

It's about people

*shared minds - **basic** and **clinical** science*



Microbiology, immunology, pharmacology, neuroscience, food science,
nutrition, biochemistry
Gastroenterology, psychiatry, cardiothoracic, rheumatology, radiology, pathology
gerontology, neonatology,

C'mon... *Ireland*



ORIGINAL ARTICLE

Exercise and associated dietary extremes impact on gut microbial diversity

Siobhan F Clarke,^{1,2,3} Eileen F Murphy,^{2,4} Orla O'Sullivan,¹ Alice J Lucey,⁵ Margaret Humphreys,⁶ Aileen Hogan,² Paula Hayes,² Maeve O'Reilly,^{2,4} Ian B Jeffery,^{2,3} Ruth Wood-Martin,⁷ David M Kerins,^{8,9} Eamonn Quigley,² R Paul Ross,^{1,2} Paul W O'Toole,³ Michael G Molloy,¹⁰ Eanna Falvey,^{10,11} Fergus Shanahan,^{2,10,12} Paul D Cotter^{1,2}

Gut 2014

[Editorial comment](#) by Hold GL



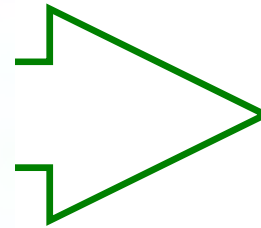
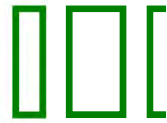
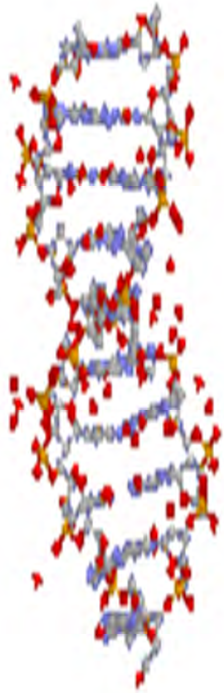


“Every dollar we invested to map the human genome returned \$140 to our economy.”

Barack Obama,
[2013 State of the Union address](#),
Feb. 12, 2013

Human Genome –

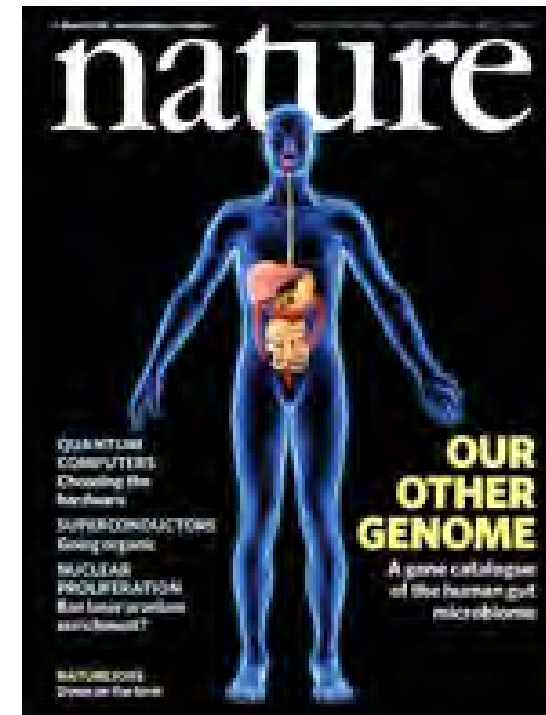
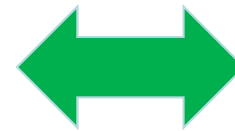
insufficient information for full development



