

HIGHLIGHT SESSION

Chairpersons:

*M. Komajda (Paris, FR); M. Tendera (Katowice, PL);
A. Vahanian (Paris, FR); V. Fuster (New York, US)*



Highlight Session
World Congress of Cardiology 2006
2-6 September - **Barcelona, Spain**



www.worldcardio.org

Basic Science

K.R. Sipido (Leuven, BE)



Highlight Session
World Congress of Cardiology 2006
2-6 September - **Barcelona, Spain**



www.worldcardio.org

- Cardiac repair
 - New sources of stem cells
 - Re-interpreting the data..
 - Countering adverse remodeling
- Promoting arteriogenesis
- Preventing/treating atherosclerosis



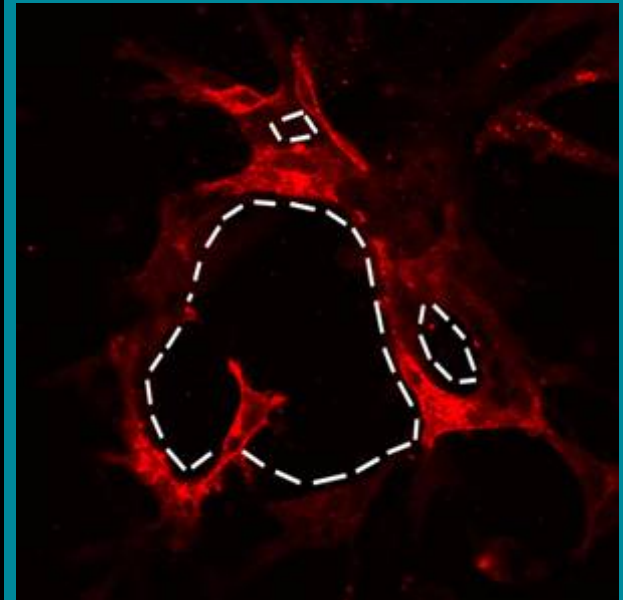
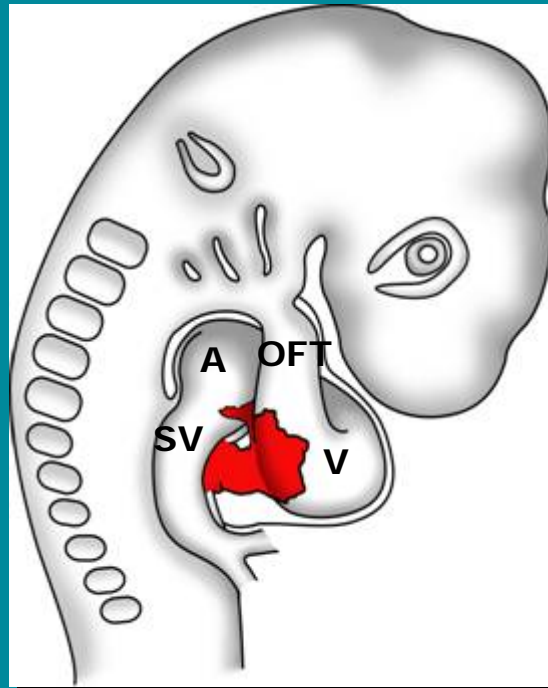
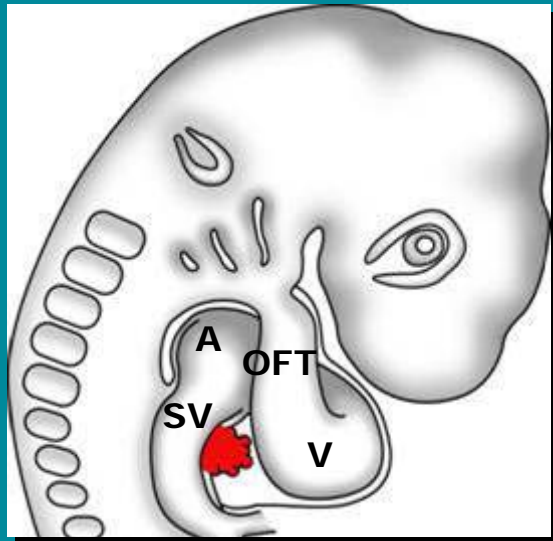
Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



www.worldcardio.org

Novel sources for cardiac repair - the epicardium?

vasculogenesis



origin of epicardium

JM. Pomares, ES, 420



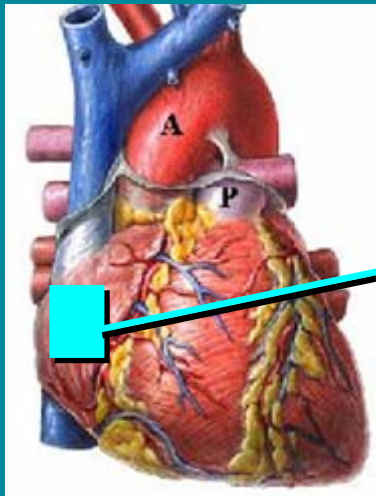
Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



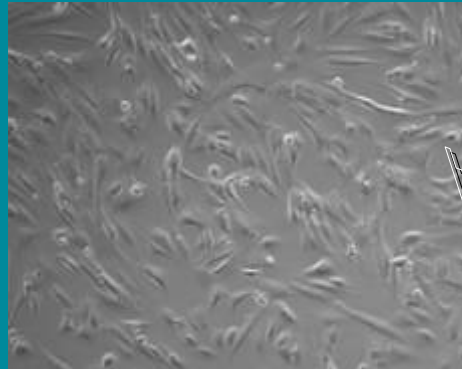
www.worldcardio.org

Epicardium-derived cells grown from human atrial biopsies improve post MI remodeling

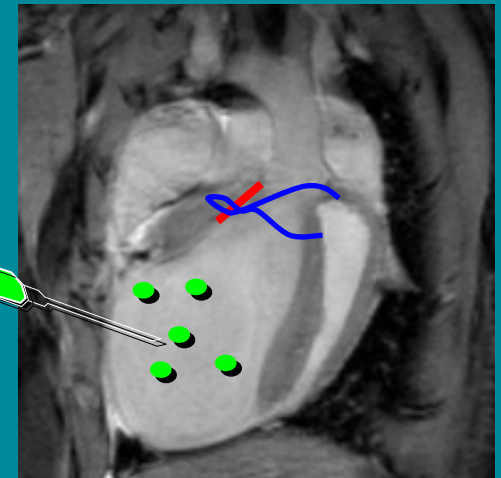
Epicardium from human adult atrial tissue



