Characterization and comparison of enteroid growth and differentiation in Matrigel and Collagen Type I.

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Crypts, which contain intestinal stem cells (ISCs), proliferate into multicellular “mini guts” termed enteroids in culture.

- Matrigel is a homogenous, variable mixture of extracellular matrix (ECM) is required for enteroid growth *in vitro*.
- To study ISC interaction with particular components of ECM, there needs to be a defined and simple ECM substrate that supports survival, growth, and differentiation of ISCs.
- Collagen Type I is naturally abundant in the small intestine and has previously been used for enteroid growth.

My main goal is to determine if Collagen Type I supports enteroid survival, growth, and differentiation.
Results

- Collagen Type I alone cannot be used as an alternative ECM substrate for growing enteroids
  - Collagen Type I did not support enteroid formation and lacked the budding pattern found in enteroids grown in Matrigel.
  - Enteroids grown in Collagen Type I did not contain differentiated Paneth or Goblet cells like enteroids in Matrigel.
  - Enteroids grown in Collagen Type I expressed lower levels of Mucin 2, a marker for the Goblet cell, a differentiated cell type.

- Importance:
  - Finding an alternative ECM will expand the field and allow for translation research into humans.