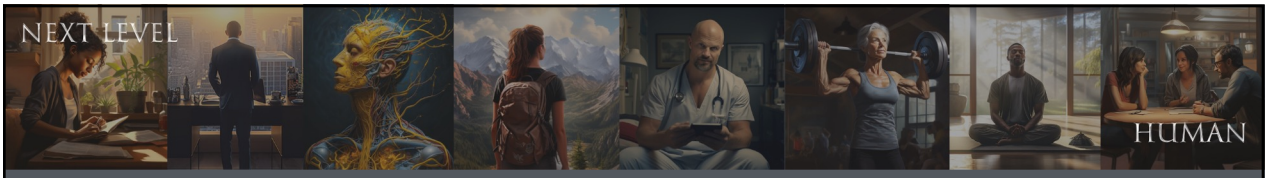


GLP-1 Medications:

From Incretin Biology to Nutrition Support

Dr Jade Teta

1

Overview & Objectives

Overview:

- History & evolution of GLP-1-therapy
- GLP-1 Physiology
- Evidence-based nutrition and lifestyle strategies for patients using or discontinuing GLP-1 drugs.

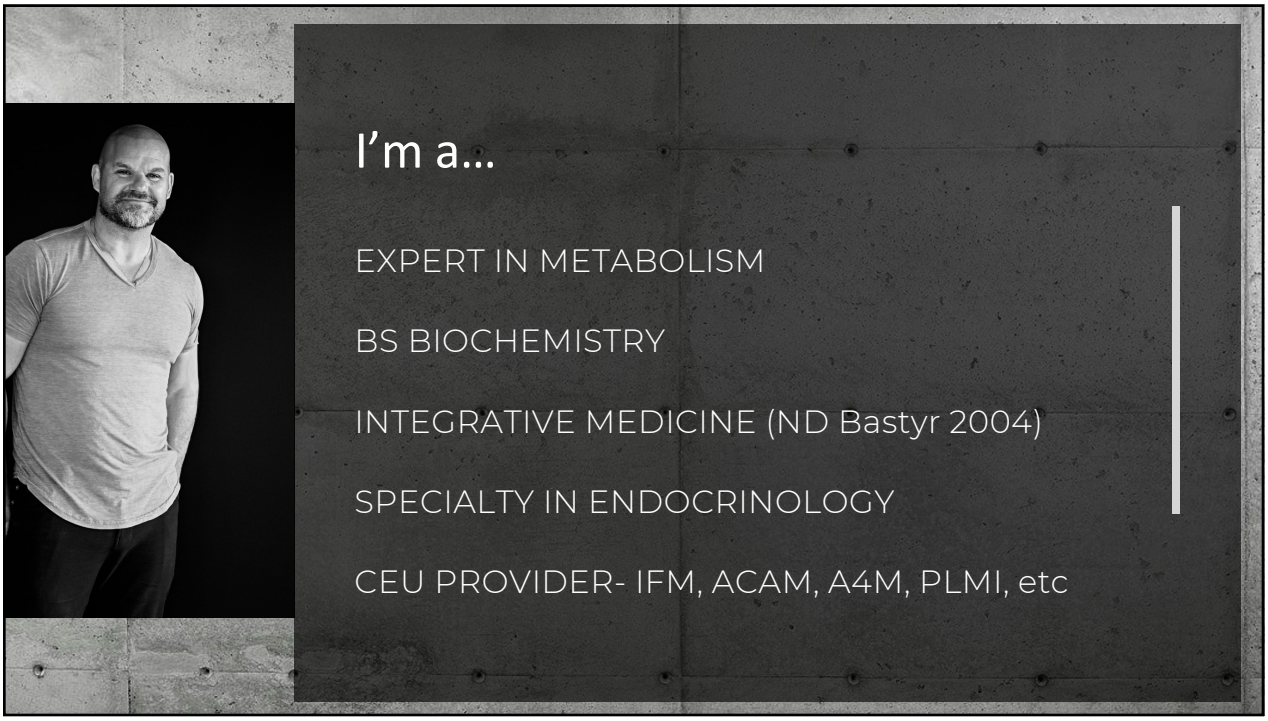
Learning Objectives:

- Explain the physiology of GLP-1 & GIP and their therapeutic roles.
- Identify mechanisms & medications within the GLP-1 class.
- Discuss clinical risks, microdosing concepts, and evidence in addiction medicine.
- Apply nutrition, supplement & exercise strategies to support sustainable metabolic health.

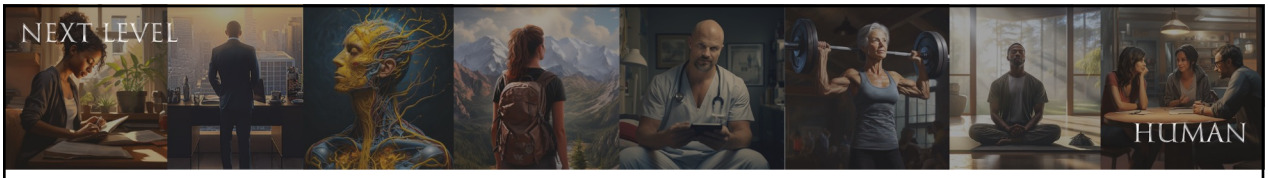
2


Dr. Jade Teta

3


I’m a…
EXPERT IN METABOLISM
BS BIOCHEMISTRY
INTEGRATIVE MEDICINE (ND Bastyr 2004)
SPECIALTY IN ENDOCRINOLOGY
CEU PROVIDER- IFM, ACAM, A4M, PLMI, etc

4

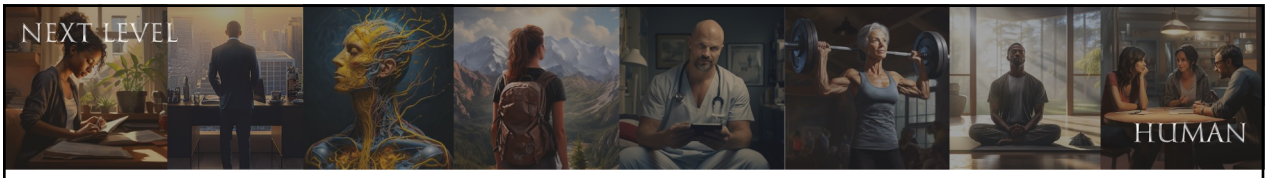


“I did it! I lost 107 lbs.*

It took me 9 months and a few rounds of Jade’s program, but 107.5 lbs. are gone. I have more energy, I have muscle, and I have more confidence. I LOVE this program!