'epicardium-derived' cells



Ligation LAD



NUD/SCID mouse

Better LV function and remodeling – more vessels

L Winter et al., NL, YIA, 914

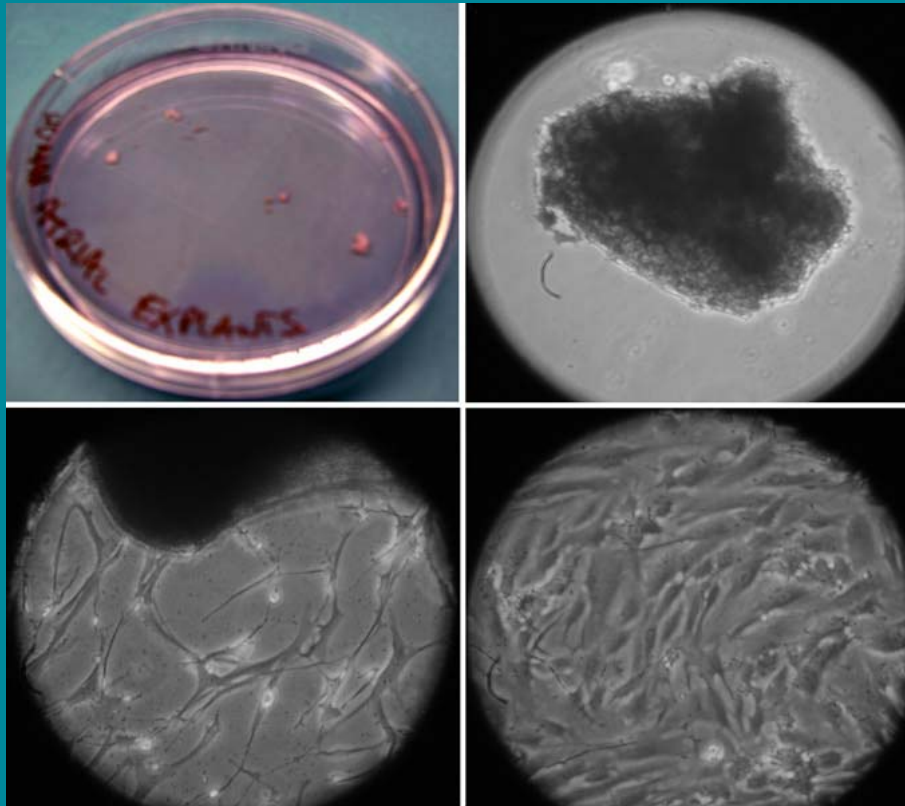


Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



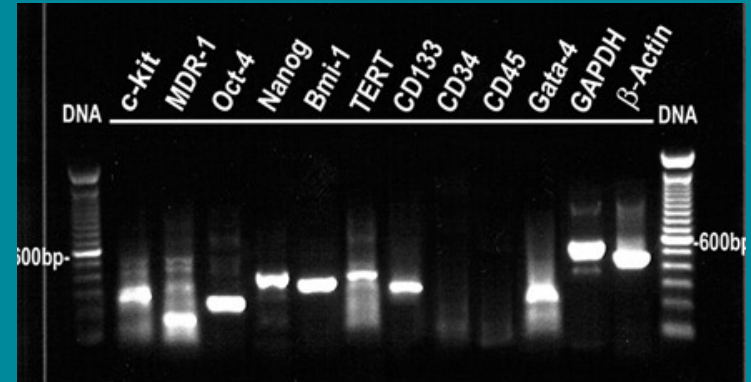
www.worldcardio.org

Human atrial biopsies are a source of resident stem cells



culture and expansion

'stemness'

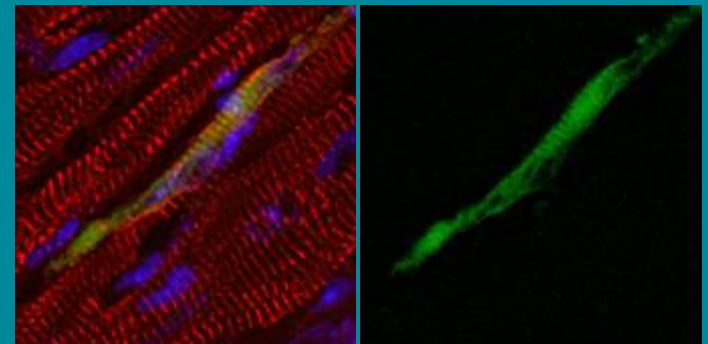
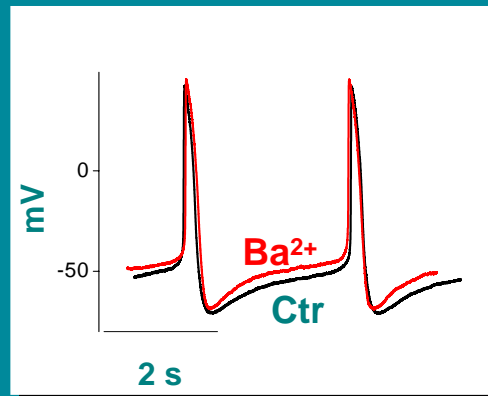
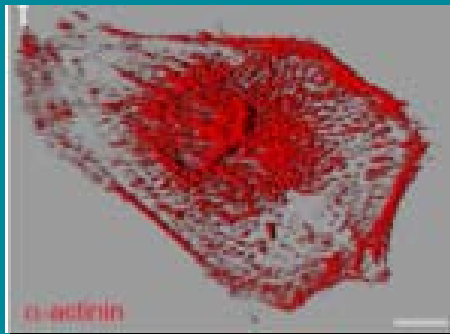


clonogenesis and self-renewal are under control of Wnt1 group and Bmi-1

D Torella, GM Ellison et al., IT/US, 1041

How to make 'true' cardiomyocytes?

