



GUT CHECK

The Real Scoop on Digestion, Metabolism & Energy

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Metabolism Is Not Just Calories

Metabolism is regulated by:

- Hormones
- Inflammation
- Insulin signaling
- The gut microbiome

Valdes AM et al. Nat Rev Endocrinol. 2018.



The Gut Microbiome

Trillions of microbes influence:

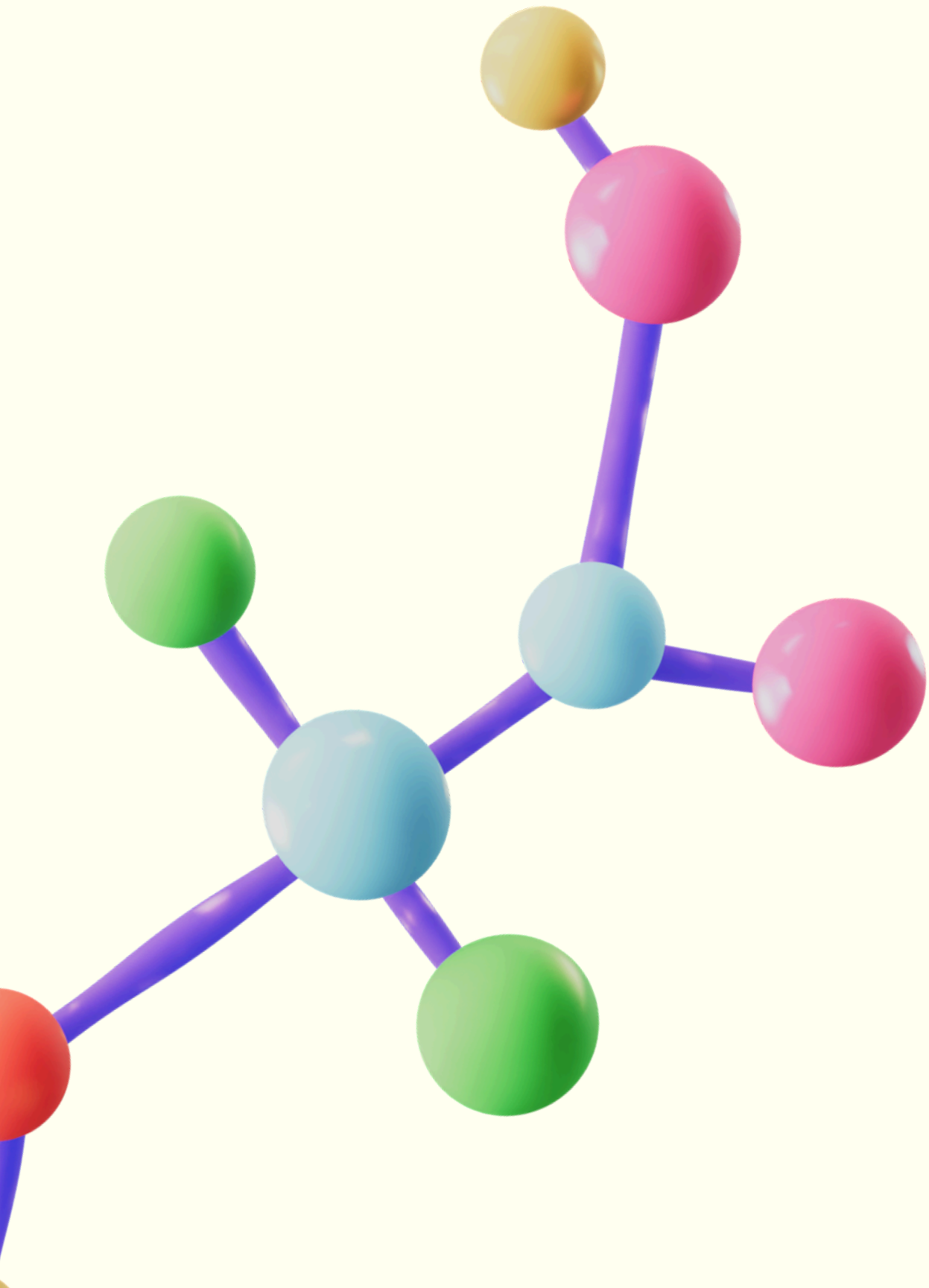
- Energy balance
- Glucose regulation
- Inflammation
- Hormone signaling

Turnbaugh PJ et al. Nature. 2006.

Valdes AM et al. Nat Rev Endocrinol. 2018.



Short-Chain Fatty Acids (SCFAs)



Healthy gut bacteria produce:

Butyrate

Acetate

Propionate

These support:

- Insulin sensitivity
- Gut lining integrity
- Reduced inflammation

Gao Z et al. J Clin Invest. 2009.

