23andMe

Linda Avey
Co-founder
23andMe

Agenda

- 23andMe PGS™ as an educational tool
- DTC Genomic--Why Now?
- New Research Approach

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Haplogroup Assignment

Maternal Haplogroup: **H3**

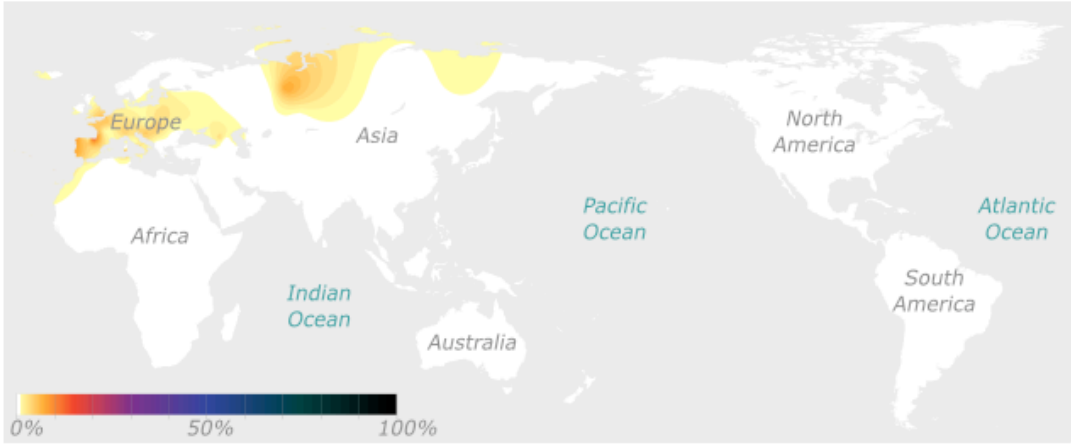
Map of H3 | The Story of H3 | Tree of All Maternal Haplogroups

Haplogroup	**H3**, a subgroup of H
Age	greater than 15,000 years
Region	Europe
Populations	Spanish (Galician), Basques
Highlight	H3 was involved in the resettlement of northern Europe after the Ice Age.

Your Family and Friends

B2	Marshela Salgado
B6	Alex Wong, James Ho
C	Lawrence Hon
D4a*	Boonsri Dickinson
D4e2	Japanese Man
D5a2	Chinese Man

Locations of haplogroup H3 circa 500 years ago, before the era of intercontinental travel.



Haplogroup H, the parent of H3, originated in the Near East and then expanded throughout Europe toward the end of the Ice Age. H3 likely branched off the rest of H in Iberia and expanded across most of western Europe after the glaciers receded. Today, H3 is distributed across much of Europe and is rare elsewhere.

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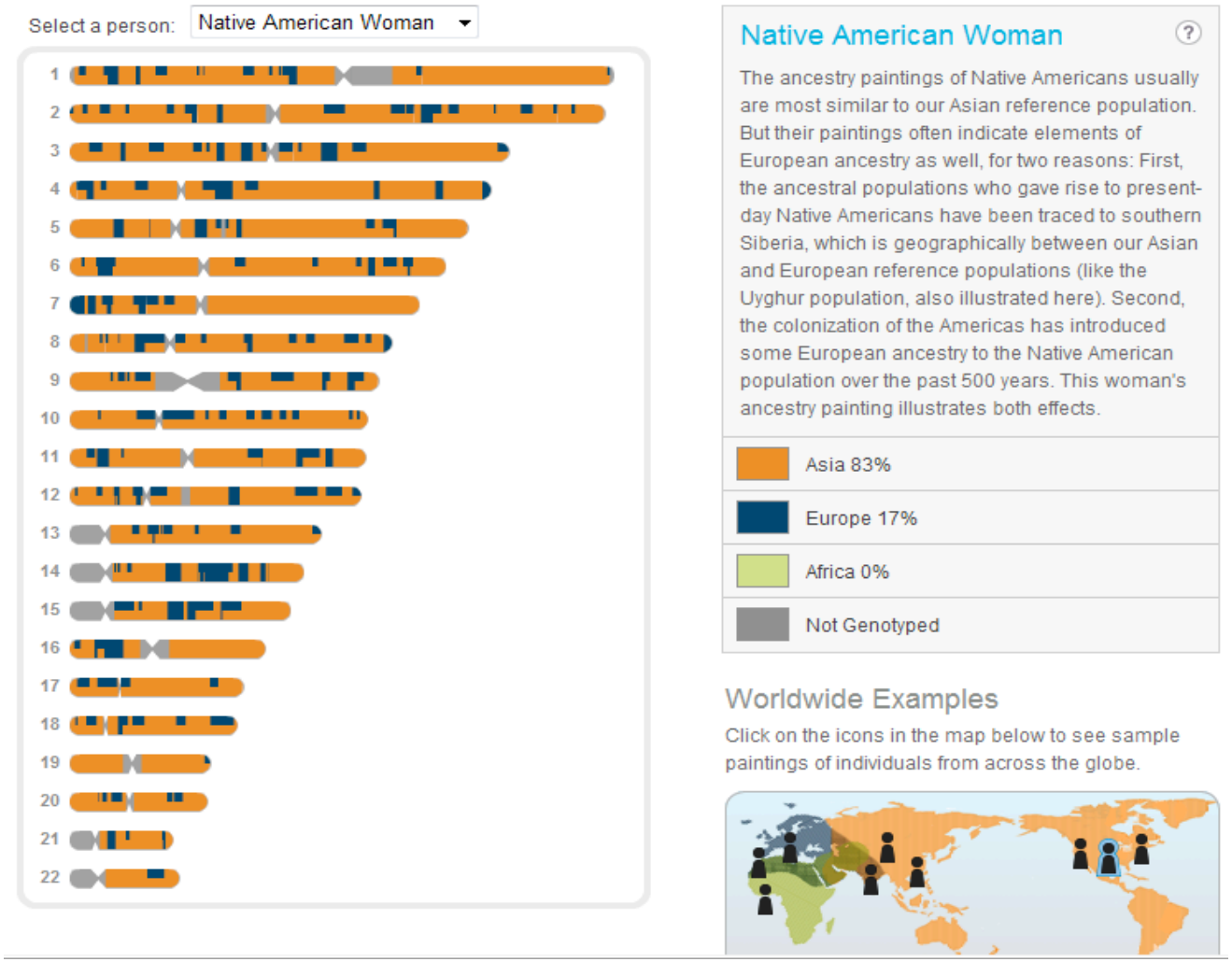
Chromsome Painting



