Temporal Association Between Gut Microbiota and Neurodevelopment in Healthy Infants

Studies suggest a potential influence of the gut microbiome on neurological development. However, the temporal association between gut microbiota and early neurodevelopment in healthy infants remains unknown.

The genus *Bacteroides* in the gut microbiome is positively associated with improved neurodevelopment during late infancy in a sex-specific manner.

**Neurodevelopment and microbiome assessment of 405 infants**

Part of **CHILD** (Canadian Healthy Infant Longitudinal Development) cohort study

- **Visit schedule**
  - 2-4 months | 1 year | 2 years
- **Fecal microbiota cluster analyses**
- **Brain function assessment**

**Identified microbial clusters (1 year)**

- **Proteobacteria**-dominant: 22.4%
- **Bacteroidetes**-dominant: 31.6%
- **Firmicutes**-dominant: 46%

**Neurological outcomes**
- Positive correlation with higher cognitive and language abilities
- Greater effects on male infants

**Microbial metabolites**
- Enriched sphingolipid metabolism

Adapted from peer-reviewed research article:
Bacteroides-dominant gut microbiome of late infancy is associated with enhanced neurodevelopment