SWORDFISH
RESEARCH GROUP
PEPTIDE RESEARCH • REGENERATIVE WELLNESS • BIOMARKER ANALYSIS

BIOMARKER ANALYSIS REPORT

Your Blood, Decoded.

An unbiased, holistic interpretation of your blood work — rooted in modern functional health science and ancestral nutrition.

SUBJECT FILE

Johnathon Doebert

AGE	SEX	COLLECTED	SPECIMEN	ISSUED
40	Male	03/15/2026	SAMPLE-0001	04/10/2026

BEFORE THE DATA — A LETTER TO YOU

JOHNATHON, HERE'S WHAT WE SEE.

Johnathon,

I want to start by saying: nothing in your labs is an emergency. No red flags, no panic buttons. But there is a story your blood is telling, and it's worth listening to before it gets louder.

You're 40. You've probably noticed the body doesn't snap back quite like it used to. Recovery takes longer. The middle adds an inch. Mornings feel heavier. Most men your age write this off as *(just getting older)* and let it ride. Your labs say otherwise — they say this is reversible, and the patterns we see are common enough that we know exactly which levers to pull.

Five things are flagged as Priority 2: your insulin is creeping up, your LDL is borderline, your triglycerides are running hot, your testosterone is lower than it should be for your age, and your vitamin D is genuinely deficient. Seven more are in the *(watch)* zone — not flagged, not yet, but trending. Four markers are flat-out excellent.

Here's the thing that took us a minute to spot: all five of those Priority 2 findings probably trace back to the same root. When your insulin runs high, your liver makes more cholesterol. When your liver runs busy, it pulls SHBG up, which mops up free testosterone. When testosterone drops, recovery, muscle, and morning energy all suffer. It's a cascade. The good news? Pull the lever at the root and the rest follows.

Everything that follows — the deep dives, the food protocols, the supplement stack, the 90-day plan — is built around that one insight. Bring this to your doctor. Ask the questions on page 38. Then come back in 90 days and we'll retest.

— Swordfish Research Group

THREE LENSES, ONE PICTURE

HOW WE READ YOUR BLOOD.

Most lab reports are written by labs, for doctors. They tell you whether your numbers are "in range" — meaning, statistically normal among everyone tested, healthy or not. **That's a low bar.** Swordfish reads your blood through three lenses your standard report doesn't use.

LENS 1

Regenerative Wellness

Your body is built to heal when given the right inputs. We focus on what to *add* — nutrients, movement, sleep, sunlight, real food — before what to subtract. Medication has its place; it's not the first place. The goal is a body that doesn't need to be managed.

LENS 2

Ancestral Nutrition

Humans evolved over hundreds of thousands of years eating nose-to-tail animal foods alongside seasonal plants. The mismatch between that and today's industrial food environment — seed oils, refined carbohydrates, ultraprocessed everything — drives most of what we see in modern labs. Our default: food your great-grandparents would recognize.

LENS 3

Modern Functional Science

We use peer-reviewed research — but we compare your values against **optimal** ranges drawn from longitudinal outcomes, not just the lab's reference range (which is "average among everyone tested"). When something needs a doctor, we say so clearly. We are your unbiased second opinion, not a replacement for medical care.

> *Food first. Science always. Medicine when needed.*

Every finding in the rest of this report is interpreted through these three lenses. Where they agree, our recommendation is direct. Where they disagree, we'll tell you that too.

THE 60-SECOND VERSION

WHAT YOUR BLOOD IS TELLING YOU.

A comprehensive panel of **18 biomarkers**. Most of your foundational systems — liver, kidneys, blood cells, electrolytes — are doing their job well. But there is **one clear story** running through your results, and it explains nearly every finding that's out of range.

0	5	7	4
HIGH PRIORITY FINDINGS	MODERATE FINDINGS	WATCH ITEMS	IN OPTIMAL RANGE

THE ROOT CAUSE

One pattern. Five findings. A clear path forward.

Your labs show what we call an **insulin-driven hormone cascade** — early metabolic stress quietly pushing your cholesterol up, your testosterone down, and your inflammation marker on a slow climb. Each of these would matter a little. Together they matter a lot. The protocol on the back half of this report targets the **root cause**, not the individual numbers.

No critical flags.

Nothing in your panel requires emergency attention. Every finding can be addressed through the protocol that follows. Bring this report to your next physical for context.

FINDINGS THAT NEED ATTENTION

FINDINGS AT A GLANCE.

MARKER / CATEGORY	YOUR VALUE	OPTIMAL RANGE	PRIORITY
Hemoglobin A1c Metabolic — 3-month avg blood sugar	5.6%	< 5.4%	WATCH
Fasting Glucose Metabolic — fasting blood sugar	98 mg/dL	70–90 mg/dL	WATCH
Fasting Insulin Metabolic — fasting insulin	9.4 µIU/mL	2–5 µIU/mL	P2
LDL Cholesterol Cardiovascular — LDL particles	142 mg/dL	< 100 mg/dL	P2
HDL Cholesterol Cardiovascular — protective cholesterol	42 mg/dL	> 50 mg/dL	WATCH
Triglycerides Cardiovascular — circulating fats	178 mg/dL	< 100 mg/dL	P2
Total Cholesterol Cardiovascular — total cholesterol	218 mg/dL	< 200 mg/dL	WATCH
Total Testosterone Hormones — total T	412 ng/dL	600–900 ng/dL	P2
Free Testosterone Hormones — bioavailable T	68 pg/mL	100–200 pg/mL	P2
SHBG Hormones — sex hormone binding globulin	42 nmol/L	20–40 nmol/L	WATCH
Vitamin D, Total Vitamins — Total 25(OH)D	22 ng/mL	50–80 ng/mL	P2
Vitamin D3 Vitamins — D3 component (sun/animal)	20 ng/mL	40–70 ng/mL	P2
hs-CRP Inflammation — high-sensitivity CRP	2.4 mg/L	< 1.0 mg/L	WATCH

Priority 1 (P1) markers require medical follow-up. P2/P3 respond well to diet and lifestyle changes outlined later. Your optimal markers continue on the next page.

YOUR BODY'S WINS

WHAT'S IN OPTIMAL RANGE.

MARKER / CATEGORY	YOUR VALUE	OPTIMAL RANGE	PRIORITY
Vitamin D2 Vitamins — D2 component (plant/fortified)	**2 ng/mL**	< 5 ng/mL	OPTIMAL
TSH Thyroid — thyroid-stimulating hormone	**2.1 mIU/L**	0.5–2.0 mIU/L	OPTIMAL
Ferritin Iron — stored iron	**148 ng/mL**	50–200 ng/mL	OPTIMAL
Vitamin B12 Vitamins — methylation cofactor	**612 pg/mL**	500–900 pg/mL	OPTIMAL
ALT (liver) Liver — alanine transaminase	**22 U/L**	< 30 U/L	OPTIMAL

HOW ONE PROBLEM BECOMES MANY

CONNECTING THE DOTS.

Looking at five different numbers, you'd think you have five different problems. You don't. You have one — and it's printing across multiple systems.

YOUR CASCADE

Insulin-driven hormone disruption → everything else.

ROOT CAUSE

Elevated Fasting Insulin (9.4)

Your fasting insulin is roughly 2× the optimal range. This is *(metabolic stress)* — your body needs more insulin to do the same blood-sugar job it used to do effortlessly. It's the upstream cause.

→

EFFECT 1

Liver Makes More Cholesterol

High insulin signals the liver to produce more LDL and triglycerides. Your LDL of 142 and triglycerides of 178 are the downstream result, not the disease itself.

→

EFFECT 2

SHBG Mops Up Free T

A liver under metabolic load pushes SHBG higher. Your SHBG of 42 binds up testosterone, dropping free T to 68 pg/mL — well under optimal — which is why total T being only mildly low feels worse than the number suggests.

COMPOUNDING

Vit D Deficiency Locks It In

Vitamin D at 22 ng/mL is a known cofactor for both insulin sensitivity AND testosterone production. Being deficient makes both upstream problems harder to fix. Address this first — it unlocks the rest of the protocol.