- human embryonic stem cells (hESC) have the necessary potential



E Cerbai et al., IT, 3215

L Van Laake et al., NL, 3321



Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain

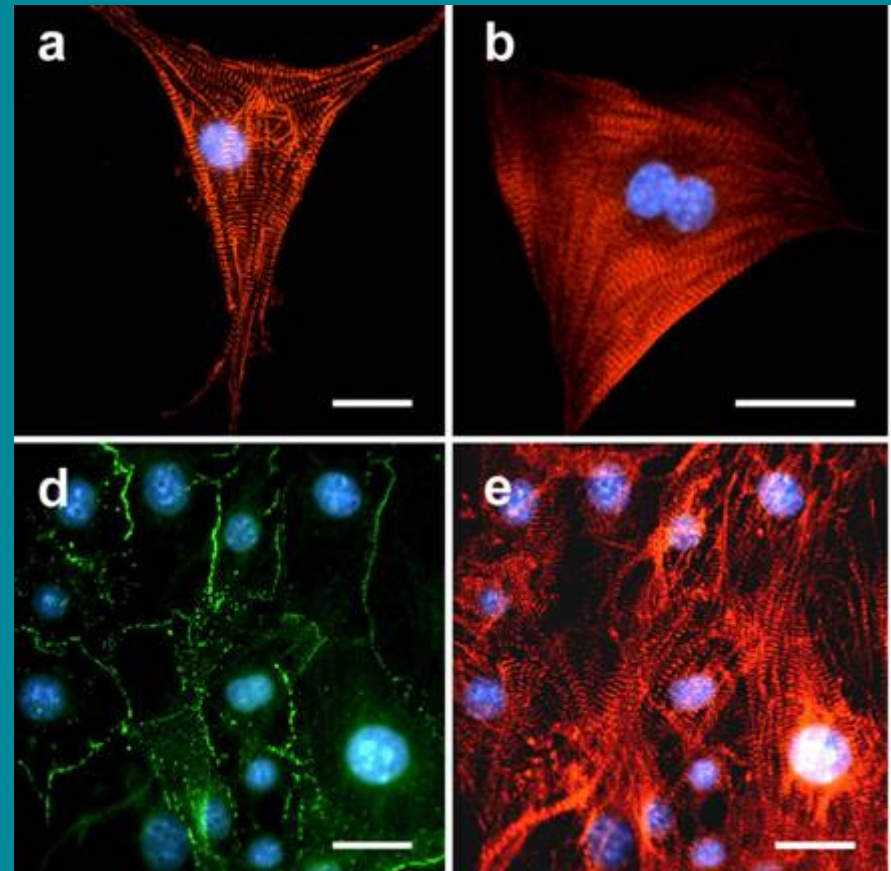
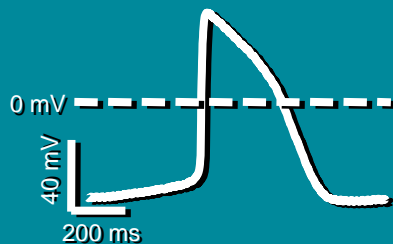


www.worldcardio.org

Spermatogonial stem cells (SSCs) have similar potential as hESC

In vitro differentiation to cardiomyocytes

Ventricle-like action potential



G Hasenfuss et al., DE, Science Hot Line, 2775



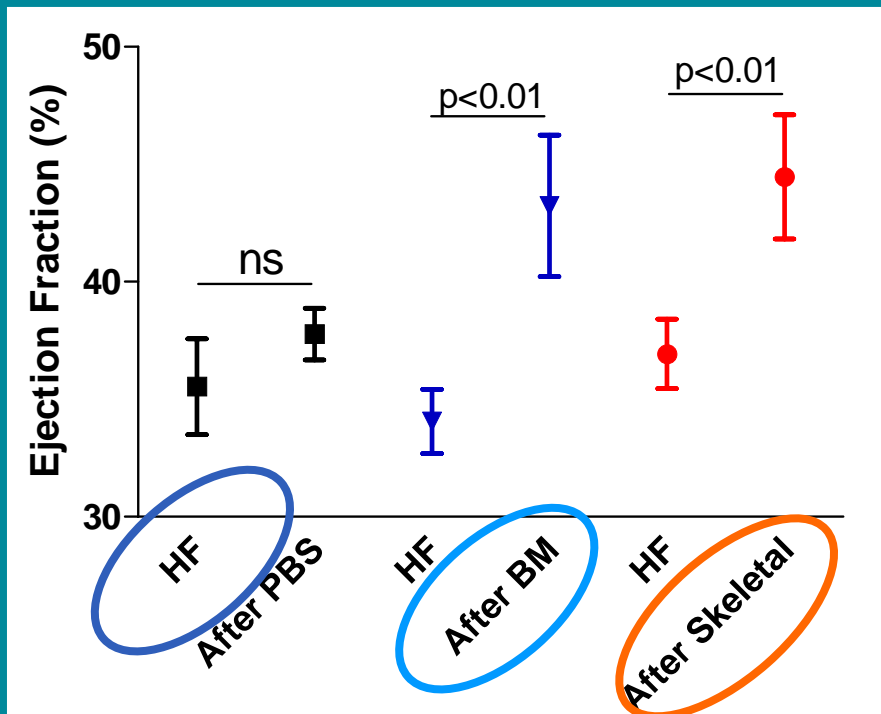
Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



