

# Pathophysiology of Heart Failure and Targets for Pharmacological Therapy

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# Disclosures:

I received consultant and / or speaker fees from:

Novartis, Roche, Servier, Vifor, Orion Pharma,

# Heart Failure: Clinical Definition

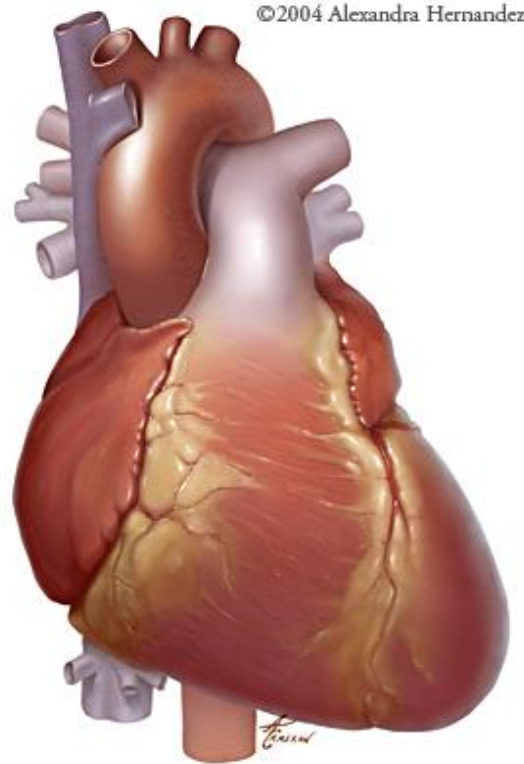
Clinical syndrome caused by the inability of the heart to **fill with (diastolic failure) and/or to eject (systolic failure)** sufficient blood under normal cardiac filling pressures to maintain a systemic perfusion that is adequate to meet the metabolic demands of the organism.

*Braunwald's Heart Disease, 7th Ed.,*

# Determinants of Cardiac Function

Heart Rate  
Myocardial Function (systolic /diastolic)

