



Landssjúkrahúsið

# Immunohistochemistry: The Scientist's Paintbrush

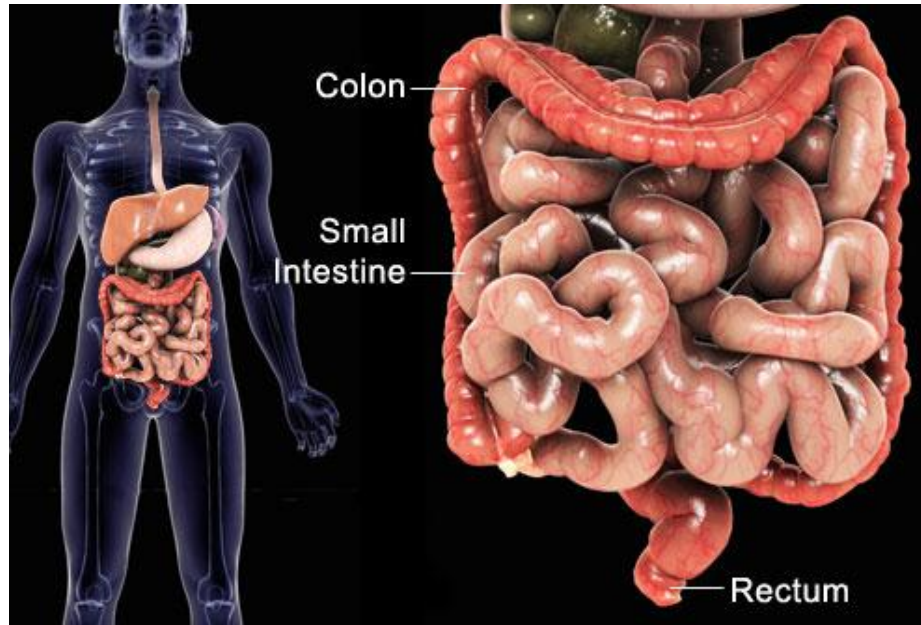
Amanda Vang, Landssjúkrahúsið

# Let's Talk about....

**Purpose:** A new drug for Inflammatory Bowel Disease



# Inflammatory Bowel Disease



Healthy Colon



Ulcerative Colitis



Crohn's Disease

## Cohort 2010 - Total [n = 1682]

Center	Incidence	Incident patients	Background population
China, Wuhan	1,78	103	5758400
Croatia, Zagreb	5,27	12	227489
Cyprus, Nicosia	10,80	31	287000
Czech Republic, Praha [incl. Pediatric]	9,80	25	255000
Czech Republic, South Bohemian Region	8,91	45	504819
Denmark, Aarhus Kommune	18,42	55	298538
Denmark, Amager	19,99	32	160064
Denmark, Funen [incl. Pediatric]	28,85	129	447000
Denmark, Herlev [incl. Pediatric]	20,38	53	260000
Denmark, Herning	17,08	49	286865
Denmark, Viborg	29,46	37	125587
Estonia, Southern Estonia [incl. Pediatric]	9,57	33	344822
Faroe Islands, Faroe Islands	73,69	33	44778
Finland, Pirkanmaa	22,44	107	476631
Greece, Ioannina	8,81	15	170239
Greenland, Nuuk	16,07	9	56000
Hungary, Veszprem province	20,33	60	295000
Iceland, Iceland	24,	72	300000
Ireland, Adelaide and Meath	12,	36	300000
Israel, Beer Sheva and Northern Negev	9,02	51	565300
Italy, Northern Italy	9,38	181	1928068
Lithuania, Kaunas city and district	7,34	34	463000
Moldova, [Pediatric Center]	2,19	17	775948
Moldova, Chisinau	3,66	10	273000
Portugal, Vale de Sousa	10,65	35	328389
Romania, Timis	3,61	24	664433
Russia, Moscow	4,95	26	525000
Spain, Vigo [incl. Pediatric]	18,45	107	579632
Sweden, Linkoping	32,41	55	169671
Sweden, Orebro	26,28	39	148382
United Kingdom, Brent and Harrow	15,19	76	500000
United Kingdom, Hull and East Yorkshire	17,84	91	510000

## Reference:

- Nielsen KR, Jacobsen S, Olsen K, Jess T, Gaini S. Incidence and clinical characteristics of inflammatory bowel disease in the Faroe Islands during 2005–2009. 2013.
- Róin F, Róin J. Inflammatory bowel disease of the Faroe Islands, 1981–1988. A prospective epidemiologic study: primary report. *Scand J Gastroenterol Suppl.* 1989;170:44–46; discussion 50–55

