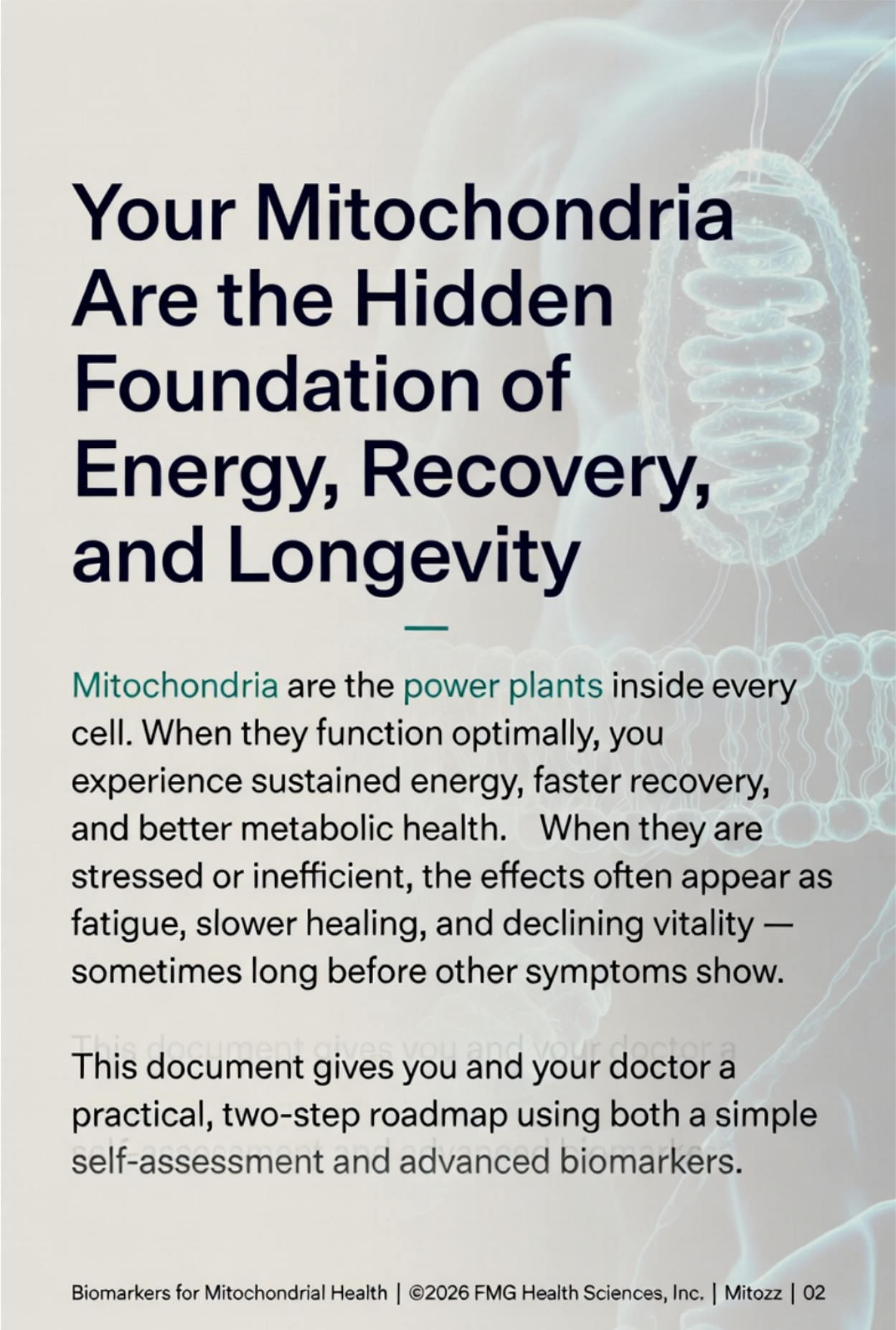


Biomarkers for Mitochondrial Health

A Clear Two-Step Roadmap to Understand Your Cellular Energy Status



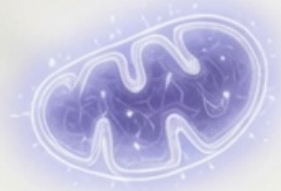


Your Mitochondria Are the Hidden Foundation of Energy, Recovery, and Longevity

Mitochondria are the **power plants** inside every cell. When they function optimally, you experience sustained energy, faster recovery, and better metabolic health. When they are stressed or inefficient, the effects often appear as fatigue, slower healing, and declining vitality — sometimes long before other symptoms show.