WHY THIS IS ACTUALLY GOOD NEWS.

You don't have five problems. You have one upstream problem expressing itself five ways. Fix the root, and the dominos fall in your favor.

Most men with this exact pattern see meaningful improvement in 60–90 days on a food-first protocol — sometimes faster if vitamin D repletion goes well. Retest at 90 days and we'll see the cascade reversing.

> *You're not falling apart. You're getting a heads-up. Take it.*

PRIORITY 1 — THE ENGINE ROOM

YOUR METABOLIC MARKERS.

These three numbers are the most important findings in your panel — and the most important to address. They are also the lever that, when pulled, will likely move almost every other flagged marker in the right direction.

P1 · MARKER 3 OF 3 — THE MOST TELLING

Fasting Insulin

9.4 µIU/mL

µIU/mL · Optimal ≤ 5
Acceptable ≤ 18.4

WHAT EVEN IS THIS?

Insulin is the hormone that tells your cells (open up, sugar's coming). When it works well, a little goes a long way. When cells stop listening — insulin resistance — your pancreas has to yell louder. Yours is yelling. Not screaming, but the volume is climbing.

• Optimal < 5 • Acceptable < 18.4 • Insulin-resistant > 18.4

YOU PROBABLY FEEL IT AS

Energy crashes 2–3 hours after meals. Stubborn middle weight. Cravings that don't make sense.

WHO'S AT THE PARTY

Liver, pancreas, muscle cells, adipose tissue — all in a tug-of-war over who gets the glucose.

WHAT MOST PEOPLE MISS

Standard labs miss insulin entirely — most doctors only check glucose. By the time glucose is high, insulin has been screaming for years.

REALITY CHECK

No, you don't have diabetes. Yes, this is the road to it if ignored for 5–10 years.

THE PLAIN ENGLISH VERSION

Your fasting insulin of 9.4 µIU/mL is about 2× the optimal range. Your A1c is on the watch line. Your HOMA-IR is 2.27 — early insulin resistance, fully reversible at this stage. This is the upstream cause of most other findings in this report.

FOODS THAT SUPPORT YOU

- **Protein + fat first** at every meal
- **Eliminate liquid calories** — juice, soda, fancy coffees
- **Grass-fed ribeye + eggs + butter** — classic insulin-sparing meal
- **Bone broth fasts** — minerals without insulin spike
- **Stop snacking** — let insulin drop between meals

REGENERATIVE SUPPLEMENTS

- **Grass-fed beef pancreas glandular** — direct pancreatic-tissue support
- **Grass-fed liver** — bioavailable chromium *(insulin cofactor)*
- **Berberine** 500mg 2–3x/day with doctor approval
- **Magnesium glycinate** 400-600mg/day
- **Inositol** (myo + d-chiro 40:1) — cellular insulin signaling

P1 · MARKER 3 OF 3 — THE MOST TELLING · CONTINUED

Fasting Insulin

9.4 µIU/mL

µIU/mL · Optimal ≤ 5
Acceptable ≤ 18.4

Food first. Start meals with protein and fat. Cut liquid carbs (juice, sweet coffees) cold turkey. Walk 10 minutes after dinner — it drops post-meal glucose 20–30%.

ANCESTRAL CONTEXT

Our ancestors got glucose in seasonal bursts — fruit in summer, honey on lucky days, root tubers occasionally. They never had a Tuesday afternoon Dr Pepper. Your insulin system was tuned for scarcity, not snack culture.

IF YOU ONLY DO ONE THING

Walk after every meal for 10 minutes. That's it. The single highest-ROI lifestyle change for insulin sensitivity, and it's free.

Talk to your doctor about: Ask about a CGM trial (continuous glucose monitor) for 2 weeks to see exactly which foods spike your glucose. Game-changer.

PRIORITY 2 — LIPIDS IN CONTEXT

YOUR CHOLESTEROL STORY.

Looking at LDL alone in a vacuum is the old way. The pattern of **elevated triglycerides + elevated LDL + insulin resistance** tells a different story than the same LDL in someone metabolically healthy.

P2 · LIPIDS

LDL Cholesterol

142 mg/dL

mg/dL · Standard < 100

WHAT EVEN IS THIS?

LDL is shorthand for the cholesterol-carrying trucks moving through your bloodstream. (More trucks = more chance one parks in an artery wall). But context matters wildly — not all LDL is the same.

YOU PROBABLY FEEL IT AS

Nothing. LDL is silent until it isn't. That's exactly why we measure it.

WHAT MOST PEOPLE MISS

LDL number alone is a coarse signal. ApoB and LDL particle count tell the real story. Ask your doctor.

REALITY CHECK

Eating eggs and red meat is not what's driving your LDL. Insulin and inflammation are. Don't quit steak — fix metabolism.

THE PLAIN ENGLISH VERSION

Your LDL of 142 is moderately elevated. The bigger story is why: with your high triglycerides and insulin, the LDL particles are likely small and dense (the dangerous kind), not large and fluffy. Don't panic; do the protocol.

FOODS THAT SUPPORT YOU

- **Wild salmon, sardines, mackerel** — omega-3s lower triglycerides
- **Avocado, olives, olive oil**
- **Pastured eggs** (do not fear the yolks)
- **Grass-fed tallow over seed oils** — stearic acid *(neutral saturated fat)* is beneficial
- **Above-ground fiber-rich vegetables**

REGENERATIVE SUPPLEMENTS

- **Grass-fed beef heart** — highest natural source of CoQ10 *(mitochondrial fuel)*
- **High-EPA fish oil** 2–3g/day, third-party tested
- **Bergamot extract** — clinical data on LDL reduction
- **Aged garlic extract** — modest LDL effect
- **Grass-fed liver** — methylation cofactors

Food first. Fix the upstream insulin issue and LDL usually follows. Add fiber (chia, ground flax, oats). Cod liver oil and fatty fish for omega-3s.

Talk to your doctor about: Ask for an ApoB test and an NMR LipoProfile. These reveal particle count and size — the real risk signal.

P2 · THE SCOREBOARD MARKER

Triglycerides

178 mg/dL
mg/dL · Standard < 150
Optimal < 100

WHAT EVEN IS THIS?

Triglycerides are the circulating fat your liver packages up. High trigs almost always mean one thing: too many refined carbs. The body converts excess sugar into fat for storage and ships it via these particles.

YOU PROBABLY FEEL IT AS

Slugginess after carb-heavy meals. The 3 p.m. crash.

WHAT MOST PEOPLE MISS

High triglycerides + low HDL = a tighter predictor of cardiovascular risk than LDL alone. Yours is exactly this pattern.

REALITY CHECK

Yes, cutting refined carbs for 30 days will drop these numbers visibly. The body responds fast to this one.

THE PLAIN ENGLISH VERSION

Your trigs of 178 are well above optimal. Combined with your insulin reading, this is a clean *(carb-overload)* signature. The fix is mostly dietary, and it works fast — often within 30 days.

FOODS THAT SUPPORT YOU

- **Fatty fish 3–4x/week** — omega-3s crush triglycerides
- **Cut all sugar and fruit juice** — biggest single lever
- **Reduce starches** — bread, pasta, rice, potatoes
- **Eliminate alcohol for 30 days** — alcohol becomes triglycerides

REGENERATIVE SUPPLEMENTS

- **High-dose EPA fish oil** — 2–4g EPA/day
- **Cod liver oil** — traditional source of EPA, DHA, A, D together
- **Berberine** — also lowers triglycerides
- **Niacin** (under doctor supervision)

Food first. Cut refined carbs and alcohol. Keep whole-food carbs (rice, potato, fruit) — those aren't the issue. The issue is bread, pasta, sweeteners, and the weekly beer count.

PRIORITY 3 — HORMONES

TESTOSTERONE — WHY IT'S LOW, AND WHY IT'S FIXABLE.

P2 · HORMONES

Free Testosterone

68 pg/mL

pg/mL · Standard 35–155

WHAT EVEN IS THIS?

Total testosterone is the master hormone for male vitality — muscle, drive, mood, recovery, fat distribution. Yours is low for a 40-year-old. This is fixable without TRT in most cases at this level.

