PHENOMIX SCIENCES

Practical multi-omics solution for chronic diseases

The right intervention for the right patient

MAYO CLINIC

A Mayo Clinic Start-up Company

Confidential

PHENOMIX SCIENCES

OBESITY IS THE #1 CHRONIC DISEASE

It is an epidemic of historic proportion and **99% of treatments are ineffective**

Confidential

PHENOMIX SCIENCES

In the United States, **obesity** is linked to 7 of the top 10 causes of **death**[1]

…and comorbidities before death:

Cardiovascular Disease
Type 2 Diabetes
Sleep Apnea
Cancer
Reproductive Disorders
Endocrine Disorders
Psychological Disorders
Bone, joint, and connective tissue disorders
Gastrointestinal disorders

We must find effective treatments for this health crisis

Confidential

The problem with treating obesity

People become obese for different reasons. No one person's cause of obesity is the same as another's.

Weight loss with current treatments (diet and lifestyle modification, medications, endoscopy and surgery) is highly variable because of the heterogeneity and complexity of the disease.

As a result, we cannot predict what obesity treatment will work best for an individual until we understand the underlying cause.

Confidential

A new individualized approach to obesity

Now, using DNA and blood-based biomarkers of metabolic function, the right intervention can be determined prior to treatment to maximize weight loss

Confidential

Precision medicine in action

Phenomix Sciences has developed the first clinically-validated blood test that guides treatment decisions by accurately predicting which obesity therapies will work best for an individual

*It uses a proprietary technology platform exclusively licensed from Mayo Clinic leveraging **'multi-level omics'** and diagnostic algorithms to classify an obesity '**phenotype**'*

In two randomized controlled trials, Phenomix Sciences 'PhenoTest' has been clinically validated to predict obesity drug response, resulting in greater weight loss for patients, with the fewest side-effects.

Confidential

Getting technical: multi-level omics

Multi-omics provides the key to unlocking precision medicine by combining the patient's unique clinical and molecular profiles to guide more effective and individualized treatments.

*It works using different layers of biological information (DNA, RNA, protein) to predict and describe a '**phenotype**' – a set of observable characteristics that result from complex interactions between our genes and our environment*

Applying multi-level omics can help people lose more weight, by determining the underlying obesity phenotype which allows for selection of the most effective treatment(s) without trial and error.

Confidential

The four obesity phenotypes

Obesity has four ‘Phenotypes’ that require different weight loss strategies

I. Hungry Brain

Satiation
Knowing when the meal is over

II. Hungry Gut

Satiety
Ability to not eat in periods between meals

III. Emotional Hunger

Psychological/Reward
Eating in response to negative and/or positive emotions

IV. Slow Burn

Energy Expenditure
Base metabolic rate plus overall activity level

Now, with a blood test, a person’s phenotype can be objectively determined, resulting in ‘the right intervention for the right patient’

Confidential

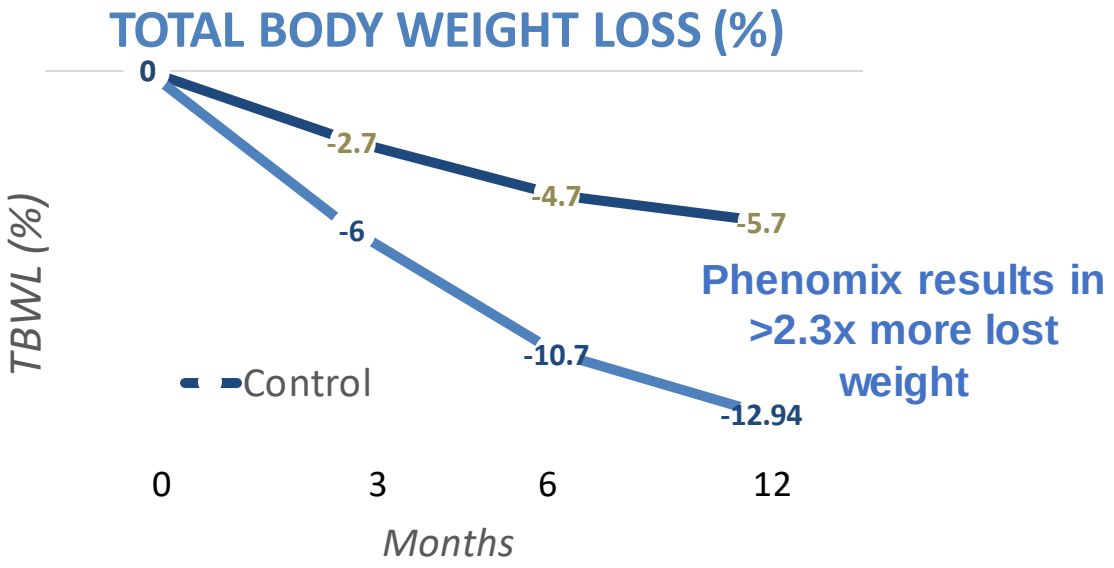
Diagnosing obesity and improving outcomes