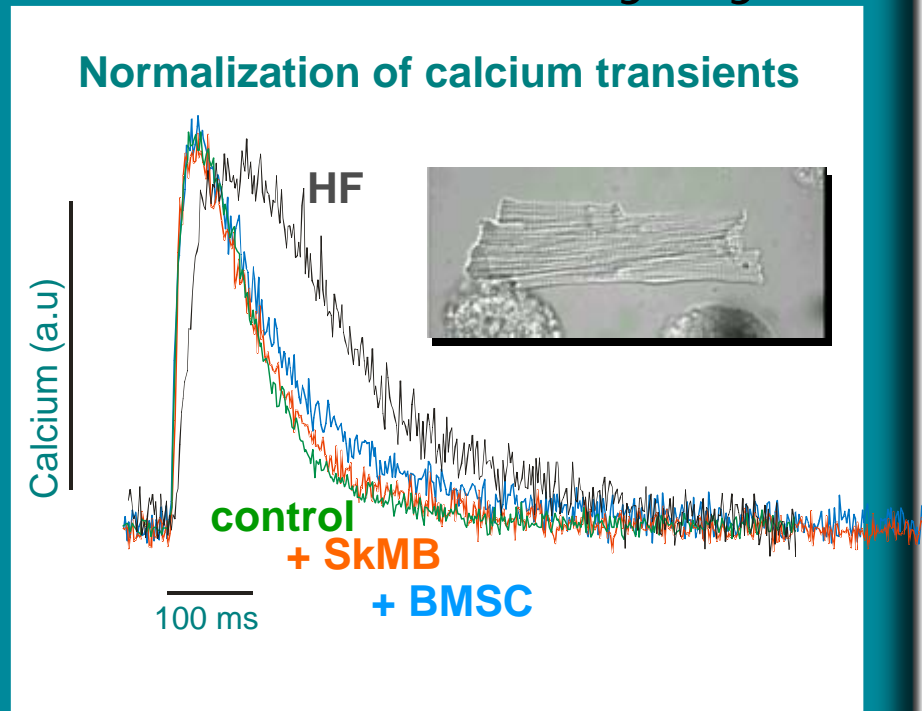
www.worldcardio.org

Paracrine effects of stem cell therapy rat with MI and heart failure

In vivo



Isolated cardiac myocytes



Cell transplant at 3 wks after MI, cell isolation at 7 wks

J Lee et al., UK, 309

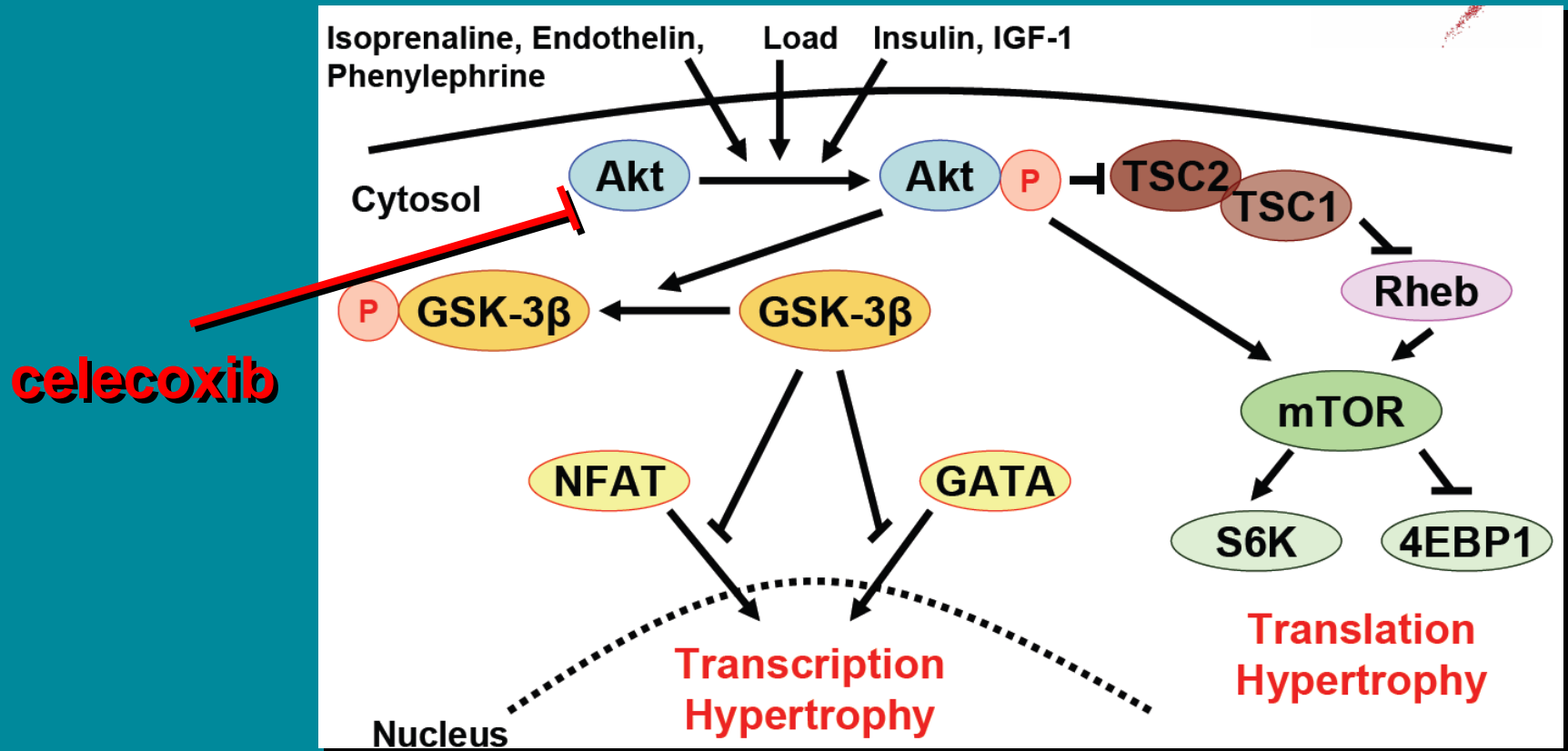


Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



www.worldcardio.org

While COX-2 inhibitors get bad press...



C Jacobshagen et al., DE, 393



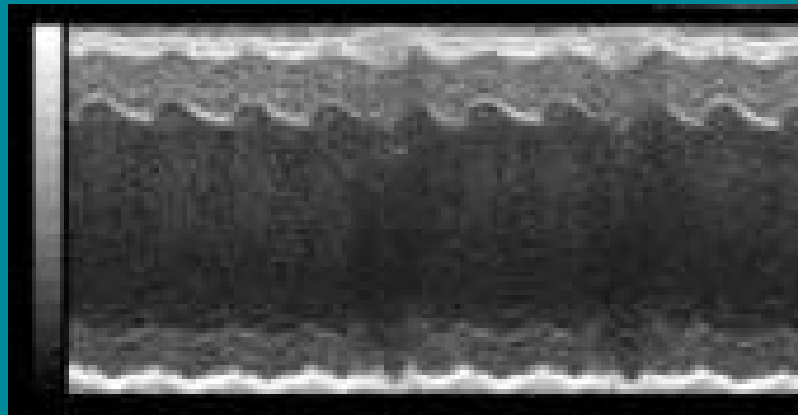
Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