Susan Hoke, *Warren, OH*

5

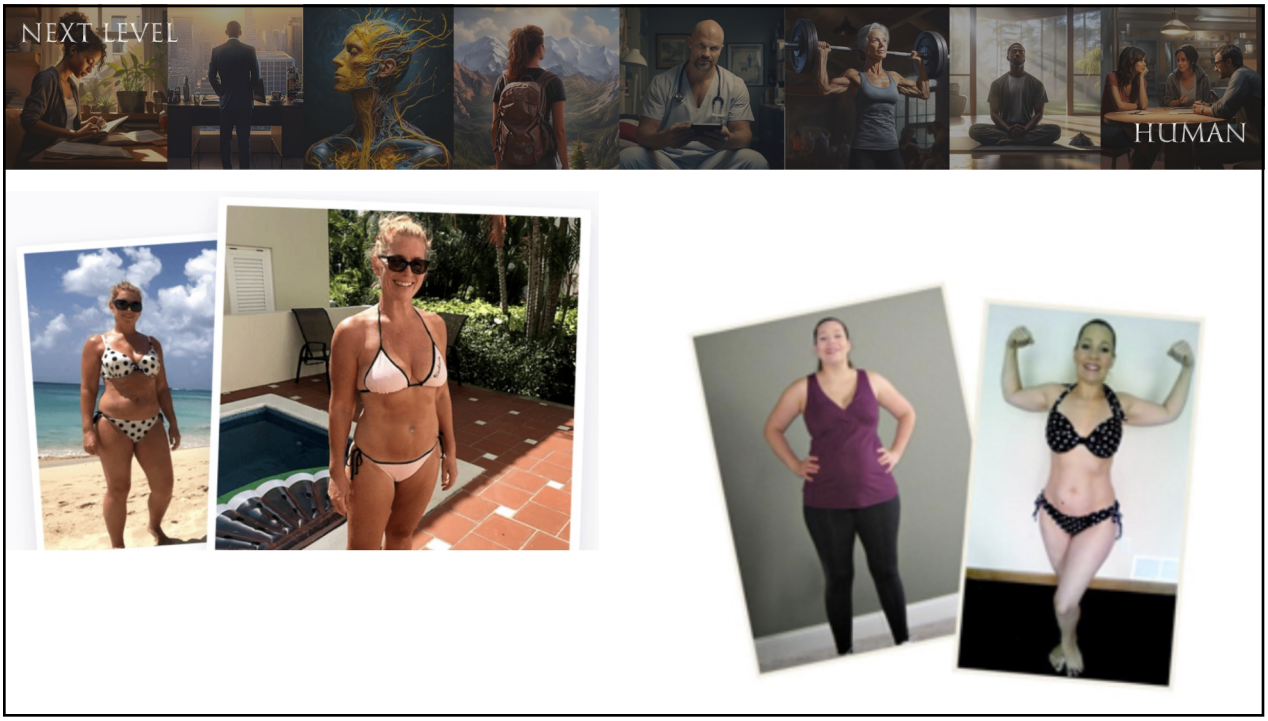


“As a busy doctor, only 15 minutes 3x a week has completely changed my body*

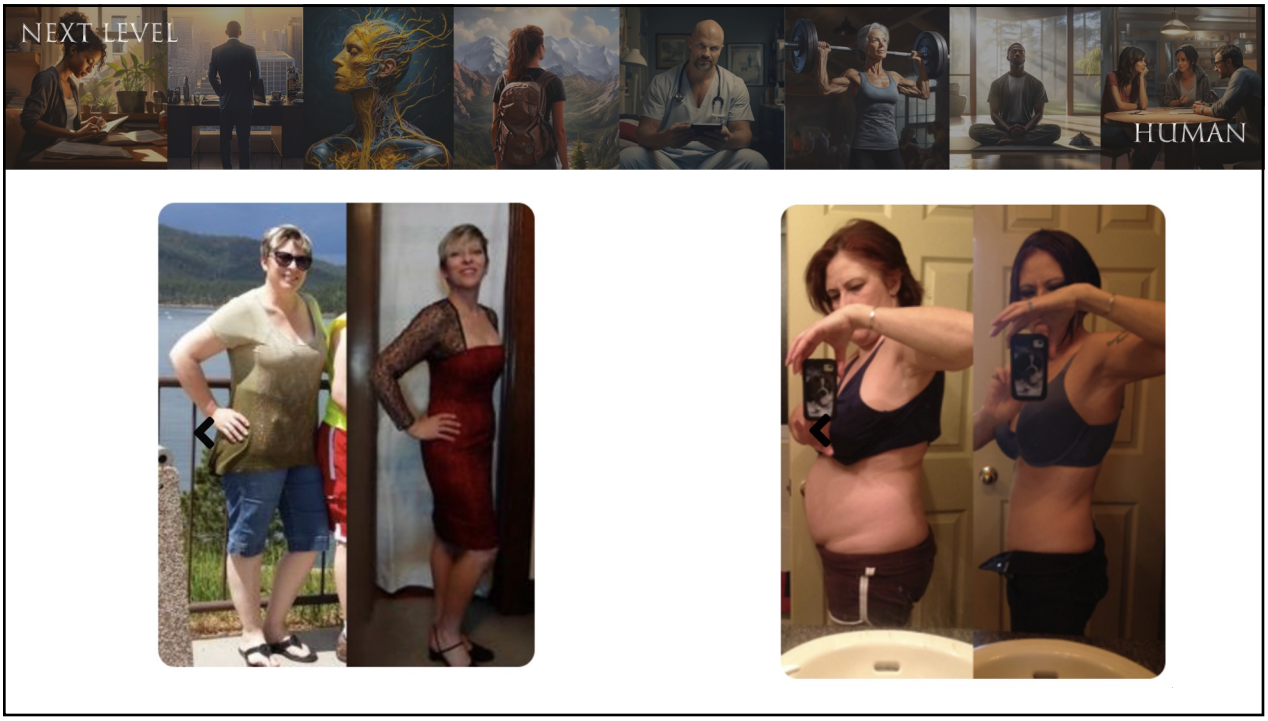
Dr. Jade’s program was the ONLY solution that helped me tone up, shrink hanging skin, and fix my hormones. Losing 100lbs… I totally changed my body and I keep dropping. This program worked for me. I LOVE It. I look and feel amazing.

Kristen McElveen ND, *Sunnyside, NY*

6



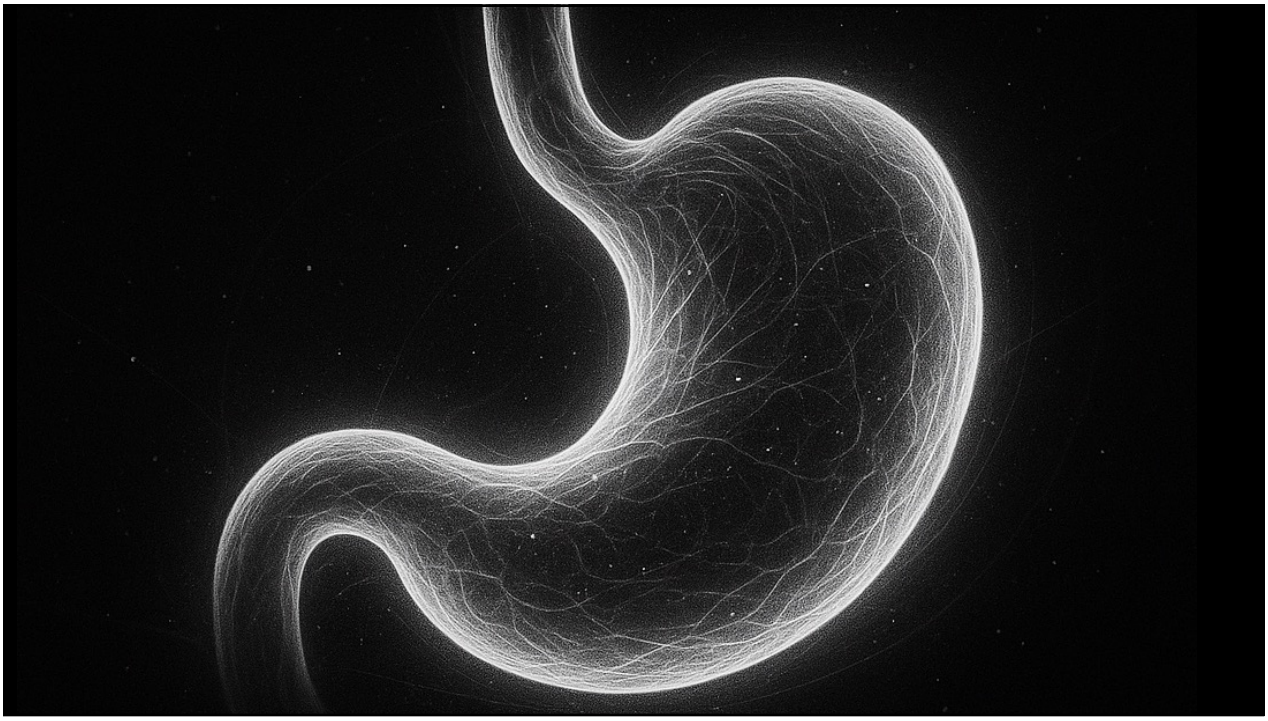
7



8


JADE TETA, ND, CSCS
KEONI TETA, ND, LAc, CSCS
The Metabolic Effect Diet
EAT MORE, WORK OUT LESS, AND ACTUALLY LOSE WEIGHT WHILE YOU REST
METABOLIC AFTERSHOCK
15 Minutes of Sweat, 48 Hours of Burn
• Only 15 Minutes a Day
• Just 3 Days a Week
• No Weights Needed
• Burns Fat, Shapes Muscle
Jade Teta, ND, CSCS
THE METABOLIC SECRET TO TARGET STUBBORN FAT AND FIX YOUR PROBLEM AREAS
LOSE WEIGHT HERE
DR. JADE TETA, ND, & DR. KEONI TETA, ND
ONLY 15 MINUTES 3 TIMES A WEEK
METABOLIC PRIME
TORCHES FAT CALORIES, SCULPTS LEAN MUSCLE IN RECORD TIME
✓ Each Move is Only 45 Seconds
✓ 15 Minutes of Sweat, 48 Hours of Fat Burn
✓ No Gym Needed
✓ Modifications for Beginners
✓ Advanced Options for "Hard Core" Users
JADE TETA, ND, CSCS
METABOLIC RENEWAL ROADMAP
DR. JADE TETA
HUMAN 365
Daily Meditations To Become A Next Level Human
NEXT LEVEL HUMAN
TRIBE
How To Find, Connect And Keep The People Who Matter The Most
• Conquer Social Anxiety
• Build A Social Team
• Connect With Your People
• Become A Next-Level Friend
Jade Teta | Danny Coleman
STOP BEING A DIETER. BECOME A METABOLIC DETECTIVE.
NEXT LEVEL METABOLISM
THE ART & SCIENCE of METABOLIC MASTERY
HEAL METABOLIC DAMAGE
BALANCE HORMONES
AMPLIFY FAT LOSS
DR. JADE TETA
NEXT LEVEL HUMAN
YOU COMPLETE ME
GROW
The Next Level Human Philosophy of Love Sex and Romantic Connection
• REPROGRAM NEEDINESS
• HEAL HEARTBREAK
• ELEVATE SEXUAL CONNECTION
• BECOME THE HUMAN YOU WANT TO LOVE
Jade Teta | Emily Gough
NEXT LEVEL HUMAN
THE ANTI-DOTE TO ASSHOLE
Radical Responsibility, The Religion Of Kindness And The Path To Becoming A Next Level Human
• Transform Your Trauma
• Release The Victim
• Create Your Purpose
• Discover Fulfillment And Joy
Jade Teta

