

HUGO PEDROZO, Ph.D.

EDUCATION

Ph.D. Animal Physiology and Cell Molecular Biology, The University of Texas Health Science Center at San Antonio, TX 1988-95
BS in Biology, The University of Texas at San Antonio, TX 1985-88

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Biology, College of Natural Sciences, St. Edwards University, Austin TX 2014-current

Courses taught: Introductory Biology and Lab, Molecular Biology, Pathophysiology of Human Disease, and Human Physiology and Lab

Owner and Principal Scientist, Orthobiomedical, LLC, Austin, TX 2010-current

Orthobiomedical is a consulting and a technology development company. We partner with companies and institutions to bring to market products in the tissue regeneration industry. Orthobiomedical operates a wet lab and prototyping facility and develops long and short term plans for clients for characterization of orthopedic biomaterials and devices including in vitro and in vivo pre-clinical testing

Clients: DePuy Orthopedics, DePuy International, KCI inc, Baylor College of Medicine, Wenzel Spine, Keith Matheny MD, The Advisory Board Company, IsoStem, BoneSolutions, Alliance Spine, and MediRex SAS

Accomplishments: Created and licensed a compact, single use, disposable device for the isolation of marrow-derived stem cells (licensed to IsoStem Inc/Wenzel Spine Inc)

Medical Science Liaison, Spinesmith, LLP and sister company Celling Biosciences, LLC Austin TX 2009-2010

Technology educator and spokesperson for the company's autologous marrow-derived stem cell line (ART21 and AXP), corporate sales and technical support for field sales personnel in TX, protocol development and execution of clinical studies for the use of stem cells in Spine and Sports Medicine

Staff Project Engineer in Tissue Engineering and New Concepts, KCI Inc (Kinetics Concepts, Inc) San Antonio, TX 2007-09

To establish, lead and manage a program for the use of negative pressure therapy in the regeneration of articular cartilage and to create biomaterial-based, tissue engineering approach for the treatment of pressure ulcers

Director of Biochemistry and Biologics, Calcitec Inc (Start-up with proprietary high compressive strength formulation of CaPO₄), Austin, TX 2005-07

Established a drug-delivery and biologics division for our proprietary CaPO₄ technology. Developed two new product concepts: OsteoFix™ Putty – moldable bone void filler with interconnected macro-porosity formulated for polypeptide and growth factor delivery and rapid resorption; and ABIS™ - an osteoinductive growth factor cocktail formulated from autogenous blood and marrow at the point of care

Senior Scientist, Emerging Technologies and Concept Development, DePuy Orthopaedics, Warsaw, IN 2003-05

Manage the execution of pivotal preclinical in vivo studies for FDA submissions for the following products and technologies: Celect™, Conduit™ TCP granules, alpha-BSM, Symphony PCS (PRP), SIS™ patch plus GDF5 (BMP-14), Vicryl™ plus GDF5 for soft tissue repair

Scientist, Orthobiologics, DePuy Orthopaedics, Warsaw, IN

1999-03

Manage the execution of preclinical evaluations of biomaterials plus growth factors for bone and cartilage repair and regeneration. Alpha-BSM plus growth factors: TGF-beta1, PDGF-AB, Symphony PCS PRP; SIS as a bone repair scaffold: guided tissue regeneration approach; the use of small molecules to speed fracture healing: lovastatin, simvastatin, TP508, and others; and Articular Cartilage Regeneration Unit (ACRU) plus Morphogens (TGF-β1, GDF-5, PDGF-BB)

Postdoctoral Fellow & Instructor, Department of Orthopedics, The University of Texas Health Science Center at San Antonio, TX

1995-99

Elucidated the paracrine and autocrine regulatory mechanisms of TGF-beta1 production and activation by Vitamin D3 metabolites and viceversa, and the role these two growth factors play in the development of the osteochondral growth plate.

Responsibilities also included teaching, training and supervision of student interns, orthopedic residents, and graduate and post-graduate dental students

PATENTS

1. Methods and devices for separating autologous cell suspensions and making cellularized implants at the point of care Provisional Application 2011 (Orthobiomedical, LLC licensed to Isotem, Inc)
2. Device and method for fabricating cellularized implants with predetermined architecture at the point of care. 8,496,642 (Orthobiomedical, LLC)
3. Cell scaffold with interconnected porosity Submitted Application 2010 (KCI, Inc)
4. Bone induction system and methods Submitted Application 2009 (Calcitec, Inc)
5. Injectable calcium phosphate cements formulated with bioactive agents and methods for making the same Submitted Application 2009 (Calcitec, Inc)
6. Bone cement compositions for use as growth factor carriers and methods of making the same Submitted Application 2009 (Calcitec, Inc)
7. Method and apparatus for impregnating porous biomaterials with bioactive agents Submitted Application 2009 (Calcitec, Inc)
8. Cartridge suture anchor delivery device, suture anchor delivery device and associated method - Application 20070100352 (DePuy, Inc)
9. Multiple suture anchor delivery device, suture anchor delivery kit and associated method - Application 20070100351 (DePuy, Inc)
10. Suture anchor cartridge holder, suture anchor cartridge and associated method -Application 20070100350 (DePuy, Inc)
11. Composition and systems for wound decontamination – Application 20070009505 (DePuy Inc)
12. Self-assembling protein matrix prepared from natural extracellular matrices - Application 20060134072 (DePuy, Inc)
13. Method for treating or preventing osteolysis in a patient by UVB irradiation. Patent 7,673,634 March 9, 2010 (DePuy, Inc)