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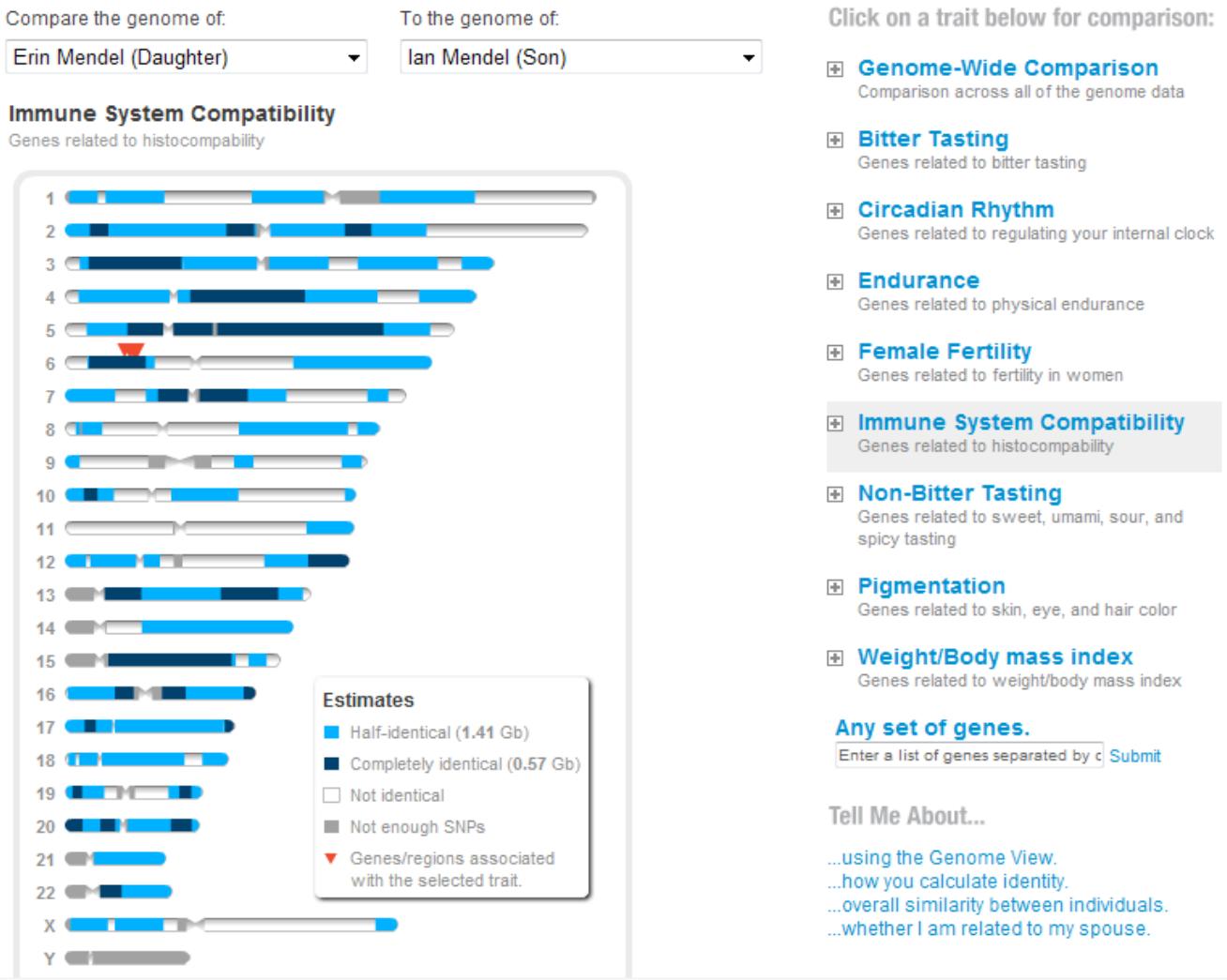
Family Tools