Preload  
Cardiac Filling

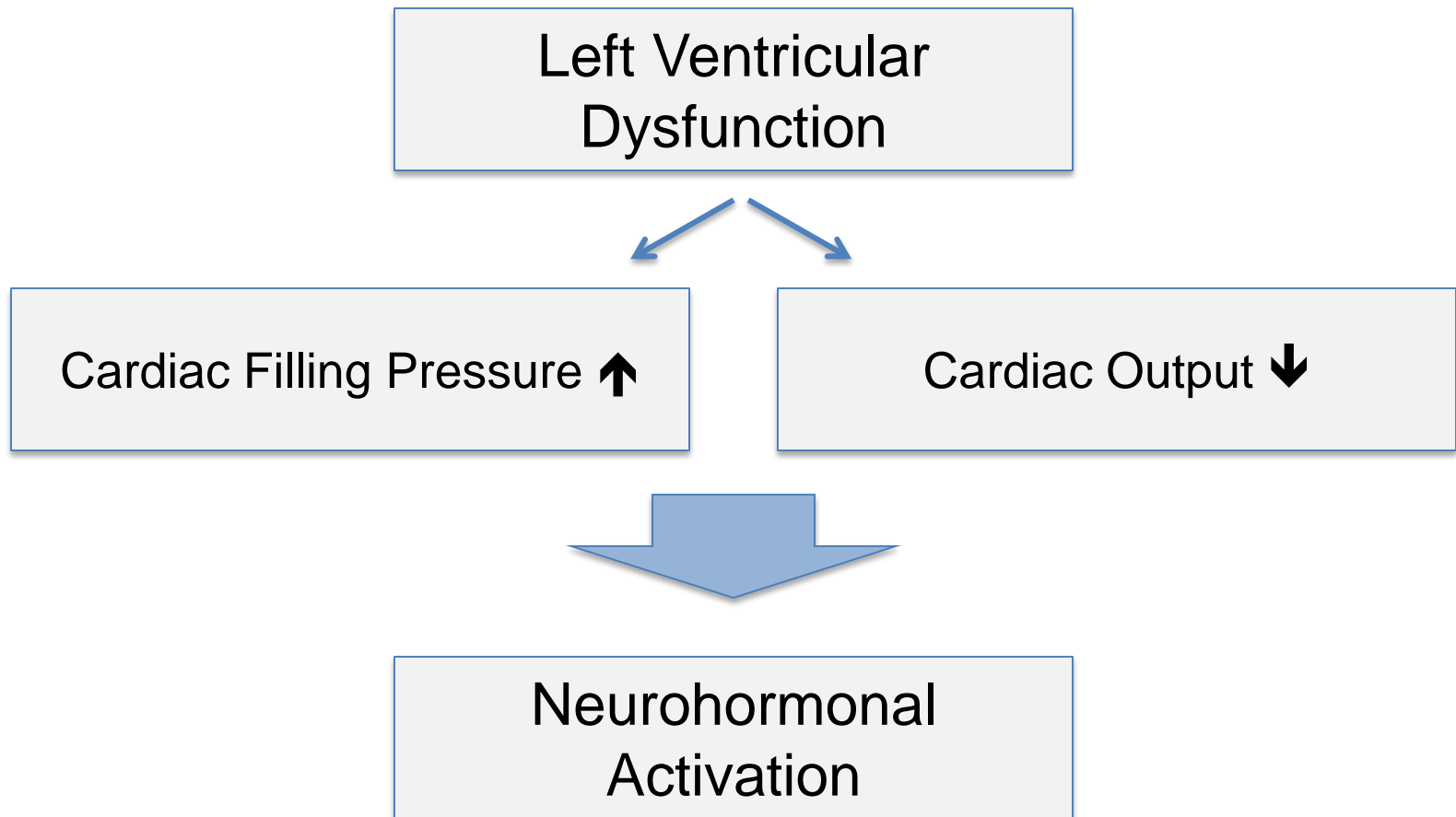


Afterload  
Resistance

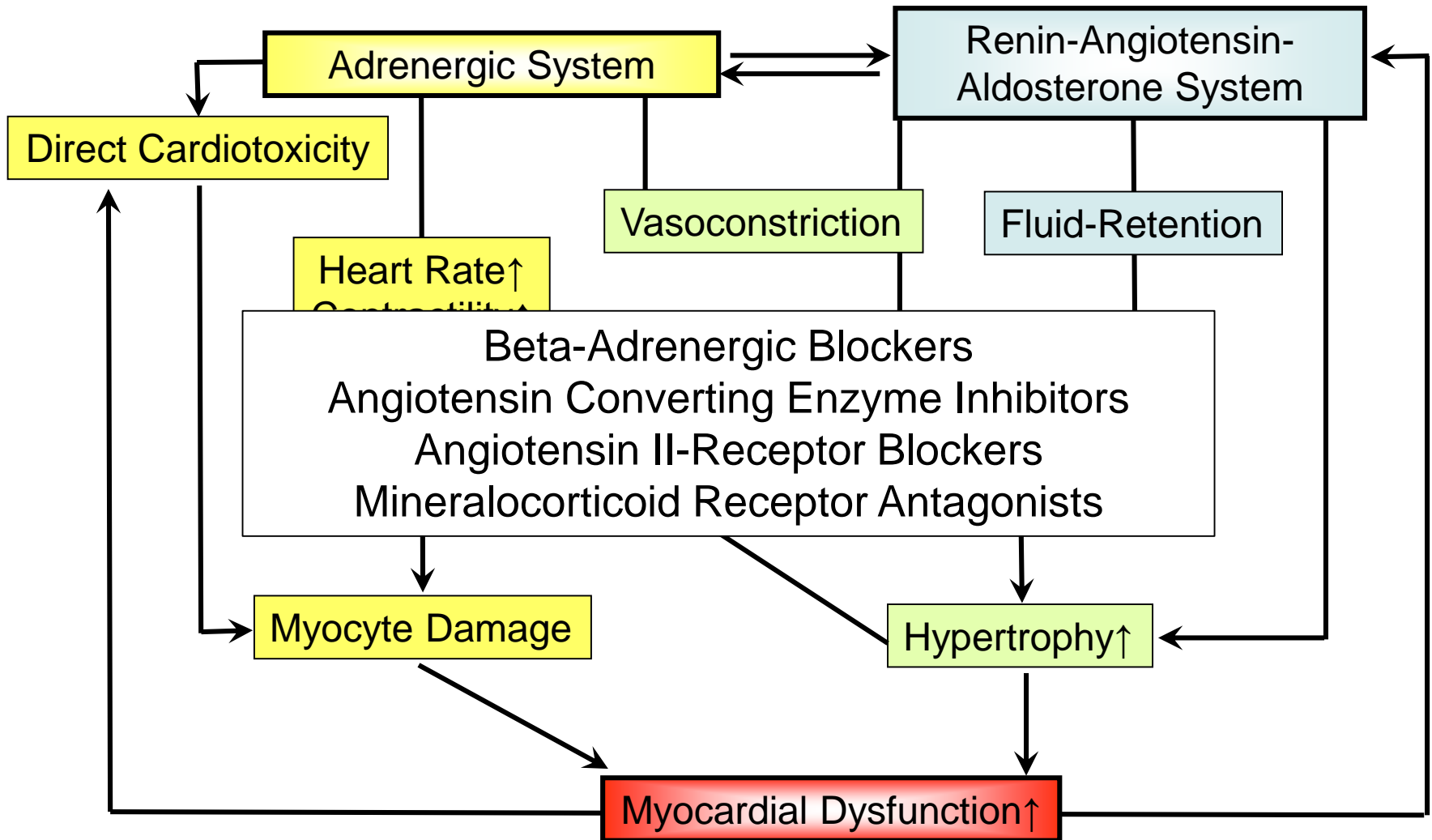


