

Role of Basic Science in Medical Research

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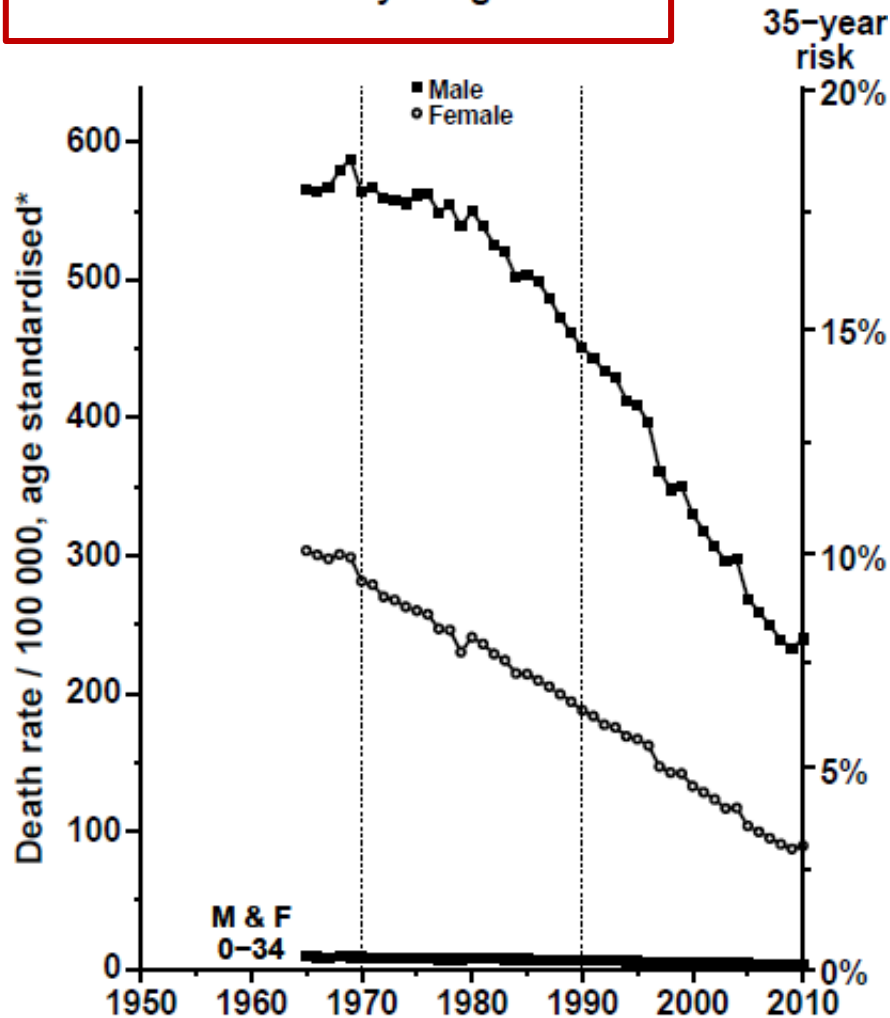
*British Heart Foundation Professor of Cardiovascular Medicine
& Hon Consultant Cardiologist*