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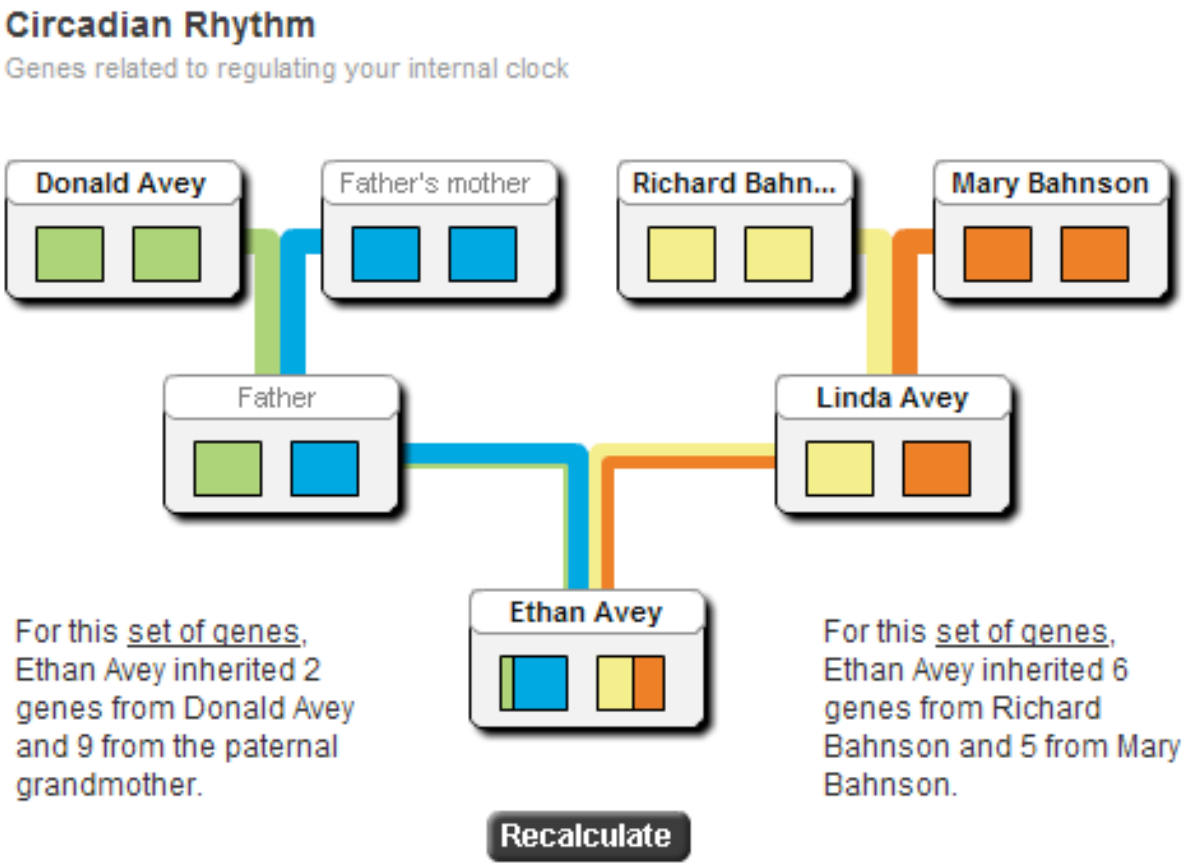
Pedigree View



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my gene journal

Intended for research and educational purposes. Not for diagnostic use.

Get your data and see how it relates to ongoing research in health and physical traits.

★★★★ **Established Research** is widely accepted by the scientific community.
★★★ **Preliminary Research** has been published in peer-reviewed journals but may not yet be fully accepted.

Browse and Search Topics (70)

View: All Topics Search: Go Show All Topics

Show Established Research first.

Prev | **1** 2 3 4 | Next

Name ▲	Research Confidence	Date Modified
Age-related Macular Degeneration	★★★★	May 21, 2008
Alcohol Dependence	★★★	Mar 21, 2008
Alcohol Flush Reaction	★★★★	Dec 19, 2007
Ankylosing Spondylitis	★★★	Feb 21, 2008
Antidepressant Response	★★	Mar 19, 2008
Asthma new	★★★	May 12, 2008
Atrial Fibrillation	★★★	Mar 5, 2008
Attention-Deficit Hyperactivity Disorder	★★	Mar 28, 2008
Avoidance of Errors	★	Feb 21, 2008
Back Pain	★★	Mar 5, 2008
Baldness	★★	Mar 28, 2008
Bipolar Disorder	★★★	Mar 21, 2008

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my gene journal

Intended for research and educational purposes. Not for diagnostic use.