This document gives you and your doctor a practical, two-step roadmap using both a simple self-assessment and advanced biomarkers.

The Two-Step Mitochondrial Health Roadmap



Step 1 – Free Self-Assessment

- Complete our 90 seconds self assessment
- Get your personalized results instantly
- Start optimizing today

Step 2 – Advanced Lab Tests with Your Doctor

- Order comprehensive biomarker panel
- Review results with your healthcare provider
- Track progress over time

Step 1 - Free Mitozz Mitochondrial Vitality Self-Assessment

A quick 90-second online questionnaire that evaluates your daily **energy**, **strength**, endurance, and recovery.

Visit: <https://mitozz.com/mitozz-mitochondrial-vitality-self-assessment/>

You will instantly receive your Mito Score (0-100).

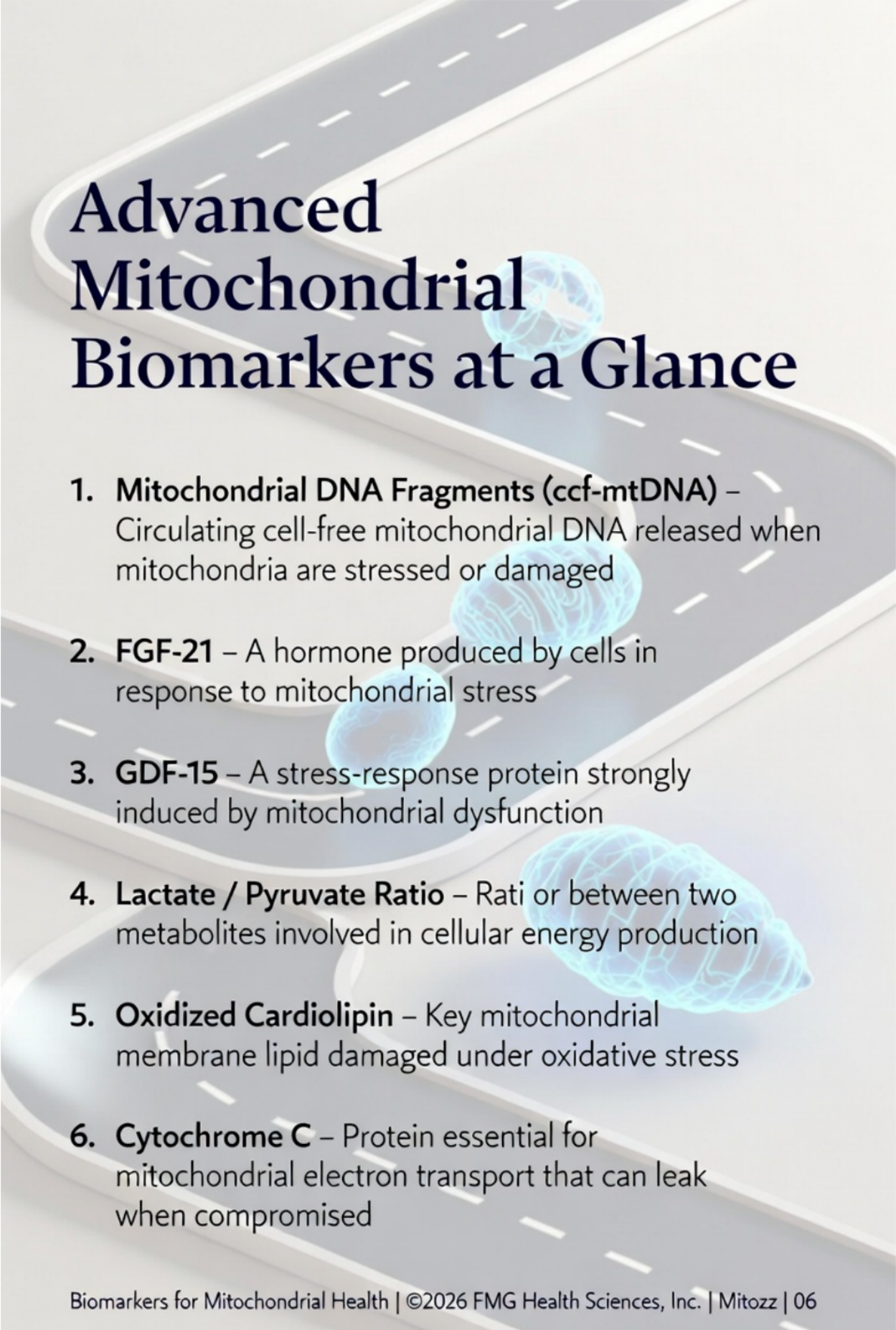
Mito Score



Understanding Your Mito Score

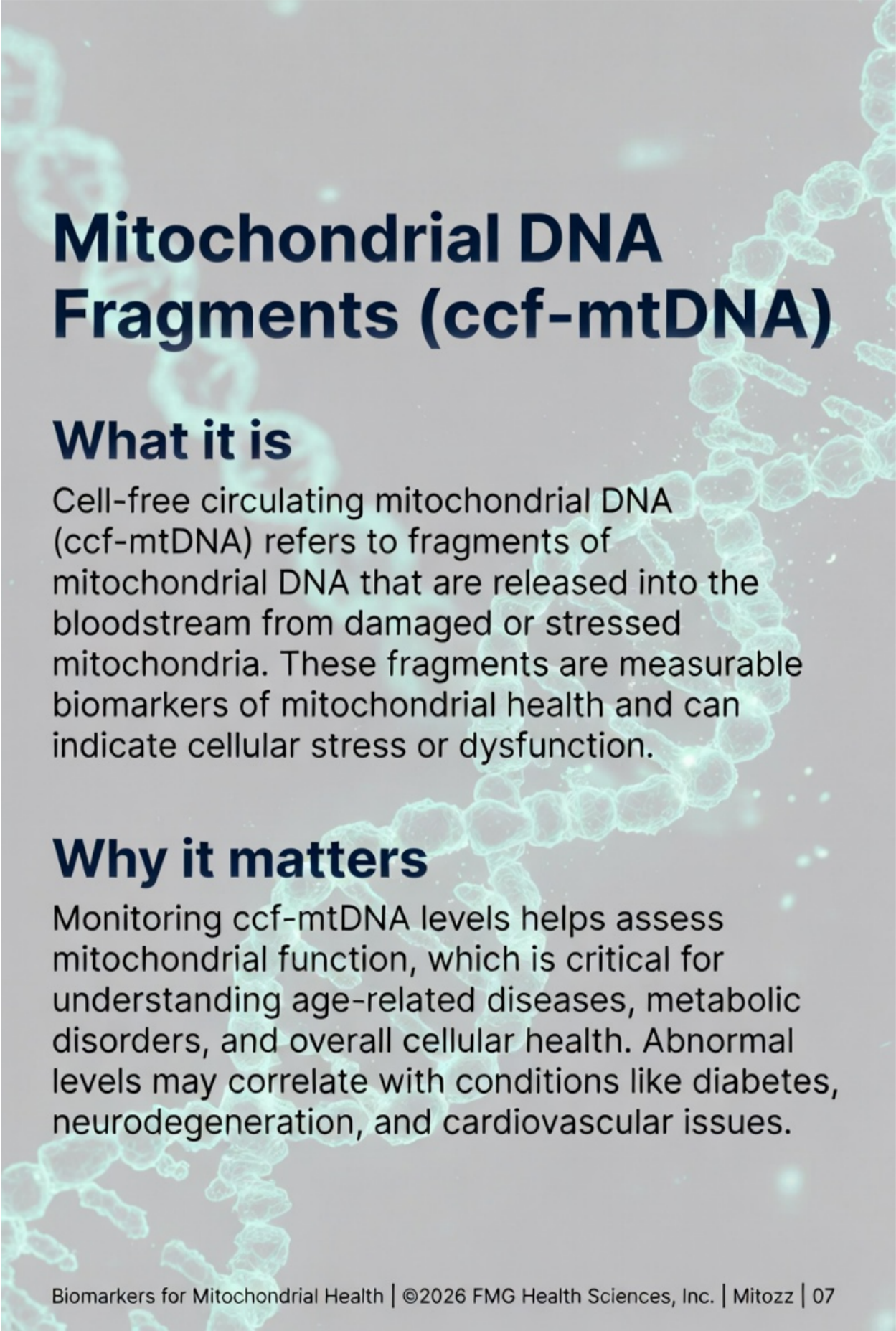
Mito Score Ranges:

- **85-100** Excellent
- **70-84** Good
- **55-69** Moderate signals
- **Below 55** Clear opportunity



