

# Intermittent Fasting

Dr Sophie Newton – 24<sup>th</sup> June 2021



# Agenda

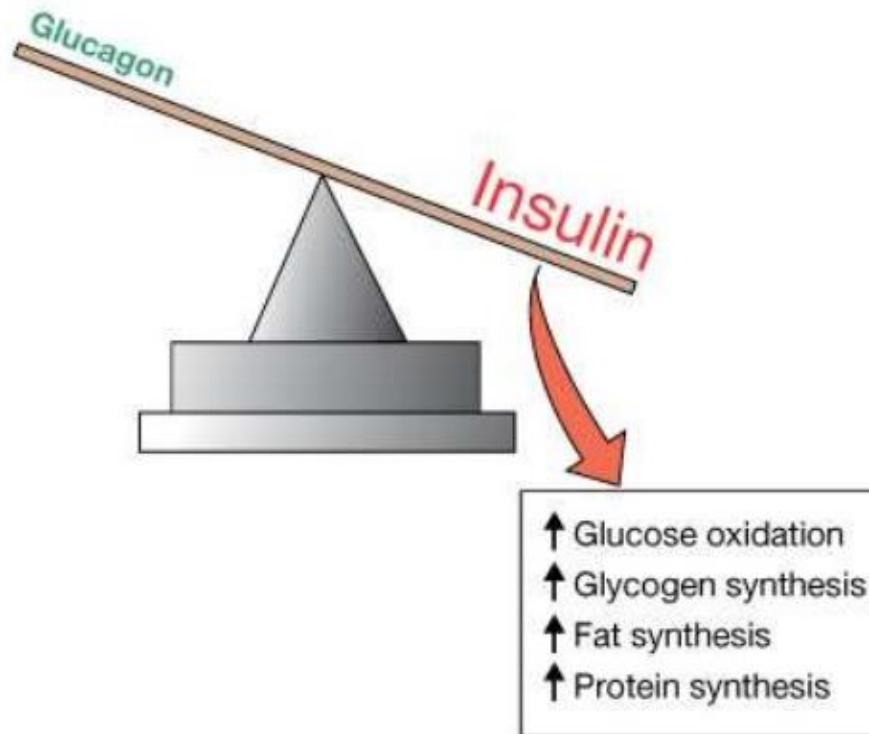


**PennineGP Learning**

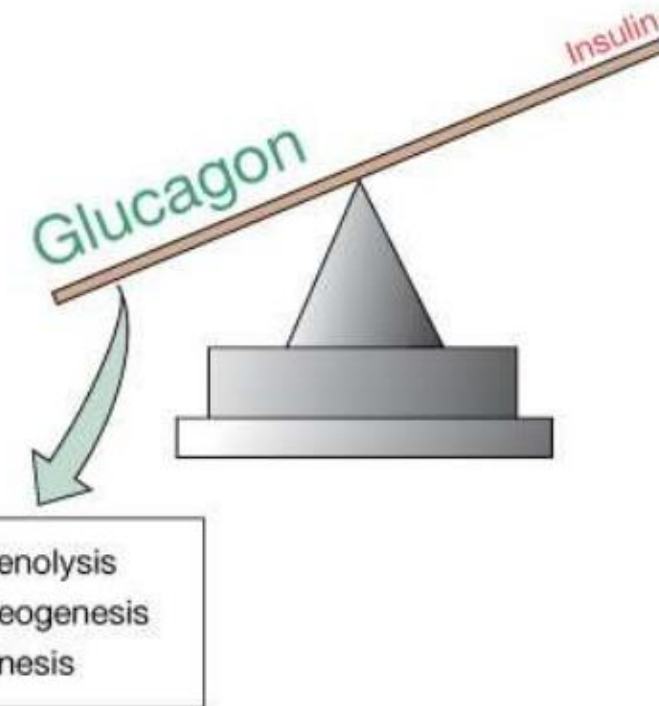


# Fasting physiology

(a) Fed state: insulin dominates



(b) Fasted state: glucagon dominates



# Why the interest in IF?



# Types of IF

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Time restricted eating, e.g. 16:8