9



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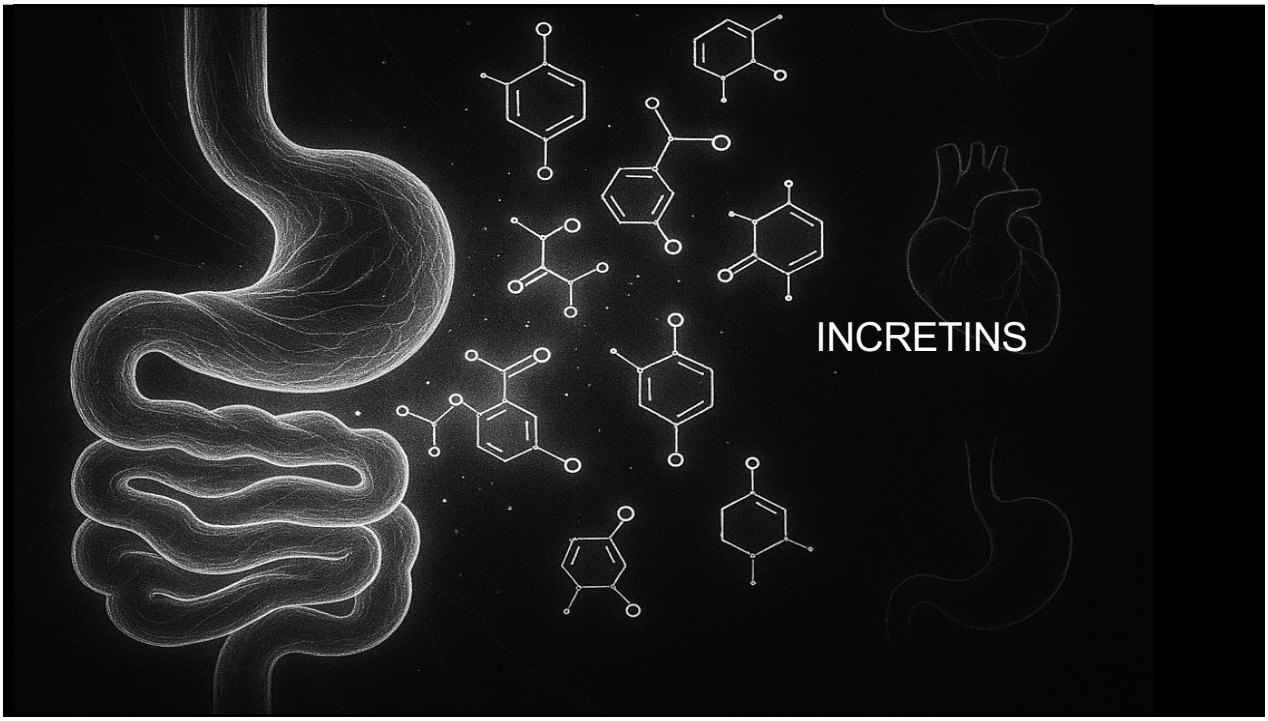
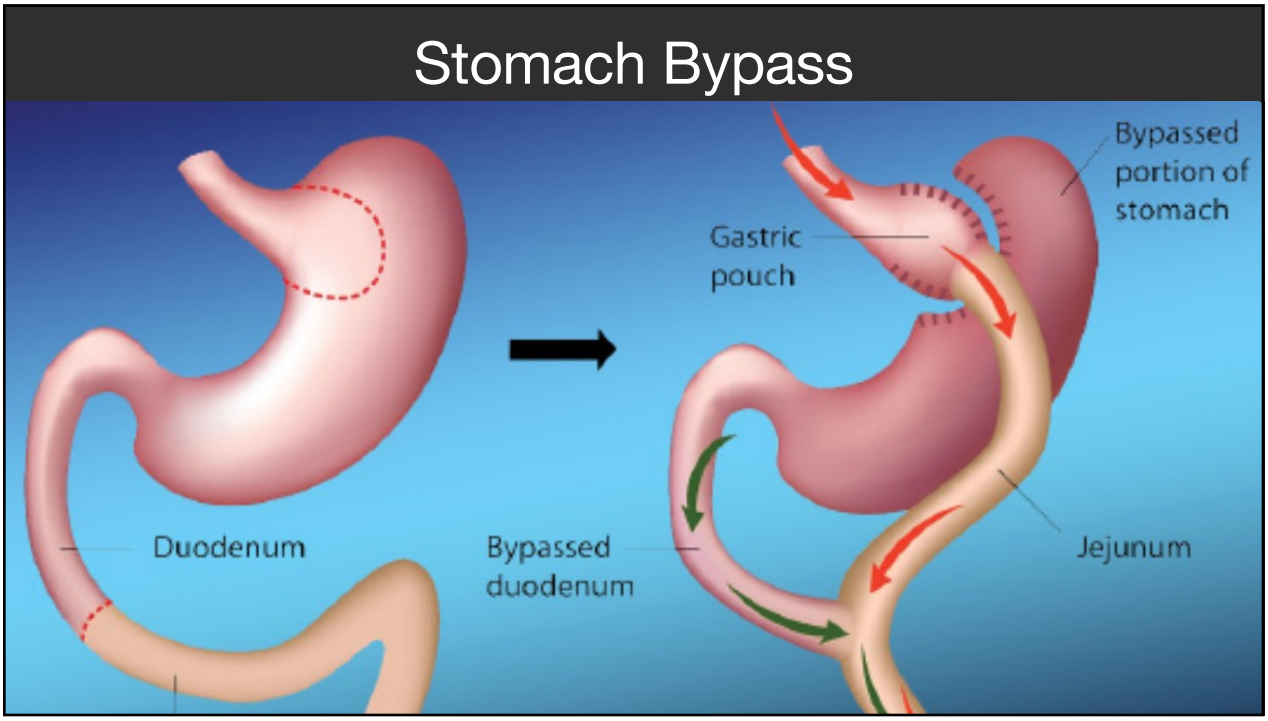

INCRETINS

11

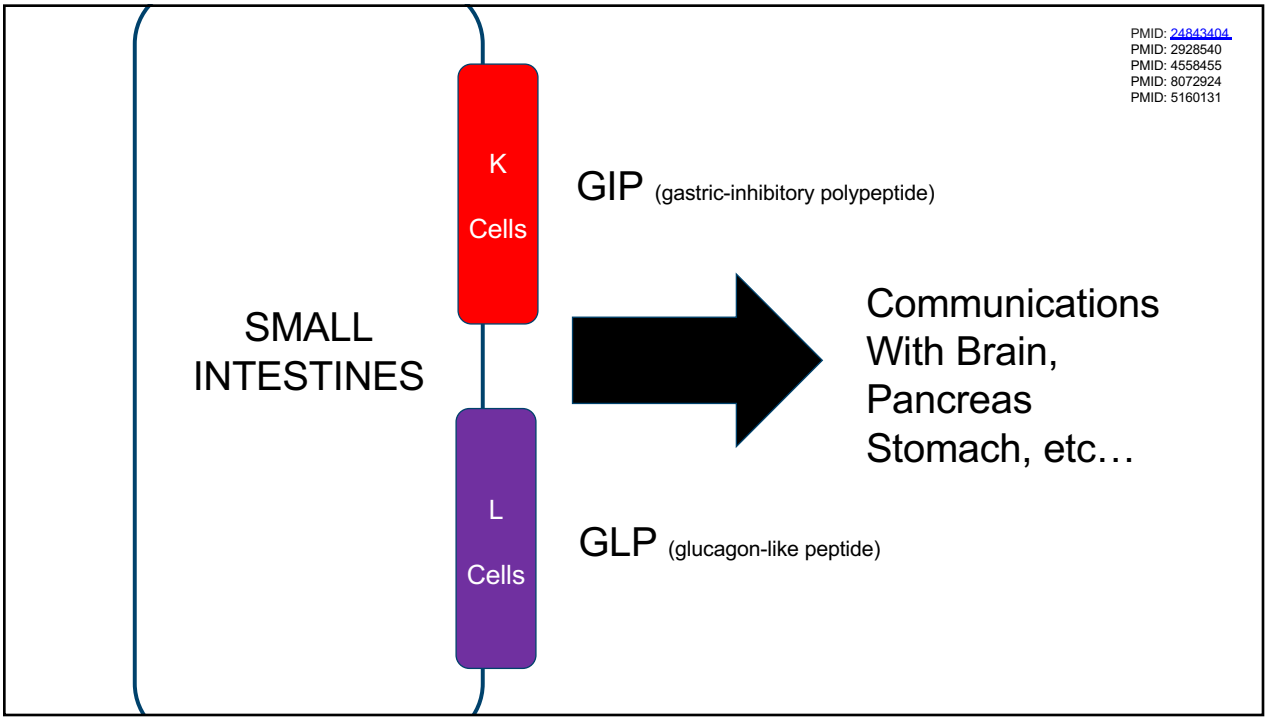

Stomach Bypass
Bypassed portion of stomach
Gastric pouch
Duodenum
Bypassed duodenum
Jejunum

12

The History

- Named after Swiss surgeon Cesar Roux
- First person to do this type of intestinal connection
- Literally= Roux's Y- Connection
- Meant to reduce amount people could eat
- Created unexpected effects --> diabetes resolving before weight loss!!