Advanced Mitochondrial Biomarkers at a Glance

1. **Mitochondrial DNA Fragments (ccf-mtDNA)** – Circulating cell-free mitochondrial DNA released when mitochondria are stressed or damaged
2. **FGF-21** – A hormone produced by cells in response to mitochondrial stress
3. **GDF-15** – A stress-response protein strongly induced by mitochondrial dysfunction
4. **Lactate / Pyruvate Ratio** – Ratio between two metabolites involved in cellular energy production
5. **Oxidized Cardiolipin** – Key mitochondrial membrane lipid damaged under oxidative stress
6. **Cytochrome C** – Protein essential for mitochondrial electron transport that can leak when compromised

A background image showing a microscopic view of cells. The cells are outlined in a light green color, and within them, the mitochondria are highlighted with a bright green, glowing effect. The overall image has a soft, out-of-focus appearance, typical of biological microscopy.

Mitochondrial DNA Fragments (ccf-mtDNA)

What it is

Cell-free circulating mitochondrial DNA (ccf-mtDNA) refers to fragments of mitochondrial DNA that are released into the bloodstream from damaged or stressed mitochondria. These fragments are measurable biomarkers of mitochondrial health and can indicate cellular stress or dysfunction.

Why it matters

Monitoring ccf-mtDNA levels helps assess mitochondrial function, which is critical for understanding age-related diseases, metabolic disorders, and overall cellular health. Abnormal levels may correlate with conditions like diabetes, neurodegeneration, and cardiovascular issues.

FGF-21 (Fibroblast Growth Factor 21)

What it is

FGF-21 is a hormone that plays a critical role in regulating metabolism, energy balance, and mitochondrial function. It is primarily produced by the liver and adipose tissue and acts as a key signaling molecule in metabolic homeostasis.

Why it matters

Elevated levels of FGF-21 are associated with improved insulin sensitivity, enhanced fat metabolism, and protection against metabolic diseases such as diabetes and obesity. It is considered a promising biomarker for mitochondrial health and longevity.



ROADMAP

GDF-15 (Growth Differentiation Factor 15)

What it is

GDF-15 is a protein that plays a critical role in cellular stress response and inflammation. It is produced by various tissues in response to injury or disease.

Why it matters

Elevated levels of GDF-15 are associated with mitochondrial dysfunction and may serve as a biomarker for assessing cellular health and disease progression.



Lactate / Pyruvate Ratio

What it is

The ratio between two metabolites involved in cellular energy production.

Why it matters

A high ratio indicates impaired mitochondrial respiration and is a classic indicator of mitochondrial dysfunction.



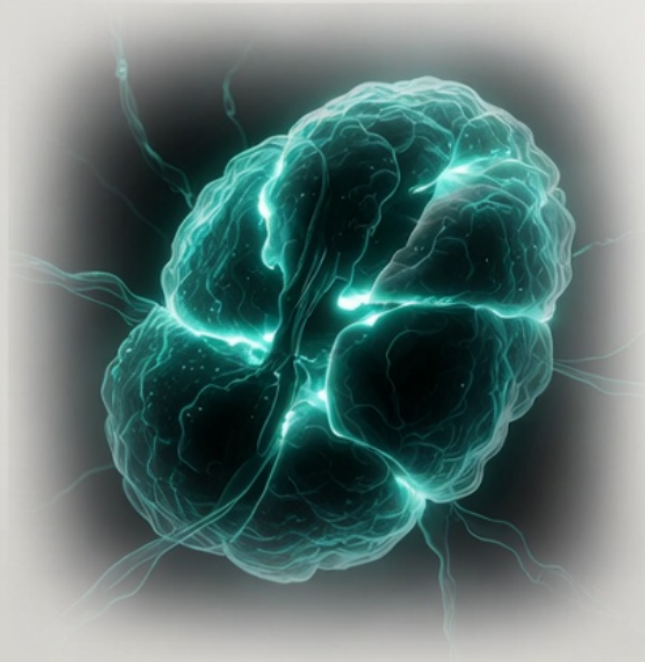
Oxidized Cardiolipin

What it is:

A key mitochondrial membrane lipid that becomes damaged (oxidized) under oxidative stress.

Why it matters:

Direct evidence of mitochondrial membrane damage and impaired energy production.



Cytochrome C

What it is:

A protein essential for mitochondrial electron transport that can leak into the blood when mitochondria are compromised.