Microbe-Host Genome Interaction



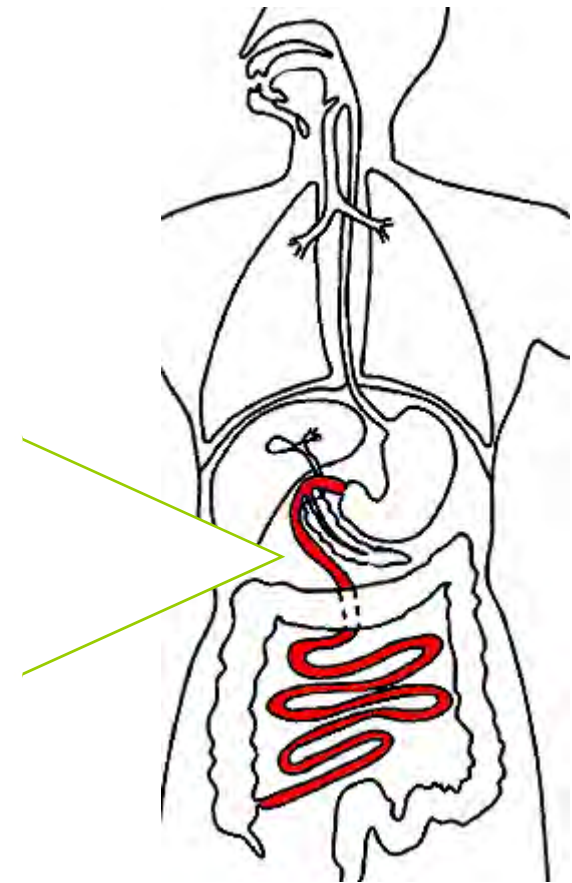
<30 k Genes – Million SNPs



10 M Genes – Zillion SNPs

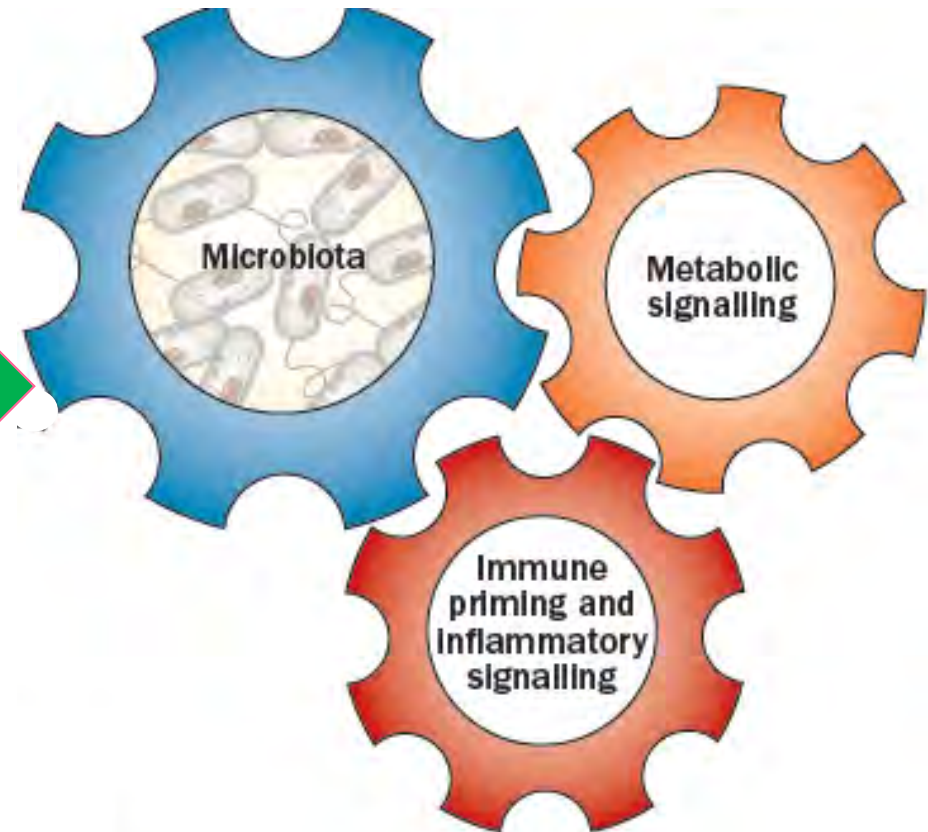
Microbial Man

- Therapeutic Target
- Therapeutic resource
- Biomarkers

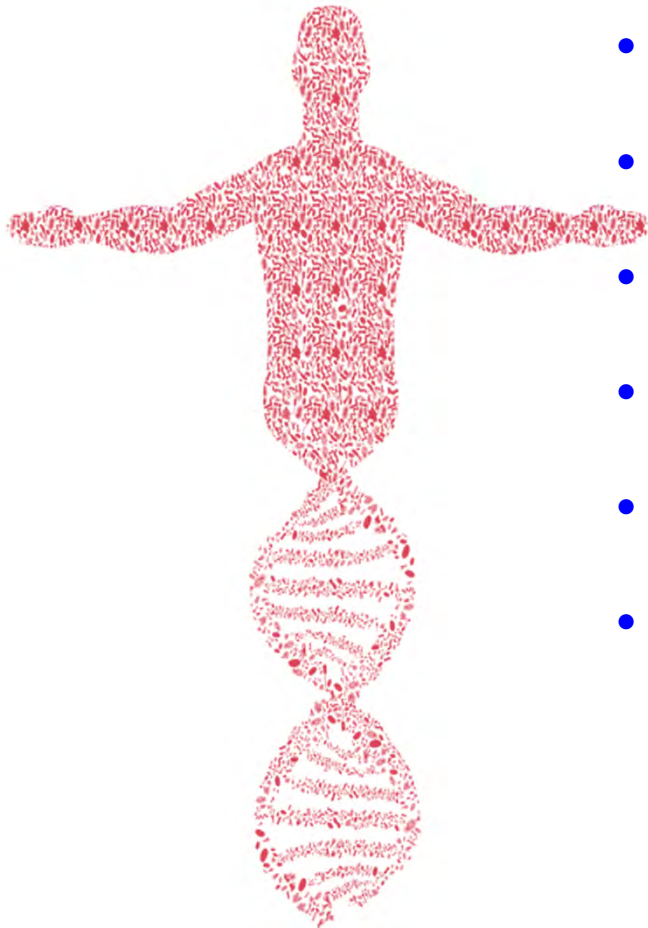


A signalling internet

Diet, Lifestyle
&
Environment



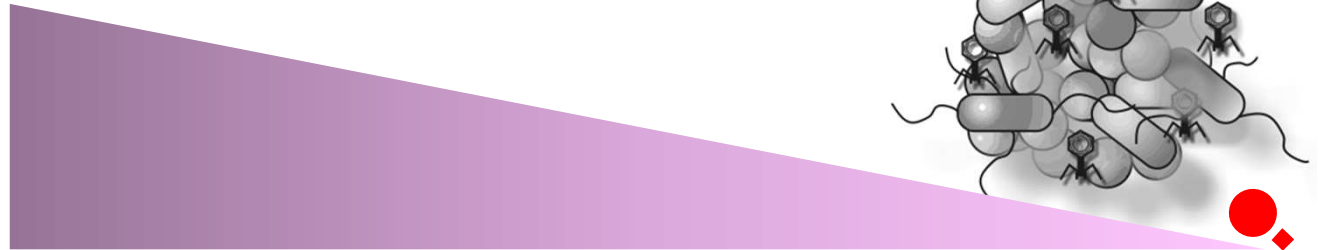
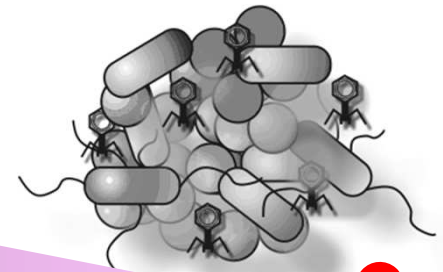
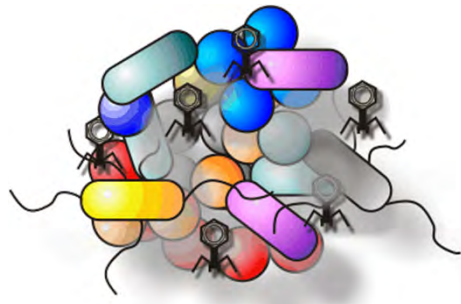
Food and Microbe Man



