

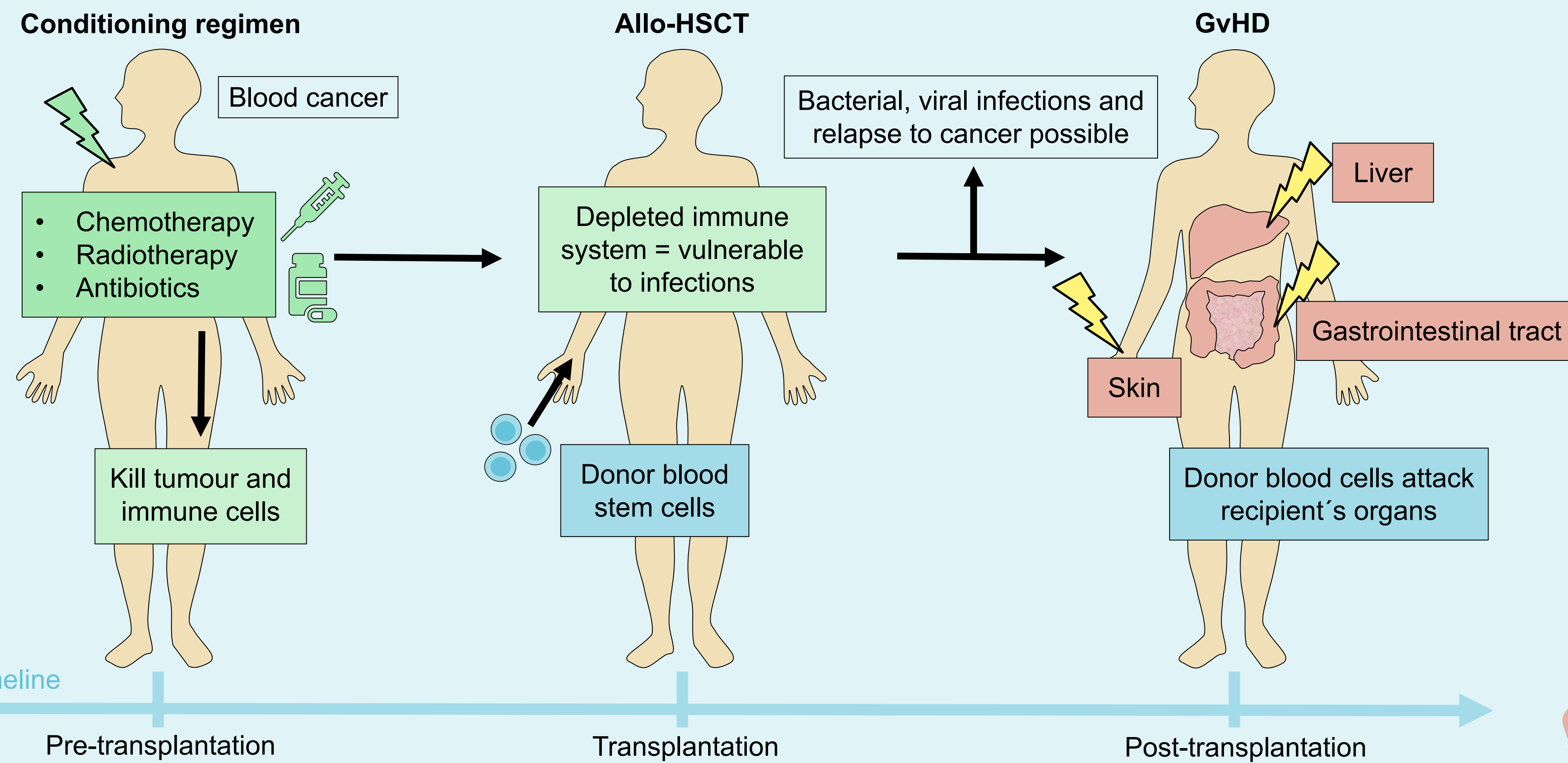
# POTENTIAL ROLE OF THE GUT MICROBIOTA IN DETERMINING THE CLINICAL OUTCOME IN ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