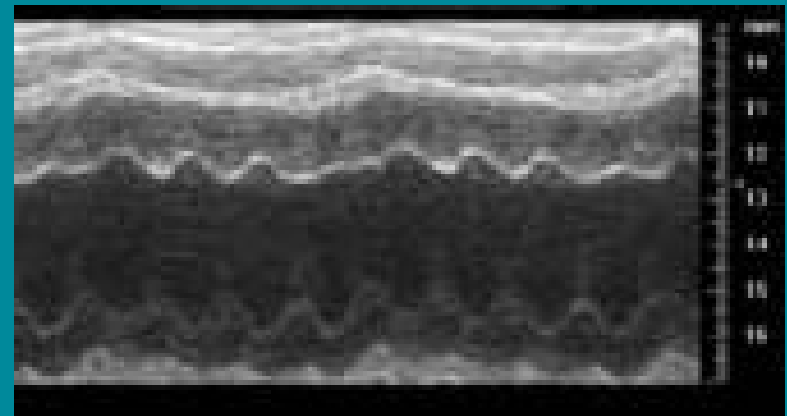
www.worldcardio.org

..there is good news from the lab

HF following aortic banding



+ celecoxib



C Jacobshagen et al., DE, 393



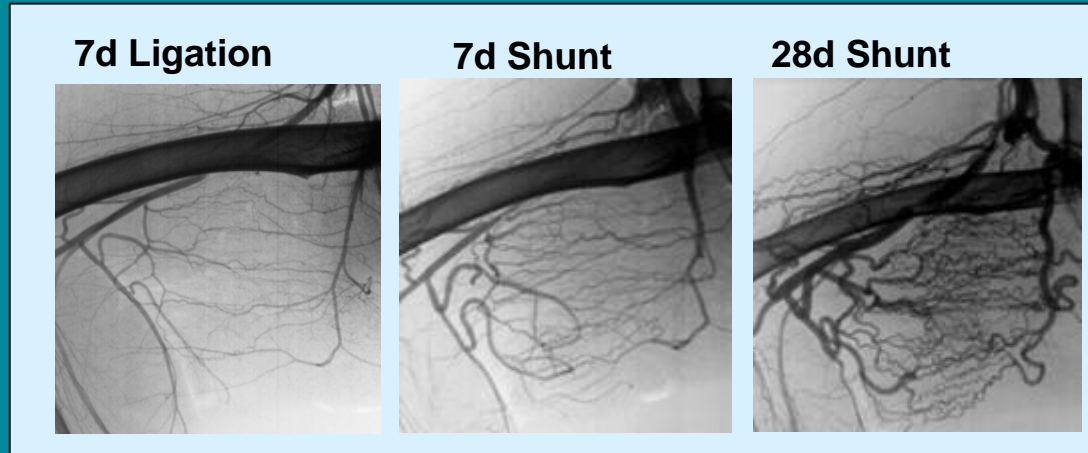
Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



www.worldcardio.org

How to enhance arteriogenesis?

genetic print from a rat model of enhanced collateral flow



- 354 differentially expressed genes
- Activation of Rho/ROCK signaling
- Most up-regulated gene = actin-binding Rho activator ABRA

K Troidl et al., DE, Science Hot Line, 2772

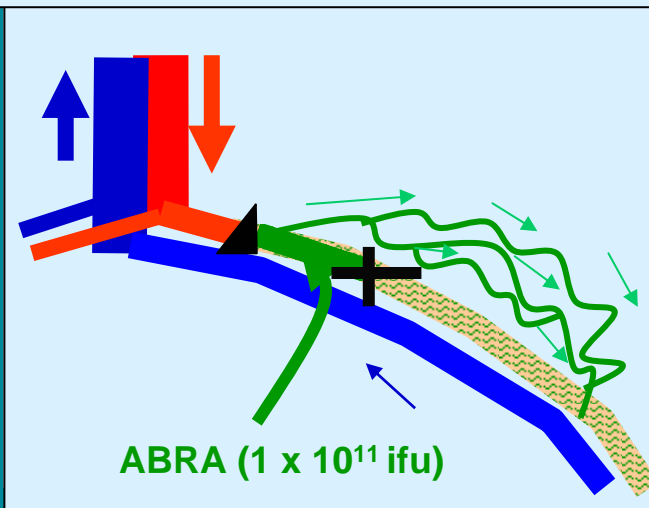
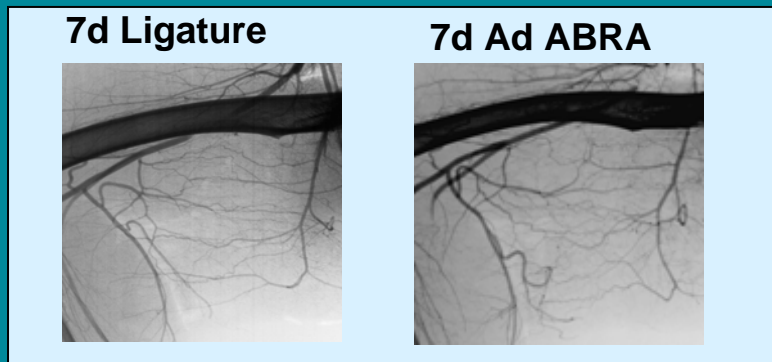


Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain

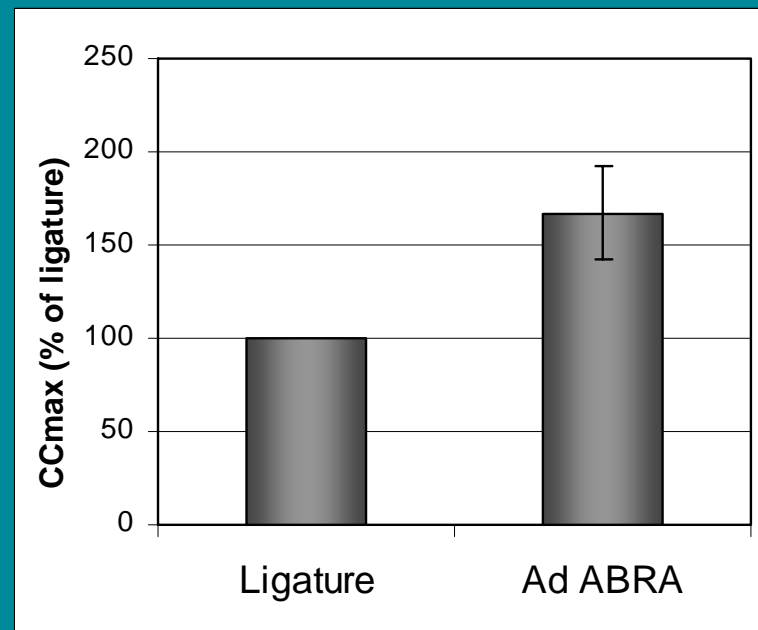


www.worldcardio.org

Adenoviral gene transfer of ABRA following ligation enhances collateral growth



Collateral Conductance

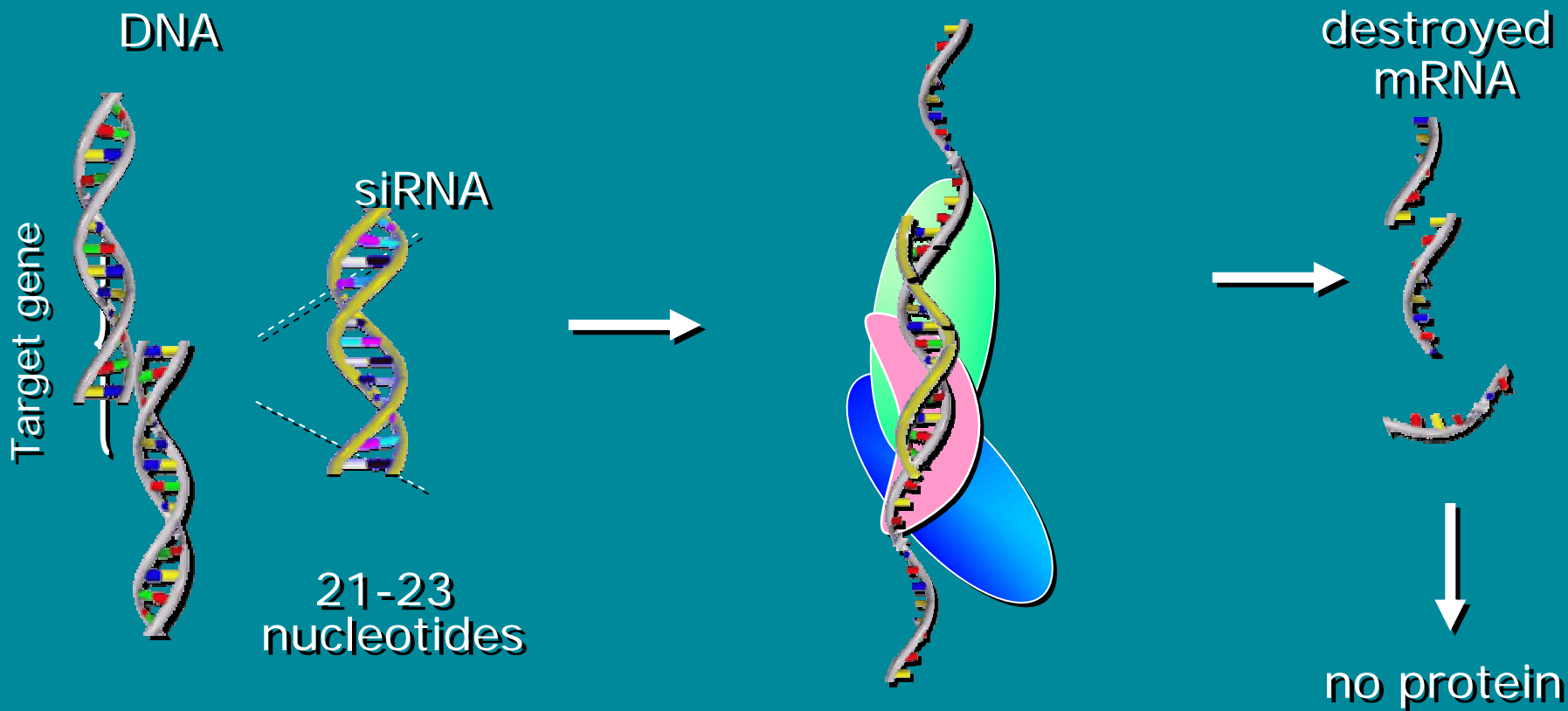


K Troidl et al., DE, Science Hot Line, 2772

Gene therapy with a twist

Gene silencing through RNA interference (RNAi)

siRNA – mRNA



D Eefting et al., NL, 167

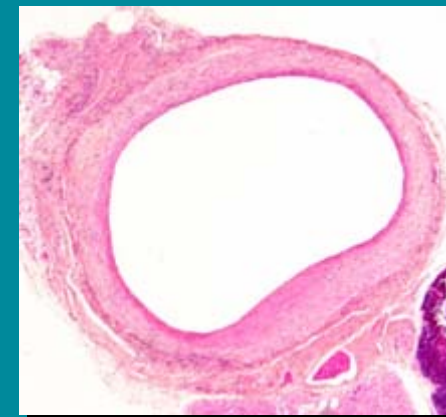
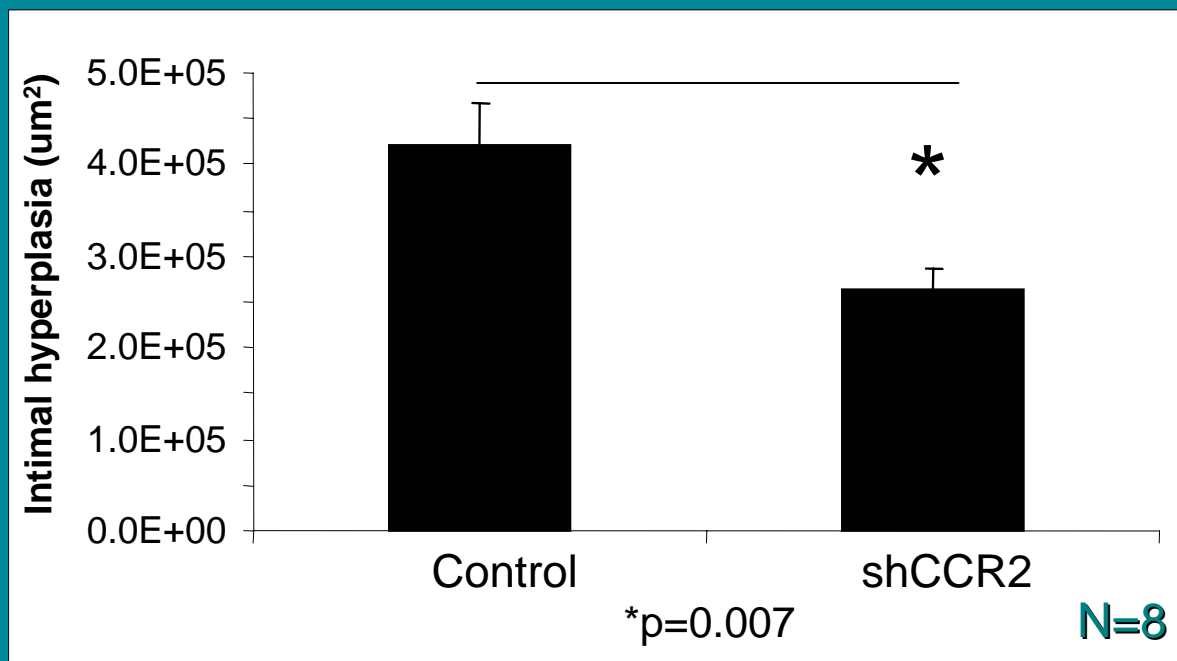


Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



www.worldcardio.org

'Short-hairpin' RNAi targeted at CC-Chemokine Receptor 2 prevents vein graft thickening



Control (Lenti-GFP)



Lenti-shCCR2

- vein graft in ApoE*3-Leiden mice on Western diet
- CCR2 = CC-Chemokine Receptor 2

D Eefting et al., NL, 167

Highlight Session

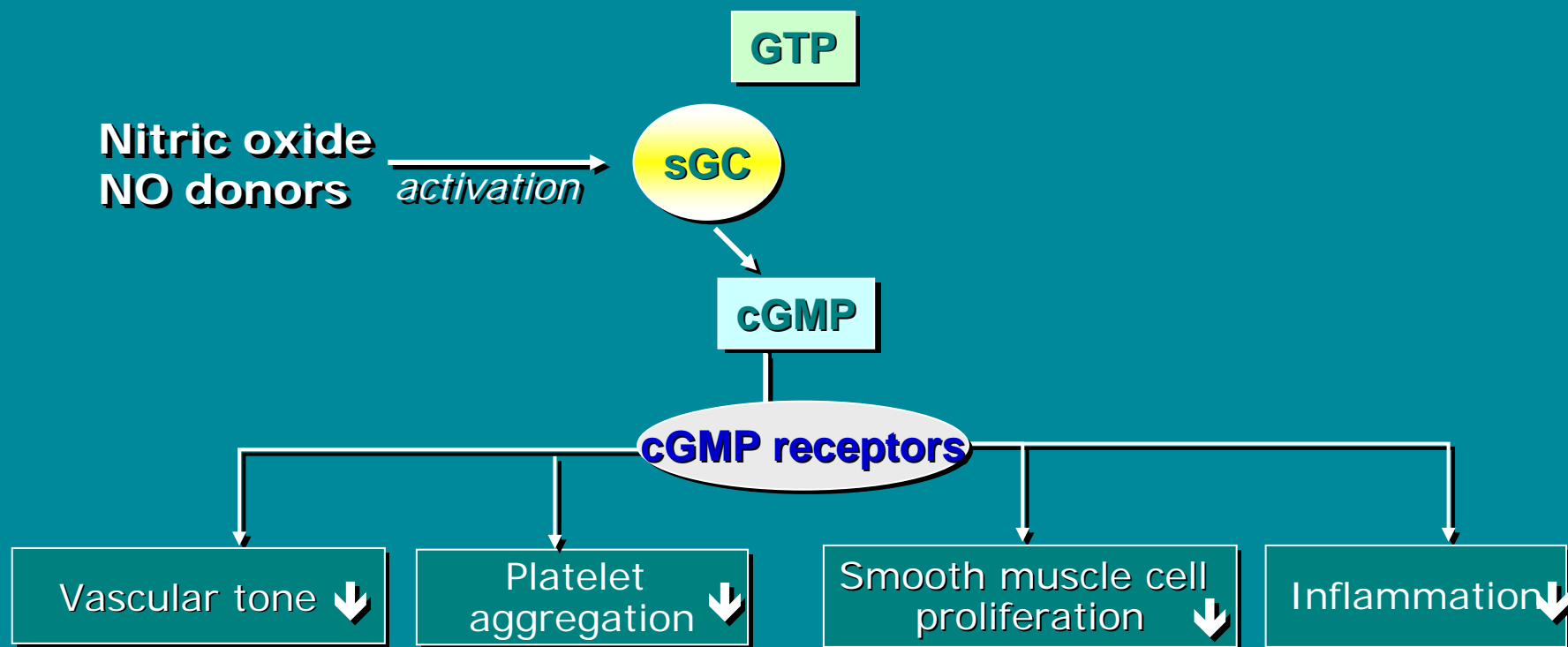
World Congress of Cardiology 2006

2-6 September - Barcelona, Spain



www.worldcardio.org

The bench as a testing ground for new drugs



after S Wassmann et al., DE, 163

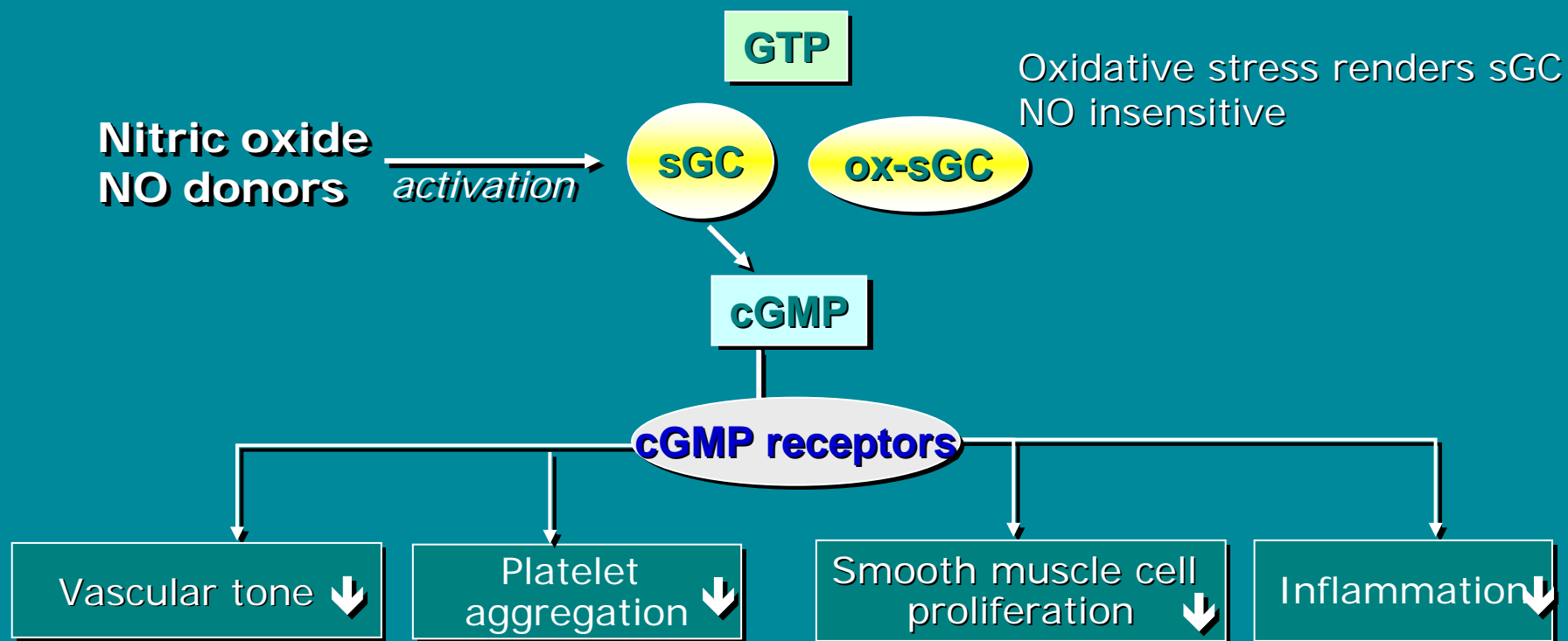


Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



www.worldcardio.org

The bench as a testing ground for new drugs