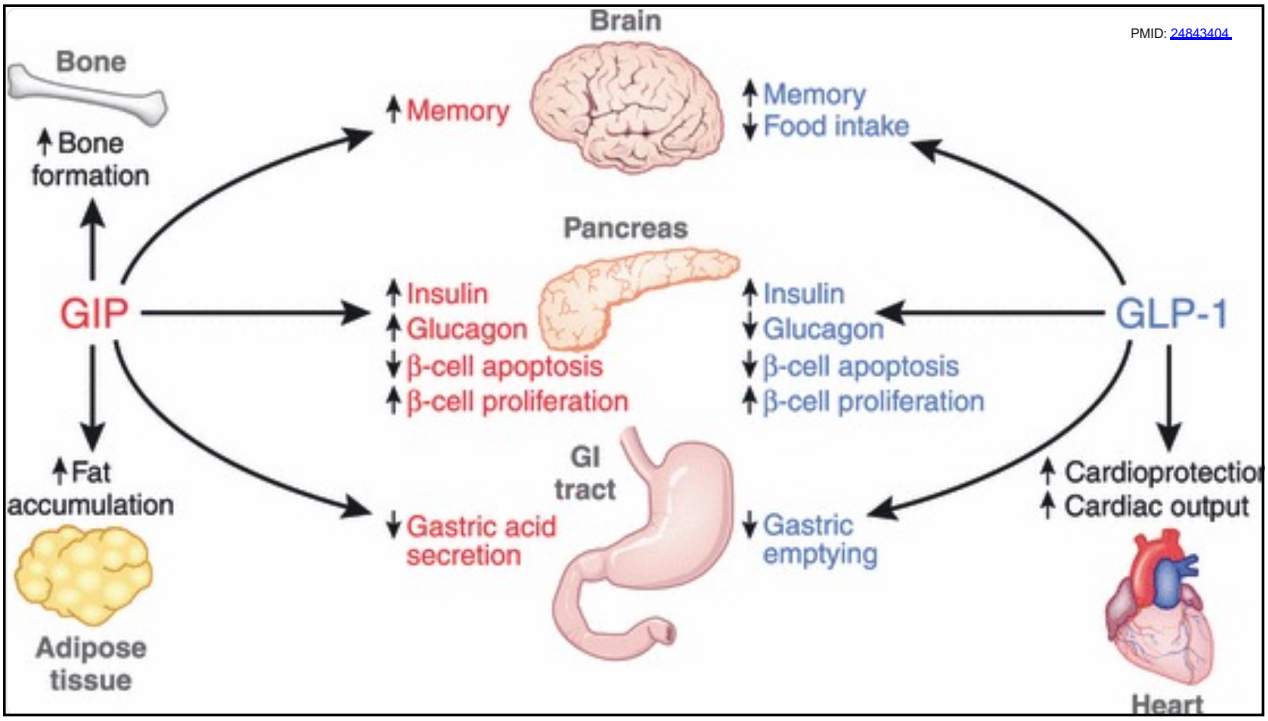
13



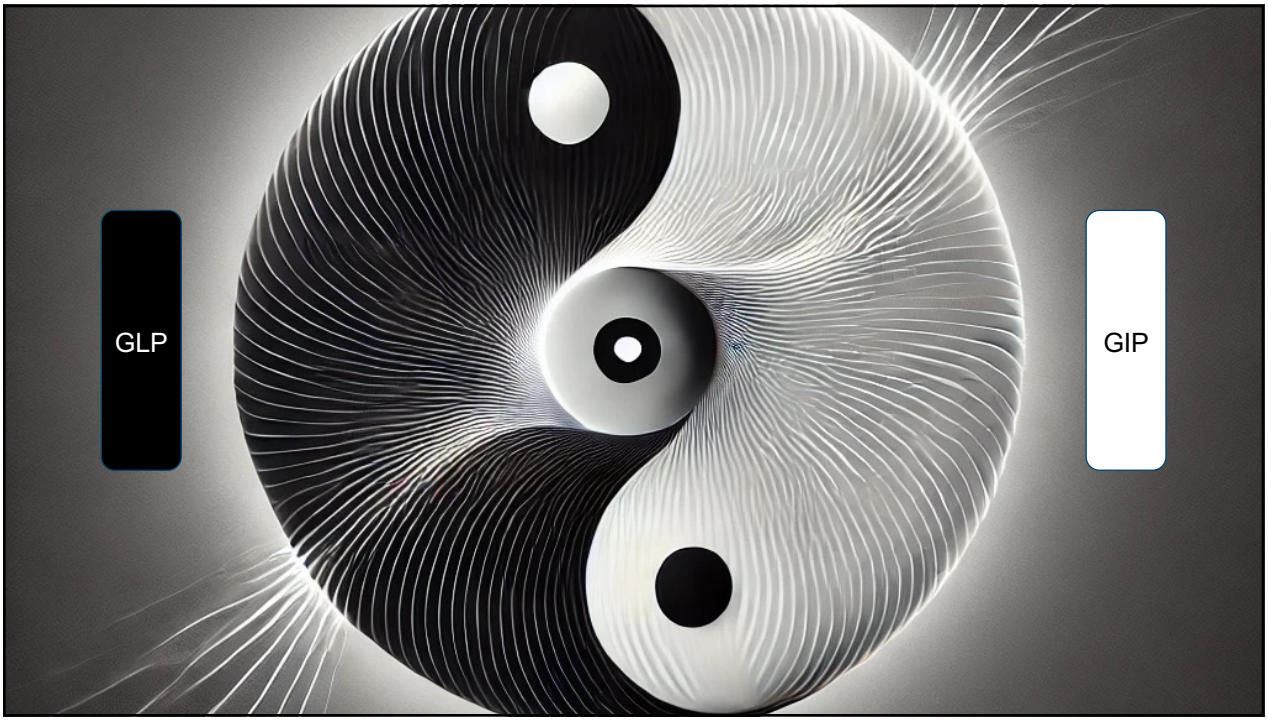
14


GLP-1 homolog. Inspired the drug class
(Exanatide)
Modern drugs are different…
Human GLP-1 altered for longer half-life (human GLP-1= only 1-2 min half life)