Canfora EE et al. Nat Rev Endocrinol. 2015.

Dysbiosis & Inflammation

Gut imbalance →

Increased intestinal permeability →

Low-grade inflammation →

Insulin resistance

Cani PD et al. PNAS. 2007.

Hotamisligil GS. Nature. 2006; updated review 2017.



Inflammation & Insulin Resistance

Chronic low-grade inflammation impairs insulin signaling.

Insulin resistance drives:

- Belly fat
- Energy crashes
- Metabolic dysfunction

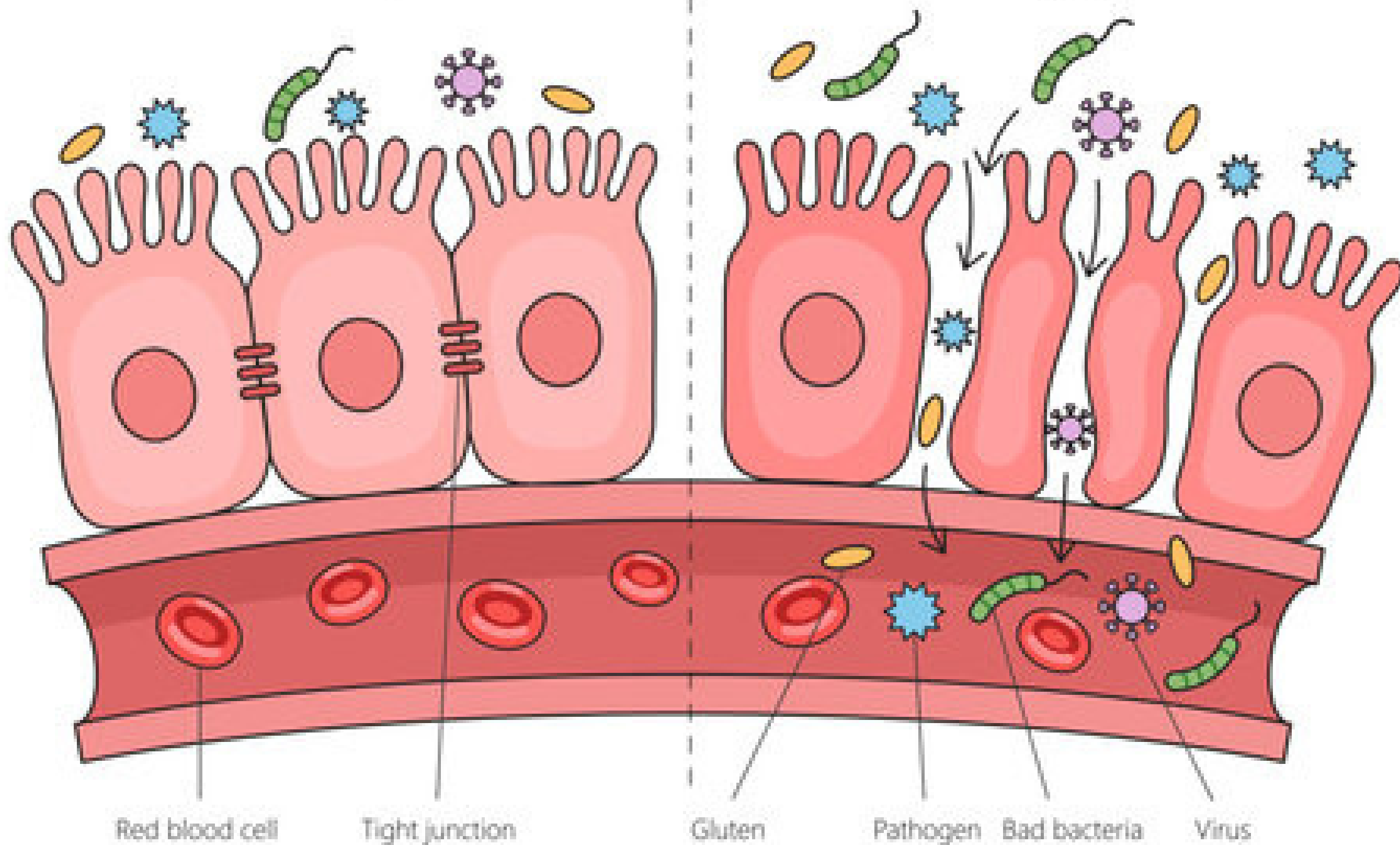


Hotamisligil GS. Nature. 2006.
Hotamisligil GS. Lancet. 2017.

