

3rd International Food Innovation Conference

Vortrag / Speech

Kate Bermingham

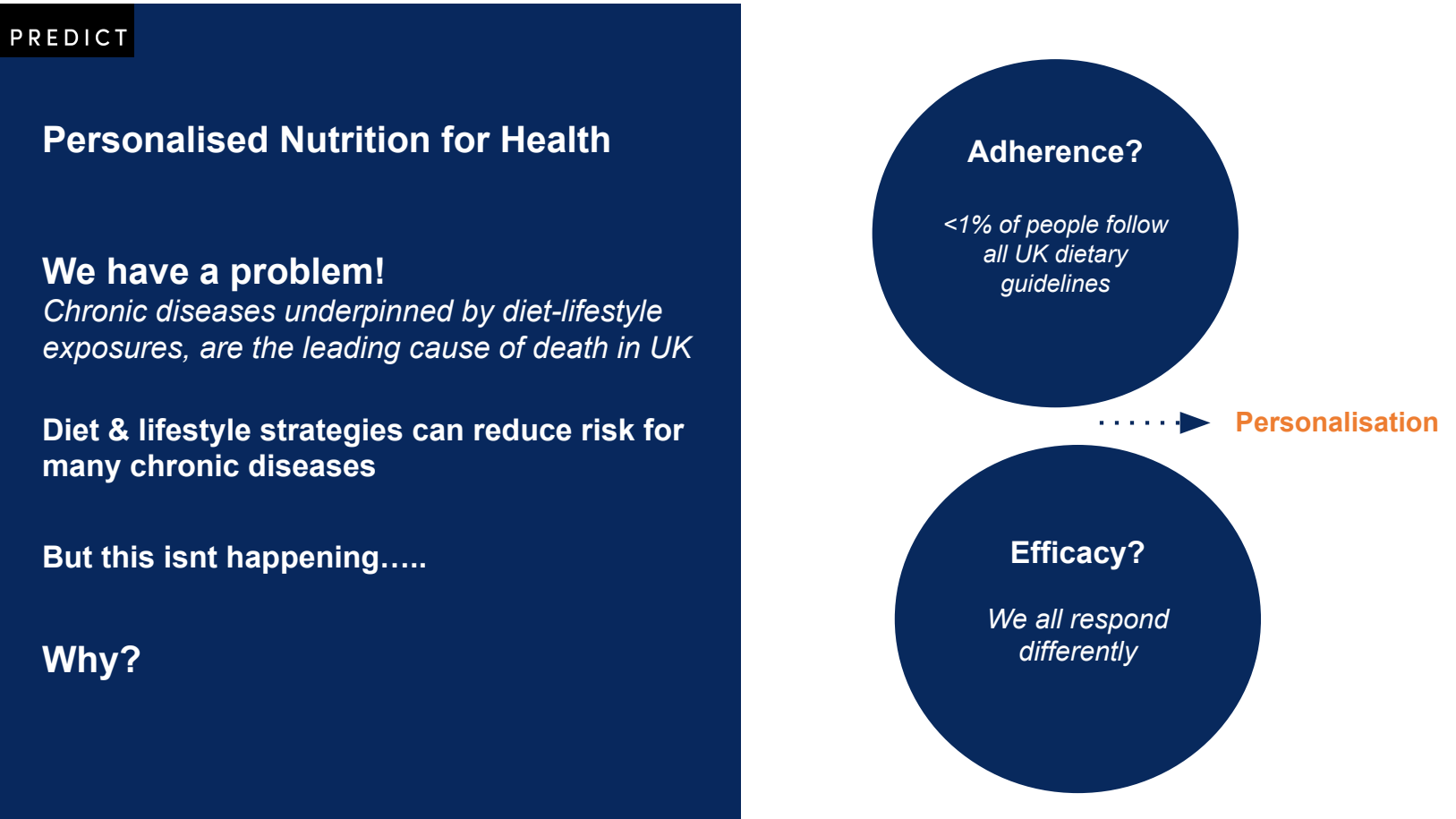
Von Big Data zu besserer Gesundheit: Die Revolution der personalisierten Ernährung