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Alternate day fasting

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OMAD

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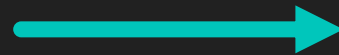
5:2 diet

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Dry fasting, AKA - bonkers

# Dietary plans for weight loss

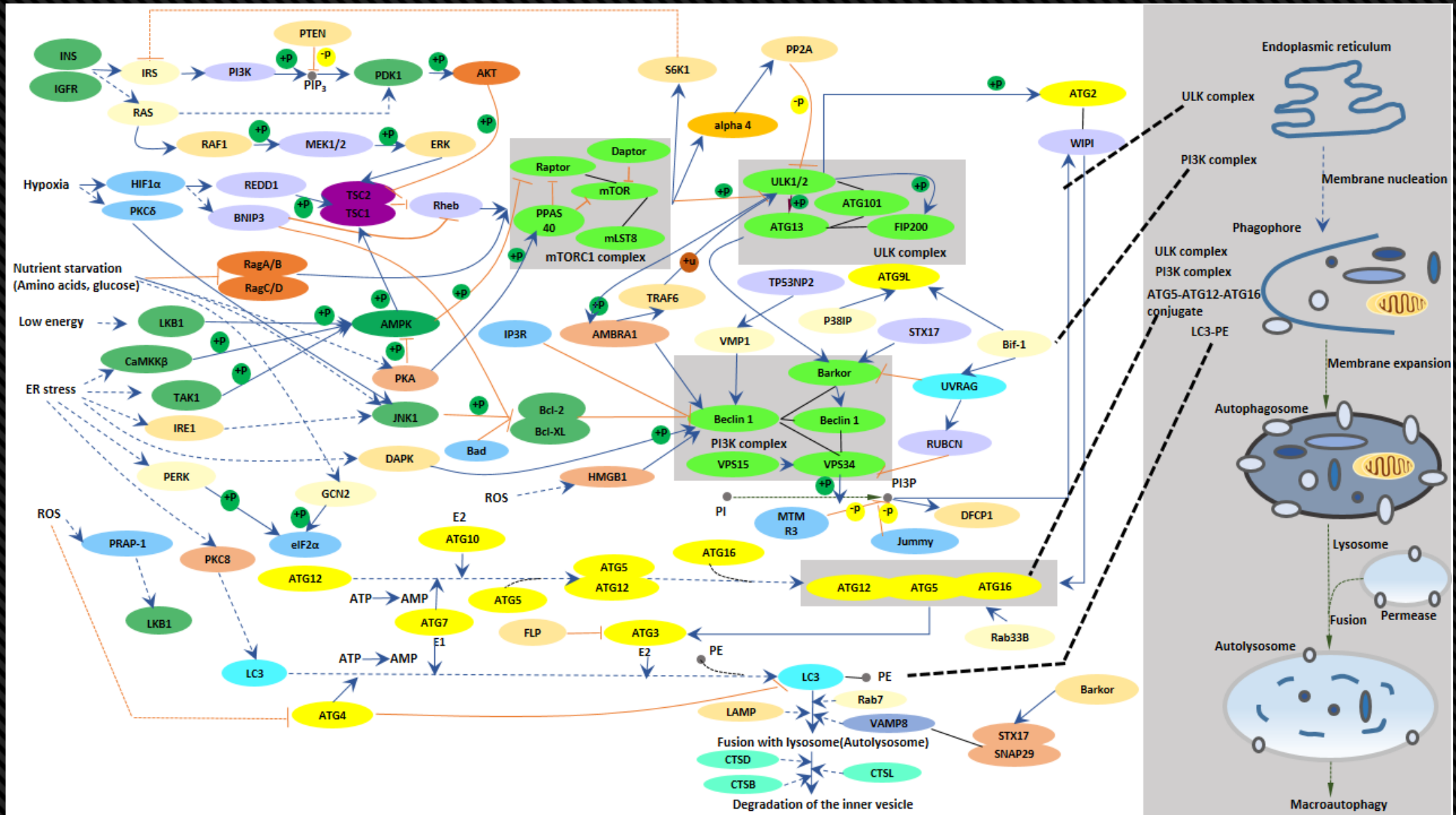
- IF
- Calorie counting
- Keto
- Plant-based wholefood diet
- Low carb
- Low fat
- Paleo