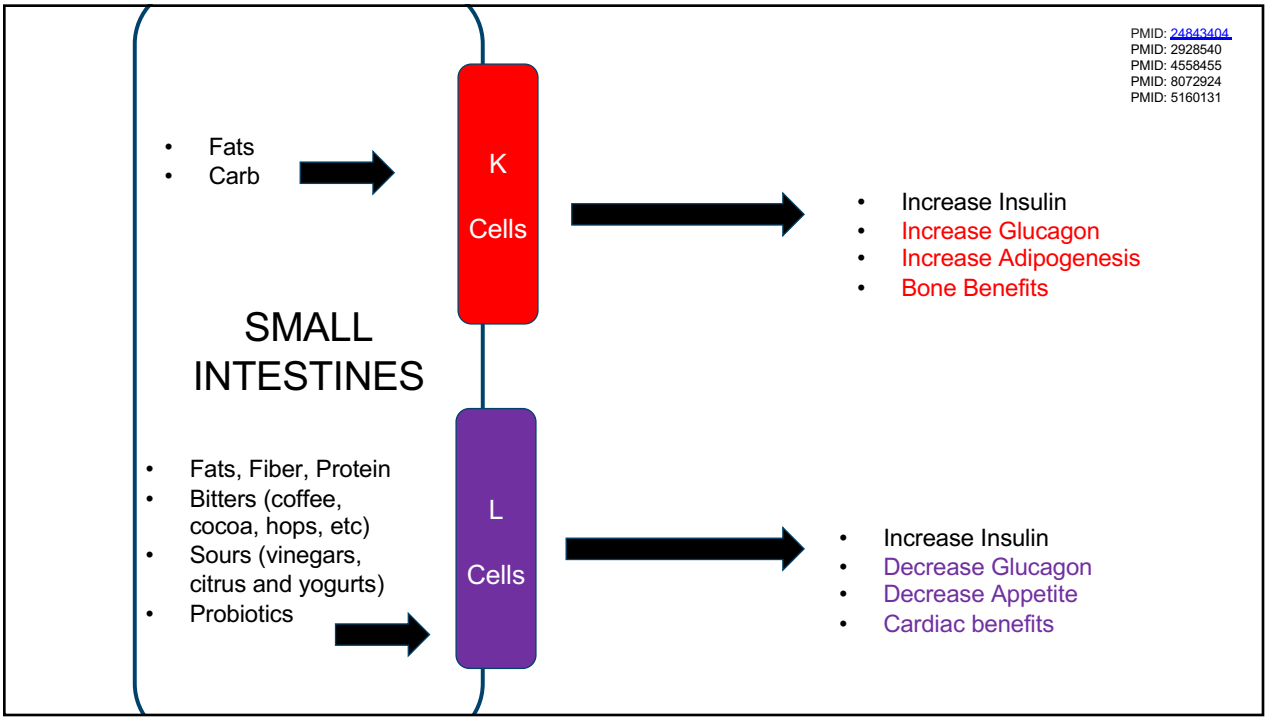
15


PMID: 24843404
Brain
Bone
↑Bone formation
↑Memory
↑Memory
↓Food intake
Pancreas
GIP
↑Insulin
↑Glucagon
↓β-cell apoptosis
↑β-cell proliferation
↑Insulin
↓Glucagon
↓β-cell apoptosis
↑β-cell proliferation
GLP-1
↑Fat accumulation
GI tract
↓Gastric acid secretion
↓Gastric emptying
↑Cardioprotectio
↑Cardiac output
Adipose tissue
Heart

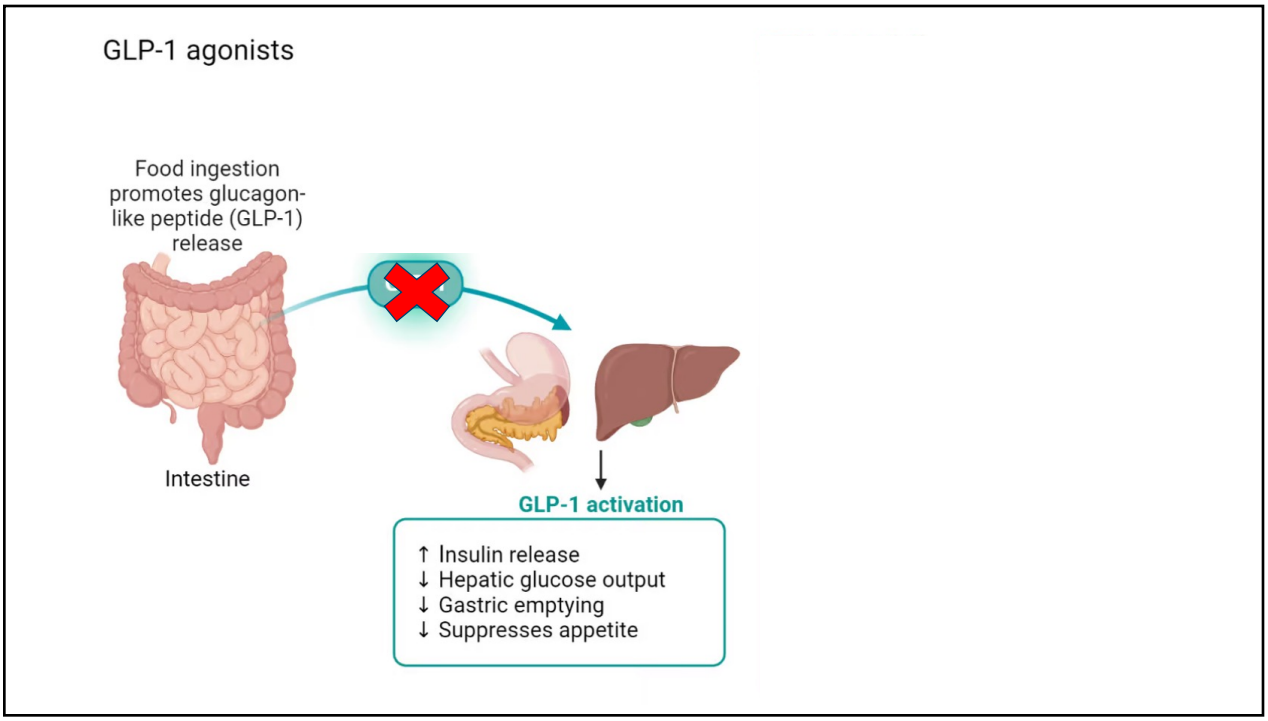
16


GLP
GIP

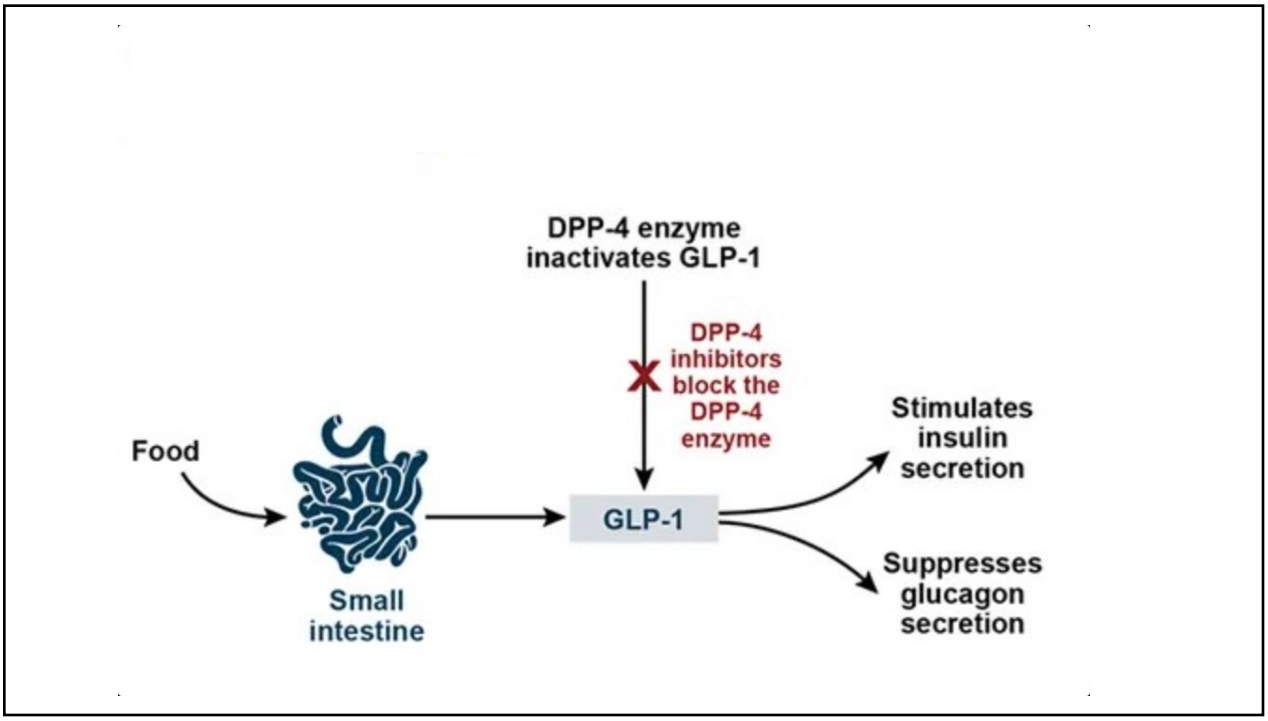
17


PMID: 24843404
PMID: 2928540
PMID: 4558455
PMID: 8072924
PMID: 5160131
Fats
Carb
K Cells
Increase Insulin
Increase Glucagon
Increase Adipogenesis
Bone Benefits
SMALL INTESTINES
Fats, Fiber, Protein
Bitters (coffee, cocoa, hops, etc)
Sours (vinegars, citrus and yogurts)
Probiotics
L Cells
Increase Insulin
Decrease Glucagon
Decrease Appetite
Cardiac benefits

18


GLP-1 agonists
Food ingestion promotes glucagon-like peptide (GLP-1) release
Intestine
GLP-1 activation
↑ Insulin release
↓ Hepatic glucose output
↓ Gastric emptying
↓ Suppresses appetite

19


DPP-4 enzyme inactivates GLP-1
DPP-4 inhibitors block the DPP-4 enzyme
Food
Small intestine
GLP-1
Stimulates insulin secretion
Suppresses glucagon secretion

20

Some Vocabulary & Nomenclature:

Drug Class	Drug Name	Brand Name
GLP-1 Agonist (RA)	Semaglutide	Ozempic
Dual Agonist	Tirzepatide	Mounjaro/Zepbound
Triple Agonist	Retatrutide	N/A
DDP-4 Inhibitor	Sitagliptin	Januvia

