Figure S1. Longitudnial trends in the cohort, Related to Figure 2. A) Drop in urea nitrogen during fiber supplementation. B-G) Longitudinal results of stool measurements.

A.

Class I Cluster
AX

B.

Class III Cluster
AX

Cytokines

Lipids

Metabolites

Microbiome

Clincal
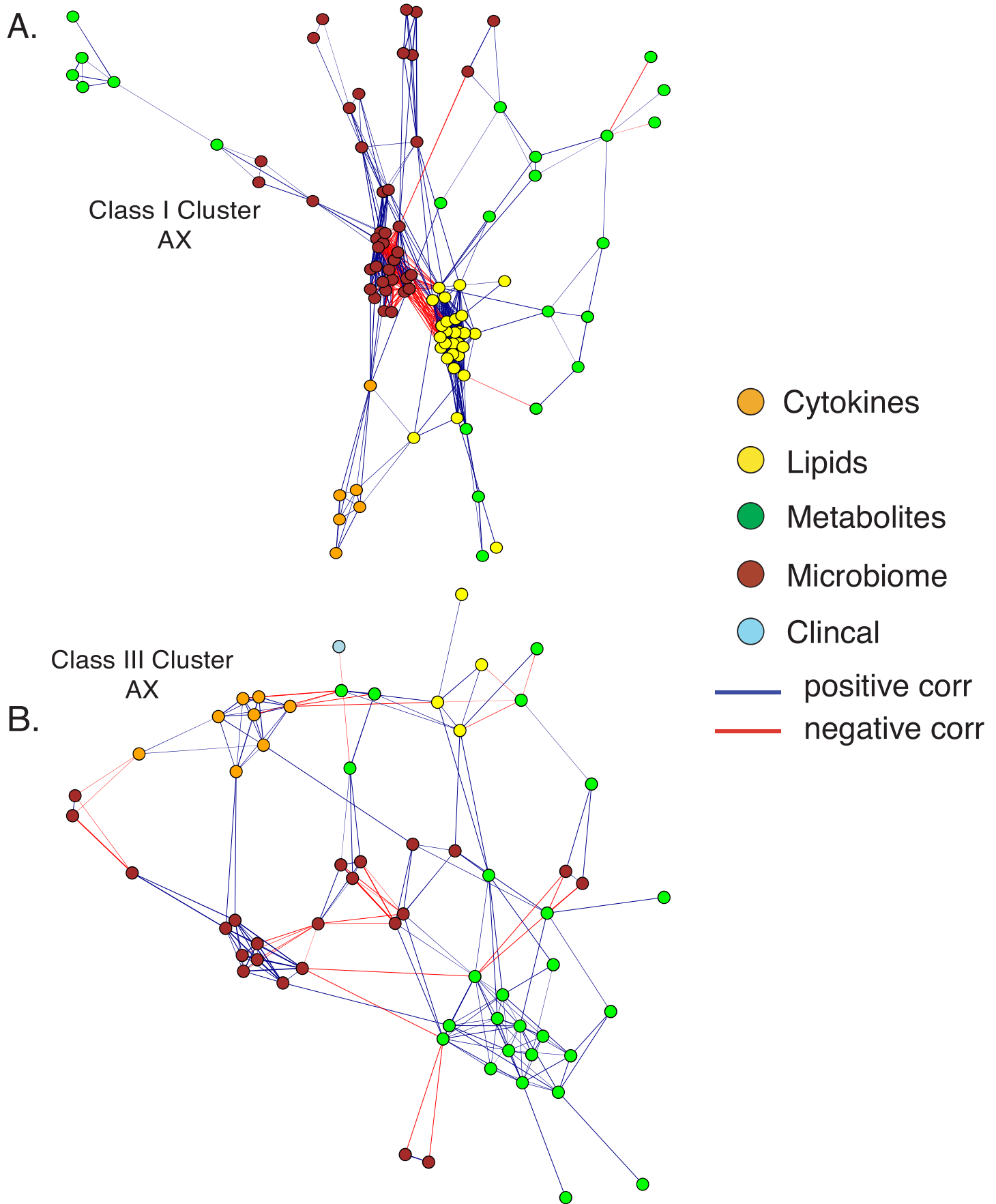
positive corr

negative corr

Figure S2. Correlation networks within classes of C-means clusters, Related to Figure 3. Orange is cytokine data, yellow lipids, brown microbiome, green metabolome, and light blue are clinical measurements. A) Correlation network for class I. B) Correlation network for class II.