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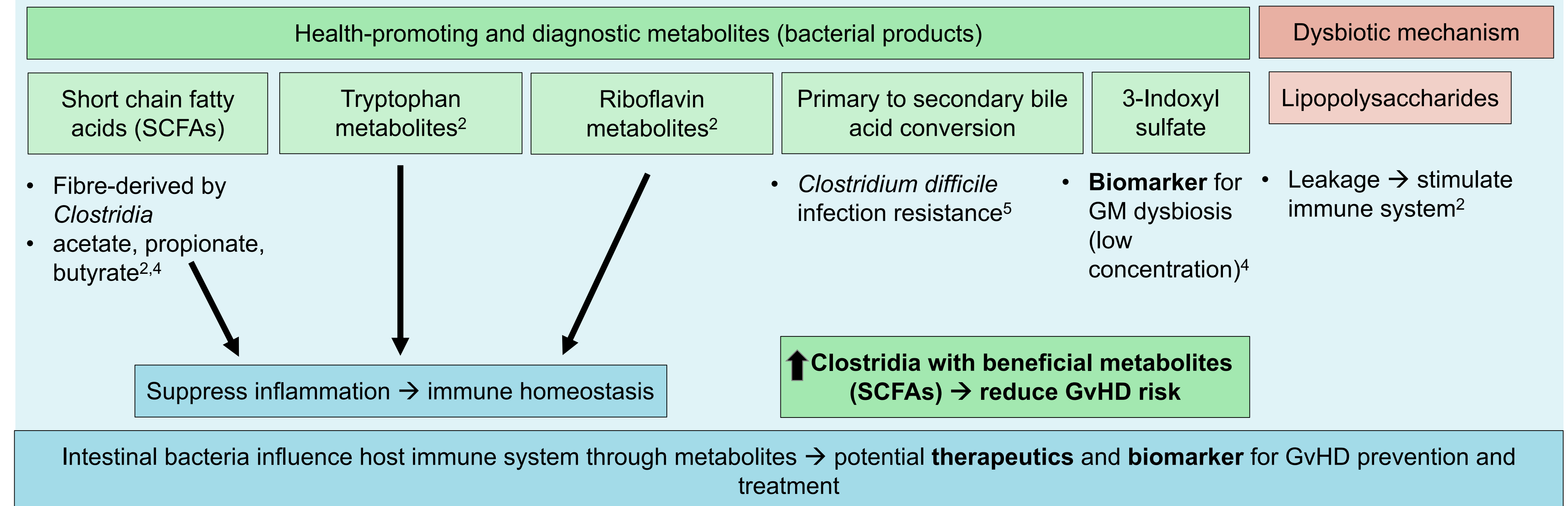


## BACKGROUND 1

- Allogeneic hematopoietic stem cell transplantation (allo-HSCT) = treatment method for blood cancer conditions
- Allo-HSCT starts with chemotherapy, radiotherapy and antibiotics
- Procedure leads to complications, namely infections and Graft-versus-Host-Disease (GvHD)<sup>1</sup>