***Chair of the Council on Basic Cardiovascular Science of the European
Society of Cardiology***

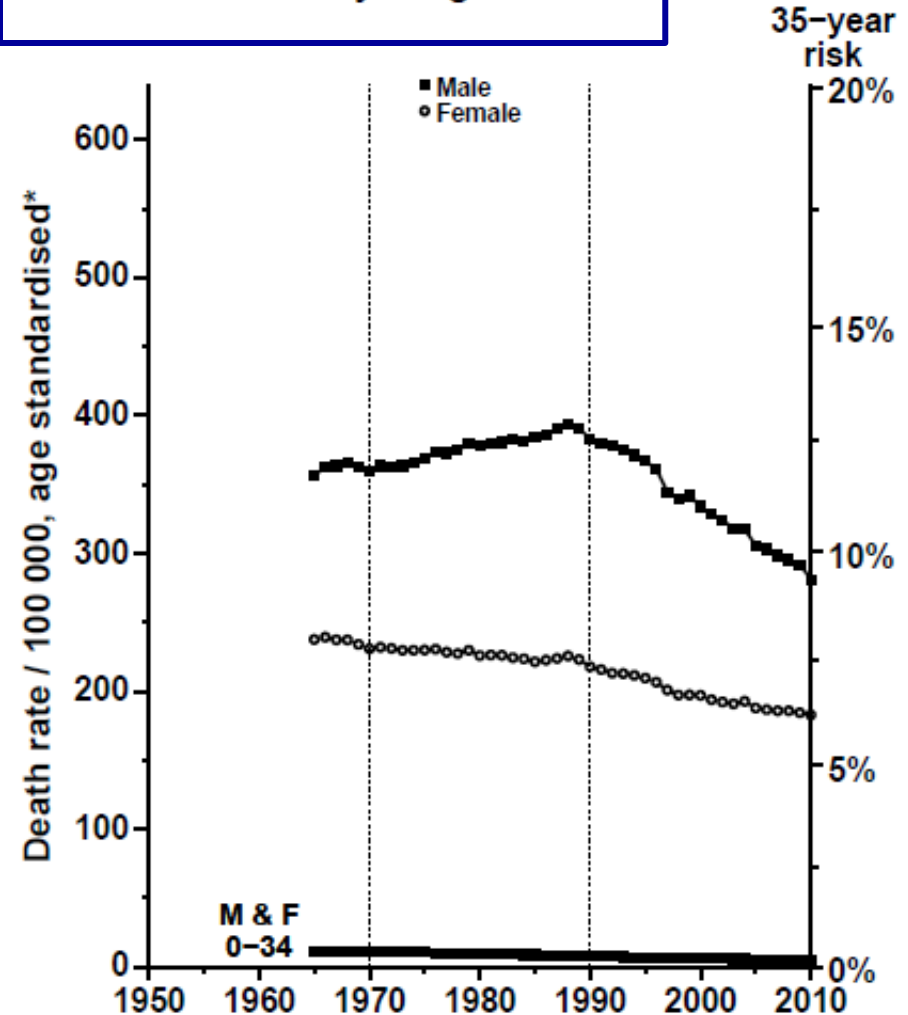
British Heart Foundation Centre of Research Excellence
University of Oxford

Mortality for CV Disease in Europe from 1965-2010

All vascular mortality at ages 35-69



All cancer mortality at ages 35-69

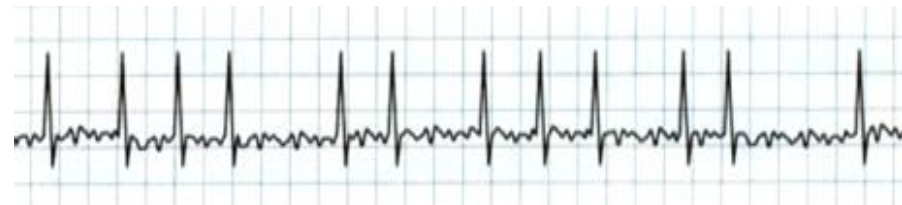
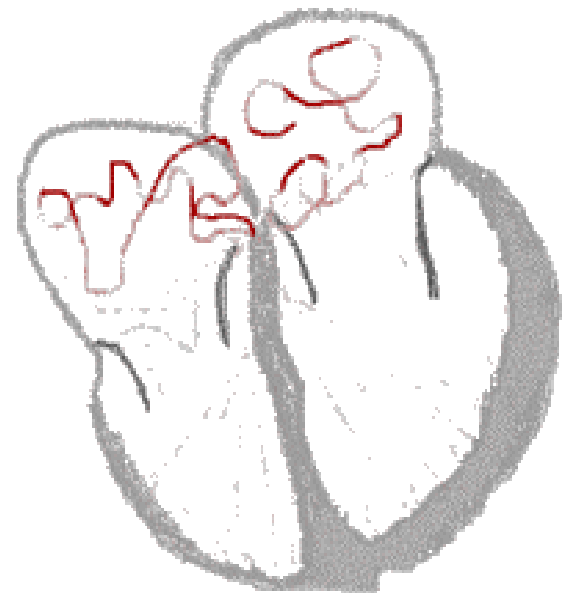