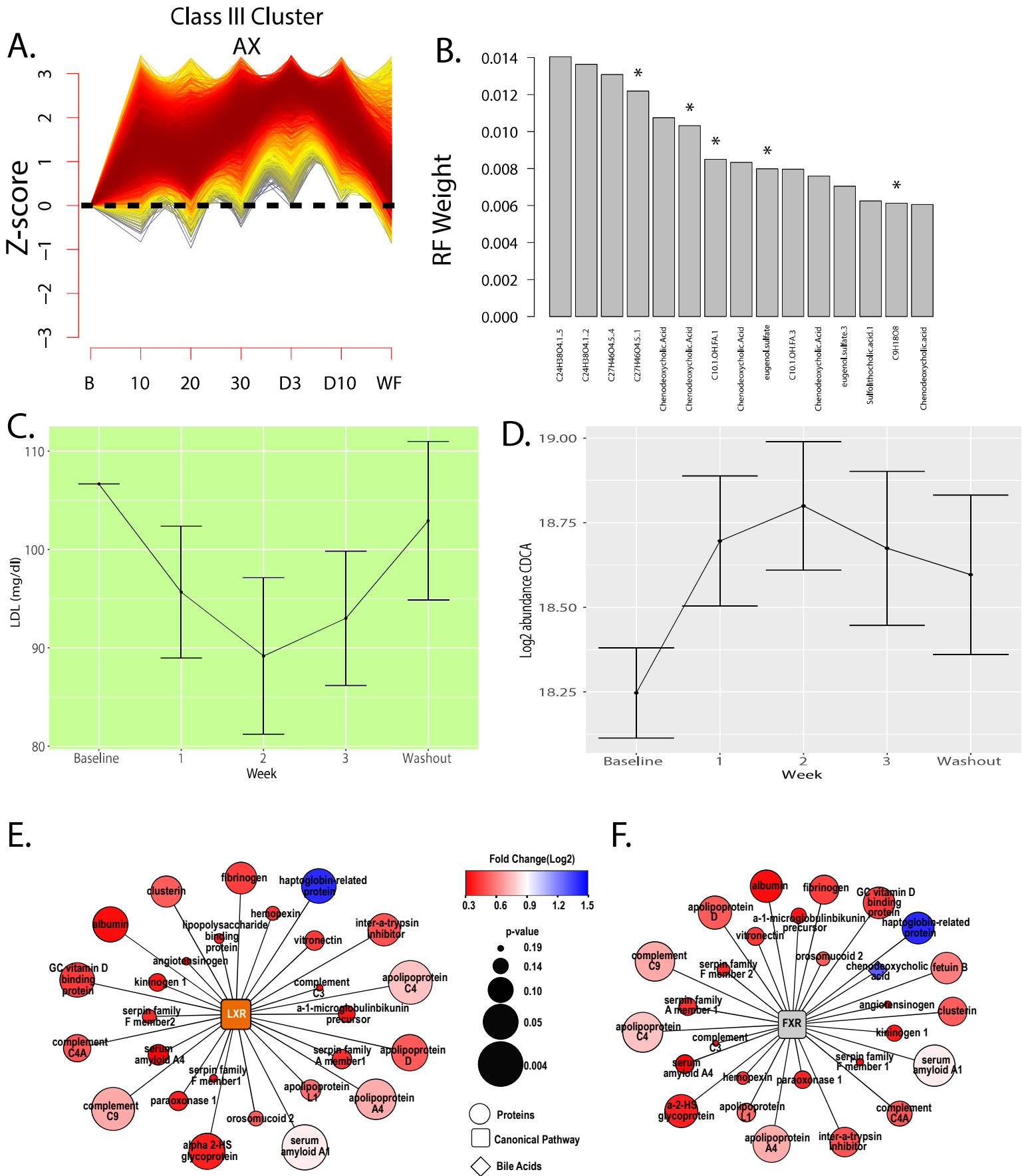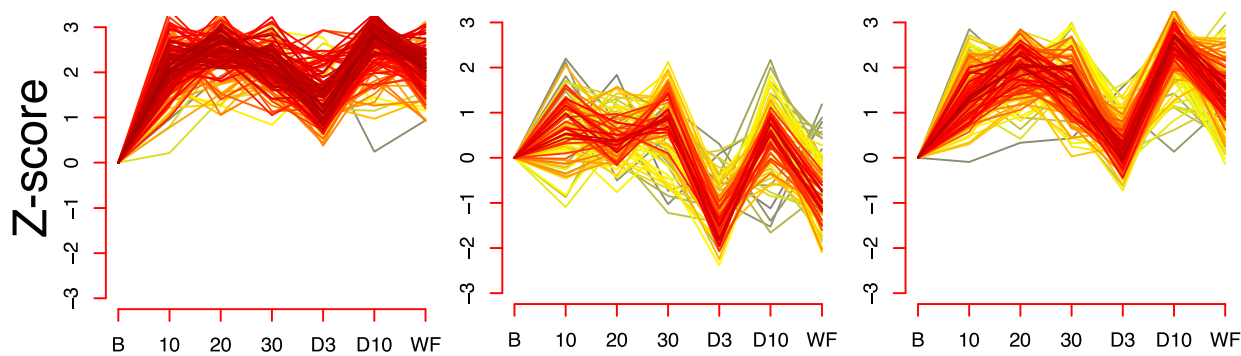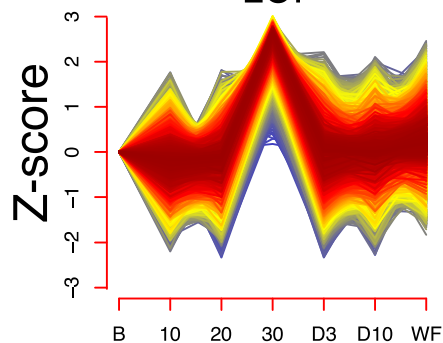
Figure S3. Additional effects of AX supplementation, Related to Figure 3. A) C-means class III cluster, showing non-dose dependent response. B) Random forest weights of the most predictive metabolites for fiber supplementation. The star indicates statistically association with fiber intake as determined by supervised clustering. C) Change in cholesterol in the validation cohort. D) Chenodeoxycholic acid in validation cohort. E,F) Significant pathways for LDL responders during AX supplementation using IPA analysis.