$\Omega$

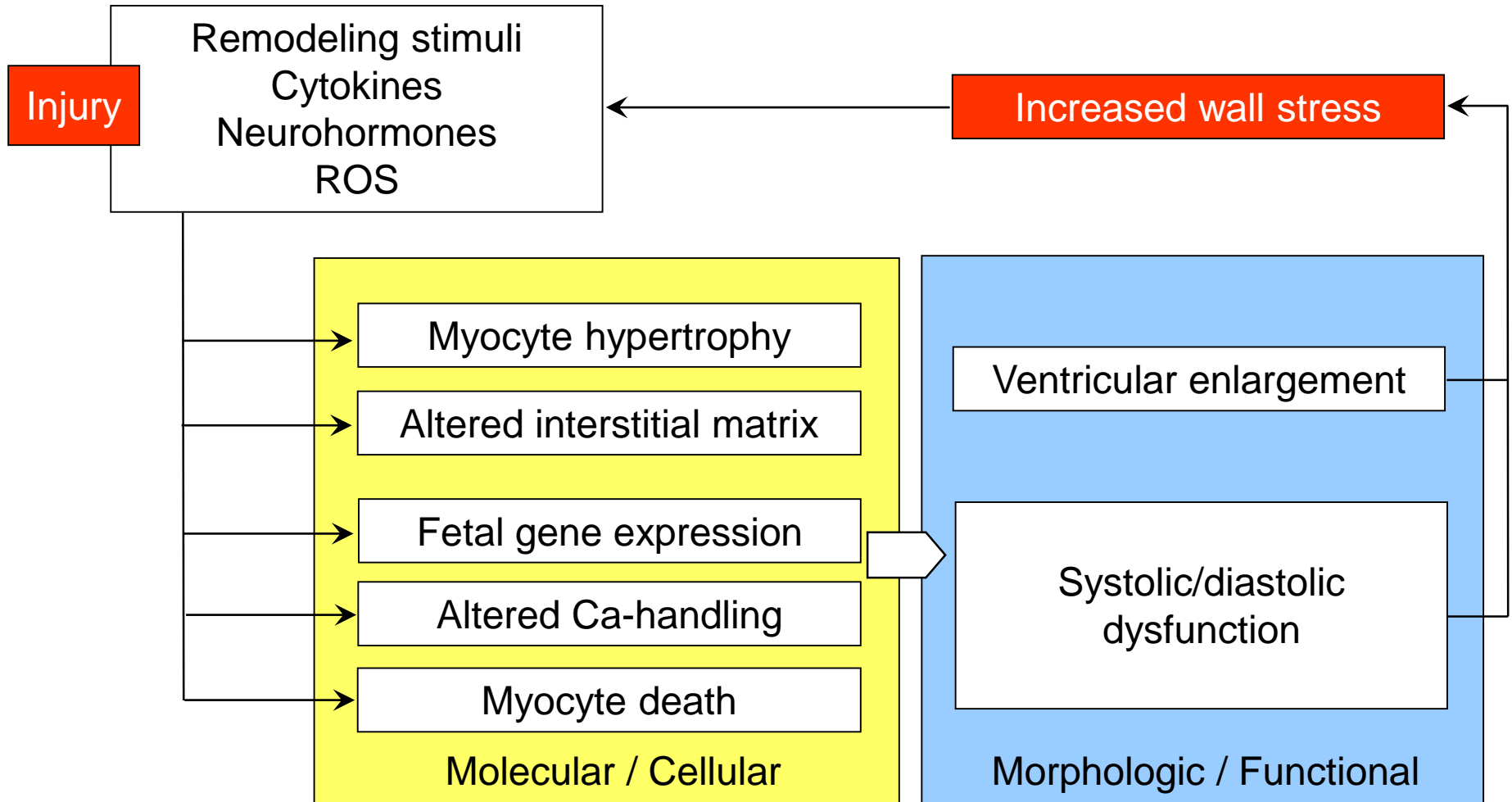
# Triggers of Neurohormonal Activation



# Treatment Target: Neurohormonal Activation

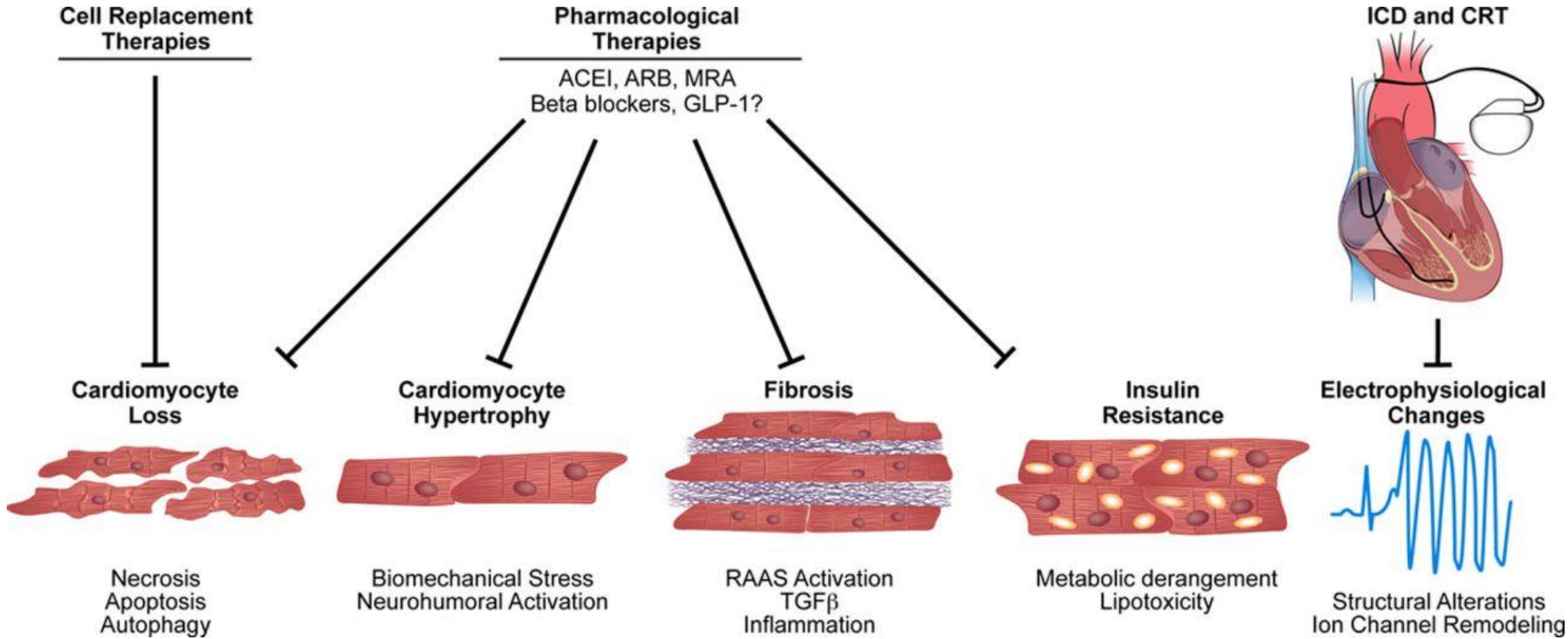


# Myocardial Remodeling



Adapted from: *Atlas of Heart