What Your Results Are Telling Us

Sam, these results are genuinely helpful — and honestly, they explain a lot. The good news first: there are no dangerous pathogens, no parasites, no yeast overgrowth, and no H. pylori. His gut is not under attack from anything acute. What we are looking at instead is a gut that has been significantly depleted — possibly from antibiotic use — and is running with very little of the protective bacterial infrastructure that should be there.

Two of the most important gut bacteria in the human microbiome — the ones that protect the gut lining and keep inflammation in check — are essentially absent in Sam's results. His pancreatic enzyme output is reduced, meaning his gut is not fully breaking down the food he eats. His gut immune system is running below its normal protective capacity. And his iron markers confirm what the HTMA suggested — his iron is being under-utilized, which connects directly to the fatigue we are already addressing.

The blood panel also gives us a meaningful inflammation signal through his hs-CRP, which at 2.5 is not alarming but is noteworthy in an 10-year-old and consistent with the low-grade gut dysbiosis we are seeing.

The bloating, belching, and gas Sam experiences after eating are also directly explained by these results. Those are not random digestive complaints — they are low stomach acid symptoms. When the stomach is not producing adequate acid, food sits longer than it should, ferments, and produces gas. The elevated Enterococcus faecalis and Streptococcus on the GI-MAP are both strongly associated with low stomach acid, and the low Elastase-1 confirms that the downstream digestive enzyme cascade is not being properly triggered. We are addressing this directly in the protocol.

The path forward is clear, and everything we are already doing on the mineral side supports gut repair. We are adding targeted gut-specific support to build on that foundation.

GI-MAP — Gut Health Findings

The Good News: No Pathogens

All bacterial pathogens, parasites, and viruses came back negative — including H. pylori, Giardia, Cryptosporidium, Candida, and all worms. This is a reassuring starting point. Sam's gut issues are not being driven by an active infection or parasitic burden. That makes our job more straightforward — we are rebuilding and rebalancing, not fighting something acute.

Bacteria That Are Elevated

Bacteria	Result	Reference	What It Means for You
Enterococcus faecalis	**1.88e4 — HIGH** HIGH	< 1.00e4	This elevation is a signal of low stomach acid. Enterococcus normally lives in small amounts in the gut, but when stomach acid is insufficient, it can overgrow. Low stomach acid connects directly to poor protein digestion, mineral malabsorption, and the fatigue and brain fog we are seeing. This also helps explain why Sam's mineral levels are so depleted despite presumably eating adequately.

Streptococcus spp.	**2.15e3 — HIGH** HIGH	< 1.00e3	Streptococcus overgrowth is another low stomach acid signal, and it is also histamine-producing, which means it can contribute to congestion, ear issues, and immune reactivity. This aligns with Sam's plugged sinuses and ears. Supporting stomach acid and gut repair will help bring this back into balance.
Fusobacterium spp.	**1.99e8 — HIGH** HIGH	< 1.00e8	Fusobacterium is an inflammatory bacteria associated with gut barrier disruption. Its elevation is consistent with the low secretory IgA we are seeing — the gut lining is under stress. Notably, Fusobacterium is also an oral-origin bacteria, which raises the question of whether oral dysbiosis may be a contributing factor here.

Critical Bacteria That Are Missing

This section is the most important part of Sam's gut results. Two foundational gut bacteria are completely undetectable, and both major bacterial phyla are significantly below optimal. This pattern is classic post-antibiotic gut depletion.

Bacteria	Result	Reference	What It Means for You
Akkermansia muciniphila	**< detectable** LOW	1.0e1 – 8.2e6	Akkermansia is the primary guardian of the gut lining. It produces the mucus layer that protects the gut wall and keeps the barrier intact. When Akkermansia is absent, the gut lining becomes vulnerable to increased permeability — commonly called leaky gut. This is one of the most significant findings in Sam's results and directly connects to his immune struggles, nutrient malabsorption, and chronic inflammation signal.
Faecalibacterium prausnitzii	**< detectable** LOW	1.0e3 – 5.0e8	Faecalibacterium is one of the most anti-inflammatory bacteria in the entire gut microbiome. It produces butyrate — the primary fuel for gut lining cells — and actively damps down gut inflammation. Its absence leaves the gut without one of its most important protective mechanisms. Low Faecalibacterium is associated with fatigue, immune dysregulation, and poor gut barrier function.
Bacteroidetes (phylum)	**1.57e11 — LOW** LOW	8.6e11 – 3.3e12	Bacteroidetes is one of the two dominant bacterial phyla that make up a healthy microbiome. A significantly depleted Bacteroidetes count reflects major microbiome disruption — likely from the antibiotic exposure.
Firmicutes (phylum)	**2.45e9 — LOW** LOW	5.7e10 – 3.0e11	Firmicutes is the other dominant phylum. Both phyla being simultaneously low tells us the

