禁食诱导换羽过程中肠道微生物的变化及其对肠-肝功能的影响

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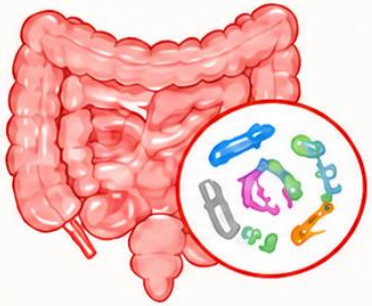
Zhang Hao, Luo Zhixuan, Zhang Jun, Wang Chenxu, Tian Yadong, Li Donghua, Guo Yujie, et al. 2026. Changes in the gut microbiome during fasting-induced molting and its effects on gut-liver function. ***iMetaOmics*** 3: e70103. https://doi.org/10.1002/imo2.70103

简介

禁食诱导换羽

禁食期间

肠道菌群紊乱



菌群失调

代谢紊乱

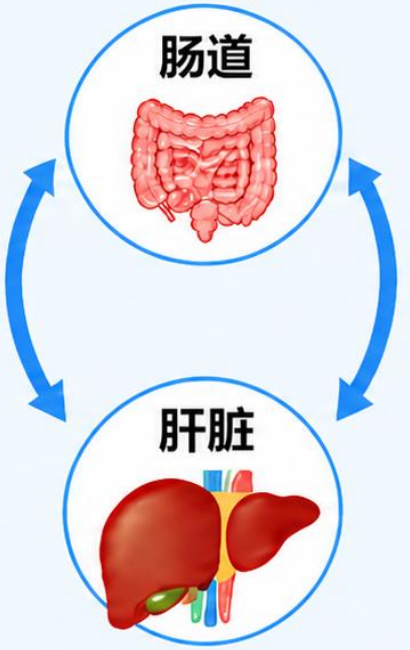
肠道炎症

肠道炎症

氧化损伤

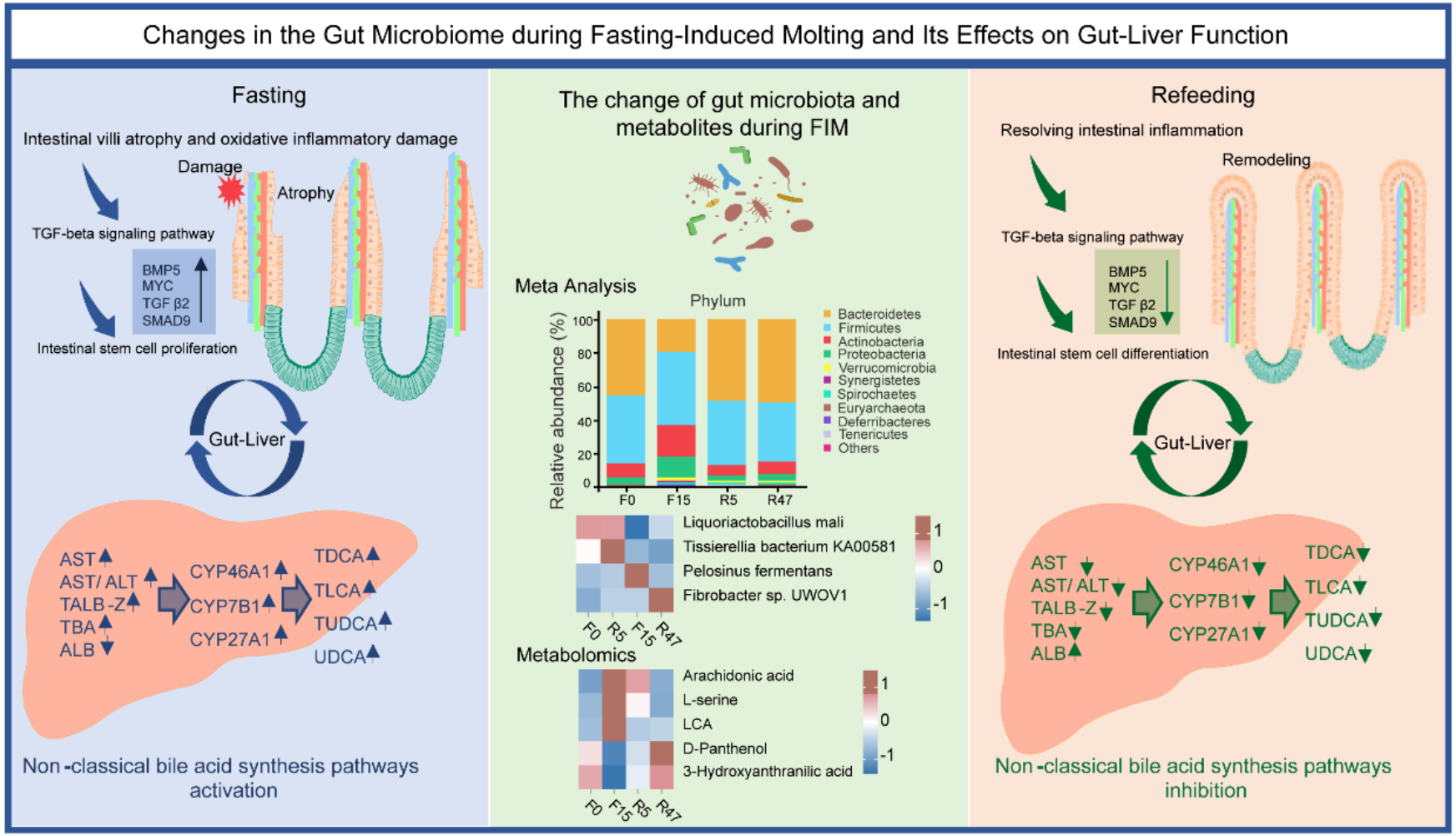
肠绒毛断裂

肠肝轴



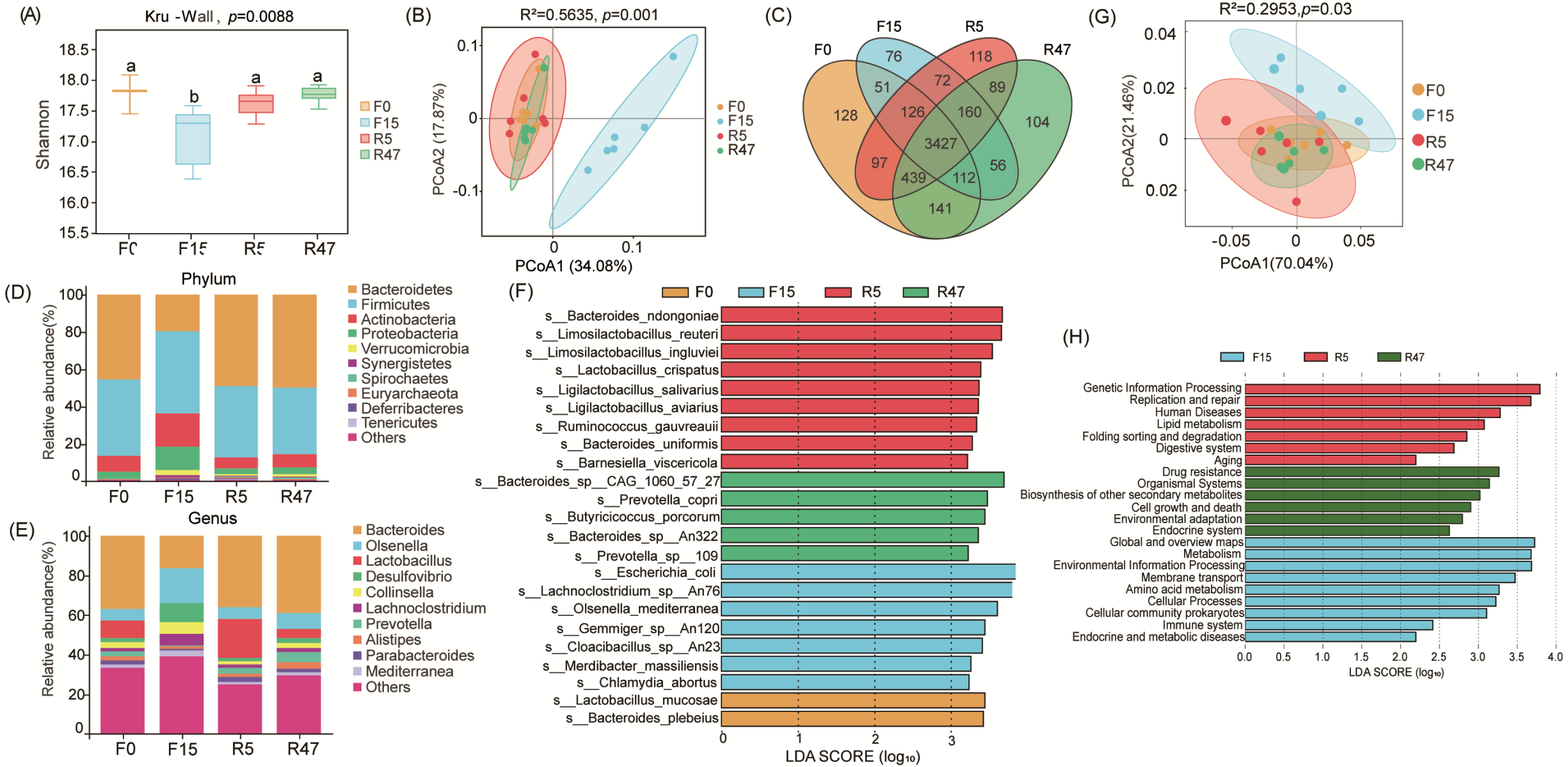
肝功能受损

亮点



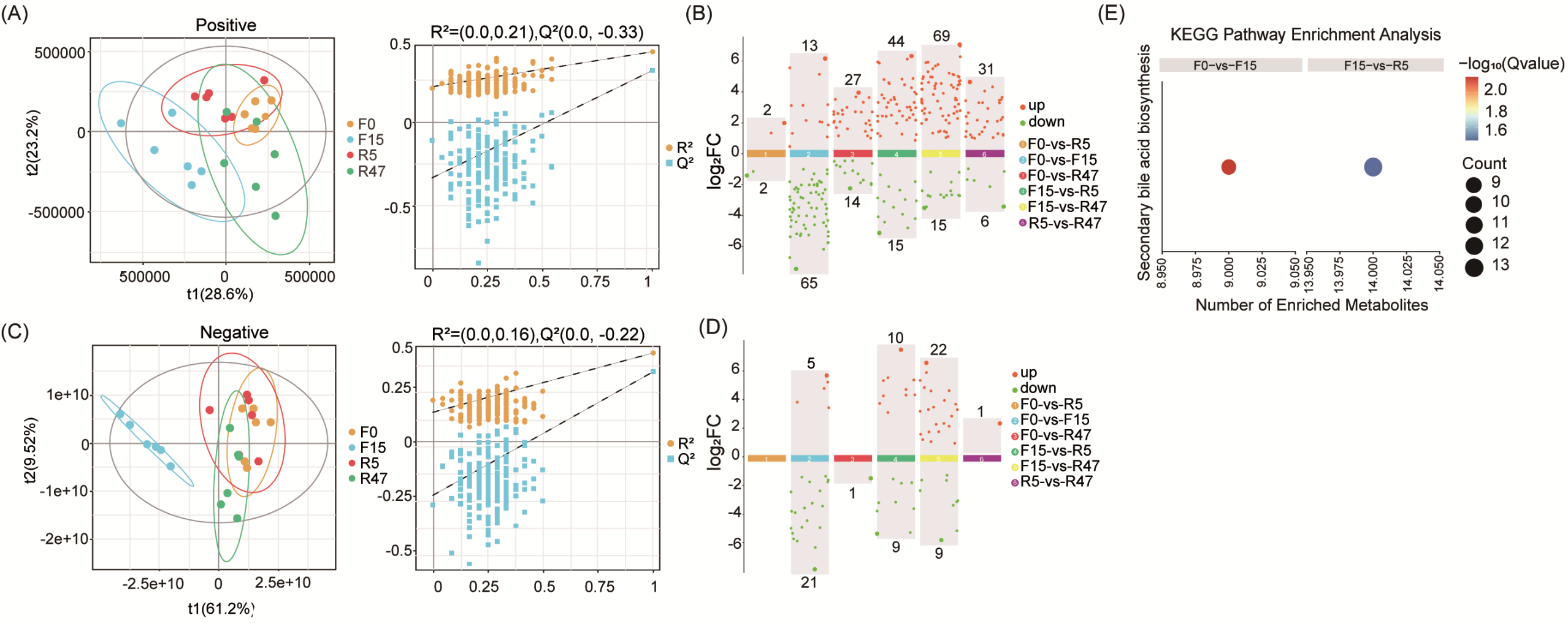
- 基于宏基因组和代谢组数据，构建了禁食诱导换羽（FIM）期间肠道菌群与代谢物变化的动态图谱;
- 阐明在FIM期间，肠道微生物及其代谢物对肠-肝损伤发生与修复进程中的调控作用;
- 优化FIM管理程序和营养精准干预策略为延长蛋鸡的生产寿命提供理论基础与的科学支撑。

