

Scientific Validity of the Metabolic Archetypes™

A Genomic, Evolutionary, and Functional
Justification for Classification and Coaching



Hormesis Health & Fitness
Evolutionary Vitality



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Executive Summary for Partnerships

The Metabolic Archetypes™ framework is a scientifically grounded, genetically-informed, and evolutionarily-consistent system for classifying individual metabolic tendencies.

It offers a powerful solution to the mismatch between modern health protocols and the ancestral design of human metabolism.

This white paper outlines the legitimacy and utility of the Metabolic Archetypes across three major axes:

1. **Evolutionary Differentiation** – Human populations adapted to diverse environments over tens of thousands of years, shaping key metabolic strategies (e.g., fat oxidation, insulin resistance, nutrient partitioning).
2. **Genetic Clustering** – Despite high individual variability, core SNPs and regulatory genes consistently organize into metabolic expression types. These gene patterns reflect population-level adaptations with coaching relevance.
3. **Phenotypic Utility** – Archetypes provide actionable groupings that improve personalization without requiring full genomic interpretation. They outperform generic advice and fill the gap between broad lifestyle recommendations and unstructured individualized protocols.

This framework withstands common challenges (e.g., admixture, uniqueness, similarity), offering a scalable, repeatable, and evidence-informed model for practitioners, wellness platforms, and personalized health ventures.

Introduction

In a world of rising chronic disease, metabolic dysfunction, and one-size-fits-all advice, the Metabolic Archetypes™ framework provides a bridge between genetic individuality and practical coaching systems. Grounded in evolutionary biology, enriched by genomic analysis, and validated by phenotypic outcomes, it offers a path to restoring biological fitness based on the body's original design.

Part I: Evolutionary Basis for Metabolic Diversity

Shared Origin, Divergent Pressures:

While all humans trace ancestry to East Africa (~200,000 years ago), global dispersal subjected populations to radically different conditions:

- Arctic cold and high-fat diets (e.g., Inuit)
- Equatorial heat and carbohydrate-based diets (e.g., West African)
- High-altitude hypoxia (e.g., Andean or Tibetan populations)
- Periodic famine and feast cycles (e.g., Northern Eurasian)
- Grain agriculture vs. pastoralism vs. foraging

Key Insight: Evolution created metabolic diversity, not uniformity—natural selection, local adaptation, drift, and bottlenecks shaped distinct physiological strategies.

Part II: Genetic Evidence of Functional Groupings

Genes That Regulate Metabolic Strategy:

Despite individual SNP differences, the regulatory architecture of metabolism is constrained—a limited number of genes and pathways control substrate use, insulin response, appetite, and energy storage. These include:

- Carbohydrate metabolism: *SLC2A2*, *TCF7L2*, *FTO*, *AMY1* copy number
- Fat metabolism: *CPT1A*, *PPARG*, *ADRB2*, *FABP2*
- Insulin signaling: *IRS1*, *IGF2BP2*, *AKT2*
- Mitochondrial efficiency: *UCP1*, *PGC1A*
- Inflammation/modulation: *IL6*, *TNFA*, *CRP*

Emergence of Archetypes:

Based on combinatorial SNP analysis, five dominant metabolic expression patterns emerge:

1. Carbohydrate-Efficient Metabolizer™
2. Fat-Adapted Metabolizer™
3. Dual-Fuel Metabolizer™
4. Carbohydrate-Sensitive Fat Storer™
5. Hypermetabolic Outlier™

Each archetype integrates genetic predisposition with ancestral origin, lifestyle needs, and expression under modern environments. These are not *labels* but *functional strategies*.



Part III: Phenotypic Expression and Coaching Application

Archetypes in the Real World:

Archetypes manifest in daily life as:

- Different responses to fasting or time-restricted feeding
- Variability in blood sugar control and triglyceride-to-HDL ratio
- Distinct responses to endurance vs. strength training
- Differing needs for fat, protein, or carbohydrate emphasis

Clinical Utility:

Archetypes allow coaches to:

- Reduce trial-and-error with nutritional plans
- Target high-impact lifestyle levers (sleep, food timing, fasting)
- Detect early signs of dysfunction (e.g., poor metabolic flexibility)
- Stratify lab results through a genetically-aligned lens

Part IV: Addressing Core Critiques

Critique 1: "We're all the same genetically."

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While 99.9% of our genome is shared, the 0.1% accounts for most interindividual metabolic variability—particularly in how we handle glucose, fats, stress, and mitochondrial efficiency.

Critique 2: "We're too different for groupings."

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Complex systems often cluster around phenotypic types. Archetypes are not simplifications—they're pattern recognitions informed by systems biology and genetic logic.

Critique 3: "Modern interbreeding erases these groupings."

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Admixture reshuffles but doesn't erase genes. Archetypes help interpret which metabolic strategy is dominant in an individual. Increased mixing makes structured classification *more important*, not less.

Critique 4: "Why not just test all the genes?"

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Archetypes provide a compressed decision-support model that translates complex genomic data into *actionable coaching insights*. This is both scalable and clinically implementable.

Conclusion: Archetypes as an Evolutionary Operating Manual

The Metabolic Archetypes™ model provides:

- A biologically grounded framework for interpreting genomic individuality
- A practical architecture for coaching and intervention
- A scientifically justifiable response to the mismatch between ancestral design and modern life

It sits at the intersection of genetics, behavior, physiology, and environment—providing a new foundation for restoring metabolic health.

At Hormesis Health and Fitness, we go beyond generic advice.

Through our **Metabolic Archetypes™** framework -

... we help identify how your body uniquely processes food, fuel, and stress—whether you're a Fat-Adapted Metabolizer™, a Carb-Sensitive Fat Storer™, or something in between.

We combine this with advanced lab interpretation using *proper* clinical thresholds -

... **not just outdated population averages**—and tools like the TyG index, fasting insulin, and triglyceride-to-HDL ratio to detect early signs of metabolic dysfunction. This allows us to reverse-engineer your current biological state and provide clear, personalized direction.

With our systems -

... The Archetype Engine™, The Hormetic Code™, and The Biological Fitness Map" we guide you through the exact metabolic and training strategies your body needs, no more and no less.

It's not about working harder. It's about working biologically smarter—and with the right map.



Disclosure & Disclaimer

The information provided by Hormesis Health and Fitness is for educational and informational purposes only and is not intended as medical advice, diagnosis, or treatment. Always consult your healthcare provider before making changes to your nutrition, physical activity, or lifestyle—especially if you have a medical condition or take prescription medications.

Hormesis Health and Fitness promotes strategies aligned with our evolutionary biology—what the human body fundamentally needs to thrive. These principles support general vitality and biological fitness, and while they benefit those with chronic conditions, they are not disease-specific protocols. Rather, they are rooted in what promotes health for all.

Our approach leverages the Metabolic Archetypes™ and the Hormetic Code™ to guide personalized strategies that support the body's natural capacity for resilience and vitality. When we honor our biological design—giving the body what it needs and avoiding what degrades it—health is not just possible, it's expected. Confidential and Proprietary

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