Proven results for six FDA-approved medications for obesity in a 12 months study

Compared to current standard of care:

Phenomix Sciences has doubled the number of patients who experience successful weight loss*

…And at 12 months, has shown Total Body Weight Loss to be >2.3x higher



Phenomix Sciences personalized approach delivers superior outcomes over the standard of care in treating obesity.

*Successful weight loss defined by treatment response of >3% weight loss at 3 months and >10% weight loss at 6 months. **Actual results: 73% (vs. 39%) at 3 months and to 55% (vs. 22%) at 6 months**

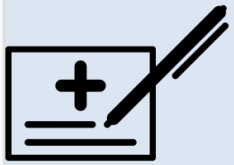
Confidential

The ordering and testing process

Patient and provider discuss weight loss options, consider test as part of their workup (Day 1)

Provider orders test

Patient and provider discuss results and create a phenotype-based plan: use of PhenoTest portal, prescription drugs, 6 month re-testing (Day 6)



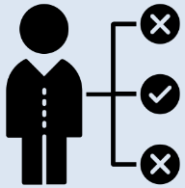
Patient's Blood collection

Fasting blood sample collected as part of regular visit (Day 1)

Recommend 6-month testing cycle to see how metabolism is changing, if interventions need to change

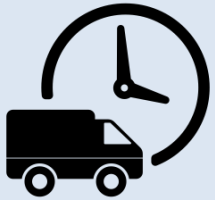
Report back to MD (copy to patient)

Multi-omics platform analyzes patient obesity subgroup. Report is generated and sent to ordering provider. (Day 5)



Blood sent to PHS lab

Samples are sent to Phenomix lab via FedEx overnight shipment (Day 2)



Patient sign-in/profile

Patient creates an account, chooses membership plan, completes their profile. (First time only, Day 2-3)