结果一：蛋鸡禁食诱导换羽期间肠道菌群-代谢物的动态变化



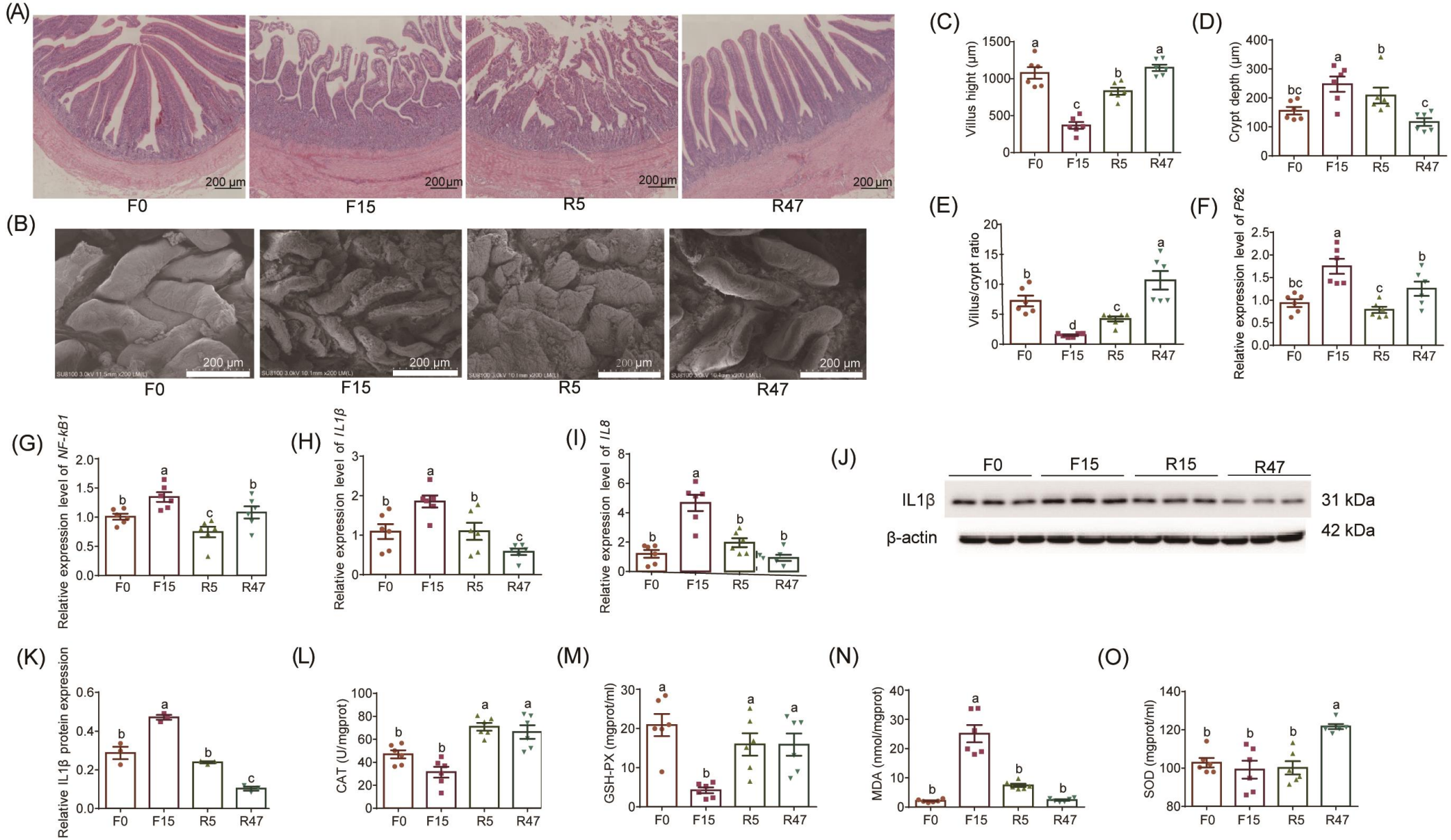
蛋鸡禁食诱导换羽过程中肠道微生物组成的变化

结果一：蛋鸡禁食诱导换羽期间肠道菌群-代谢物的动态变化



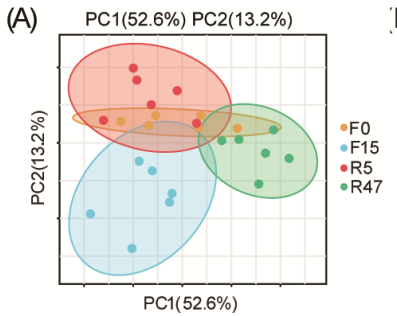
蛋鸡禁食诱导换羽过程中肠道代谢物组成的变化

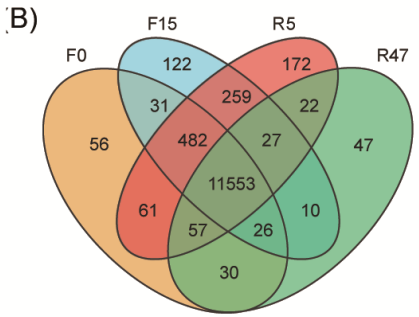
结果二：禁食诱导换羽过程中肠黏膜的重塑

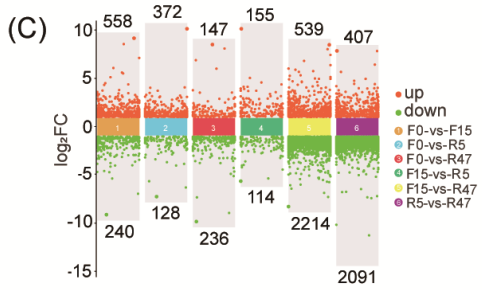