CALORIE DEFICIT

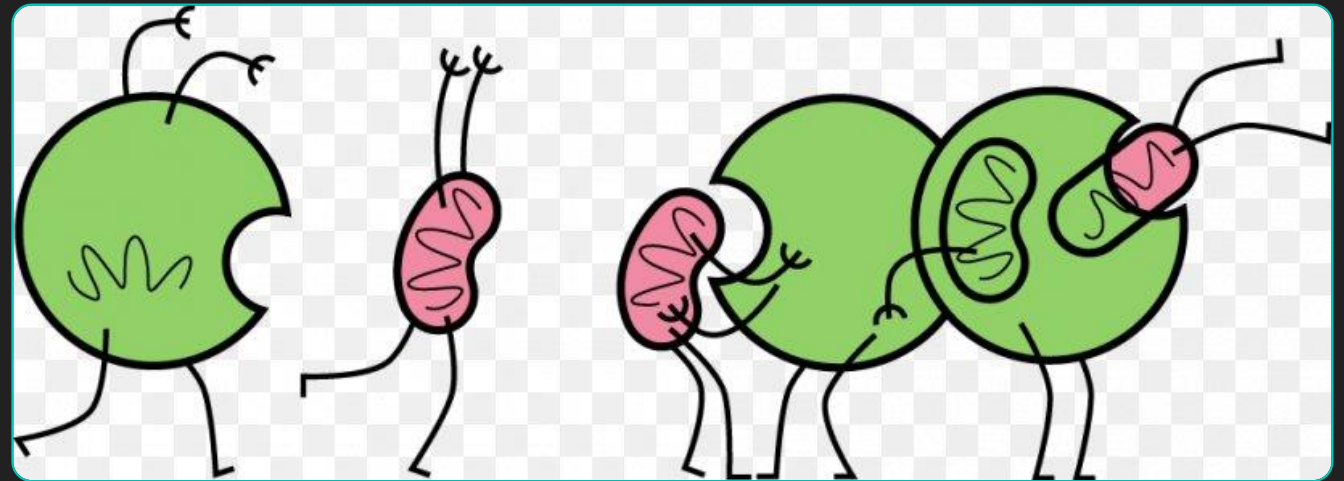
# Additional key benefit of fasting: AUTOPHAGY

