

Reproductive health

Developmental origins of health and
disease – across generations

South Australia

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The “developmental origins” concept

**‘Disturbance of the environment
in early life,**

**at critical stages of development
of regulatory systems and their
target tissues,**

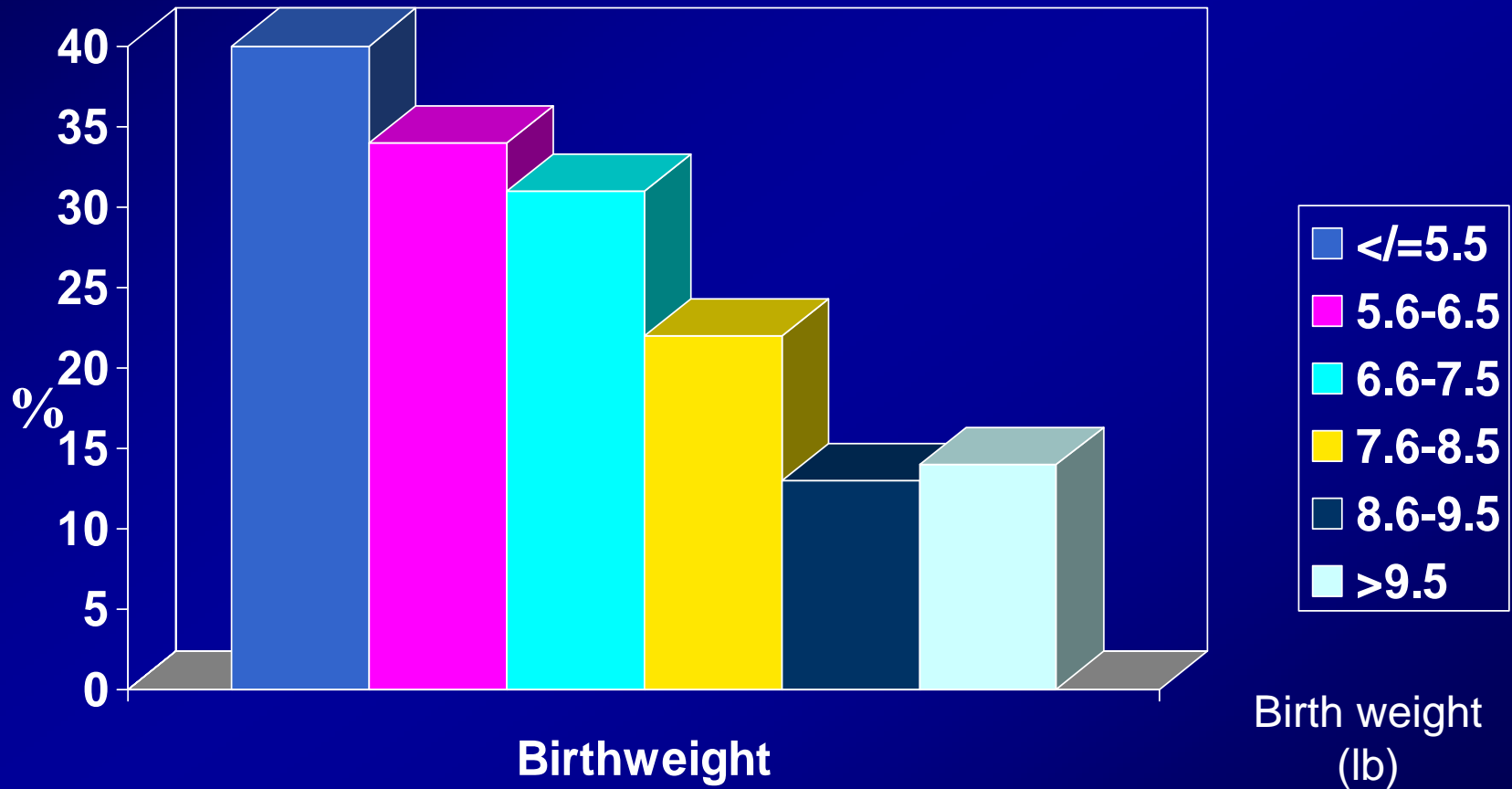
alters functional development,

**permanently impairing functional
capacity,**

**and predisposing to disease in
later life’**



Prevalence of type 2 diabetes and impaired glucose tolerance* in men aged 59-70 years - Sheffield cohort



* Plasma glucose concentration >7.8 mmol/l at two hours after challenge.

Hales et al, 1991

Small size at birth

Accounts for 18% of population prevalence of diabetes in aged Finnish population

Eriksson 2005

Large size at birth?