21

Drug Class	Mechanism/Targets	Generic Name(s)	Brand Name(s)	Key Features/Notes
GLP-1 Receptor Agonists (short-acting)	Activates GLP-1 receptor; enhances insulin; slows gastric emptying	Exenatide, Lixisenatide	Byetta, Bydureon, Lyxumia	Exenatide from exendin-4; Lixisenatide is a modified synthetic analog
GLP-1 Receptor Agonists (long-acting)	Activates GLP-1 receptor; extended via fatty-acid or protein fusion	Liraglutide, Semaglutide, Dulaglutide, Albiglutide	Victoza, Ozempic, Wegovy, Trulicity, Tanzeum (withdrawn)	Human GLP-1 analogs; longer half-life for once-daily/weekly dosing
Dual GLP-1/GIP Agonists	Simultaneous GLP-1 and GIP receptor activation for additive/synergistic incretin effect	Tirzepatide (approved), Maritide (pipeline)	Mounjaro (tirzepatide)	Enhances both insulin and satiety; superior metabolic outcomes
Triple GLP-1/GIP/GCGR (Oxyntomodulin-mimetics, trials)	GLP-1, GIP, and glucagon/oxyntomodulin receptor activation (triple incretin action)	Retatrutide, Pemvidutide, SAR441255 (trials)	Retatrutide, Pemvidutide	Show best-in-class weight/fat loss; in clinical development
DPP-4 Inhibitors	Inhibits DPP-4 enzyme—protects native GLP-1 and GIP from degradation	Sitagliptin, Saxagliptin, Linagliptin, Alogliptin,	Januvia, Onglyza, Tradjenta, Nesina, Galvus	Oral, well-tolerated; less potent for weight loss than injectables

**G-protein–coupled receptor (GPCR) or Glucagon receptor (GCGR) found mainly in the liver, adipose tissue, heart, kidney, and the brain

22

Drug (GLP-1 Agonist)	Route	Approved Indication	Typical A1c Reduction	Average Weight Loss	Notes (CV/Compliance/Other)
Rybelsus (semaglutide)	Oral Daily	Type 2 diabetes (pending obesity)	0.6–1.4%	3–5 kg avg (up to ~11–15%*)	First and only oral GLP-1; CV benefit; easier for needle-averse ema.europa +3
Ozempic (semaglutide)	Weekly Injection	Type 2 diabetes	1.3–1.7%	6–9 kg avg (up to 17%*)	Superior average efficacy; proven CV benefit; self-injection weekly pmc.ncbi.nlm.nih +2
Wegovy (semaglutide)	Weekly Injection	Chronic weight management	1.5–1.8% (if diabetic)	12–15% body weight	Highest mean weight loss among GLP-1 drugs; weekly injectable; approved for obesity bmj +1
Other injectables (Trulicity, Victoza, Byetta)	Daily/weekly Injection	T2D ± weight	0.8–1.5%	4–6 kg avg	Generally lower efficacy than semaglutide; adherence varies by injection type pmc.ncbi.nlm.nih +1

23

DOSING MATTERS FOR WEIGHT LOSS

Weight loss may not occur at all at lower doses

Drug/Agent	Start Dose	Therapeutic	Low Dose	Weight Loss
Exenatide	5 mcg BID (Byetta)	10 mcg BID (Byetta)	2.5 mcg BID or less	After 8-12 weeks
Liraglutide (Victoza/Wegovy)	0.6 mg daily	2.4 mg weekly (Wegovy)	0.3-0.6 mg	After 8-12 weeks
Semaglutide (Ozempic/Wegovy/Rybelsus)	0.25 mg weekly (Ozempic)	2 mg weekly (Ozempic), 2.4 mg weekly (Wegovy)	0.1-0.25 mg weekly	After 4-8 weeks (Wegovy), plateau at 16 weeks+
Dulaglutide (Trulicity)	0.75 mg weekly	4.5 mg weekly	0.25-0.5 mg weekly	After 8-12 weeks
Tirzepatide (Mounjaro)	2.5 mg weekly	10-15 mg weekly	1.5-2.5 mg weekly	After 4-8 weeks, plateau by 14-16 weeks
DPP-4 Inhibitors	Sitagliptin 100 mg daily	100 mg daily	50 mg or less	Minimal; not significant for weight loss

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Average Weight Loss & Regain

Drug/Class	Avg. Weight Loss	Typical Timeline	% Body Weight Lost	Recidivism (Weight Regain)	Onset/Timing of Regain
Semaglutide (Ozempic/Wegovy)	30–50 lbs (15–22 kg)	9–15 months	12–18%	Regains ~66% within 1 yr of stopping	Begins 2–5 months post-discontinuation
Liraglutide (Saxenda/Victoza)	15–25 lbs (7–12 kg)	6–12 months	6–10%	Regains ~40–60% in 6–12 months	Begins 2–4 months post-discontinuation
Tirzepatide (Mounjaro)	35–60 lbs (16–27 kg)	12–18 months	16–21%	Regain rates mirror semaglutide but longer trials pending	Onset after 2–5 months off drug
Rybelsus (oral semaglutide)	10–22 lbs (5–10 kg)	6–12 months	5–10%	Regains ~50–60% in 1 yr	Data limited; seen by 4–6 months off drug
General GLP-1 class (real-world)	5–10 lbs (2–5 kg) loss at 8–12 weeks, 15–20% at 72 weeks in best responders	2–15 months	5–20%	Most see regain within 1 year after stopping; up to two-thirds in meta-analysis	Usually begins within 2–5 months post-medication

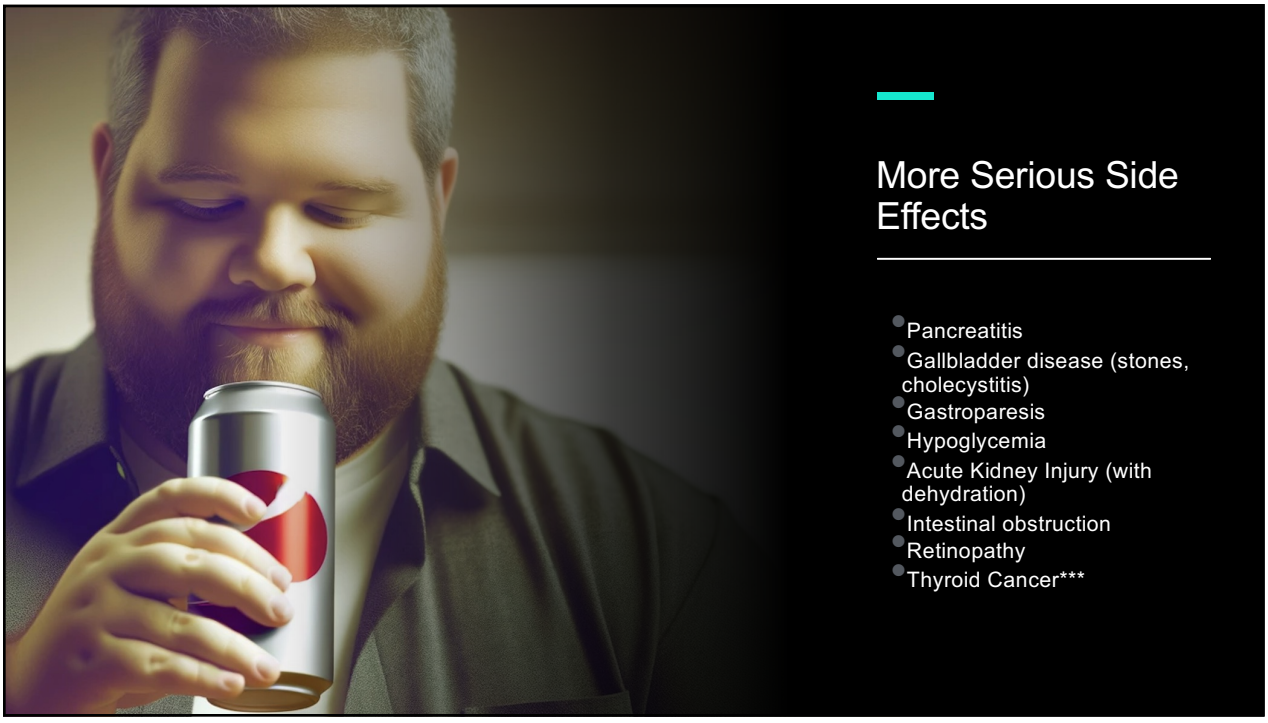
25

Side Effects?

