

Glossary

Gary D. Lopaschuk

Asymmetric dimethylarginine (ADMA)

ADMA is a guanidino-substituted analogue of L-arginine that acts as an endogenous, inhibitor of nitric oxide synthase (NOS) by competitively displacing L-arginine from the NOS active site. The concentration of ADMA is increased in the plasma of human patients with hypercholesterolemia, atherosclerosis, hypertension, chronic renal failure, and chronic heart failure. Moreover, ADMA concentrations are elevated in proportion to the severity of carotid, coronary, and peripheral atherosclerosis, leading to the suggestion of ADMA as a novel marker of cardiovascular risk.

B-type natriuretic peptide

Also known as brain natriuretic peptide, is a 32 amino acid polypeptide that is produced and secreted by the ventricles of the heart during excessive stretching of cardiac myocytes. Although it is produced primarily in the ventricles of the heart in humans, its name originates from it initially being discovered in porcine brain extracts.

Genomics

Genomics is the study of an organism's genome (full DNA sequence). Genomics includes an intensive effort to determine the complete DNA sequence of organisms and fine-scale genetic mapping efforts. Also included in this field are studies of intragenomic phenomena such as epistasis, heterosis, pleiotropy, and other interactions between alleles and loci within the genome.

Lipoprotein-associated phospholipase A₂ (Lp-PLA₂)

A protein predominantly synthesized by macrophages that belongs to the calcium-independent family of phospholipase A₂ proteins. Lp-PLA₂ is considered a vascular-specific inflammatory marker. In plasma Lp-PLA₂ is bound to low density lipoproteins (LDL) and high density lipoproteins (HDL), with higher affinity for LDL molecules that have been minimally oxidatively modified. Elevated Lp-PLA₂ (mass concen-

tration and/or elevated activity) is recommended as a novel risk factor and risk marker involved in the causal pathway of atherosclerotic plaque inflammation and the formation of rupture-prone plaque, as such is an emerging candidate for future cardiovascular disease (CVD) risk.

Protein kinase C

Is a family of ~10 isozymes divided into 3 classes (classical, novel, and atypical) capable of controlling the function of other proteins via phosphorylation of hydroxyl groups on serine and threonine amino acid residues of these proteins. Protein kinase C isozymes in general are activated by signals that elevate the concentration of Ca²⁺ and diacylglycerol. Protein kinase C isozymes play important roles in the regulation of several signal transduction cascades.

Proteolysis

Is the degradation (digestion) of proteins by a family of cellular enzymes known as the "proteases".

Phosphorylation

Is the addition/introduction of a phosphate group (PO₄) onto a protein or other organic molecule by the action of a wide class of enzymes known as the "kinases". Protein phosphorylation by kinases plays a major role in many signalling cascades, such as insulin regulation of glycogen mobilization.

Troponin

A regulatory protein present in striated muscle (skeletal and cardiac muscle) that in conjunction with tropomyosin forms a regulatory complex that controls the interaction of actin and myosin. The binding of Ca²⁺ to troponin permits muscle contraction. Cardiac troponins are released from cardiac myocytes following myocardial damage and loss of membrane integrity, and serve as highly sensitive and specific biomarkers for establishing the diagnosis of myocardial infarction