Contribution of factors throughout life to insulin resistance and related diseases at age 49-51 years

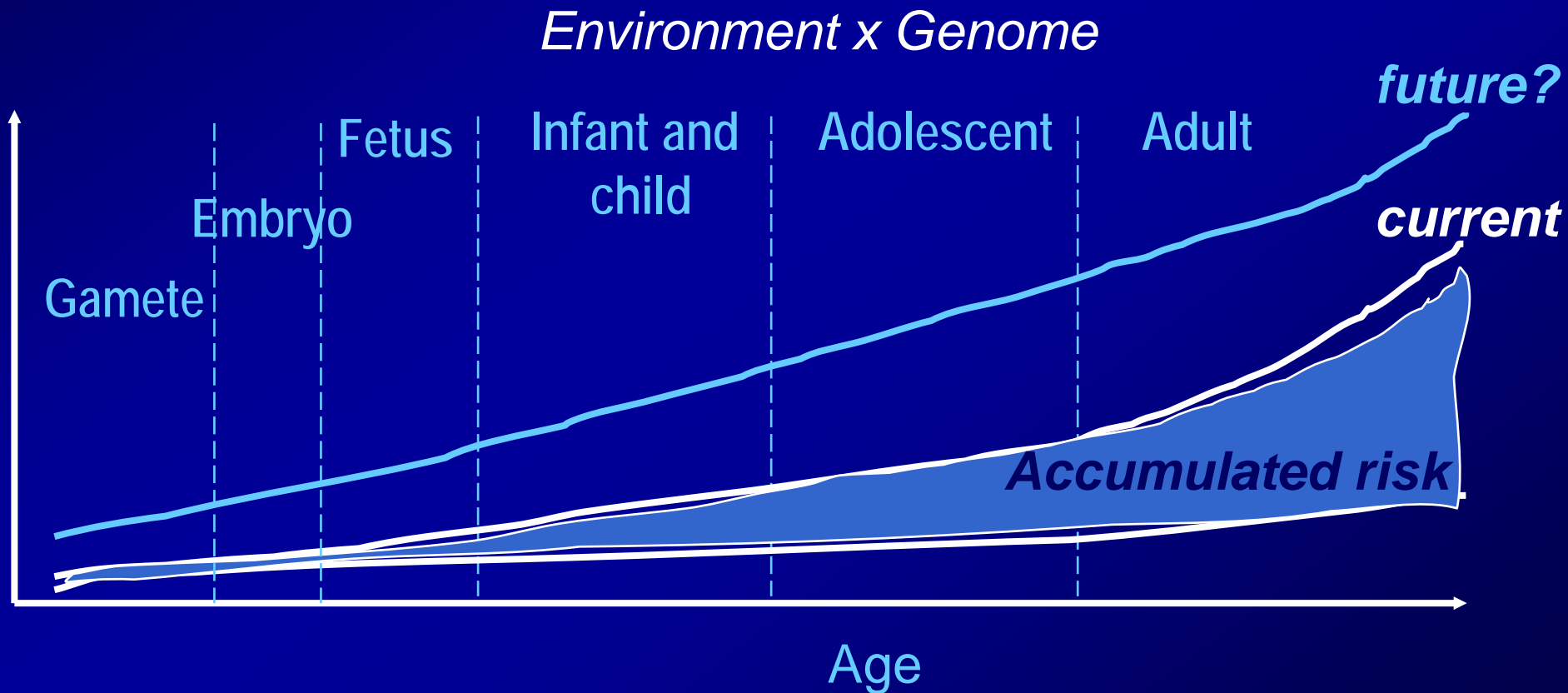
	%		variance
Source	Women (n=204)	Men (n=154)	
Family history: diabetes, obesity, high BP	0.7	0.2	
Fetal life (birth weight)	6.3	2.0	
Infancy & childhood (growth)	8.0	1.7	
Total early life	11.9	4.6	
Adult SES & lifestyle	9.3	9.8	

Parker et al 2003





Life Course and risk of Chronic Disease



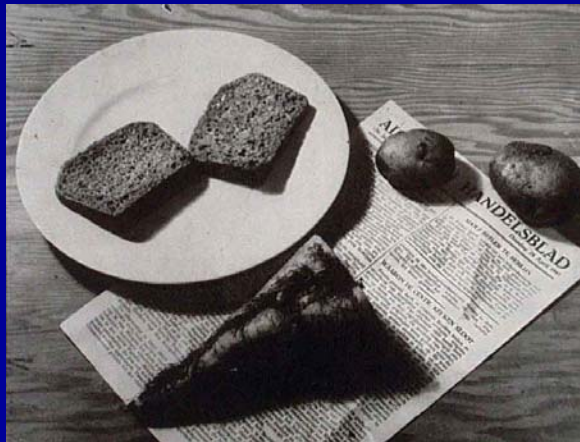
Early development and later health

- Coronary Heart disease, hypertension and stroke
- Diabetes
- Obesity
- Osteoarthritis

Early development and later health

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- Cancer: breast cancer, prostate cancer
- Fertility and PCOS
- Neurological function: schizophrenia, behaviour, neuromotor dysfunction.....