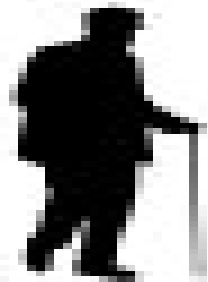
- Diversity (Claesson M. *et al. Nature* 2012)
- Fibre (Kovatcheva-Dathary P. *et al. Cell Metab* 2015)
- Personalised microbiome (Zeevi D. *et al. Cell* 2015)
- Feeding for next generation (Sonnenburg E. *et al. Nature* 2016)
- Atherosclerosis, TMA & microbiota (Wang Z. *et al. Cell* 2015)
- Additives:
 - Sweeteners (Suez J. *et al. Nature* 2014)
 - Emulsifiers (Chassaing B. *et al. Nature* 2015)



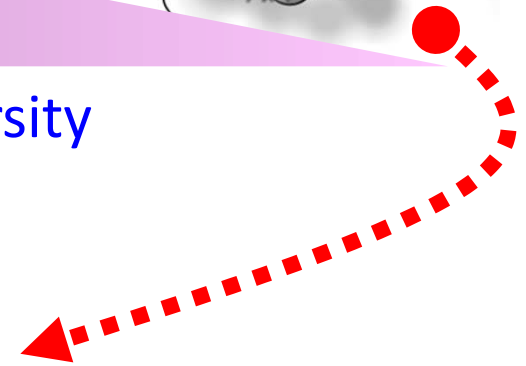
Diminishing Dietary Diversity



Diminishing Microbial Diversity

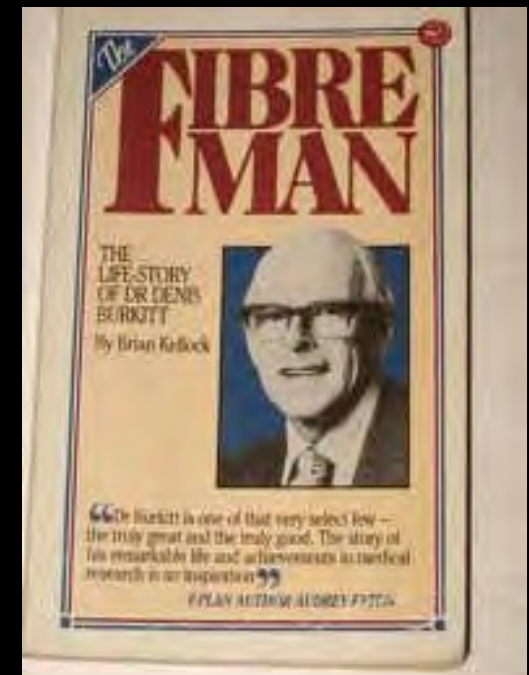
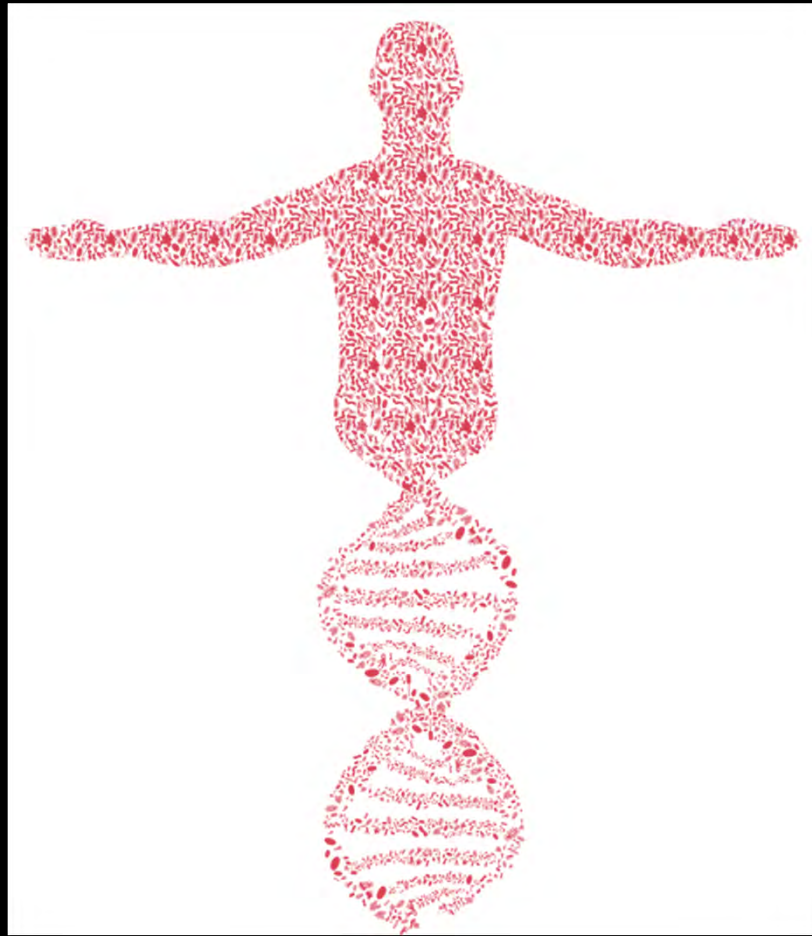


