An overview of host-derived molecules that interacted with gut microbiota

Chenguang Zhang[1], Huifeng Liu[1], Lei Sun [2], Yue Wang[1], Xiaodong Chen[1], Juan Du [2,*], Åsa Sjöling [2,*], Junhu Yao[1,*], Shengru Wu[1, #, *]

[1] College of Animal Science and Technology, Northwest A&F University, Yangling, China.

[2] Centre for Translational Microbiome Research, Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, Stockholm, Sweden

Lead contact

*Co-corresponding authors

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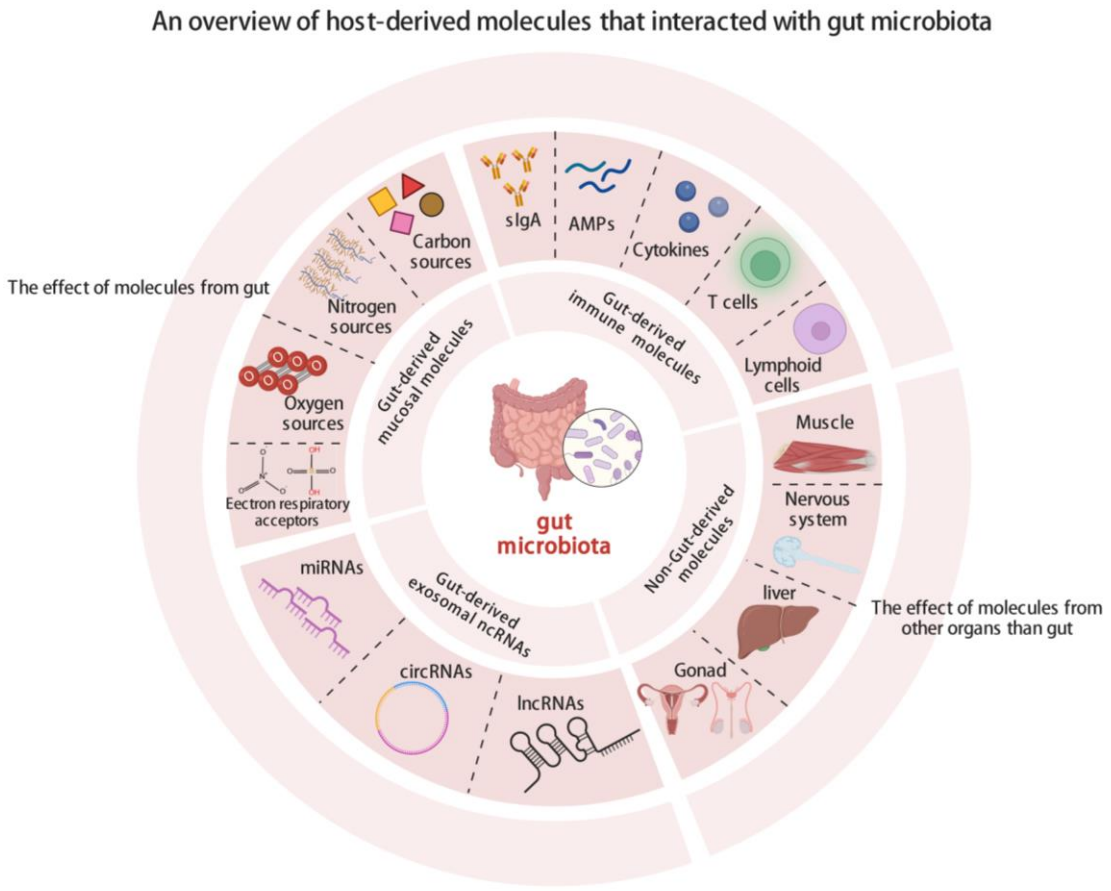
Introduction



- **Why we pay attention to host-derived molecules that interacted with gut microbiota?**