# Let's Talk about....

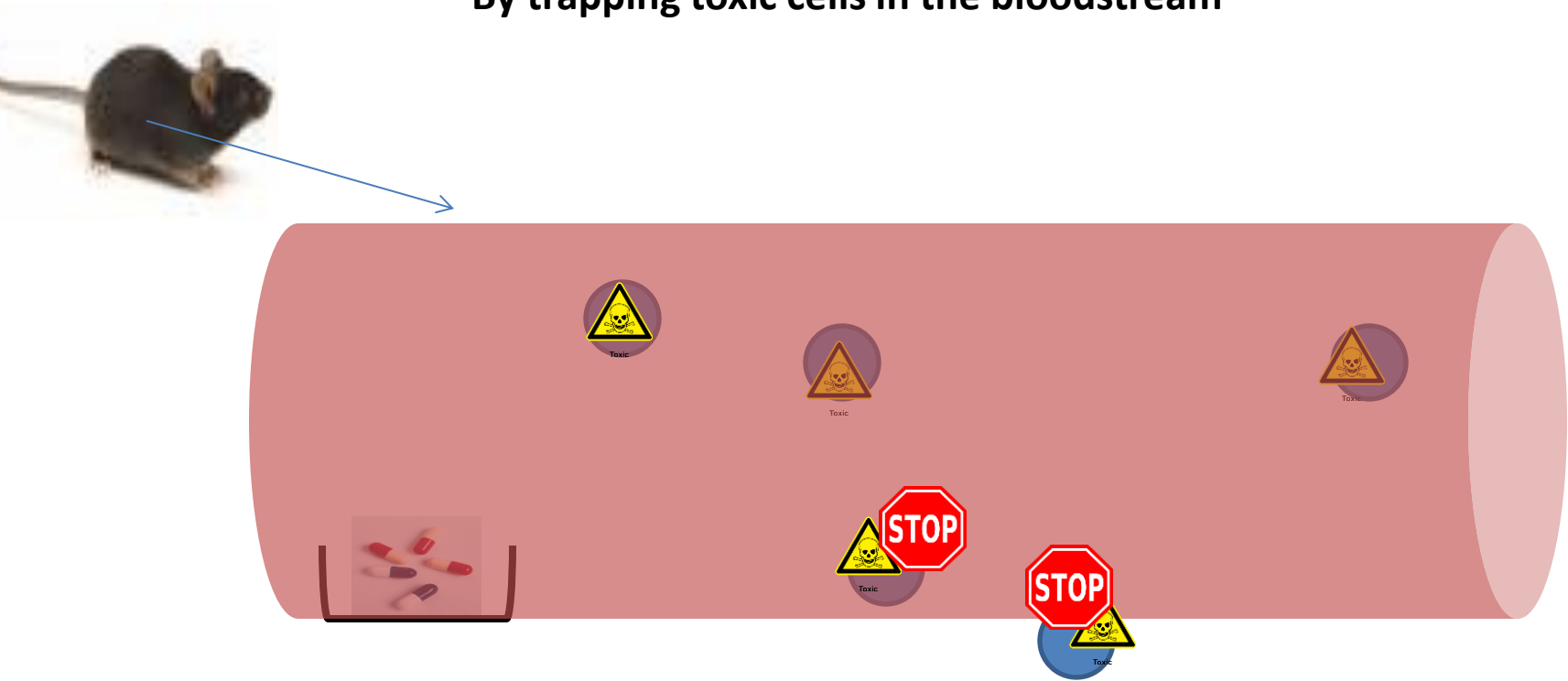
Purpose: A new drug for Inflammatory Bowel Disease



