Journal Club

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I st Paper

Gut Microbial Metabolites Fuel Host Antibody Responses

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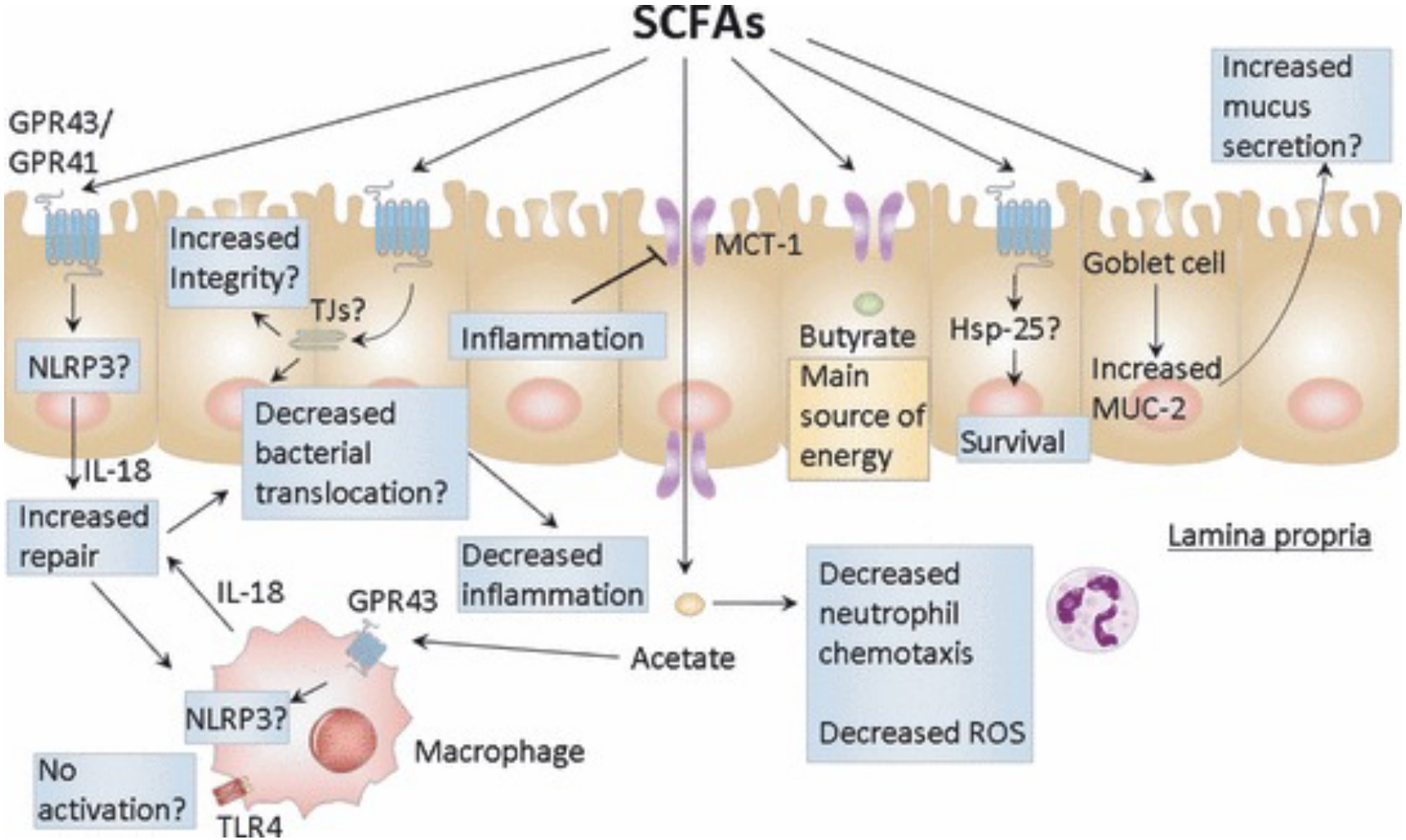
Potential effects of SCFAs on gut epithelial biology and immune cells.

