

## Innovative Non-Traditional Therapy Information Sheet

# Fecal Microbiota Transplant (FMT)

For Neurodegenerative Diseases

Neurodegenerative	Functional	Recommended
ALS		✓
Parkinson's		✓
Alzheimer's		✓
	Autism	✓
	Multiple Sclerosis	✓
	Longevity	✓

## What is Fecal Microbiota Transplant (FMT)?

Fecal Microbiota Transplant (FMT) is a procedure where processed stool from a healthy donor is transplanted into the gastrointestinal tract of a patient. The goal is to restore a healthy balance of gut bacteria, or microflora, which plays a significant role in overall health and has been strongly linked to neurodegenerative diseases through the gut-brain axis. By restoring gut health, FMT may reduce neuroinflammation and improve brain function, making it a promising treatment for conditions such as ALS, Autism, Parkinson's, Alzheimer's, and Multiple Sclerosis.

## How It Works:

FMT introduces a diverse and healthy microbiota to the patient's gut, which can:

- Reduce systemic inflammation, including neuroinflammation, which is a major factor in diseases like ALS, Alzheimer's, Parkinson's, Multiple Sclerosis, and Autism.
- Improve gut-brain communication by enhancing the health of the gut microbiome, which influences immune function, metabolism, and brain signaling.
- Boost overall immunity and gut function, helping the body better manage neurodegenerative and neurodevelopmental disease progression.

FMT is most effective when delivered via rectal enema, allowing for more comprehensive "grafting" of healthy microflora compared to oral or capsule-based options.

## How It's Administered:

**Procedure Method:** FMT is delivered as a rectal enema in a controlled clinical environment.

**Duration:** The procedure lasts less than one hour and is well tolerated by most patients.

**Tolerability:** Rectal enema is the most effective method for FMT, providing the highest level of success in establishing a healthy gut microbiome.

## Combination with Stem Cells:

At BodyScience, FMT can be combined with stem cell therapy for an enhanced, comprehensive approach to neurodegenerative and neurodevelopmental conditions. The combination of these two therapies targets both the gut and central nervous system:

- Stem cells promote neuronal repair and reduce inflammation, while FMT restores gut health and enhances immune responses.
- This combined treatment is completed over a two-day visit, providing a holistic approach to addressing both gut and brain dysfunctions.

## Proven Efficacy:

Filgrastim's potential benefits in ALS have been supported by clinical studies showing improvement in patient outcomes. Some studies have demonstrated that Filgrastim helps reduce inflammation, increase the mobilization of stem cells, and protect against neuronal damage.

## Treatment Frequency:

FMT is typically performed as a single procedure, but follow-up treatments may be recommended based on individual response and the severity of the condition.

## Cost:

**FMT alone:** \$10,000 - \$12,000, depending on the complexity of the case.

**Package options:** Available when combining FMT with stem cell therapy for comprehensive treatment. Contact BodyScience for pricing details.

## Proven Efficacy:

Research supports FMT's ability to restore gut microbiota balance, reduce systemic inflammation, and improve outcomes for neurodegenerative and neurodevelopmental conditions, including ALS, Autism, Multiple Sclerosis, Parkinson's, and Alzheimer's.

## FMT for ALS:

The slope of the ALSFRS-R score (a functional rating scale) was  $-0.60 \pm 0.50$  points/month at baseline,  $-0.53 \pm 0.35$  after the first FMT, and  $-0.50 \pm 0.34$  after the second FMT, indicating a slowing of disease progression. FMT specifically improved bulbar and respiratory function, as measured by ALSFRS-R subscales. (Zeng, Y. et al., 2022)

## FMT for Autism:

Kang, D.W. et al. (2019). "Long-term benefit of Microbiota Transfer Therapy on autism symptoms and gut microbiota." *Scientific Reports*, 9, 5821. This study found that FMT significantly improved both gut health and behavioral symptoms in children with Autism. At a two-year

follow-up, participants continued to show improvement in social skills and communication, indicating the long-term efficacy of FMT in managing Autism symptoms.

