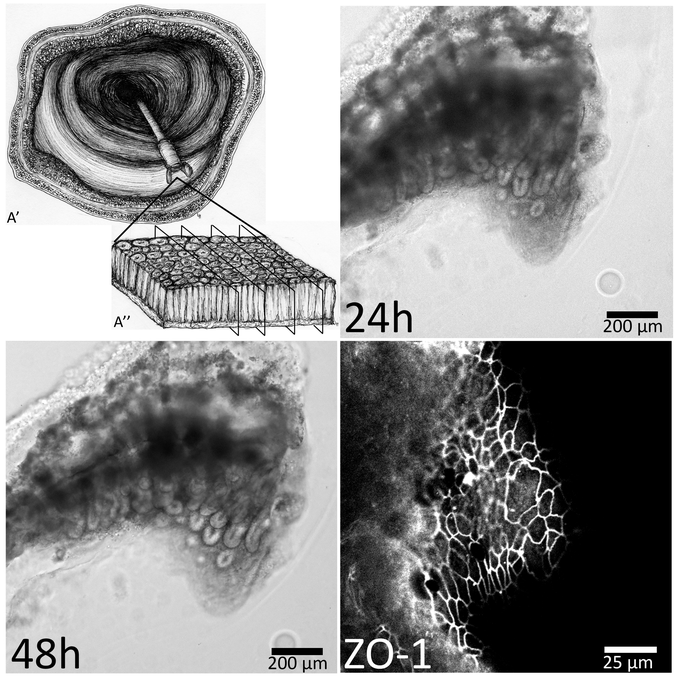
Key objective:

- Use human colon biopsy slice model to study impacts of oxygen and microbes on both tissue health and immune response to pathogen.

Organotypic Slice Model:

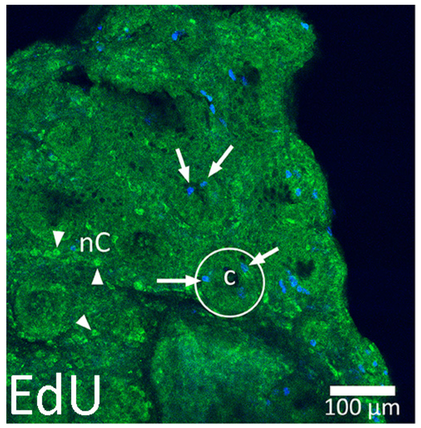
- Studied cell proliferation in response to antibiotic treatment or varied oxygen concentration.
- Observed sex differences in basal T-cell count, and response to *Salmonella enterica.*



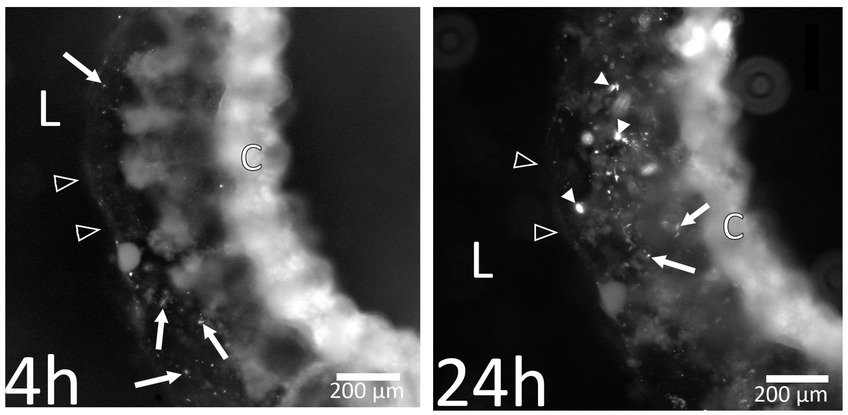
Biopsies yield tissue slices with colonic crypt structure and barrier integrity for 3 days ex vivo.

Results:

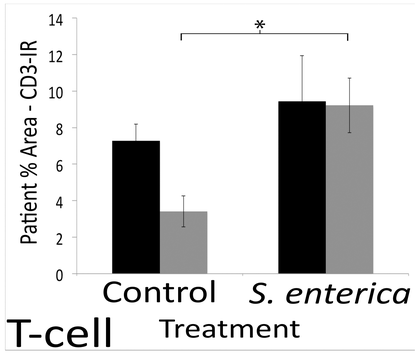
Penicillin (PS) treatment decreased cell proliferation in slices from human colon biopsies at 1% oxygen concentration.



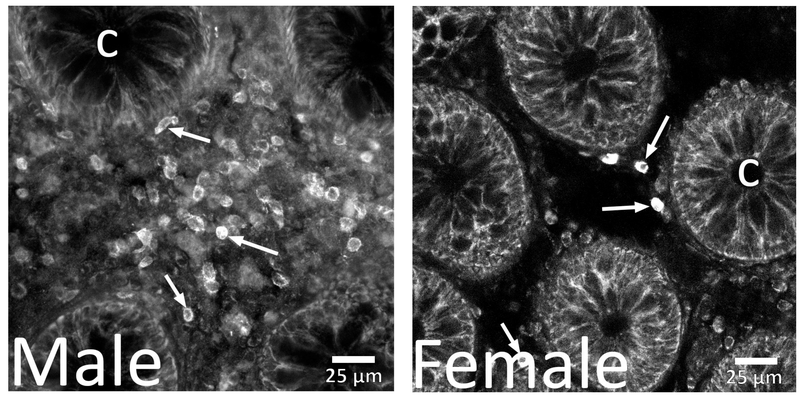
Salmonella infects tissue within 24h ex vivo.

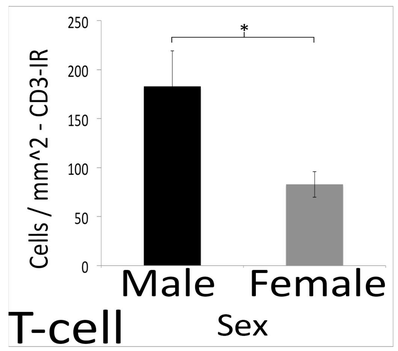


There was a 2-fold increase in T-cell count (CD3-IR) in response to *S. enterica* in females, but not males.



Basal T-cell counts were measured in drop fixed biopsy sections for males and females.





There were more than double the T-cell number (CD3-IR) per mm² of biopsy, in males compared to females.

Take Home Message:

- Basal sex difference in T-cells seen in human colon biopsy slices.
- Sexually different T-cell response to *Salmonella* infection.
- Slice model validated for future use in gut-microbe-immune study.

Future Directions:

Microfluidic Instrumented Tissue System: an "Ussing chamber ++" for the future.

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