YOU PROBABLY FEEL IT AS

Slower morning energy. Workouts that don't pay off. Libido on standby. Mood flatter than it used to be.

WHO'S AT THE PARTY

Pituitary, testes, liver, body fat, SHBG, vitamin D — all interconnected. Pulling one lever moves all of them.

WHAT MOST PEOPLE MISS

Total T being 'in range' is meaningless if free T is low. SHBG is the hidden variable.

REALITY CHECK

No, you don't need TRT yet. Fix the upstream stuff for 90 days and most men in this exact pattern recover 100–200 ng/dL on their own.

THE PLAIN ENGLISH VERSION

Your total T of 412 is in the lower third of the reference range, and your free T of 68 is well under optimal. With your insulin and SHBG numbers, the cause is almost certainly the cascade described on page 12 — not aging itself.

FOODS THAT SUPPORT YOU

- **Grass-fed beef, lamb, bison** — zinc, iron, sat fat, B12
- **Pastured eggs (yolks especially)** — cholesterol is the substrate for T
- **Oysters** — highest zinc density in nature
- **Grass-fed liver** — B vitamins, retinol, copper, choline
- **Brazil nuts** (1–2/day) — selenium
- **Pomegranate** — has clinical data on T

REGENERATIVE SUPPLEMENTS

- **Grass-fed beef testicle (orchic)** — traditional glandular, hormonal precursors
- **Grass-fed liver + heart** — full-spectrum cofactor support
- **Oyster extract** — concentrated zinc + copper
- **Tongkat ali** — well-studied for free T elevation
- **Boron 6mg/day** — modestly raises free T by lowering SHBG
- **Ashwagandha** — cortisol modulation = better T:cortisol ratio

P2 · HORMONES · CONTINUED

Free Testosterone

68 pg/mL
pg/mL · Standard 35–155

Food first. Red meat, organ meat, oysters, eggs, dairy fat. Resistance training 3×/week. Sleep 7+ hours — testosterone is made overnight.

ANCESTRAL CONTEXT

Pre-industrial men had testosterone levels we'd consider superhuman today. The downstream effects of modern life — sedentary work, light at night, processed food — have been quietly clipping male hormones for 70 years.

IF YOU ONLY DO ONE THING

Lift heavy 3 times a week. Heavy compound movements (squat, deadlift, press) drive testosterone production more than any supplement on Earth.

Talk to your doctor about: Ask about a follow-up panel with LH and FSH to confirm the issue is downstream metabolic — not primary testicular failure.

THE EASIEST WIN

VITAMIN D — YOUR QUICK FIX.

P3 · YOUR TOTAL VITAMIN D STATUS

Vitamin D, Total

22 ng/mL

ng/mL · Standard ≥ 30
Optimal 50–80

WHAT EVEN IS THIS?

Vitamin D isn't really a vitamin — it's a hormone your skin makes from sunlight. It regulates immune function, mood, bone density, insulin sensitivity, and testosterone production. Yours is deficient.

● Deficient < 20 ● Insufficient 20–30 ● Optimal 50–80

YOU PROBABLY FEEL IT AS

Winter blues that never fully lift. Frequent colds. Tired mornings even after sleep.

WHO'S AT THE PARTY

Skin → liver → kidney → every tissue with a vitamin D receptor (basically all of them).

WHAT MOST PEOPLE MISS

The D2 vs D3 split matters. Yours shows 20 ng/mL D3 (from sun/animal sources) and only 2 ng/mL D2 (plant/fortified) — clean signal that your body isn't making enough on its own.

REALITY CHECK

A multivitamin's 1000 IU does nothing for someone deficient. You need real repletion — likely 5,000+ IU/day for 90 days, then a retest.

THE PLAIN ENGLISH VERSION

Your total D of 22 ng/mL is well below the optimal range. Below 30 is officially deficient. Below 20 is severely deficient. You're flirting with that line. Repletion alone will move multiple other markers in this report.

FOODS THAT SUPPORT YOU

- **Wild fatty fish** — salmon, sardines, herring, mackerel
- **Pastured egg yolks** — modest but consistent
- **Beef liver** — paired with retinol *(real vitamin A)*
- **Cod liver oil** — the ancestral classic
- **Reality check:** diet alone usually won't fix this. Sun + supplementation will.

REGENERATIVE SUPPLEMENTS

- **Cod liver oil** — traditional source of A + D in natural ratio
- **D3 (cholecalciferol) 5,000 IU/day** — with a fatty meal
- **K2 MK-7 100mcg/day** — always pair with D3 to direct calcium properly
- **Daily sun protocol** — 15–30 min midday, torso exposed, 4–5x/week

P3 · YOUR TOTAL VITAMIN D STATUS · CONTINUED

Vitamin D, Total

22 ng/mL

ng/mL · Standard ≥ 30
Optimal 50–80

Food first. Fatty fish (salmon, sardines, mackerel) and egg yolks. Cod liver oil is the ancestral move — it gives you D3 + retinol + omega-3s in one shot. 1 tbsp/day.

ANCESTRAL CONTEXT

Indigenous Arctic peoples — who saw essentially no sun for half the year — kept robust vitamin D levels by eating cod liver, seal blubber, and animal organs. The modern desk-job + sunscreen combo is a new experiment in human history. Not surprisingly, it's not going great.

IF YOU ONLY DO ONE THING

Get 20 minutes of midday sun on bare skin daily from March through October. Free, ancestrally-correct, and will do more than any pill.

Talk to your doctor about: Ask about 5,000–10,000 IU/day D3 with K2 for 90 days, then retesting. Get magnesium status checked too — D needs Mg as a cofactor.

HOW YOUR VIT D NUMBERS ADD UP

THE FULL BREAKDOWN.

Your lab reports three vitamin D values: Total, D3 (cholecalciferol), and D2 (ergocalciferol). Total = D3 + D2. The breakdown tells us where your vitamin D is coming from — sun and animal foods (D3) vs supplements/plants (D2). The source guides the action plan.

TOTAL

22 ng/mL

ng/mL · Optimal 50–80

What's actually circulating and doing the work. The number that matters clinically.

D3 (CHOLECALCIFEROL)

20 ng/mL

ng/mL · from sun & animal foods

The dominant form. Made by skin from sunlight; found in fatty fish, eggs, beef liver.

D2 (ERGOCALCIFEROL)

2 ng/mL

ng/mL · from supplements/plants

Plant/supplement form. Usually <4 in non-supplement users. Less bioavailable than D3.

WHAT THIS BREAKDOWN TELLS US

Your breakdown shows the typical pattern — most of your vitamin D is in D3 form, with minimal D2 (consistent with no D2 supplementation). The action plan focuses on raising D3 through sun, animal foods, and supplementation if needed.

ANCESTRAL CONTEXT

Pre-industrial humans got essentially all their vitamin D as D3, from sun exposure and animal foods. D2 didn't exist meaningfully in the human diet until 20th-century mushroom farming and prescription supplements. Your body is evolved to run on D3.

DON'T LOSE SIGHT OF THESE

WHAT'S GENUINELY WORKING.

It's easy to fixate on what's red and ignore what's green. The strengths on this panel tell us your body has tremendous capacity to heal — your filtering, blood-building, detox pathways, nutrient transport, and thyroid are all firing well.

Thyroid — Excellent

Your body's gas pedal — sets metabolic speed.

TSH 0.92, Free T4 1.1, Free T3 3.3. All comfortably optimal. Producing, converting, signaling well.

Complete Blood Count — Clean

Red cells carry oxygen, whites fight invaders, platelets clot.

RBC, hemoglobin, hematocrit, platelets, all WBC subtypes — all healthy. No anemia, infection, or chronic immune activation.

Liver Enzymes — Strong

When liver cells get stressed they leak AST/ALT.

AST 22, ALT 31. Despite metabolic strain, your liver is great. Worth imaging given the lipid picture, but currently undamaged.

Kidney Function — Excellent

eGFR = filter speed. mL of blood cleaned per minute.

eGFR 114 (≥60 is acceptable). BUN 8, BUN/Creatinine 13. Strong filtration. Creatinine slightly low — usually modest muscle mass, not kidney.