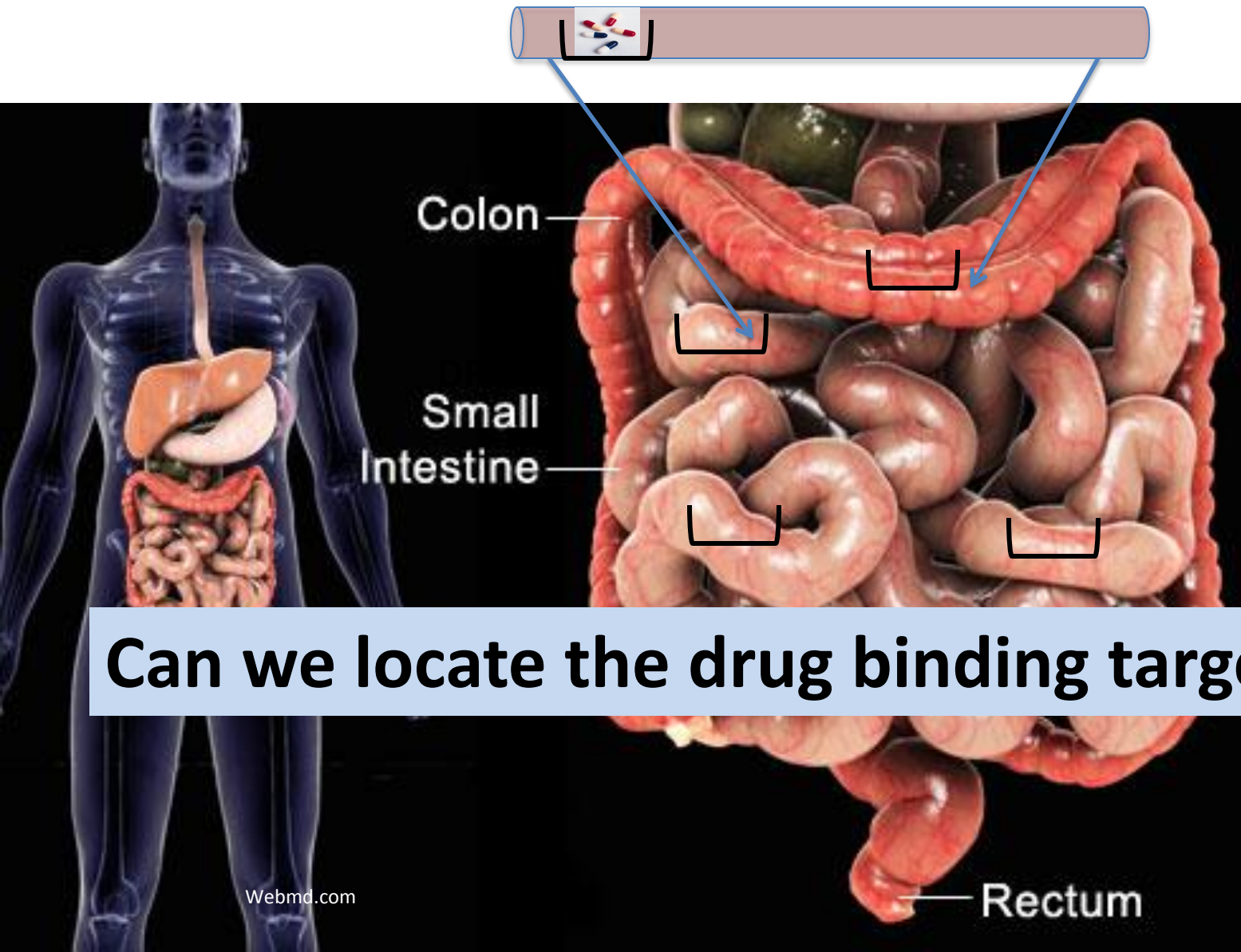
Project goal: Will the drug work in the intestines?