			microbiome has been broadly depleted, not just in one area. The Firmicutes:Bacteroidetes ratio of 0.02 reflects how profoundly out of balance the overall ecosystem is.

Why Missing Akkermansia Matters for Blood Sugar and Appetite Control

This is directly relevant to two of Sam's biggest health concerns — his weight and his energy crashes — and it is worth understanding the connection.

Akkermansia is one of the most metabolically important bacteria in the entire gut. When it is present and thriving, it does four things that matter greatly for blood sugar and appetite:

1. Gut barrier protection — Akkermansia maintains the mucus layer that keeps the gut lining sealed. When it is absent, bacterial toxins (called LPS) from gram-negative bacteria like Fusobacterium — which is elevated in Sam's results — can leak into the bloodstream. LPS directly interferes with how insulin works at the cellular level, driving up blood sugar and promoting fat storage.

2. GLP-1 production — Akkermansia stimulates the release of GLP-1, a gut hormone that slows digestion, signals fullness, and helps coordinate insulin release after meals. Without Akkermansia, GLP-1 output drops — meaning blood sugar spikes faster after eating, the fullness signal arrives late, and appetite is harder to regulate. This is a direct physiological explanation for why hunger can feel hard to satisfy.

3. Butyrate production — Akkermansia works together with Faecalibacterium prausnitzii (also absent in Sam's results) to produce butyrate, a short-chain fatty acid that fuels gut lining cells and improves insulin sensitivity throughout the body. With both bacteria gone, this entire pathway is shut down.

4. Adiponectin regulation — Akkermansia increases adiponectin, a hormone that improves insulin sensitivity and supports healthy body composition. Low Akkermansia means lower adiponectin, which creates a greater tendency toward fat storage even when caloric intake is not excessive.

Sam's fasting glucose of 95 — sitting at the very top of the functional optimal range — combined with absent Akkermansia, absent Faecalibacterium, elevated Fusobacterium, and low chromium and manganese creates a compounding metabolic vulnerability. He is nowhere near diabetes or pre-diabetes, but the conditions that make blood sugar harder to regulate over time are all present.

Rebuilding Akkermansia through polyphenol-rich foods and targeted prebiotic support is one of the most impactful things we can do for Sam's long-term metabolic health — not just his gut.

Intestinal Health Markers

Marker	Result	Reference	What It Means for You
Elastase-1	**115 — LOW** **LOW**	> 200 ug/g	Elastase-1 is a marker of pancreatic enzyme output. A result of 115 against an optimal of over 200 tells us that Sam's pancreas is not producing adequate digestive enzymes. This means food — especially protein and fat — is not being fully broken down and absorbed. This directly explains the widespread mineral depletion on HTMA: even if the food is there, the gut cannot extract what it needs from it. This is a root-cause finding.
Secretory IgA (sIgA)	**253 — LOW** **LOW**	510 – 2010 ug/g	Secretory IgA is the gut's first line of immune defense. A level this far below optimal signals that Sam's gut immune system is depleted and not mounting a full protective response. Low sIgA is often seen after prolonged stress, antibiotic use, or chronic illness. It leaves the gut more vulnerable to overgrowth and infection, and it correlates with the systemic immune challenges — repeated congestion, ear issues, and poor resilience — that we are seeing.
Calprotectin	**31** **In range**	< 173 ug/g	Calprotectin measures active gut inflammation. A result of 31 is well within range, which tells us there is no acute inflammatory fire burning in the gut right now. This is genuinely reassuring — the dysbiosis is real, but it is not causing overt gut inflammation at this stage.
Anti-gliadin IgA	**7** **In range**	< 175 U/L	Negative for gluten reactivity. No evidence of a gut immune response to gliadin (wheat protein). This rules out active gluten sensitivity as a driver of the current gut picture.
Beta-glucuronidase	**984** **In range**	< 2486 U/mL	Within range. This marker reflects phase 2 liver detox function. A normal result here is reassuring and tells us the liver's detox pathways are not under significant additional stress at this time.
Steatocrit	**< detectable** **In range**	< 15%	Fat absorption is intact. Despite the low Elastase-1, fat is still being absorbed adequately. This is a positive finding and tells us the enzyme deficiency is affecting protein digestion more than fat.

