



纵向分析揭示人类肠道微生物组对菊粉的时序性及个性化响应

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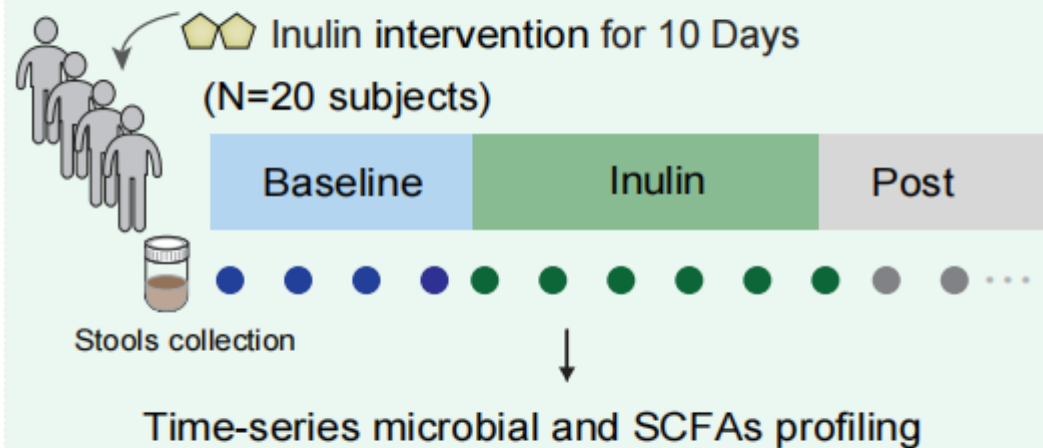
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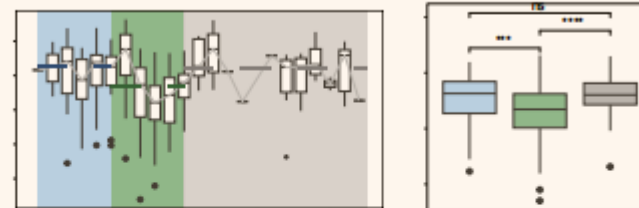
Lu Wu, Hongbin Liu, Xuwen Wang, Zining Tao, Zepeng Qu, Chaobi Lei, Yangyu Liu, et al. 2025.
Longitudinal profiling of the human gut microbiome reveals temporal and personalized responses to inulin.
iMetaOmics 2: e70029. <https://doi.org/10.1002/imo2.70029>

