

A New Diagnostic for Preeclampsia- MetaBio Ltd.

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Content

- Background to project
- Setting up of MetaBio Ltd.
- Progress to date
- The Future

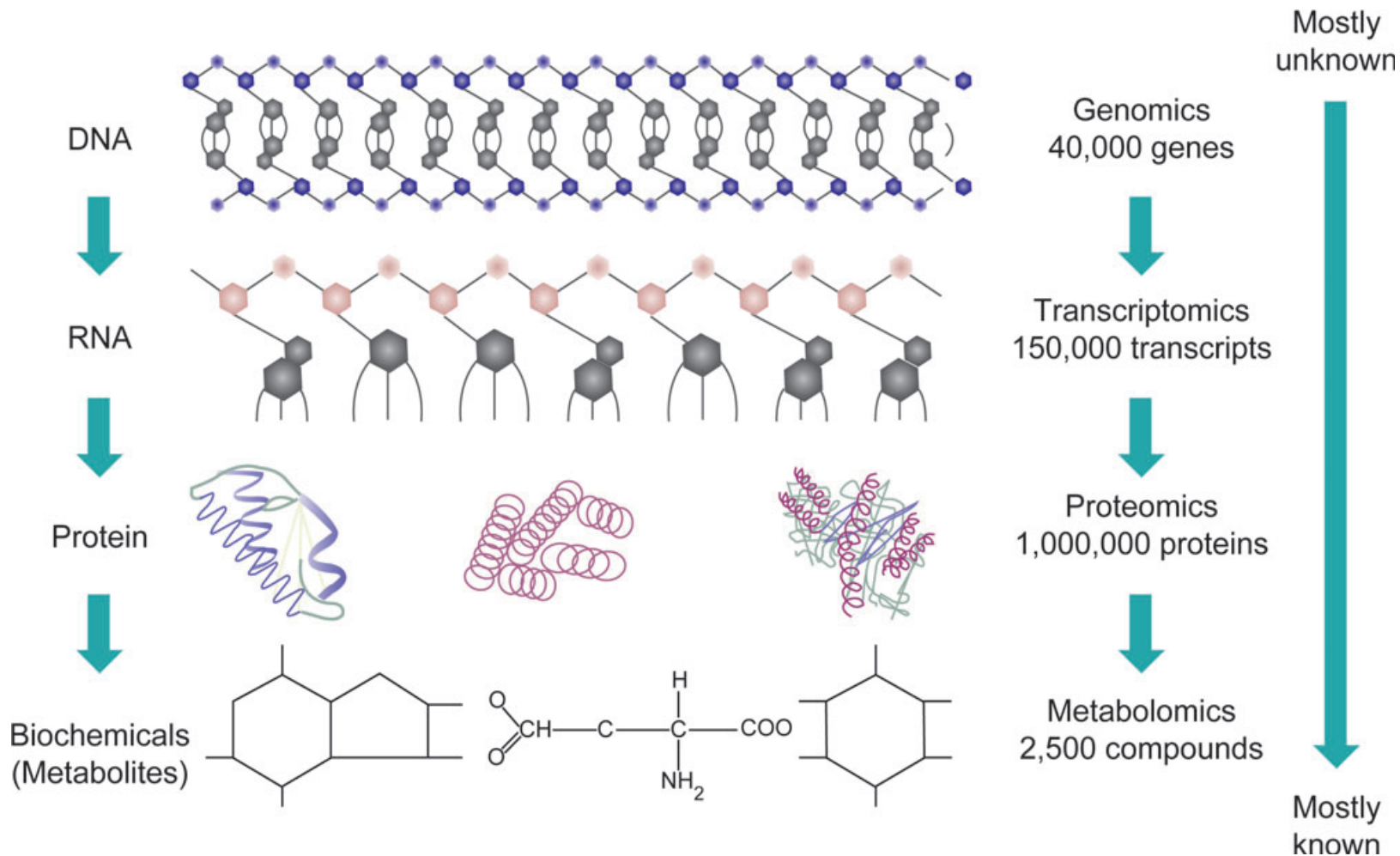
Metabonomics

Overall definition:

'Metabonomics is the quantitative measurement of the time-related multiparametric metabolic response of living systems to pathophysiological stimuli or genetic modification.'