Improving reproductive health

- Birthweight and growth are surrogate markers!
- Contemporary populations?
- Direct proof?

- Initiating factors?
- When?
- Mechanisms?
- Prevention?
- Reversibility?
- Timing?

Experimental and non-human based studies

- **Initiating factors**
- **Mechanisms**
- **Interventions: prevention, reversibility**

- **Nutrients**
 - Fats, Protein, Glucose, Folate, Calcium,
- **Maternal Environment**
 - Stressors, Chemicals, Pharmaceuticals.....
- **Maternal Conditions**
 - Diabetes, Obesity, Hypertension

Cohorts and clinical trials

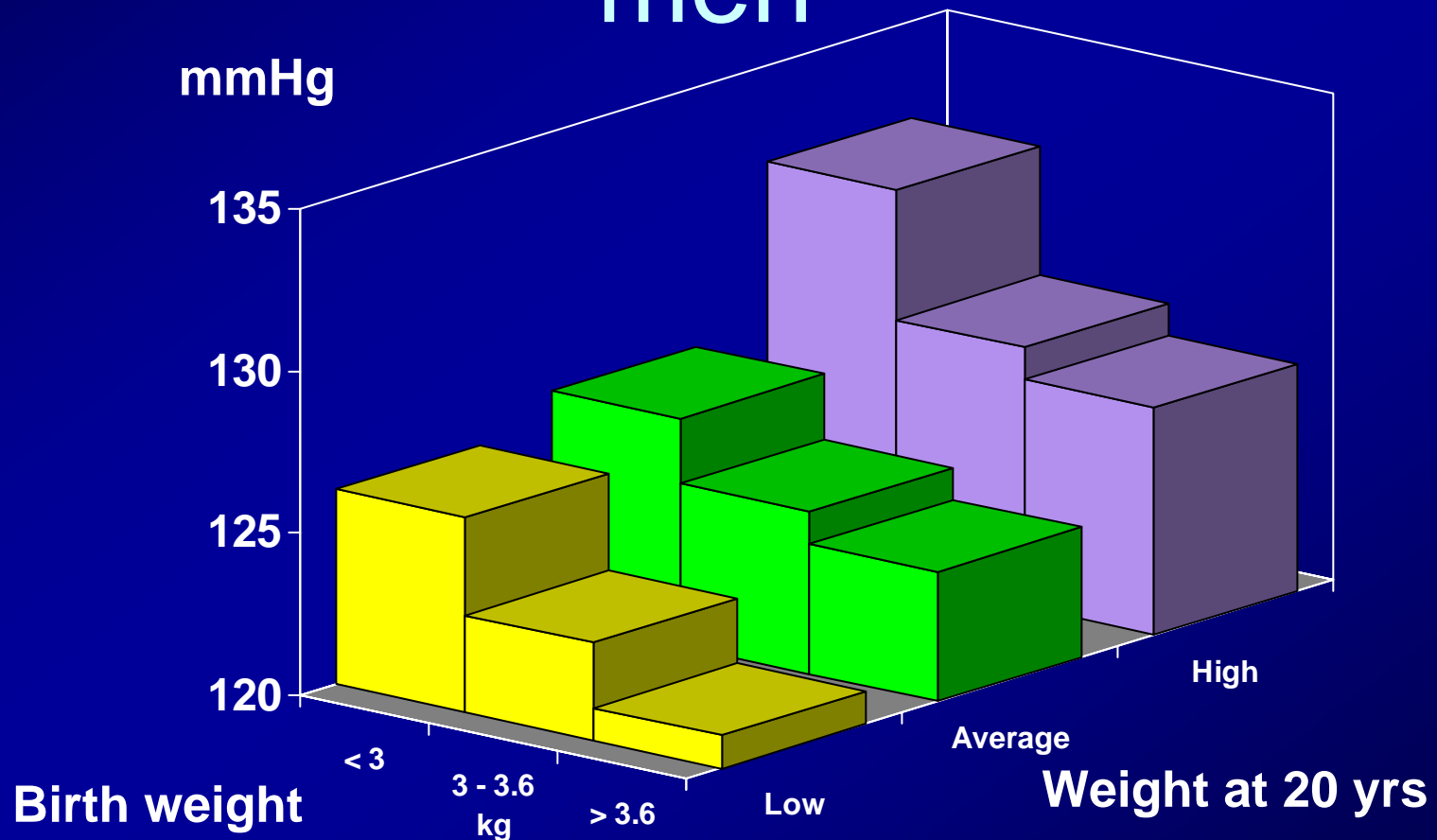
Cohorts

- Adelaide Family Heart
- **Generation One**
- **Lucina**
- **PREMOCODE**
- FAMAS
- SCOPE