Inflammation





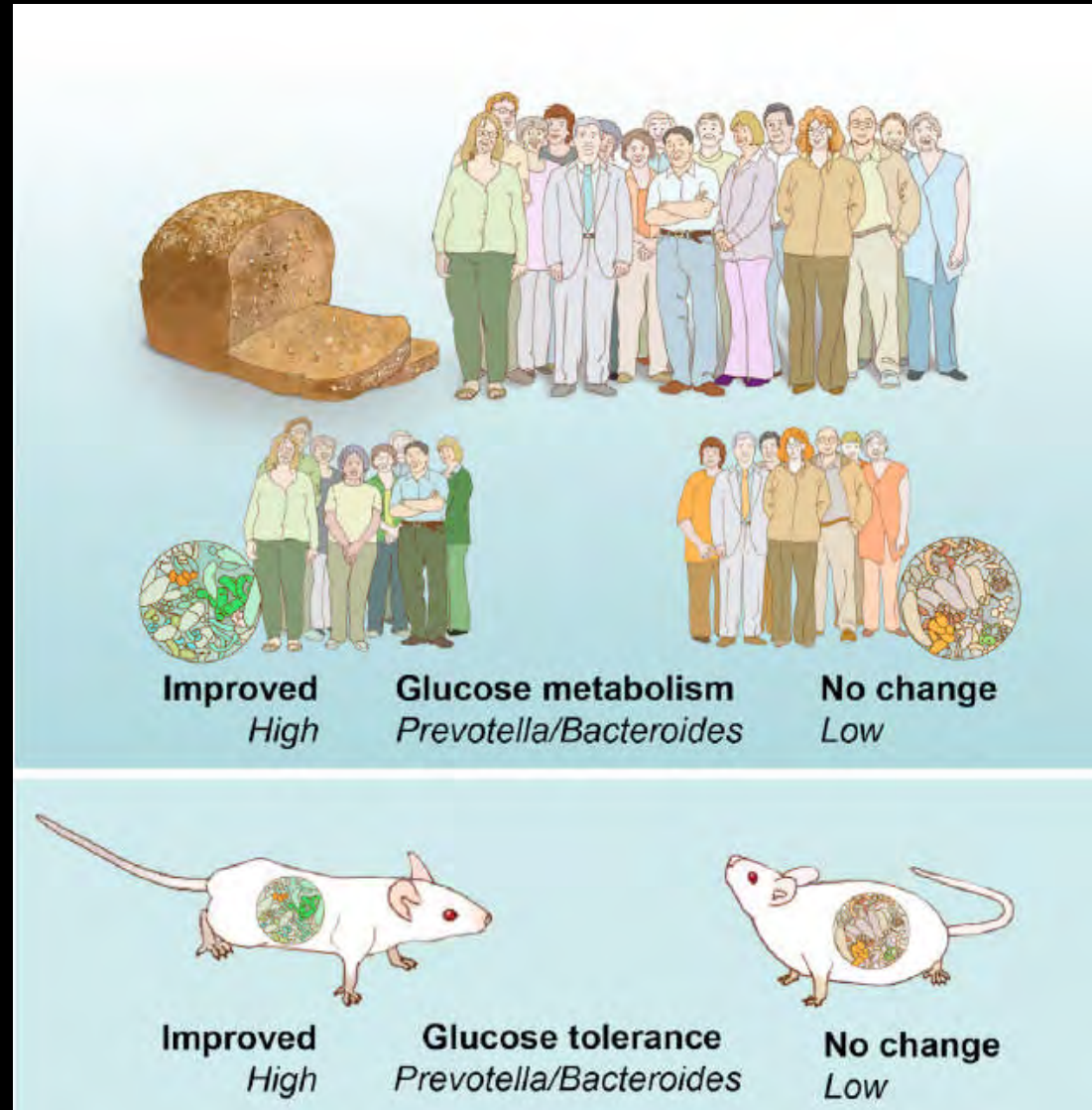
Fibre man meets microbial man



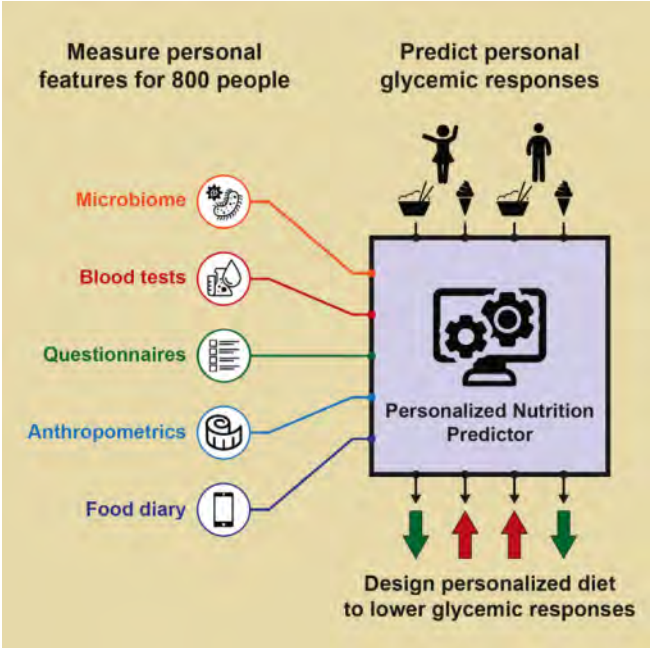
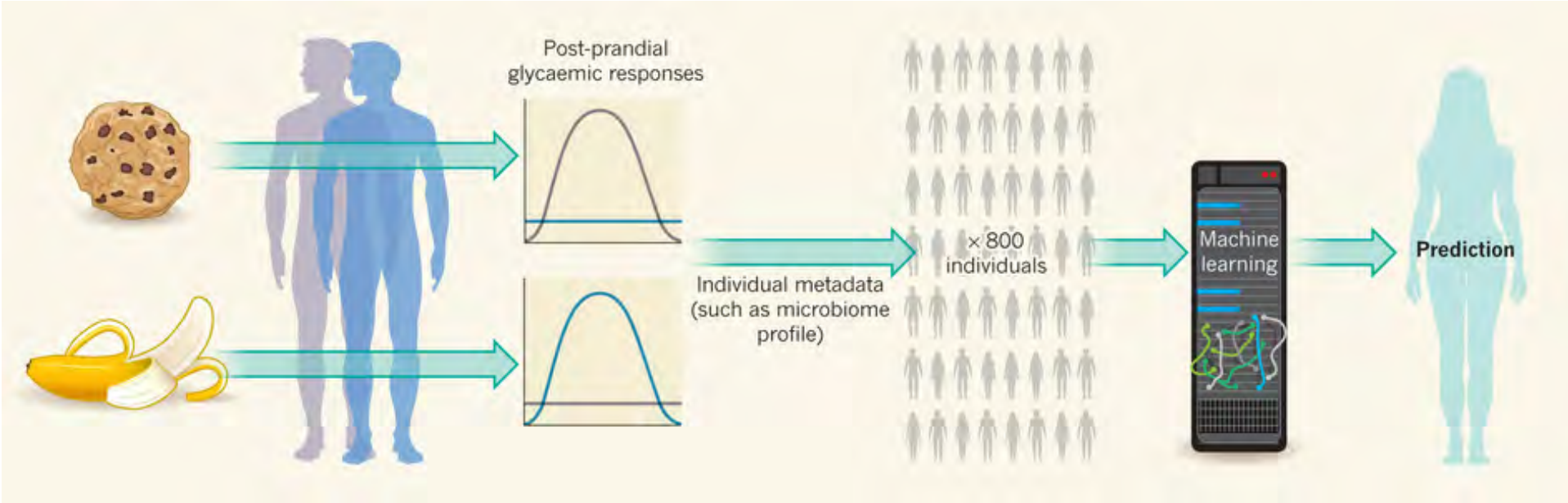
If you pass small stools (low dietary fibre),
you have to have large hospitals