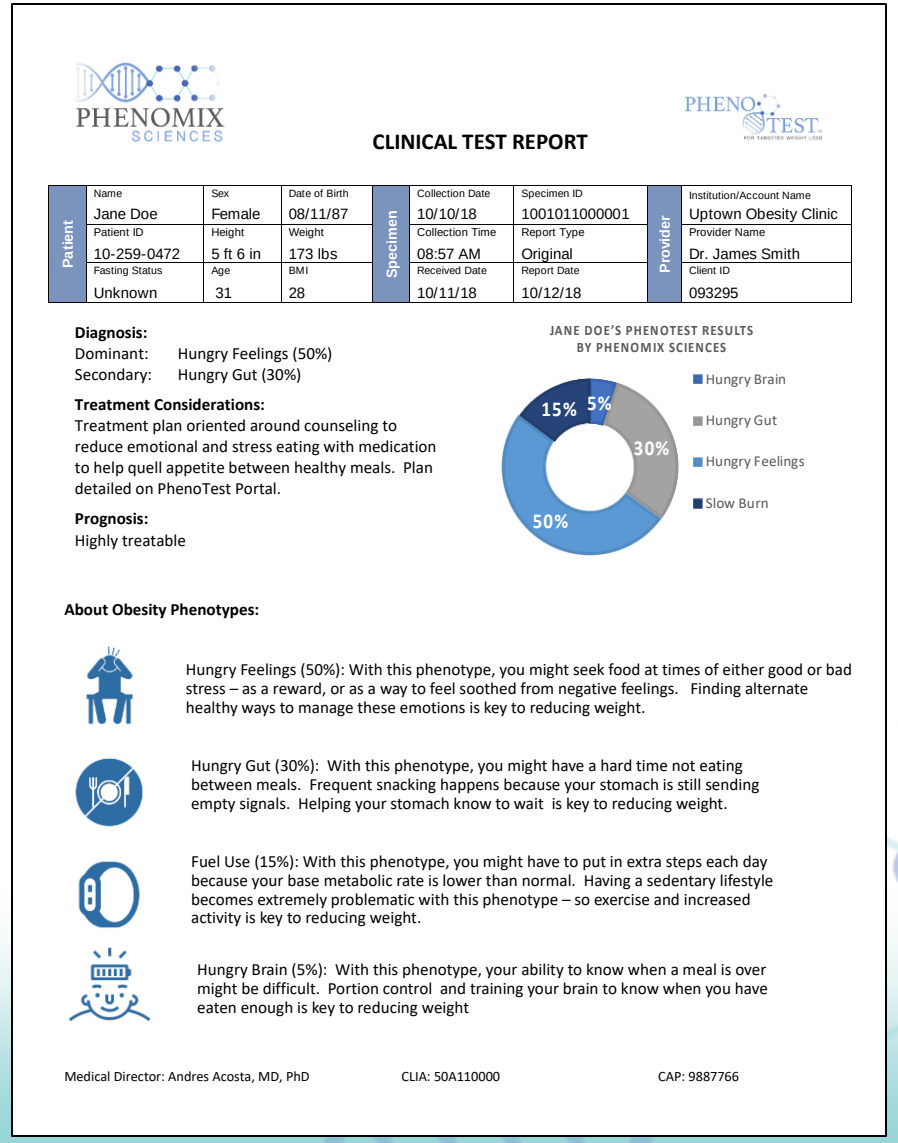
Confidential

The first deliverable (test report prototype)

Report includes easy to understand phenotype categories/descriptions with diagnosis, treatment considerations and prognosis

Individualized breakdown of the phenotype findings and what they mean for the patient

Reports to be delivered electronically through a HIPAA-compliant portal



PHENOMIX SCIENCES

PHENO TEST

CLINICAL TEST REPORT

Patient				Specimen			Provider	
Name	Sex	Date of Birth		Collection Date	Specimen ID		Institution/Account Name	
Jane Doe	Female	08/11/87		10/10/18	1001011000001		Uptown Obesity Clinic	
Patient ID	Height	Weight		Collection Time	Report Type		Provider Name	
10-259-0472	5 ft 6 in	173 lbs		08:57 AM	Original		Dr. James Smith	
Fasting Status	Age	BMI		Received Date	Report Date		Client ID	
Unknown	31	28		10/11/18	10/12/18		093295	

Diagnosis:
Dominant: Hungry Feelings (50%)
Secondary: Hungry Gut (30%)

Treatment Considerations:
Treatment plan oriented around counseling to reduce emotional and stress eating with medication to help quell appetite between healthy meals. Plan detailed on PhenoTest Portal.

Prognosis:
Highly treatable

JANE DOE'S PHENOTEST RESULTS BY PHENOMIX SCIENCES

About Obesity Phenotypes:

Hungry Feelings (50%): With this phenotype, you might seek food at times of either good or bad stress – as a reward, or as a way to feel soothed from negative feelings. Finding alternate healthy ways to manage these emotions is key to reducing weight.

Hungry Gut (30%): With this phenotype, you might have a hard time not eating between meals. Frequent snacking happens because your stomach is still sending empty signals. Helping your stomach know to wait is key to reducing weight.

Fuel Use (15%): With this phenotype, you might have to put in extra steps each day because your base metabolic rate is lower than normal. Having a sedentary lifestyle becomes extremely problematic with this phenotype – so exercise and increased activity is key to reducing weight.

Hungry Brain (5%): With this phenotype, your ability to know when a meal is over might be difficult. Portion control and training your brain to know when you have eaten enough is key to reducing weight

Medical Director: Andres Acosta, MD, PhD CLIA: 50A110000 CAP: 9887766

Confidential

Product pipeline: more than just a diagnostic test

2019 PhenoTest Report	2020 PhenoTest Weight Loss Portal	2021+ Phenomix Weight Loss Clinic
• *The blood test, assessment checklist, diagnosis of obesity phenotype and report, used by independent clinicians to guide patient care* • *Can be incorporated into existing health plan/disease management programs* • *To be offered through physicians, wellness programs* • *Average sale price = $599/test*	• *An app and interactive online portal that holds the phenotype results and can be used by clinicians or patients; Supports interactive health coaching, fitness tracking* • *Contains curated information to understand the results and guide better decision making to manage obesity* • *To be offered as an add on and/or subscription service for PhenoTest users* • *Avg. revenue per user = $240/year*	• *A wholly-owned subsidiary provider group who specifically cares for obesity patients (Health Coaches & Physicians) using text, video calls, and data sharing from connected scales and activity trackers* • *Leverages partnerships (phlebotomy services, retail clinics, home health care)* • *Offers virtual clinic services and Phenotest directly to patients* • *Avg. Revenue per visit = $99*