after S Wassmann et al., DE, 163

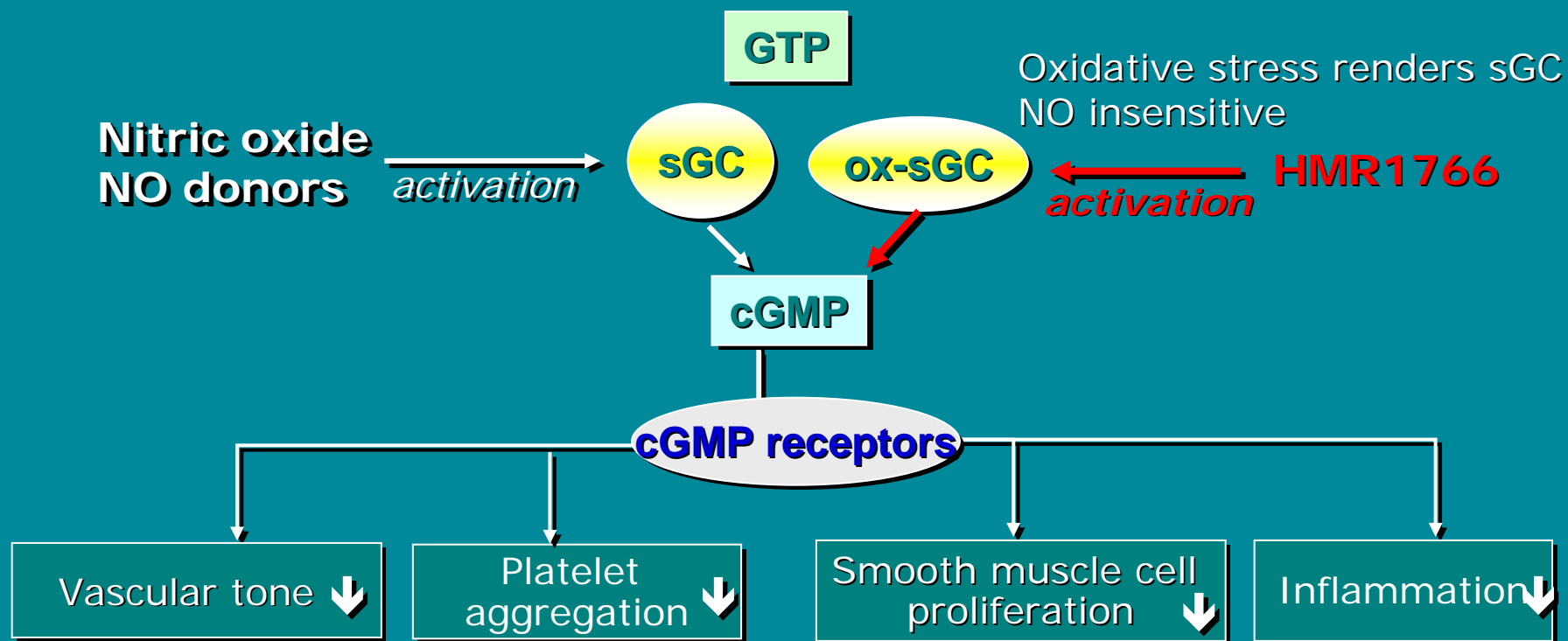


Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



www.worldcardio.org

The bench as a testing ground for new drugs



after S Wassmann et al., DE, 163



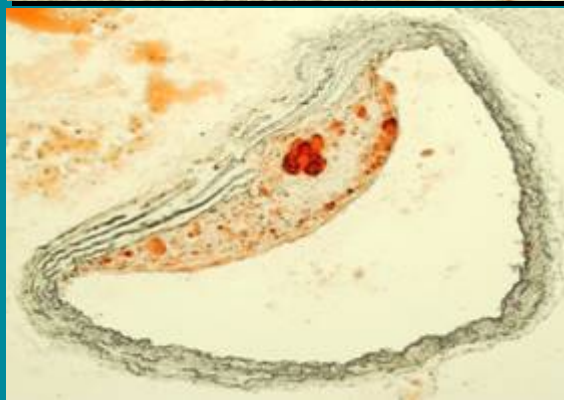
Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



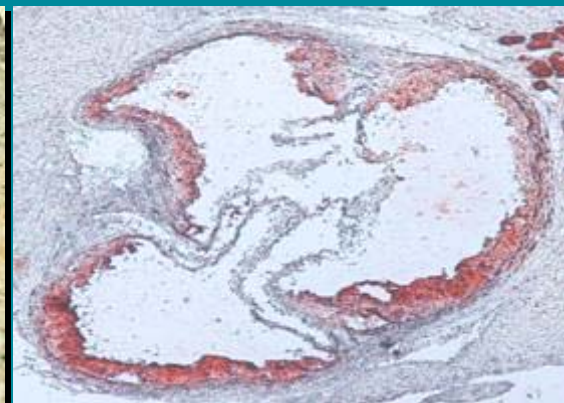
www.worldcardio.org

Reduction of atherosclerotic plaque formation in the ApoE-/- mouse by HMR1766

ApoE
Placebo



ApoE
HMR1766



Oil-red O staining, histological morphometric analysis
1.25% cholesterol, 6 weeks

S Wassmann et al., DE, 163



Highlight Session
World Congress of Cardiology 2006
2-6 September - Barcelona, Spain



www.worldcardio.org