## RESULTS 2 – GUT BACTERIA INFLUENCE IMMUNE SYSTEM VIA METABOLITES

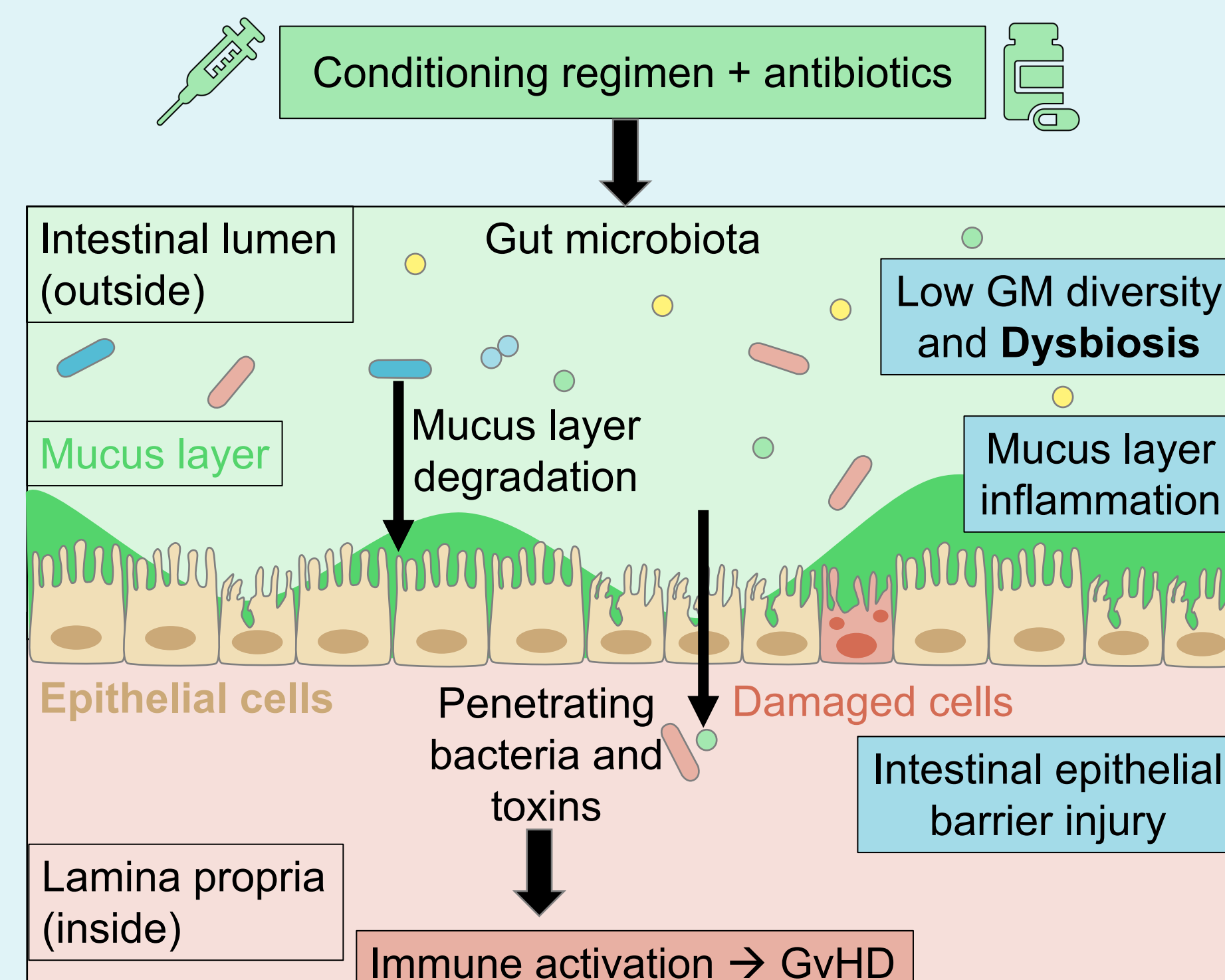


## MICROBIOTA AS A MEDICAL TARGET

- Prebiotics** = fibre e.g. inulin, nourish health-promoting bacteria, studies show increase in allo-HSCT survival<sup>4</sup>
- Probiotics** = living bacteria e.g. *Lactobacillus rhamnosus*, recolonise GM → faecal microbial transplant (FMT) shown to cure *C. difficile* infection and lessens GvHD<sup>6</sup>
- Postbiotics** = bacterial metabolites e.g. SCFAs, directly applied<sup>1</sup>