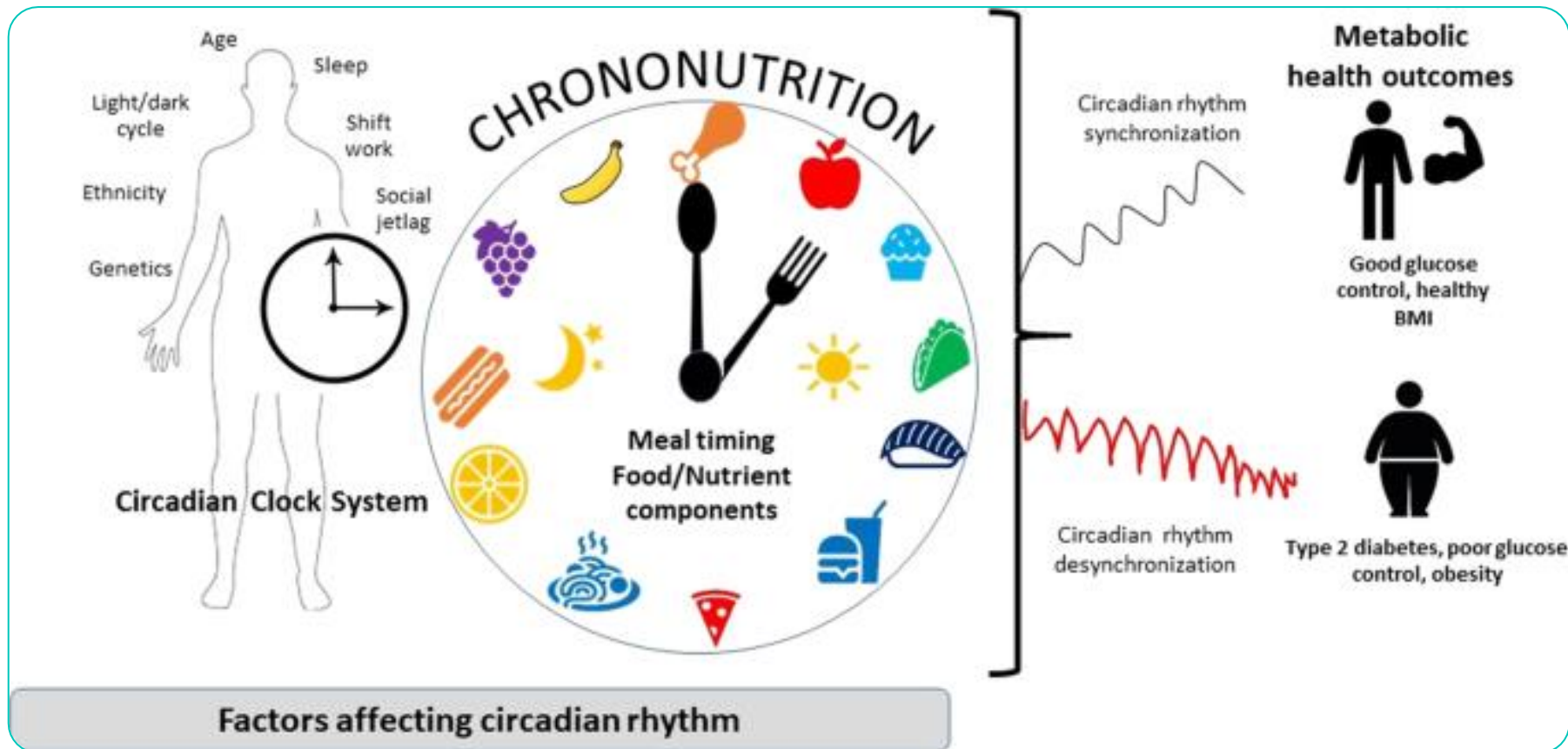




# Autophagy

- The Nobel Prize in Physiology or Medicine 2016 was awarded to Yoshinori Ohsumi "for his discoveries of mechanisms for autophagy"
- Autophagy is a catabolic process stimulated by fasting during which our cells disassemble and remove their dysfunctional components
- Recognized as a crucial defence mechanism against malignancy, infection and neurodegenerative diseases<sup>1</sup>.