Confidential

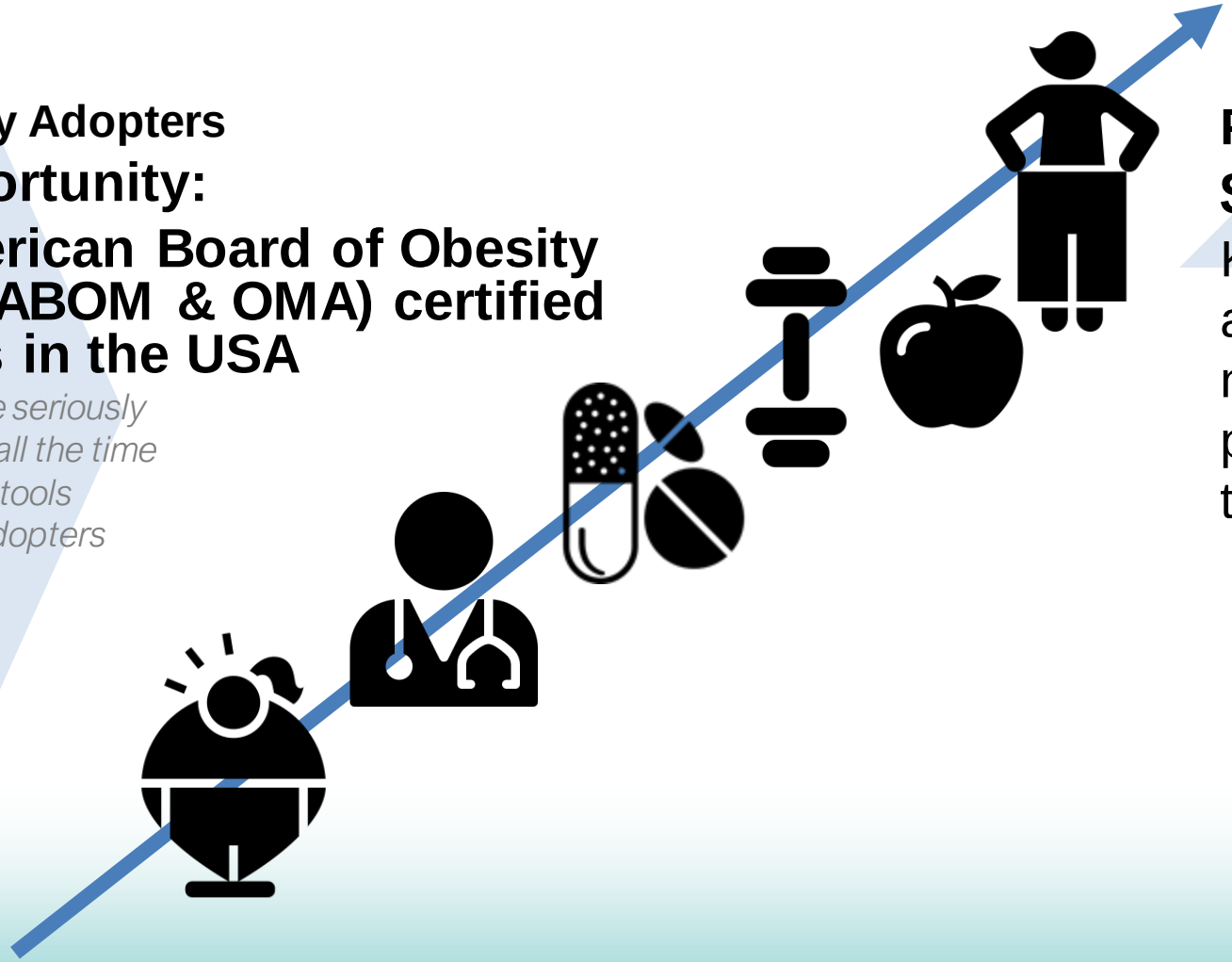
Physician segment business opportunity

Phase I: Early Adopters

$10M Opportunity:

~2500 American Board of Obesity Medicine (ABOM & OMA) certified physicians in the USA