Failure, 4th Ed., W.S. Colucci*

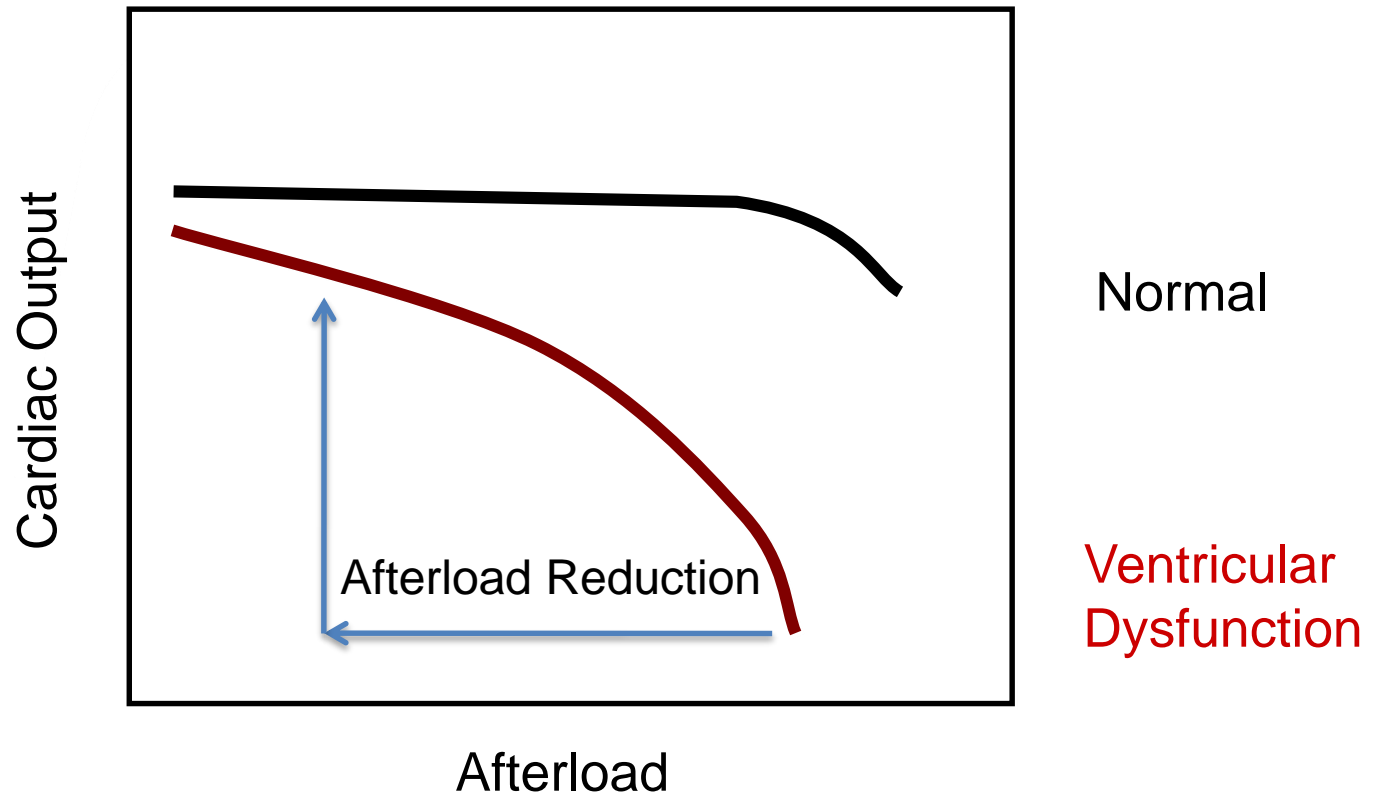
# Myocardial Remodeling: Therapeutic Concepts



