**Figure S1.** Study design.

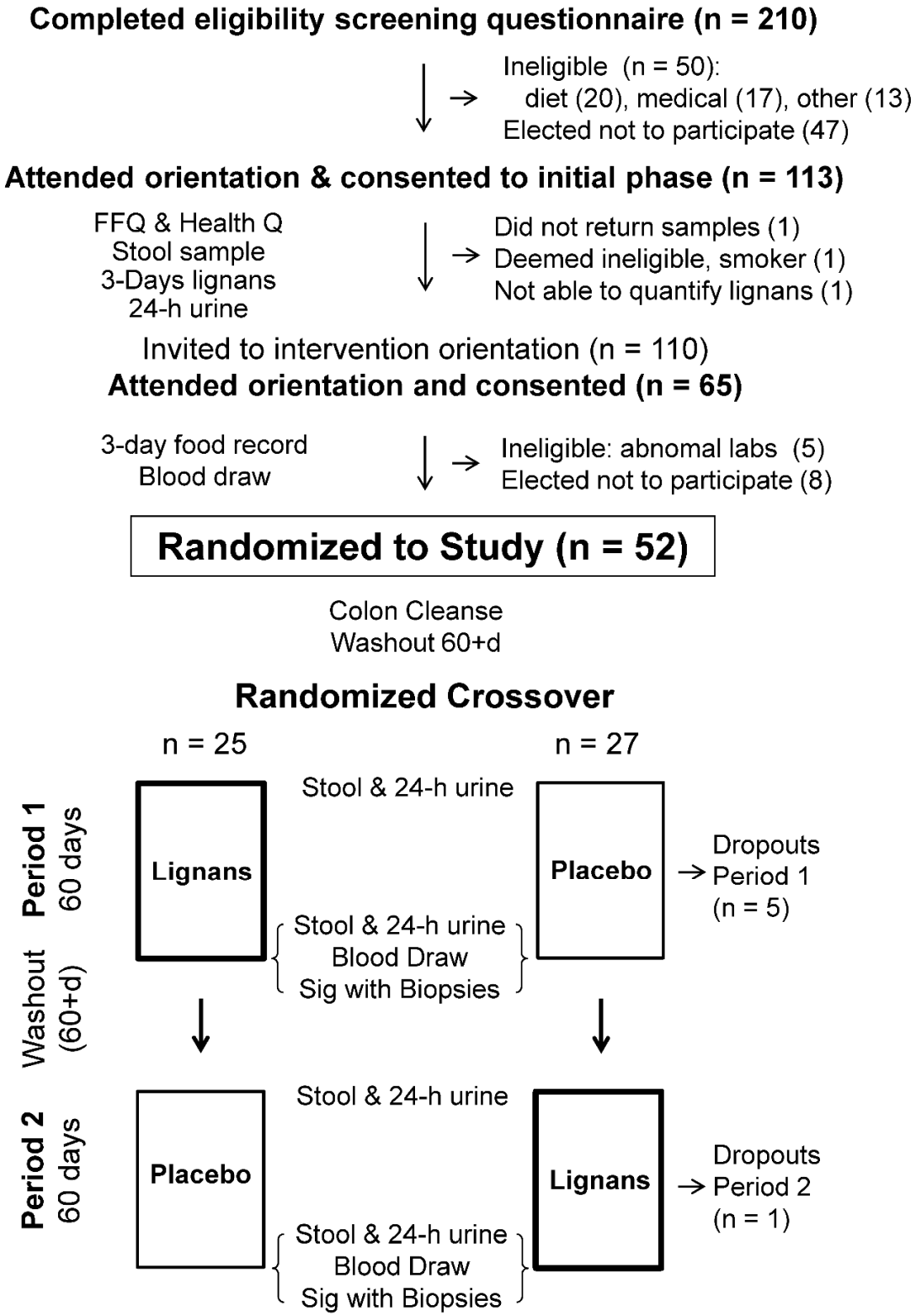


**Table S1.** TCAP2 Media Components for *in vitro* incubations.

| Reagent | g/L |
|---|---|
| L-Cysteine-HCl (Aldrich) | 0.25 |
| Glucose (Sigma) | 0.9 |
| Resazurin (1mg/L) (Aldrich) | 1 |
| NaCl (Sigma) | 2.78 |
| K2HPO4 (Sigma) | 0.42 |
| Na2HPO4·7H2O (Fisher) | 3.3 |
| NaH2PO4·2H2O (Fluka) | 1.2 |
| (NH4)2SO4 (Fisher) | 1.2 |
| MgCl2·6H2O (Sigma) | 0.08 |
| KH2PO4 (Fisher) | 0.16 |
| CH3COONa (Fisher) | 0.5 |
| HCOONa (Fluka) | 0.5 |
| Trace element solution* | 10 ml |
| Vitamin solution** | 1 ml |