From Big Data to Better Health: The Revolution in Personalized Nutrition

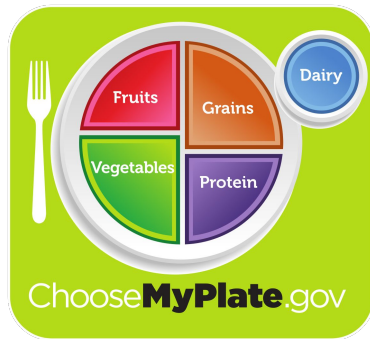
From Big Data to Better Health: The Revolution in Personalized Nutrition

Moving beyond a one-size-fits-all approach by combining science, AI and collaboration

The Great Food Gridlock, 2023
Dr Kate Bermingham
Kings College London and ZOE Ltd.



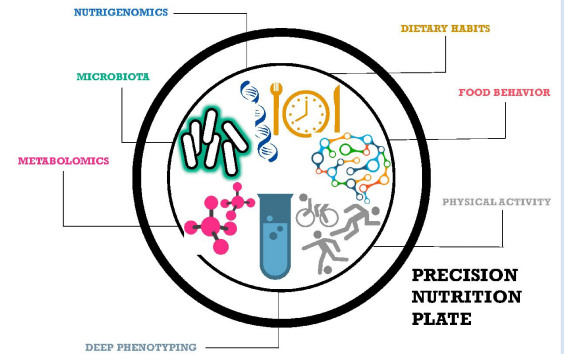
How do we transition from 'average' to 'individual' advice?



Fact?



here



Fiction?

there

3

New era in biological research.....

