**Table S1. Characteristics of the health controls.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **HCs agreed with brain scan (n = 32)** | **HCs did not agree with brain scan (n = 37)** | **Statistic value (t or ChiSq)** | ***p*-value** |
| **Age, years (mean ± S.D.)** | 22.19 ± 3.14 | 23.95 ± 4.31 | -1.954 | 0.055 |
| **Gender (male, female)** | 17M, 15F | 20M, 17F | 5.2682e-31 | 1.000 |

Abbreviations: HC: health controls; ChiSq: Chi-square; M: male; F: female.

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**Figure S1. Clustered plot of UHR, HR and HC groups with PLS-DA.**

The OTUs selected on 1st and 2nd components are presented.

Abbreviations: HR: high-risk subjects; UHR: ultra-high risk subjects; HC: health controls; PLS-DA: partial least squares discriminant analysis; OTU: operational taxonomic unit.



**Figure S2.** **The differences of predicted functional pathways between groups.**

There are significant activation of the acetyl-CoA synthesis pathway (B) and non-significant activation of the pyruvate synthesis (A) and fatty acid biosynthesis initiation (C) pathways in UHR group. All three pathways are basic steps of synthesis of SCFAs.

Abbreviations: HR: high-risk subjects; UHR: ultra-high risk subjects; HC: health controls; SCFAs: Short Chain Fatty Acids.