Take disease seriously
See failures all the time
Need better tools
Best early adopters



Phase II: Mainstream

$50M Opportunity:

Know-how for building clinical applications that will enable the next 20,000 – 200,000+ physicians to adopt Phenomix tools

Confidential

Physician segment delivery workflow

1. Person decides it is time to lose weight

2. Talks to their provider, is prescribed Obesity PhenoTest

3. Patient gives blood sample and sample is sent to Phenomix for evaluation

4. Phenomix tests sample and diagnoses Obesity Phenotype. Results sent to prescribing physician

5. When results are ready, provider calls patient to schedule follow-up appt.

6. Follow-up visit with clinician, patient learns phenotype and discusses treatment plan with their provider. Gets Rx, meal planning, and exercise goals.

7. Patient begins their weight-loss journey. Check-ins and additional testing are at the discretion of the provider

8. Ongoing support is available through subscription to PhenoTest Portal, which can be shared with their friends and family for support

Confidential

Payers and population health business opportunity

Proof Points

Demonstrate outcomes

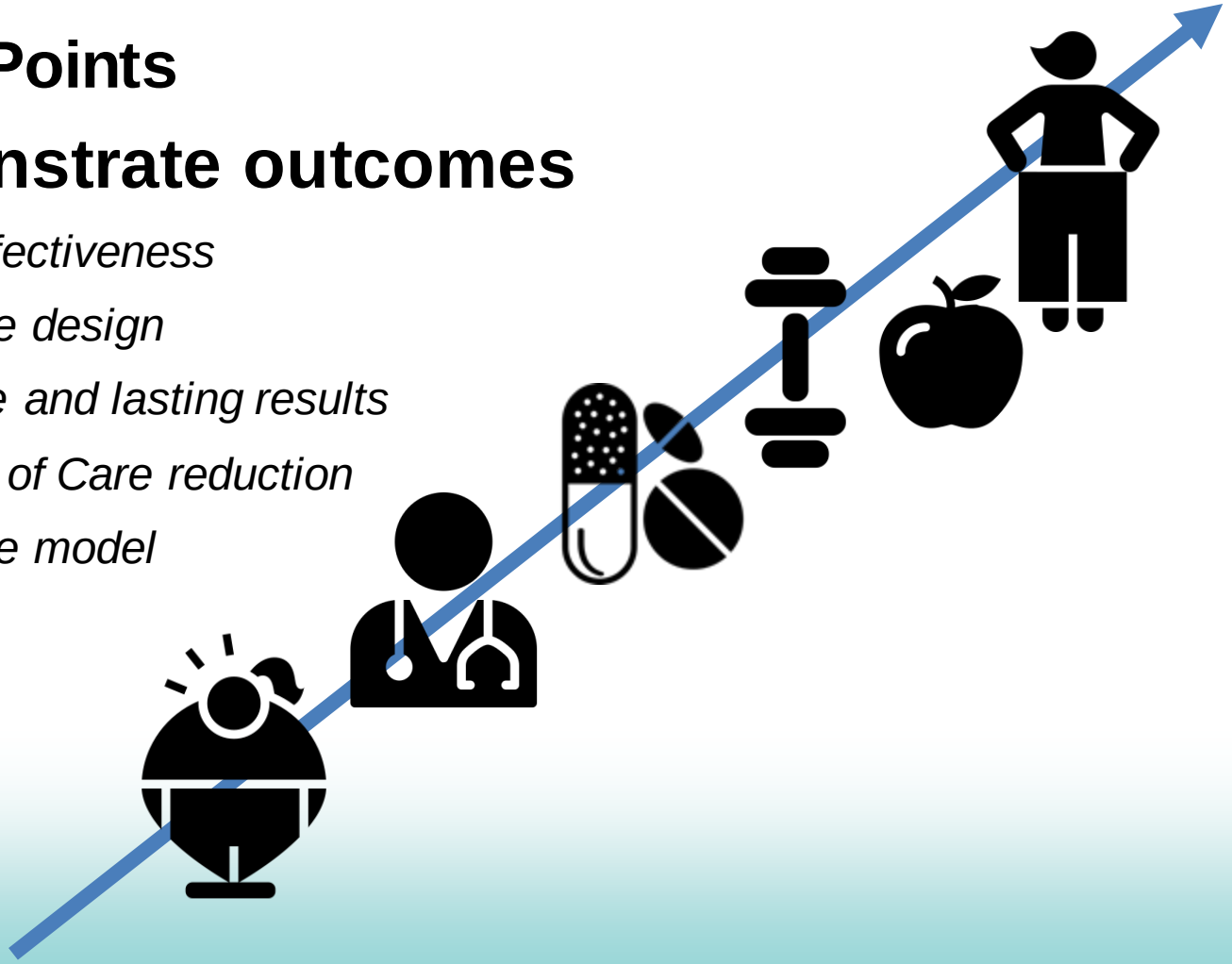
Clinical effectiveness

Experience design

Adherence and lasting results

Total Cost of Care reduction

Virtual care model



Entitlement Market

>$100M Annual Sales Potential:

Enabling consumer model so that people can access world-class obesity treatment, anytime, anywhere – and programming to prove reduction in total cost of care (TCOC)

- *Payers*
- *Employers*