Blood Panel Findings

The blood panel gives us important confirmation of several things we suspected from the HTMA, and adds a few new pieces to the picture. All results were interpreted using functional optimal ranges rather than conventional lab reference ranges.

Iron Markers

Marker	Result	Functional Optimal	What It Means for You
Serum Iron	**67 mcg/dL** LOW	~120 mcg/dL	Iron is below functional optimal. While conventional reference ranges show this as acceptable, at a functional level his iron is not where it needs to be for optimal energy production, cognitive function, and thyroid support. This confirms what the HTMA iron suggested.
TIBC (Iron Binding Capacity)	**399 mcg/dL** HIGH	~340 mcg/dL	TIBC is elevated, meaning the body has increased its iron-carrying capacity because it is hungry for more iron. This is a classic iron insufficiency signal — the transport system is ramped up trying to catch whatever iron is available.
% Saturation	**17%** LOW	25–30%	Saturation tells us how much of the iron transport protein is actually loaded with iron. At 17%, Sam's transferrin is only partially filled — confirming functional iron insufficiency even though ferritin looks adequate.
Ferritin	**41 ng/mL** In range	20–50 ng/mL	Ferritin is the storage form of iron and falls within functional optimal. His storage is intact, but his body is not efficiently utilizing and transporting that iron — which is why serum levels and saturation are low. This is a transport/utilization issue, not a storage issue, and is directly connected to low ceruloplasmin.
Hemoglobin	**13.8 g/dL** In range	~14.5 g/dL	Hemoglobin is within the acceptable range for an 10-year-old male, though slightly below the functional adult male optimal. Monitoring as minerals and copper support rebuilds is appropriate.
Transferrin	**298 mg/dL** In range	~300 mg/dL	Transferrin is just barely below the functional optimal of 300. Borderline — consistent with the iron transport picture overall.

Ceruloplasmin	**29 mg/dL** **In range**	~30 mg/dL	Ceruloplasmin is just below functional optimal. Ceruloplasmin is the copper-carrying protein that regulates iron transport — it is what allows the body to load iron onto transferrin and move it into cells. Even a marginally low ceruloplasmin can impair iron utilization, which is exactly what we are seeing. As copper support from the blend takes effect, ceruloplasmin should improve.
Serum Copper	**115 mcg/dL** **In range**	~100 mcg/dL	Serum copper is slightly above functional optimal, despite HTMA showing low copper. This is not a contradiction — it tells us copper is present in circulation but may not be fully bioavailable, consistent with the borderline-low ceruloplasmin. As ceruloplasmin improves, copper should become better utilized.

Metabolic & Inflammation Markers

Marker	Result	Functional Optimal	What It Means for You
Fasting Glucose	**95 mg/dL** **In range**	85–95 mg/dL	Glucose is at the very top of the functional optimal range. This is worth keeping an eye on as the mineral protocol progresses, particularly as chromium and manganese support from the blend takes effect. Blood sugar support is already built into the protocol.
hs-CRP	**2.5 mg/L** **Elevated**	< 1.0 preferred	hs-CRP is a systemic inflammation marker. At 2.5 in an 10-year-old with no conventional cardiovascular risk context, this is meaningful. It is consistent with the gut dysbiosis, low-grade gut barrier stress, and the elevated Fusobacterium we saw on the GI-MAP. As gut repair progresses and dysbiosis resolves, we would expect this to trend down.
Magnesium RBC	**6.3 mg/dL** **LOW**	6.5 mg/dL	Just below functional optimal, confirming the HTMA magnesium depletion pattern in the blood. The blend is already addressing this directly.
Serum Copper	**115 mcg/dL** **In range**	~100 mcg/dL	See iron section above.
Vitamin A (Retinol)	**38 mcg/dL** **In range**	26–49 mcg/dL	Vitamin A is within range. Sam's Vykon blend includes Vitamin A support, so this is already being addressed in his protocol.
Liver Enzymes (AST/ALT)	**18 / 24** **In range**	AST 12–32 / ALT 8–30	Both liver enzymes are within range, which is reassuring. Despite the mold history and the gut

			dysbiosis, the liver is not under overt stress at this time.

