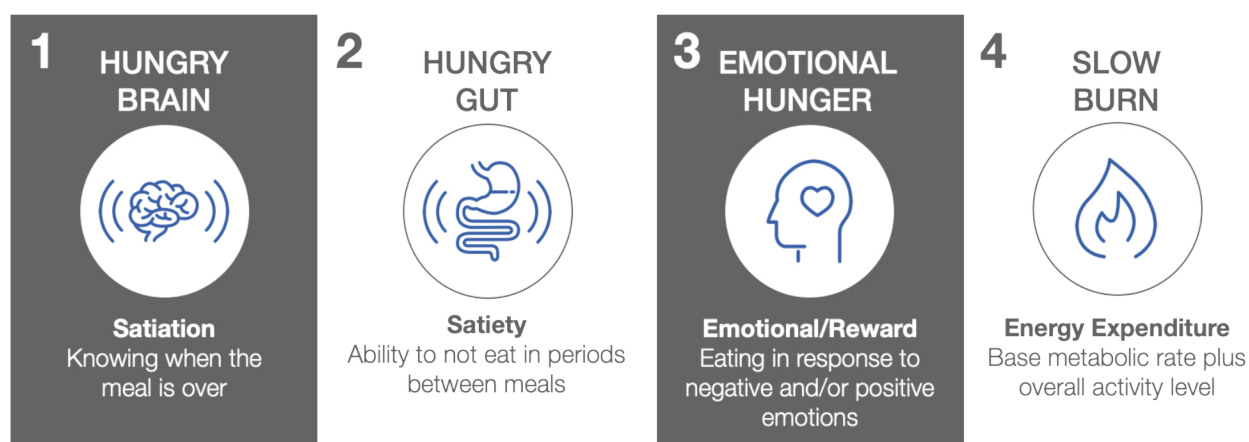


Precision Medicine for Obesity

As clinicians treating obesity are acutely aware, identifying effective treatments for obesity often involves trial and error. Outcomes with current interventions (including medications, endoscopy, and surgery) are highly variable because of the underlying heterogeneity and complexity of the disease. However, emerging research from Mayo Clinic has recently defined four underlying phenotypes of obesity which can be determined from a fasting blood sample, and clinically applied to help select the most effective treatments.

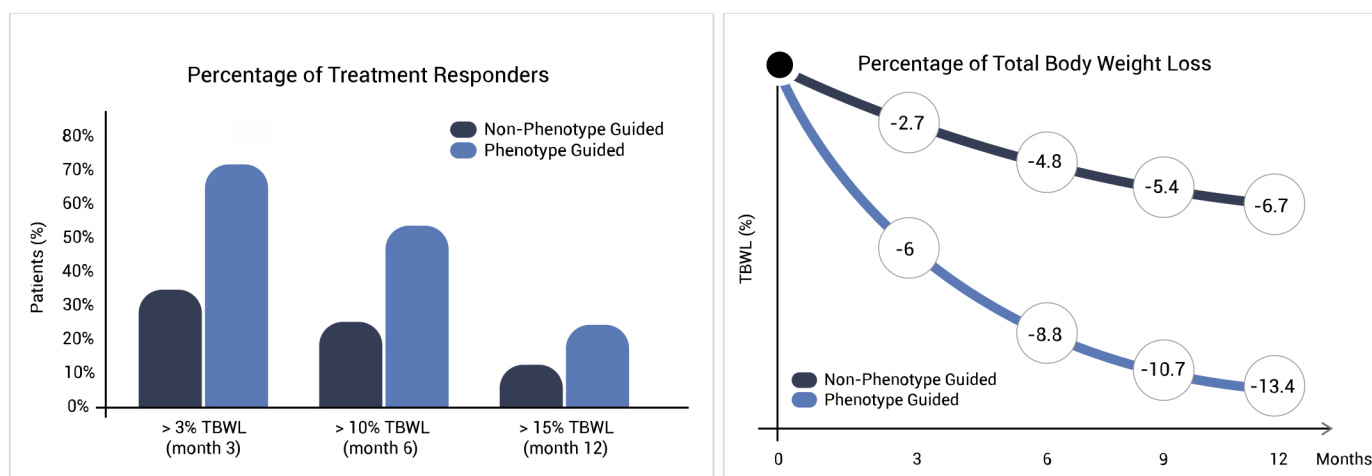
Obesity classification based on pathophysiology

In 509 patients with obesity vs. normal body weight controls, research has identified several obesity phenotypes^{1,2}. Phenotypes were established with an unsupervised machine learning approach using gold standard measures of obesity pathophysiology.



