University of Colorado

GI and Liver Innate Immune Program
Goals:

*Develop the University of Colorado Anschutz Campus as the preeminent place to do GI and liver innate immune research in the United States*

*Translate research discoveries and innovations into new personalized therapies and cures for patients with GI and liver disease(s)*
Why GI and Liver?

Significant unmet needs:

- GI and liver-related diseases cost US healthcare system >$500B/yr
  - High morbidity/mortality diseases
  - Increasing incidence

- Many patients (IBD, EoE, NAFLD, pancreatic cancer, etc) have few therapeutic options

- Innate immunity and the microbiome is timely; GWAS studies in numerous GI / liver diseases have identified innate immune-related SNPs

- No such focus exists in the US
Why target innate immunity?

GWAS Inflammatory Bowel Disease(s)

>85% of IBD-related SNP’s target to innate immune genes

Why innate immunity at CU?

- Significant GI / Liver innate immunity history
  - 1958 - Ben Eisemen performed 1st fecal transplant
  - 1963 - Tom Starzl performed 1st liver transplant
  - 1966 - Kimishige Ishizaka discovered IgE
  - 1983 - Kappler and Marrack discovered T cell receptor
  - 1984 - Charles Dinarello discovered interleukin-1
  - 1985 - Norman Pace first to use 16S microbiota sequencing
  - 1996 - First adult-adult live donor liver transplant
  - 2008 - Identification of new eosinophilic esophagitis phenotypes

- 57 faculty with >$15M in annual GI and Liver-related NIH funding

“Good to Great”
Unique Pediatric <-> Adult collaborations

- Mucosal Inflammation Program
- CU Liver Transplantation Program
- Gastrointestinal Eosinophilic Diseases Center
- U of C Hospital Crohn’s and Colitis Center
- Children’s Hospital Pediatric IBD Center
- CCTSI

Unique Basic <-> Translational collaborations
Aims:

**Aim 1:** Develop five biomedical sub-programs focused on innovation, discovery and translation of new information related to GI and liver innate immunity.

**Aim 2:** Provide pilot funding to drive GI/liver innate immunity on the AMC campus.

**Aim 3:** Establish an Enrichment Program for education and dissemination of new research from AMC.

**Aim 4:** Retain and recruit new investigators to fill voids in innate immunity in the liver and GI tract.
Program Co-Directors
Hugo Rosen
Ron Sokol

Program Director
Sean Colgan

Faculty Recruitment Program
Directed by the Executive Committee

Administration
Program Admin: Carol Ross

Pilot Grant Program
Director: Holger Eltzschig

Enrichment Program
Director: Glenn Furuta

Biomedical Sub-Programs

Innate Immunity
Director: Hugo Rosen
Co-Directors: Brent Palmer, Cara Wilson

Animal Model
Director: Holger Eltzschig
Co-Directors: Cynthia Ju, Kristi Kuhn, Linda Johnson

Microbiota
Director: Cathy Lozupone
Co-Director: Dan Frank, Nichole Reisdorph

Biorepository
Director: Lucy Golden-Mason
Co-Directors: Ed DeZoeten, Mark Gerich

Inflammation and Cancer
Director: Peter Dempsey
Co-Director: Wells Messersmith

Internal Advisory Board

External Advisory Board

Executive Committee
Role of Individual Sub-Programs

- Provide subsidized access to immunologic technologies
- Develop and optimize innate immunity assays
- Develop and facilitate testing of animal models
- Facilitate and prioritize microbiome analysis
- Develop human / mouse liver & GI stem cells
- Foster collaborations w/ pediatric and adult tissue biorepository

Diagram:
- Inflammation and Cancer
- Microbiome
- GI/Liver Biorepository
- Animal Model
- Innate Immunity
Milestones / Metrics / Outcomes

Recruit and retain the best faculty talent
- Areas of need to include:
  - Liver / GI cancer biology
  - Fatty liver disease
  - Immunometabolomics
  - Gut – liver axis biology

Extramural support
- P30 NIDDK Silvio Conte Digestive Diseases Center
- Other Center grants
- P01’s / U01’s
- Multi-PI R01’s
- Industry collaborations

Steer local talent toward digestive diseases and innate immunity
Thank you!