Citizen
science



Digital
tools



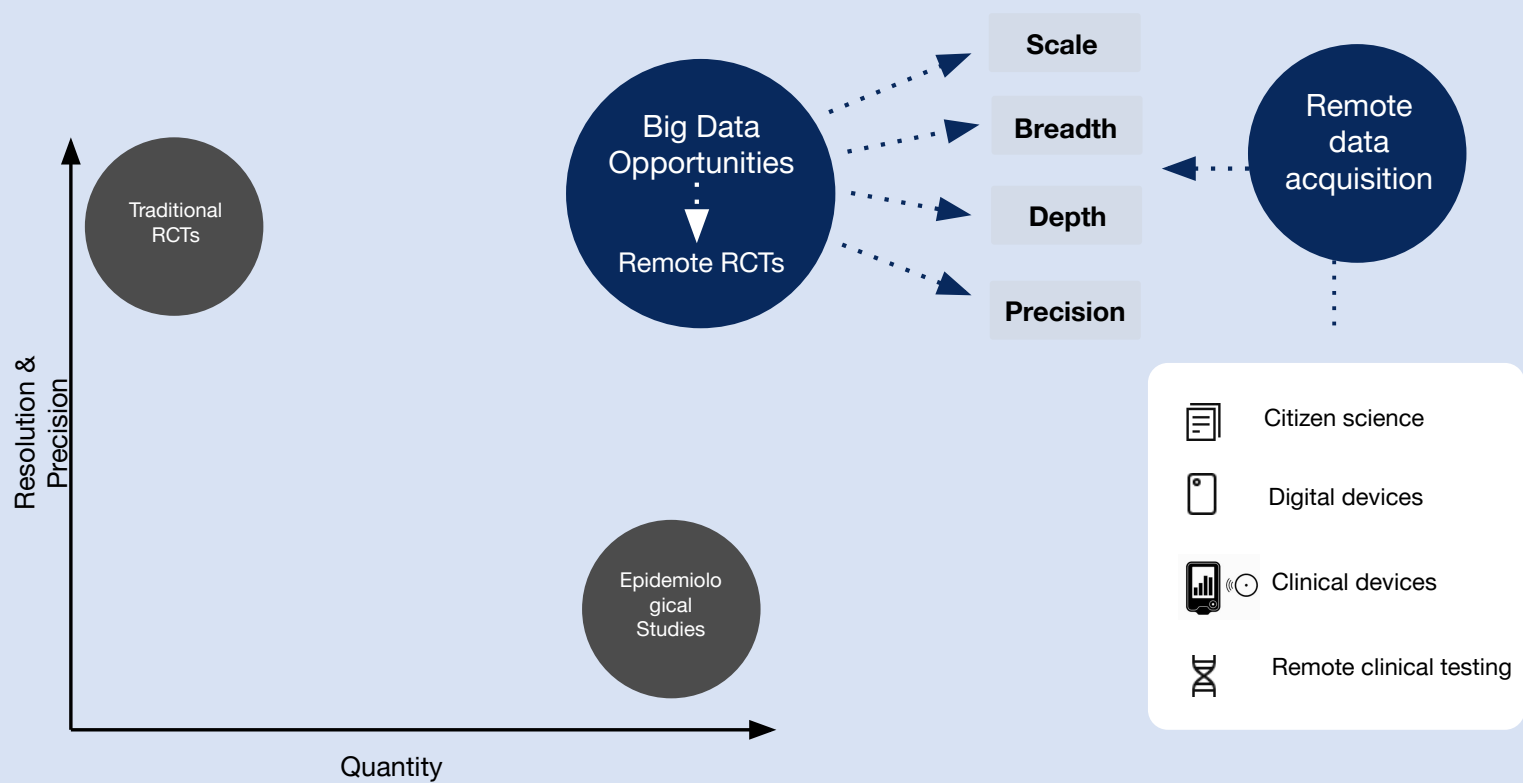
Data
science



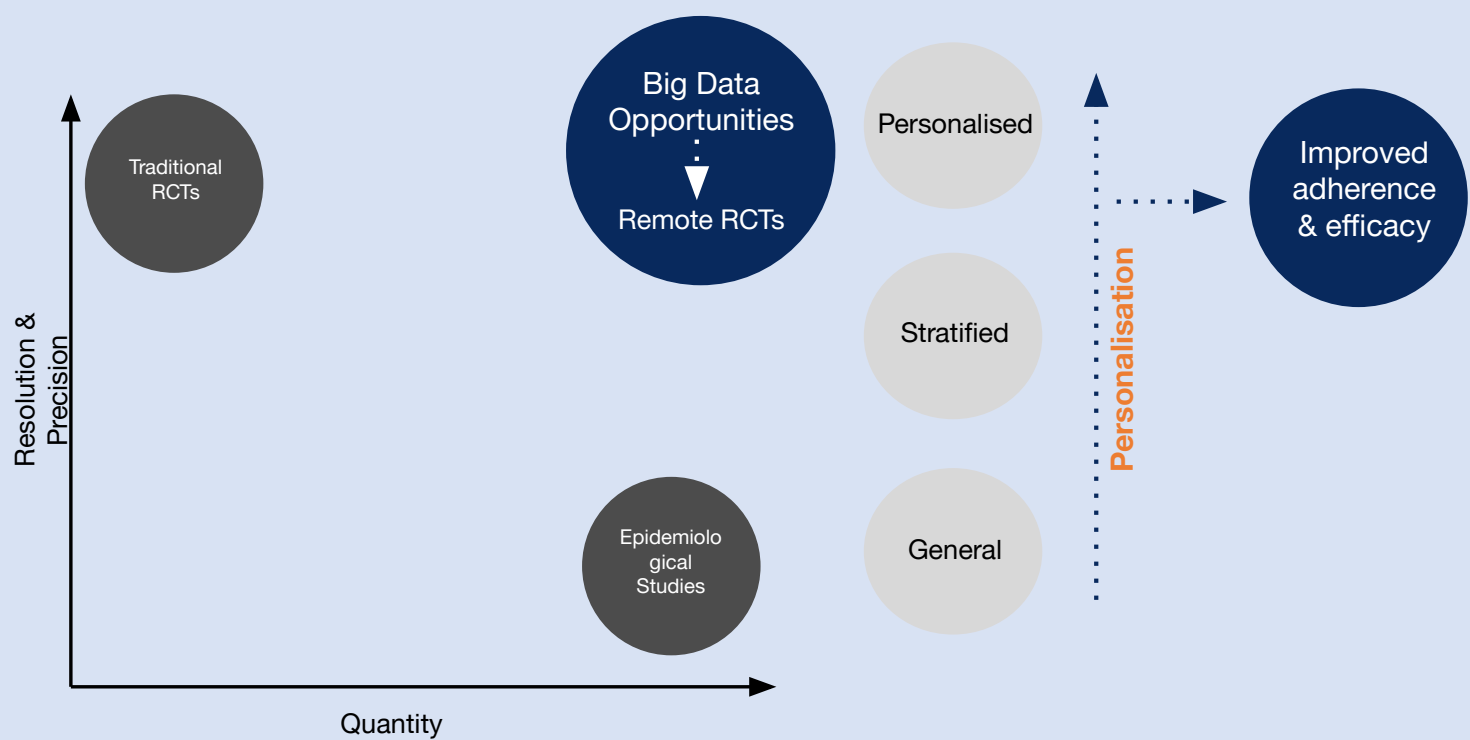
Traditional
science

New ways of data acquisition.....

Paradigm shift in how we conduct research - Big data and novel technologies



Paradigm shift in how we conduct research - Big data and novel technologies



PREDICT Remote clinical trials n~100,000

Ongoing program to measure
