## **Supplementary information**

## Richer gut microbiota with distinct metabolic profile in HIV infected Elite Controllers

Jan VESTERBACKA<sup>1,\*</sup>, Javier RIVERA<sup>2,\*</sup>, Kajsa NOYAN<sup>3</sup>, Mariona Parera<sup>2</sup>, Ujjwal Neogi<sup>3</sup>, Malu CALLE <sup>4</sup>, Roger PAREDES<sup>2,4,5,6</sup>, Anders SÖNNERBORG<sup>1,3</sup>, Marc NOGUERA-JULIAN<sup>2,4</sup>, Piotr NOWAK<sup>1</sup>

<sup>1</sup>Department of Medicine Huddinge, Unit of Infectious Diseases, Karolinska Institutet, Karolinska University Hospital, Stockholm, Sweden; <sup>2</sup>IrsiCaixa & AIDS Unit, Hospital Universitari Germans Trias i Pujol, Universitat Autònoma de Barcelona, Badalona, Spain; <sup>3</sup>Department of Laboratory Medicine, Division of Clinical Microbiology, Karolinska Institutet, Karolinska University Hospital, Stockholm, Sweden; <sup>4</sup>Universitat de Vic-Universitat Central de Catalunya, Catalonia, Spain; <sup>5</sup>Universitat Autònoma de Barcelona, 08193 Bellaterra, Catalonia, Spain; <sup>6</sup>HIV Unit & Lluita Contra la SIDA Foundation, Hospital Universitari Germans Trias i Pujol, Ctra de Canyet s/n, 08916 Badalona, Catalonia, Spain

<sup>\*</sup>The authors contributed equally to this work

## **Supplementary Table 1. Metadata of study subjects**

	EC (n=16)	Naive (n=32)	Negative (n=16)
Antibiotics <sup>1</sup>	2	6	2
Probiotics	1	2	1
Special diet <sup>2</sup>	2	0	1
Smoking	6	8	2
Diabetes	1	2	1
Other medication	11	9	4
Travelled abroad <sup>3</sup>	5	NA	1

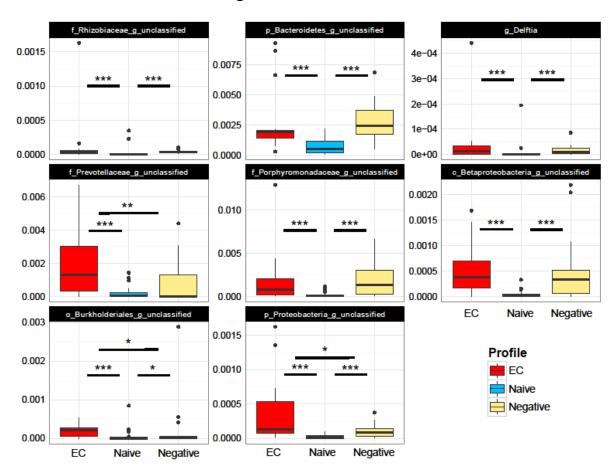
<sup>&</sup>lt;sup>1</sup>Within 3 months from inclusion

NA – not available

<sup>&</sup>lt;sup>2</sup>Lactose, gluten free, vegan, vegetarian (EC: one lactose/gluten free diet, one vegetarian. Negative: one lactose/gluten free diet)

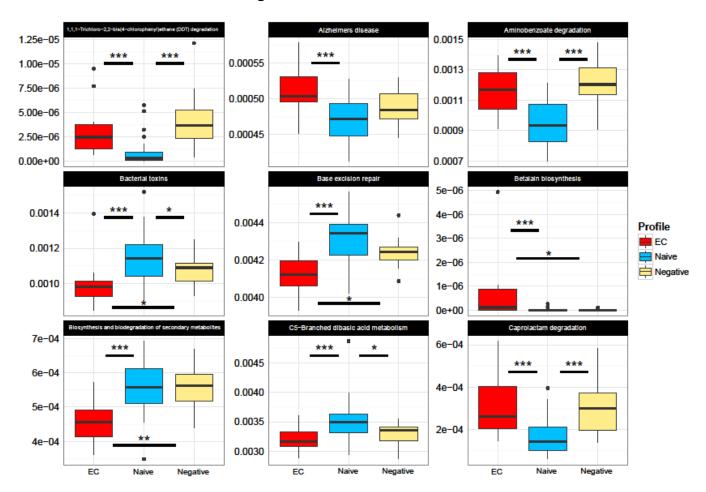
<sup>&</sup>lt;sup>3</sup>More than 4 weeks during the last 12 months before inclusion

