THE GUT MICROBIOME AND COGNITION: EPIGENETIC PRECURSORS TO LONGEVITY AND VITALITY

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Abstract. Researchers have been intensively studying the interplay between the gut microbiome, cognition and epigenetics, highlighting how these systems work together to shape our health and well-being. The gut microbiome reveals a complex ecosystem of microorganisms that impact everything from our metabolism to our behavior. By studying the microbiome, we see how a balanced diet can nurture beneficial bacteria that promote vitality and resilience. Cognition, on the other hand, shows us how the brain functions in response to thought and action, and how mental engagement can help prevent disease. Understanding cognition also uncovers what happens when things go wrong, offering insights into conditions like Alzheimer's Disease and depression. The field of epigenetics ties these systems together by showing how both internal and external influences can alter gene expression. It empowers us to see that our genes are not fixed but rather responsive to our lifestyle, diet, and mental activity. Epigenetics acts as the bridge through which the microbiome and cognition exert long-lasting effects on each other and on our overall health. This presentation explores how dysregulation in the aforementioned systems can lead to conditions like neurodegenerative diseases and mental health disorders, and, more importantly, how to counteract these risks. Practical advice on nutrition, mental engagement, and lifestyle changes are offered to help maintain a balanced microbiome, cognitive health, and optimal gene expression. Finally, future research directions are discussed, focusing on interventions that leverage this interconnected system for sustained health and longevity.

Keywords: epigenetic, gut microbiome, cognition, SCFA, cognitive reserve, diet.