What are the common side effects?:

- Nausea (most common)
- Vomiting
- Diarrhea
- Constipation
- Abdominal pain, bloating, heartburn
- Excessive appetite suppression
- Headache
- Fatigue
- Dizziness
- Injection site irritation

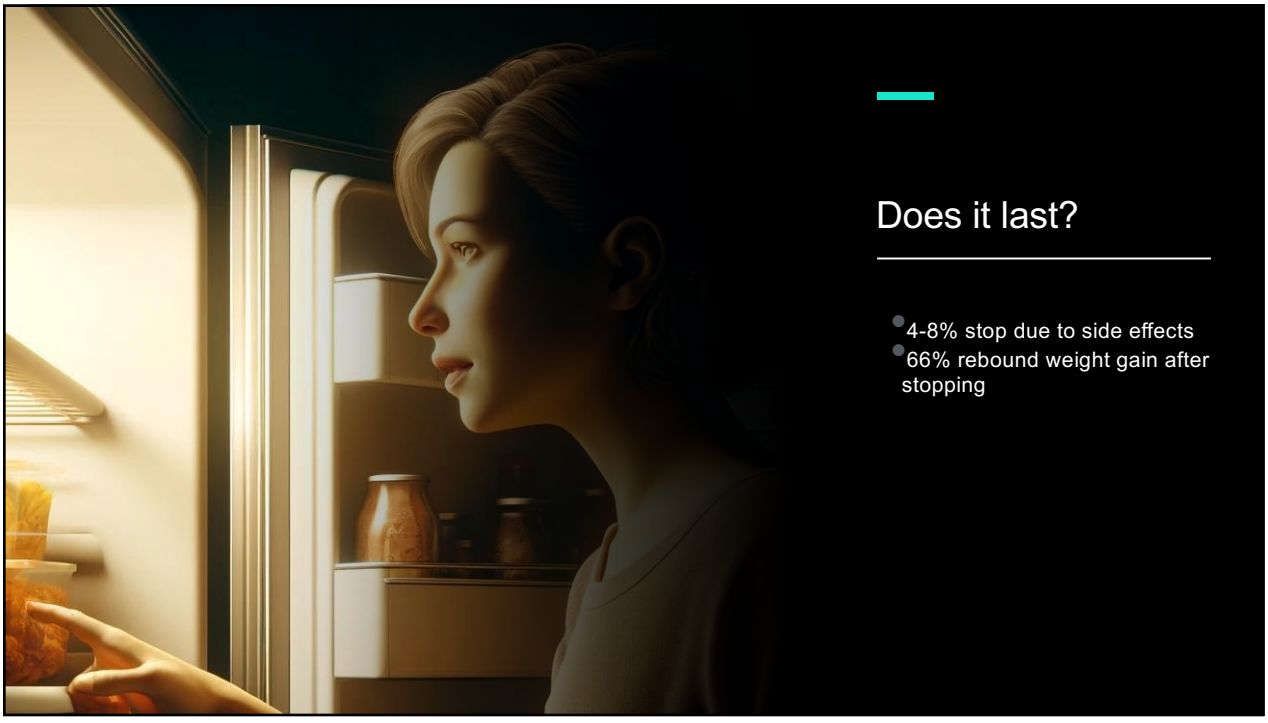
26



More Serious Side Effects

- Pancreatitis
- Gallbladder disease (stones, cholecystitis)
- Gastroparesis
- Hypoglycemia
- Acute Kidney Injury (with dehydration)
- Intestinal obstruction
- Retinopathy
- Thyroid Cancer***

27



Does it last?

- 4-8% stop due to side effects
- 66% rebound weight gain after stopping

28

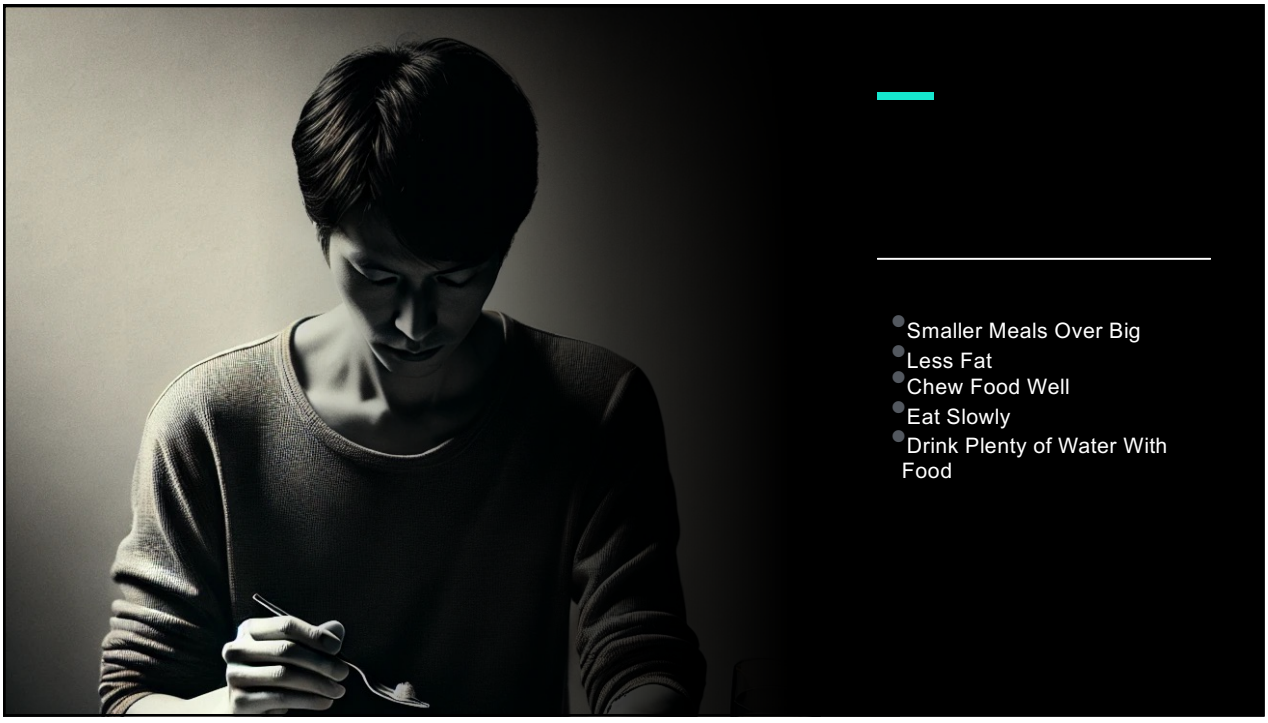
Lifestyle Still Matters

- Bone loss?
- Muscle loss?
- Walking
- Weight lifting

29

- For Nausea?
- Peel, Cut, Boil
- Drink as tea
- Real ginger candy

30


Smaller Meals Over Big
Less Fat
Chew Food Well
Eat Slowly
Drink Plenty of Water With Food

31


Digestive Enzyme Could Make Sense
Digestive Enzymes
DIGESTIVE ENZYME
DIETARY SUPPLEMENT

32

Microdosing?

33

Microdosing?

.25 to 2mg Semaglutide

.1 to .25mg Semaglutide

34

Think of it as a “metabolic brace”

35

Mental Emotional Effect?

CAN IT RESET & SUPPRESSES THE PHYSIOLOGICAL AND PSYCHOLOGICAL URGES TO EAT?

36

Summary Table: Key Brain Regions Influenced by GLP-1R Agonists in Addiction

Region	Role	Addictive Impact
Ventral tegmental area (VTA)	Dopamine "reward" signaling	Suppresses drug reinforcement, craving
Nucleus accumbens (NAc)	Motivation/reward/focus	Reduces drug and food “wanting”
Amygdala	Emotion, associative memory	Modulates stress, relapse, cue reactivity
Habenula	Aversion, negative valence	Reduces negative affect/cue-induced craving
Prefrontal cortex	Executive function, goal setting	Helps inhibit craving/impulsivity
Hypothalamus/Brainstem	Satiety, interoception	Links metabolic and reward signals

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JAMA Psychiatry

Original Investigation

Once-Weekly Semaglutide in Adults With Alcohol Use Disorder

A Randomized Clinical Trial

Christian S. Hendershot, PhD[1,2,3]; Michael P. Bremmer, MA[3,4]; Michael B. Paladino, BS[3,4] ; et al

Author Affiliations | Article Information

RELATED ARTICLES FIGURES SUPPLEMENTAL CONTENT

Cite Permissions Metrics Comments

JAMA Psychiatry
Published Online: February 12, 2025
2025;82;(4):395-405.
doi:10.1001/jamapsychiatry.2024.4789

Key Points

Question Does the glucagon-like peptide 1 (GLP-1) receptor agonist semaglutide reduce alcohol consumption and craving in adults with alcohol use disorder (AUD)?

Findings In this randomized clinical trial, relative to placebo, low-dose semaglutide reduced the amount of alcohol consumed during a posttreatment laboratory self-administration procedure. Over 9 weeks of treatment, semaglutide led to reductions in some but not all measures

38

EMOTIONAL SOOTHING?

SOME USE FOOD TO EMOTIONALLY SOOTHE

IT'S LIKE ADDICTION!

39

FOOD ADDICTION?

THE HEDONIC HIJACK IS VERY REAL!!