J.K. Nicholson *et al.* *Nature Rev: Drug Discovery* **1** (2002) 153-161.





Annals of Oncology **18** (Supplement 12): xii8–xii14, 2007

‘New strategies to identify molecular markers predicting chemotherapy activity and toxicity in breast cancer’

A. Di Leo*, W. Claudino, D. Colangiuli, S. Bessi, M. Pestrin & L. Biganzoli



Advantages of analysing the metabolome

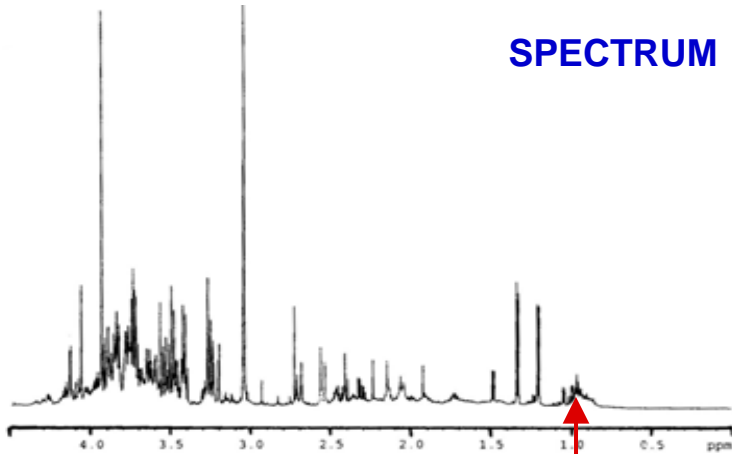
- Number of metabolites should be lower than number of genes and proteins (in a system)
- Concentration of metabolites is highly context dependent.
- Metabolome is downstream of gene products and is influenced by environmental factors. This 'omic' provides **real biological endpoints**.
- Estimated cost is almost half that incurred with the other 'omics'

W.B. Dunn & D.I. Ellis, *Trends in Anal. Chem.*, 24 (2005) 285-294

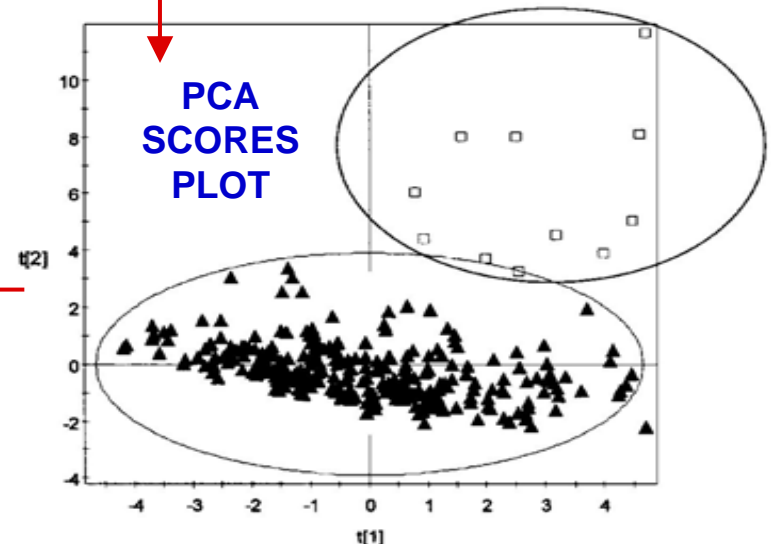
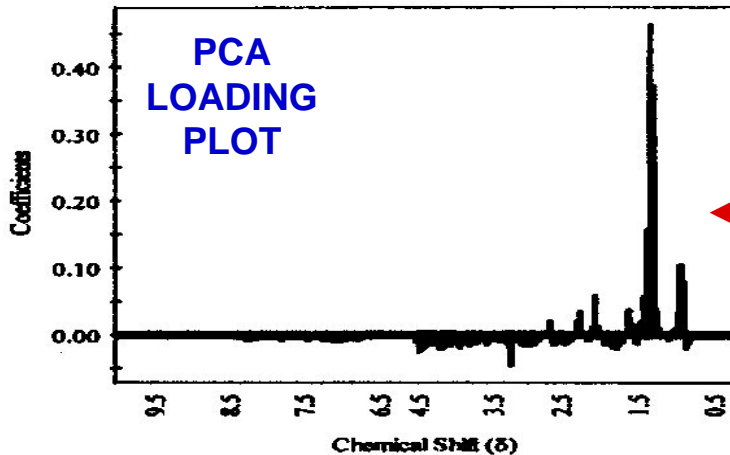
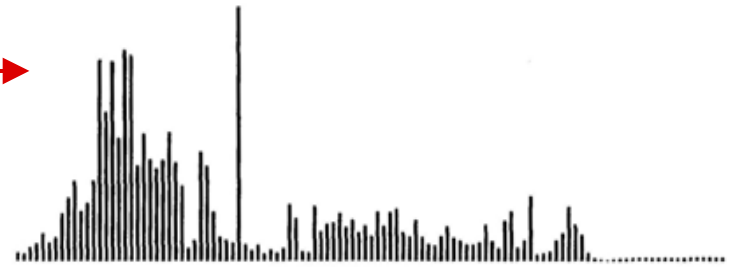