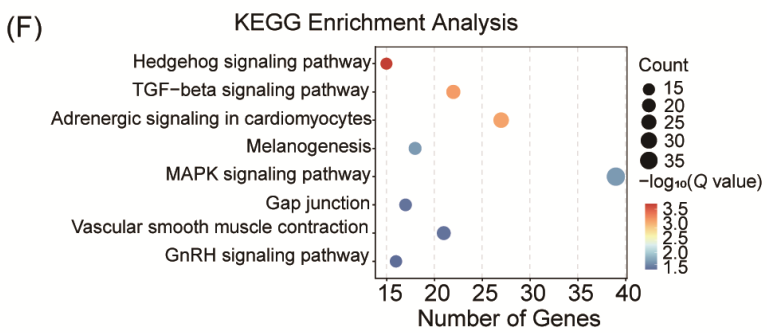
蛋鸡禁食诱导换羽过程中空肠转录组测序分析

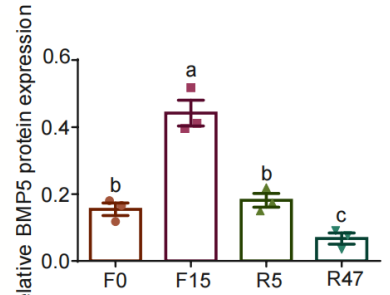
结果三：RNA-seq分析肠黏膜重塑的机制

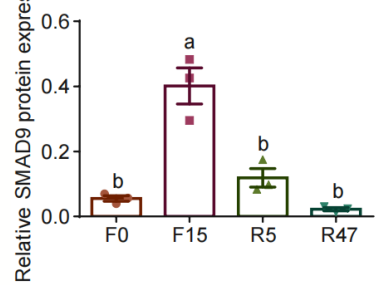


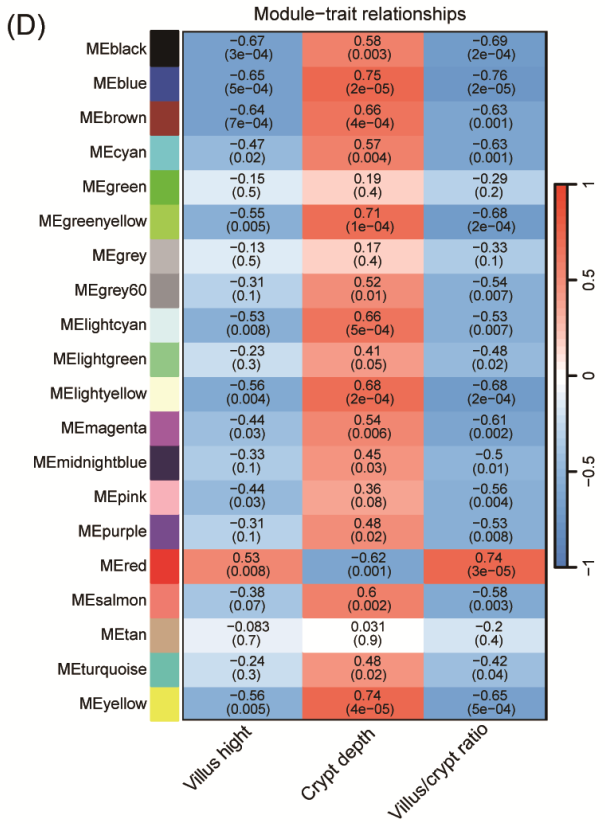


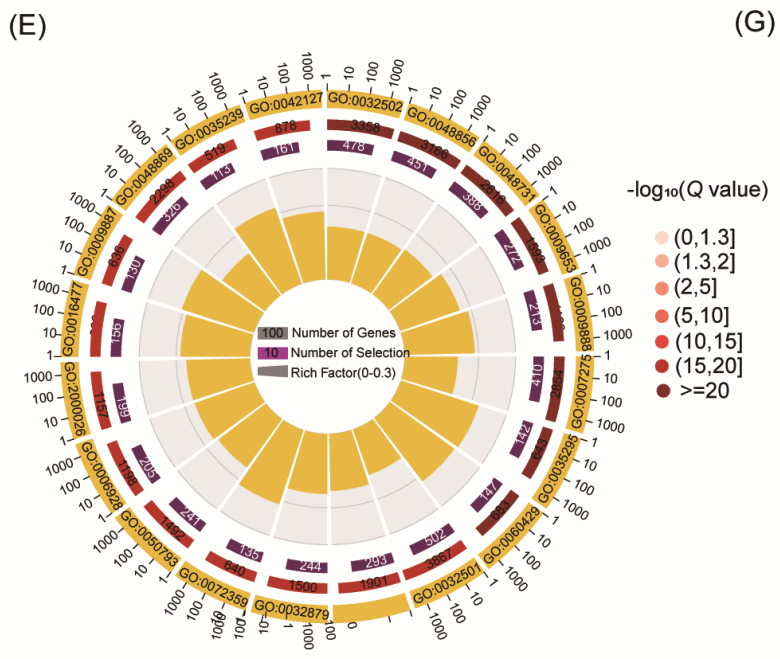


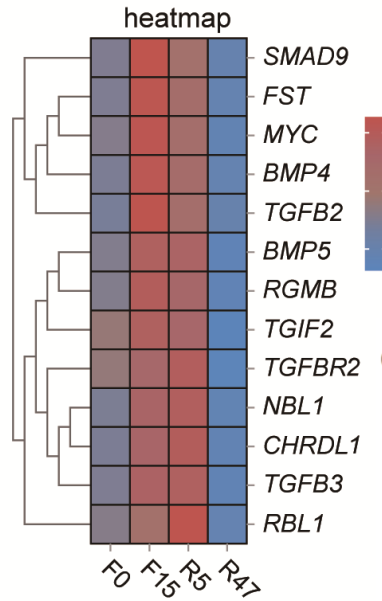