14. Joint resurfacing orthopaedic implant and associated method – Patent 7,595,062 Sept. 29, 2009 (DePuy, Inc)
15. Method for organizing the assembly of collagen fibers and compositions formed therefrom. Patent 7,354,627 April 8, 2008 (DePuy, Inc)
16. Orthopedic implant for vascularization of the femoral head. 7,217,283 May 15 2007 (DePuy, Inc)

PUBLICATIONS

1. Brodke D, Pedrozo HA, Kapur TA, Attawia M, Kraus KH, Holy CE, Kadiyala S, and Bruder SP. Bone grafts prepared with selective cell retention technology heal canine segmental defects as effectively as autograft. *J Ortho Res*, 2006 May; 24(5):857-66.
2. Moore DC, Pedrozo HA, Crisco JJ 3rd, Ehrlich MG. Preformed grafts of porcine small intestine submucosa (SIS) for bridging segmental bone defects. *J Biomed Mater Res A*. 2004 May 1;69(2):259-66.
3. Schwartz Z, Pedrozo HA, Sylvia VL, Gomez R, Dean DD, Boyan BD. 1 α , 25-(OH) $_2$ D $_3$ regulates 25-hydroxyvitamin D $_3$ 24R-hydroxylase activity in growth zone costochondral growth plate chondrocytes via protein kinase C. *Calcif Tissue Int*. 2001 Dec;69(6):365-72.
4. Wiederhold ML, Pedrozo HA, Harrison JL, Hejl R, Gao W. Development of gravity-sensing organs in altered gravity conditions: opposite conclusions from an amphibian and a molluscan preparation. *J Gravit Physiol*. 1997 Jul;4(2):P51-4.
5. Pedrozo HA, Schwartz Z, Robinson M, Gomes R, Dean DD, Bonewald LF, Boyan BD. Potential mechanisms for the plasmin-mediated release and activation of latent transforming growth factor-beta1 from the extracellular matrix of growth plate chondrocytes. *Endocrinology*. 1999 Dec;140(12):5806-16.
6. Pedrozo HA, Schwartz Z, Rimes S, Sylvia VL, Nemere I, Posner GH, Dean DD, Boyan BD. Physiological importance of the 1,25(OH) $_2$ D $_3$ membrane receptor and evidence for a membrane receptor specific for 24,25(OH) $_2$ D $_3$. *J Bone Miner Res* 1999 Jun; 14(6):856-67.
7. Boyan BD, Sylvia VL, Dean DD, Pedrozo H, Del Toro F, Nemere I, Posner GH, Schwartz Z. 1,25-(OH) $_2$ D $_3$ modulates growth plate chondrocytes via membrane receptor-mediated protein kinase C by a mechanism that involves changes in phospholipid metabolism and the action of arachidonic acid and PGE $_2$. *Steroids* 1999 Jan-Feb;64(1-2):129-36. Review.
8. Pedrozo HA, Schwartz Z, Mokeyev T, Ornoy A, Xin-Sheng W, Bonewald LF, Dean DD, Boyan BD. Vitamin D $_3$ metabolites regulate LTBP1 and latent TGF-beta1 expression and latent TGF-beta1 incorporation in the extracellular matrix of chondrocytes. *J Cell Biochem* 1999 Jan 1;72(1):151-65.
9. Pedrozo HA, Boyan BD, Mazock J, Dean DD, Gomez R, Schwartz Z. TGFbeta1 regulates 25-hydroxyvitamin D $_3$ 1 α - and 24-hydroxylase activity in cultured growth plate chondrocytes in a maturation-dependent manner. *Calcif Tissue Int* 1999 Jan; 64(1):50-6.
10. Pedrozo HA, Schwartz Z, Gomez R, Ornoy A, Xin-Sheng W, Dallas SL, Bonewald LF, Dean DD, Boyan BD. Growth plate chondrocytes store latent transforming growth factor (TGF)-beta 1 in their matrix through latent TGF-beta 1 binding protein-1. *J Cell Physiol* 1998 Nov; 177(2):343-54.
11. Nemere I, Schwartz Z, Pedrozo H, Sylvia VL, Dean DD, Boyan BD. Identification of a membrane receptor for 1,25-dihydroxyvitamin D $_3$ which mediates rapid activation of protein kinase C. *J Bone Miner Res* 1998 Sep; 13(9):1353-9.
12. Pedrozo HA, Schwartz Z, Dean DD, Harrison JL, Campbell JW, Wiederhold ML, Boyan BD. Evidence for the involvement of carbonic anhydrase and urease in calcium carbonate formation in the gravity-sensing organ of *Aplysia californica*. *Calcif Tissue Int*. 1997 Sep;61(3):247-55.

13. Pedrozo HA, Schwartz Z, Luther M, Dean DD, Boyan BD, Wiederhold ML. A mechanism of adaptation to hypergravity in the statocyst of *Aplysia californica*. *Hear Res.* 1996 Dec 1;102(1-2):51-62.
14. Pedrozo HA, Schwartz Z, Dean DD, Wiederhold ML, Boyan BD. Regulation of statoconia mineralization in *Aplysia californica* in vitro. *Connect Tissue Res.* 1996;35(1-4):317-23.
15. Pedrozo HA, Schwartz Z, Nakaya H, Harrison JL, Dean DD, Wiederhold ML, Boyan BD. Carbonic anhydrase is required for statoconia homeostasis in organ cultures of statocysts from *Aplysia californica*. *J Comp Physiol [A]*. 1995 Oct;177(4):415-25.
16. Pedrozo HA, Wiederhold ML. Effects of hypergravity on statocyst development in embryonic *Aplysia californica*. *Hear Res.* 1994 Sep;79(1-2):137-46.