# Chrononutrition: Benefits of TRF

# Chrononutrition

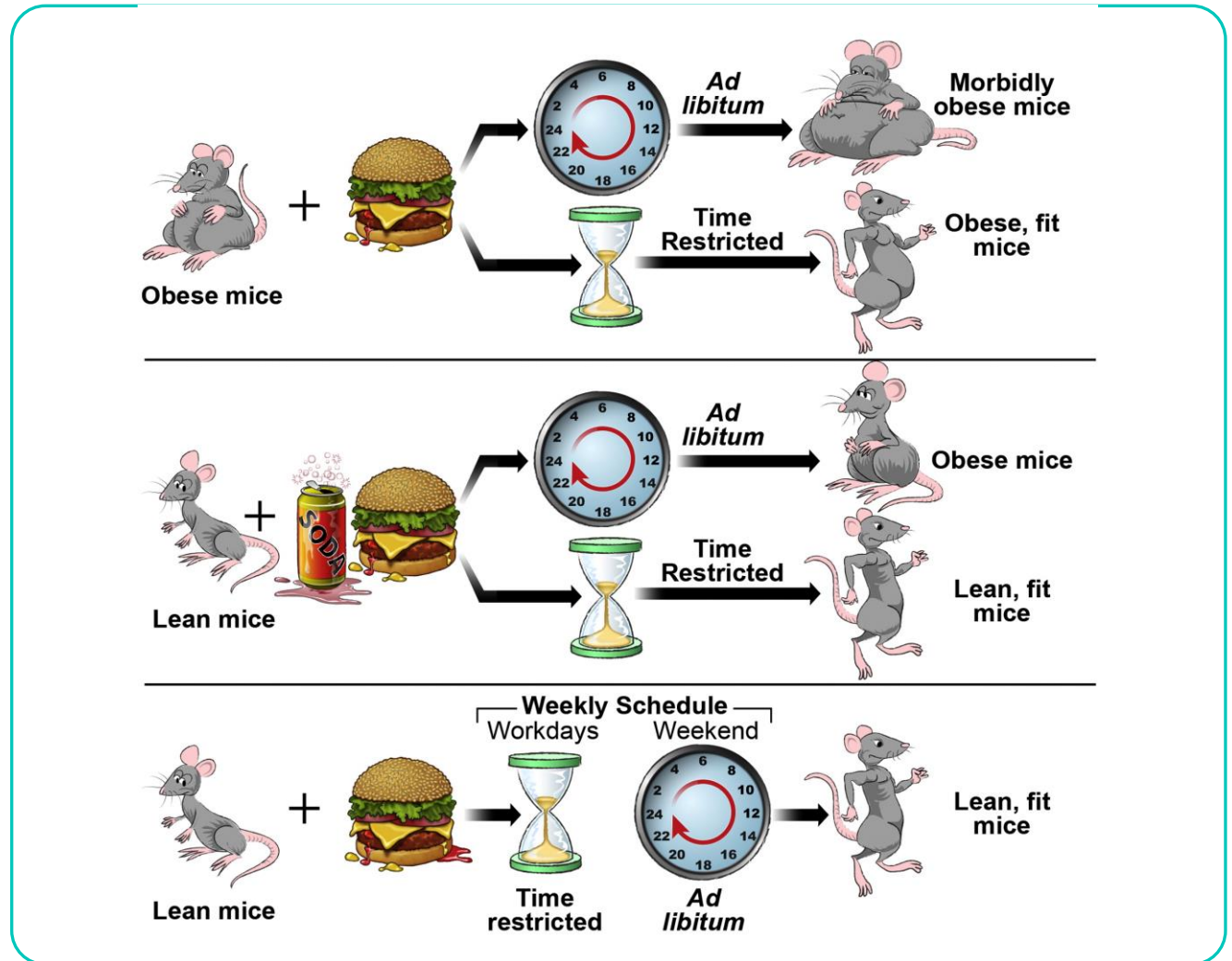
- In the morning, in response to daylight and food, insulin sensitivity increases and melatonin decreases, making you feel alert and energized. Meanwhile, in the evening, melatonin levels go up and insulin sensitivity decreases, preparing your body for rest and cell repair
- Sleep affects two hormones in the body, which regulate hunger: ghrelin & leptin; ghrelin stimulates your appetite while leptin does the opposite
- A disrupted circadian rhythm may lead to increased production of insulin in your body
- Your natural body clock is synchronized with your external environment through cues like exposure to light and the timing of your meals



# Myths of chrononutrition

- You should eat breakfast to “boost your metabolism.”
- Eating carbohydrates after 6pm will lead to immediate fat gain.
- Eating several smaller meals across the day is required to ensure a “fast metabolism.”

# TRF: The evidence for weight loss?



# Is IF superior for weight loss?

- No
- Repeated studies have shown that for sustainable weight loss, the best diet is the one the patient will adhere to – ADHERENCE IS KING!\*
- Many people find IF easy, prevents food obsession and help build healthy relationship with food

# TRF: Mixed evidence for weight loss

Initial rodent studies demonstrated obese mice could get thin on same calories over a restricted time period and vice versa<sup>2</sup>

Studies have found that consuming larger meals earlier in the day produce better weight loss than similar meals later in the evening<sup>3</sup>

The first randomized trial demonstrated meal-timing interventions facilitate weight loss primarily by suppressing appetite and increasing sensations of fullness<sup>4</sup>

A 2018 study compared obese subjects to a matched control group and found those on TRF on average consumed 350 fewer calories, lost about 3 percent of their body weight and had improvements in blood pressure over a 12-week period.