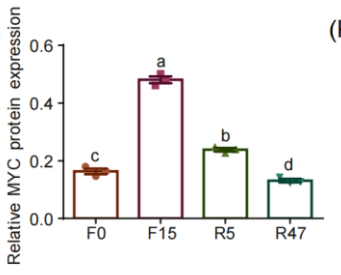


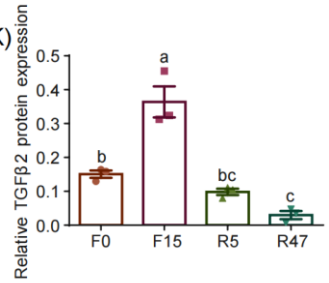


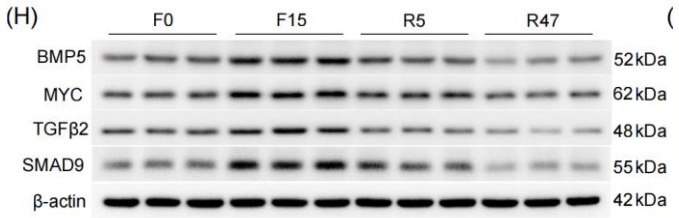






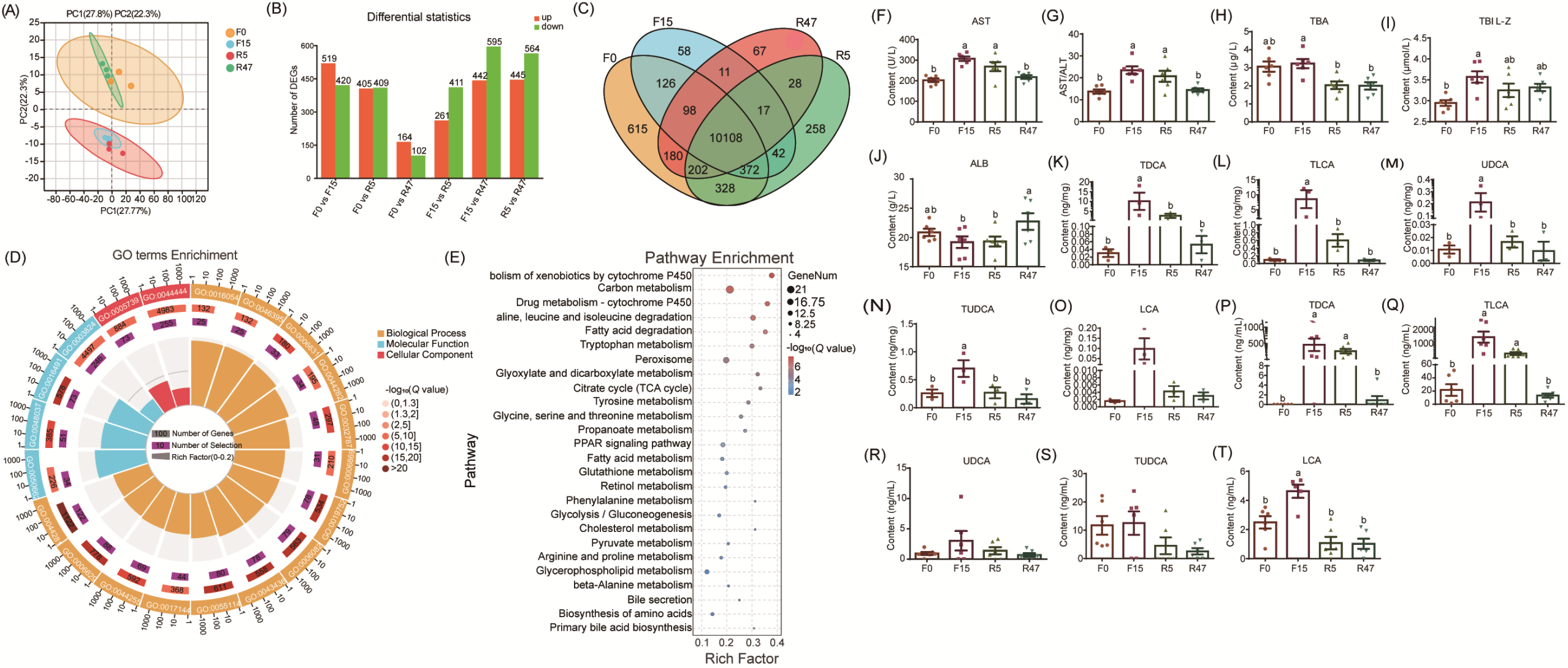






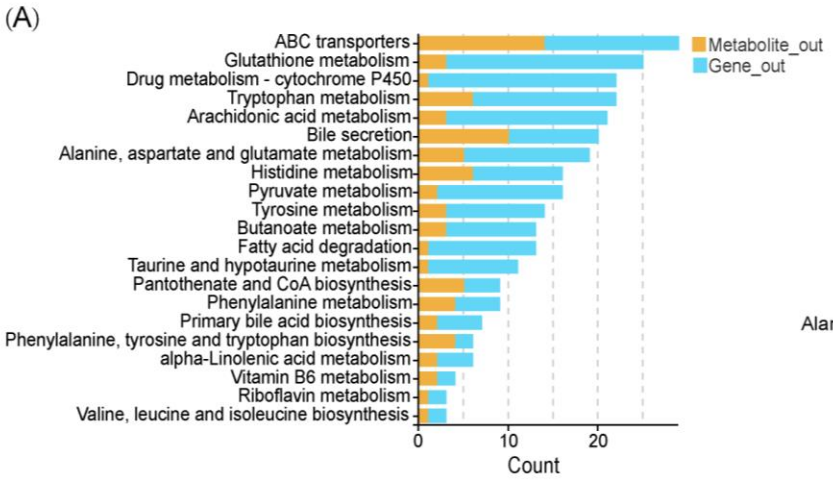
蛋鸡禁食诱导换羽过程中空肠转录组测序分析

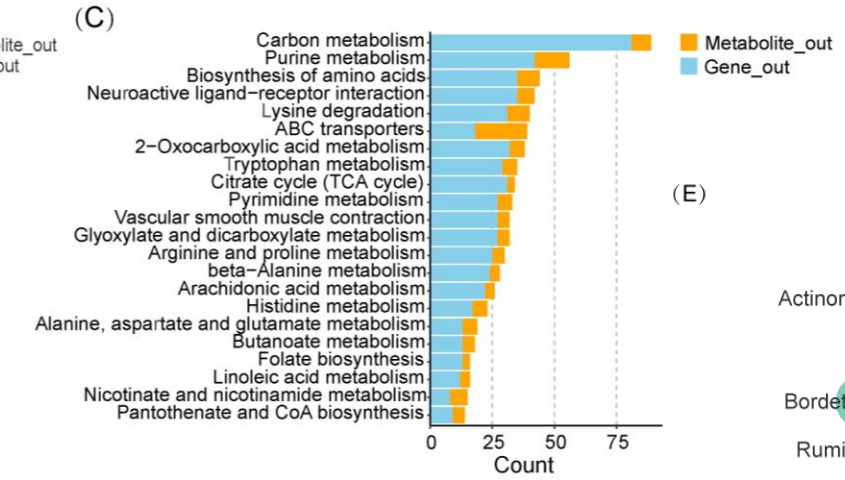
结果四：禁食诱导换羽过程中蛋鸡肝功能的变化