简介

Inulin intervention study in a cohort of healthy volunteers

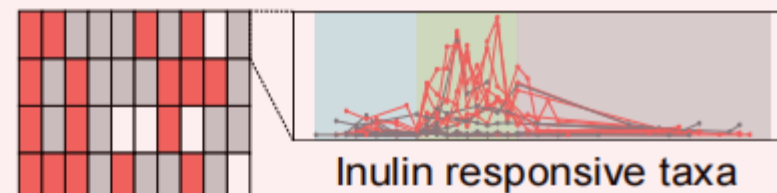


Dynamical response

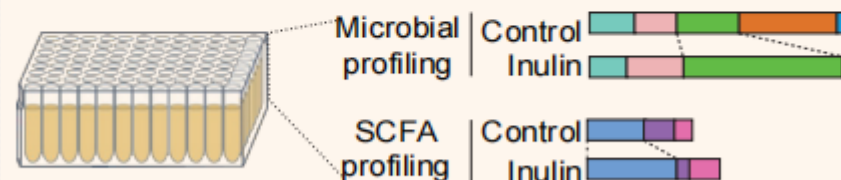


Microbial and SCFAs dynamics and response

Personalized response



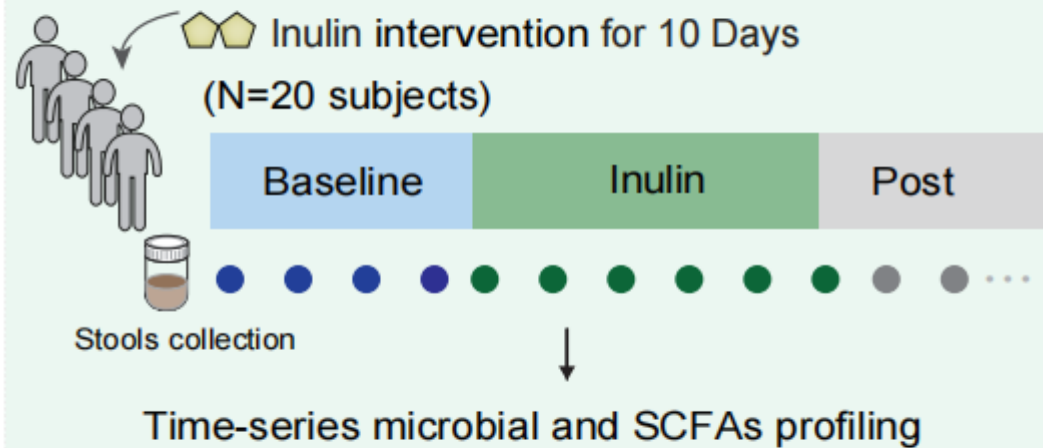
In vitro culture



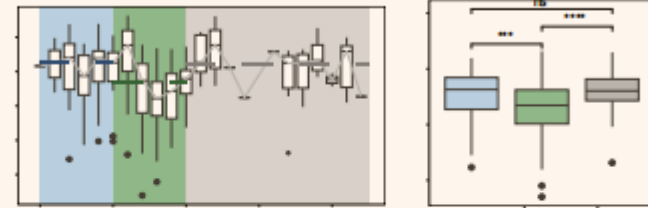
