

Math Biology® - Executive Investment Memorandum (2026 Edition)

"Your body speaks, we listen." | non-Invasive Deep Metabolic Assessment (DMA®)

EXECUTIVE INVESTMENT SUMMARY

Opportunity: Math Biology® is raising **€12M in Series A equity funding** to scale its AI-driven Deep Metabolic Assessment (DMA®) technology across European and US markets.

Core Edge: A zero-invasive, passive bioelectrical screening platform capable of translating naturally occurring metabolic signals into functional insights across organ systems.

Business Model: High-margin Technology-as-a-Service (TaaS) recurring revenues paired with direct flagship revenue. **Defensibility**: Proprietary dataset (2M+ data points, 25k+ protocols), MDR Class I certification active, 3 pending international patents, and a network data flywheel.

CHAPTER 1: EXECUTIVE SUMMARY

1. Mission & Core Value Proposition

Math Biology® pioneers zero-invasive, AI-driven metabolic platform through proprietary Deep Metabolic Assessment (DMA®) technology.
Grounded in the core positioning *"Your body speaks, we listen"*, the platform translates naturally occurring, weak bioelectrical signals into functional metabolic insights across organ systems and biological processes.

Unlike static diagnostic tools, DMA provides real-time, point-of-care evaluation to support **proactive screening, therapeutic monitoring, longevity optimization, and athletic performance** management.

2. The Problem & Healthcare Gap

Modern healthcare suffers from a systemic "Diagnostic Odyssey" characterized by delayed disease interception, high error rates, and fragmented monitoring:

- **Diagnostic Blind Spots**: Approximately 1 in 3 clinical visits involve unexplained symptoms, while ~40% of cancers are detected late when intervention costs are highest.
- **Severe Clinical & Economic Consequences**: Diagnostic error contributes to ~10% of patient deaths. Furthermore, measuring therapeutic efficacy typically requires feedback loops of up to 12 weeks.
- **Massive Financial Burden**: Diagnostic errors and unexplained symptom workups create an annual burden exceeding $500B in the United States and €220B in the European Union.
- **Structural Limitations of Alternatives**: Standard blood panels lack organ localization; imaging modalities (full-body PET/MRI) are cost-prohibitive (~$2,500/scan), episodic, and radiation/contrast-heavy; consumer wearables provide surface-level metrics without cellular or metabolic depth.

3. DMA® Technology & Proprietary Defensibility

DMA® captures weak electrical currents (nanoampere range) naturally emitted by the body across 62 standardized anatomical points. It injects zero current or electromagnetic fields into the body, ensuring complete patient safety and non-invasiveness.

Core Capability	Technical & Strategic Benchmark
Comprehensive Screening	Multi-parametric reporting covering up to 600 metabolic parameters in a 15–60 minute visit.
Neurotransmitter Axis	Breakthrough ability to evaluate the metabolic demand of neurotransmitters, unlocking novel applications in neurology, mental health, and high performance.
Data & Model Moat	Hybrid AI/mathematical digital twin model trained on a proprietary dataset of 2M+ data points, 25,000+ protocols, and 1,300+ evaluated subjects.
IP & Regulatory	2 pending international patents CE (EMC) mark since 2023; MDR Class I & ISO-13485 closing phase; MDR Class IIa and FDA clearance (target Q4 2027) underway.

4. Commercial Strategy & Business Model (Technology-as-a-Service - TaaS)

Math Biology® operates a scalable Technology-as-a-Service (TaaS) business model that combines direct flagship income with recurring B2B network subscriptions:

- **Direct Flagships - Human Biology Institutes (HBIs)**: Directly owned, high-visibility centers in a few strategic metropolitan areas (e.g., Rome, Zurich, New York). HBIs function as operational demonstration labs, intensive data acquisition engines, clinical trial nodes, and brand anchors.
- **Commercial B2B2C network of partners (Scale-Up) - hosted Human Biology Institutes (h-HBIs)**: B2B2C network of partner-operated clinics, pharmacies, diagnostic hubs, and sports centers operating under Math Biology's brand, protocol library, and data governance.
- **Recurring Revenue Streams**: The h-HBI network generates annual platform software subscriptions ($ 4,000/yr) and direct per-visit usage fees ($50–$90/visit).

5. Phased Go-To-Market Sequence

Math Biology® mitigates execution risk by prioritizing cash-pay markets that bypass insurance reimbursement bottlenecks:

GO TO MARKET STAGING STRATEGY

Phase 1: Cash-Pay Beachhead (Months 1–12)

Focus on elite Sport & Performance clubs and Longevity/Wellness clinics. Discretionary cash budgets enable fast sales cycles (weeks) and immediate high-stress metabolic validation.

Phase 2: B2B2C Provider Scaling (Months 12–36)

Expansion of hosted HBIs across private medical centers and pharmacy networks in Europe and the US.