Individual responses to food & lifestyle interventions

Nutrition
academia



Tech
companies



MASSACHUSETTS
GENERAL HOSPITAL

Stanford
University

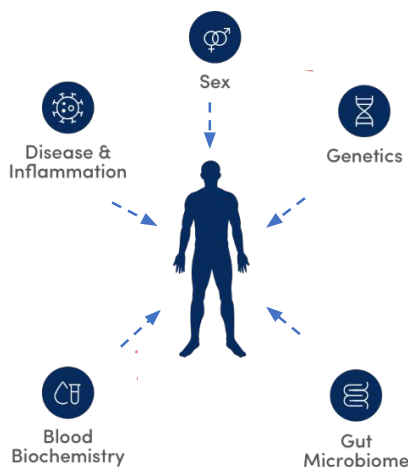
HARVARD
MEDICAL SCHOOL

Tufts
UNIVERSITY

ZOE

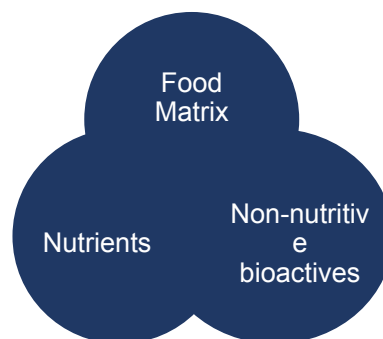
How do we truly personalize advice.....unravel the variability in **who** we are, **what** we do and **why** we make those choices

