

Table S1

Bacteria (genus)	Microbiota-based cluster main effect	Significant pairwise post hoc differences (p-value)		
		A-B	A-C	B-C
Bacteroides	F(2,48)=60.038, p=.000, η^2_p =.7.144, 1- β =1.000	-.21200 (.000)		.28230 (.000)
Prevotella 9	F(2,48)=118.017, p=.000, η^2_p =.8.310, 1- β =1.000		-.38280 (.000)	-.41690 (.000)
Faecalibacterium	F(2,48)=3.922, p=.026, η^2_p =.1.405, 1- β =.679			
Mycobacterium	F(2,48)=4.515, p=.016, η^2_p =.1.583, 1- β =.744		-.00022 (.017)	-.00022 (.020)
Holdemanella	F(2,48)=4.273, p=.020, η^2_p =.1.511, 1- β =.719		-.01685 (.024)	-.01887 (.011)
Barnesiella	F(2,48)=4.222, p=.020, η^2_p =.1.496, 1- β =.713	-.00936 (.030)		
Ruminococcus (gnavus group)	F(2,48)=3.832, p=.029, η^2_p =.1.377, 1- β =.668	-.00056 (.032)		
Monoglobus	F(2,48)=3.715, p=.032, η^2_p =.1.340, 1- β =.654			
Unidentified (Ruminococcaceae)	F(2,48)=3.210, p=.049, η^2_p =.1.180, 1- β =.586			
Fournierella	F(2,48)=3.814, p=.029, η^2_p =.1.371, 1- β =.666			
Coriobacteriaceae UCG-003	F(2,48)=4.022, p=.024, η^2_p =.1.435, 1- β =.691		-.00044 (.018)	-.00045 (.020)
Marvinbryantia	F(2,48)=5.110, p=.010, η^2_p =.1.755, 1- β =.798	.00041 (.013)		
Slackia	F(2,48)=3.921, p=.026, η^2_p =.1.404, 1- β =.679			
Libanicoccus	F(2,48)=5.646, p=.006, η^2_p =.1.904, 1- β =.839		-.00023 (.008)	-.00025 (.003)
Lactiplantibacillus	F(2,48)=3.800, p=.029, η^2_p =.1.367, 1- β =.664		-.00019 (.020)	-.00017 (.044)
Leuconostoc	F(2,48)=4.059, p=.024, η^2_p =.1.447, 1- β =.695		-.00001 (.017)	-.00001 (.020)
Stenotrophomonas	F(2,48)=4.515, p=.016, η^2_p =.1.583, 1- β =.744		-.00005 (.017)	-.00005 (.020)
Others	F(2,48)=9.184, p=.000, η^2_p =.2.768, 1- β =.969	.09777 (.000)		

η^2_p : Effect size (partial eta square)
1- β : Observed power

Table S1: Microbiota genera that presented a significant main effect of cluster and the statistically significant post-hoc differences in relative proportion between the three microbiota-based clusters.

Table S2

Frequency band	Brain ROI	Center MNI Coordinates (X, Y, Z)	Microbiota-based cluster main effect	Significant pairwise post hoc differences (p-value)		
				A-B	A-C	B-C
Theta (4Hz-7Hz)	L A37mv	-31, -64, -14	$\chi^2(2)$ =11.231, p=.004	-	-.427 (.015)	-.572 (.002)
	L A37lv	-38, -52, -14	$\chi^2(2)$ =9.215, p=.010	-	-.223 (.028)	-.343 (.008)
	L A5l	-33, -47, 50	$\chi^2(2)$ =9.204, p=.010	-	-1.149 (.007)	-.938 (.049)
	L A5m	-8, -47, 57	$\chi^2(2)$ =9.897, p=.007	-	-1.482 (.005)	-1.208 (.032)
	L A31	-6, -55, 34	$\chi^2(2)$ =10.871, p=.004	-	-.679 (.004)	-.675 (.010)
	L A23d	-4, -39, 31	$\chi^2(2)$ =12.543, p=.002	-	-.517 (.002)	-.524 (.004)
	L A23v	-8, -47, 10	$\chi^2(2)$ =10.714, p=.005	-	-.298 (.004)	-.319 (.011)
	L rLinG	-17, -60, -6	$\chi^2(2)$ =10.582, p=.005	-	-.327 (.012)	-.402 (.004)
	R A31	6, -54, 35	$\chi^2(2)$ =9.513, p=.009	-	-.604 (.009)	-.629 (.013)
	R A23d	4, -37, 32	$\chi^2(2)$ =10.125, p=.006	-	-.462 (.005)	-.480 (.013)
	R A23v	9, -44, 11	$\chi^2(2)$ =10.306, p=.006	-	-.288 (.005)	-.308 (.012)

Table S2: Brainnetome cortical areas that presented a significant main effect of microbiota-based cluster and the statistically significant post-hoc differences in spontaneous brain activity (source density) between the three microbiota-based clusters, for different frequency bands in the eyes closed condition. L: Left; R: Right.

Table S3

Frequency band	Brain ROI	Center MNI Coordinates (X, Y, Z)	Microbiota-based cluster main effect	Significant pairwise post hoc differences (p-value)		
				A-B	A-C	B-C
Theta (4Hz-7Hz)	L A31	-6, -55, 34	$\chi^2 (2)=9.681, p=.008$	-	-.447 (.030)	-.532 (.006)
	L A23d	-4, -39, 31	$\chi^2 (2)=10.109, p=.006$	-	-.455 (.007)	-.449 (.009)
Low Alpha (7Hz-10Hz)	R IFS	48, 35, 13	$\chi^2 (2)=9.131, p=.010$	-.332 (.009)	-	-
Mid Beta (18Hz-21Hz)	R A4ul	34, -19, 59	$\chi^2 (2)=9.616, p=.008$	-	-	.567 (.012)

Table S3: Brainnetome cortical areas that presented a significant main effect of microbiota-based cluster and the statistically significant post-hoc differences in spontaneous brain activity (source density) between the three microbiota-based clusters, for different frequency bands in the eyes open condition. L: Left; R: Right; IFS: Inferior frontal sulcus.