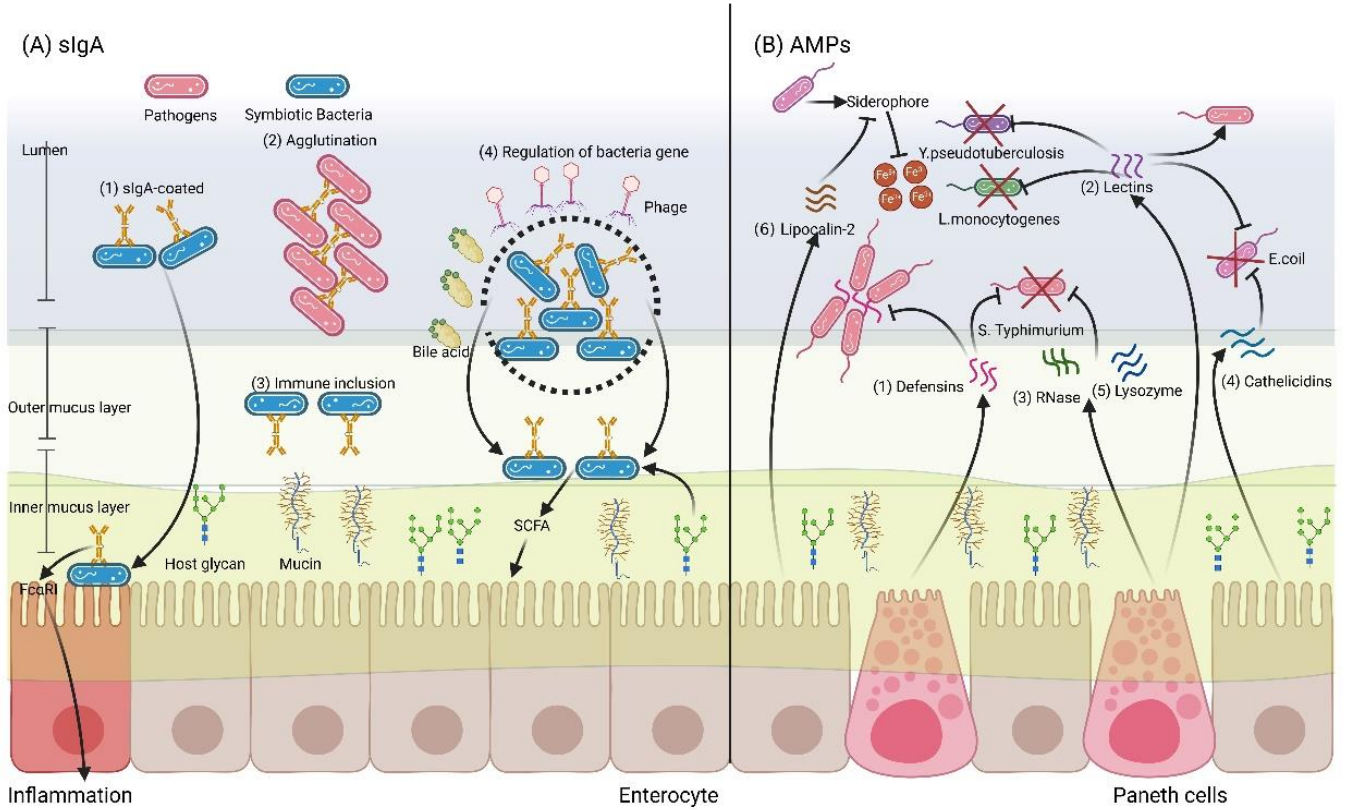
  ① Host susceptibility to disease,

  ② Under the same diet and physiology conditions, there are differences in phenotype,

  ③ the regulating mechanisms must also be systematically reviewed.