Who we are



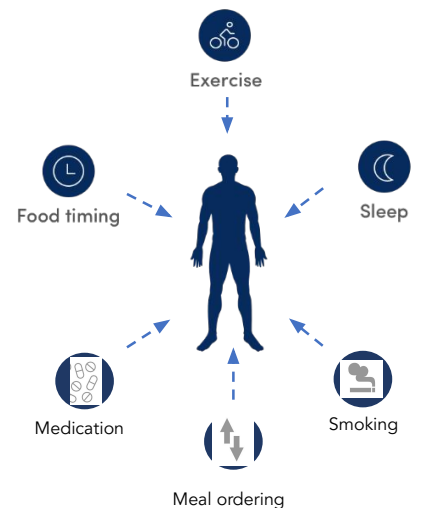
Resolution + precision + breadth

What we eat



Resolution + precision + breadth

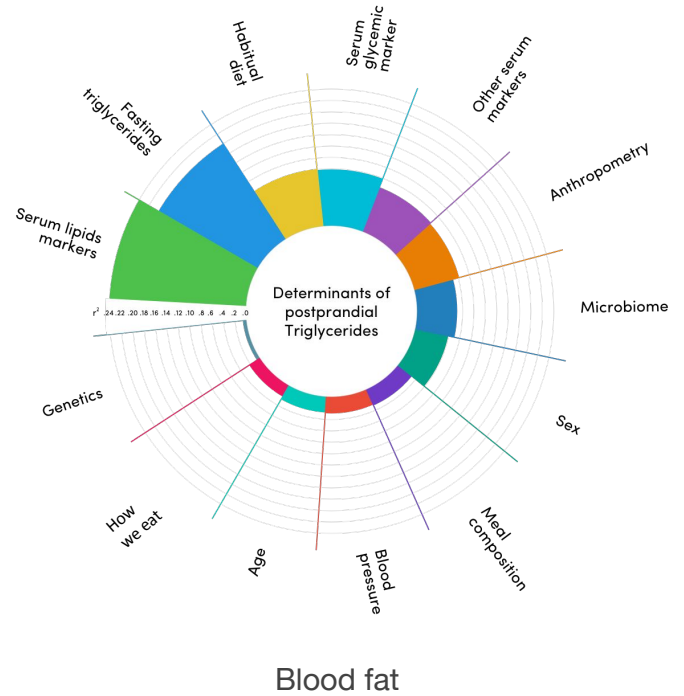
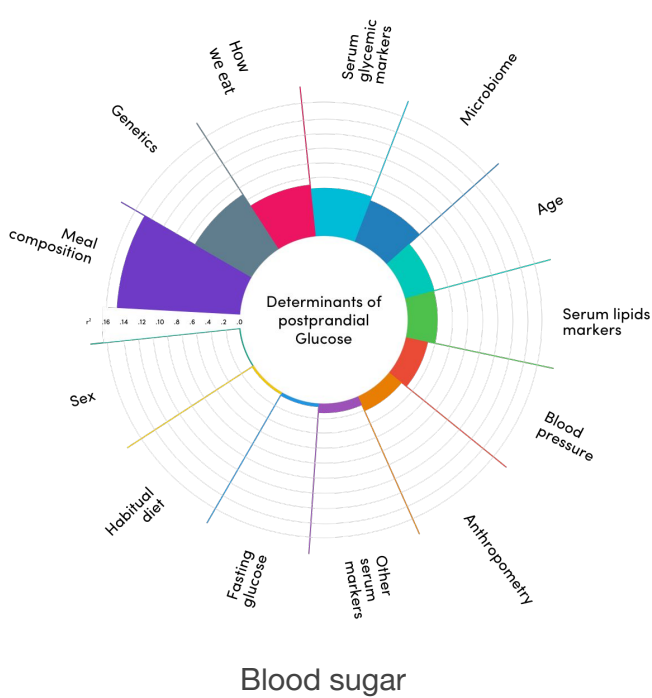
How we eat & Why we make those choices



Real time data

PREDICT 1

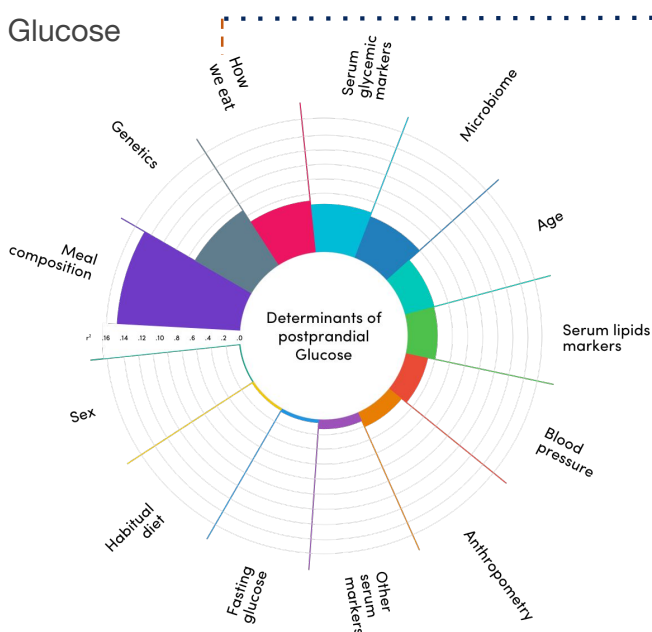
We must understand 'determinants' and do they differ for different outcomes?