Leaky Gut Syndrome

Normal gut

Leaky gut



Microbiome & Cravings

Certain gut microbes influence:

- Hunger hormones
- Dopamine pathways
- Cravings

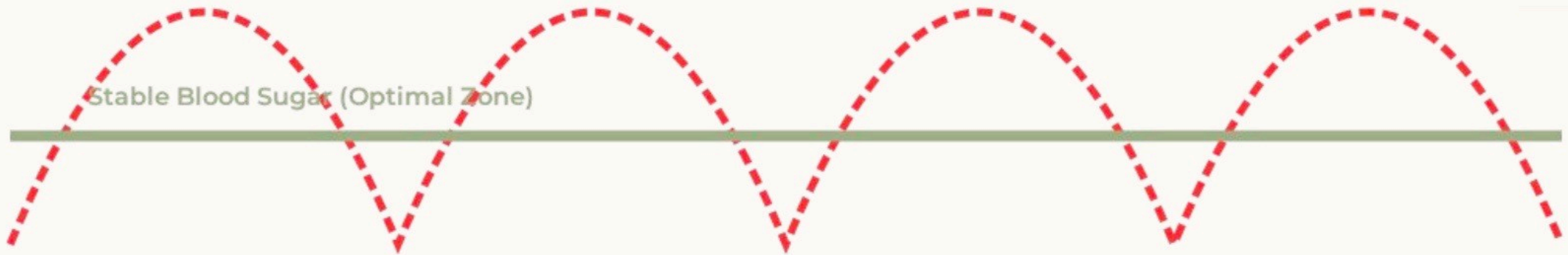
Cryan JF & Dinan TG. Nat Rev Neurosci. 2012.
Cryan JF et al. Nat Rev Gastroenterol Hepatol. 2019.



The Blood Sugar Roller Coaster

Spiking Blood Sugar results in:
Fatigue • Cravings • Feeling Hungry

Spiking Blood Sugar (Spikes & Crashes)



Stable Blood Sugar results in:
Steady Energy • Fewer Cravings • Better Metabolism

Stress & the Gut

Chronic stress

↑ Cortisol

↓ Beneficial microbes

↑ Gut permeability

↑ Blood sugar

Cryan JF et al. Nat Rev Gastroenterol Hepatol. 2019.



What Normal Digestion Looks Like

Healthy digestion:

- 1–3 bowel movements/day
- Well formed
- Minimal bloating
- No chronic reflux

Bharucha AE et al. Gastroenterology. 2013 (functional bowel guidelines).



Five Anchors

- Protein first
- Fiber diversity
- Post-meal movement
- Stress regulation
- Sleep protection

Fiber Diversity

Dietary fiber
feeds beneficial microbes
→ increases SCFA production
→ improves metabolic markers

Zhao L et al. Cell. 2018.



Post-Meal Movement

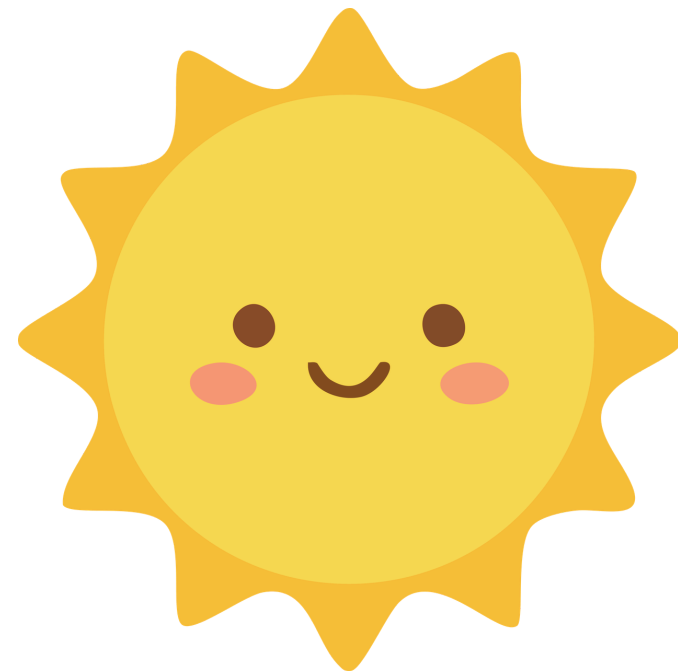
10 minutes of walking after meals
improves glucose disposal.

Mikus CR et al. J Appl Physiol. 2012.