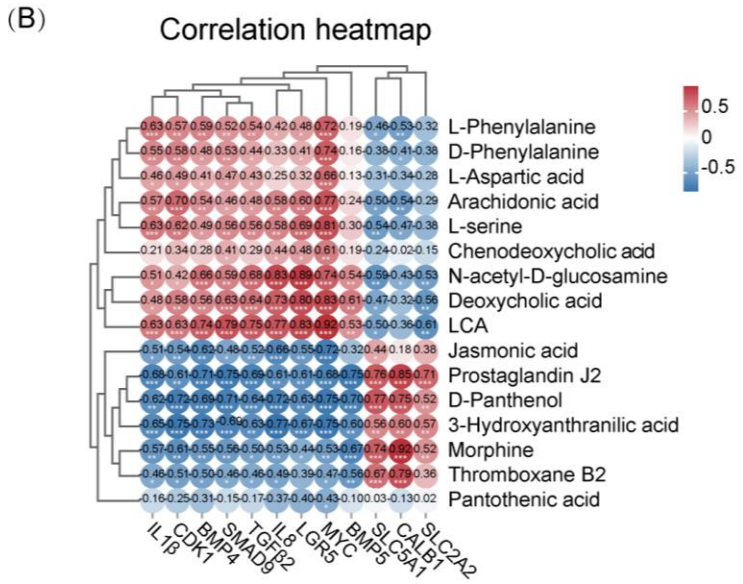


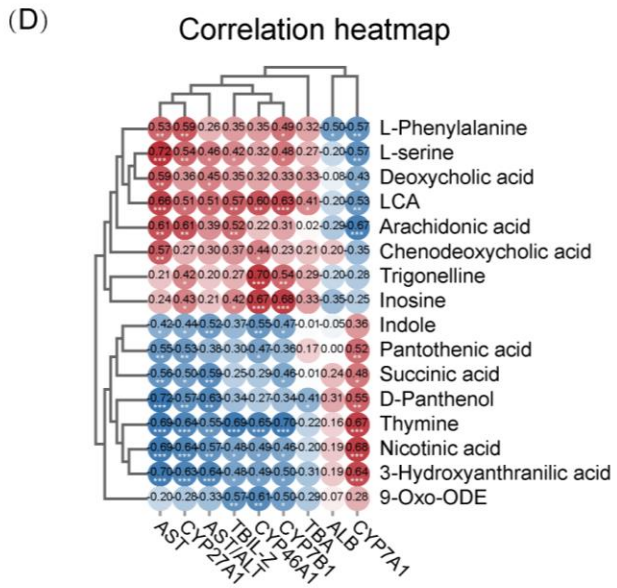
蛋鸡禁食诱导换羽过程中肝功能的变化

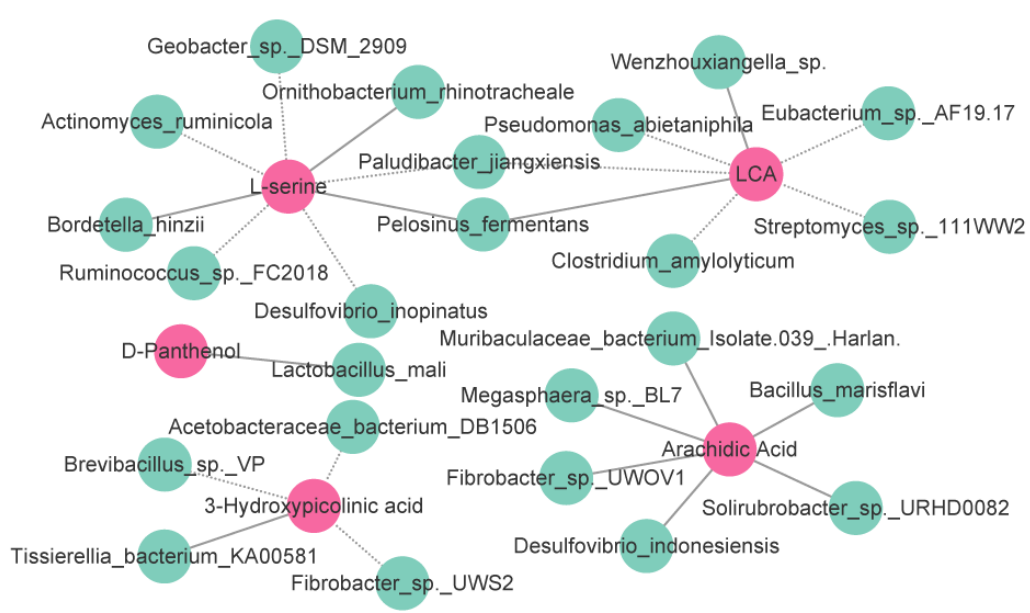
结果五：盲肠微生物影响肠-肝轴健康的整合研究





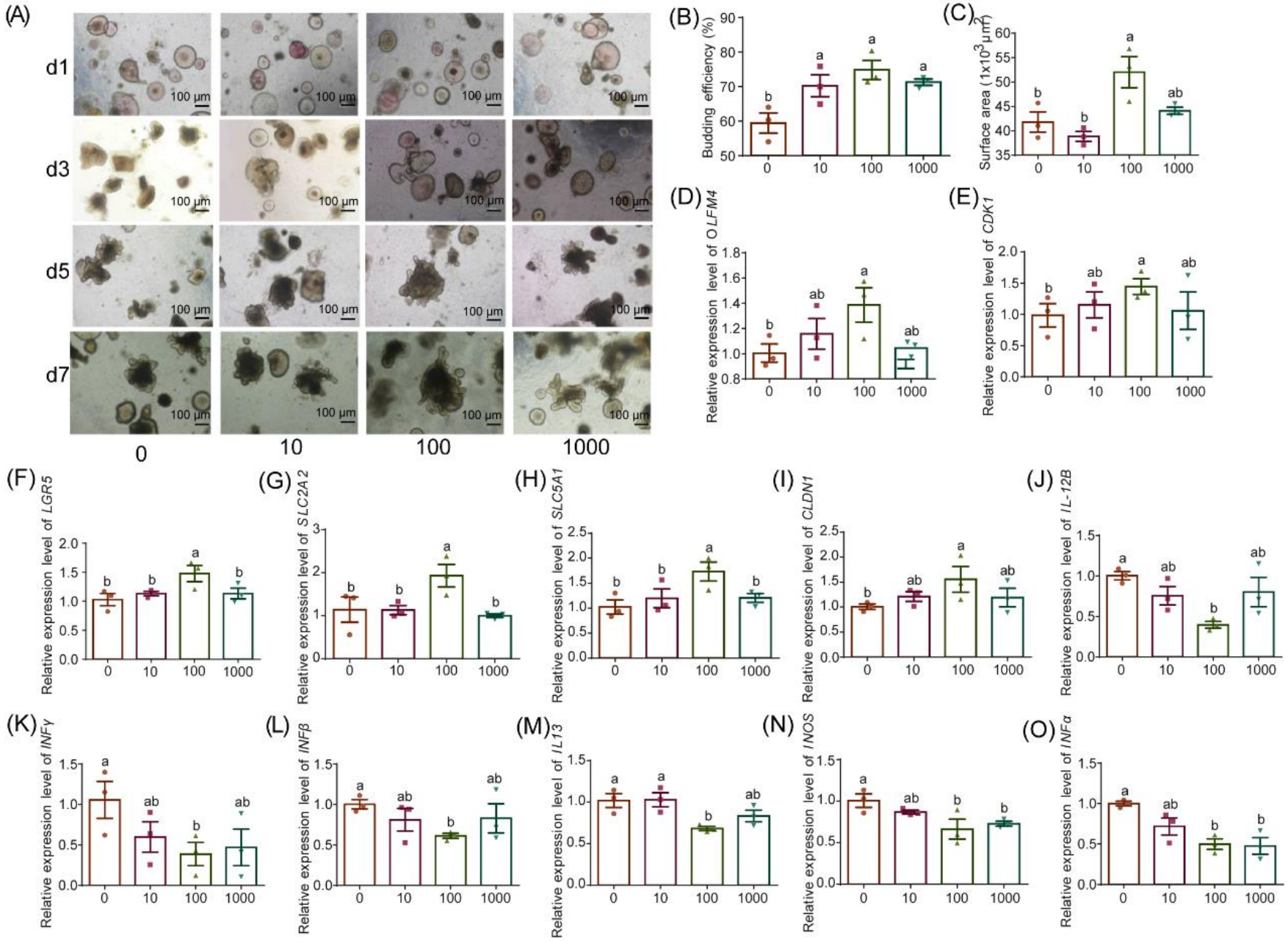






多组学整合分析

结果六：D-泛醇促进鸡小肠类器官的生长



D-Panthenol对鸡小肠类器官生长的影响

总结