Results

Gut-derived immune system factors (sIgA and AMPs)

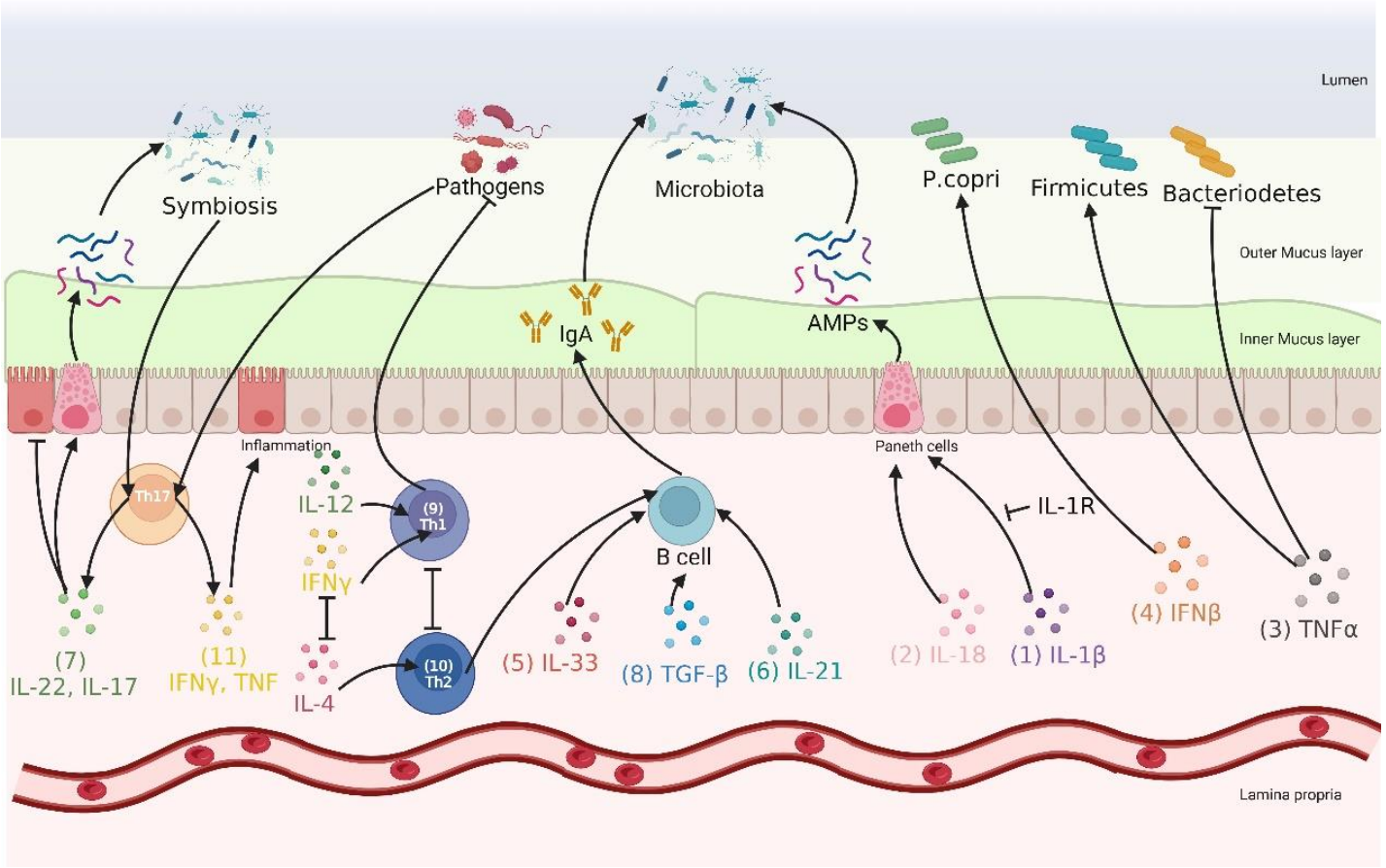


- **sIgA**
  - sIgA-coated
  - Agglutination
  - Immune inclusion
  - Regulation of bacteria gene

- **AMPs**
  - Defensins
  - Reg protein family
  - RNase angiogenin 4
  - Cathelicidins
  - Lysozymes
  - Lipocalin-2

