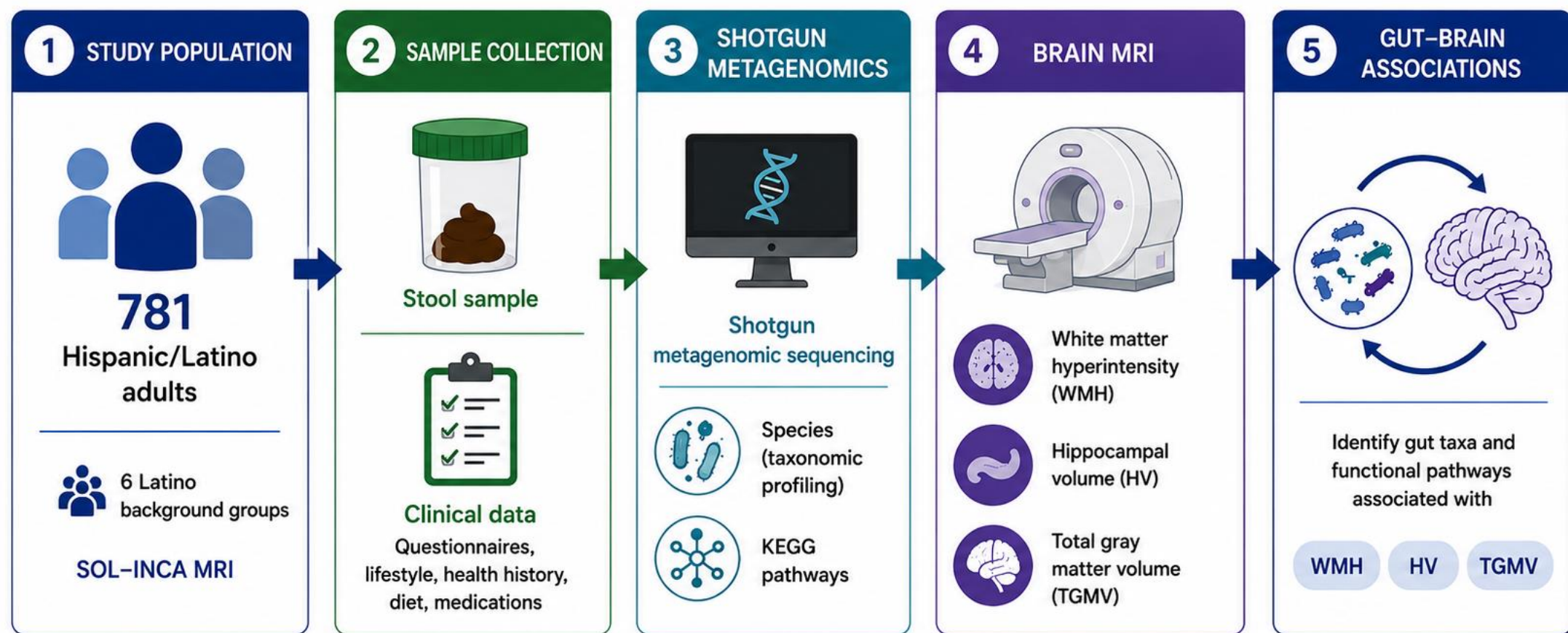


BACKGROUND

- ❖ White matter hyperintensities (WMH) are markers of cerebral small vessel disease and cognitive decline.
- ❖ Gut microbes may influence brain health through inflammatory and metabolic pathways.
- ❖ Evidence in Hispanic/Latino populations remains limited.