# The Drug works in blood vessels

By trapping toxic cells in the bloodstream



# Where will the drug bind in human intestines?



**Can we locate the drug binding target?**

# Let's Talk about....

Purpose: A new drug for Inflammatory Bowel Disease



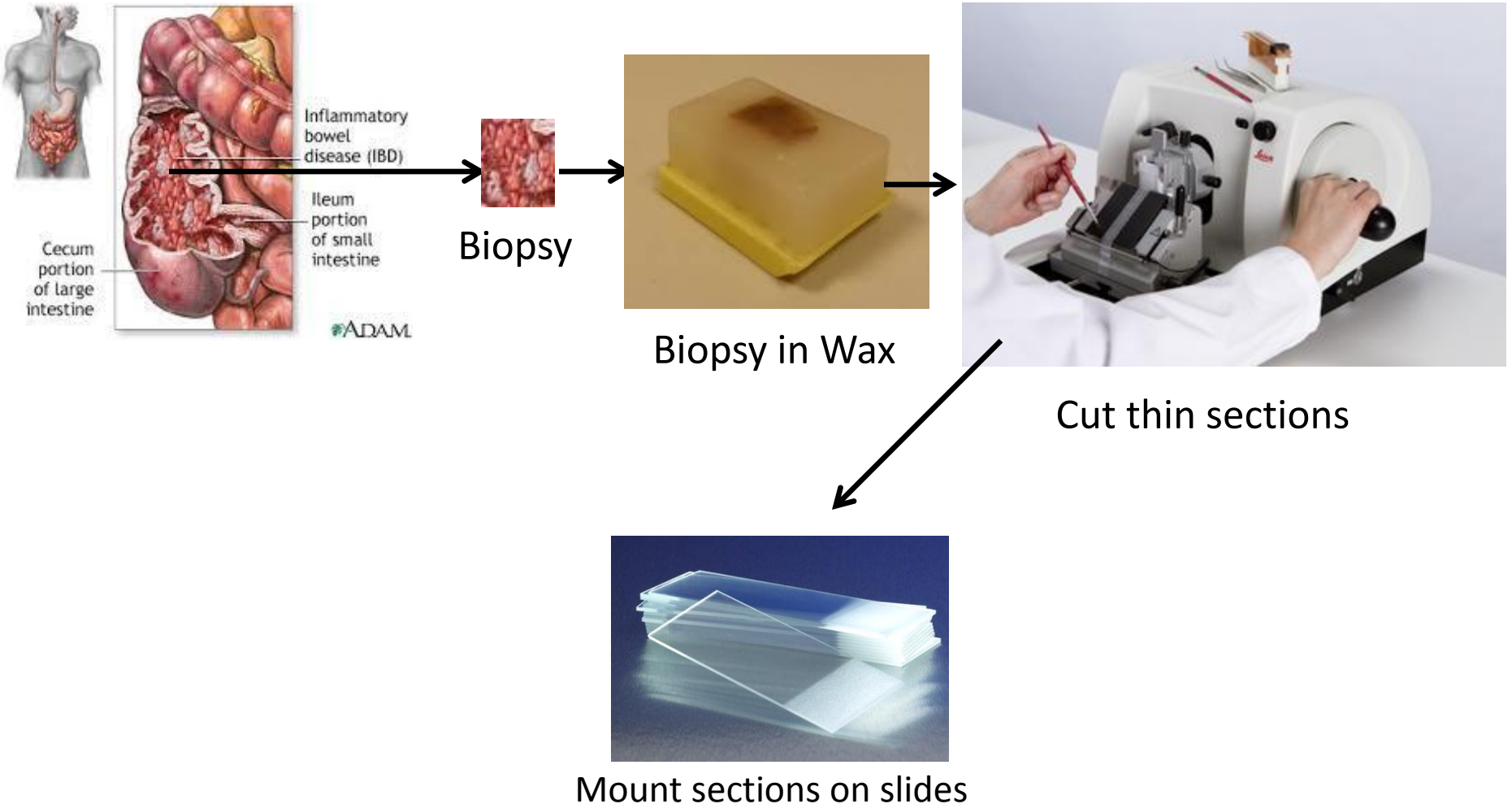
Project goal: Will the drug work in the intestines?



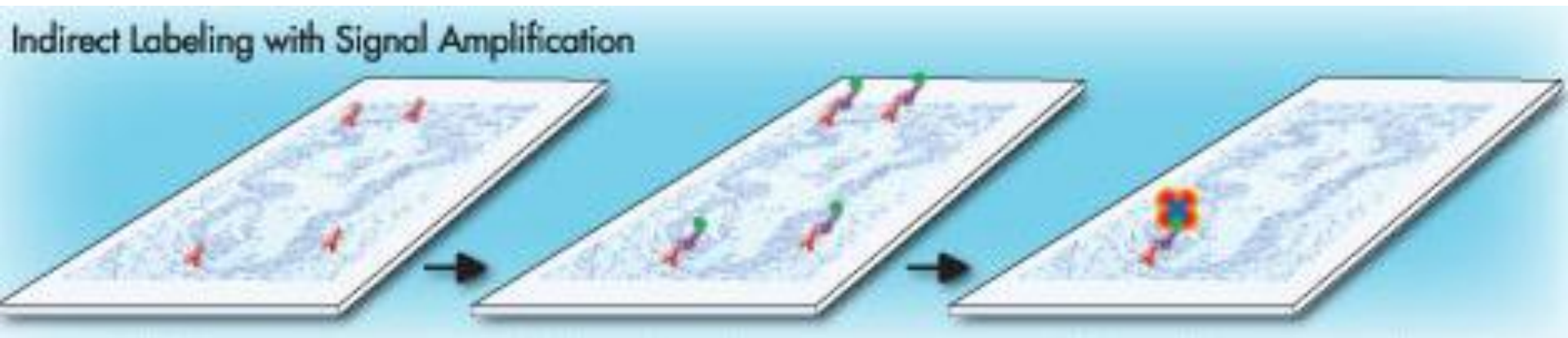
**Methods: Immunohistochemistry**

**A tool to see the drug binding sites using color**

# Preparing the intestine biopsies for immunohistochemistry



# Immunohistochemistry: A tool to see the drug binding sites using color



# Let's Talk about....

A new drug for Inflammatory Bowel Disease



Will the drug work in the intestines?