How the GI-MAP and Blood Panel Connect to the HTMA

These three tests tell a coherent and consistent story when read together. The HTMA showed widespread mineral depletion. The GI-MAP explains a major reason why — his gut cannot fully absorb nutrients because his pancreatic enzyme output is reduced, his gut lining is compromised, and his protective bacteria are gone. The blood panel confirms that iron utilization is impaired (likely because ceruloplasmin is borderline) and that systemic inflammation is present.

The antibiotic use wiped out critical gut bacteria — particularly Akkermansia and Faecalibacterium — and the elevated Streptococcus and Enterococcus faecalis point to low stomach acid as a compounding factor. Low stomach acid means less mineral absorption, less protein breakdown, and a less acidic environment that allows opportunistic bacteria to take hold. This is the gut-mineral feedback loop: a depleted gut worsens mineral status, and low minerals further impair gut function.

The good news is that we now have a clear and complete picture, and everything we are doing works together. The mineral blend supports the gut. Digestive enzymes address the Elastase-1 deficiency directly. The gut repair protocol rebuilds what the antibiotics removed. And as the gut heals, mineral absorption will improve — which means the protocol gets more effective over time, not less.

Updated Protocol — Adding Gut Repair Support

The following supplements are being added to Sam's existing protocol to directly address the GI-MAP findings. His Vykon blend, Seraphos, digestive enzymes, and essential amino acids remain unchanged and are already supporting this work.

Addition	Why We Are Adding It
Mega SporeBiotic	Spore-based probiotics are the preferred choice when the microbiome has been broadly depleted. Spore strains survive the digestive tract intact, do not require prebiotics or fiber to activate, and help reseed the microbiome without overstimulating an already stressed immune system. This is the right fit for Sam given his depleted sIgA and gut dysbiosis pattern.
Polyphenols Broad Spectrum+Akkermansia 500 Ultra — 1 daily	We are using two products to target Akkermansia restoration. Akkermansia 500 Ultra provides a direct Akkermansia muciniphila strain at a therapeutic dose (1 daily). Polyphenols Broad Spectrum+ provides the polyphenol-rich prebiotic environment that Akkermansia needs to colonize and thrive — without polyphenol support, Akkermansia strains have a harder time establishing. Both are taken alongside Mega SporeBiotic. Each works on a different part of the microbiome.
Mega Mucosa	Mega Mucosa addresses two of the most important findings in Sam's results simultaneously. The IgG (450mg) and Serum-Derived Bovine Immunoglobulin Concentrate (550mg) directly support mucosal immune function and help restore the gut's depleted secretory IgA. The mucosal amino