Atrial fibrillation

Sinus Rhythm

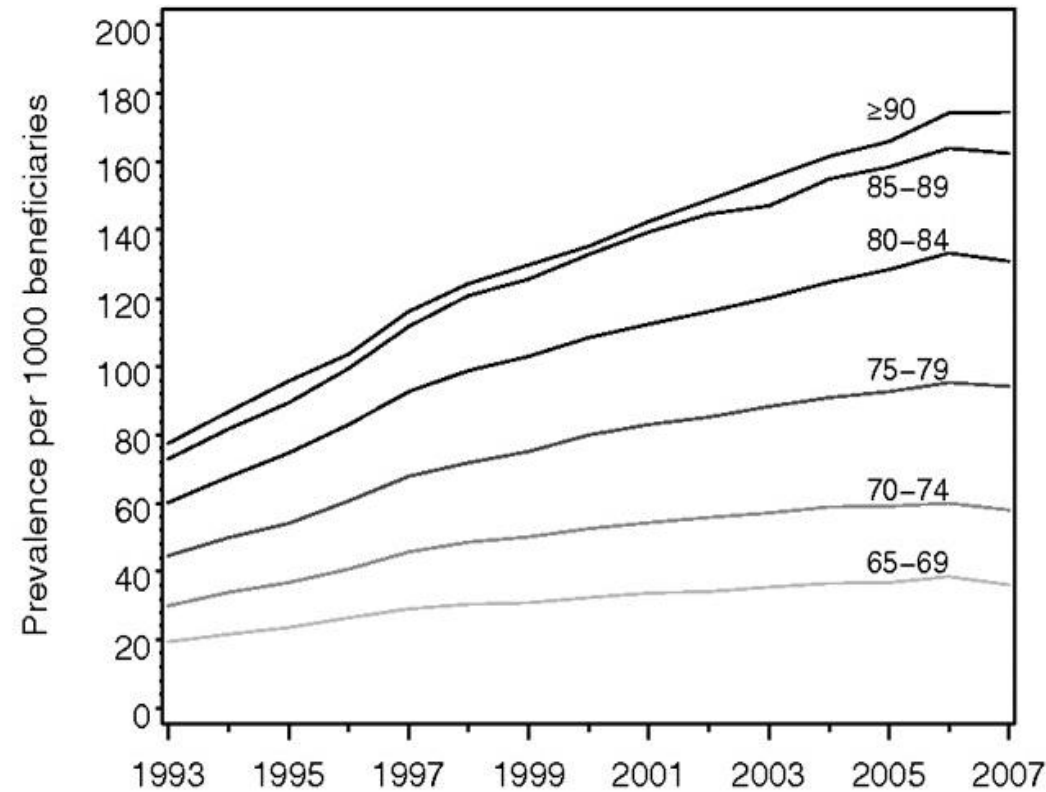


Atrial Fibrillation

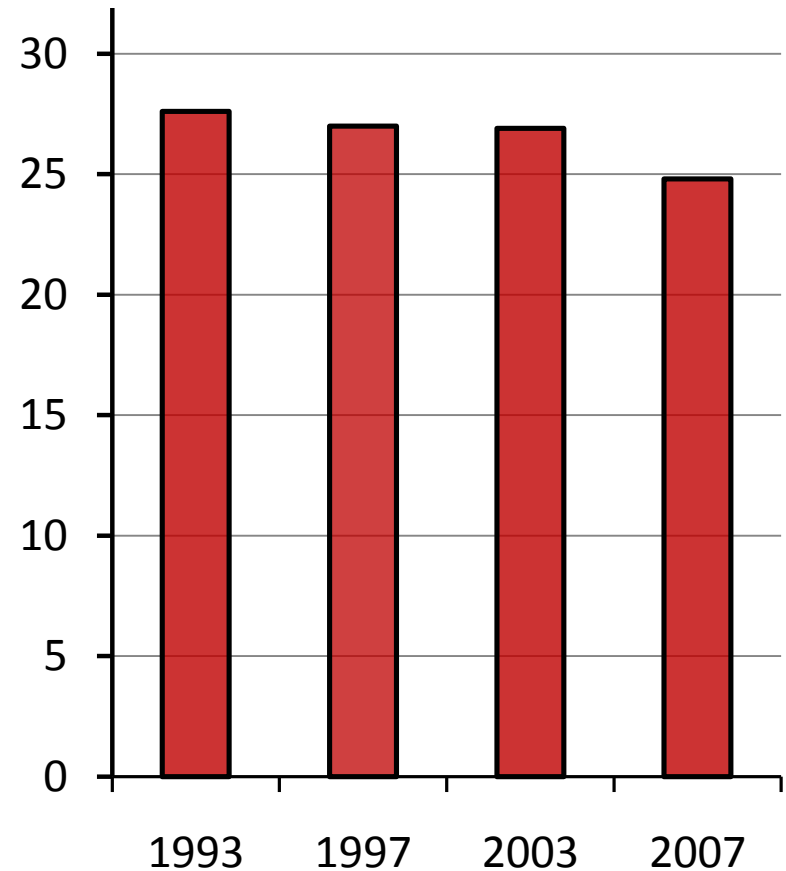


Prevalence and mortality of atrial fibrillation in 1993-2007

Prevalence



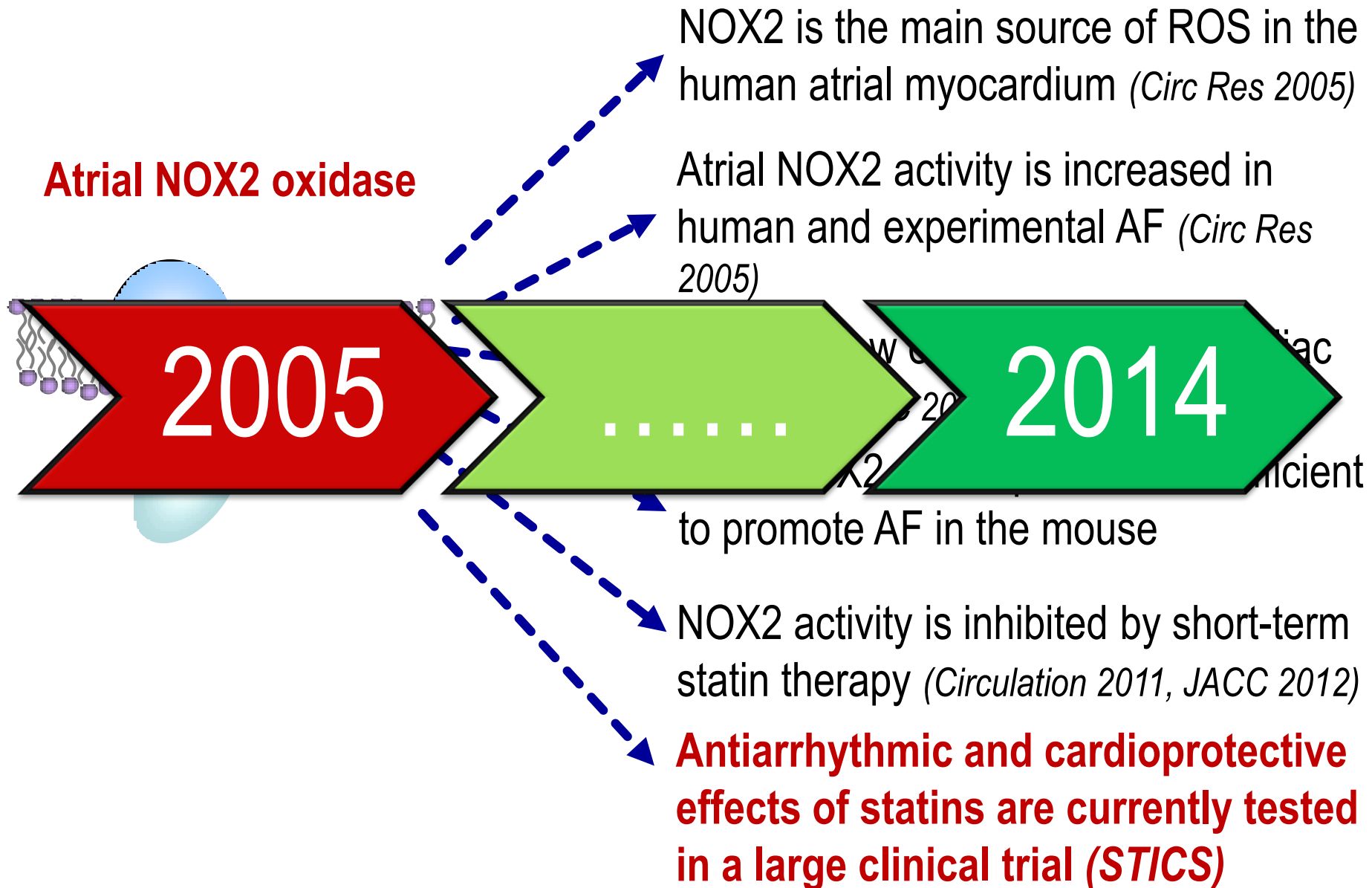
Mortality



Current management of atrial fibrillation