In vitro culture model

亮点

Inulin intervention study in a cohort of healthy volunteers

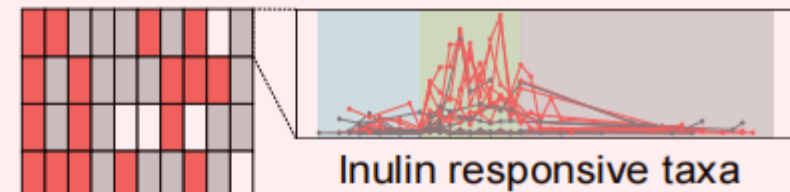


Dynamical response

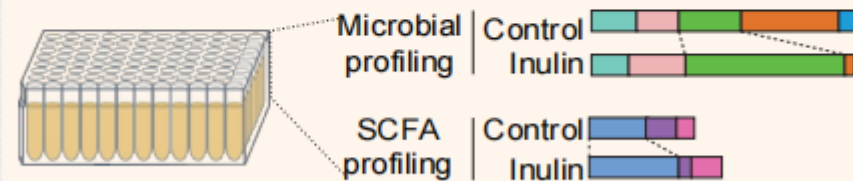


Microbial and SCFAs dynamics and response

Personalized response



In vitro culture



In vitro culture model

菊粉摄入诱导肠道菌群组成的动态变化