Denis Burkitt

Who can benefit from dietary fibre

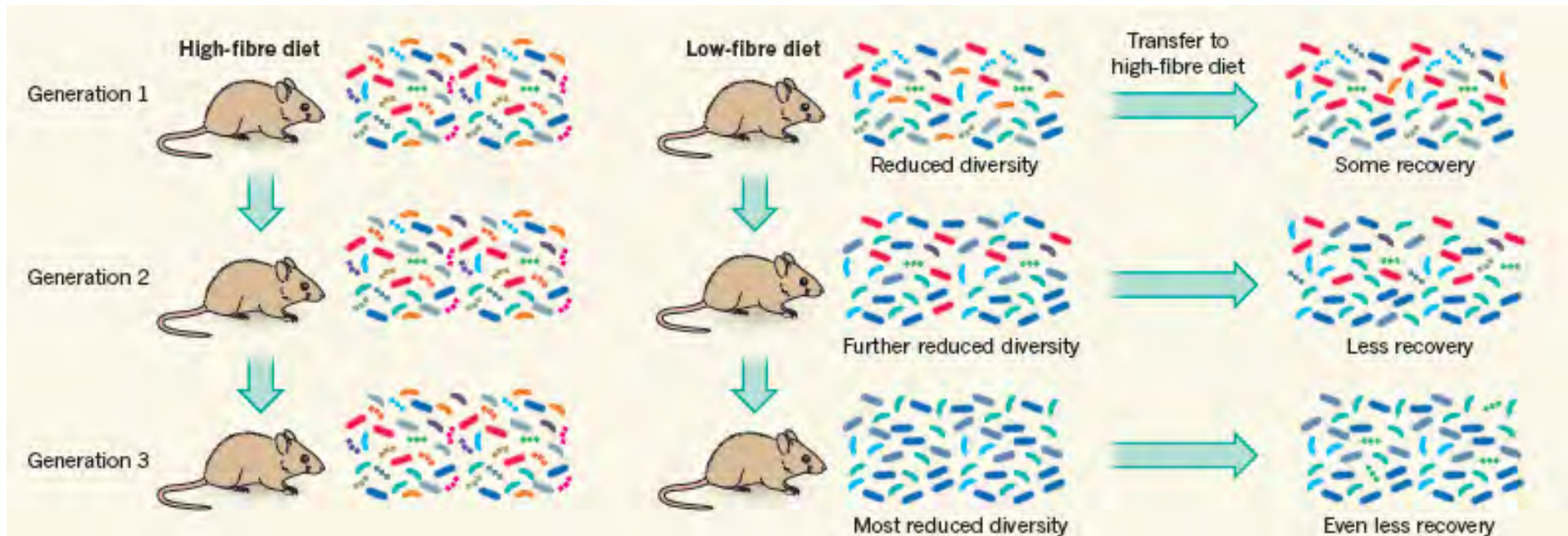


The Personalised Microbiome Predictor of Disease Risk

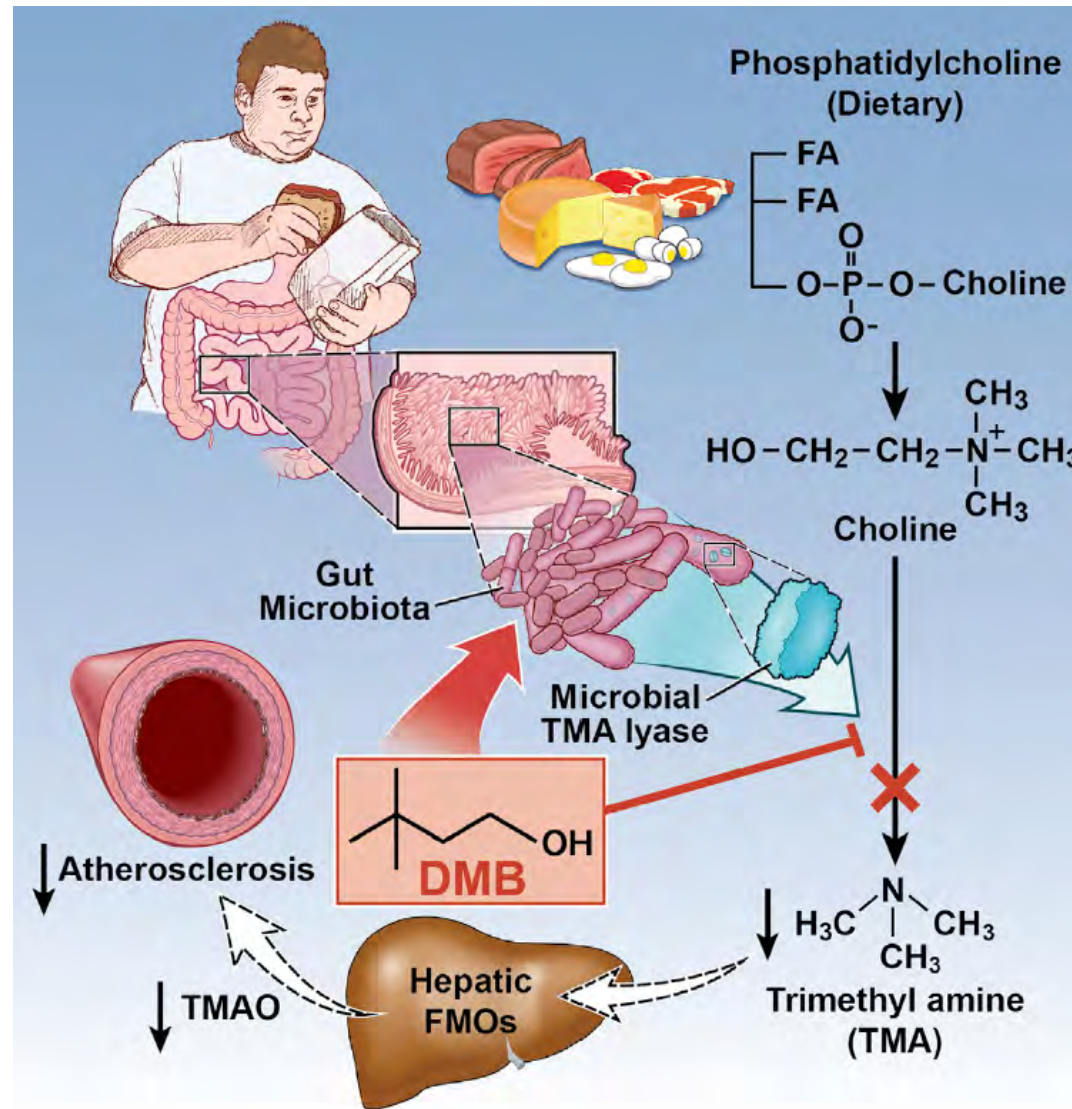