- With the exception of anticoagulants, no treatment has beneficial effects on death, stroke or heart failure.
- Mostly directed to symptoms (e.g., ablation)
- Potentially unsafe (pro-arrhythmic/invasive)

Identification and testing of a new therapeutic target in AF



Peripartum Cardiomyopathy



Peripartum Cardiomyopathy

Peripartum cardiomyopathy is a disorder of unknown etiology that leads to heart failure between the last month of pregnancy and the first 6 months after delivery.

Incidence

Africa:	1:600
Haiti:	1:300
Europe:	1:1700

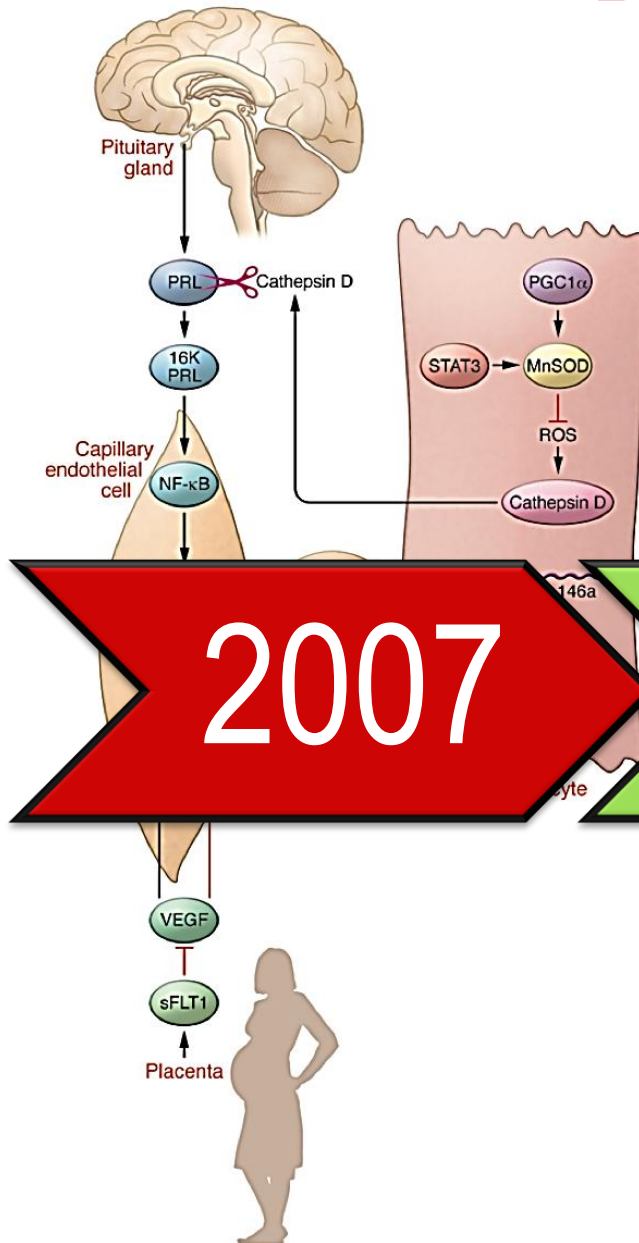


Reimold S.& Rutherford J. N Engl J Med 2001; Sliwa K. et al. Lancet 2006; Sliwa et al. EJHF 2010; Haghighi et al. BRC 2013.