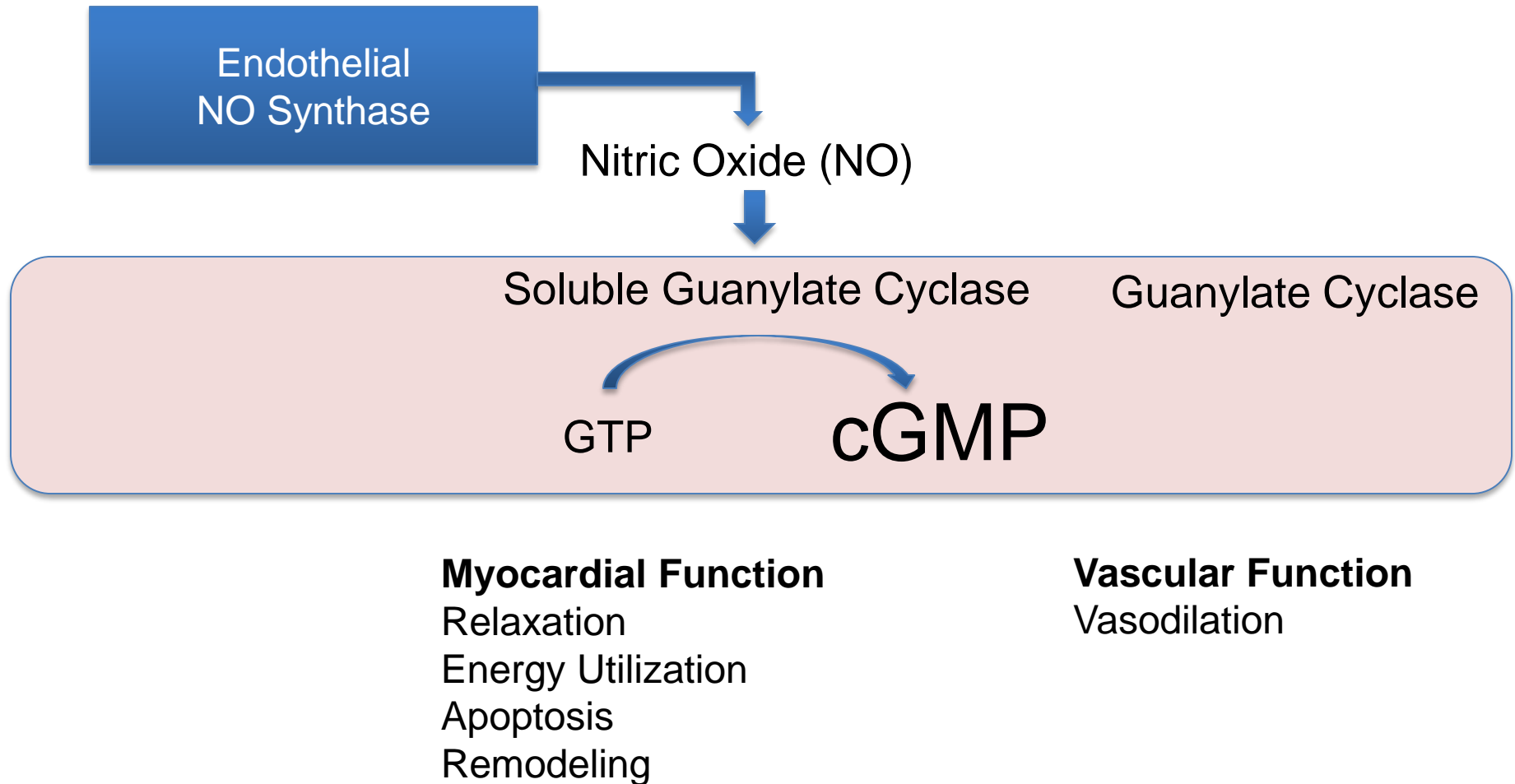
Burchfield JS et al., Circulation 2013



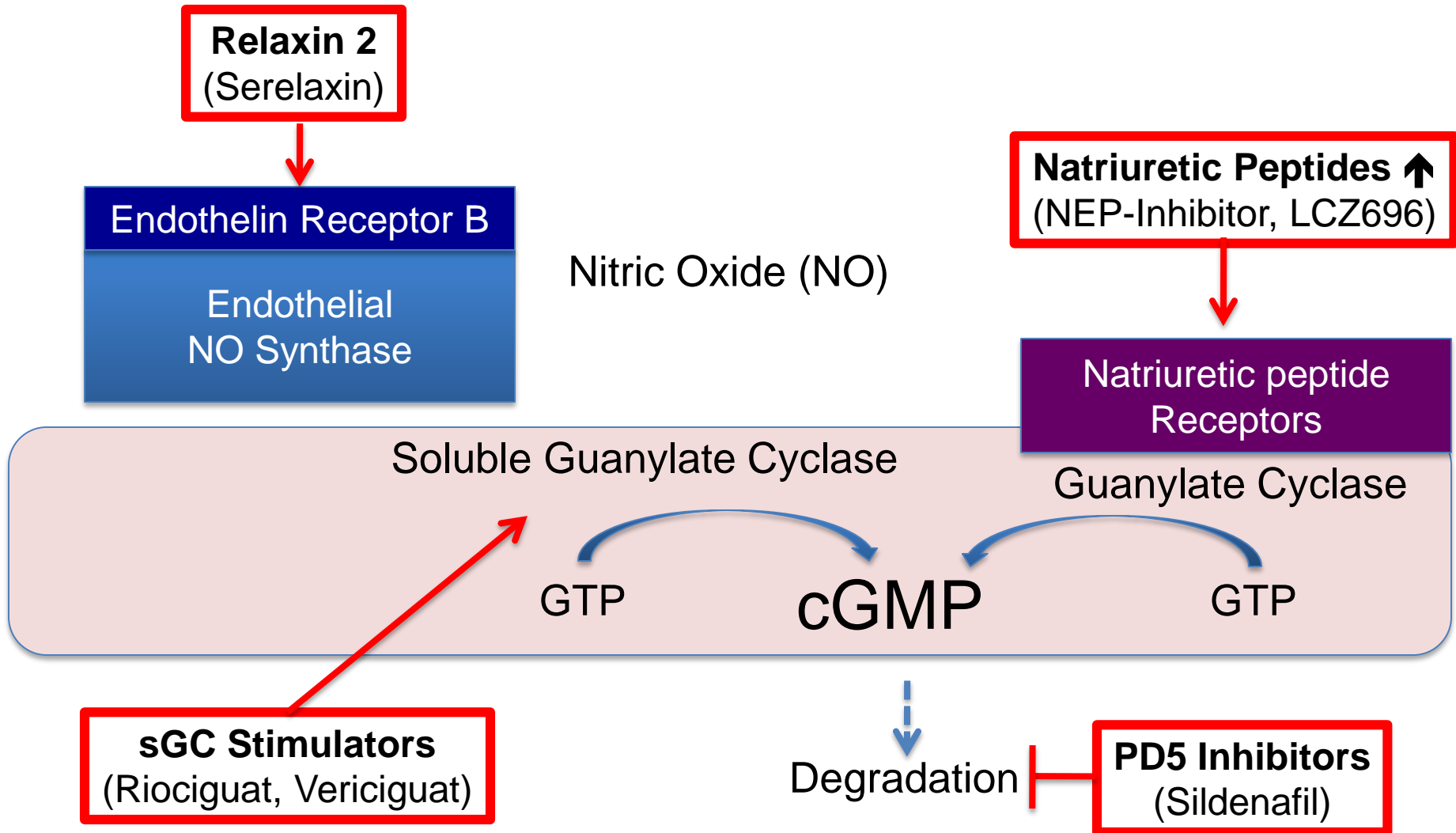
# Treatment Target: Afterload Reduction



# Pivotal Role of Cyclic Guanosine-Monophosphat (cGMP) for Cardiac Function



# Strategies to increase cGMP



# The Optimal Drug for Heart Failure should...

Unload the Heart

Preserve Myocardial  
Homeostasis and Structure

Protect Systemic  
Organ Function

Reduce Mortality and Morbidity

# Vielen Dank



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