Zeevi D *et al* Cell 2015

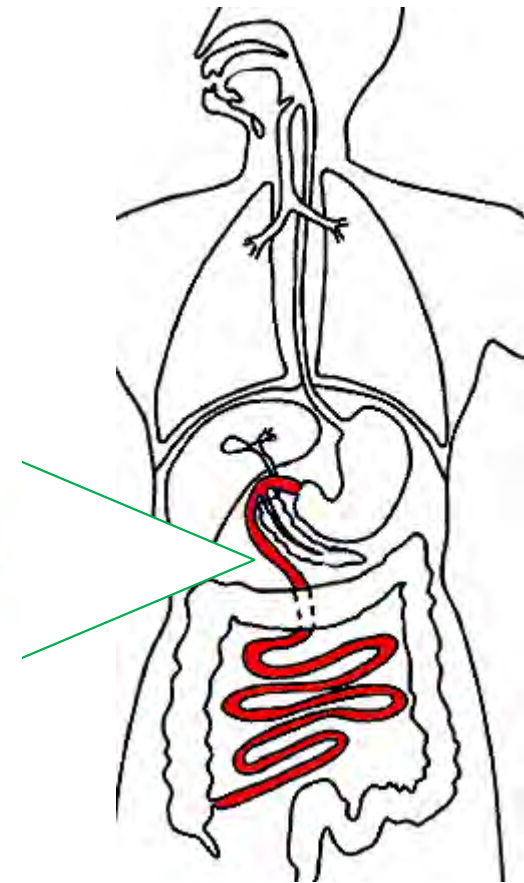
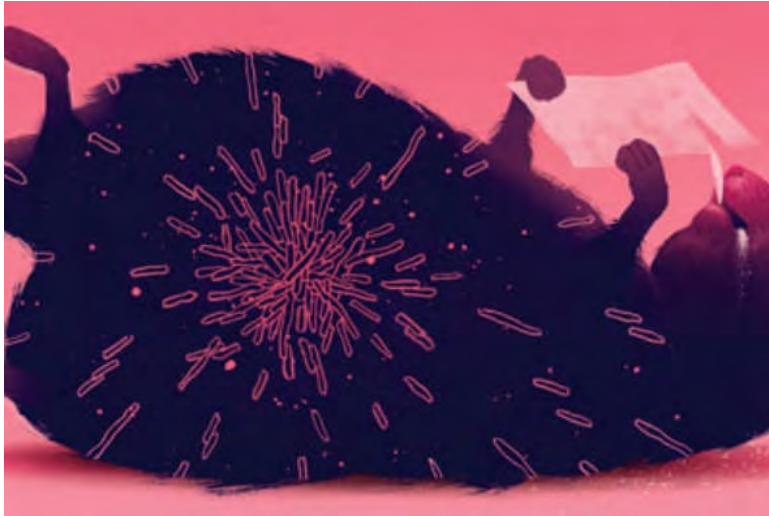
Feeding the microbiome for the next generation



