Pancreas section from a donor with recent-onset Type 1 Diabetes imaged by immunofluorescence, with pancreatic islets shown in green.
White boxes represent areas measured by imaging mass cytometry. One islet imaged by IMC is shown at higher magnification.
Same islet as on the previous slide, but different proteins are shown

Left: pancreatic hormones, each representing a different islet cell type.

- Insulin: β cells
- Glucagon: α cells
- Somatostatin: δ cells

Right: Immune cells surrounding the islet (shown in green).

- CD4: helper T cells
- CD8: cytotoxic T cells
- CD20: B cells
- CD68: Macrophages
- MPO: Neutrophils
“Segmentation” enables extraction of single-cell information from images.
Type of information that can be extracted from IMC images

- **Original image**
- **Protein abundance**
  - Glucagon: low → high
  - Insulin: low → high
- **Cell type classes**
  - Islet
  - Exocrine
  - Immune
- **Distance to islet**
  - Outside → Inside

**Cell types**
- α cells
- β cells
- δ cells

**Cell-cell association**
- Immune cells
- Neighboring cells
1. Healthy islet (from a non-diabetic donor)

2. Early stages (around diagnosis): β cells are still present but have an altered phenotype (not visible here). Islets are surrounded and infiltrated by immune cells

3. Late stages (from diagnosis to > 10 years later): β cells have been destroyed. Less immune cells around the islets