Why it matters:

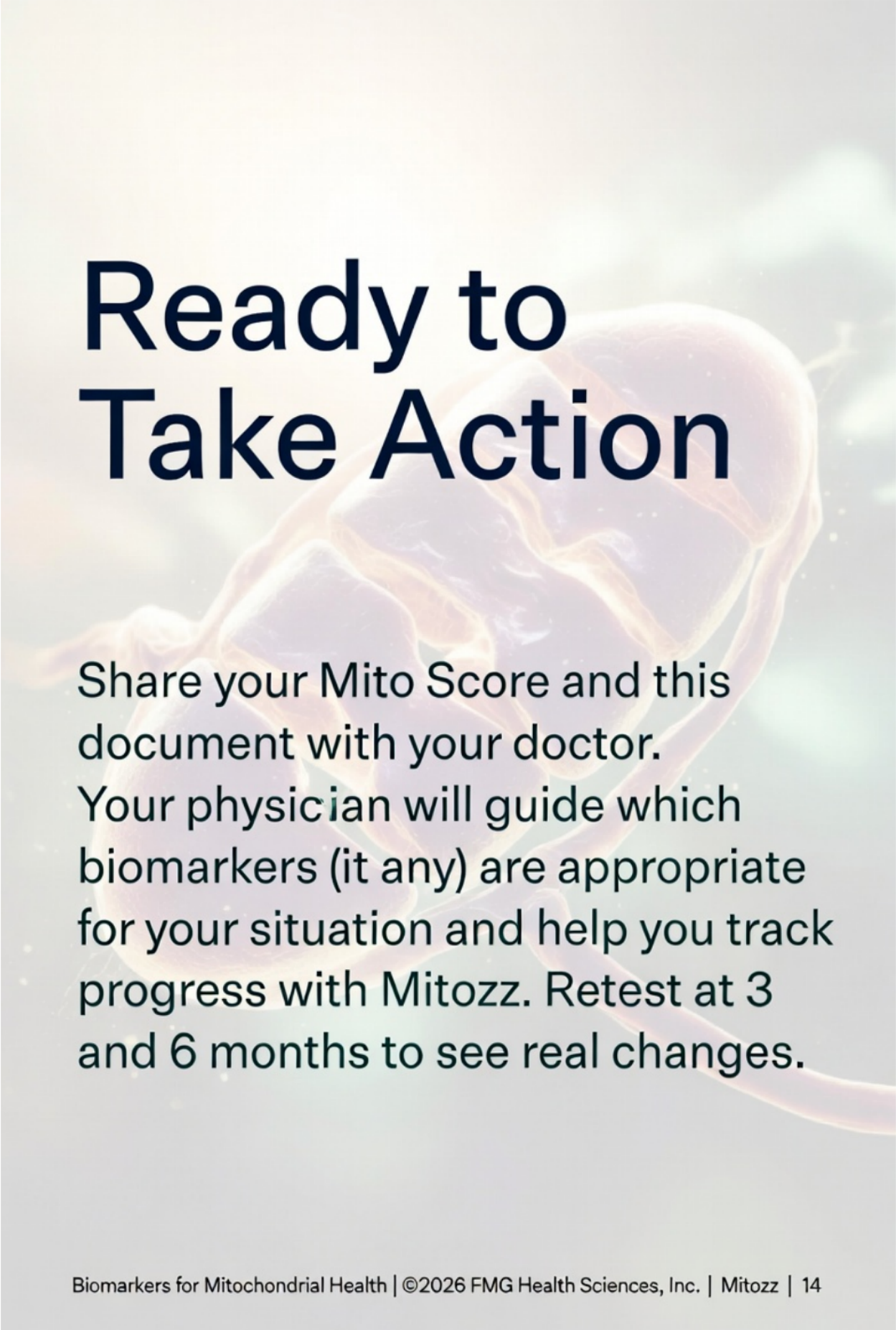
Elevated levels reflect mitochondrial membrane damage and early cell stress.



Step 2 Complete

You now have a clear,
objective picture of
your mitochondrial
health

through the free self-
assessment and the
advanced biomarkers
discussed with your
doctor.



Ready to Take Action

Share your Mito Score and this document with your doctor. Your physician will guide which biomarkers (if any) are appropriate for your situation and help you track progress with Mitozz. Retest at 3 and 6 months to see real changes.