- *Other large groups*

Confidential

Payers and population health delivery workflow

1. Employee health screen identifies candidates >30 BMI who opt-in for weight loss support

2. Phenomix MD disease management specialist follows up by direct outreach to opt-in members to offer obesity testing and precision weight loss support

3. Phlebotomist sees member at work or home to take a blood sample, then sends to Phenomix for PhenoTest to diagnose Obesity Phenotype

5. Follow-up call with Phenomix MD, member learns PhenoTest type and personalized treatment plan options are discussed and emailed to member

6. Member chooses a plan with discounted pricing offered through their health plan. Has daily check-ins through a connected scale, activity monitor and text chats with coach. Rewards given for reaching goals.

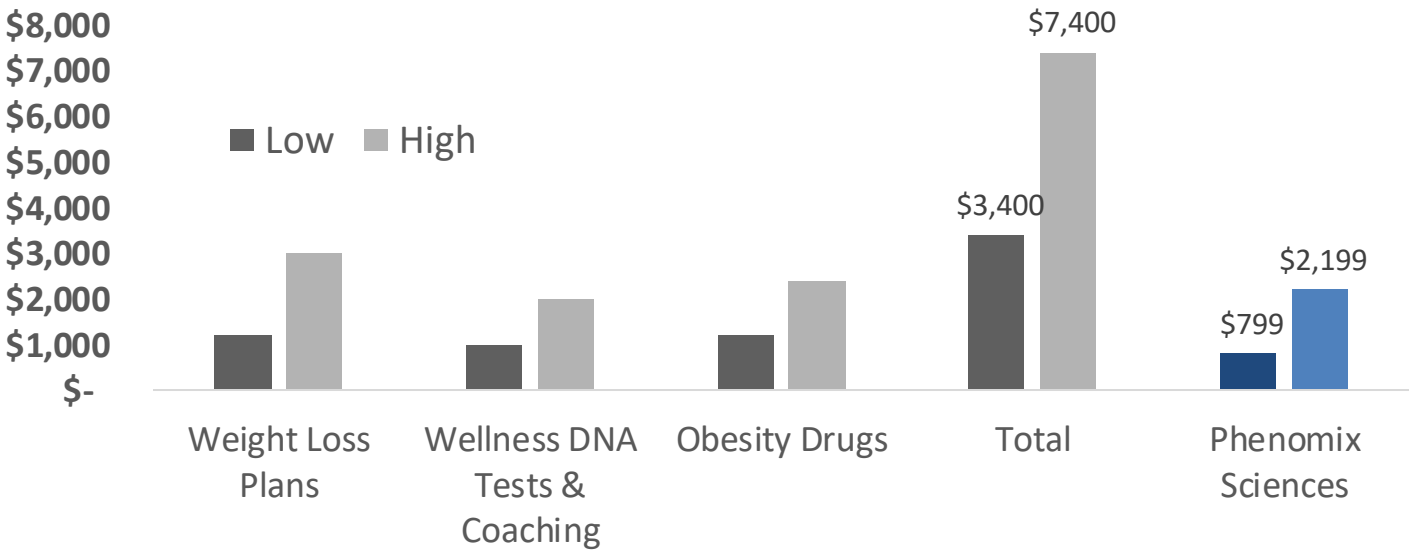
7. Check-ups at 3 months and 6 month time-points to re-run metabolic panels and assess treatment response

8. 12 month evaluation checks behavioral shift and establishes membership in Phenomix Graduates Support Network

Confidential

Market and price sensitivity

People spend thousands of dollars each year trying to lose weight, and most of it does not work



Estimates:

Weight Loss Plans
Nutrisystem, Medi Fast, Weight Watchers each cost $100-$1000/month

Obesity Medications
Drugs cost $100-200/mo; Trial and error on the wrong drugs can total $400-$1000 or more

Wellness DNA Tests & Coaching
$200-$1000; With coaching services included: $1000-2000/year

Phenomix figures are projections and cannot be gauranteed.