Type 2 Diabetes

◀ Prev *Type 1 Diabetes*

Next ▶ *Birth Weight*

★★★★ **Established Research** on 9 reported markers.

Your Data | How It Works | Timeline | MD's Perspective | Resources | Technical Report

About Type 2 Diabetes

The most common type of diabetes, type 2 diabetes mellitus occurs when chronically high blood sugar levels cause a breakdown of the body's natural response to eating sweets and starches. Left untreated, type 2 diabetes can result in kidney failure, blindness, and circulatory problems that increase the risk of heart attack or stroke. In the United States, almost 21 million children and adults have diabetes, but the rate of new diagnoses is increasing.

Learn more about the biology of Type 2 Diabetes...
Major discoveries in Type 2 Diabetes...

1 of 3. Smart choices about diet can help delay or prevent type 2 diabetes.

Your Genetic Data

Show information for Greg Mendel (Dad) assuming European ethnicity and an age range of 40-59

Where's mine?

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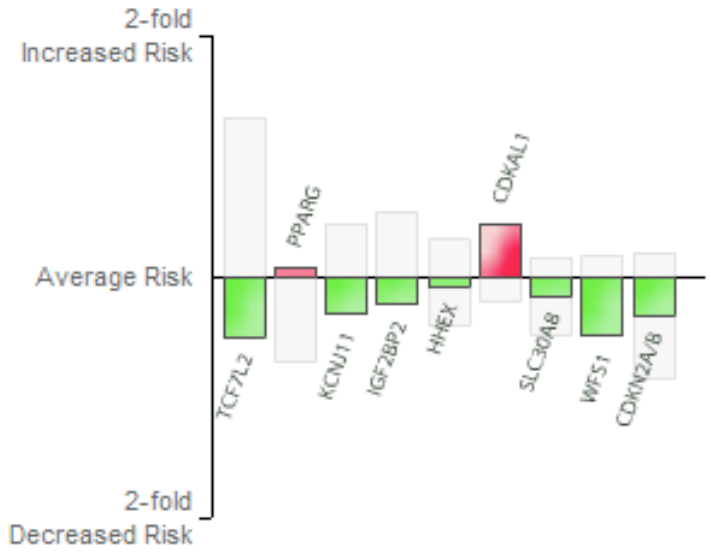
Type II Diabetes Genes

Marker Effects



What does this chart show?

The chart shows the approximate effects of the selected person's genotype at the 9 reported markers. Higher, red bars indicate increased risk from the average, while lower, green bars indicate decreased risk from the average. The light gray bars show the maximum possible effects for the possible genotypes at the marker.

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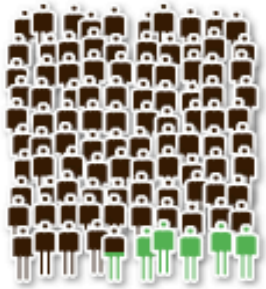
Your Genetic Data

Show information for Greg Mendel (Dad) assuming European ethnicity and an age range of 40-59

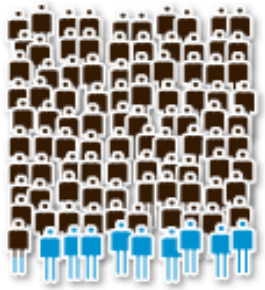
Where's mine?



Greg Mendel (Dad)

5.6 out of 100

people of European ethnicity who share Greg Mendel (Dad)'s genotype will get Type 2 Diabetes between the ages of 40 and 59.



Average

9.4 out of 100

people of European ethnicity will get Type 2 Diabetes between the ages of 40 and 59.

What does the Odds Calculator show me?

Use the ethnicity and age range selectors above to see the estimated incidence of Type 2 Diabetes due to genetics for someone with **Greg Mendel (Dad)**'s genotype. The 23andMe Odds Calculator assumes that a person is free of the condition at the lower age in the range. You can use the name selector above to see the estimated incidence of Type 2 Diabetes for the genotypes of other people in your account.

The 23andMe Odds Calculator only takes into account effects of markers with known associations that are also on our genotyping chip. Keep in mind that aside from genetics, environment and lifestyle may also contribute to one's chances of developing type 2 diabetes.

Genes vs. Environment

26 %
Attributable to Genetics

The heritability of type 2 diabetes is estimated to be 26%. This means that environmental factors contribute more to differences in risk for this condition than genetic factors. Genetic factors that play a role in type 2 diabetes include both unknown factors and known factors such as the SNPs we describe here. Environmental factors include obesity, gestational diabetes, giving birth to at least one baby weighing nine pounds or more, high blood pressure, abnormal cholesterol levels, physical inactivity, polycystic ovarian syndrome, other clinical conditions associated with insulin resistance, a history of impaired glucose tolerance or impaired fasting glucose, and a history of cardiovascular disease. (sources)

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Security

- Security is built into our development process starting from the design stage. Regular audits by white hat experts.
- All sensitive data including genotypes are always encrypted at rest, with the encryption keys being encrypted themselves encrypted as well.
- The main genotype data repository is secured and separated from other environments such as the web application, analytics, and research. Nothing accesses it directly.
- Account, genotype, and phenotype data are stored separately in a de-identified manner, and require additional steps to link them together while the user is logged in.