菊粉摄入后肠道菌群的 α 多样性逐渐降低，组成逐渐发生变化，并且菊粉撤掉后菌群又趋向恢复原态

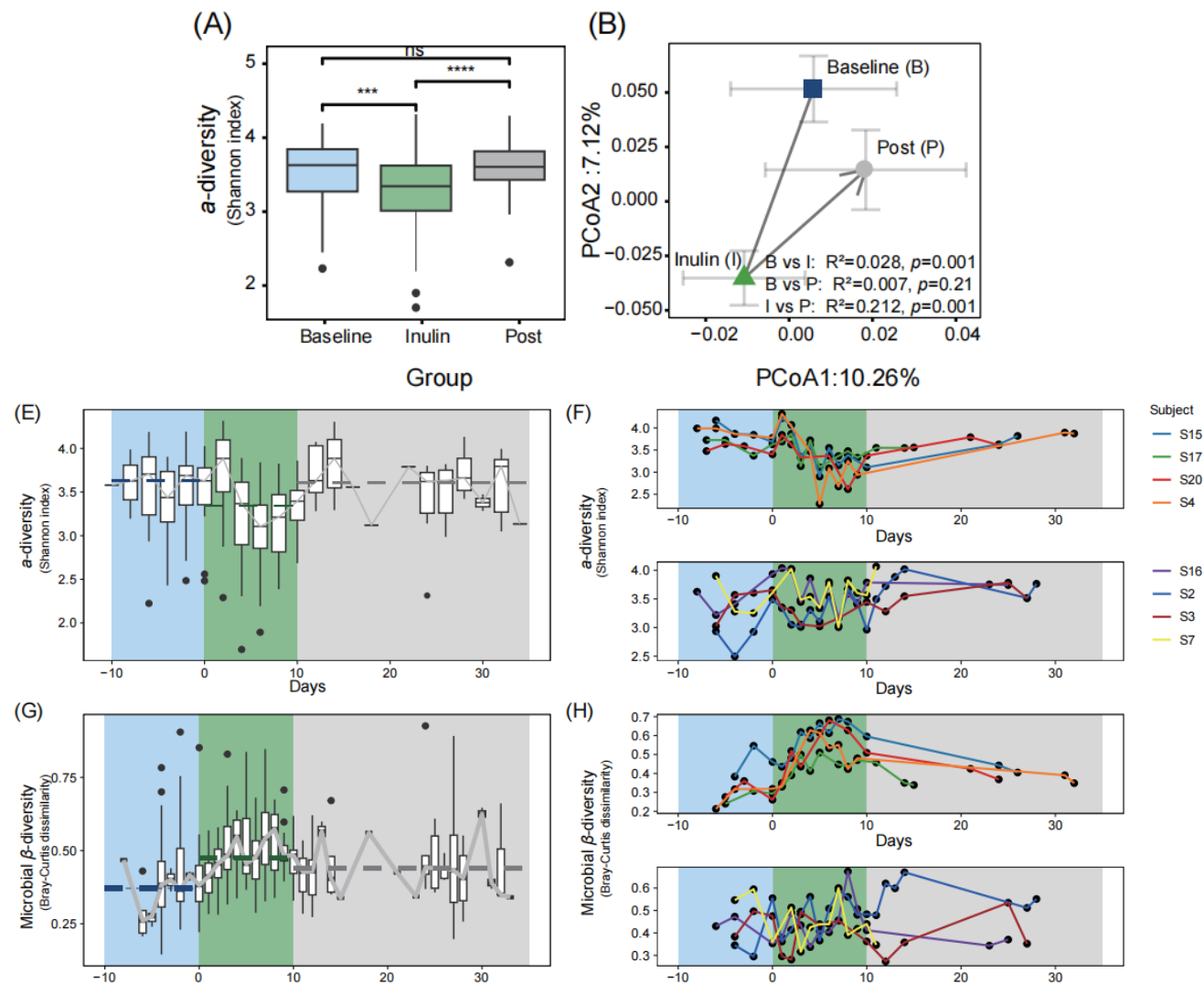


图1. 菊粉摄入后肠道菌群组成的动态变化特征

菊粉摄入对粪便短链脂肪酸水平的动态影响

菊粉摄入后粪便中短链脂肪酸浓度的变化不显著，呈现出比较大的波动

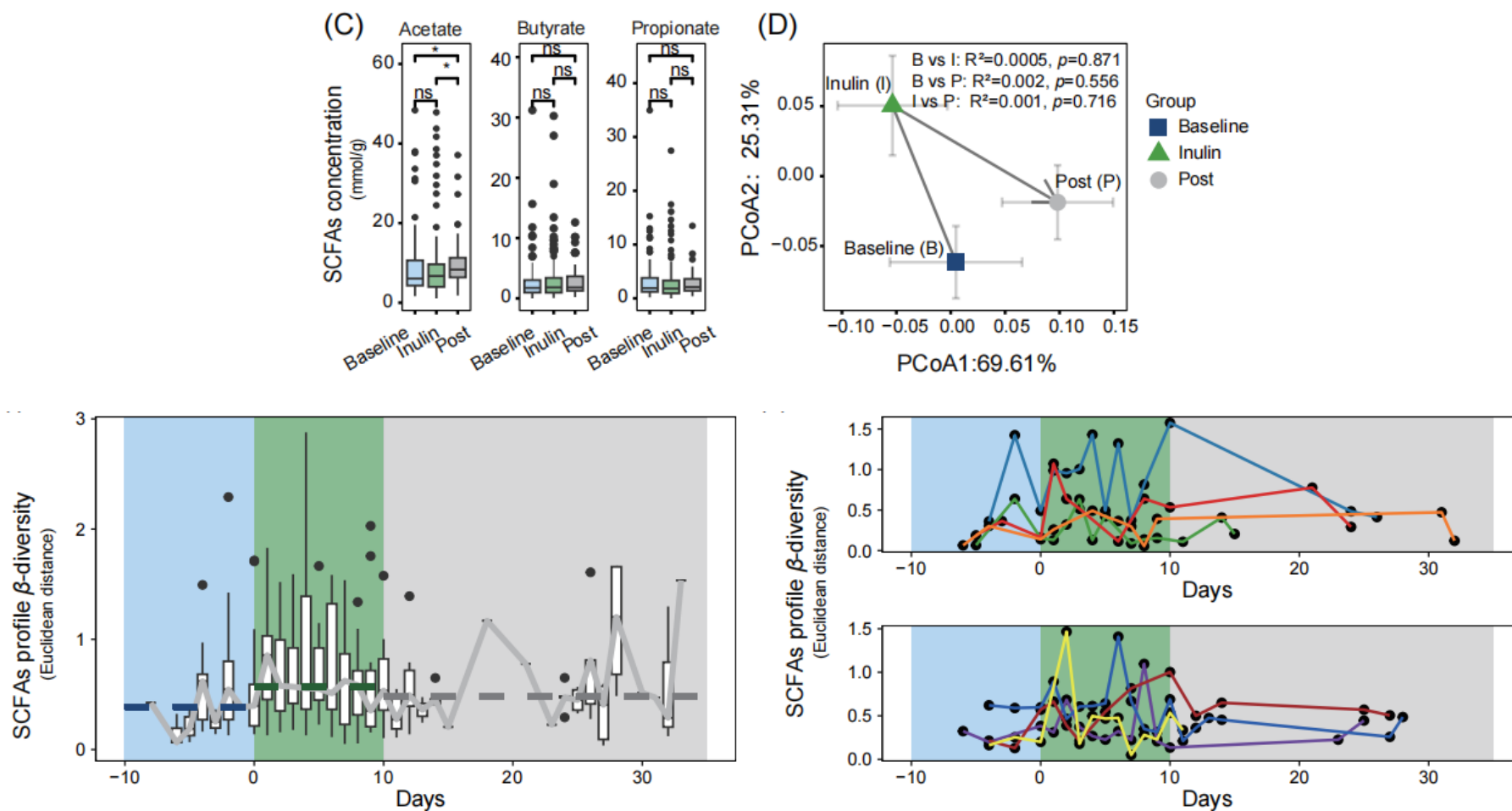


图1. 菊粉摄入后肠道短链脂肪酸代谢的动态变化特征

菊粉响应菌的个体间异质性及其时间动态变化规律

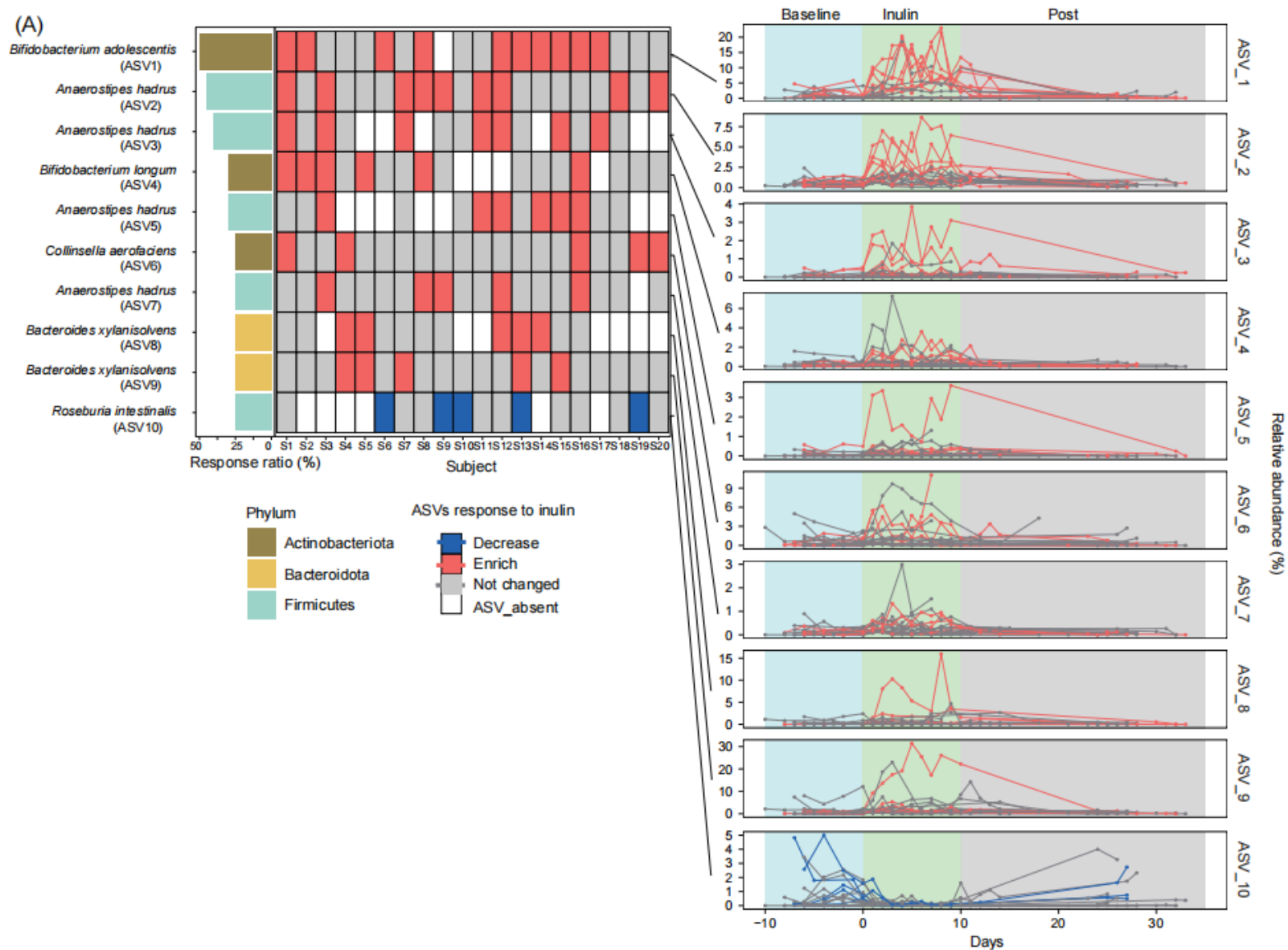


图2. 菊粉响应菌的个体间异质性及其时间动态变化规律