Phase 3: Institutional Accelerators (2027+)

Integration into health insurance risk pools, corporate wellness programs, and public health pathways (e.g., initiatives with Regione Lazio and Regione Piemonte) as reimbursement coding matures.

6. Investment Requirement & Capital Allocation

To execute this growth plan, Math Biology® is securing a **€12M Series A equity raise**:

Allocation Category	Share (%)	Primary Operational Objectives
Go-to-Market & Flagships	30%	Sport & Wellness beachhead launch, rollout of owned flagship HBIs.
Clinical Validation & Regulatory	35%	US prospective trials, FDA clearance preparation, MDR Class IIa completion, AI algorithm refinement.
Team & Tech Edition 2.0	25%	US holding structure, executive C-suite expansion, specialized scientific/engineering hires.
G&A, IP & Working Capital	10%	QMS maintenance, patent portfolio international expansion, corporate operations.

CHAPTER 2: KEY INVESTOR QUESTIONS & ANSWERS (Q&A)

1. What specific healthcare problem are we solving, for whom, and what outcome does it improve?

Problem: Traditional healthcare is fundamentally reactive, episodic, and invasive. Late-stage disease detection, diagnostic errors (~10% of mortality), and 12-week

therapy monitoring delays drive up healthcare costs and compromise clinical outcomes.

Target Customers (Sequenced Go-To-Market):

1. *Beachhead - Sport & Performance*: Professional sports teams, elite clubs, and athletes paying direct cash via discretionary budgets.
2. *Prevention, Longevity & Wellness*: Health-conscious individuals and corporate wellness programs seeking non-invasive biological tracking.
3. *Core Medical Markets*: Clinicians in oncology, neurology, cardiology, and gastroenterology requiring fast point-of-care functional screening.
4. *Insurers & Payers (2027+)*: Health and life insurers aiming to optimize risk pools and reduce downstream hospitalizations.

Improved Outcomes:

- *Compressed Time-to-Answer*: Point-of-care assessment completed in a single 15–60 minute visit.
- *Closed Feedback Loops*: Rapid, non-invasive monitoring of therapeutic response and side-effect emergence.
- *Reduced Care Costs*: Triage tool preventing redundant imaging and unindicated invasive workups.

2. What measurable outcome do we improve, and what proof do we have so far?

Measurable Outcomes:

- *Time Acceleration*: Reduces diagnostic feedback intervals from several weeks to a single point-of-care session covering up to 600 parameters.
- *Metabolic Separation*: In exploratory retrospective analysis, the composite Bioelectrical Marker Response Index (BMRi) demonstrated a **>4× separation between healthy controls (~7.9) and untreated oncology patients (~36.5)**. Additionally, patients under chemotherapy exhibited intermediate values (~12.3), reflecting measurable treatment tracking.

- *Cost Efficiency*: Delivers broad functional screening at $50–$90 per visit compared to ~$2,500 for full-body MRI scans.

Validation & Proof Points:

- *Proprietary Evidence Base*: 2M+ data points, 25,000+ protocols, and 1,300+ validated subjects.
- *High Retrospective Sensitivity (PPA)*: >95% sensitivity across internal retrospective verification datasets.
- *Clinical Concordance*: Hundreds of documented cases showing strong alignment between DMA® reports and third-party clinical diagnostics (biopsies, blood panels, PET/CT).
- *Prospective Trials*: 3 clinical studies currently active (Oncology and Cardiology with University of Salerno; Infections with Campus Bio-Medico Rome).
- *Regulatory Baseline*: CE (EMC) certified since 2023, MDR Class I reached, ISO-13485 in final stages. MDR Class 2A & FDA in progress.

3. Who is the economic buyer, who is the end user, and who benefits from the result?

- **Economic Buyer**:
  - *Near-Term (Beachhead)*: Sports club managers, athletic directors, longevity clinic owners, and cash-paying individuals.
  - *Mid-Term (Scale-Up)*: Private medical practice operators, diagnostic laboratory groups, and pharmacy chains subscribing to the TaaS model.
  - *Long-Term*: Health insurance underwriters and self-insured corporate employers.
- **End User**: The individual undergoing evaluation (athlete, patient, wellness consumer) supervised by trained operators, physicians, or biologists.
- **Beneficiaries**:
  - *Patients*: Gain fast, non-invasive, pain-free functional insights.
  - *Clinicians*: Receive objective decision-support data to refine interventions.

- *B2B2C Clinics & Pharmacies*: Experience immediate demand generation, as every 10 DMA® visits average ~7 indicated referrals for secondary diagnostic workups (ultrasound, blood panels, specialized imaging).
- *Athletes &Coaches:* Receive actionable insights
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4. What traction do we have today?