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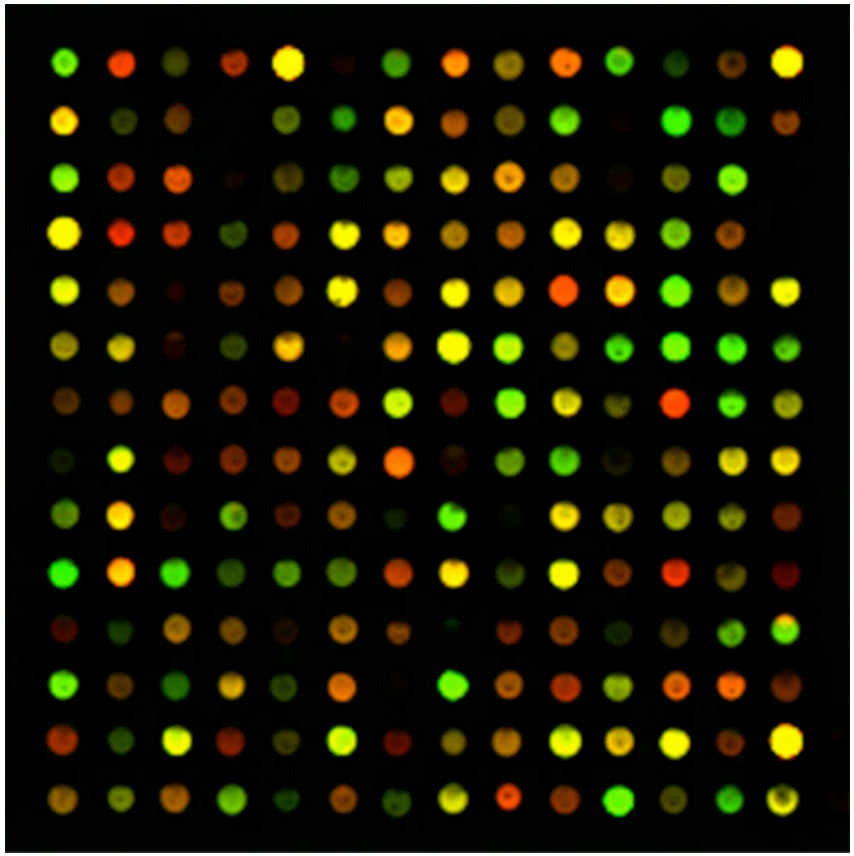
Why Now?

- Decreasing technology costs
- Targeting specific genetic information
  - Drug interaction genes
  - Ancestry genes, including mitochondria and Y
  - Cancer genes
  - HLA
- Consumers want personalized healthcare NOW
- GINA signed into law