- 禁食期间盲肠内病原菌与有害代谢物增加，引发肠道氧化损伤、炎症反应与肠绒毛萎缩；同时可激活 TGF-β 信号通路促进肠道干细胞增殖。；
- 禁食还导致肝功能下降，并激活非经典胆汁酸合成通路，造成肝内胆汁酸淤积；
- 本研究鉴定出 FIM 期间与肠道和肝脏损伤-修复相关的关键微生物（*Liquorilactobacillus mali*和*Tissierellia bacterium KA00581*）和功能性代谢物（D-Panthenol和3-HAA）。

Zhang Hao, Luo Zhixuan, Zhang Jun, Wang Chenxu, Tian Yadong, Li Donghua, Guo Yujie, et al. 2026. Changes in the gut microbiome during fasting-induced molting and its effects on gut-liver function. ***iMetaOmics*** 3: e70103. https://doi.org/10.1002/imo2.70103

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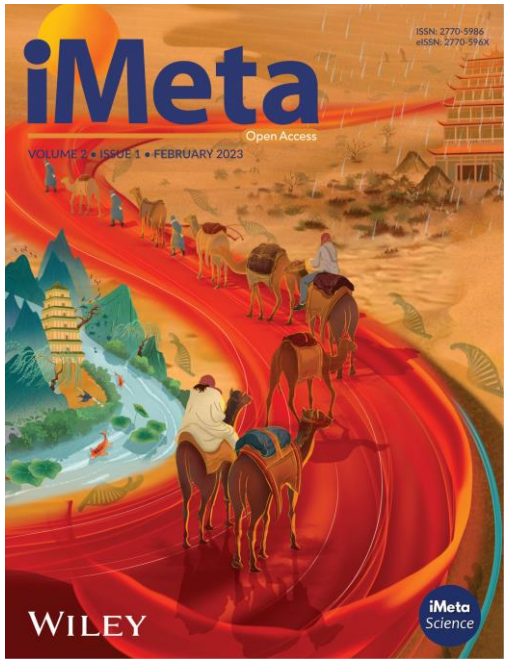

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