Chemometrics

SPECTRUM



DATA REDUCTION



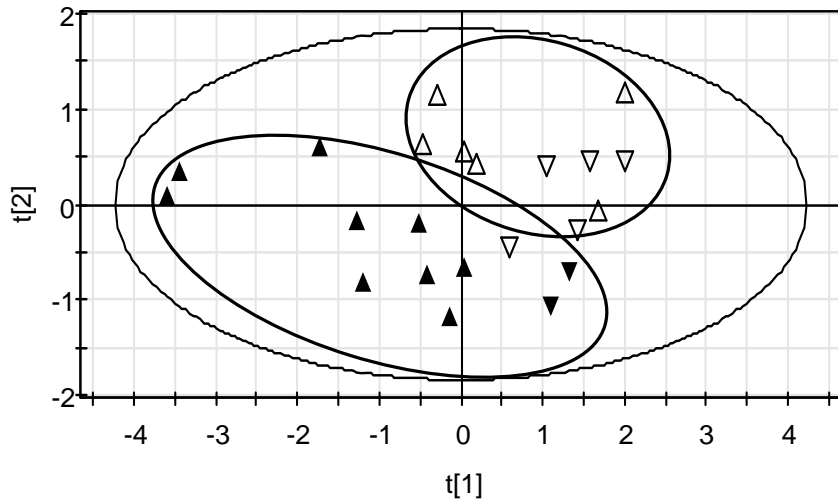
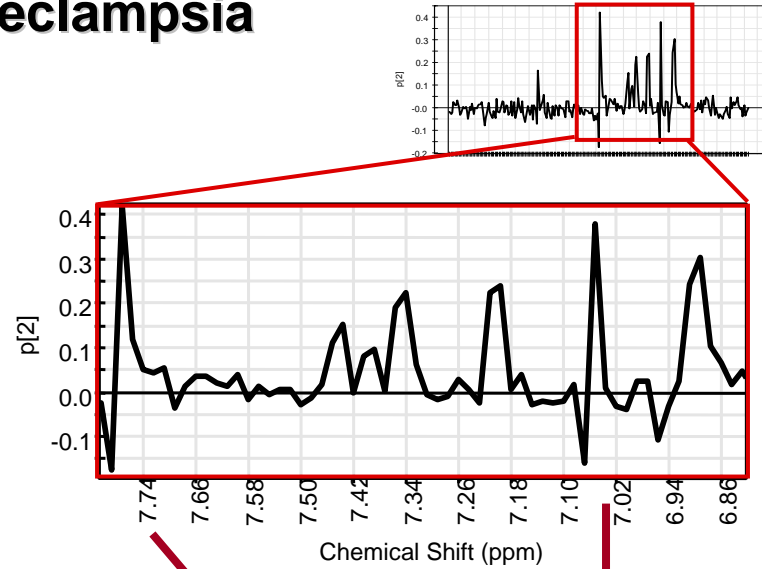
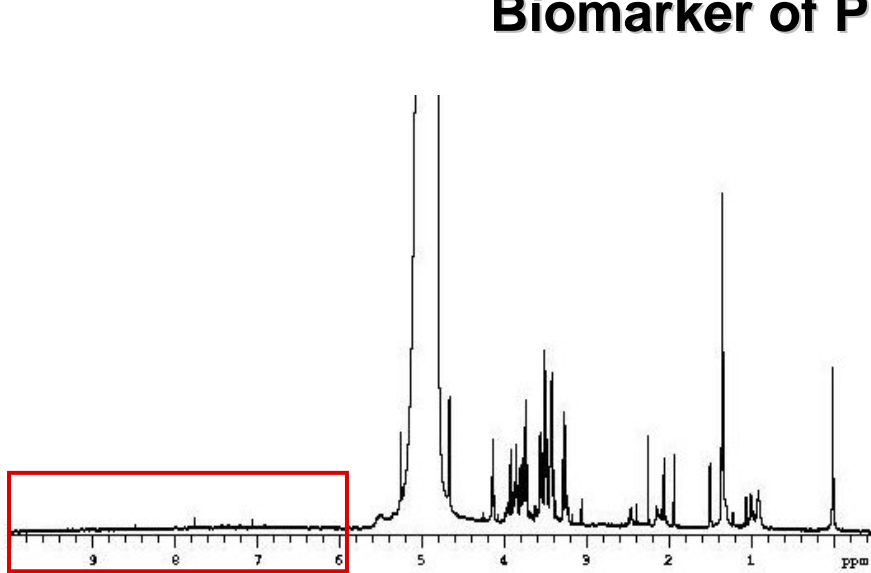
Holmes, E.; Nicholson, J. K.; Nicholls, A. W.; Lindon, J. C.; Connor, S. C.; Polley, S.; Connelly, J. *Chemom. Intell. Lab. Syst.* **1998**, *44*, 245-255.