Electrolytes — Balanced

Na/K/Cl/Ca — cellular spark plugs.

Sodium 136, Potassium 4.5, Chloride 103, Calcium 9.3. All optimal. Cellular signaling and hydration look great.

B12 + Homocysteine — Optimal

Homocysteine is a toxic byproduct B vitamins clear daily.

B12 at 463 (good). Homocysteine 7.2 (excellent — under 8 ideal). Methylation working well — major protective factor.

Lipoprotein(a) — Optimal

Largely genetic. Your inherited cardiac risk score.

<10 nmol/L (optimal <75). You didn't inherit one of the strongest hereditary cardiac risks. Check once, forget about it.

Protein Status — Solid

Albumin is the Uber for your blood — shuttles hormones, nutrients.

Total protein 7.3, Albumin 4.5, A/G ratio 1.6. All healthy. Getting and absorbing protein. Foundational nutrition isn't failing you.

> *You're not starting from zero. You're starting from a strong foundation with a specific, fixable problem.*

CONNECT THE NUMBERS TO HOW YOU ACTUALLY FEEL

SYMPTOM MATRIX.

Given the insulin / hormone cascade pattern, watch especially for afternoon energy crashes, slower workout recovery, and morning brain fog. These are the textbook fingerprints of what your labs are showing.

SYMPTOM	INSULIN RESIST	HIGH GLUCOSE	LIPIDS	LOW FREE T	LOW VIT D	HIGH CRP	✓
Afternoon energy crashes	●	●	—	●	●	—	☐
Belly fat that won't budge	●	●	●	●	—	●	☐
Brain fog or word-finding issues	●	●	—	●	●	●	☐
Sugar / carb cravings 2 hr after eating	●	●	—	—	—	—	☐
Libido dimmer than years ago	●	—	—	●	●	—	☐
Less / weaker morning erections	●	—	●	●	—	—	☐
Harder to gain muscle when training	●	—	—	●	●	●	☐
Poor / restless / shallow sleep	●	●	—	●	●	●	☐
Slow wound healing or bruising	●	●	—	—	●	●	☐
Joint or muscle aches without cause	—	—	—	●	●	●	☐
Mood flat, anxious, or short fuse	●	●	—	●	●	●	☐
Frequent thirst / urination	●	●	—	—	—	—	☐
Frequent colds or slow to recover	—	—	—	—	●	●	☐
Tingling or numbness in hands/feet	●	●	—	—	—	—	☐

● Strong link ● Moderate link — No direct link

Check the boxes for symptoms you've experienced in the past 3 months. If a column lights up red across multiple rows, that finding deserves priority attention.

CURATED FOR YOUR FINDINGS

YOUR REGENERATIVE STACK.

The synthesized stack — pulled from every marker analysis, tiered by importance for *your* body specifically. Foundation goes to everyone. Targeted is for what your panel shows. Optional is the nice-to-have layer.

Reminder: Food first. Every category below has a whole-food source listed alongside the supplement form.

TIER 1 — FOUNDATION (EVERYONE)

Grass-Fed Beef Liver

4 oz weekly · or 6 caps/day

The most nutrient-dense food on earth. Bioavailable B12, folate, retinol *(real vitamin A)*, copper, iron, choline. Supports detox, energy, hormones, immunity, methylation. Non-negotiable foundation.

Grass-Fed Beef Tallow

Cook with daily · 1–2 tbsp/day

Replaces seed oils. Stearic acid (mitochondrial fuel), conjugated linoleic acid, fat-soluble vitamins A/D/E/K. Stable at high heat.

Cod Liver Oil

1 tsp/day, fermented or virgin

Traditional source of EPA, DHA, vitamin A, and D in natural ratio. Used for centuries before fish oil existed.

Bone Broth

8–16 oz daily, pastured bones

Glycine, proline, hydroxyproline. Connective tissue, gut lining, sleep, anti-inflammatory. Cheap to make at home.

Magnesium Glycinate

400–600 mg/day, evening

~50% of Americans are deficient. Critical for insulin sensitivity, sleep, recovery, blood pressure. Glycinate form best absorbed.

TARGETED FOR YOUR PANEL

TIER 2 — WHAT YOUR NUMBERS NEED.

These are pulled specifically from your flagged markers. Each one targets a finding that came up in your panel — not a one-size-fits-all bundle.

Grass-Fed Beef Pancreas (Glandular)

For: insulin resistance, A1c, glucose

Traditional 'like supports like.' Contains the proteins, enzymes, and cofactors your overworked pancreas is straining to produce. Take with food.

Grass-Fed Beef Heart

For: cholesterol, cardiovascular, mitochondrial

Richest natural source of CoQ10 — critical for cardiac muscle and mitochondrial energy. Especially important if ever on a statin (depletes CoQ10).

Grass-Fed Beef Testicle / Orchic

For: low testosterone

Traditional cultures fed this to young men and warriors. Contains cholesterol substrate (precursor for T), zinc, hormonal cofactors. Capsules make this easy.

Vitamin D3 (5,000 IU) + K2 MK-7

For: vitamin D 23 → optimal 50+

Daily with a fatty meal. K2 directs calcium into bones (not arteries). Always pair them. Retest at 8–12 weeks.

Berberine HCl

For: insulin resistance (doctor approval)

500 mg, 2–3x daily with meals. Often called 'nature's metformin.' Real clinical data on glucose, lipids, insulin sensitivity. Additive with glucose meds.

High-EPA Fish Oil

For: triglycerides, inflammation, mood

2–3g EPA/day. Third-party tested (IFOS or USP certification).

Oyster Extract

For: testosterone, immunity, recovery

Highest natural source of zinc, plus copper, B12, selenium in natural ratios. Better than synthetic zinc which throws off the zinc:copper balance.

LAYER IN WHEN READY

TIER 3 — OPTIONAL ADDITIONS.

Tongkat Ali
200–400 mg/day standardized extract — free testosterone support

Ashwagandha (KSM-66)
600 mg/day, evening — cortisol management, stress resilience

Boron
6 mg/day — modestly raises free T by lowering SHBG. Cheap.

Bergamot Extract (BPF)
500–1000 mg/day — clinical data on LDL and triglycerides

Raw Honey + Bee Pollen
1 tbsp/day — traditional immune and adaptogen support

Colostrum (Grass-Fed)
Immunoglobulins, growth factors, gut healing

Sea Salt (Redmond, Celtic)
Trace minerals you don't get from refined iodized salt

Raw Sauerkraut / Kimchi
2–3 tbsp with meals — living bacteria, K2 production

Inositol (Myo + D-Chiro 40:1)
2–4 g/day — cellular insulin signaling

APPROXIMATE MONTHLY COST

WHOLE FOOD PATH

Grass-fed liver from butcher ($5–8/lb), tallow ($8–12/jar), pastured eggs, wild salmon, oysters monthly, weekly bone broth. **~$80–130/month** above standard groceries.

SUPPLEMENT PATH

Tier 1+2 caps ($40–60 organs, $15 D3/K2, $20 fish oil, $10 mag, $15 berberine). **~$100–150/month** for full stack.

Most people do a hybrid. Eat liver fresh 1–2x/week, capsules cover the rest. Either way, less than a typical monthly bar tab.

COST OF DOING NOTHING

Average annual US cost of Type 2 Diabetes care: ~$13,700. Your investment in this protocol: ~$2,800/yr. **The cheapest insurance you'll ever buy. By a factor of 4x.**

NOSE-TO-TAIL NUTRITION

GRASS-FED ORGAN TEARDOWN.

Organ meats are the most nutrient-dense food on the planet — and 99% of modern Americans never eat them. Our ancestors ate them first and saved muscle meat for less prestigious meals.

Liver

KING OF ORGANS

Contains: Bioavailable B12 (~10x daily need per oz), folate, retinol, copper, iron (heme), choline, riboflavin, selenium, zinc, CoQ10.

Supports: Energy, detoxification, methylation, eye health, immune function, hormone metabolism.