A. Lipid Clusters

B.

Class III Cluster
LCI

○ Cytokines
○ Lipids
○ Metabolites
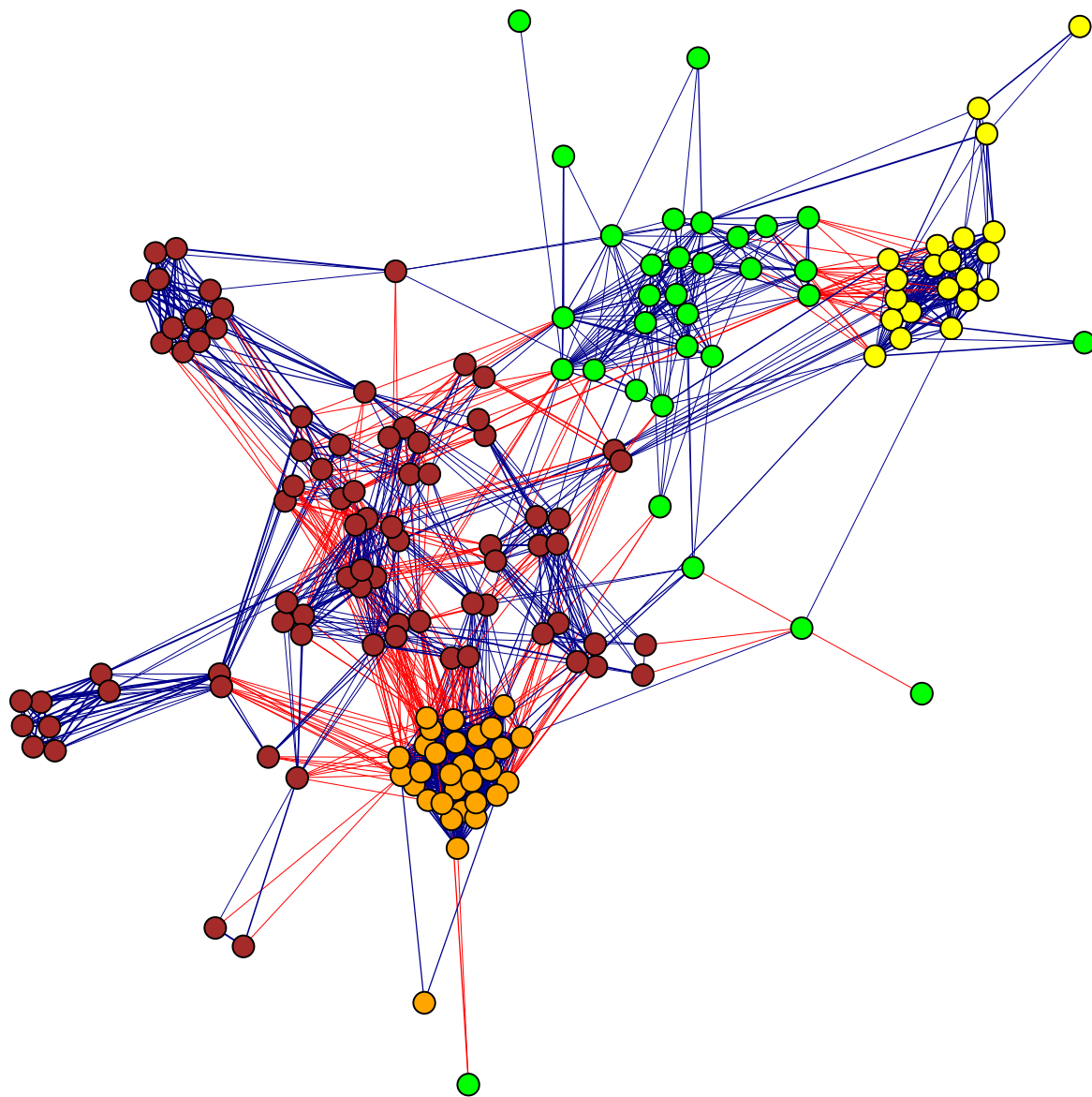○ Microbiome
○ Clincal
— positive corr
— negative corr

C.