Results

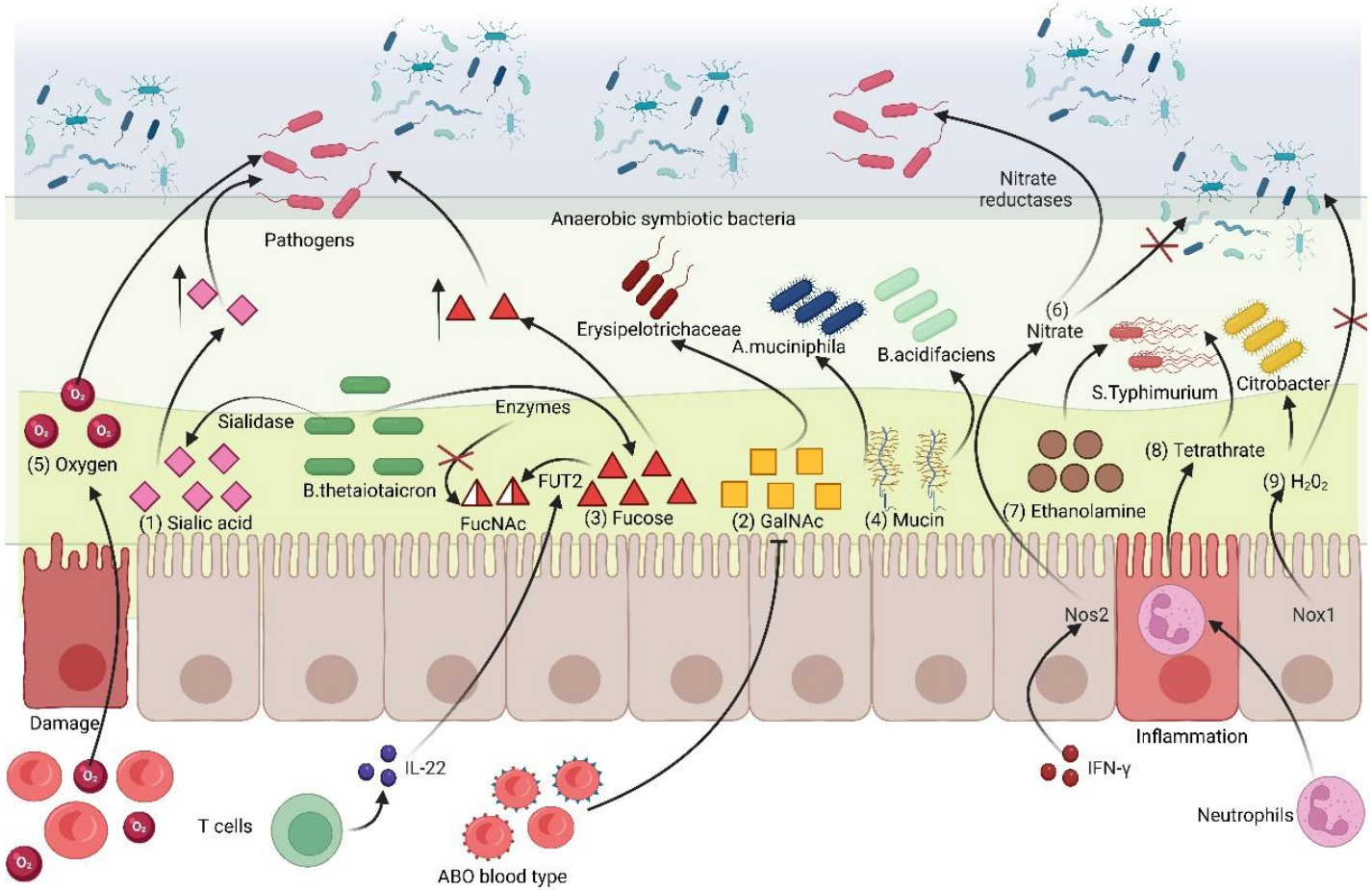
Gut-derived immune system factors (cytokine)



- **cytokine**
  - IL-1β
  - IL-18
  - TNF-α
  - IFN-β
  - IL-33
  - IL-21
  - IL-17 and IL-22
  - TGF-β
  - IFN-γ and IL-12
  - IL-4
  - Th17 cells