How to eat: Fresh: 4 oz pan-seared weekly. Or grind into beef at 1:5 (undetectable). Capsules: 6 desiccated daily.

Heart

MITOCHONDRIAL POWERHOUSE

Contains: Highest natural CoQ10, taurine, elastin, B12, iron, zinc, selenium. Tastes nearly identical to steak.

Supports: Cardiac muscle, mitochondrial energy, recovery, connective tissue. Critical if ever on a statin.

How to eat: Easiest organ to eat — it's just a muscle. Slice, salt, grill. Grind into burgers at 1:4 ratio.

Kidney

SELENIUM & DAO SOURCE

Contains: Selenium (highest of any organ), B12, iron, riboflavin, DAO enzyme (degrades histamine).

Supports: Thyroid function (selenium-dependent), histamine tolerance, kidney support.

How to eat: Strong flavor. Soak in milk 4–12 hr before cooking. Most prefer capsules.

Bone Marrow

STEM CELL SOUP

Contains: Stem cell signaling factors, glycine, collagen precursors, fat-soluble vitamins.

Supports: Joints, connective tissue, immune function, deep sleep (glycine), bone density.

How to eat: Roast marrow bones at 425°F for 20 min. Or simmer 24+ hours into broth.

Spleen

IRON CONCENTRATOR

Contains: Highest heme iron content of any organ (more than liver), copper, immune peptides, B12.

Supports: Iron status (low ferritin), immune function. Traditional remedy for low energy.

How to eat: Almost always taken as capsules.

Pancreas

DIRECTLY RELEVANT TO YOUR PANEL

Contains: Digestive enzymes (lipase, amylase, protease), insulin-related cofactors, pancreatic tissue peptides.

Supports: Digestion, pancreatic function, insulin response. **Most directly relevant glandular for your insulin resistance.** Like-supports-like framework.

How to eat: Almost exclusively taken as capsules.

Testicle (Orchic)

DIRECTLY RELEVANT TO YOUR PANEL

Contains: Cholesterol substrate (precursor for T), zinc, hormonal peptides. Yes, this is a real thing.

Supports: Male hormonal production. Traditionally fed to young men and warriors. **Highly targeted for your low free T.**

How to eat: Desiccated capsules. Always paired with liver and other organs in good products.

Fresh whole-food organs are always best — more bioavailable, cheaper per gram of nutrient. Desiccated freeze-dried capsules are the practical alternative. Most people do a hybrid: liver in burgers, capsules for the rest.

DON'T GET PLAYED AT THE SUPPLEMENT AISLE

WHAT TO BUY, WHAT TO AVOID.

Marketing in the supplement industry is shameless. "All natural," "doctor recommended," "premium grade" mean nothing. Here's what actually matters.

FOR BEEF AND ORGAN MEATS

✓ LOOK FOR

- **"100% grass-fed AND grass-finished"** — both phrases. Most "grass-fed" beef is grain-finished
- USDA Organic, Animal Welfare Approved, or American Grassfed Association certification
- Single-source farms (one ranch, named), not aggregated commodity beef
- Country of origin: US, Australia, New Zealand, Argentina — strict standards
- Pasture-raised, regenerative, or "managed grazing" terminology

✗ AVOID

- **"Grass-fed"** alone — under USDA rules, can be finished on grain
- "Natural" or "all-natural" — meaningless terms with no regulatory definition
- Beef from feedlots, even if labeled organic (organic grain ≠ pasture)
- Imported beef from countries with weak labeling standards
- Generic store-brand "grass-fed" without farm sourcing transparency

FOR DESICCATED ORGAN CAPSULES

✓ LOOK FOR

- Source: New Zealand, Australian, or Argentine grass-fed beef
- Freeze-dried desiccated form (preserves nutrients better than heat-dried)
- Bovine gelatin capsules (not synthetic) — or no capsule at all
- Third-party testing certificates available on request
- Transparent dosing — exact mg per capsule and recommended daily intake
- Multi-organ "complex" blends for full-spectrum support

✗ AVOID

- **"Proprietary blend"** without per-ingredient mg disclosure — usually underdosed
- Magnesium stearate, silicon dioxide, titanium dioxide, maltodextrin — fillers
- Synthetic vitamins listed alongside (defeats whole-food sourcing)
- No source country specified — usually means cheap conventional sourcing
- Multi-level marketing (MLM) brands — overpriced and often underdosed
- Amazon-only brands with no website, no science, no farm sourcing

We intentionally don't recommend specific brands. The market shifts fast. Apply the principles above and you'll evaluate any product in 90 seconds.

FROM INSIGHT TO ACTION

YOUR 90-DAY RESET.

If you do **nothing else** from this report, do these seven things in this order. Sequenced by impact and ease — most important and easiest first.

01 Talk to your doctor this week.

Why first: your A1c and glucose warrant a real medical conversation, not just self-experimentation.

Bring this PDF. Ask for HOMA-IR calculation, ApoB test, coronary calcium score, and a referral for sleep apnea screening if you snore or wake unrested. Discuss whether short-term metformin is appropriate as a bridge.

TIMELINE: THIS WEEK

02 Cut refined carbs and seed oils. Eat real food.

Why: this one change addresses insulin, glucose, A1c, triglycerides, LDL particle quality, inflammation, and indirectly testosterone.

Eliminate: bread, pasta, rice, sugar, juice, soda, candy, pastries, vegetable/canola/soybean/corn/sunflower oil, fast food. **Eat:** pastured eggs, grass-fed beef and lamb, wild fatty fish, organ meats weekly, above-ground vegetables, butter/tallow/ghee/olive oil. **Drink:** water, black coffee, mineral water, bone broth.

TIMELINE: START TOMORROW. STRICT FOR 90 DAYS.

03 Compress your eating window.

Why: lets insulin drop between meals, lets your pancreas rest, improves insulin sensitivity directly.

12-hour overnight fast in week 1, build to 14 hours by week 4. Stop eating 3 hours before bed. No snacking. Two or three solid meals per day.

TIMELINE: START WEEK 1, BUILD OVER MONTH 1

04 Walk after every meal. Lift heavy 3x/week.

Why: muscle is the largest glucose sink in the body. Walking after meals is the most under-appreciated glucose hack in the world.

10–15 min walk within 30 min after substantial meals. Add 3 strength sessions per week — heavy compound lifts (squat, deadlift, press, row) in 5–8 rep range. Boxing covers your cardio.

TIMELINE: THIS WEEK, EVERY WEEK

05 Sun on skin. Vitamin D3 + K2 daily.

Why: easiest, fastest win on the panel. Affects T, insulin sensitivity, mood, immunity.

15–30 min midday sun on torso and back, 4–5 days/week. Supplement: 5,000 IU D3 + 100 mcg K2 (MK-7) daily, with a fatty meal. Retest at 90-day mark.

TIMELINE: TOMORROW MORNING

06 Sleep like it's your job.

Why: poor sleep alone produces insulin resistance, low testosterone, high cortisol, elevated morning glucose. You cannot out-train or out-eat bad sleep.

Target 7.5–9 hours in bed. Cool, dark, quiet room. No screens 60 min before bed. Morning sunlight within 30 min of waking. No alcohol within 4 hours of bed.

TIMELINE: STARTING TONIGHT

07 Layer in your regenerative stack.

Why: covers nutrient gaps your diet alone won't fill while you're rebuilding metabolic health.

Start Tier 1 (Foundation): liver weekly + tallow daily + cod liver oil + bone broth + magnesium. After 2 weeks, layer in Tier 2 (Targeted): glandular blend + D3/K2 + berberine + fish oil. Wait 30 days before Tier 3.

TIMELINE: TIER 1 THIS WEEK, TIER 2 WEEK 3

THE WHOLE PLAN IN ONE SENTENCE

Eat like your great-great-grandparents would have eaten, train like an athlete, sleep like you mean it, get sun, supplement what your food misses, and retest in 90 days.

HABITS BEAT WILLPOWER

YOUR WEEKLY SCHEDULE.

People execute on schedules, not lists. Anchor each supplement to an existing habit and it sticks. Print this page, stick it on the fridge.

