

**Chromosomal “locus” and “focus”**

The chromosomal “locus” refers to the specific location of a DNA sequence/gene on a chromosome, whereas the “focus” refers to the 3-dimensional architecture of mutually exclusive domains of a chromosome.

**Matrix metalloproteinases (MMPs)**

Matrix metalloproteinases (MMPs) are a family of extracellular matrix degrading enzymes that are involved in tissue remodeling. Alteration in MMP activity has been shown to contribute to ventricular remodeling in heart failure or following an acute myocardial infarction.

**micro RNA (miRNA)**

miRNAs are a class of highly conserved, endogenous, non-coding RNA molecules of approximately 22 nucleotides that silence gene expression at the post-transcriptional level by either promoting the degradation of messenger RNA (mRNA), or inhibiting the translation of protein from mRNA by translational repression.

**Randle Cycle**

The Randle Cycle is a metabolic phenomenon characterized via substrate competition between carbohydrate (glucose) and fatty acids for entry into oxidative pathways (the Krebs Cycle) for subsequent energy metabolism. As the oxidation of one substrate increases, it results in decreased oxidation of the competing substrate.

**Renin angiotensin system (RAS)**

RAS is the physiological hormone system responsible for the regulation of blood pressure and fluid balance. Renin (originating from the kidneys) stimulates the production of angiotensin, which induces blood vessel constriction and increases blood pressure. Angiotensin also stimulates the production of aldosterone, which acts on the kidneys to increase sodium and water reabsorption into the blood, also contributing to an increase in blood pressure.

**Rheumatoid factor**

Rheumatoid factor is an autoantibody (antibody that targets the host organism’s own tissues) against the Fc portion of immunoglobulin, and this rheumatoid factor/immunoglobulin immune complex is the most relevant autoantibody complex in the development of rheumatoid arthritis.

**Transforming growth factor  $\beta$  (TGF- $\beta$ )**

Transforming growth factor (TGF)- $\beta$  is a growth factor that has an important role in controlling fibroblast growth and accumulation of extracellular matrix proteins. Increases in TGF- $\beta$  have been implicated in the maladaptive response to cardiac hypertrophy.

**Troponins**

Troponins are a complex of 3 regulatory proteins (Troponin C/I/T) essential for muscle contraction in skeletal and cardiac muscle. Troponins are not involved in smooth muscle contraction. •