Wang, Y.; Tang, H.; Nicholson, J. K.; Hylands, P. J.; Sampson, J.; Holmes, E. *J. Agric. Food Chem.* **2005**, *53*, 191-196.

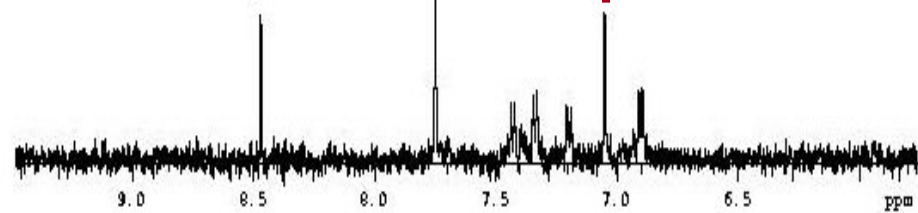
Brindle, J. T.; Antti, H.; Holmes, E.; Tranter, G.; Nicholson, J. K.; Bethell, H. W. L.; Clarke, S.; Schofield, P. M.;

McKilligan, E.; Mosedale, D. E.; Grainger, D. J. *Nature Medicine* **2002**, *8*, 1439-1444.

Biomarker of Preeclampsia



- ▲ Control
- ▽ Preeclamptic



Patent filed:- (PCT/GB2007/050357) June 2007
J.Fisher, E.Turner, J.J. Walker.