Clinical application of phenotyping at Mayo Clinic: 2.3X more weight-loss

Clinical experience at Mayo Clinic Weight Management Center shows that a phenotype guided approach (n=55) results in a higher percentage of responders and total body weight loss (TBWL) compared to non-phenotype guided (standard of care) approach (n=175) when patients are treated with FDA-approved obesity pharmacotherapy.



¹Acosta A, Camilleri, et al., *Gastroenterology*. 2015

²Camilleri M and Acosta A., *Gastrointest Endosc*. 2015

How it works



- PHENOTYPE TEST**

PHENOTYPE TEST

Age (years)	Sex	Height (cm)	Weight (kg)	Glucose (mmol/L)	HbA1c (%)	Insulin (mU/kg/day)	Insulin Sensitivity (mU/kg/day)
10	Female	140	35	10.2	10.2	0.4	0.4
12	Female	150	40	10.2	10.2	0.4	0.4
14	Female	155	45	10.2	10.2	0.4	0.4
16	Female	160	50	10.2	10.2	0.4	0.4
18	Female	165	55	10.2	10.2	0.4	0.4
20	Female	170	60	10.2	10.2	0.4	0.4
22	Female	175	65	10.2	10.2	0.4	0.4
24	Female	180	70	10.2	10.2	0.4	0.4
26	Female	185	75	10.2	10.2	0.4	0.4
28	Female	190	80	10.2	10.2	0.4	0.4
30	Female	195	85	10.2	10.2	0.4	0.4
32	Female	200	90	10.2	10.2	0.4	0.4
34	Female	205	95	10.2	10.2	0.4	0.4
36	Female	210	100	10.2	10.2	0.4	0.4
38	Female	215	105	10.2	10.2	0.4	0.4
40	Female	220	110	10.2	10.2	0.4	0.4
42	Female	225	115	10.2	10.2	0.4	0.4
44	Female	230	120	10.2	10.2	0.4	0.4
46	Female	235	125	10.2	10.2	0.4	0.4
48	Female	240	130	10.2	10.2	0.4	0.4
50	Female	245	135	10.2	10.2	0.4	0.4
52	Female	250	140	10.2	10.2	0.4	0.4
54	Female	255	145	10.2	10.2	0.4	0.4
56	Female	260	150	10.2	10.2	0.4	0.4
58	Female	265	155	10.2	10.2	0.4	0.4
60	Female	270	160	10.2	10.2	0.4	0.4
62	Female	275	165	10.2	10.2	0.4	0.4
64	Female	280	170	10.2	10.2	0.4	0.4
66	Female	285	175	10.2	10.2	0.4	0.4
68	Female	290	180	10.2	10.2	0.4	0.4
70	Female	295	185	10.2	10.2	0.4	0.4
72	Female	300	190	10.2	10.2	0.4	0.4
74	Female	305	195	10.2	10.2	0.4	0.4
76	Female	310	200	10.2	10.2	0.4	0.4
78	Female	315	205	10.2	10.2	0.4	0.4
80	Female	320	210	10.2	10.2	0.4	0.4
82	Female	325	215	10.2	10.2	0.4	0.4
84	Female	330	220	10.2	10.2	0.4	0.4
86	Female	335	225	10.2	10.2	0.4	0.4
88	Female	340	230	10.2	10.2	0.4	0.4
90	Female	345	235	10.2	10.2	0.4	0.4
92	Female	350	240	10.2	10.2	0.4	0.4
94	Female	355	245	10.2	10.2	0.4	0.4
96	Female	360	250	10.2	10.2	0.4	0.4
98	Female	365	255	10.2	10.2	0.4	0.4
100	Female	370	260	10.2	10.2	0.4	0.4

Predicted Phenotype Composition

• Slow Burn
 • Emotional Hunger
 • Hungry Gut
 • Hungry Brain

ABOUT PHENOTYPE GENOTYPES

The phenotype of the HNF1B mutation is a result of the loss of function of the HNF1B gene. The phenotype is characterized by the following symptoms:

 - Slow Burn:** This is the most common symptom, characterized by a gradual increase in blood glucose levels over time.
 - Emotional Hunger:** This is a symptom characterized by a strong, sudden urge to eat, often triggered by emotional factors.
 - Hungry Gut:** This is a symptom characterized by a strong, sudden urge to eat, often triggered by physical factors.
 - Hungry Brain:** This is a symptom characterized by a strong, sudden urge to eat, often triggered by mental factors.

The phenotype of the HNF1B mutation is a result of the loss of function of the HNF1B gene. The phenotype is characterized by the following symptoms:



We are here to revolutionize the treatment of obesity by guiding
'the right intervention for the right patient'