Figure S4. Additional LCI information, Related to Figure 4. A) Lipid C-means clusters in LCI, showing dip in lipids after LCI supplementation ended. B) Correlation network for lipid multiomic C-means cluster class III.
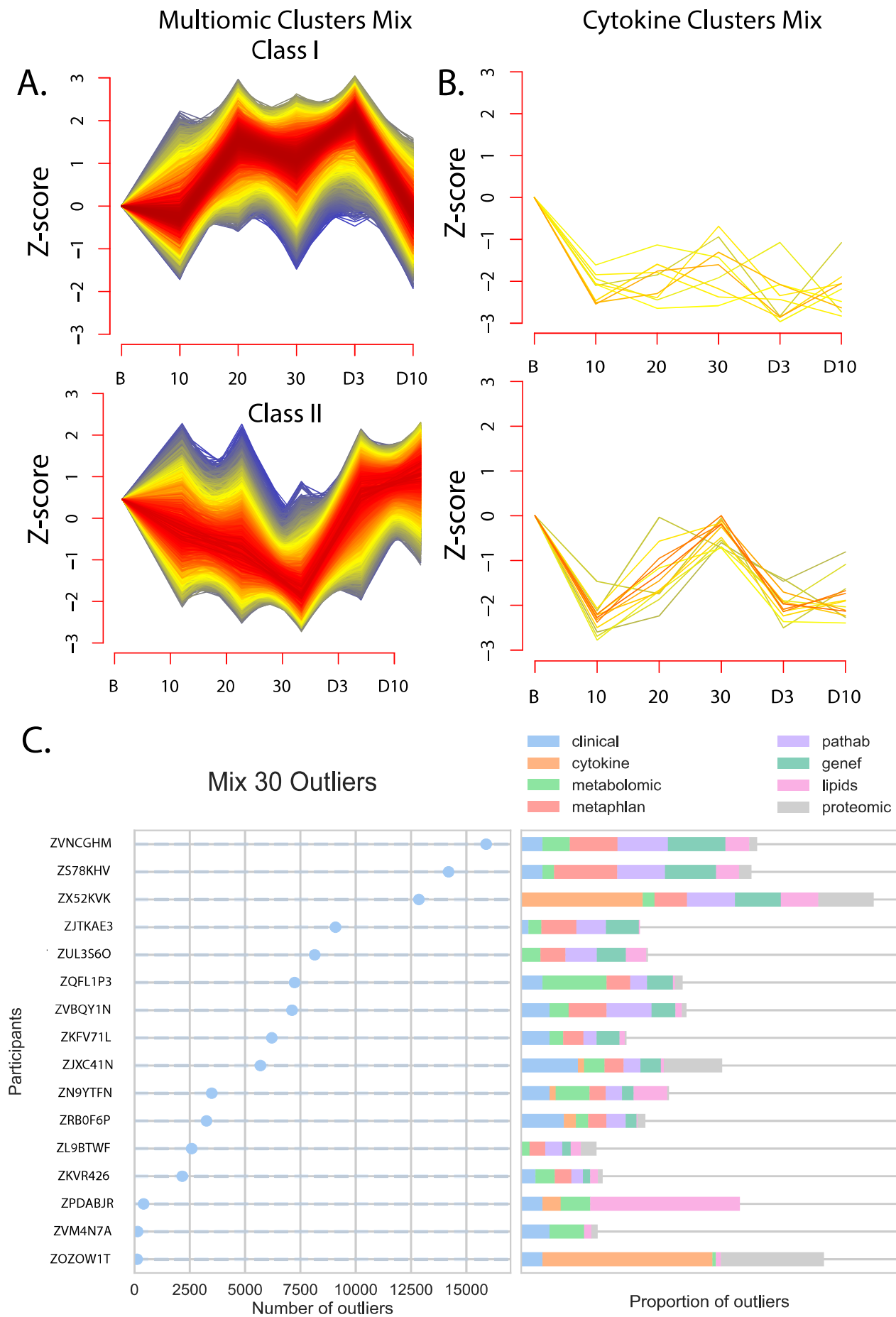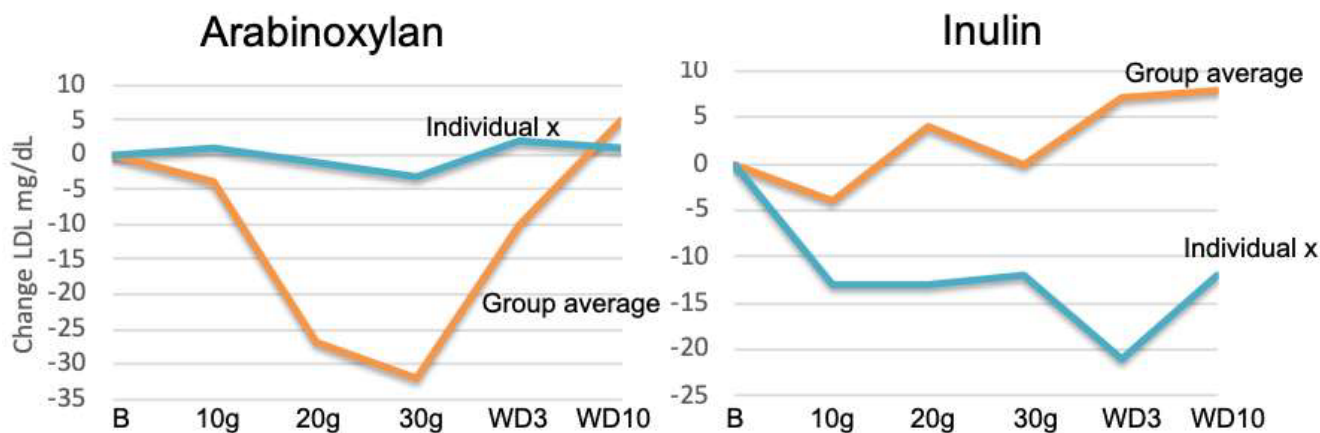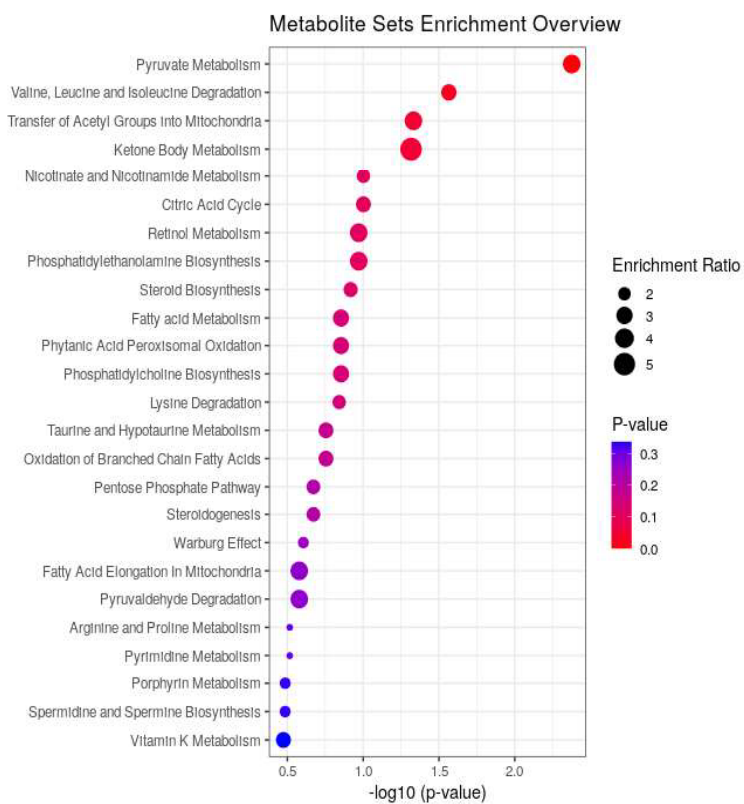
