

## Foods 2022: Food, Microbiome and Health



How iron combined with prebiotics and lactoferrin can favor a healthy gut microbiota in infants living in rural Africa – an *in vitro* study

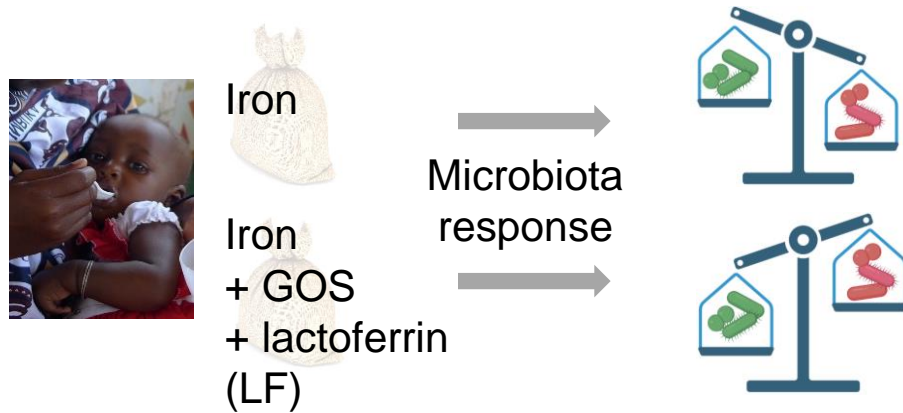
Carole Rachmühl, Ambra Giorgetti, Nicole Stoffel, Michael Bruce Zimmermann, Christophe Lacroix and Annelies Geirnaert



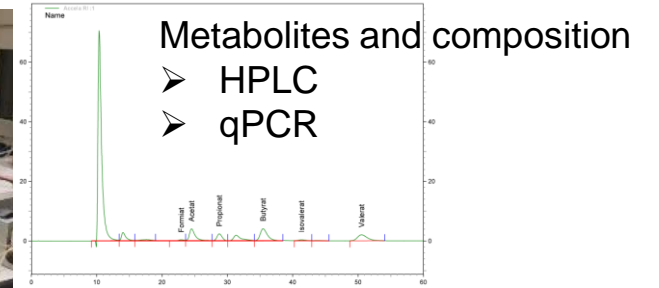
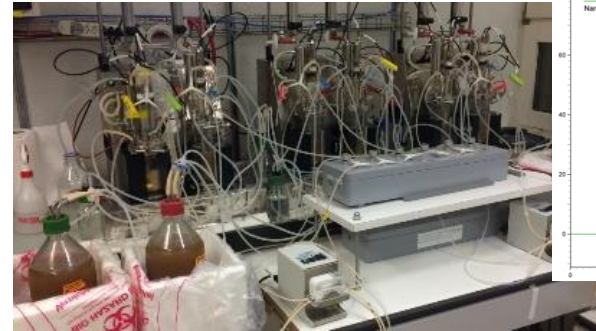
# Investigating the mode of action of nutritional interventions in Kenyan infants using a continuous *in vitro* colonic fermentation model

## Novel nutritional solutions against IDA

Intervention

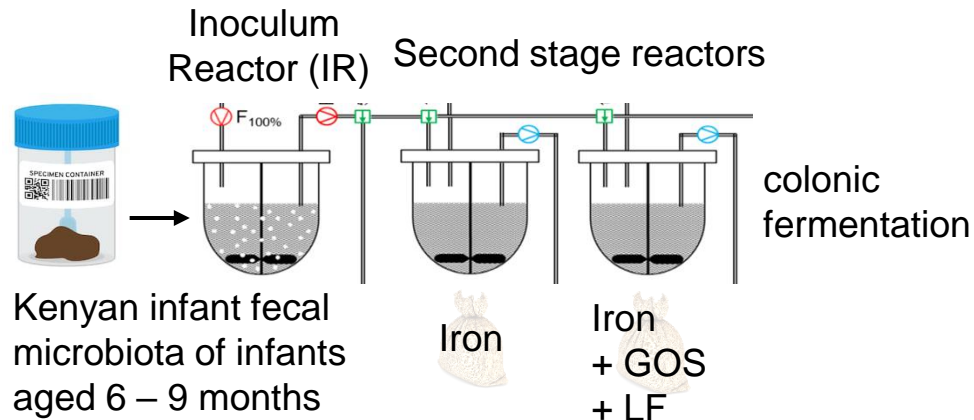


## Colonic fermentation model (PolyFermS)



➤ Proximal colon condition of a Kenyan infant during weaning at the age of 6 – 9 months