Dietary phospholipids, the microbiota & cardiovascular disease

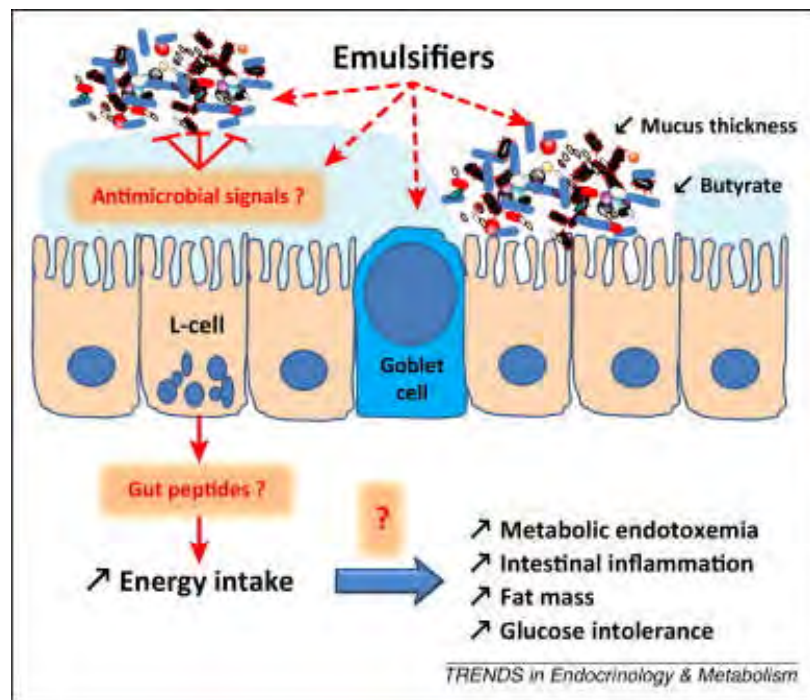
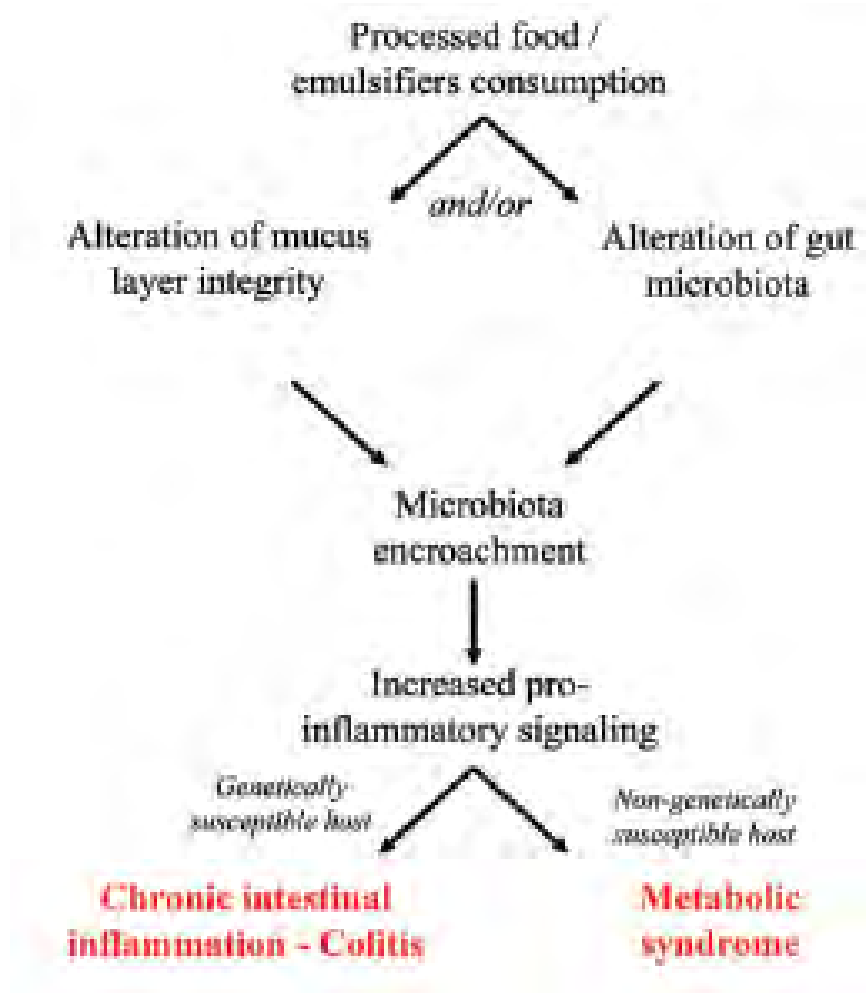