METHODS

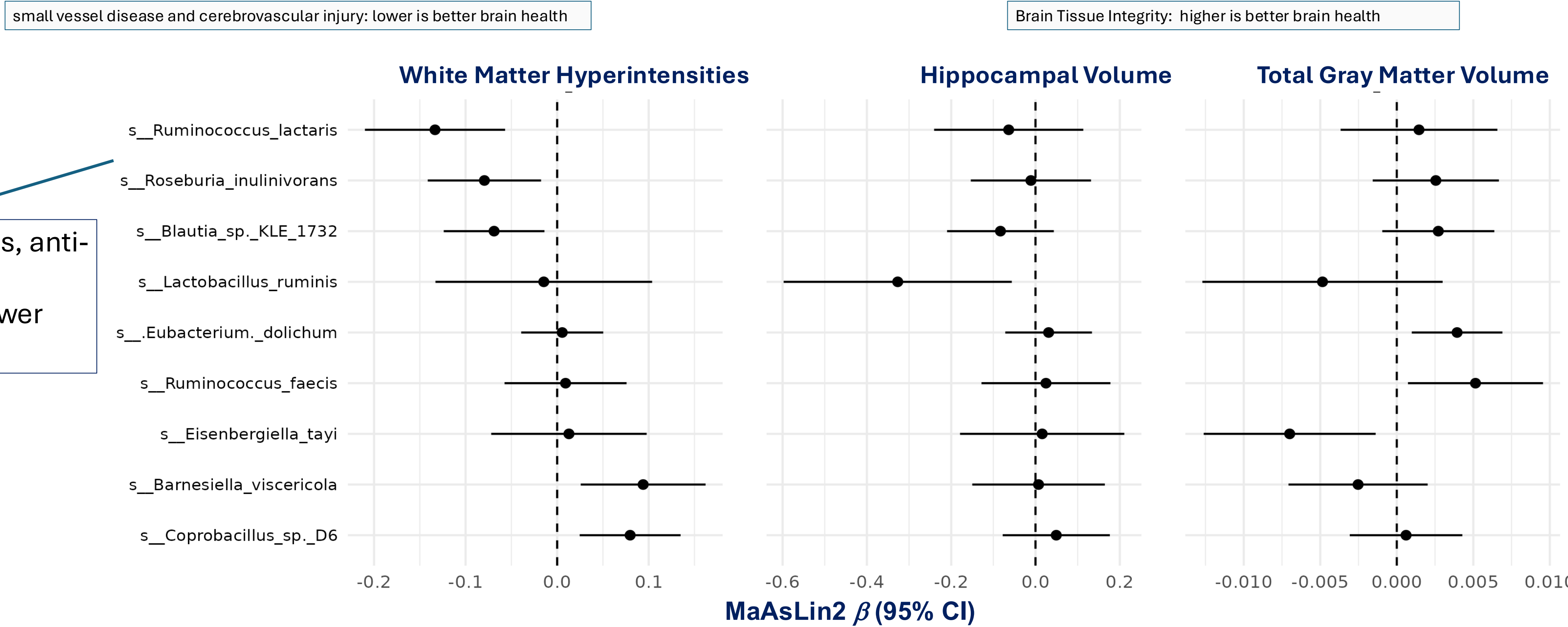
SOL: Multi-Site Study: Largest Study of US-based Latinos