TREAT RCT: No statistically significant weight loss with 16:8 over 12 weeks<sup>5</sup>

Ultimately: snack less in front of TV and consume fewer calories!  
Need longer-term studies.



# TRF: Evidence for T2DM improvements

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In pre-DM, early-TRF vs a standard eating schedule has been shown to **improve insulin sensitivity** independent of any changes to body weight, thought to be due to relation to circadian rhythms<sup>6</sup>

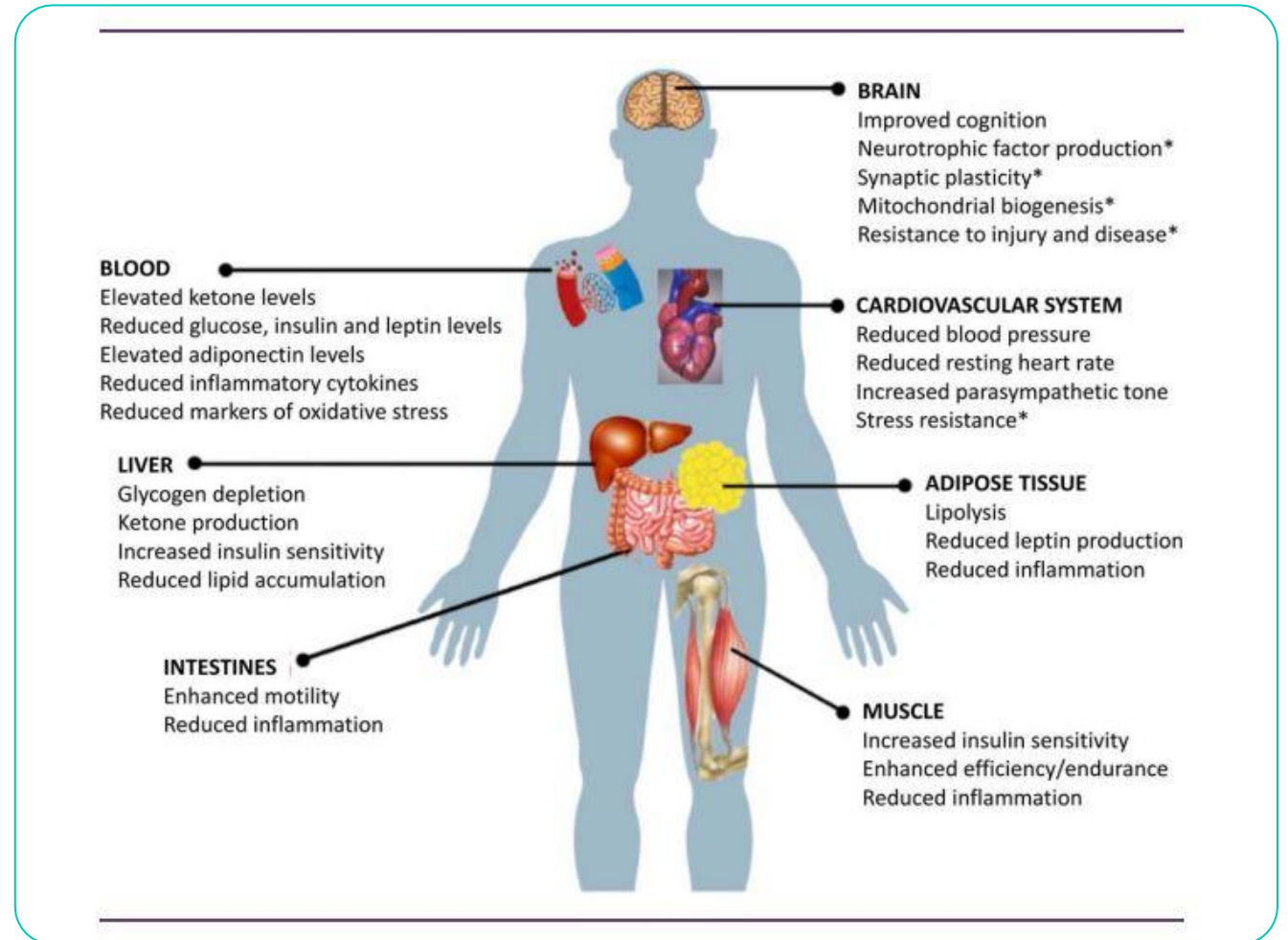
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One small study from Australia demonstrated 1 week of TRF improves glucose responses to a meal and reduced triglycerides in men at risk of type 2 diabetes<sup>7</sup>