## BACKGROUND 2

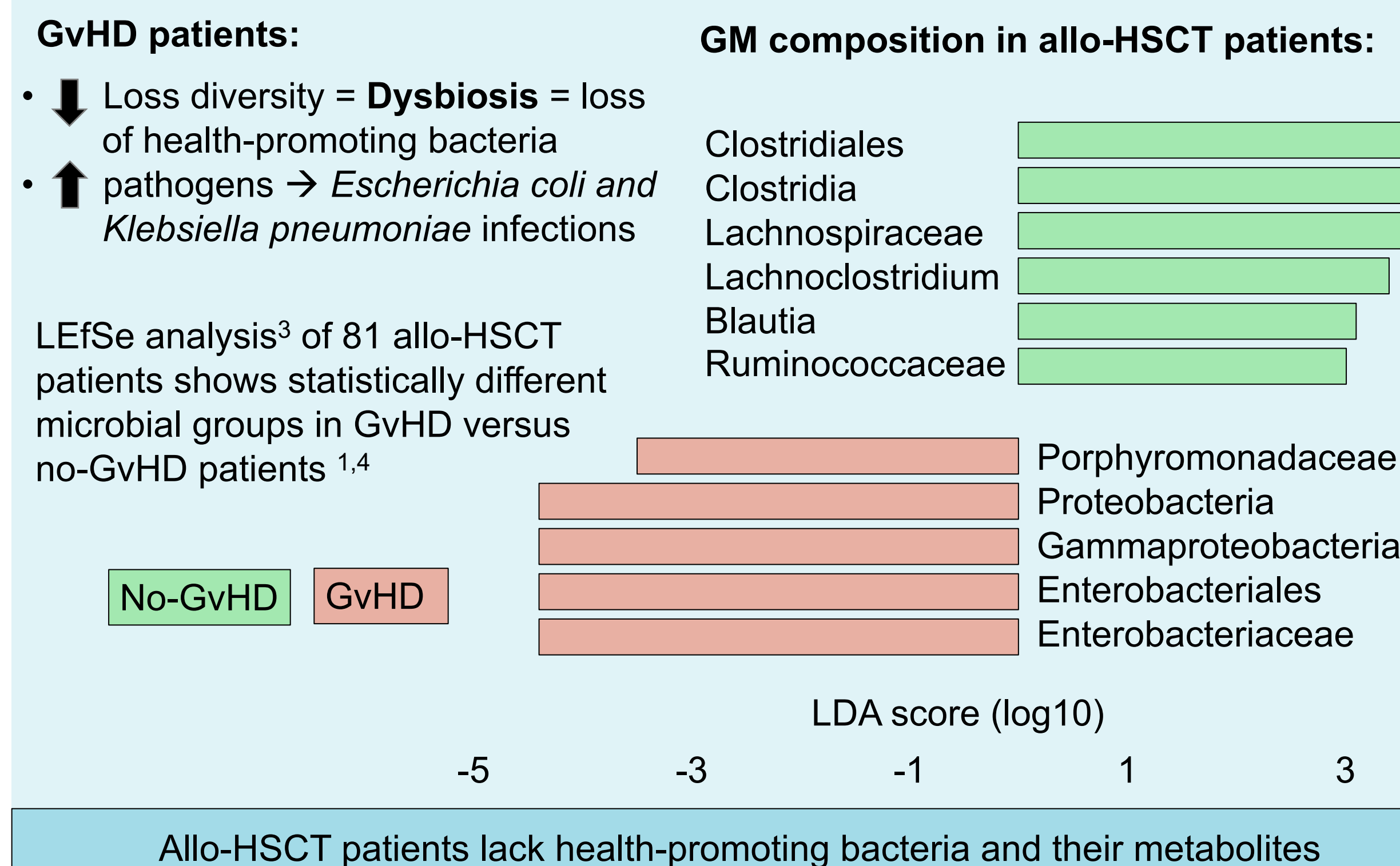
- GvHD development:**
- Genetics and conditioning → microbial dysregulation (**Dysbiosis**)
  - Dysbiosis**, inflammation, barrier defect → immune activation
  - Immune activation → clinical outcomes (GvHD)<sup>1,2</sup>



## HYPOTHESIS

The GM can regulate the clinical outcome of allo-HSCT

## RESULTS 1 – MICROBIAL COMPOSITION



## CONCLUSION

GM plays important role in GvHD development → can GM-targeting therapies reduce GvHD risk?

- Future investigations:**
- preserve/ restore high GM diversity through prebiotics, probiotics, postbiotics
  - enhance epithelial barrier regeneration
  - target mucus-degrading bacteria through species-specific drugs instead of antibiotics

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