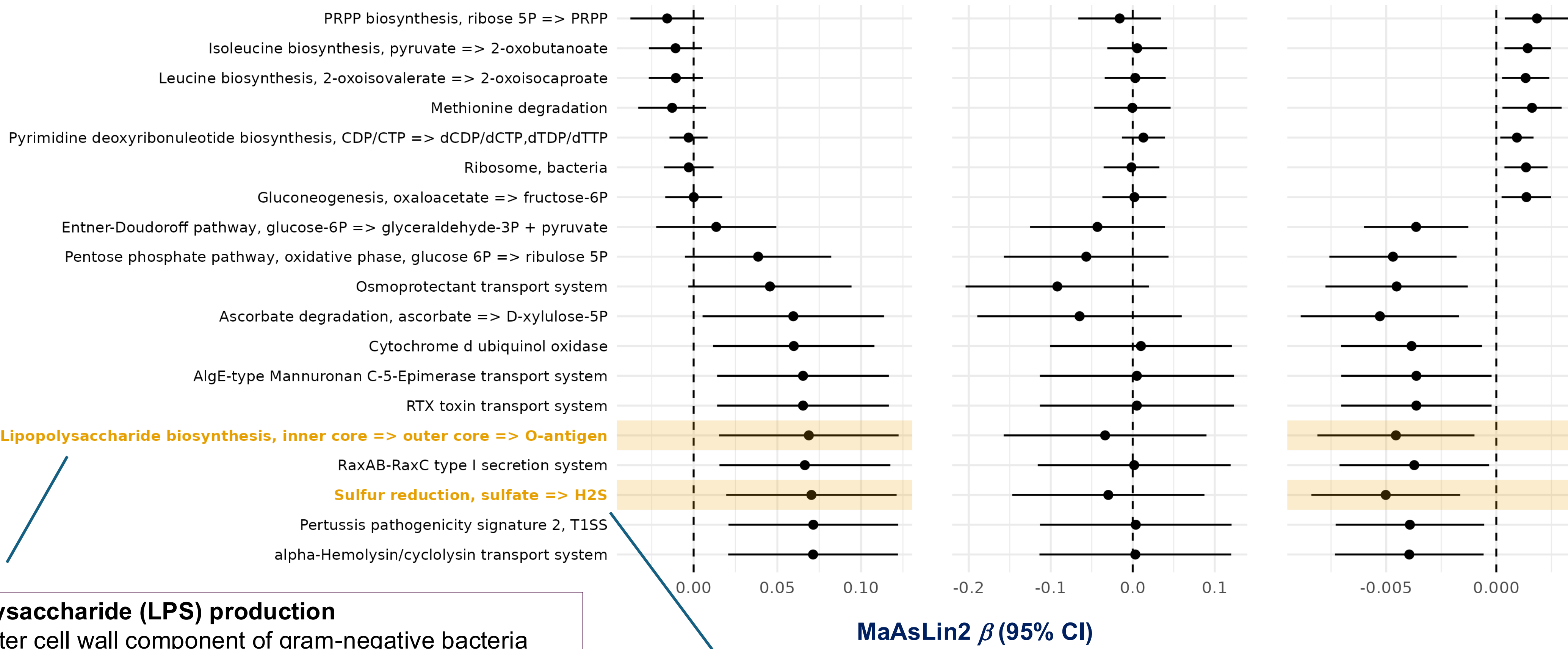
Obligate anaerobes, anti-inflammatory taxa associated with lower WMH volumes.