Figure S5. Mixed fiber supplementation, Related to FIgures 2, 3 and 5. A) Multiomic C-means cluster class I and II for Mix fibers. B) Longitudinal patters from cytokine data during Mix supplementation. C) Outliers during 30g of mixed fiber supplementation.
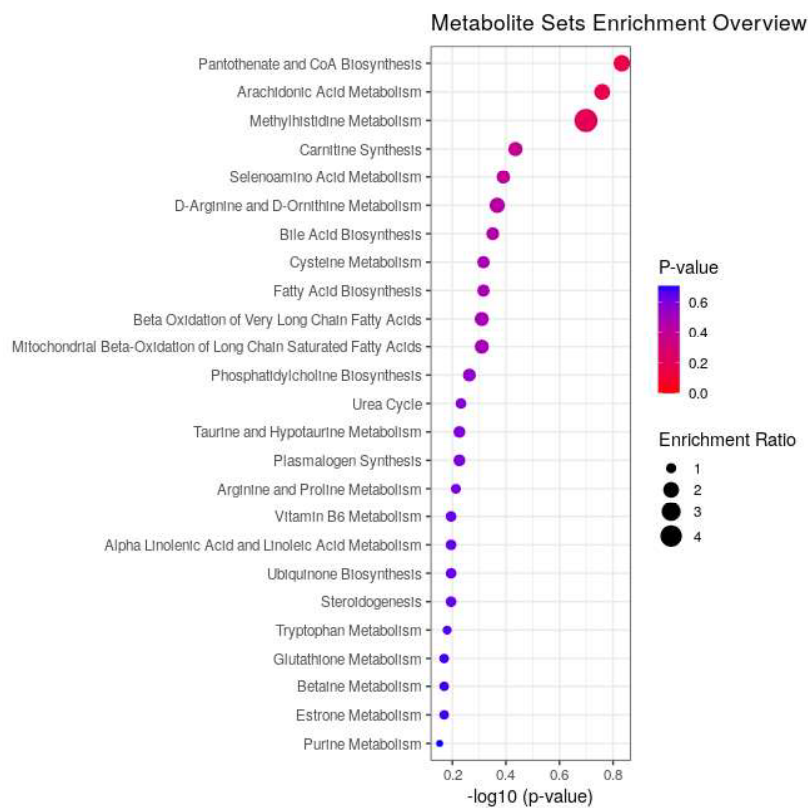
Figure S6. Individualized data, Related to Figures 3 and 5. A) shows and individual's response (blue) in comparison to the group average (orange) when taking both arabinoxylan and inulin. This individual shows a personalized response to each fber opposite to that of the group. B) Shows the enrichment of individual ZOZOW1T while taking the mixed fber when having a spike in cytokines. C) Shows the enrichment of participant ZQFL1P3 showing a healthy response to 30g of LCI while others of the cohort had negative effects associated with 30g of LCI.