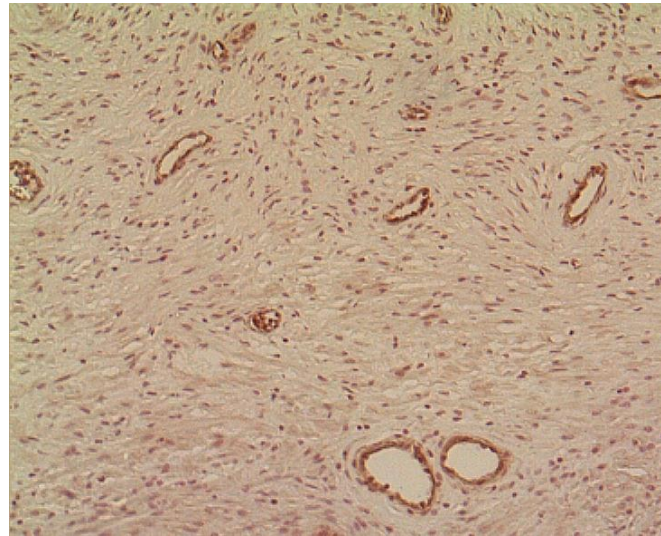


Immunohistochemistry:  
A tool to see inside cells using color

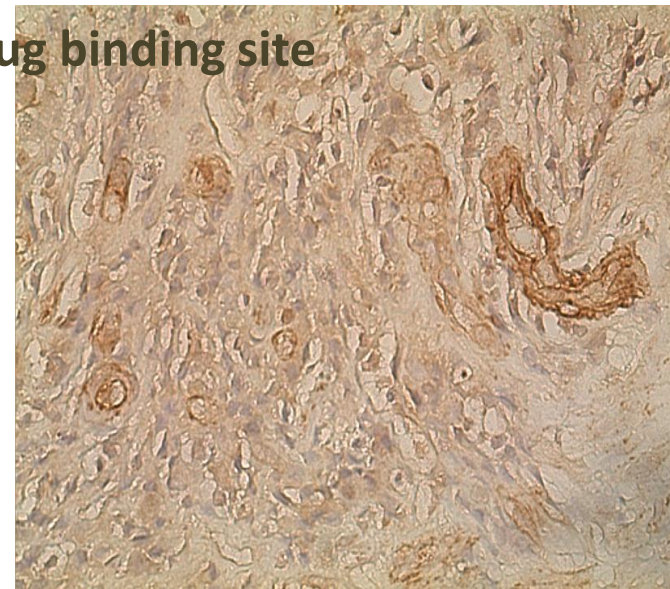


**What answers have we found using  
immunohistochemistry?**

**Result: The drug binding site is located  
in the blood vessels of the intestine**



**Brown color = Drug binding site**



# Let's Talk about....

A new drug for Inflammatory Bowel Disease



Will the drug work in the intestines?



Immunohistochemistry:  
A tool to see inside cells using color



What answers have we found using  
immunohistochemistry?



**What are we working on now?**

# Current Experiment:

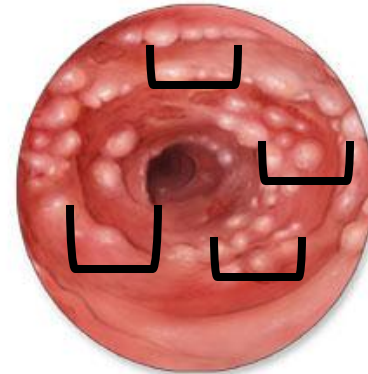
## Are there more drug binding sites in Ulcerative Colitis or Crohn's Disease?



*Healthy Colon*



*Ulcerative Colitis*



*Crohn's Disease*



**Specific drug for types of IBD types**

**Visualizing Phosphodiesterase 8A:**  
a novel therapeutic target for autoimmune  
and inflammatory diseases

Maciej Kaminski, Kári R. Nielsen,  
Gunnrið Jóanesarson, Gisela Djurhuus



Landssjúkrahúsið