A

60 mice from 4 vendors

7 days acclimatization

+Cellulose

+Resistant starch

+Inulin

0 1 3 5   8   13   19   25   31 days

0 1 3 5   8   13   19   25   31 days

0 1 3 5   8   13   19   25   31 days

SCFA quantification ● ● ● ●   ●   ●   ●   ●

16S rRNA sequencing ● ● ● ●   ●   ●   ●   ●

quantitative PCR ● ● ● ●   ●   ●   ●   ●

metagenomics sequencing ●   ●   ●

B

Data collection

MGS
16S
qPCR
SCFA

Data analysis

Descriptive bioinformatics (e.g., CAZymes, PCA)

Quantitative modeling (e.g., RF, ElasticNet, gLV)

Knowledge synthesis

Microbiome-SCFA dynamics

Candidate fiber degrader, SCFA producer & consumer

Systems biology approach

Data interpretation
(e.g., individualized diet response)