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Other studies have found improvements in diabetes risk indicators comparable to traditional calorie restriction diets and reduced cardiovascular disease risk factors, including blood pressure, total and LDL cholesterol, blood triglycerides, inflammatory markers and blood sugar levels<sup>8,9</sup>

# Additional benefits



# What to recommend to patients

Try to pinch an hour each way, e.g. finish eating 7pm and start eating 8am

Benefits of stopping as early as possible, but adherence is king so has to work with their life.

Evidence suggests 5 out of 7 days TRF just as beneficial

Extend longer every couple of weeks, depending on goals and preference

Can be done alongside other interventions, e.g. increase protein, swap out processed carbs for veg, mindful eating etc

# Who shouldn't try IF

Pregnant / BF

Hx Eating Disorder

Diabetics at risk of hypos



YOU KNOW  
WHAT'S HEALTHIER  
THAN KALE?



HAVING A GOOD  
RELATIONSHIP  
WITH FOOD.

# Questions?

When ur doing intermittent fasting and you have to wait until 4 pm to eat

@tank.sinatra



# References

<sup>1</sup>Alirezaei, M et al. Short term fasting induces profound neuronal autophagy. *Autophagy* 2010 Aug 16; 6(6): 702–710.

<sup>2</sup>Hatori M, et al. Time-restricted feeding without reducing caloric intake prevents metabolic diseases in mice fed a high-fat diet. *Cell Metab* 2012 15(6):848–860

<sup>3</sup>Garaulet M, et al. Timing of food intake predicts weight loss effectiveness. *Int J Obes (Lond)*. 2013;37(4):604–11.

<sup>4</sup>Ravussin, E., Beyl, R.A., Poggiogalle, E., Hsia, D.S. and Peterson, C.M. (2019), Early Time-Restricted Feeding Reduces Appetite and Increases Fat Oxidation But Does Not Affect Energy Expenditure in Humans. *Obesity*, 27: 1244-1254. doi:[10.1002/oby.22518](https://doi.org/10.1002/oby.22518)

<sup>5</sup>Lowe DA, Wu N, Rohdin-Bibby L, et al. Effects of Time-Restricted Eating on Weight Loss and Other Metabolic Parameters in Women and Men With Overweight and Obesity: The TREAT Randomized Clinical Trial. *JAMA Intern Med*. 2020;180(11):1491–1499. doi:10.1001/jamainternmed.2020.4153

<sup>6</sup>Sutton Ef et al. Early Time-Restricted Feeding Improves Insulin Sensitivity, Blood Pressure, and Oxidative Stress Even without Weight Loss in Men with Prediabetes. *Cell Metab*. 2018 Jun 5;27(6):1212-1221.e3. doi: 10.1016/j.cmet.2018.04.010. Epub 2018 May 10. PMID: 29754952; PMCID: PMC5990470.

<sup>7</sup>Hutchison, A.T., Regmi, P., Manoogian, E.N., Fleischer, J.G., Wittert, G.A., Panda, S. and Heilbronn, L.K. (2019), Time-Restricted Feeding Improves Glucose Tolerance in Men at Risk for Type 2 Diabetes: A Randomized Crossover Trial. *Obesity*, 27: 724-732. doi:[10.1002/oby.22449](https://doi.org/10.1002/oby.22449).

<sup>8</sup>Varady K et al. Short-term modified alternate-day fasting: a novel dietary strategy for weight loss and cardioprotection in obese adults. *Am J Clin Nutr*. 2009 Nov;90(5):1138-43.

<sup>9</sup>Antoni, R et al. The Effects of Intermittent Energy Restriction on Indices of Cardiometabolic Health, *Research in Endocrinology*, Vol. 2014 (2014), Article ID 459119,