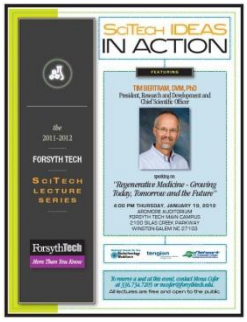

Ideas in ACTION

January 2012

"Regenerative Medicine - Growing Today, Tomorrow and the Future"

The January 2012 speaker in the SciTech Lecture Series was Dr. Tim Bertram, President of Research and Development and Chief Scientific Officer for Tengion, a regenerative medicine company located in Winston-Salem, NC. Dr. Bertram has been a leadership-mentor to scientists in government, academics, and industry. His experience includes world-wide leadership of multidisciplinary scientific teams for the pharmaceutical industry, government and private foundations. Dr. Bertram is a member of journal editorial boards for Tissue Engineering and Regenerative Medicine. He has over 150 scientific communications and patents focusing on the cellular and molecular basis of diseases and tissue and organ regeneration involving the respiratory, urogenital, renal and gastrointestinal organ systems. The title of his lecture was "Regenerative Medicine – Growing Today, Tomorrow and the Future."

Dr. Shari Covitz, Vice President for Institutional Advancement and Executive Director of the Forsyth Tech Community College Foundation, introduced the series and welcomed the audience of over 100 which included students, business leaders, instructors, and community professionals. Russ Read, the Executive Director of the National Center for the Biotechnology Workforce, introduced Dr. Tim Bertram and stated that Tim is the son of two teachers who must be very proud of him, because he has two doctorates.

Dr. Bertram shared with the audience that Forsyth Tech is close to his heart, not only because Tengion has hired Forsyth Tech Biotechnology graduates, but his own daughter is a graduate of Forsyth Tech. He guided the audience through a well-received lecture in three sections: 1) What is regenerative medicine, 2) What is Tengion, and 3) Careers.

To address the first section, Dr. Bertram explained that regenerative medicine is the application of multidisciplinary principles intended to restore the structure and function of damaged tissues and organs. It is much more than stem cells, although cells are the fundamental unit on which the body depends. Requiring meticulous understanding of the way the human body heals, or regenerates itself allows researchers to instigate the natural processes and augment them when necessary to restore health to tissues and organs. Dr. Bertram used the urinary bladder to demonstrate the concept that a cell in one organ "knows" that it is in that organ. The

bladder, with its relative simplicity sometimes overstated, has a specific structure that allows it to stretch to accommodate the function of storing urine. The attributes that allow it to accomplish this purpose would be unsuitable for other organs and vice versa. So understanding how the cell "knows" what it is supposed to be is necessary for instigating healing through the development stages from cell to tissue to organ and its interactivity with the human body.

Dr. Bertram then focused his lecture on Tengion describing it as a clinical-stage biotechnology company with a focus on regenerative medicine. Researchers at Tengion are developing neo-organs and neo-tissues derived from a patient's own cells. Tengion owns or licenses over 30 US patents and patent applications and over 100 international patents and filings. Their work was originally founded on the research conducted in Dr. Anthony Atala laboratories at the Wake Forest University Institute for Regenerative Medicine. Currently, the pipeline includes clinical trials applying regenerative medicine to patients with urinary cancer and defining the pathway toward clinical trials for kidney regeneration technologies applied to patients with chronic kidney disease. Tengion's pipeline includes tubular and solid organ regenerative technologies in various stages of development. As a commercial enterprise Tengion is advancing regenerative medical technologies through numerous research and development activities while meeting the necessary regulatory standards in this emerging field.

Dr. Bertram ended his lecture with a motivating discussion of a career in regenerative medicine. He explained that North Carolina is a leader in research and development of regenerative medical products with multiple companies at various stages of their life-cycle. His advice to students was to take a serious inventory of their working preferences, strengths and goals to determine which specific area of regenerative medicine would hold the greatest potential for them. Whether that pathway led to industry, government or academia in the area of devices, tissues or organs, North Carolina has numerous options for a dedicated student of regenerative medicine.