PREDICT 1

With enough data we can deep dive into the complexities.....

Glucose



How we eat

- Time of day
- Exercise
- Meal ordering
- Sleep
- Eating speed
- Snacking

and more...

 **Real time data acquisition**

How
we
eat

Sleep – mid-point vs duration vs efficiency



Poor sleep quality & later bedtime routines



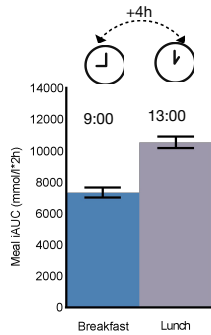
Pronounced postprandial blood glucose level & poorer glycemic control

Diabetologia

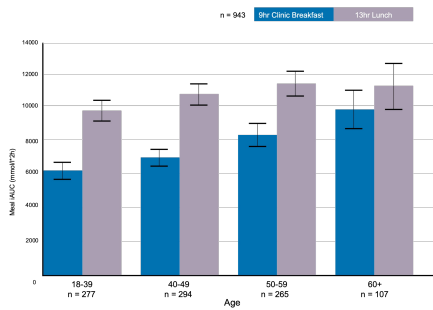
Impact of insufficient sleep on dysregulated blood glucose control under standardised meal conditions

Neil Turner¹ · Raphael Valleri² · Juan Fernandez-Fajó³ · Linda M. Delahanty⁴ · Jose M. Ordovas^{5,6} · David A. Drew^{6,7} · Ana M. Velho⁸ · Nicola Sgambato^{9,10} · Andrew T. Chan¹¹ · Jonathan Wolf¹² · Sarah E. Berry¹³ · Matthew P. Walker¹⁴ · Timothy D. Spector¹⁵ · Paul W. Franks^{1,16}

Time of day



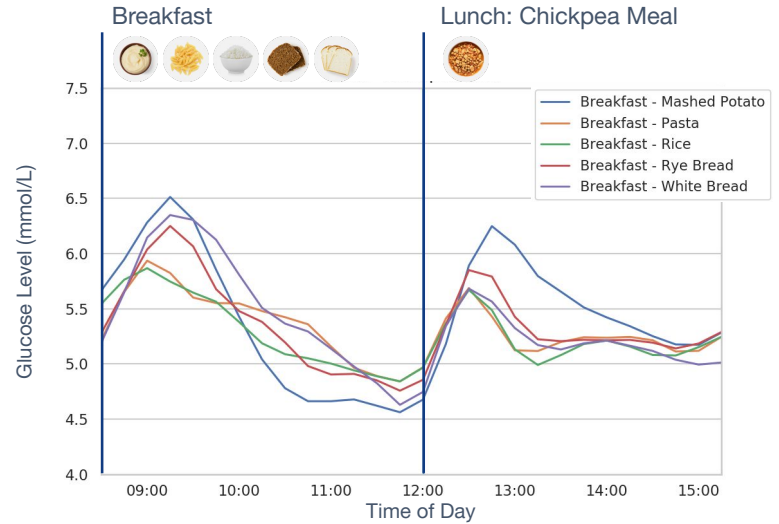
INTERIM UNPUBLISHED DATA



Meal order

PREDICT - Carbs

Lunchtime response affected by breakfast meal



INTERIM UNPUBLISHED DATA

Can we understand what people do in everyday noisy life?

zoe
Health
Study

zoe



The ZOE Health Study is a longitudinal cohort of 1 million active users, leveraging the power of large-scale community science to discover the nutrition and lifestyle interventions that work in a real world setting