Results

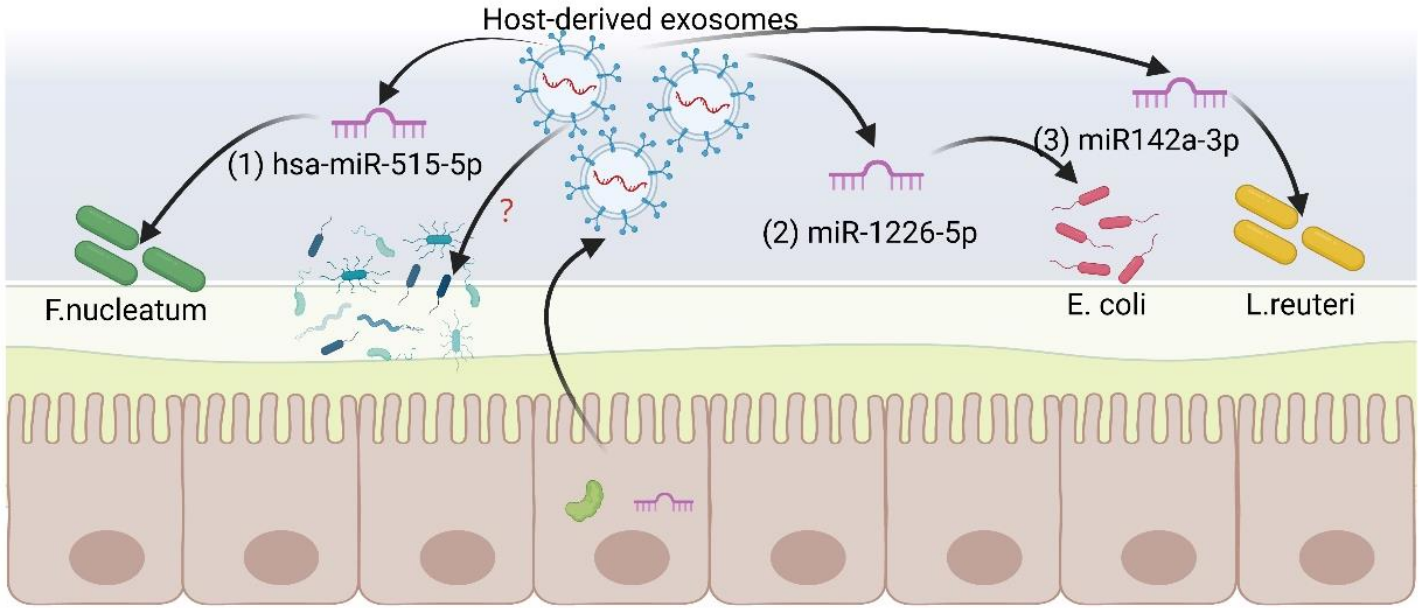
Sources related to gut-derived mucosal metabolites



- **Carbon sources**
  - Sialic acid
  - Fucose
  - N-acetyl-galactosamine
  - Ethanolamine
- **Nitrogen sources**
  - Mucin
- **Oxygen sources**
- **Electron respiratory acceptors**
  - Nitrate respiration
  - Sulfate respiration
  - H_2O_2