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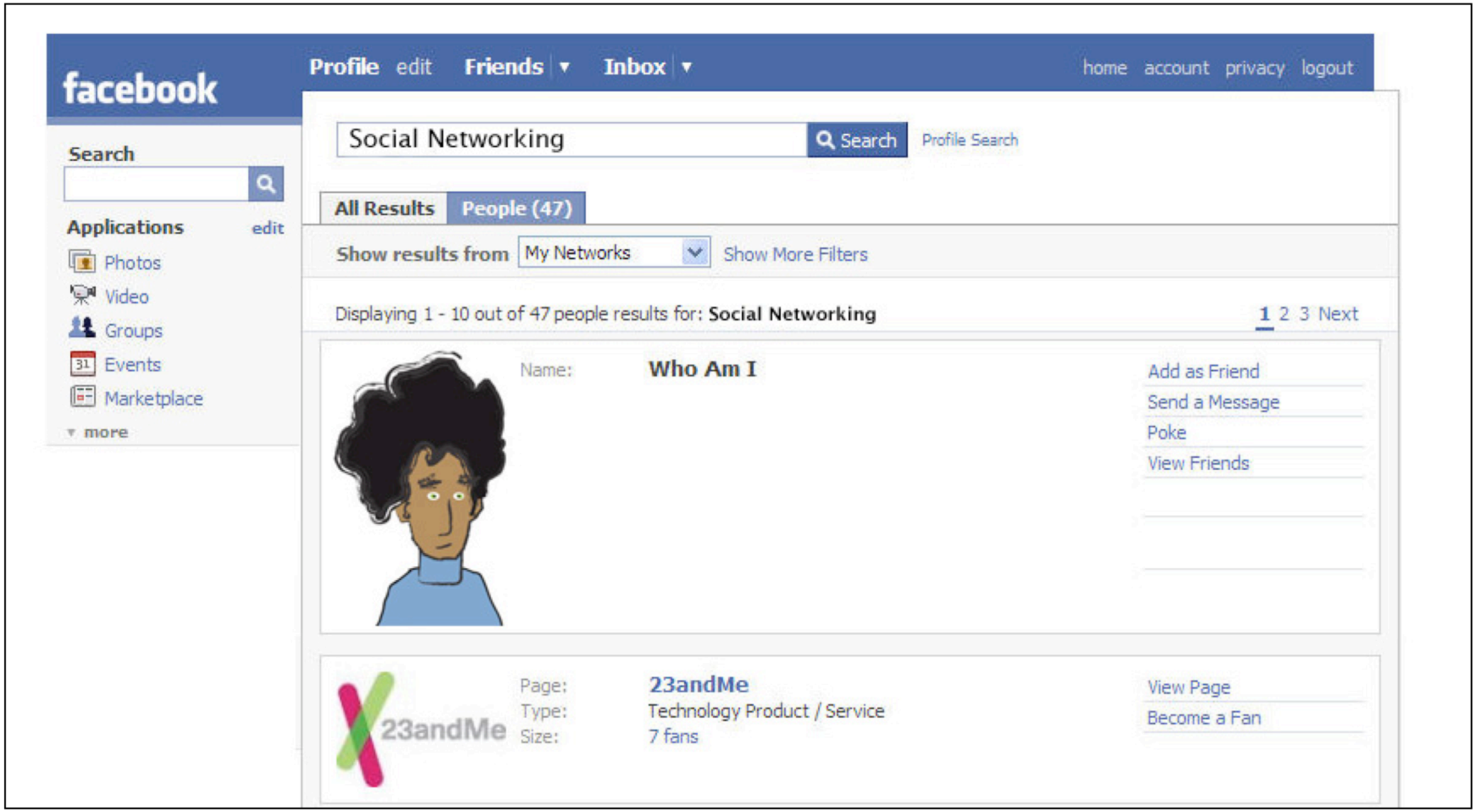
Web 2.0



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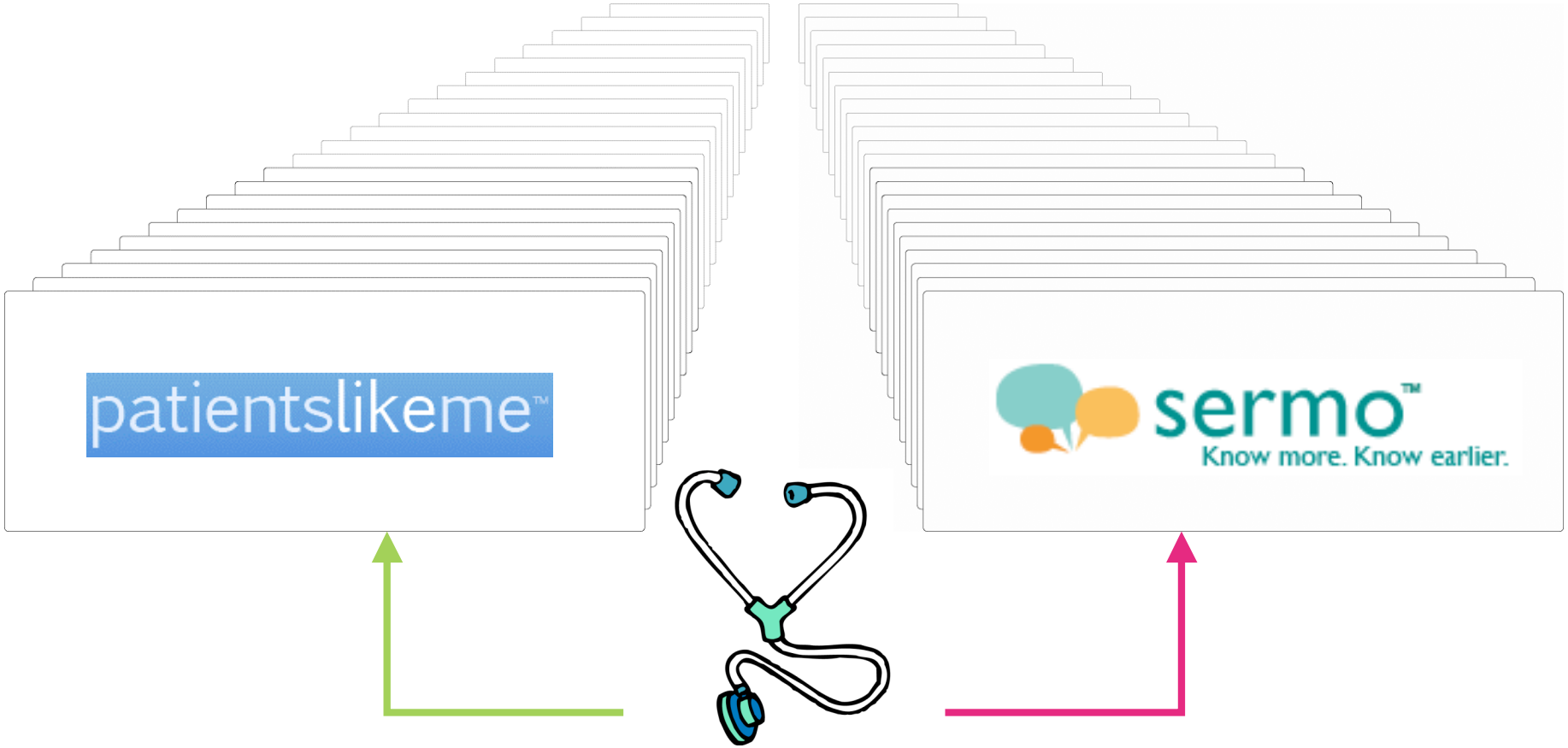
Health 2.0