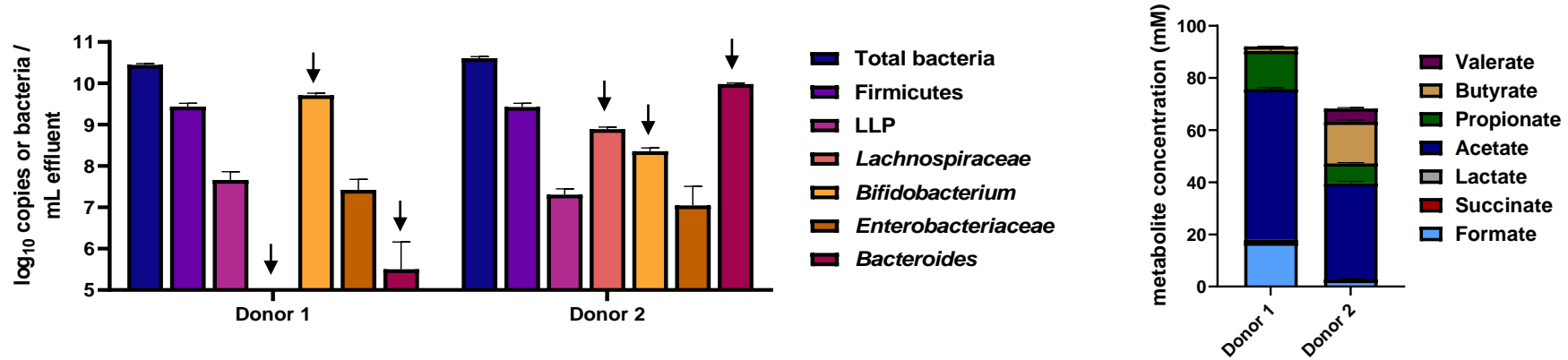
Mechanistic study



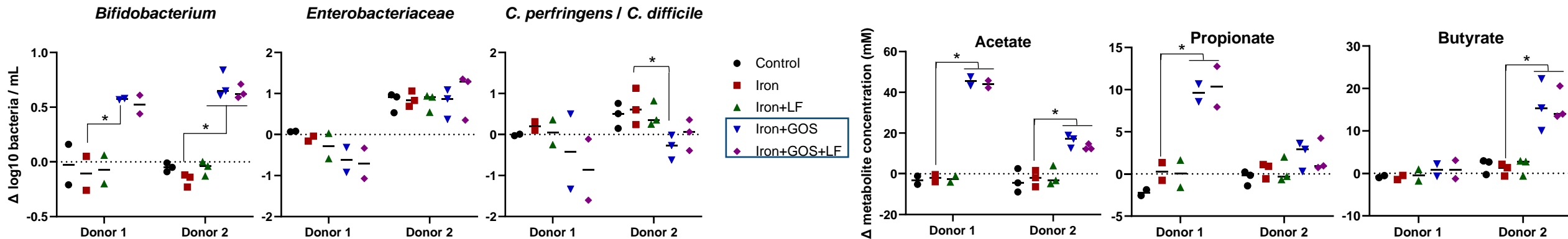
pH 5.8    37 °C    120 rpm    Nutrients from corn and mother milk

# Protective effect of galacto-oligosaccharides through stimulation of beneficial gut microbes and metabolite production

Two different infant microbiota established in the reactors.



Decreased growth of enteropathogens upon exposure to galacto-oligosaccharides concomitant with an increase of *Bifidobacterium* and short-chain fatty acids.



Δ before and after treatment; 2 repeats for donor 1, 3 repeats for donor 2; no differences observed in total bacterial counts; \* p < 0.05

Iron  
+ GOS  
+ LF



Beneficial effect of galacto-oligosaccharides on microbiota composition and activity.

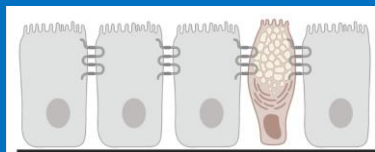
Trend towards beneficial synergistic effect with lactoferrin against *C. perfringens*.

Iron



*Ex vivo* colon microbiota were not affected by iron alone at 5 mg/L.

→ host-dependent mode of action?



→ Combine with *in vitro* cellular models to study the host-microbe interaction.

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