Results

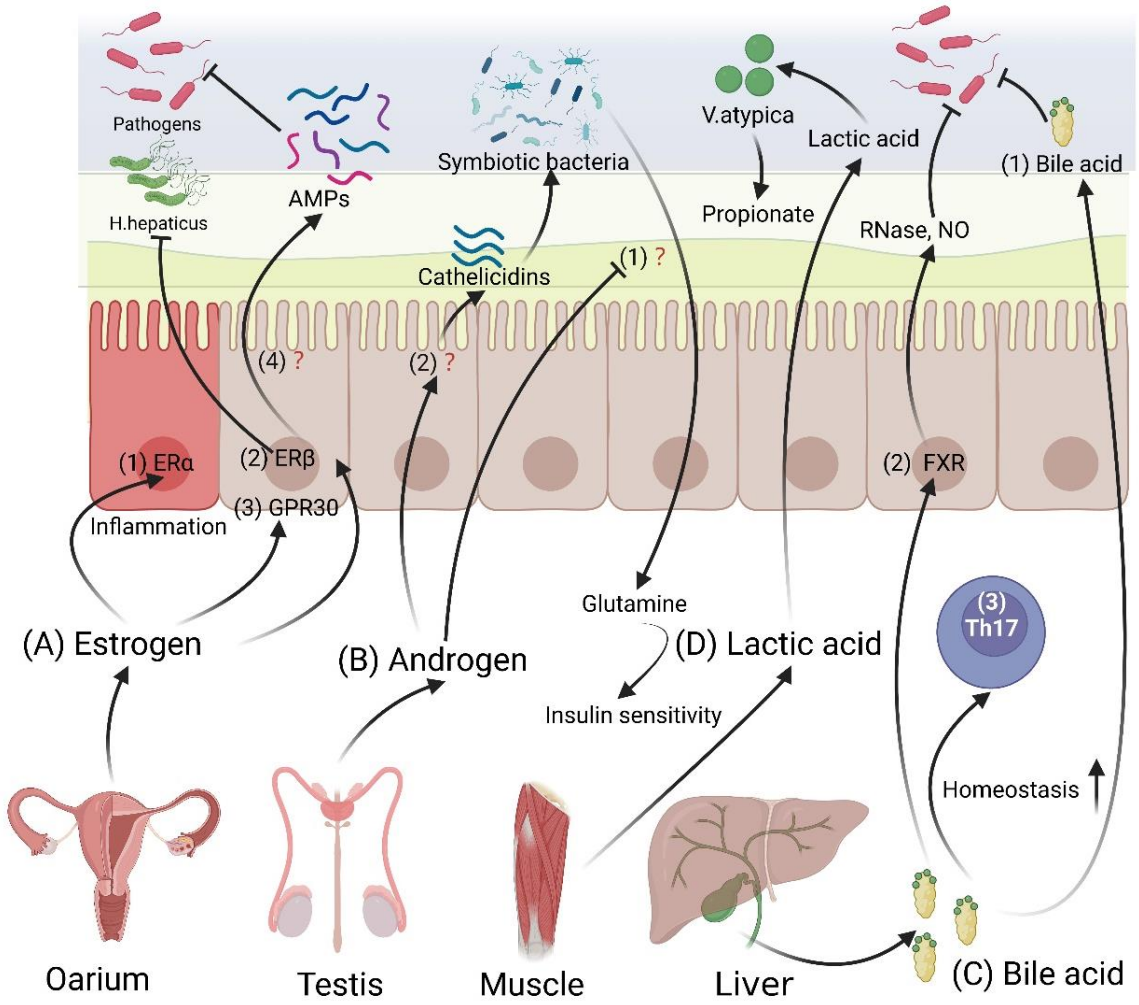
Gut-derived exosomal <ncRNA> regulation



- **miRNAs**
  - has-miR-515-5p
  - miR-1226-5p
  - miR142a-3p
- **circRNAs**
- **lncRNAs**

Results

Molecules derived from other organs than the gut



- **Sex hormone (Sexual gonads)**
- **Neurohormones (nervous system)**
- **Bile acid (Liver)**
- **Lactic acid (Muscle)**

Summary

- The host-derived molecules that could interact with the gut microbiota and the mechanism about how these molecules affected the gut microbiota were summarized.
- The host-derived molecules that shaping gut microbiota includes gut-derived immune molecules, sources related to gut-derived mucosal molecules, gut-derived exosomal ncRNAs, and molecules derived from other organs than gut were separately reviewed.
- Understanding how host factors regulate the gut microbiota and influence disease incidence can help to develop novel preventive and therapeutic interventions, improve the cure rate of the fecal microbiota transplantation, and even aid in the prediction of disease susceptibility in individuals.

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