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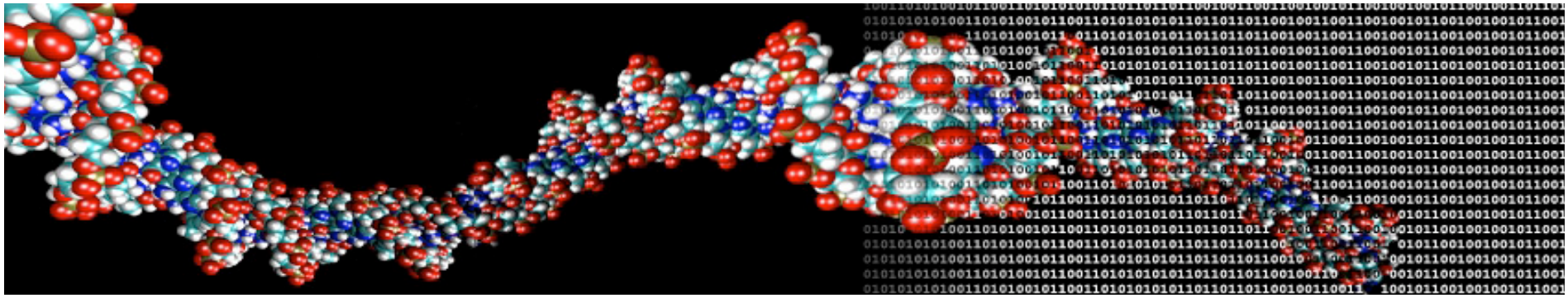
Research 2.0

- Built on genetics platform
- ‘Human subjects’ are real, living people
- Individuals engaged in the process and realize their impact
- Results, both negative and positive, are shared
- Individuals get their data



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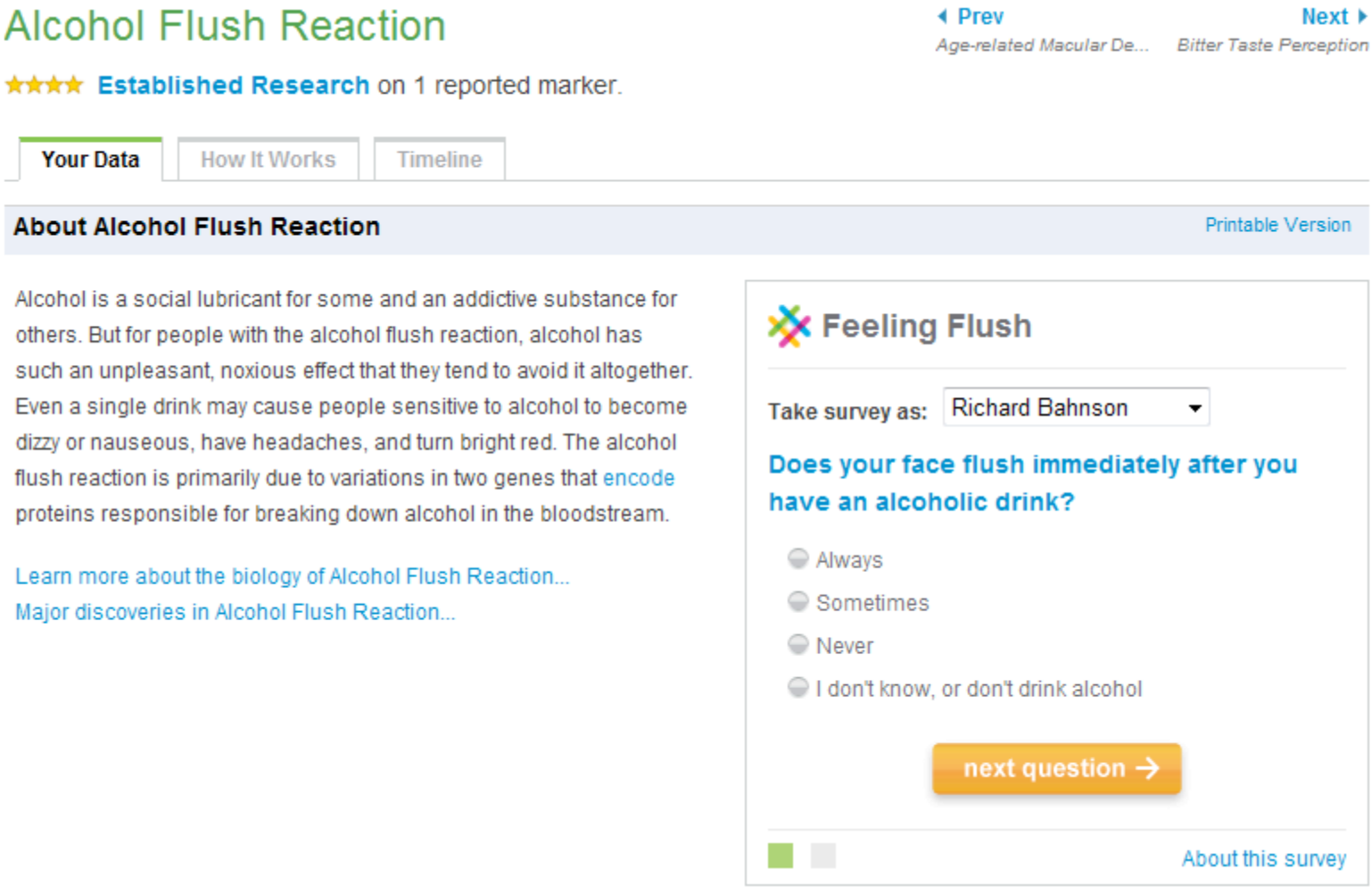
Survey Tools