Artificial sweeteners alter microbiota metabolism – glucose tolerance



Suez J. et al. *Nature* 2014

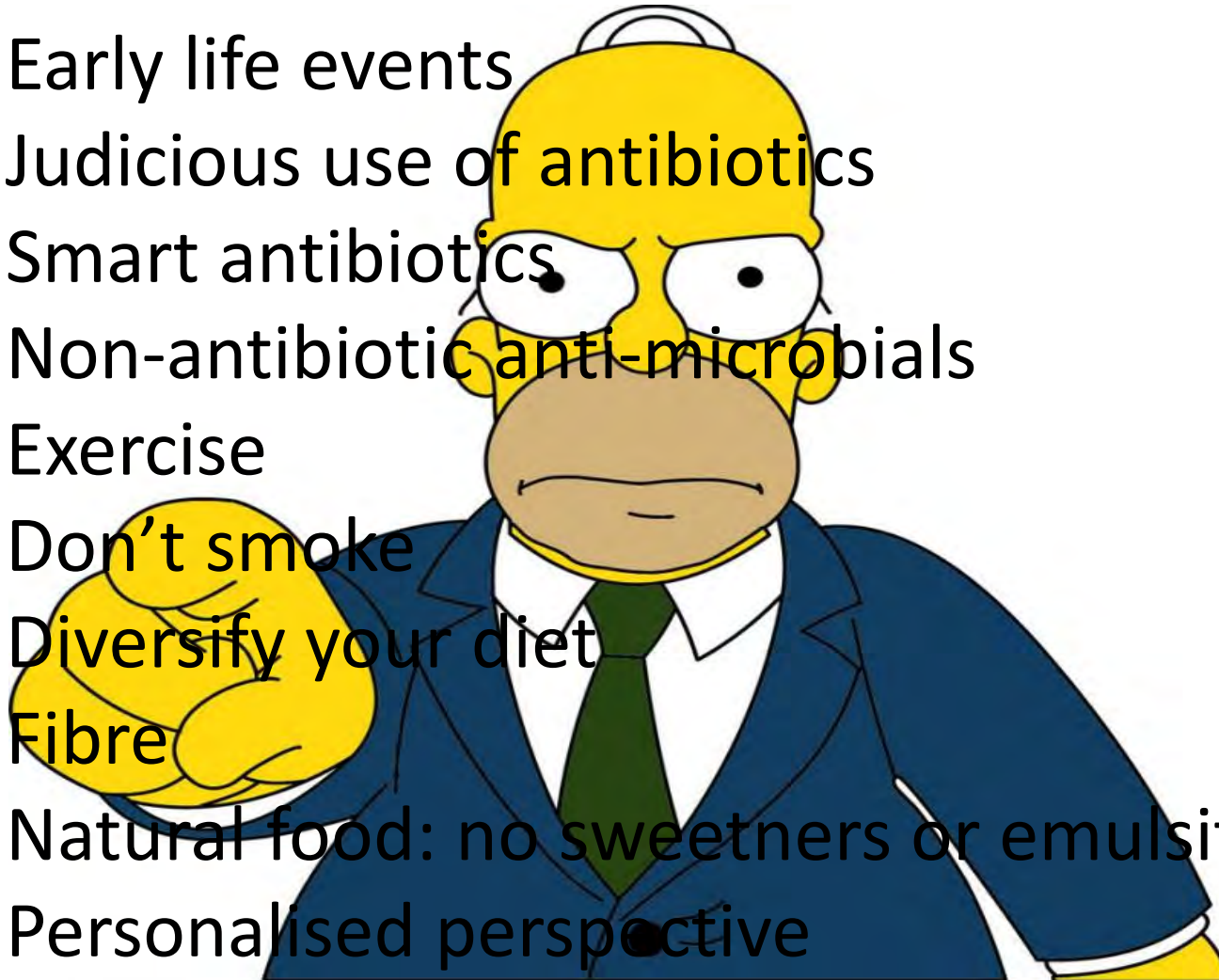
Emulsifiers



Based on Chassaing B. et al Nature 2015

Mind your microbes

- Early life events
- Judicious use of antibiotics
- Smart antibiotics
- Non-antibiotic anti-microbials
- Exercise
- Don't smoke
- Diversify your diet
- Fibre
- Natural food: no sweeteners or emulsifiers?
- Personalised perspective



Bibliometrics 2003-13

- APC publications have a citation rate > twice world average
- A quarter of APC publications in top 10% most cited papers for the field/year

Rank	Field	Institute	Total normalized citation score
1	Microbiome field	Univ Colorado - Boulder	2137.74
2	Microbiome field	Washington Univ - St Louis	1814.43
3	Microbiome field	Harvard Univ	1685.45
4	Microbiome field	APC Microbiome Institute	1340.65
5	Microbiome field	Univ Calif - Berkeley	1118.95

1 antimicrobials;

#1 probiotics;

#5 gastrointestinal disease



Thank you

*shared minds - **basic** and **clinical** science*



Microbiology, immunology, pharmacology, neuroscience, food science,
nutrition, biochemistry
Gastroenterology, psychiatry, cardiothoracic, rheumatology, radiology, pathology
gerontology, neonatology,