MetaBio Ltd. est 2008



Contact: Dr. A. Round, Investment manager, Techtran

Funding: Grub loan



White Rose
Health Innovation Partnership

Contact: Penny Jackson, Business Development Manager, WRHIP

Funding: PoC

Employees: part-time midwife, full-time research assistant

Project

1. Validate model
2. Test for prediction capability
3. Test alternative detection techniques
4. Transfer techniques to test kits for point of care use – with new partners

Test 'to predict pre-eclampsia'

Researchers say they are a step closer to developing a predictive test for pre-eclampsia, a dangerous condition which affects one in ten pregnancies.

A team at the University of Leeds has found blood plasma taken from women with the condition contained different chemical levels from those without. 13/02/2008

<http://news.bbc.co.uk/1/hi/health/7241001.stm>

Yorkshire's National Newspaper

YORKSHIRE POST

Medical breakthrough could save 1,000 babies a year

Published Date: 13 February 2008 **By** Mike Waites **Health Correspondent**

SCIENTISTS in Yorkshire have discovered a test to diagnose pre-eclampsia – which affects one in 10 pregnant women and kills 1,000 babies a year.

The team from Leeds University now plans to develop a diagnostic kit for hospitals to safely and speedily test all pregnant women for the condition.

<http://www.yorkshirepost.co.uk/news/Medical-breakthrough-could-save-1000.3771126.jp>



13 Feb 2008, Source: PA News

A user-friendly kit for diagnosing a potentially fatal pregnancy complication could be developed within five years after researchers discovered a way of testing for the condition.

<http://www.channel4.com/news/articles/society/health/preeclampsia+test+kit+possible/1555752>

Breakthrough In Pre-eclampsia Test

***ScienceDaily* (Feb. 14, 2008) — A team at the University of Leeds has discovered a way of diagnosing pre-eclampsia, a condition which affects almost one in ten pregnant women and accounts for up to 15% of all premature deliveries.**

<http://www.sciencedaily.com/releases/2008/02/080212102343.htm>



**Commercial
Interest**

Robert Armand	Senior Vice President Commercial Operations	Chembio	US – New York
Elisa Shen	Senior Product Manager	BioRad	US – San Francisco
Siobhan Marsden	Sales Development Manager - Chemistry	Sigma	UK – Poole

Existing Commercial Potential

Although PE symptoms manifest late in pregnancy, and only 10% of pregnancies suffer from PE, all women are monitored throughout gestation.

The Market -

Proposed technology could screen earlier in pregnancy bringing-

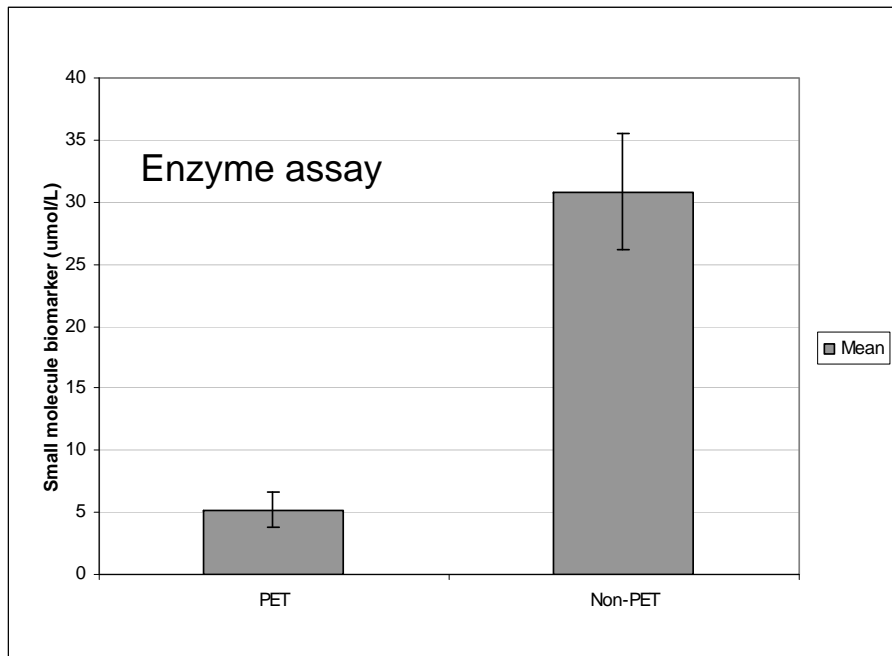
- (i) Improved obstetric management of high risk women
- (ii) Decreased monitoring of low risk women

Cost savings – from downgrading of antenatal care for (ii) – approximately £1000-£1500 per patient. That is ca. £750m £1.25bn in the UK for the NHS.