Clinical trials

- **ActoMgSO4**
- ACTS
- **Actords**
- **ACHOIS**
- Actobat
- **Calcium supplementation**

Adelaide Family Heart Study: systolic blood pressure in young men



Cohorts and clinical trials

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Generation 1

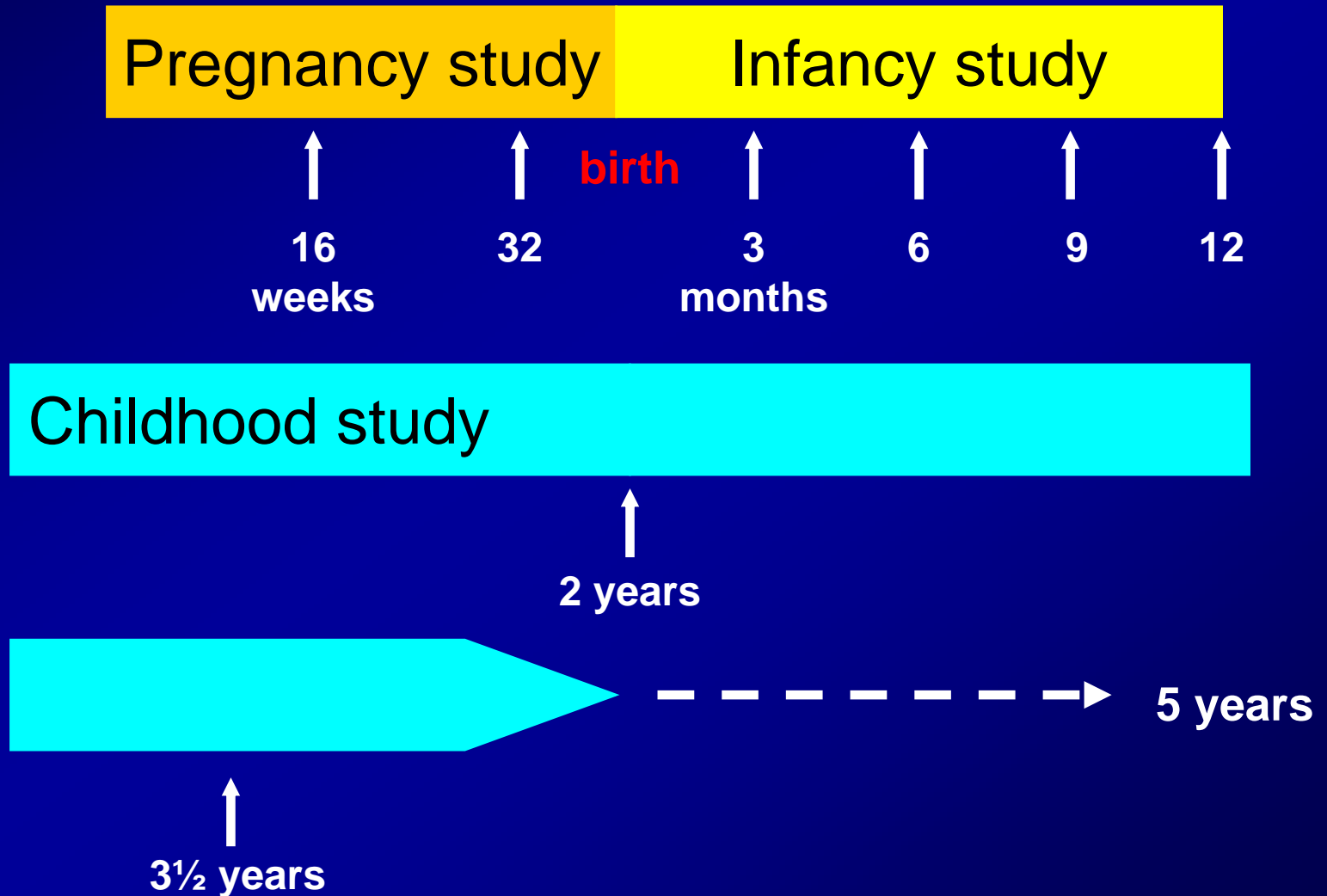
Early life influences on obesity and fat patterning in children: critical periods, environmental determinants, and socio-cultural context.

Associate Professor Vivienne Moore, University of Adelaide

Moore VM, Robinson JS, Davies MJ, Warin M, Ryan P, Worsley A.

NHMRC A Healthy Start to Life for All Australians Strategic Award. 2007-2009 \$1.09 million

Generation 1 Study



Generation 1 Study