40

PHYSIOLOGICAL URGES?

WE NEED SOMETHING TO CONTROL PHYSIOLOGICAL URGES

41

MINDFULNESS

Perhaps combining this with GLP-1 could make a big difference?

42

43

What To With Diet?

Soups

Salads

Scrambles

Skillets

Stir Frys

Smoothies

Shakes (protein)

Sours

Spices

Smidgen Of Fav

44

45

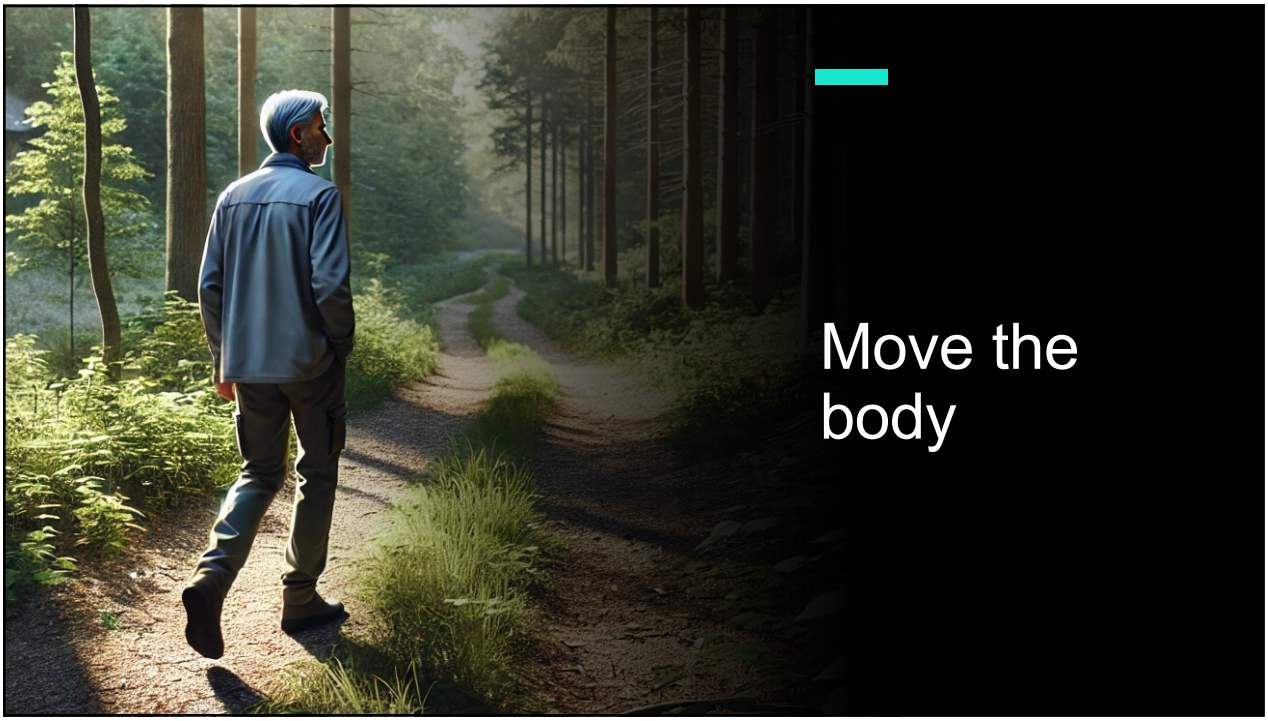
46


MULTIVITAMINS
FISH OIL
PROTEIN
SHAKE
PROTEIN SHAKE
Multi-vitamin
Protein
Fish Oil

47


Move
&
Sweat

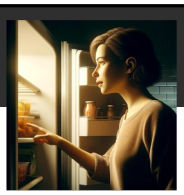
48



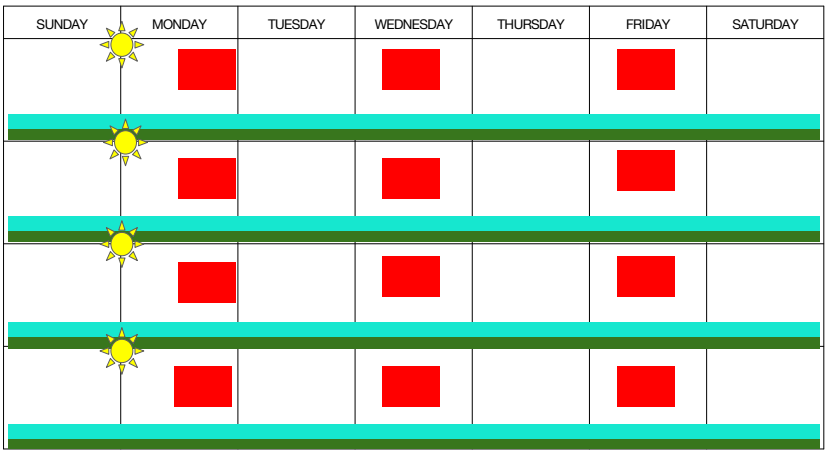
49

50

What It Looks Like

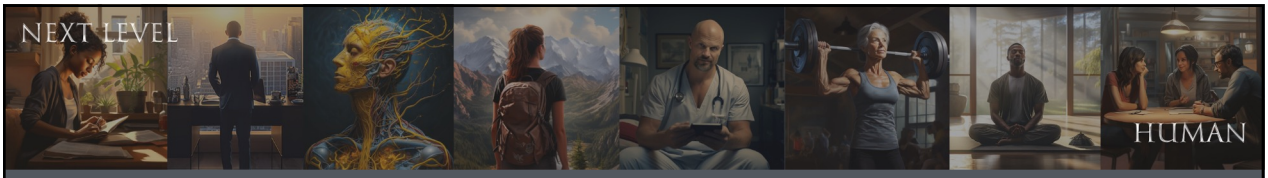


GLP-1



Workouts
Diet (high fiber, high protein)
Walking

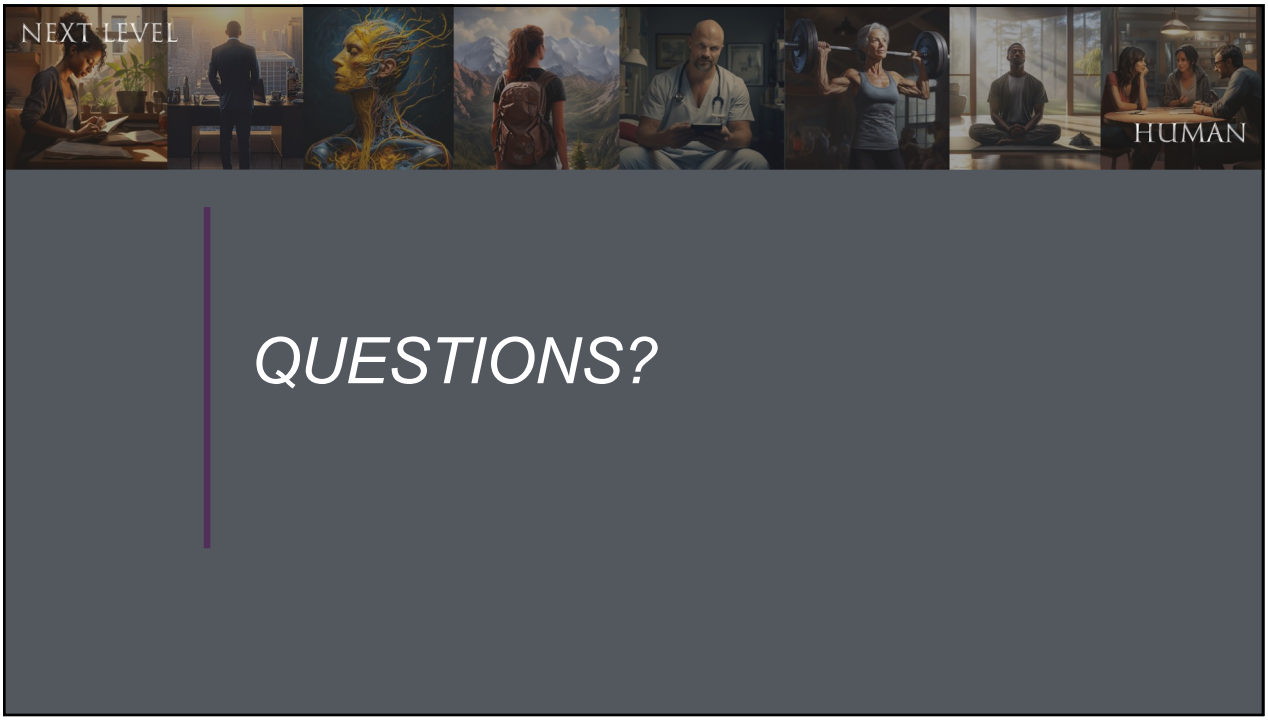
51



How To Come Off?

52

53



QUESTIONS?

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