Intervention trials – *feasibility in our noisy lives!*

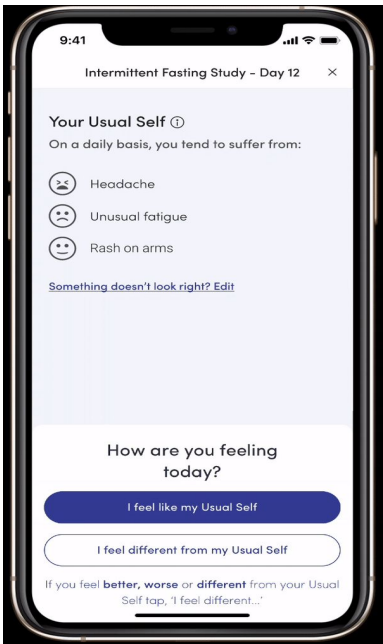
The Big IF Study

The largest-ever community experiment into Intermittent Fasting.

Sign up for future studies for free on the ZOE Health Study app.

148,257 joined

Oct 2022



Intervention trials – *user experience*

The Big IF Study

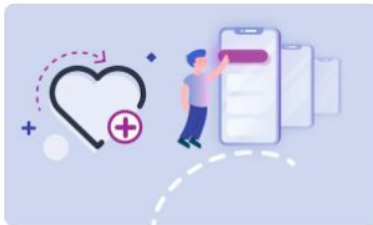


Cross sectional 'Deep Dives'

Cross sectional data collection on:

- Menopause
- Diet Habits
- Diet Quality
- Mental Health

n = 107,000



The ZOE Health Study
Habit Tracker: Looking to
make a change this year?

n = 56,000



The Blood Pressure Study:
What can blood pressure
tell us about health?

The **BIG POO REVIEW**

In partnership with Channel 4's Steph's Packed Lunch

zoe Health Study + **STEPH'S PACKED LUNCH**

120,837 JOINED

In just a few minutes, tell us about your poo and help us improve the health of millions.

[Take part now](#)

The current state of play...

The Personalised Nutrition Industry

\$6-18 billion



The Research



\$170 million

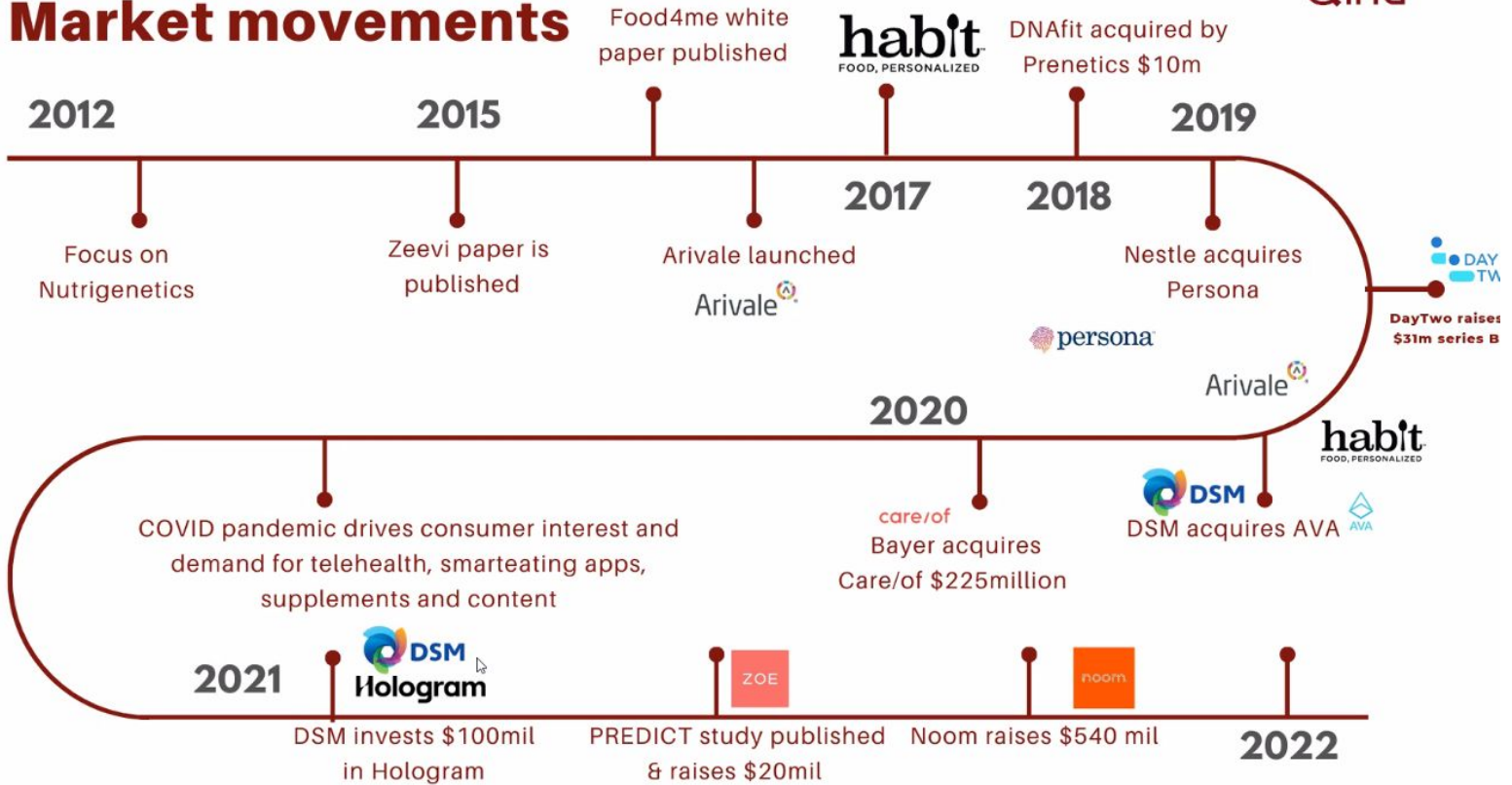
Nutrition for Precision Health
Deliverable: Algorithms that
predict individual responses to
diet

