HARVEY MUDD
COLLEGE

Department of Engineering
Seminar Program
Wednesday, November 30, 2011
Galileo McAlister, 4:10pm

Jerome Jackson, Vice-President Research and Development, Stellartech Research Corp.

Jerome has over 30 years of experience leading medical system development in environments ranging from small VC backed companies to large multinational corporations. Responsibilities include technical product research and development, business development and contract review, domestic and international regulatory strategy, and IP creation and management. He has also managed early stage manufacturing and quality assurance engineering, and has expertise providing input to meet domestic and international regulatory agency requirements. He is responsible for the entire product realization process, from concept through market release and is typically involved in research efforts to solve challenging medical issues. His projects require a 'multi-physics' approach to product development, integrating multiple scientific and technical disciplines, and is based upon expertise in structural biocompatible materials, analysis of fluid flow and energy transfer systems, mechanical product design, and managing the development of embedded microprocessor controlled electro-medical systems.

Jerome has developed numerous medical products, including permanent implants, such as intraocular lenses, coronary artery stents, neurological stimulation systems, and heart valves; minimally invasive disposable devices, such as cardiovascular, electrophysiological, neurovascular, urological, peripheral vascular, gastroenterological and gynecological catheters and hand-held instruments; brachytherapy systems; and embedded microprocessor controlled radiofrequency (RF) ablation systems.

Jerome is currently Vice-President of Research and Development for Stellartech Research Corporation. Previously, he served as Vice President of Research and Development for the Vascular Therapies Division of US Surgical Corporation and Director of Engineering and Research for EP Technologies, Inc. now a division of Boston Scientific. He holds a Master of Science Degree in Mechanical Engineering from Stanford University and a Bachelor of Science Degree in Engineering Sciences from Harvey Mudd College. In 2006, Harvey Mudd College presented Jerome with the Outstanding Alumni Award and in 2008 he was recognized as one of the 100 Notable People in the Medical Device Industry by MDDI magazine. He is a named inventor on over forty US and international patents.

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Medical Device Design, Development and Product Realization

Biomedical Engineering is a field that continues to evolve as the relationships between the biological, physiological and anatomical processes and the physical world are better understood. There are two main pathways to developing treatments and cures for disease, biologic/pharmacologic materials and medical devices. The biologic/pharmacologic solutions attempt to enable the body's processes to respond to disease and generally operate at the cellular/tissue level. However, medical device solutions typically modify, support or supplant the affected physiologic process or anatomical system. The application of these two types of interventions is rapidly changing as the ability to screen for, predict and preemptively treat diseases is advancing and the need for reactive/reparative solutions may be reduced. However, there are currently many diseases that must be addressed with medical devices, which is the focus of my career.

The goal of the biomedical engineer is to understand the proper operation and functioning of physiologic and anatomical systems, assess the disease state being treated, and engineer medical devices that help restore the operation and function to as near normal as possible. To do this, the biomedical engineer must needs to have a working knowledge of biology, anatomy and physiology. But, the engineer also needs to possess sound and multidisciplinary engineering skills. Most engineering solutions require knowledge of and/or expertise in Materials Science; Chemistry; Physics; Mechanical, Electrical and Systems Engineering; software design; systems integration, and be able to translate the physician's treatment goals for the patient into objective engineering design criteria. I will provide real world examples of how my multidisciplinary experience is used to develop medical devices that treat and cure diseases.