Math Biology® is transitioning from clinical validation to commercial execution:

- **Anchor Clinical Patient Base**: DMA® emerged from real-world clinical practice led by co-founder Giuseppe Sgrò (former Pfizer R&D Director). His practice currently maintains ~500 patients (~200 active paying ~€200/visit), forming the immediate founding patient community for the first flagship HBI opening in 2–3 months.
- **Commercial Beachhead Pipeline**: Advanced discussions with 4 major tennis club clusters (~7,200 total members). Assuming conservative 5–10% member adoption at 2 visits/year (€125/visit), this initial cluster represents **~€90k–€180k/year in recurring visit revenue**.
- **Institutional & Clinical Cooperations**: Active research frameworks with University of Salerno and Campus Bio-Medico; formal interest expressed by Duke University; signed partnership agreements with a Swiss rare-disease foundation and international multi-sensory provider HComm.
- **Public Health Engagement**: Exploratory senior-level discussions with regional health authorities (Regione Lazio and Regione Piemonte) regarding long-term preventive screening deployment.

5. Which part of the model is most difficult to implement into the workflow of a healthcare system, payer, or employer?

The primary integration friction is **securing formal insurance reimbursement codes (CPT/MDR integration)** and embedding decision-support outputs into standard clinical pathways without triggering defensive over-testing.

Strategic Mitigation Strategy:
Math Biology® deliberately sequences its Go To Market to avoid early regulatory and reimbursement dependencies:

1. The company launches exclusively in cash-pay Sport, Performance, and Longevity Wellness channels, generating immediate revenue and validation data outside insurance gates (de-risk factor).
2. In parallel, running prospective clinical trials builds the peer-reviewed evidence required to secure reimbursement coding and health system procurement by 2027+.

6. Who are the main competitors or established alternatives?

No company today (that we can find commercially globally) combines multi-point bioelectrical acquisition with proprietary, clinically-validated AI fingerprinting and a standardized protocol library at our depth - there is no direct equivalent on the market. DMA® is passive and non-invasive: it observes naturally occurring bioelectrical signals and injects no current into the body. Our edge rests on scientific and regulatory rigor: standardized protocols, a proprietary AI model validated on a proprietary dataset, an MDR / ISO-13485 quality system, a risk-based approach, and three clinical validation studies underway.

Alternative Category	Competitor / Alternative	Strategic Position & DMA® Differentiation
Blood Panels	Traditional Labs, Function Health	Identify systemic inflammation but lack organ localization. DMA® localizes functional metabolic changes live without needle sticks or lab waits.
Body Composition	InBody, Bodystat	Measure total water and muscle/fat mass. DMA® reads multi-organ cellular metabolism and neurotransmitter demand.
Full-Body MRI	Prenuvo, Ezra	Costly (~$2,500/year) structural snapshots. DMA® is a low-cost (€50–€90), frequent functional screen.
High-End Clinics	Neko Health	Require heavy physical capital and flagship clinical footprints. DMA® utilizes a lightweight, ultra-portable (<1 kg) hardware kit.

COMPLEMENTARY POSITIONING

Math Biology® **does not replace existing** diagnostic tools-it acts as an early functional triage layer. By screening functional dysmetabolism non-invasively, DMA® directs patients to the *right* downstream diagnostic test earlier.

7. What is our main differentiator, and why is it difficult to replicate?

DMA® stands out as the only non-invasive screening platform capable of evaluating multi-organ biochemical function while measuring **neurotransmitter metabolic demand** in a single visit.

Core Barriers to Replication (Moat):

- **Passive Acquisition Physics**: Injects zero electrical current; reads naturally emitted nanoampere signals using proprietary reference markers and standardized 62-point protocols.
- **Proprietary Protocol Library**: 100+ validated vertical protocols targeting specific metabolic, oncological, and neurological processes.
- **AI & Data Flywheel**: Hybrid mathematical models trained on 2M+ data points and 25,000+ protocols. Every operational HBI continuously feeds standardized biological data back into the central engine, compounding defensibility.
- **Regulatory Head Start**: Established Quality Management System (MDR Class I active, ISO-13485 closing phase), creating a multi-year barrier for prospective entrants.

8. What is our go-to-market motion, expected sales cycle, and biggest implementation obstacle?

Go-To-Market Motion: A land-and-expand strategy moving from owned flagship HBIs (validation, training, branding) to certified hosted-HBIs in existing Clinics & Pharmacies (franchised TaaS distribution).

Sales Cycle Duration:

- *Sport & Longevity (Beachhead)*: Short (weeks to 2 months); cash purchase orders.
- *Hosted-HBI Medical Networks*: Medium (~6 months); commercial setup, device lease, and operator certification.
- *Insurance & Payers*: Long (12–18 months); gated by published prospective evidence and coding.