**PREDICT
Programme**

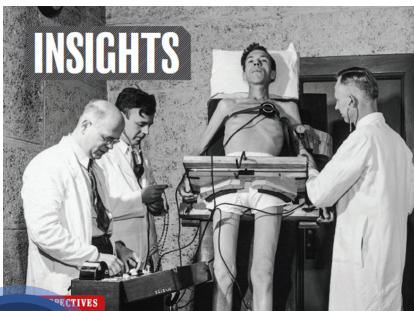
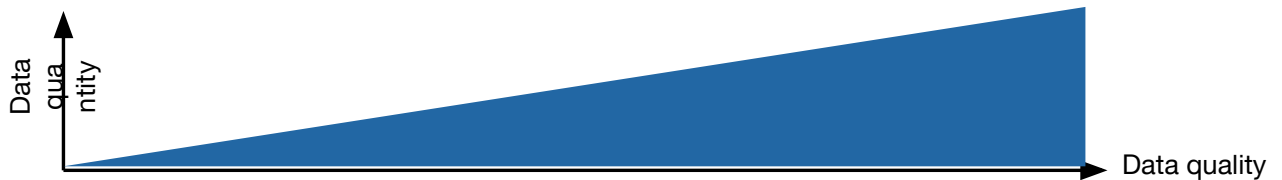


Market movements

Qina



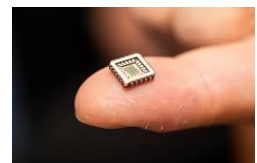
Citizen Scientists Real-time data



The Past



The Present



The Future

Acknowledgements

King's College London, UK

Sarah Berry
Tim Spector
Wendy Hall

ZOE Ltd, UK

Jonathan Wolf
George Hadjigeorgiou
Richard Davies
Haya Al Khatib
Inbar Linenberg
Joan Pujol
Anna May

University of Trento, Italy

Nicola Segata
Francesco Asnicar

University of Nottingham, UK

Ana Valdes

Tufts University,, USA

Jose Ordovas

Stanford University, USA

Christopher Gardner

Massachusetts General Hospital, USA

Linda Delahanty

Harvard University, USA

Andy Chan
David Drew
Long Nguyen
Jordi Merino

Lund University, Sweden

Paul Franks