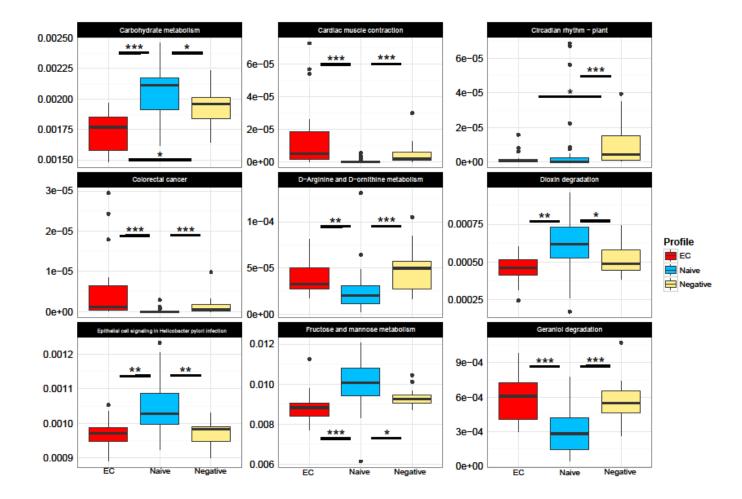
Figure S1

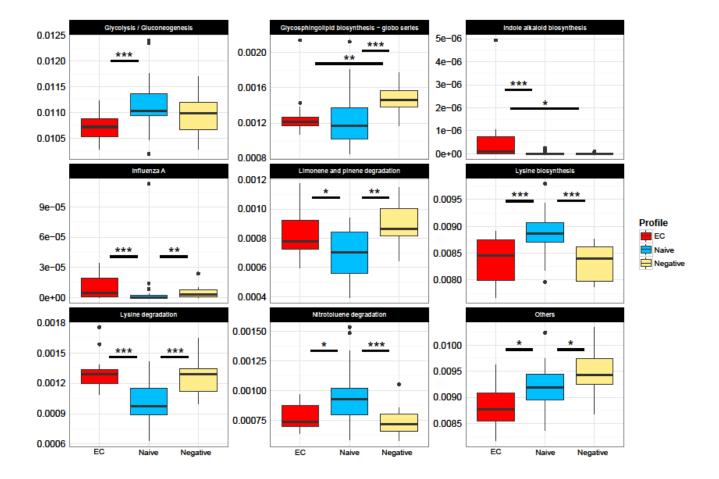


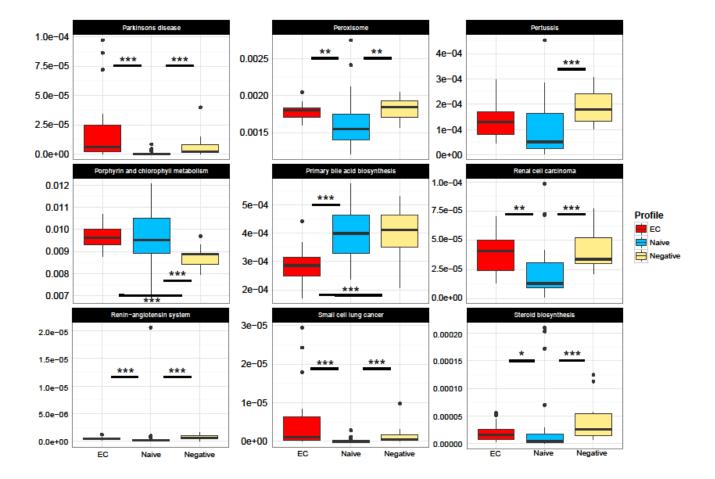
**Figure S1. Significant differences in composition of fecal microbiota between EC, naive and negative.** The abundance of bacterial taxa at genus level. Differences in taxa abundances were analyzed via Kruskal -Wallis ranked based test and Benjamini-Hochberg was used for correction of multiple testing. Adjusted p-value < 0.01 was considered significant for Kruskal-Wallis. Dunn's post-hoc pairwise analyses: \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Box plots represent median (black horizontal line), 25th and 75th quartiles (edge of boxes), upper and lower extremes (whiskers). Outliers are represented by a single data point.

