rhBMP-2 growth factor approved for oral and maxillofacial use by FDA

Interview with Dr. Ulf ME Wikesjö, Professor of Periodontology

By Sierra Rendon, Managing Editor, Implant Tribune

(Editor's note: Dr. Wikesjo took time recently to answer questions for Implant Tribune about tissue regeneration and BMPs.)

How long have you been involved with tissue regeneration and what is the reason for your strong interest in BMPs?

I have been involved in tissue regeneration/engineering during the past 20 years. The focus of my Laboratory for Applied Periodontal & Craniofacial Regeneration (http://www.odontogenome.com/LA PCR.htm) has been alveolar regeneration/implant osseointegration and periodontal tissue engineering. In comparison to BMP-based technologies, no biomaterial, device, or growth factor as a stand alone or combination protocol comes close in clinical potential and relevance.

BMPs induce normal physiologic bone formation. With 2001/2002 approval dates for the BMP technologies has rapidly expanded over the past decade. In the United States alone, nearly one million allografts are placed each year.3

What are BMPs and what is their main effect?

BMPs are naturally occurring proteins sequestered in bone matrix. In development, they play essential roles in skeletal patterning but also support/regulate formation of several other tissues including heart, kidney, and the central nervous system. In postnatal life, BMPs have first and foremost been shown to induce bone, cartilage and marrow, but also tendon/ligament tissue.

When were they discovered, and how much work and time did it take to bring them to the market?

Already 40 years ago, Dr. Marshall Urist, a practicing orthopedic surgeon at UCLA School of Medicine, discovered a group of proteins sequestered in bone that he named BMPs. Some 20 years later, Dr. John Wozney and colleagues at Genetics Institute, today Wyeth Research, purified, characterized, and cloned several of these proteins to subsequently demonstrate their bone inductive effect. More than 20 different BMPs have been identified, several of which have been shown to induce bone formation.

The early days of tissue banking primarily focused on refining methods of tissue preservation. With improved methodologies, the focus has shifted to purification and sterilization technologies that help to ensure that an implant is safe from disease and pathogen transmission. While surgery-related risks are inherent with any invasive procedure, allograft processing methods have been very effective in minimizing the risks involved in utilizing biological tissue for implantation. This article describes a proprietary tissue graft cleaning and preservation process utilizing sodium dehydral (Tutoplast Process, Tutogen Medical, Neunkirchen a. Br., Germany), which...