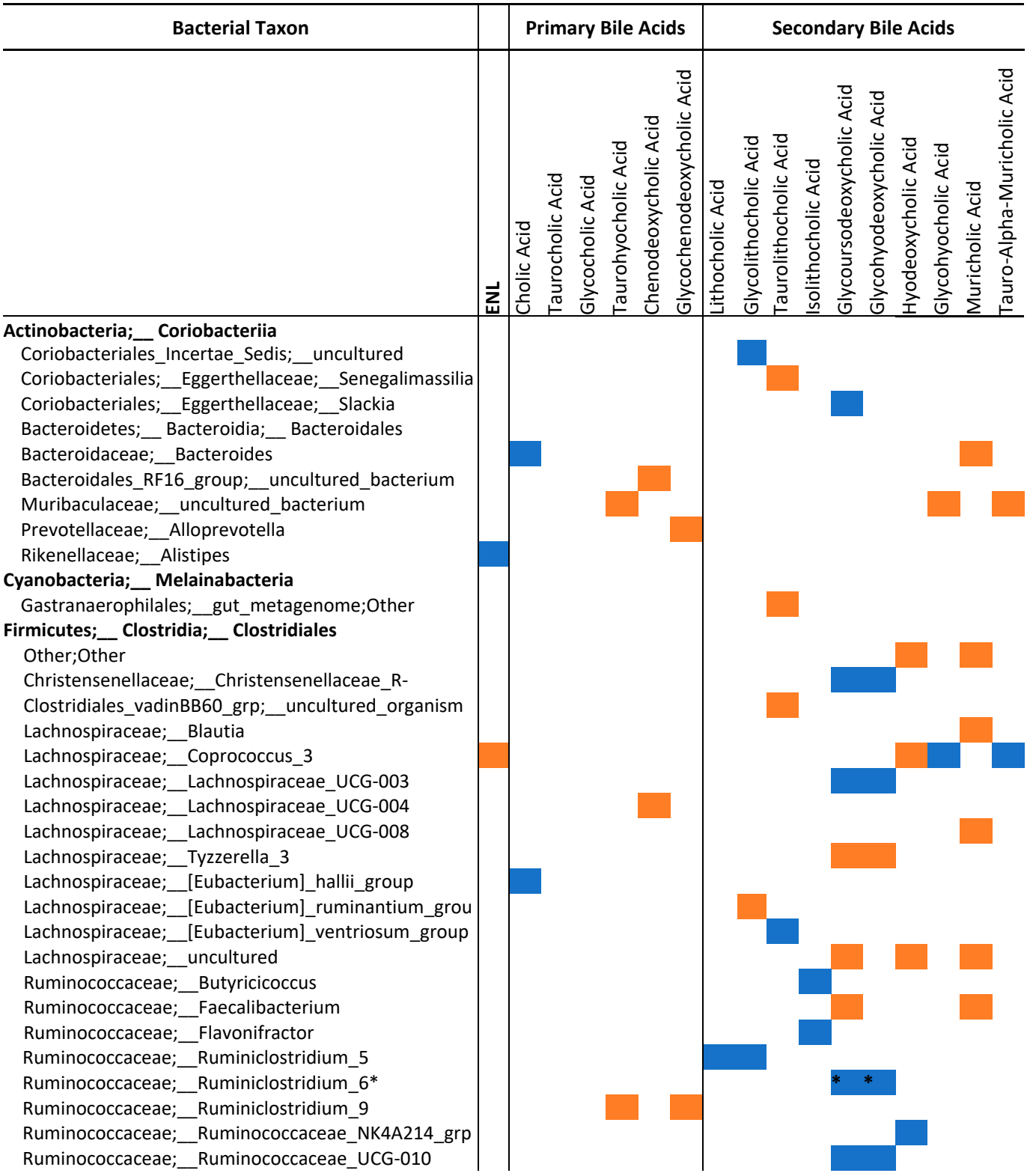
***Trace Element Solution mg/L**

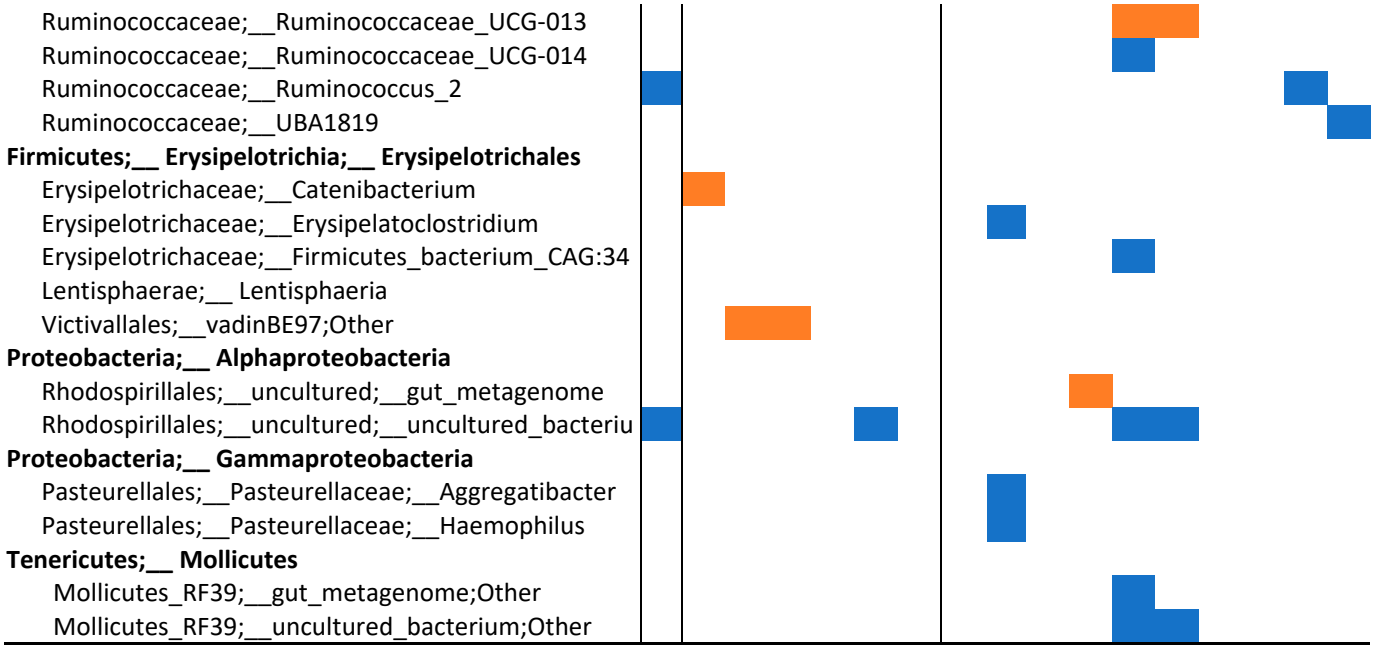
| **Reagent** | **mg/L** |
|---|---|
| MnSO4·H2O (Fisher) | 1159 |
| FeSO4·7H2O (Fisher) | 3680 |
| CoCl2·6H2O (MP Biomedicals) | 120 |
| ZnSO4·7H2O (Fisher) | 440 |
| CuSO4·5H2O (Fisher) | 98 |
| (NH4)6Mo7O24·4H2O (Fluka) | 17.4 |

****Vitamin Solution mg/L**

| **Reagent** | **mg/L** |
|---|---|
| Menadione (MP Biomedicals) | 1 |
| Biotin (Jackson Immuno Research) | 2 |
| Pantothenate (MP Biomedicals) | 10 |
| Nicotinamide (Acros) | 5 |
| Vitamin B12 (MP Biomedicals) | 0.5 |
| Thiamine (MP Biomedicals) | 4 |
| ρ-Aminobenzoic acid (MP Biomedicals) | 5 |

**Table S2.** Association between gut bacterial genera at the end of placebo and ENL excretion and plasma bile acids after 60 days of flaxseed lignan intervention (n=44)[a].






[a]Results derived from linear mixed models evaluating the association between genera and ENL excretion and bile acids separately, adjusted for age, sex, body mass index, treatment, and batch for bile acids. 147 genera were tested and only those with raw *P* values less than 0.01 are shown; values in blue represent negative coefficients while orange represents positive coefficients. An asterisk indicates FDR<0.1. The secondary bile acids: deoxycholic acid, taurodeoxycholic acid, glycodeoxycholic acid and beta-cholanic acid-3beta, 12alpha-diol were not associated with any bacteria. Microbial DNA extracted from two participants did not pass quality control.