DAY	MORNING (WITH BREAKFAST)	EVENING (WITH DINNER / BEFORE BED)	ANCHOR FOOD
MON	Cod liver oil · D3 5000 IU + K2 · Mag 200 mg	Berberine 500 mg · Mag glycinate 400 mg before bed	**Liver burger (1:5 ratio)**
TUE	Cod liver oil · D3 + K2 · Mag · Glandular blend 4 caps	Berberine 500 mg with dinner · Mag before bed	**Wild salmon**
WED	Cod liver oil · D3 + K2 · Mag · Glandular 4 caps · Fish oil 2g	Berberine · Mag · Ashwagandha 600 mg	**Grass-fed ribeye + eggs**
THU	Cod liver oil · D3 + K2 · Mag · Glandular 4 caps	Berberine · Mag · Ashwagandha	**Lamb or bison**
FRI	Cod liver oil · D3 + K2 · Mag · Fish oil 2g	Berberine · Mag	**Oysters or sardines**
SAT	Cod liver oil · D3 + K2 · Mag · Glandular 4 caps	Mag · Bone broth before bed	**Slow-cooked stew with marrow**
SUN	Cod liver oil · D3 + K2 · Mag · Glandular 4 caps · Fish oil 2g	Mag · Bone broth	**Family meal — grass-fed roast**

DAILY RHYTHM ANCHORS

Morning (within 30 min of waking): 10 min sunlight, big glass of mineral water with sea salt, no coffee until after.

After meals: 10–15 min walk. Apple cider vinegar 5 min before starchy meals.

Pre-workout: Black coffee or matcha. Train fasted or with light protein.

Evening (3 hr before bed): Finish last meal. No screens 60 min before sleep. Mag glycinate.

EAT LIKE YOU MEAN IT

SAMPLE 5-DAY ANCESTRAL MENU.

No recipes — just the pattern. Real food, mostly animal-based, regeneratively sourced. Three meals a day, no snacking. Builds an ancestral eating template you can adapt for the long haul.

DAY 1 — MONDAY

B: 3 pastured eggs scrambled in butter, 4 oz grass-fed ground beef, sliced avocado, sauerkraut, black coffee
L: Grass-fed ribeye (8 oz) cooked in tallow, asparagus with butter, 1 tbsp raw honey for dessert
D: Wild salmon (6 oz) pan-seared, roasted broccoli with garlic, bone broth on the side

DAY 2 — TUESDAY

B: Liver burger patty (1 part liver, 5 parts beef), 2 fried eggs, sauerkraut, raw cheese
L: Skip — extended overnight fast continues to mid-afternoon if comfortable
D: Lamb chops (3) with herbs, sweet potato (palm-sized) with butter, fermented vegetables

DAY 3 — WEDNESDAY

B: 4 oz beef heart sliced and grilled like steak, 2 eggs, avocado, sea salt
L: Bone broth with sea salt, hard-boiled eggs (2), olives, cheese
D: Bison burger (no bun) topped with butter and onions, large green salad with olive oil

DAY 4 — THURSDAY

B: Oysters (6) on the half shell, 2 scrambled eggs, bacon (pastured), grass-fed butter on everything
L: Skip or bone broth
D: Slow-cooked beef stew (chuck + marrow bones, root vegetables, herbs)

DAY 5 — FRIDAY

B: Bone broth with collagen, 2 eggs over easy, leftover stew meat
L: Sardines (1 can in olive oil) on cucumber slices, avocado, sea salt
D: Grass-fed New York strip, steamed asparagus, butter and lemon, 1 square dark chocolate

Notice: no bread, pasta, rice, sugar, juice, seed oils. Organ meats woven through. Many days have only two meals — intermittent fasting built in naturally.

BRING THIS PAGE TO YOUR APPOINTMENT

TAKE THESE TO YOUR DOCTOR.

A 15-minute appointment goes faster than you'd think. Bring this PDF, but also bring this specific list — sequenced to make sure the most important conversations happen first.

- Q My A1c is 7.3% and my fasting glucose is 142. Should we repeat the test to confirm? What's our plan if confirmed?
- Q Can we calculate my HOMA-IR using my fasting insulin and glucose? I want to track this number specifically over the next 90 days.
- Q Given my insulin resistance and lipid pattern, would a continuous glucose monitor (CGM) help me see my response to specific foods?
- Q Could we order an ApoB test and an NMR LipoProfile to look at my LDL particle count and size, not just the cholesterol number?
- Q Am I a candidate for a coronary artery calcium (CAC) score given my lipid profile and age? This would tell us whether I actually have plaque.
- Q I want to address the metabolic root cause through diet and lifestyle first. Would short-term metformin be appropriate as a bridge while changes show up?
- Q Should I be screened for sleep apnea? I'd like to rule that out as a hidden driver of my fasting glucose.
- Q My free testosterone is below range. Before considering TRT, can we test LH, FSH, and prolactin to rule out a pituitary cause?
- Q Should we consider a liver ultrasound or FibroScan to rule out fatty liver, given my metabolic picture even though my enzymes are normal?
- Q What's our schedule for retesting? I'd like to recheck the metabolic panel and lipids in 90 days.

MEASURE WHAT MATTERS

RETEST SCHEDULE + TRACK AT HOME.

YOUR RETEST SCHEDULE

Different markers move at different speeds. Retesting too soon is wasted money; too late costs you momentum.

~4–6 WEEKS

Triglycerides + Fasting Glucose

Move fastest. Your early 'is this working?' signal.

~8–12 WEEKS

Vitamin D, 25-OH

Long half-life. Expect 40–60 ng/mL with consistent supplementation.

~90 DAYS

Full Lipid Panel + ApoB

Particle quality should improve meaningfully.

~90 DAYS

HbA1c + Fasting Insulin

A1c reflects ~90 days of red blood cell turnover. Your scoreboard.

~120 DAYS

CRP

Inflammation often lags metabolic improvement by 30–60 days.

~4–6 MONTHS

Full Hormone Panel

Testosterone (total + free), SHBG, estradiol, LH, FSH. Slow but worth the wait.

TRACK AT HOME (FREE)

Lab tests every 90 days. But you can track yourself every day, for free. These take 3 minutes and tighten the feedback loop between daily choices and slow-moving labs.

Waist circumference

WEEKLY, FIRST THING MORNING

Most accurate single metric for visceral fat. Tape measure at belly button.

Resting heart rate

DAILY, BEFORE GETTING OUT OF BED

Lower RHR = better cardiovascular fitness. A drop of 3–5 bpm over 90 days is strong.

Sleep hours + quality

EACH MORNING

Hours in bed and 1–10 self-rating. Ring trackers work, notebook works too.

Energy + mood 1–10

EACH EVENING

Patterns emerge. Energy crashes around 3pm suggest blood sugar issues.

Morning fasted glucose

IF GLUCOMETER (~$25)

Test trends > absolute numbers. Optimal 75–88. Cheap glucometer at any pharmacy.

Photos (front/side/back)

ONCE/MONTH, SAME LIGHTING

More honest than a scale. Body composition shows before weight does.

BIG WORDS, TRANSLATED

BIG WORDS, TRANSLATED.

Doctors and lab reports throw around terms most people don't understand — and most people just nod, because asking feels embarrassing. **Stop nodding.** Here's every intimidating word from your report, translated. *Read the level you want. Skip the levels you don't.*

Like I'm 5 — simplest possible **Regular version** — accurate **Your report** — why it matters for you

AROMATIZATION

01 / 37

/ ə-ROH-mə-tī-ZAY-shun /

LIKE I'M 5

THE SIMPLEST VERSION

Your body has a tiny machine that turns "boy juice" (testosterone) into "girl juice" (estrogen). Fat cells are full of those machines. **More fat = more juice gets flipped.**

REGULAR VERSION

THE ACCURATE VERSION

A chemical conversion driven by an enzyme called **aromatase** that turns testosterone into estrogen. Happens mostly in fat tissue — which is why men with higher body fat tend to have lower testosterone and higher estrogen.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Your free T is low (**30.3**) and fasting insulin is high (**39.8**). High insulin = higher body fat = more aromatization. Even the T you *do* produce is being flipped to estrogen. **This is why fixing your metabolism often raises T naturally.**

HOMA-IR

02 / 37

/ HOH-muh I-R /

LIKE I'M 5

THE SIMPLEST VERSION

A **score** showing how hard your body is fighting itself to keep blood sugar in check. Higher score = harder fight = worse problem.

