Gut–Brain Axis

The Link Between Digestion, Mood & Microbiome Health

~JACQUIFERNANDEZ.COM.AU~

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Gut–Brain Axis: A Clinical Approach

This guide was developed by Jacqui Fernandez, Naturopath, Nutritionist and Psychotherapist, to explain the gut–brain axis in a clear, practical and evidence-informed way. It explores how the digestive system, microbiome, nervous system, immune system and stress pathways interact to influence digestion, mood, resilience and overall wellbeing.
Rather than viewing symptoms in isolation, the gut–brain axis highlights the body as an interconnected system. This guide is designed as an educational starting point and may also support more personalised naturopathic, nutritional and psychotherapy-based care.

Reflective Questions

- Could my digestion, stress levels and mood be influencing each other more than I realise?

- What small daily habits might better support both my gut and my nervous system?

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

What Is the Gut–Brain Axis?

Why the Gut-Brain axis Matters

The gut–brain axis is a two-way communication network between the digestive system and the brain. This connection occurs through the nervous system, the microbiome, immune pathways and stress-related hormonal signals.

This means the brain can influence digestion, and the gut can also influence mood, cognition and stress responses. It is one reason stress can affect gut function, and why digestive health can impact emotional wellbeing.

Clinical Insight

The gut and brain are not separate systems — they are continuously communicating. Supporting one often supports the other.

The gut and brain communicate through a network — not a single pathway.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

How the Gut and Brain Communicate

Communication between the gut and brain occurs through multiple interconnected pathways:

- The vagus nerve → a key communication pathway linking the gut and brain
- The microbiome → influences chemical signalling and metabolic activity
- The immune system → links inflammation, gut integrity and brain function
- Stress pathways (HPA axis) → influence digestion, motility and microbial balance

Clinical Insight

When these pathways are balanced, digestion, mood and energy tend to stabilise. When disrupted, symptoms may appear across multiple systems.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

The Role of the Microbiome

Your Gut's Control System

The gut microbiome refers to the community of microorganisms living in the digestive tract. These microbes play a key role in digestion, nutrient metabolism, immune function and gut barrier integrity. They also influence signalling along the gut–brain axis, affecting mood, resilience and overall health.

Clinical Insight

A diverse and balanced microbiome supports both digestive and emotional wellbeing.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Brain Chemistry

How Your Microbiome Influences Mood & Brain

The gut–brain axis is not driven by a single pathway. While serotonin is often highlighted, the microbiome influences a range of neuroactive compounds that affect mood, stress, digestion and overall wellbeing.

Key Neurotransmitters Influenced by the Gut

- GABA → supports calm and nervous system balance
- Dopamine → influences motivation and mood
- Norepinephrine → supports alertness and stress response
- Acetylcholine → supports memory and gut motility
- Histamine → involved in immune and gut signalling
- Glutamate → supports brain signalling
- Melatonin → regulates sleep and circadian rhythm

Beyond Neurotransmitters

The microbiome also influences:

- SCFAs → support gut lining and reduce inflammation
- Tryptophan metabolism → influences serotonin pathways
- Gut hormones → regulate appetite and metabolism
- Immune signalling → links inflammation and brain function.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Gut–Brain Axis Out of Balance

Signs the Gut–Brain Axis May Be Under Strain

When the gut–brain axis is disrupted, symptoms may affect both digestion and emotional wellbeing.

Digestive Signs

- Bloating
- Irregular bowel movements
- Food sensitivities
- Abdominal discomfort

N**ervous System & Mood Signs**

- Anxiety or low mood
- Brain fog
- Fatigue
- Poor sleep
- Reduced stress tolerance

Clinical Insight

Symptoms rarely occur in isolation — patterns often reveal underlying imbalance.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Gut Health: Nutrition & Lifestyle

Supporting the gut–brain axis begins with simple, consistent foundations:

- Whole, unprocessed foods
- Adequate fibre intake
- Balanced meals with protein, fats and carbohydrates
- Regular meal timing
- Hydration

Lifestyle Factors

- Sleep
- Stress management
- Movement
- Time in natural environments

Clinical Insight

Small, consistent changes are more effective than extreme or restrictive approaches.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Fibre for Gut Health: Feeding Your Microbiome

Fibre plays a key role in feeding beneficial gut microbes and supporting digestive health. It contributes to the production of short-chain fatty acids, which support gut integrity and influence inflammation and brain signalling.

Practical Approach

- Increase fibre gradually
- Include a variety of plant foods
- Stay well hydrated

Clinical Insight

Diversity in the diet supports diversity in the microbiome.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Stress & the Gut

Stress & the Gut–Brain Axis: The Missing Link

Stress can influence digestion, gut motility, microbial balance and gut sensitivity. Many people notice digestive symptoms increase during periods of stress.

The relationship is bidirectional — gut dysfunction can also influence mood, stress responses and emotional resilience.

Clinical Insight

Supporting stress regulation is essential for supporting digestive health.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

GLP-1
Gut–Brain Axis

GLP-1 (glucagon-like peptide-1) is a gut-derived hormone involved in appetite regulation, blood sugar balance and metabolic health. It plays a key role in communication between the digestive system and the brain. Interest in GLP-1 has increased with the use of medications for weight and metabolic conditions. While promising, this is an evolving area, and further clinical insights are continuing to emerge.

Clinical Note

A balanced approach — including nutrition, microbiome support and lifestyle — remains central to long-term health. Further updates will follow as research and clinical understanding develop.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Gut–Brain Health: Bringing It All Together

The gut–brain axis highlights the connection between digestion, mood, immune function and overall wellbeing. Supporting this system involves:

- Nutrition
- Microbiome health
- Stress regulation
- Sleep and lifestyle

Conclusion

Health is not determined by one system alone. It is shaped by how the body functions as a whole.

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Evidence & Key Terms

Research into the gut–brain axis and microbiome is rapidly evolving. Communication between the gut and brain occurs through neural, microbial, immune and hormonal pathways.
Current evidence suggests the microbiome may influence neurotransmitter activity, inflammation, stress responses and aspects of mental health. While findings are promising, individual responses may vary.

Key Terms

- GABA → supports calm and nervous system balance
- SCFAs (Short-chain fatty acids) → support gut lining and reduce inflammation
- HPA Axis → regulates the stress response
- GLP-1, PYY, CCK → gut hormones involved in appetite and metabolism

Selected References

- Nature Reviews Gastroenterology & Hepatology
- Nature Communications
- BMC Medicine (SMILES trial)
- Frontiers in Psychiatry

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.

Thank you

Jacqui Fernandez
(Master of Psychotherapy & Couns, B.HSc (Nat), Dip Nat, Dip Nutr)

Naturopath, Nutritionist, Psychotherapist

Online consultations available Australia-wide

PH: 0414 402045

Ballarat Business Centre, 706 Sturt Street. Ballarat

E: jacquifernandez@tpg.com.au

Website: Jacquifernandez.com.au

LINKEDIN FACEBOOK INSTAGRAM

© Jacqui Fernandez | jacquifernandez.com.au | Ballarat, Australia. All rights reserved.
Educational content only — not medical advice or treatment.