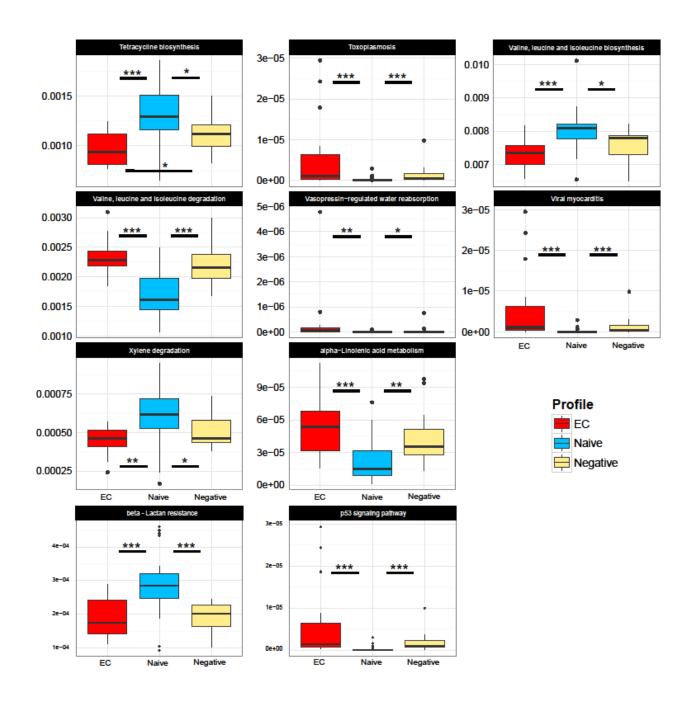
Figure S2



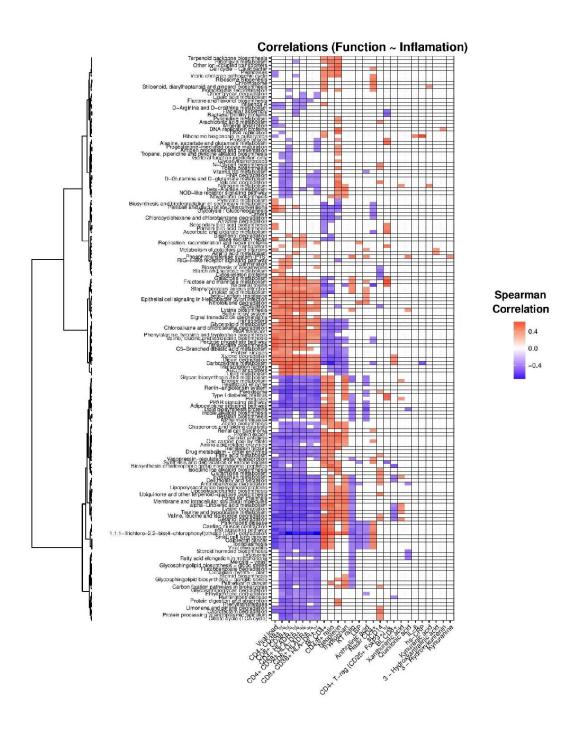








**Figure S2. Predicted functional content of gut microbiota reveal significant differences between EC and naive/controls.** Microbiome function was inferred using PICRUSt analysis. Differences in predicted gut microbiota functionality are shown in (a) and (b). Kruskal – Wallis rank-based test was applied, and Benjamini – Hochberg correction was used to correct for multiple testing. Adjusted p-value < 0.01 was considered significant for Kruskal-Wallis. Dunn's post-hoc pairwaise analyses: \*p<0.05, \*\*p<0.01, \*\*\*\*p<0.001. Box plots represent median (black horizontal line), 25th and 75th quartiles (edge of boxes), upper and lower extremes (whiskers). Outliers are represented by a single data point.



**Figure S3. Significant correlations between predicted functional pathways and markers of immune activation and inflammation.** All Spearman's correlations with a Benjamini – Hochberg adjusted p-value lower than 0.05 are presented. Immune activation and inflammatory parameters associated with less than two bacteria were discarded when plotting the heatmap.