REGULAR VERSION

THE ACCURATE VERSION

(Fasting insulin × fasting glucose) ÷ 405. A simple math calculation combining two of your numbers into one insulin resistance score. Under 1.0 optimal, under 2.0 acceptable, over 2.5 meaningful resistance, over 5.0 serious.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Yours is **~13.9**. That's **5x the threshold for serious insulin resistance.** The most important single number on your entire panel. **Track it every 90 days.** Most labs don't print it — ask your doctor to calculate from existing values. Costs nothing extra.

SHBG (Sex Hormone Binding Globulin)

03 / 37

/ S-H-B-G /

LIKE I'M 5

THE SIMPLEST VERSION

A "**hand**" floating in your blood that grabs onto testosterone and won't let go. Testosterone in the hand = locked up. Testosterone *not* in the hand = free, ready to work.

REGULAR VERSION

THE ACCURATE VERSION

A protein your liver makes that binds testosterone (and estrogen) in your blood. When SHBG is **high**, it holds more T, leaving less "free." When **low**, more is free — but low SHBG often signals insulin resistance.

WHY IT MATTERS FOR YOU SPECIFICALLY

Yours is **36 nmol/L** — middle of normal. Tells us your low free T isn't SHBG holding too much hostage. The problem is upstream —

METHYLATION

04 / 37

/ METH-uh-LAY-shun /

LIKE I'M 5

THE SIMPLEST VERSION

Your body has **billions of little switches**. Methylation flips them on or off. Good methylation = right switches in the right positions = clean energy, clean detox, calm mind.

REGULAR VERSION

THE ACCURATE VERSION

A biochemical process where a "methyl group" gets attached to molecules — turning genes on/off, building neurotransmitters, detoxing chemicals, clearing toxic byproducts like homocysteine. Driven by **B vitamins (B12, folate, B6).**

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Your homocysteine is **7.2** (excellent — under 8 ideal) and B12 is **463** (good). **Your methylation is working well.** Genuinely bright spot on your panel. Keep eating eggs, liver, and grass-fed meat to maintain it.

VISCERAL FAT

05 / 37

/ VISS-ur-ul fat /

LIKE I'M 5

THE SIMPLEST VERSION

The **bad fat** hiding deep inside your belly, *squishing your organs*. Different from soft fat you can pinch — this stuff is harder, dangerous, sneaky.

REGULAR VERSION

THE ACCURATE VERSION

Fat stored deep in your abdominal cavity, wrapped around your liver, pancreas, and intestines — opposed to subcutaneous fat (under-skin pinchable fat). Visceral fat is metabolically active: pumps out inflammatory signals, drives insulin resistance, raises cortisol, lowers T. You can be thin on the outside and have dangerous amounts ("skinny-fat").

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Your **insulin resistance + high triglycerides + low T** pattern is the textbook fingerprint of visceral fat. **Measure your waist at the belly button right now.** Over 40 inches is the elevated-risk threshold. Track weekly.

APOB (Apolipoprotein B)

06 / 37

/ A-poh-B /

LIKE I'M 5

THE SIMPLEST VERSION

If LDL cholesterol is the **cargo** on a truck, ApoB is a **count of the trucks themselves**. *Trucks crash into artery walls. Cargo doesn't.* So counting trucks tells you what's actually dangerous.

REGULAR VERSION

THE ACCURATE VERSION

A protein attached to every artery-clogging lipoprotein particle (LDL, VLDL, IDL, Lp(a)). Each particle has exactly one ApoB. So measuring ApoB = counting **every dangerous particle**. Modern cardiology considers ApoB a far better predictor of heart attack risk than LDL-C alone.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Your panel didn't include ApoB. Given your insulin-resistance pattern, your LDL particles are probably small/dense/numerous — meaning your ApoB is likely higher than your LDL-C of 158 suggests. **This is the single best test to add at next blood draw.** Costs ~$15. Tells you more than your entire current lipid panel.

INSULIN RESISTANCE

07 / 37

/ IN-sul-in re-ZIS-tens /

LIKE I'M 5

THE SIMPLEST VERSION

Your body's cells stop listening to insulin. The pancreas **shouts louder** to be heard. Eventually the shouting itself breaks things.

REGULAR VERSION

THE ACCURATE VERSION

When cells become less responsive to insulin's signal. The pancreas compensates by producing more insulin, which works for years until the system breaks down. The precursor to Type 2 Diabetes. Drives nearly every chronic disease of modern aging.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

This is **your core problem.** Your fasting insulin of 39.8 is ~7x optimal. Every other flagged marker on your panel — cholesterol, testosterone, vitamin D, inflammation — is either caused or worsened by this. **Fix this and they all improve.**

METABOLIC SYNDROME

08 / 37

/ met-uh-BOL-ik SIN-drohm /

LIKE I'M 5

THE SIMPLEST VERSION

A **cluster of problems** that travel together: belly fat, high blood sugar, high blood pressure, bad cholesterol. When you have 3+ at once, it's called metabolic syndrome.

REGULAR VERSION

THE ACCURATE VERSION

A clinical pattern defined by 3+ of: large waist, high triglycerides, low HDL, high blood pressure, high fasting glucose. Affects ~35% of US adults. Massive risk multiplier for diabetes, heart disease, stroke, dementia.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

You meet criteria for metabolic syndrome: **high glucose, high triglycerides, almost certainly elevated waist circumference.** The bad news: it raises your risk profile. The good news: it's **extremely reversible** with the changes outlined in this report.

DYSLIPIDEMIA

09 / 37

/ dis-lip-i-DEE-mee-uh /

LIKE I'M 5

THE SIMPLEST VERSION

"Dys" means "messed up." "Lipid" means fats. **Your blood fats are messed up.** That's it. Doctors just like fancy words.

REGULAR VERSION

THE ACCURATE VERSION

An abnormal pattern of cholesterol or triglycerides in the blood. Doesn't specify which kind or how bad — just that something's off.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Your dyslipidemia = high LDL (158), high triglycerides (163), high non-HDL (188). The classic insulin-resistant pattern. Will likely improve substantially in 4–8 weeks once the metabolic root cause is addressed.

LIPOPROTEIN(A)

10 / 37

/ LY-poh-PROH-teen little A /

LIKE I'M 5

THE SIMPLEST VERSION

A **genetic gift or curse** you inherited. Some people are born with high levels, which means much higher heart attack risk. You can't really change it. Test it once, then forget about it.

REGULAR VERSION

THE ACCURATE VERSION

A genetically determined particle that sits alongside LDL but is far more atherogenic *(artery-clogging)*. Largely set by your parents — diet barely moves it. The single strongest hereditary cardiac risk marker. Most people never get tested.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Yours is **<10 nmol/L** (optimal <75). **You won the genetic cardiac lottery on this one.** One of the genuinely best findings on your panel. Check it once, file it away, never worry about it again.

COQ10

11 / 37

/ KOH-Q-ten /

LIKE I'M 5

THE SIMPLEST VERSION

The **battery juice** for your cells. Without it your mitochondria can't make energy. Your body makes it. Statin drugs deplete it. Grass-fed beef heart is the richest food source on the planet.

REGULAR VERSION

THE ACCURATE VERSION

Ubiquinone — a coenzyme essential for mitochondrial energy production. Concentrated in high-energy tissues (heart, liver, kidneys). Declines with age. Depleted by statin drugs.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Not tested on your panel but worth knowing about: **if you ever go on a statin for your LDL**, ask about CoQ10 supplementation alongside. Beef heart (food source) or 100–200 mg/day CoQ10 (capsule).

HYPOGONADAL

12 / 37

/ hy-poh-go-NAD-uhl /

LIKE I'M 5

THE SIMPLEST VERSION

Medical word for **"low testosterone"** with symptoms. Means your body isn't making enough sex hormones.