Biggest Implementation Obstacle & Mitigation:

- *Operational Risk*: Maintaining service quality and protocol adherence across a distributed third-party partner's network.
- *Mitigation*: Operator mandatory certification through flagship HBIs, strict standardized software execution, and centralized cloud AI data governance.

9. Why is our team uniquely suited to win in this market?

Math Biology® brings together pharma R&D depth, advanced AI/mathematical modeling, regulated MedTech execution, and capital markets discipline:

- **Giuseppe Sgrò (BioClinics R&D Director)**: Former apical R&D Director at Pfizer; 30+ years in drug development, oncology, and metabolic research. Pioneer of the clinical methodology behind DMA®.
- **Raffaele Maccioni (CEO & CTO)**: Automation Engineer (Politecnico di Milano); AI and mathematical modeling expert; founder of ACT OR (successful M&A exit to Spindox); President of the Decision Science Alliance.
- **Alessandro Cascia (CFO)**: 15+ years in corporate finance, asset management, and private equity investments (Banca Generali, Azimut).
- **Maria Cristina Caracciolo, PhD (Legal & Regulatory)**: PhD in International & EU Law; 10+ years managing EU/Regional R&D grants and regulatory compliance frameworks.
- **Partners & Scientific Advisors**: Prof. Emanuele Carpanzano (Director of R&D at SUPSI Switzerland) and Prof. Raffaele Cerulli (Full Professor of Optimization & AI at University of Salerno).

- **US Expansion Leadership**: Supported by Ted Matwijec (US enterprise BD lead); pre-selecting a US co-CEO and commercial team to execute US holding consolidation.

In addition:

- **Multidisciplinary Support Team**: Supported by a dedicated team of PhDs and researchers with deep expertise spanning bioclinics, engineering, mathematics, and AI.
- **Global Operational Footprint**: Operational across the EU, US, and UAE, perfectly aligning with an international-by-design go-to-market strategy.
- **Proven Regulated Execution**: Successfully established a complete Quality Management System (QMS) in highly regulated environments—achieving CE marking, MDR Class I compliance, ISO-13485 certification, and documented SOPs to ensure seamless medical path execution beyond prototyping.
- **US Leadership Expansion**: Currently pre-selecting a dedicated US C-suite—including a co-CEO alongside Raffaele, as well as commercial and MedTech executives with proven sector and fundraising track records.

10. What are the sources and uses of the investment?

The target capital requirement for this round is a **€12M Series A equity raise**:

CAPITAL ALLOCATION BREAKDOWN (€12M)
├── 35% (€4.20M) - Clinical Validation & Regulatory (US trials, FDA)
├── 30% (€3.60M) - Go-To-Market (Sport/Wellness expansion, flagship HBIs rollout)
├── 25% (€3.00M) - Team & Tech 2.0 (US setup, executive C-suite, engineering)
└── 10% (€1.20M) - G&A, IP Portfolio Expansion, QMS & Working Capital

This structure funds the business through key valuation inflections: US clinical trial completion, FDA filing, and commercial traction across owned and hosted HBIs.

11. How much have we raised to date, from whom, and what are the key terms of this round?

Capital Raised / Secured to Date (~$2.3M equivalent):

- *2024 Seed Equity*: €400K (~$0.44M) priced equity from founders and early private angels.
- *Non-Dilutive Public Grants*: ~€1.0M (~$1.1M) secured across competitive EU/regional R&D calls (e.g., Smart&Start, PREVEDO project).
- *Bridge Equity*: €800K (~$0.88M) priced at the 2023 pre-money valuation of €8.4M (~$9.2M) under pre-existing investor agreements.

Seed+ Round Structure:

- Instrument: Simple Agreement for Future Equity (SAFE) or direct equity structure with an ambitious **$48M valuation cap**.
- Early Conversion Incentives: The first $3M converts at a **40% discount**; the next $3M–$6M converts at a **25% discount**; remaining terms determined alongside lead institutional partners. This offers substantial early-stage upside protection for first-Investors .

12. What is important for us to know that is not obvious from the deck?

1. **Care Network Platform, Not Hardware**: Math Biology® is not a hardware vendor. The device is a gateway into a high-margin, recurring TaaS **platform** and **branded care network**. Valuations should reflect recurring software/data platforms rather than medical device hardware manufacturers.
2. **De-Risked Cold Start**: DMA® was derived from 10+ years of active clinical application. The first flagship HBI opens with an established community of ~500 patients, ensuring immediate revenue generation upon opening.
3. **Capital-Efficient Scale**: Hosted HBI build-outs are funded by franchise partners, keeping corporate capital expenditures low while scaling distribution and data acquisition.

4. **Neurotransmitter Category Creation**: The ability to non-invasively measure neurotransmitter metabolic demand represents an unpriced upside option in neurology, psychiatry, and cognitive performance management.