*Prof Denise Hilfiker-Kleiner
Hanover, Germany*

Peripartum Cardiomyopathy (PPCM): Bench to Bedside

Unbalanced oxidative stress via cleavage of the nursing hormone prolactin mediates PPCM. Destruction of blood vessels by a **16kDa prolactin fragment** is the driving factor. *Cell* 2007



A proof-of-concept pilot study in Africa and data from the German PPCM registry suggest that bromocriptine is beneficial in patients with PPCM. *Circulation* 2010; *BRC* 2013.

Sudden Death



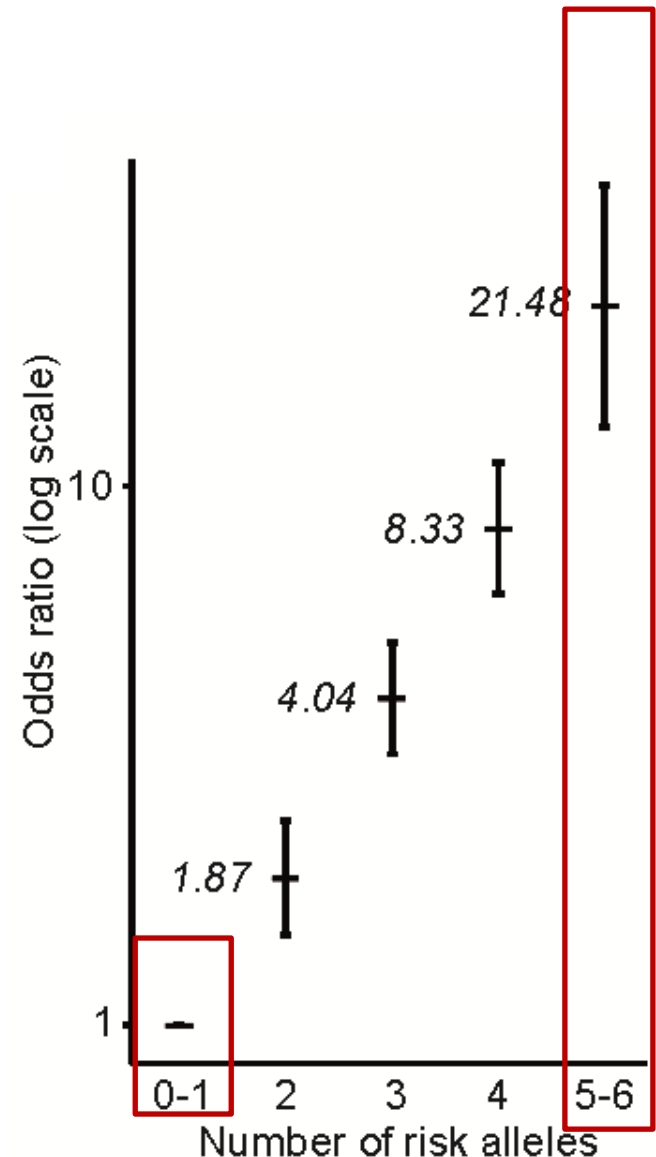
Is Your
Child
At Risk
For
Sudden
Death?



Brugada Syndrome: a more complex inheritance model

Prof Connie Bezzina
Amsterdam, NL

- Loss of function mutation of SCN5A has low penetrance and variable disease expression
- **Common genetic variations** can have a strong impact on the predisposition of sudden cardiac death *Nat Genetics* 2013
- Genetic variations regulate the expression and patterning of SCN5A in the myocardium *Nat Genetics* 2013



Relevance of Basic Science to Cardiovascular Health in Europe

- There has been huge progress in the management of cardiovascular disease but there is more to do
- Basic science generates novel insights that can be rapidly translated into improved health outcomes
- How to make it even more effective?
 - Use human material to generate/validate hypotheses
 - Use better animal models of human disease
 - Use better experimental practice