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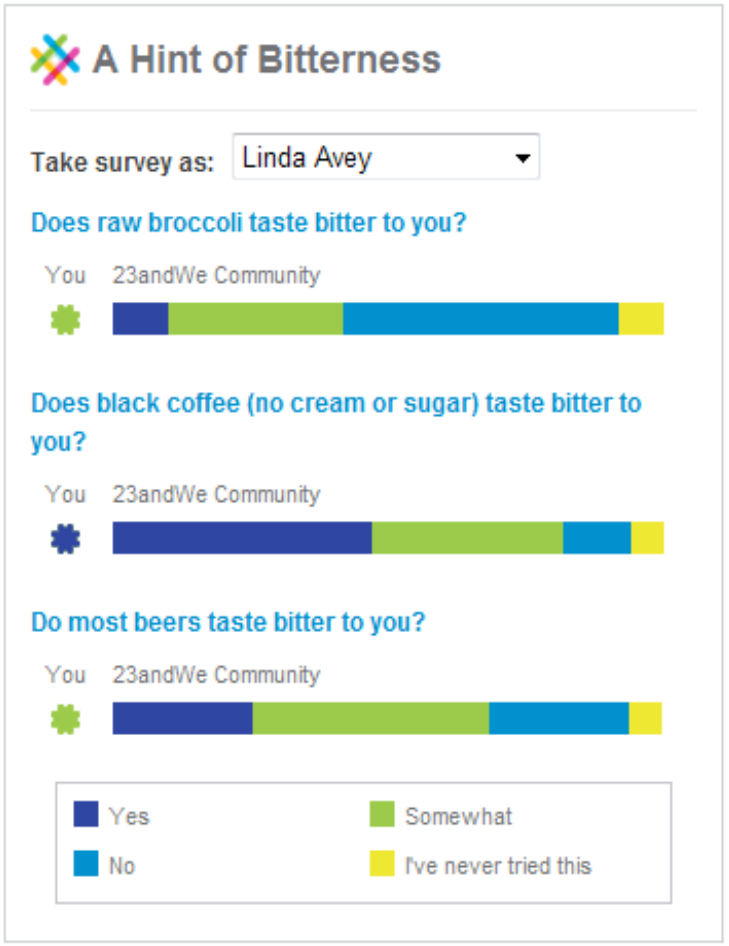
Community Feedback

About Bitter Taste Perception Printable Version

Why do some people seem to enjoy Brussels sprouts, while others can't stand them? The answer may be that genetic variation prevents some people from tasting bitter flavors found in certain vegetables. About 25% of people are unable to taste a chemical called propylthiouracil (PROP) similar to the bitter components found in cabbage, raw broccoli, coffee, tonic water, and dark beers. These people are essentially "taste-blind"—and compared to those who do respond to PROP, taste-blind people find most food and drink to be less bitter, or not bitter at all. It turns out that sensitivity to this kind of taste is due almost entirely to a single gene that encodes receptors in taste buds on the tongue. A SNP in this gene is responsible for whether a person is bitter taste-blind.

Learn more about the biology of Bitter Taste Perception...
Major discoveries in Bitter Taste Perception...



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Translational Goals

- Tying individual responses to clinical outcomes and genetics
- Building knowledge base of clinically validated correlations
- Working with all healthcare stakeholders: researchers, physicians, AND the consumer

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