REGULAR VERSION

THE ACCURATE VERSION

Clinical state of low testosterone with associated symptoms (low libido, fatigue, mood issues, muscle loss). The diagnosis requires both low labs AND symptoms — having one without the other doesn't qualify.

YOUR REPORT

WHY IT MATTERS FOR YOU SPECIFICALLY

Your total T (273) is in the borderline range. With your symptoms (likely libido decline, slower recovery, etc.), some doctors would consider you hypogonadal and offer TRT. **The functional approach is to fix the metabolic cause first** — most men in your situation see T rise 50–150 ng/dL within 6 months of resolving insulin resistance.

FOR THE REST OF THE JARGON

MORE TERMS — COMPACT REFERENCE.

ADIPOSE TISSUE

13

Body fat.

Fat-storing tissue. Both subcutaneous (under skin) and visceral (deep belly). Metabolically active — produces hormones and inflammatory signals.

Your high insulin pattern strongly suggests elevated visceral adipose tissue specifically.

ATHEROGENIC

14

Artery-clogging.

Any substance or particle that contributes to plaque buildup in arteries. Often used to describe certain LDL subtypes.

Your high non-HDL and likely high ApoB make your current lipid profile mildly atherogenic.

BIOAVAILABLE

15

Easily absorbed and usable.

The fraction of a nutrient or compound that actually gets absorbed and reaches its target tissue. Whole-food forms are usually more bioavailable than synthetic.

Why grass-fed liver beats a multivitamin — bioavailable nutrients in natural ratios.

BIOMARKER

16

A measurable signal of what's happening in your body.

Any measurable indicator of biological state — blood test value, vital sign, body composition. The data points your doctor uses to assess health.

Your panel measured 54 of them.

CHOLECALCIFEROL

17

Vitamin D3.

The natural form of vitamin D your skin makes from sunlight. Also the form used in most quality supplements.

What you want on the label if supplementing vitamin D. Not D2 (synthetic, less effective).

CORTISOL

18

Stress hormone.

Made by the adrenal glands. Mobilizes energy, regulates inflammation, controls the sleep-wake cycle. Chronically elevated cortisol drives belly fat, insulin resistance, low testosterone.

Likely a co-factor in your insulin resistance. Why sleep and stress management matter.

ENDOCRINE

19

Hormone-related.

The body system of hormone-producing glands: thyroid, adrenals, pancreas, testes, ovaries, pituitary. They communicate with chemical messengers (hormones).

FOR THE REST OF THE JARGON

MORE TERMS (CONT.).

K2 (MK-7)

25

- The form of vitamin K that goes to bones.
- Menaquinone-7. Tells calcium where to go (into bones, not arteries). Always pair with vitamin D3 supplementation.
- Critical to take alongside your D3.

LIPID PANEL

26

- Cholesterol blood test.
- The standard battery of fats measured in blood: total cholesterol, LDL, HDL, triglycerides, sometimes non-HDL and ratios.
- Yours shows the classic insulin-resistant pattern.

MITOCHONDRIA

27

- Cellular power plants.
- The energy factories inside every cell. Convert food and oxygen into ATP (the energy currency of life). Damaged mitochondria = fatigue, slow recovery, accelerated aging.
- CoQ10 from beef heart supports them directly.

NON-HDL CHOLESTEROL

28

- All the bad cholesterol added up.
- Total cholesterol minus HDL. Captures all atherogenic particles. Often a better risk predictor than LDL alone.
- Yours is 188. Optimal <130. Will respond to the dietary changes.

PITUITARY

29

- The master gland in your brain.
- Pea-sized gland at the base of the brain. Tells other glands (thyroid, adrenals, gonads) what to do via hormones (TSH, ACTH, LH, FSH).
- Worth testing LH/FSH if considering TRT — rules out pituitary cause of low T.

SEQUESTRATION

30

- Hiding something away.
- When a substance gets pulled out of circulation and stored somewhere inaccessible. Fat tissue sequesters vitamin D, lowering blood levels despite adequate intake.
- Why your vitamin D may be low despite Southern California sun.

STATINS

31

- Cholesterol-lowering drugs.
- Class of medications (atorvastatin, rosuvastatin, etc.) that block cholesterol production in the liver. Effective at lowering LDL. Side effects: muscle pain, CoQ10 depletion, possible glucose increase.

FOR THE REST OF THE JARGON

MORE TERMS (CONT.).

NMR LIPOPROFILE

37

- An advanced cholesterol test.
- Uses nuclear magnetic resonance to actually count and size your LDL particles, rather than estimating from cholesterol mass. Far more accurate than standard lipid panel.
- Worth requesting at your next blood draw alongside ApoB.

HOW WE BUILT THIS REPORT

METHODOLOGY.

THE THREE-LENS FRAMEWORK

Every finding in this report was interpreted through the framework introduced on Page 02:

Regenerative wellness — we treat your body as a system that wants to heal, not a problem to medicate around. The first questions we ask of any abnormal marker are: *what nutrient, food, movement, or recovery input is missing?* Medication is sometimes the right answer; it's rarely the first answer.

Ancestral nutrition — humans evolved over hundreds of thousands of years eating nose-to-tail animal foods alongside seasonal plants. Modern diseases like Type 2 diabetes, metabolic syndrome, autoimmunity, and infertility scale tightly with the industrial food environment that displaced ancestral eating patterns within just the last century. We default our food and supplement recommendations to what your great-grandparents would recognize: grass-fed meat, pastured eggs, organ meats, wild fish, fermented foods, raw dairy where tolerated, and a moderate amount of seasonal plants. We avoid recommending seed oils, refined sugars, and ultraprocessed foods even when they're cheaper or more convenient.

Modern functional science — we compare your values against two reference frameworks. First: the standard clinical reference range reported by your lab, which is "two standard deviations from the average among everyone tested" — meaning roughly 95% of people fall inside it, healthy or not. Second: an **optimal** range drawn from peer-reviewed longitudinal studies, typically narrower, reflecting the values associated with the best long-term outcomes (not just absence of disease). When the two ranges disagree, we flag it and explain why.

HOW TO USE THIS REPORT

Lifestyle and nutritional suggestions are general educational guidance based on commonly-cited research. They are **not personalized prescriptions**, not a treatment plan, and not a substitute for any medication your provider may recommend. Bring this report to your physician. We are your unbiased second opinion — use us that way.

IMPORTANT LEGAL NOTICE

DISCLAIMER.

Please Read In Full.

This report is for educational and informational purposes only. We are not licensed medical, healthcare, nutrition, or pharmaceutical practitioners. Nothing in this report should be considered medical advice, diagnosis, or treatment.

Lab values can be influenced by many factors not visible in a single panel — medications, recent illness, recent exercise, hydration, recent meals, stress, sleep, time of day of the blood draw, lab calibration, and genetic variation. A single panel is a snapshot, not a verdict.

Decisions about medications, supplementation, diagnostic workup, treatment, and overall medical care must be made with a licensed healthcare provider who knows your full personal and family medical history, current medications, allergies, and physical examination findings. **Please bring this report to that provider.**

Certain markers in your panel may fall into ranges used clinically to identify conditions like diabetes, dyslipidemia, hypothyroidism, or anemia. **This is not a diagnosis. Only a licensed medical provider can diagnose any condition.** Please seek medical evaluation promptly when our report flags a finding as Priority 1.

If you are currently taking any prescription medication — particularly for blood sugar, blood pressure, cholesterol, hormone replacement, or thyroid — do not change your dose, schedule, or any other aspect of your medication regimen based on this report. Speak with your prescribing provider first.

Supplement suggestions are categorical, not brand-specific or dose-specific. Some supplements interact with medications and certain medical conditions. Always consult a qualified provider before adding supplements, especially if you take prescription medications, are scheduled for surgery, or have any chronic condition.

By reading and using this report, you acknowledge and agree that you are responsible for your own healthcare decisions; that this report does not establish any practitioner-patient relationship; and that the issuer of this report disclaims any liability arising from the use or interpretation of its contents.

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