

Atropine

Atropine is a parasympatholytic agent that exerts its effects via competitive antagonism of the muscarinic acetylcholine receptors. Atropine decreases vagal tone to the heart and causes tachycardia by blocking cardiac muscarinic receptors. Atropine is clinically utilized via intravenous administration to treat sinus bradycardia.

Biomarker

A biomarker is a functional, physiological, biochemical, cellular, or metabolic characteristic that can be objectively measured and evaluated as an indicator of normal biological processes, pathological processes, or pharmacological responses to therapeutic intervention. In the setting of clinical trials, where appropriate, biomarkers can be utilized as surrogate end points that substitute for clinically meaningful end points.

Troponins

Troponin(s) are a complex of three regulatory proteins (troponin C, I, and T) essential for muscle contraction in skeletal and cardiac muscle. Troponin(s) (troponin-1 and troponin-2) are heterotrimeric complexes present in striated muscle (skeletal and cardiac muscle) that are comprised of a Ca^{2+} binding subunit (troponin-C), an inhibitory subunit (troponin-1), and an elongated troponin molecule (troponin-2), which binds both troponin-C and troponin-1. In conjunction with tropomyosin, the troponin heterotrimer forms a regulatory complex that controls the interaction of actin and myosin. The binding of Ca^{2+} to troponin permits muscle contraction. Cardiac troponins (troponins 1 and 2) 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.

Late gadolinium enhancement

Late gadolinium enhancement is a cardiac magnetic resonance imaging methodology that utilizes gado-

linium bound to extracellular contrast agents that do not gain entry into the intracellular space. Under pathological conditions, where the extracellular space is increased, the volume of gadolinium distribution is increased, consequently leading to gadolinium enhancement. As late gadolinium enhancement is dependent on differences in extracellular space in different areas of the myocardium, it is useful for detecting regional disease, including acute myocardial infarction, myocardial scar, and cardiomyopathies (eg, cardiac sarcoidosis).

Taxonomy

Taxonomy refers to the science of defining/naming groups of biological organisms based on shared characteristics, and its development was primarily advanced by Carl Linnaeus. Taxonomy involves organisms being grouped into taxa that are given a taxonomic rank that includes domain, kingdom, phylum, class, order, family, genus, and species.

AMP-activated protein kinase (AMPK)

AMPK is a key kinase that controls many cellular processes, particularly pathways involved in cellular energy status. AMPK is activated during metabolic stress, where it then can either activate energy-producing pathways or inhibit energy-consuming pathways. For these reasons, it has been termed a “fuel gauge” of the cell.

Myocardial apoptosis

Myocardial apoptosis refers to programmed cell death of cardiac myocytes within the myocardium. Apoptosis involves a series of events resulting in cellular morphological changes and subsequent death, including cell shrinkage, blebbing, nuclear fragmentation, and chromatin condensation. One of its key features is that, unlike cell death via necrosis, the cellular contents do not spill out due to phagocytic cells engulfing the apoptotic cell, which is a primary reason why apoptotic cell death does not result in inflammation.