	acid blend — L-Threonine (600mg), L-Serine (700mg), L-Proline (1000mg), L-Cysteine (80mg), and Citrus Bioflavonoids (500mg) — provides the specific building blocks the gut needs to rebuild its mucus layer, which is exactly what is structurally compromised when Akkermansia is absent. This is a better fit than colostrum alone because it addresses both the immune and the structural sides of gut repair.
Pylor-X (Zinc/Berberine/Bismuth complex)	This combination addresses the elevated Enterococcus faecalis and Streptococcus directly. Berberine is antimicrobial against these dysbiotic strains and also supports blood sugar regulation — relevant given Sam's fasting glucose sitting at the top of functional optimal and the Akkermansia-blood sugar connection. Bismuth supports gut barrier integrity. Zinc carnosine is the most studied form for gut lining repair and directly complements the stomach acid support already in the blend.
Lactoferrin and/or Beef Spleen Capsules(taken as directed)	Serum iron is 67 against a functional optimal of ~120, TIBC is elevated, and saturation is only 17% — iron support is clearly needed. However, directly supplementing elemental iron into a dysbiotic gut is not appropriate right now. Dysbiotic bacteria including Enterococcus faecalis and Streptococcus — both elevated in Sam's results — are iron-dependent organisms. Free iron in the gut feeds them directly. Lactoferrin is the right tool here: it is an iron-binding protein that improves iron absorption and utilization through the lactoferrin receptor pathway while simultaneously pulling free iron away from pathogenic bacteria, acting as a natural bacteriostatic agent. It also directly supports immune function and aligns well with the low sIgA picture. Beef spleen capsules are an excellent complement — they provide heme iron in its most bioavailable whole-food form alongside naturally occurring transferrin and iron-binding proteins, without releasing free iron into the gut environment. Once gut repair is well underway and dysbiosis has resolved, we will retest the Functional Lab Panel and reassess.
Digestive Enzymes (already in protocol)	Already included and confirmed essential by the low Elastase-1. These compensate for reduced pancreatic enzyme output and ensure food is being fully broken down and nutrients absorbed.
Apple Cider Vinegar (ACV)— or Betaine HCl if preferred	You have two options here and can choose whichever works best for Sam. Option 1: 1 teaspoon of raw ACV diluted in a small amount of water, taken 5–10 minutes before the two largest meals. Option 2: Betaine HCl — if Sam prefers a capsule over the taste of ACV, you can start here instead. Begin with one capsule with the largest meal and see how he tolerates it. Either option gently acidifies the stomach environment, triggers the downstream signal for pancreatic enzyme release, and creates a less hospitable environment for the Enterococcus faecalis and Streptococcus overgrowth we are seeing. Discontinue whichever you choose if any reflux or warmth in the chest develops. DGL is already in the protocol working alongside this to support the gastric mucosa.

What to Watch For as the Gut Heals

Gut repair in children can be relatively fast — the gut lining turns over quickly and children tend to respond well to probiotic and repair support. Here is what we would expect to see as the protocol takes effect:

Timeframe	What to Expect
Weeks 2–4	Digestive symptoms may shift — some children experience temporary loose stools or changes in bowel habits as the microbiome begins to rebalance. This is normal and usually short-lived. Energy may begin to improve as enzyme support kicks in and nutrient absorption improves.
Months 1–3	Focus and memory improvements as the gut-brain axis stabilizes. The connection between gut health and cognitive function is well established — a rebuilding microbiome directly supports neurotransmitter production and nervous system signaling. Congestion and ear issues may begin to ease as Streptococcus levels come down and immune function improves.
Months 3–6	Deeper immune resilience as sIgA rebuilds. Akkermansia and Faecalibacterium regrowth is a slower process and may take the full 3–6 months. The hs-CRP inflammation marker should trend down as gut dysbiosis resolves. At the 6-month HTMA retest, we would expect to see mineral levels beginning to improve as absorption improves.

These results give us so much clarity — and honestly, they are encouraging.

There is nothing dangerous here. No infections, no parasites, no serious disease. What we are looking at is a gut that has been significantly disrupted — possibly by antibiotics — and needs strategic support to rebuild. That is exactly what we are doing.

The fatigue, the brain fog, the memory struggles, the congestion, the sleep issues — these all make complete sense in light of what the gut test is showing. A depleted microbiome, low digestive enzyme output, and a gut immune system running below capacity create exactly these symptoms. This is not mysterious, and it is not permanent.

The blood sugar and appetite piece matters too. The absence of Akkermansia is not just a gut issue — it directly affects how Sam's body regulates blood sugar, signals fullness, and manages weight. Rebuilding his microbiome is one of the most powerful metabolic interventions we can make for him right now. The berberine in the zinc/berberine/bismuth complex supports this work directly, and as Akkermansia is restored, the GLP-1 and adiponectin pathways will begin to normalize on their own.

Sam's body wants to heal. We are giving it the tools to do that — and the mineral foundation we are already building makes all of this gut repair work more effective. These pieces work together.

Please reach out with any questions as we move forward. We are making real progress.

If at any point in time you experience adverse effects or constipation from your supplements let me know. We may need to adjust the dose and/or add in additional binder support.

Your GI-MAP results provide a detailed snapshot of your gut health at this moment in time. Because your body is always adapting and healing, these results — and the recommendations based on them — are considered accurate for about six months.

To ensure continued accuracy and effectiveness of your protocol, retesting at that time is required before continuing or adjusting supplementation.