



Is the marketplace ready for nutrigenomic foods?

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Plant & Food
RESEARCH
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Top editors.... Nutrition gets personal

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The genie is out of the bottle with nutrigenomics, but where will it end up?

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Major food and ingredient companies like Nestlé, Unilever, Danone and DSM are reported to be investing in nutrigenomics. That said, Chr. Hansen's R&D department told Food & Beverage International that it was no longer involved in nutrigenomics research.

There are obvious challenges with bringing to market personalised food products.

Silly Yaks Bakery Café, 105 High St, Northcote, Melbourne

Liz Cincotta, New Age, July
1, 2006



- **There's no exaggeration in Silly Yaks' clever catch-cry: "We separate the wheat from the chef."**
- **Gluten-free breads, cakes and biscuits are made at the bakery in Thornbury - loaves, baguettes, dinner rolls and Turkish bread are in plentiful supply.**

Gluten-free Silly Yaks' "separate the wheat from the chef."

Pathogenesis



- Genetic predisposition
- Environmental triggers
 - Dietary
 - Non dietary?



Nutrigenomic foods for celiac disease



- Strict, lifelong diet
 - Avoid:
 - Wheat
 - Rye
 - Barley
- Would early genetic diagnosis prevent the disease from developing?

Main challenges to more general uptake of nutrigenomic foods *(in my opinion)*

- Suspicion about “genetic horoscopes”
- Technical challenges (and costs) of developing personalised food lines
- Confused public messages

Enabling technologies

- Gene chips
 - Ideal for a large number of SNPs and CNVs

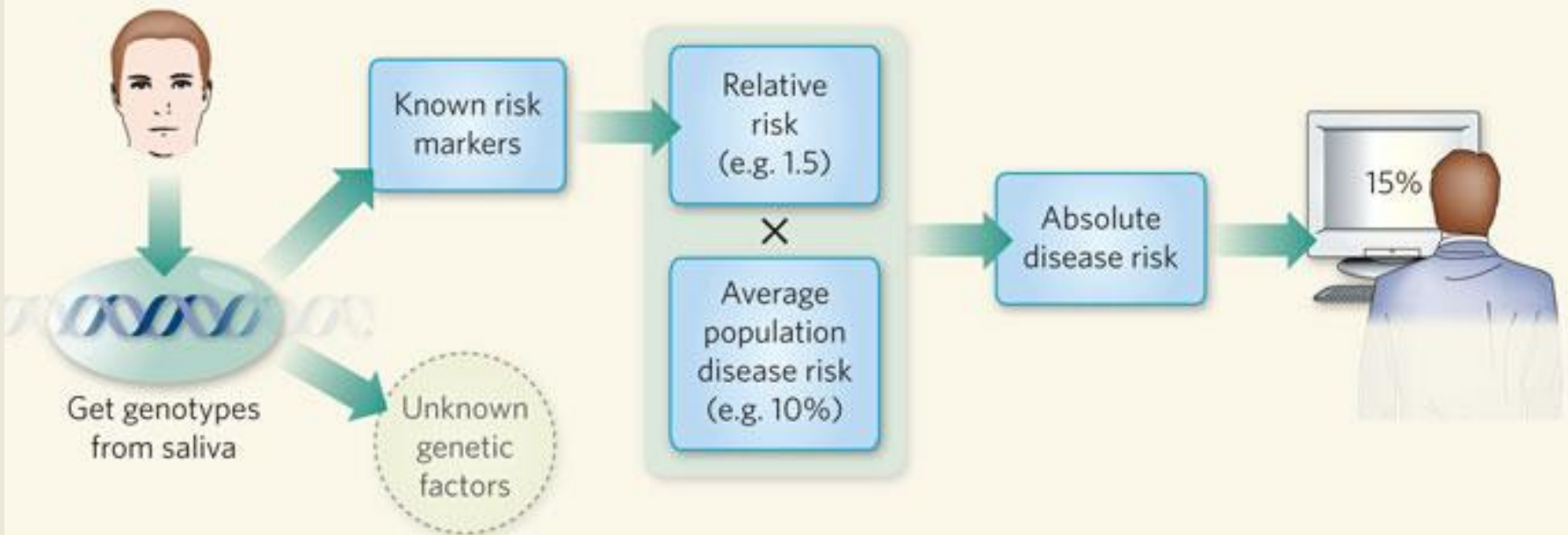


- Mass Array
 - Testing individual variants

8 October 2009 : Pauline C. Ng, et al.

Nature 461, 724-726 doi:10.1038/461724a

DIRECT-TO-CONSUMER METHOD FOR CALCULATING DISEASE RISK



Who are Nutrigenomics New Zealand ?

(www.nutrigenomics.org.nz)

Research collaboration since June 2004 between :



“Tailoring New Zealand foods to match people’s genes”

Strong science behind selection of Inflammatory bowel disease as initial target

Concordance in twins:

Shows the importance of environmental inputs →

CD



UC



Monozygotic

44-50%

5-14%

Dizygotic

8%

0%

Highly integrated scientific programme

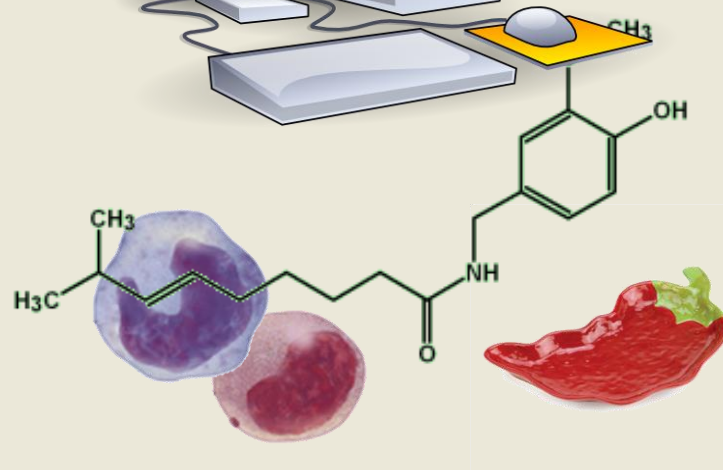


**Human
in vivo
Gene-diet
interactions**

	Control	Obesity model
C		
FF		

Animal in vivo

Diet-gene interactions



**Human in vitro
Gene-diet interactions**

Addressing technological challenges: fruit flavoured gluten-free bread

Technical challenges
vs
Consumer satisfaction



Achieving bioactive levels of a
food ingredient, in the
appropriate food matrix,
creates a major technological
challenge



Sun-Waterhouse D, et al., *Int J Food Sci Nutr.* 2009 Jun 22:1-14.
Kiwifruit-based polyphenols and related antioxidants for functional foods:
Kiwifruit extract-enhanced gluten-free bread.

New links between foods, genes and inflammatory bowel disease

Nutrigenomics New Zealand researchers have found turmeric relieves symptoms in some cases of inflammatory bowel disease while others may have a mushroom intolerance.



4th ASIA PACIFIC NUTRIGENOMICS CONFERENCE

GENES-DIET & GUT HEALTH



AUCKLAND 21-24 FEB 2010

www.nutrigenomics.org.nz



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Acknowledgements