短链脂肪酸的个体间异质性及其时间动态变化规律

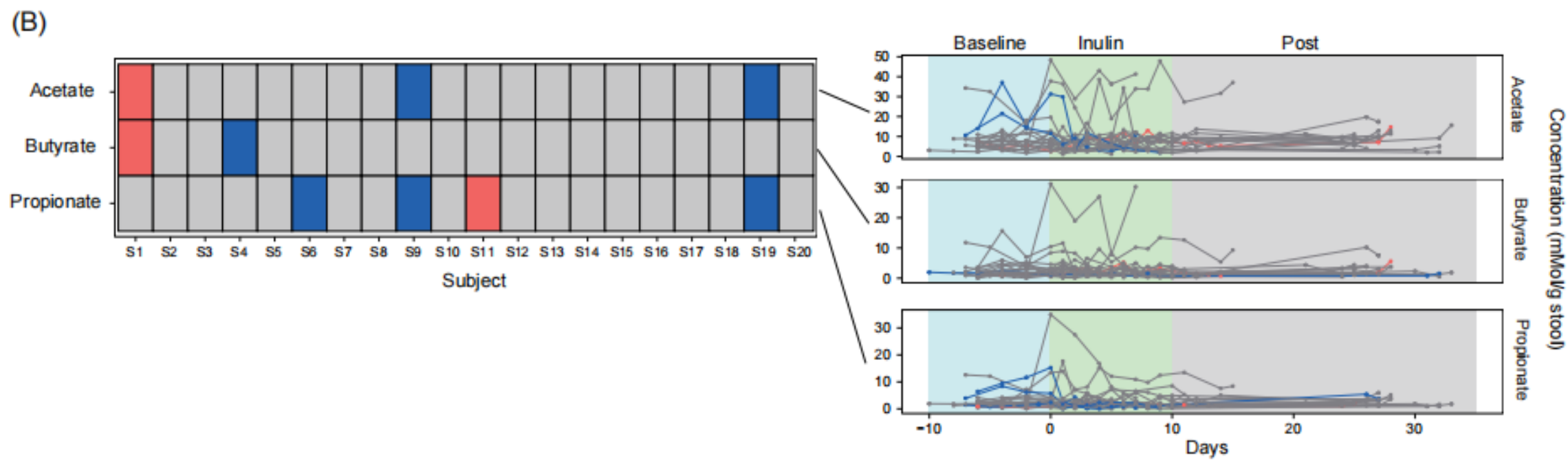


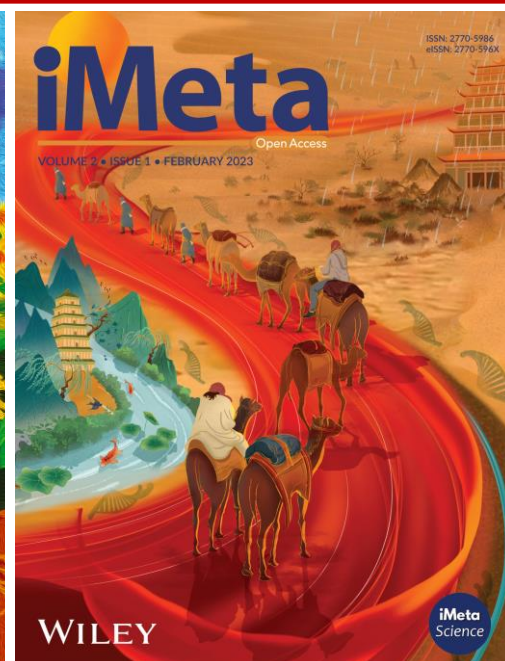
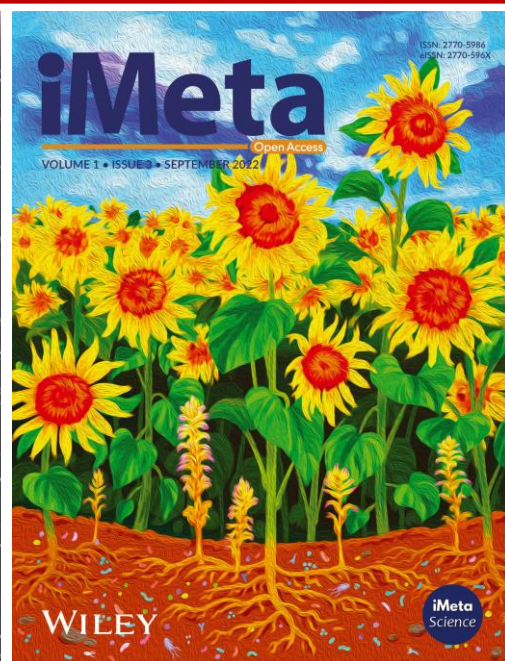
图2. 短链脂肪酸的个体间异质性及其时间动态变化规律



总结

- ❑ 在这项研究中，我们展示了健康志愿者摄入菊粉后肠道菌群和短链脂肪酸代谢的个性化的时序性变化特征；
- ❑ 研究显示菊粉摄入显著富集了青春双歧杆菌、长双歧杆菌、哈氏厌氧棍状菌及解木聚糖拟杆菌，但菊粉响应菌的存在和响应存在个体间异质性；
- ❑ 本研究中肠道菌群对益生元的个性化响应凸显了精准营养干预的必要性

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iMeta期刊(影响因子**33.2**)由宏科学、千名华人科学家和威立出版, 主编刘双江和傅静远教授。目标为生物/医学/环境综合期刊群(对标Cell), 高影响力的研究、方法和综述欢迎投稿, 重点关注生物技术、大数据和组学等前沿交叉学科, 已被SCIE、PubMed等收录, IF 33.2位列全球SCI期刊第65(前千分之三), 微生物学研究类全球第一, 中国第5, 中科院生物学双1区Top; 外审平均21天, 投稿至发表中位数87天。

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