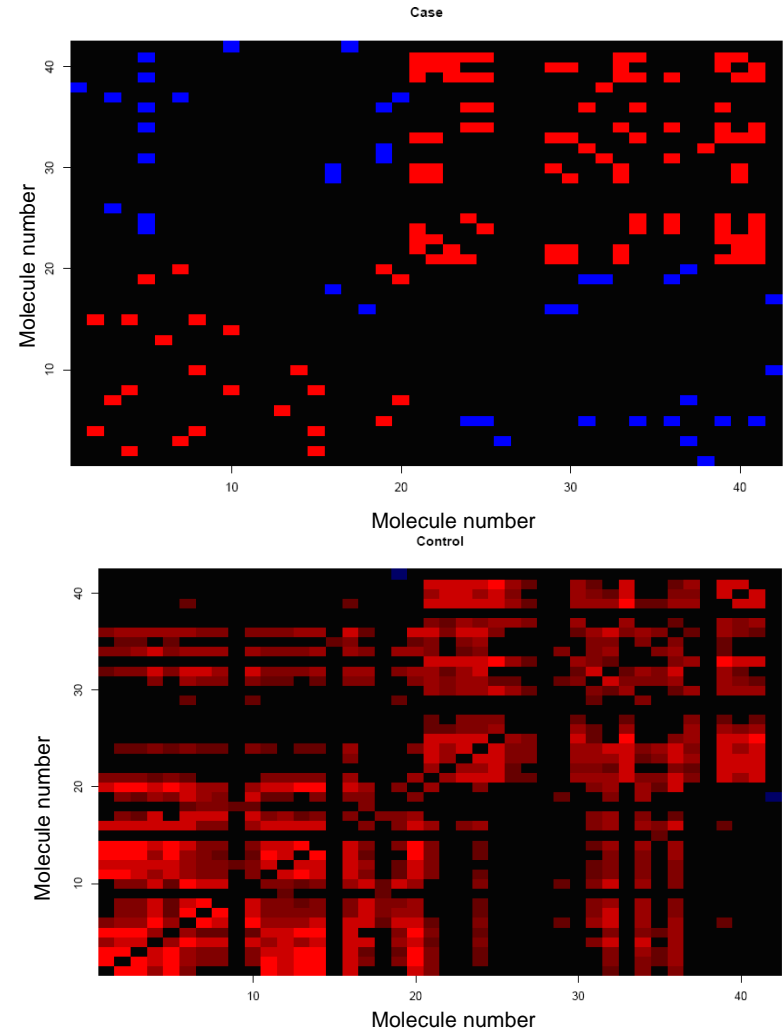
Progress

Different molecular classes have emerged as biomarkers providing new IP

Patent filed:- (PCT/GB2007/050357)
J.Fisher, E.Turner, J.J. Walker.



Two biomarkers in patent have been validated by different methods – one spectrometric, one enzymatic – and are detected ‘early’.



Combination of molecules correlate with PE (above) and healthy (below) pregnancy.

The Future

Immediate future -

Continue sample collection for analysis to validate all biomarkers found to date. *This may utilise sample collection at another site and gaining further access to established biobanks.*

Determine transfer technologies – to kit or dip-stick type tests – *this will be explored through contacts already made.*

Medium term –

Widen scope of project to other pregnancy (excluding fertility) disorders – *ethical permission is already in place for studies of biomarkers of miscarriage, interuterine growth problems, and so on.*

Of highest priority is the need to secure further funding to facilitate the above.



White Rose
Health Innovation Partnership