RESULTS

Gut Bacterial Taxa Associated with White Matter Hyperintensities



Gut Microbial KEGG Modules Associated with White Matter Hyperintensities



Lipopolysaccharide (LPS) production

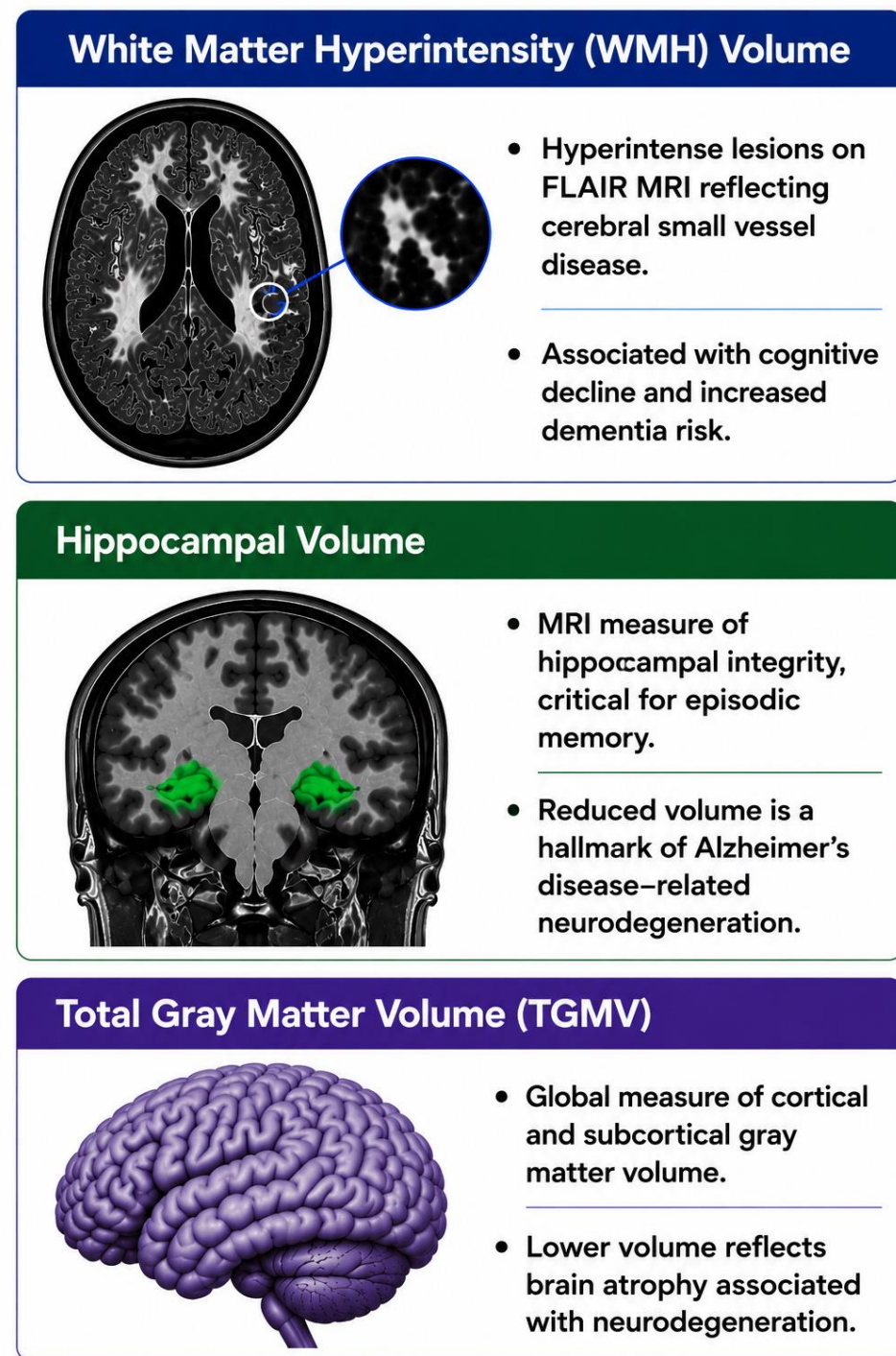
- outer cell wall component of gram-negative bacteria
- strong immune responses in humans, pro-inflammatory