Competitively priced with other Wellness DNA and Coaching companies

Phenomix Sciences provides a clinically validated solution for obesity management

Saving patients thousands of dollars in non-effective treatments

Confidential

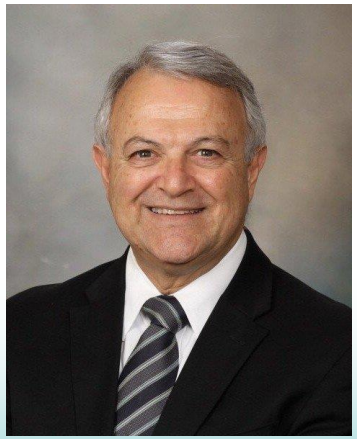
Engaged founders

Andres Acosta M.D., Ph.D.,

Physician, Scientist and Serial Entrepreneur
Gastroenterologist & Assistant Professor at Mayo Clinic.

Michael Camilleri, M.D.,

Physician, Scientist, Gastroenterologist & Endowed Professor at Mayo Clinic.



Confidential

Experienced management team, advisors, and board of directors

Ross Higgins, MBA, MLS (ASCP)
Chief Operating Officer

Erich Heneke
Advisor (Finance)

Soledad Andrade
Advisor (Marketing)

Xavier Frigola
Advisor (Business Development)

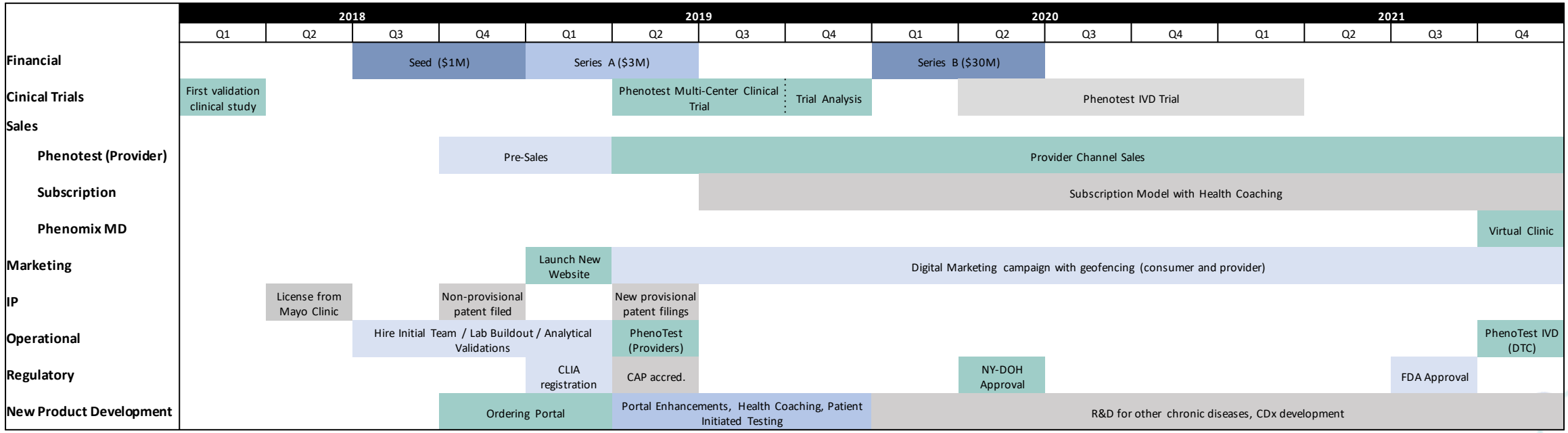
Paul Owen
Advisor (Strategy)

Timothy Still
Board Member

Sean McCauley
Board Member

Confidential

Roadmap and commercialization timeline



Confidential

Obesity is just the beginning…

PhenoTests are in development for

- Obesity monitoring tests (A1c for Obesity)
- Cardiovascular Disease
- Type II Diabetes

We are here to revolutionize the treatment of Chronic Disease by guiding '*the right intervention for the right patient*'

Confidential