Daily Stress Regulation

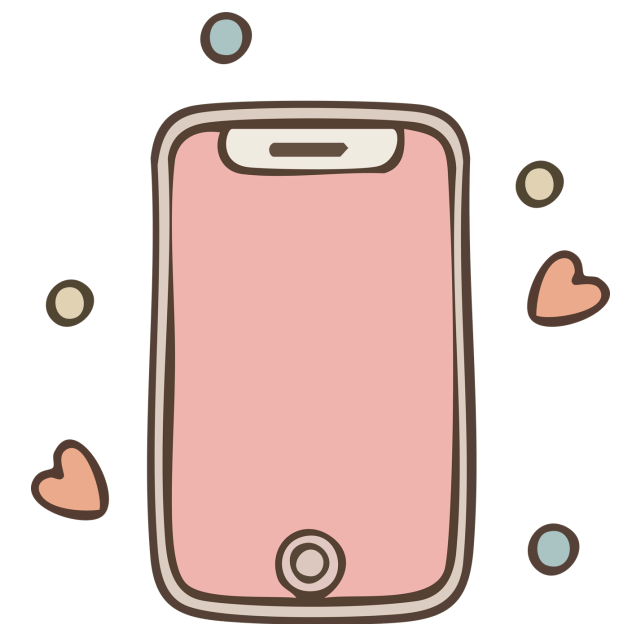
Sunshine



Deep Breathing



Phone a Friend



Get Outside



Exercise



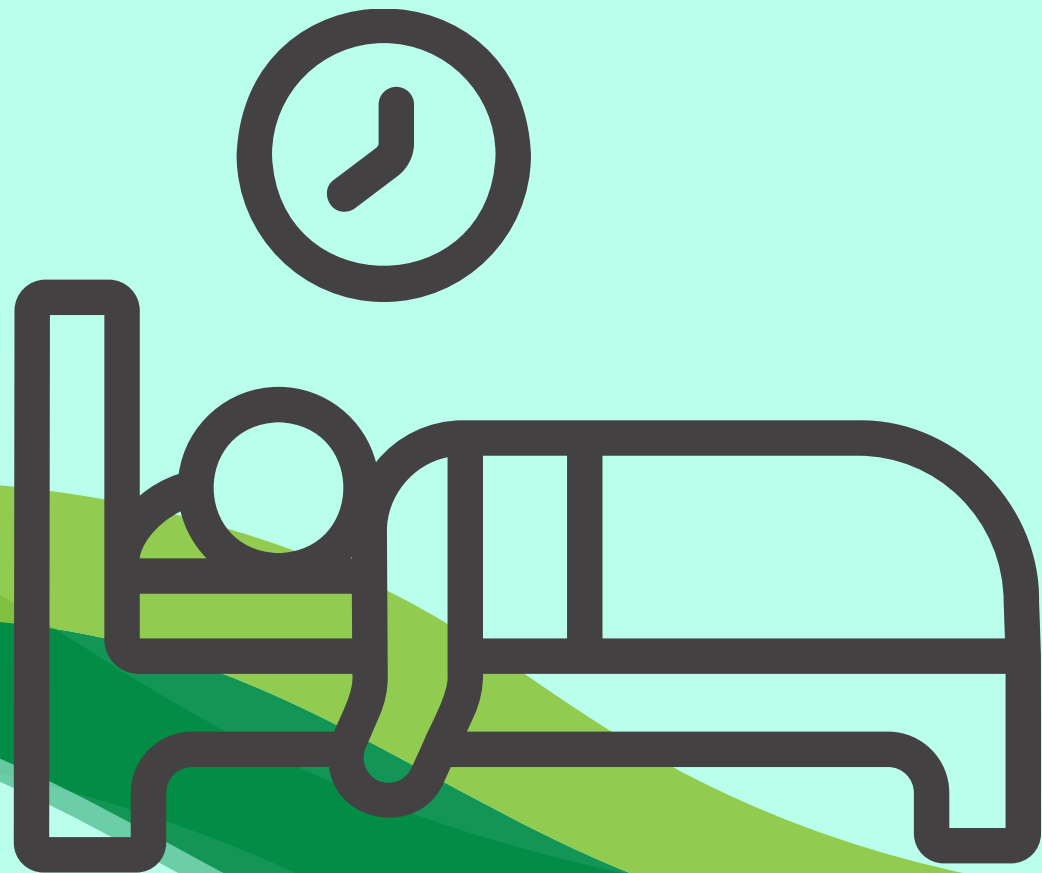
Sleep & Metabolism

Poor sleep:

- Increases insulin resistance
- Increases inflammation
- Alters microbiota composition

Benedict C et al. Sleep. 2016.

Spiegel K et al. Lancet. 1999 (classic insulin resistance + sleep restriction study).



Key things to Remember

- **Body is always communicating**
- **Learn to understand the signals**
- **Protein first**
- **Fiber diversity**
- **Post-meal movement**
- **Stress regulation**
- **Sleep protection**

**When you support your gut, you support
your metabolism!**

April Webinar Invitation

Stress, Cortisol, and
Metabolism: Why Slowing
Down Helps You Feel Better
Faster

April 16



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