



Illuminating Coronary Artery Disease

Taking the Guesswork out of **Plaque** Characterization



InfraReDx, Inc. is a privately funded medical device company dedicated to improving patient care through development and commercialization of intelligent imaging technologies to advance the diagnosis and treatment of coronary artery disease.

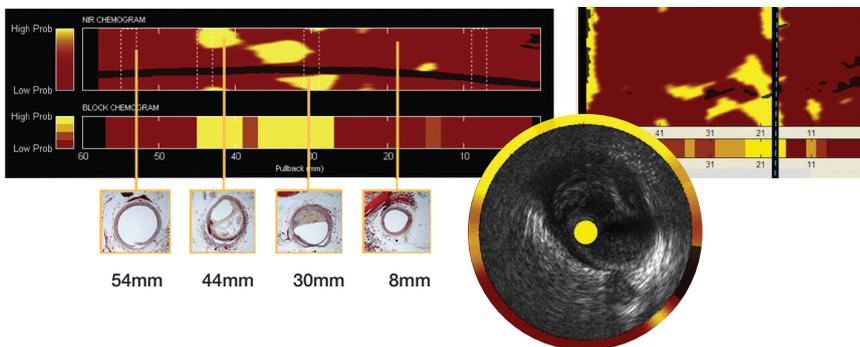
Current Methods to Detect and Treat Coronary Artery Disease are Limited

Myocardial infarction (MI), or heart attack, is a major cause of death, disability and expense globally. In fact, the American Heart Association estimates that 1.1 million Americans will have a new or recurrent heart attack every year and more than 45% will die as a result. Each year, more than two million individuals worldwide undergo coronary stenting, a procedure that restores blood flow to a blocked coronary artery. While clinical results of stenting procedures have steadily improved, approximately 30% of individuals undergoing these procedures experience a significant adverse event. Stenting has traditionally been guided by X-ray angiography, which identifies the general location of the luminal blockage but cannot reveal the health of the vessel wall. **Physicians are increasingly recognizing the limitations of relying on angiography alone and are turning to advanced imaging solution systems to optimize stenting strategy.**

Enhancing IVUS for Better Plaque Assessment

The LipiScan™ IVUS Coronary Imaging System is the **first and only** available system and catheter to combine both near-infrared spectroscopy (NIR) and intravascular ultrasound (IVUS) technologies, facilitating visualization of the coronary artery lumen and plaque (via IVUS) and rapid assessment of lipid core plaques (LCPs) (via NIR). Upon completion of a single catheter pullback, the LipiScan IVUS System is able to immediately generate and display a grayscale IVUS image of the coronary artery, along with a complete and co-registered Chemogram™ (map of LCP) within the imaged vessel. **The LipiScan IVUS system provides physicians with an unparalleled “one-stop” visual determination of critical coronary features to assist in the care of coronary patients.**

IVUS and Chemogram images from a single pullback of the LipiScan™ IVUS Coronary Imaging System.



www.infraredx.com

FOUNDER'S CORNER



James E. Muller, MD, Founder and Chief Executive Officer of InfraReDx

For more than 25 years, Dr. Jim Muller conducted research on the causes of heart attacks while a Professor of Medicine at the Harvard Medical School. In 1989, he introduced the concept of “vulnerable plaque” to describe those coronary artery plaques likely to disrupt and cause cardiac events. He co-founded InfraReDx in 1998 after a detailed search to find the optimal technology to identify LCPs suspected to be vulnerable plaques.

Since its founding, InfraReDx has leveraged major advances in lasers and optics to develop intelligent catheter-based coronary imaging devices. Following on the successful 2009 launch of the LipiScan™ NIR Coronary Imaging System, InfraReDx has launched the LipiScan IVUS Coronary Imaging System, the first and only available imaging system to combine IVUS and NIR spectroscopy to characterize plaques and identify the LCPs that complicate stenting and are believed to cause the majority of heart attacks.



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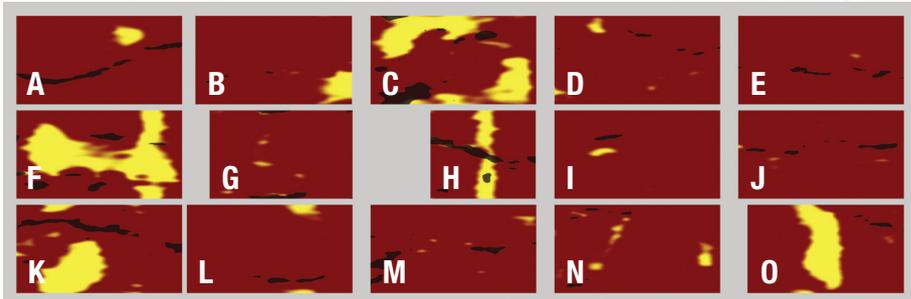
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Big Yellow = Big Trouble

Coronary artery disease most often results when the vessels that provide blood and oxygen to the heart become clogged and narrowed restricting blood flow, a condition also known as stenosis. Stenosis is caused by a substance called plaque, both “hard” and “soft,” which is made up of cholesterol, other fatty compounds, calcium and a blood-clotting material called fibrin. Lipid-core-containing plaque (LCP) is a fatty coronary artery plaque suspected to be vulnerable, to cause most heart attacks and to complicate stenting procedures by rupturing and forming dangerous blood clots, either during or post-intervention. On a Chemogram, LCP is visualized as bright yellow.

Can you guess which of these Chemograms are from patients who subsequently suffered a heart attack during their stent procedure? (answers at bottom)



About IVUS

Intravascular ultrasound (IVUS) is a medical imaging technology that produces detailed images of the wall of an artery. IVUS is used to determine both plaque volume and the degree of stenosis in the artery to inform treatment decisions, as well as to assess the effects of stenosis treatment and the results of medical therapy over time.

About NIR

Near-infrared (NIR) diffuse reflectance spectroscopy is a highly developed technique in common use in fields such as chemistry and pharmaceutical development to identify, at different wavelengths, the chemical composition of substances. An important feature of NIR light is that it can penetrate blood and tissue and can identify details despite the presence of blood between the detector and the target.

Improving Plaque Characterization with Multimodality Imaging

The LipiScan IVUS system is a novel and unique combination of the complementary technologies of IVUS and NIR spectroscopy. In a single pullback, the physician obtains accurate, co-registered information about plaque structure (from IVUS) and composition (from NIR spectroscopy). This combined information helps cardiologists with decisions regarding the need for a stent, the likelihood that stenting complications might occur, and the results of stent placement.