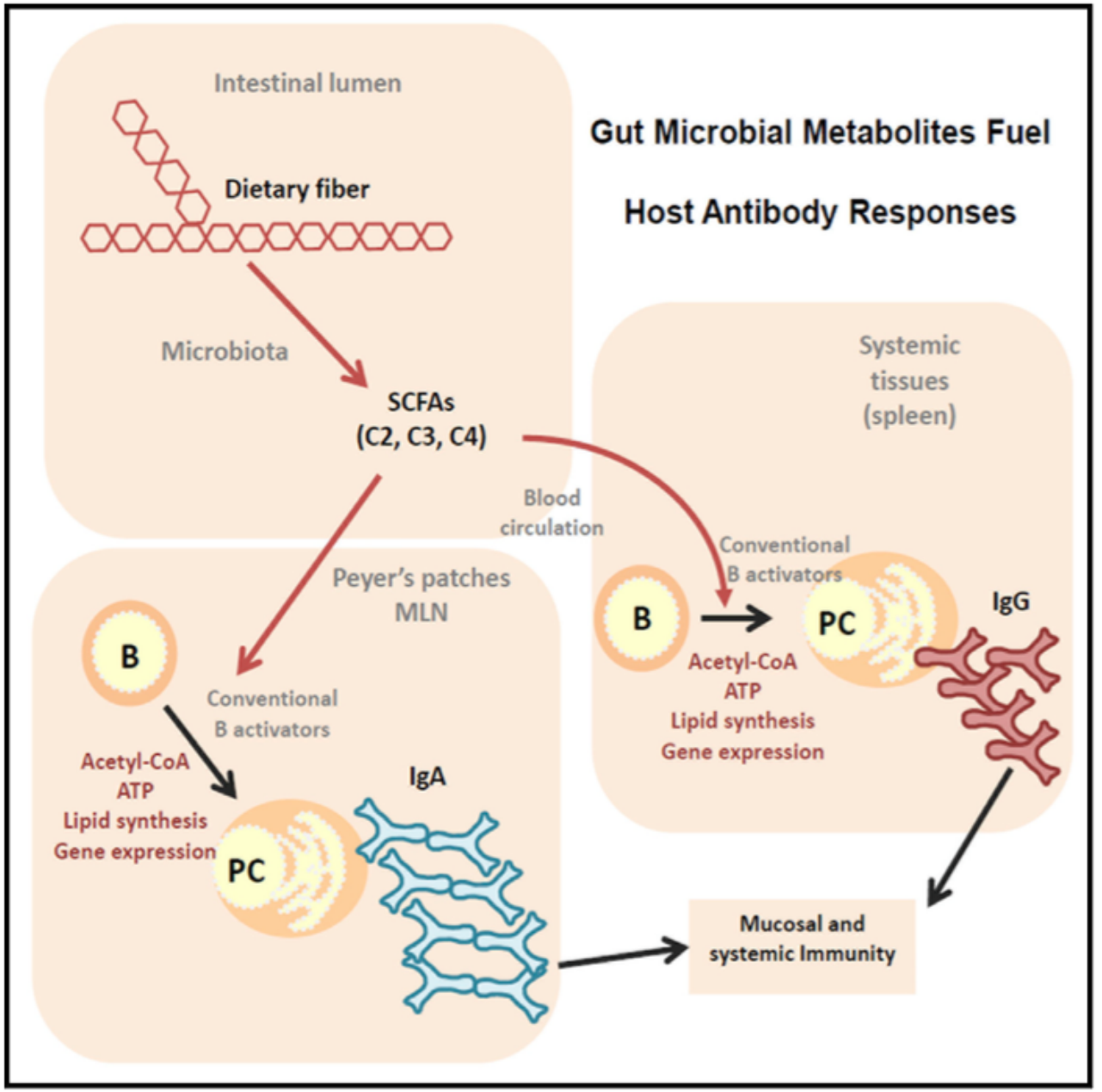


Macia, L., et al. (2012). Microbial influences on epithelial integrity and immune function as a basis for inflammatory diseases. *Immunological Reviews*, *245*(1), 164–176

Highlights

- SCFAs
  - Support host antibody production.
  - Increase acetyl-CoA and enhance metabolic sensors for energy and antibody production.
  - Control gene expression for plasma B differentiation.
  - When it is reduced in mice can result with pathogen susceptibility.
  - Can restore immune deficiency.

