Microbiota-gut-brain axis - from dysbiosis to neuropsychiatric diseases

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The gut microbiota of humans and animals consists of more than a thousand microorganisms. Their primary function is to ferment carbohydrates and proteins that are not digested in the upper gut into absorbable energy. Other functions of these bacteria include producing vitamins, protecting against pathogens, and mediating innate and adaptive immune responses. Although the gut of humans and animals is sterile at birth, thereafter microbes colonize body surfaces including the gastrointestinal and vaginal tracts. Most of these microbes are derived from the mother's vaginal and fecal microbiota. Human gastrointestinal microbiota is generally estimated to comprise 100 trillion consisted of over 2000 species. Most species belong to eight dominant phyla: *Firmicutes, Bacteroidetes*, *Proteobacteria*, *Actinobacteria, Fusobacteria, Verrucomicrobia, Cyanobacteria,* and *Spirochaeates*. The composition of gut microbiota was influenced by environmental factors such as diet, stress, pathogen infection, aging, and drugs and the disturbance of gut microbiota causes systemic diseases including neurological diseases including depression and memory impairment. Therefore, controlling the gut microbiota composition should be considered for the therapy of these diseases.