Virulence/toxin secretion

Sulfur reduction

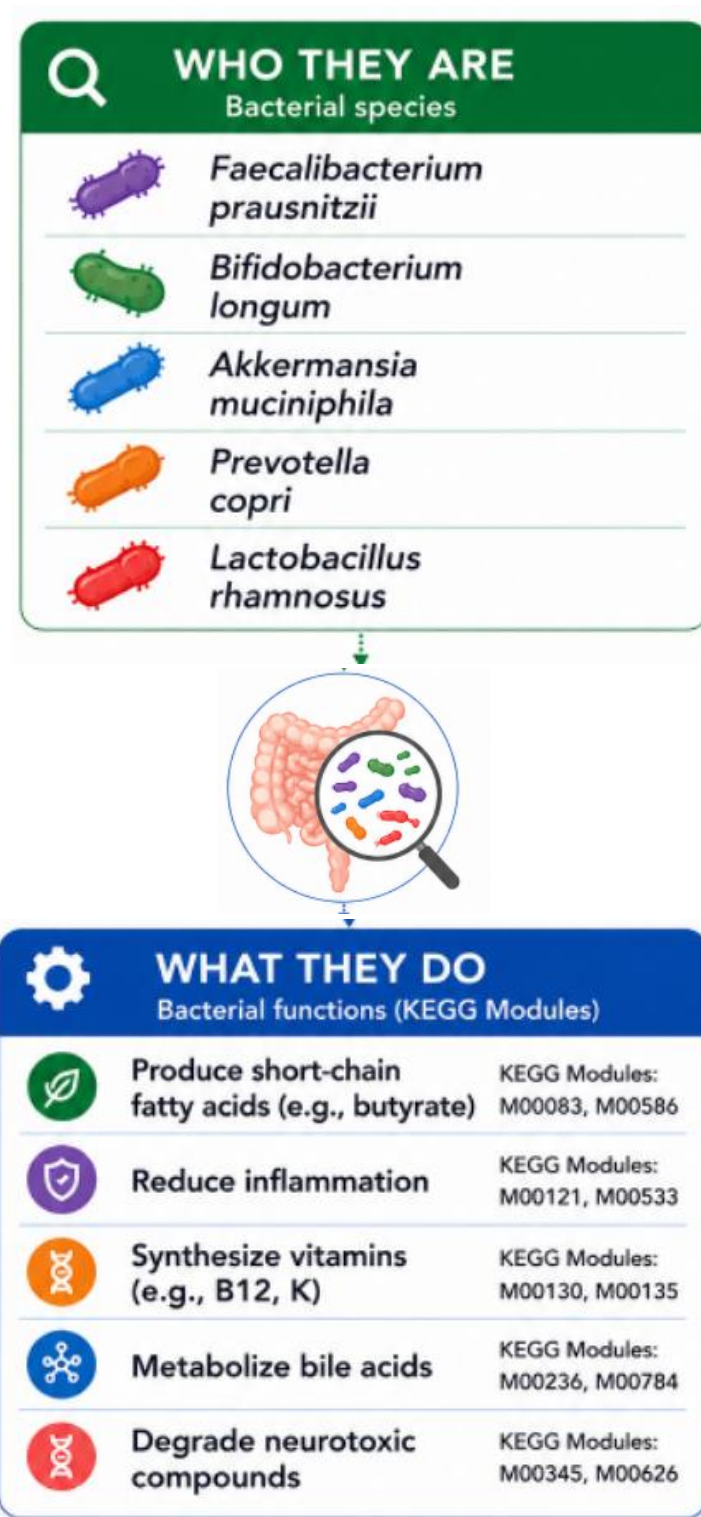
- Microbial hydrogen sulfide production linked to mucosal inflammation, barrier disruption and implicated in neurovascular and neurodegenerative pathway

Brain Health Outcomes:



- WMHV volume (continuous) derived from 3D FLAIR MRI.
- HV and TGMV derived from T1-weighted structural MRI.
- all imaging outcomes were log-transformed and adjusted for intracranial volume.

Microbiome



	WMH tertiles (SOL-GOLD with MRI)		
	Tertile 1 N = 310	Tertile 2 N = 310 ¹	Tertile 3 N = 309 ¹
Age, years (mean SD)	56 (7)	59 (7)	63 (7)
Female Sex	219 (71%)	217 (70%)	212 (69%)
Hypertension	116 (37%)	143 (46%)	194 (63%)
Education level			
less than 9th grade	84 (27%)	80 (26%)	88 (28%)
beyond HS	145 (47%)	122 (39%)	117 (38%)
Diabetes status			
normal glucose regulation	78 (25%)	62 (20%)	62 (20%)
impaired glucose regulation	161 (52%)	136 (44%)	135 (44%)
diabetes	71 (23%)	112 (36%)	112 (36%)
BMI (kg/m ²)	29.9 (4.8)	30.1 (5.7)	29.5 (5.2)

CONCLUSIONS

- ❖ Gut microbial composition is associated with brain structural measures, especially WMH Volumes.
- ❖ Obligate anaerobes, anti-inflammatory taxa associated with lower WMH volumes.
- ❖ Pro-inflammatory microbial pathways (including LPS biosynthesis) are associated with greater WMH burden.
- ❖ These findings support a role for the gut microbiome in brain aging and warrant longitudinal investigation.