Major Findings



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2nd Paper

Colonic transit time is related to bacterial metabolism and mucosal turnover in the gut

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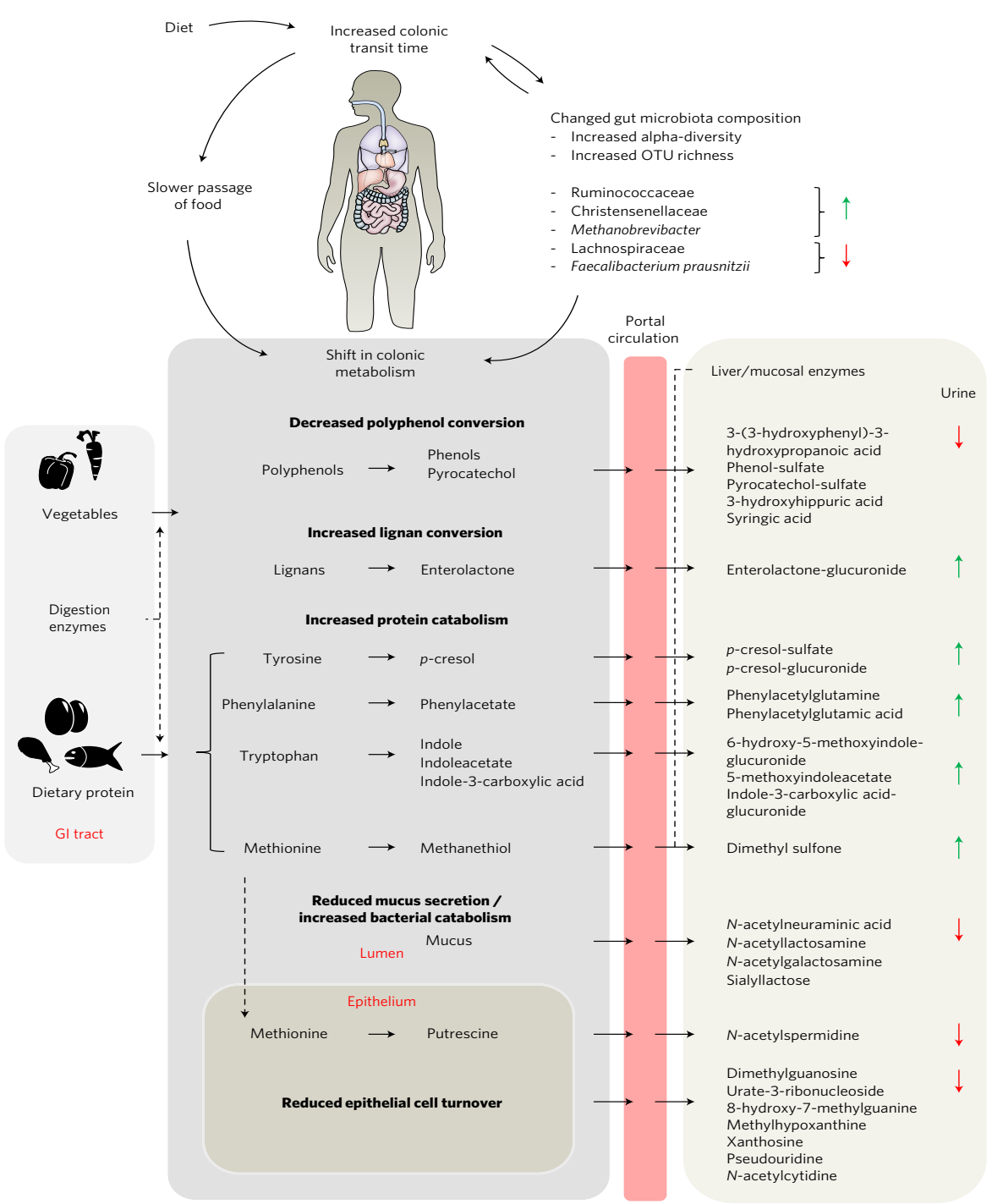
What we know and what we don't…

- A lack of knowledge on modulation of gut microbial metabolism by colonic transit time.
- A firm stool consistency correlates with a high gut microbial richness and favours several bacterial groups involved in colonic fermentation.
- In the colon, the transit of luminal material is considerably slower than in the small intestine.
- If carbohydrate depletion occurs, fermentation in the colon shifts to protein degradation, which results in a range of products including ammonium, hydrogen sulfide, SCFAs and branched-chain fatty acids.
- The bacterial protein degradation products are largely absorbed in the colon and metabolized in the mucosa and liver before being excreted into the urine
- Protein degradation products affect colonic epithelial cells and are associated with diseases such as colorectal cancer, chronic kidney disease and autism , although the mechanisms remain largely unknown.

Highlights

- Colonic transit time is associated with overall gut microbial composition, diversity and metabolism.
- A long colonic transit time associates with high microbial richness and is accompanied by a shift in colonic metabolism.
- A shorter colonic transit time correlates with metabolites possibly reflecting increased renewal of the colonic mucosa.
- Urinary metabolites are less associated with microbial richness than with colonic transit time.
- A healthy gut microbial ecosystem is also associated with colonic transit time.

Major Findings



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