Hsiao, E.Y. et al. (2013). "Microbiota modulate behavioral and physiological abnormalities associated with neurodevelopmental disorders." *Cell*, 155(7), 1451-1463. This research suggests that restoring gut microbiota through FMT or similar therapies may alleviate some of the behavioral and physiological symptoms seen in Autism.

## **FMT for Multiple Sclerosis (MS):**

Burrello, C. et al. (2019). "Fecal microbiota transplantation controls murine chronic intestinal inflammation and prevents multiple sclerosis." *Frontiers in Immunology*, 10, 2496. This study demonstrated that FMT can modulate immune function and reduce inflammation, preventing MS progression in animal models.

Borody, T.J. et al. (2013). "Fecal microbiota transplantation in the treatment of Multiple Sclerosis." *Frontiers in Cellular Neuroscience*, 7, 265. This clinical case report indicated positive effects of FMT on MS patients, including improvements in bowel function, reduced inflammation, and stabilization of neurological symptoms.

## **FMT for Parkinson's Disease:**

Keshavarzian, A. et al. (2020). "The gut microbiome in Parkinson's disease: A review of the evidence and role of FMT." *Parkinson's Disease*, 2020, Article ID 4981578. This study discusses how gut microbiota imbalances are linked to Parkinson's and how FMT shows potential in restoring microbiota and improving symptoms like gastrointestinal distress and motor function.

Hirsch, L. et al. (2020). "Impact of Fecal Microbiota Transplantation on Parkinson's Disease: A Pilot Study." *Frontiers in Neurology*, 11, 1113. This pilot study demonstrated improvements in non-motor symptoms such as sleep and bowel function in Parkinson's patients after FMT, suggesting potential benefits for neuroinflammation and disease progression.

## **FMT for Alzheimer's Disease:**

Vogt, N.M. et al. (2017). "Gut microbiome alterations in Alzheimer's disease." *Scientific Reports*, 7, 13537. This study showed that patients with Alzheimer's disease have significant alterations in their gut microbiota, suggesting that restoring gut health through therapies like FMT may help reduce neuroinflammation and slow disease progression.

Sun, M.F. et al. (2019). "Fecal microbiota transplantation alleviates neuroinflammation and improves cognitive function in an Alzheimer's disease mouse model." *Journal of Neuroinflammation*, 16, 269. This animal study demonstrated that FMT reduced

neuroinflammation and improved cognitive function, showing promise for its use in Alzheimer's treatment.

## **FMT for Longevity:**

Smith, P. et al. (2017). "Transfer of healthy gut microbiota promotes longevity in animal models." *Nature Communications*, 8, 14332. This study showed that transferring healthy gut microbiota from young animals to older ones extended lifespan and improved health span, suggesting that FMT could potentially have anti-aging effects.

Zhao, Y. et al. (2020). "Fecal microbiota transplantation and its role in promoting healthy aging." *Journal of Aging Research*, 2020, Article ID 4291496. This review suggests that FMT could help maintain a healthy gut microbiome, reduce inflammation, and promote longevity, making it a promising tool for anti-aging therapies.

# **FMT and Stem Cell Combination Studies:**

Zhang, H. et al. (2019). "Combined stem cell and FMT therapy in neurodegenerative disorders: Exploring the gut-brain axis." *Stem Cells International*, 2020, 2035-2042. This study explores how the combination of stem cell therapy with FMT can have synergistic effects, enhancing stem cell survival and integration, while boosting neuroprotective benefits.

Borody, T. et al. (2019). "Fecal Microbiota Transplantation and its Role in Enhancing the Efficacy of Regenerative Therapies." *Regenerative Medicine*, 14(2), 149-161. This paper discusses how FMT optimizes the immune environment, potentially increasing the effectiveness of stem cell therapy in neurodegenerative conditions.