

AAO Foundation Award Final Report

Principal Investigator	Sundaralingam Premaraj
Co-Investigator	
Secondary Investigators	
Award Type	Faculty development: AAOF Eugene E. West Memorial Fellowship
Project Title	
Project Year	2010
Institution	University of Nebraska Medical Center
Summary/Abstract (250 word maximum)	<p>The award was used to supplement my salary. Activities during the award period:</p> <p>GRANT SUPPORT:</p> <ol style="list-style-type: none"> 1. Role of sclerostin in tooth-extraction-induce alveolar bone resorption Principal investigator: S. Premaraj, BDS, MS, PhD, Funding: University of Nebraska Medical center, seed grant, \$5000, July 2010 2. Differential expression of chemokines in PDL cells subjected to mechanical loading, Principal investigator: S. Premaraj, BDS, MS, PhD, Funding: University of Nebraska Medical center student summer research fellowship, \$2250, April 2011 3. Differential expression of chemokines in compression and tension sides during experimental orthodontic tooth movement, Principal investigator: S. Premaraj, BDS, MS, PhD, Funding: University of Nebraska Medical center student summer research fellowship, \$2250, April 2011 <p>PENDING:</p> <ol style="list-style-type: none"> 1. Experimental and numerical investigation of vascular remodelling to reveal basic mechanisms of restenosis, UNL life sciences Competitive grant program: Enhancing interdisciplinary teams in life sciences, Submitted: March 2011, Amount: \$ 180450, Role: Co-PI (PI: Linxia Gu) <p>MENTORSHIP: MASTERS STUDENT, THESIS ADVISOR</p> <ol style="list-style-type: none"> 1. MS Medical Sciences Interdepartmental Area, Dr. Isabela Souza, DDS, Dept. of Oral Biology, Molecular biology of mechanotransduction of orthodontic loading, Degree awarded 8/2010 2. MS Medical Sciences Interdepartmental Area, Dr. Fouy Chau, DMD, Section of Orthodontics, Role of sclerostin in tooth extraction-induced alveolar bone resorption, Degree expected 12/2011 3. MS Medical Sciences Interdepartmental Area, Dr. Vivian Luong, DMD, Section of Orthodontics, Degree expected 12/2012 4. MS Medical Sciences Interdepartmental Area, Dr. Tram Nguyen, DDS, Section of Orthodontics, Degree expected 12/2012

MASTERS STUDENT, THESIS COMMITTEE MEMBER

1. MS Medical Sciences Interdepartmental Area, Dr. Mark George, DDS, Section of Orthodontics, Effect of Intra-articular Injection of Simvastatin on TMJ inflammation, Degree expected 12/2011

DENTAL STUDENTS, RESEARCH ADVISOR

1. Conrad Parks, Mechanisms of Strain-Induced phosphorylation of GSK-3 β in Periodontal ligament cells, 7/2010- 3/2011
2. Lori Petersen, Mechanisms of Mechanical strain-induced upregulation of Cx43 expression in periodontal ligament cells, 7/2010 – 3/2011
3. Tami Luebke, Differential expression of chemokines in PDL cells subjected to mechanical loading, 4/2011- present
4. Kelly Russell, Differential expression of chemokines in compression and tension sides during experimental orthodontic tooth movement, 4/2011- present

TEACHING:

ORT 576 Ortho Concepts:	Course director
PG 849 Biophysical principles I:	Course director
PG 850 Biophysical principles II:	Course director
PG 844 Cephalometrics:	Course director
Dentofacial program:	Instructor
Ortho-Perio interdisciplinary seminar:	Instructor
Critical Review of Current Literature:	instructor
Clinical Orthodontic seminars:	instructor
Dentofacial Clinical conference:	Instructor
Ortho-Endo graduate student seminar:	Instructor

ADMINISTRATION:

Program Director, 03/2009 - present

SERVICE:

A. College and University Committees:

1. Research Committee, College of Dentistry
2. Teaching and Faculty development committee, College of Dentistry
3. University Dental Associates board
4. Admissions Committee, Postdoctoral residency in orthodontics, UNMC

B. Professional Societies, Reviews and Consultations:

1. President, Nebraska Society of Orthodontists 2010-2011
2. Education Committee, American Cleft Palate-Craniofacial Association
3. Reviewer of abstracts and manuscripts, Midwest Student Biomedical Research Forum
4. Ad hoc reviewer- Bone, Journal of Dental research, The Cleft palate-craniofacial journal
5. Judge, Research presentations, Midwest Student Biomedical Research Forum
6. Judge, IADR Sarnat Craniofacial biology award competition

	<p>INVITED PRESENTATIONS AND CONTINUING EDUCATION:</p> <ol style="list-style-type: none"> 1. Introduction to Orthodontics, Summer Medical and Dental Education program (SMDEP), University of Nebraska Medical Center, June 11, 2010. 2. Maximizing Smile Esthetics: An Interdisciplinary Approach, 32nd Asia Pacific Dental Conference, Colombo, Sri Lanka, May 12-16, 2010. 3. Molecular mechanisms of tooth movement: Emerging concepts, Rising Stars in Orthodontics, 110th Annual sessions of American Association of Orthodontists, Washington, DC, USA. May 2, 2010. 4. Dentofacial treatment planning, Continuing Education presented to the members of Sri Lanka Orthodontic Society, Colombo, Sri Lanka, December 31, 2010.
<p>Were the original, specific aims of the proposal realized?</p>	<p style="text-align: center;">Yes</p>
<p>Were the results published? If not, are there plans to publish? If not, why not?</p>	<ol style="list-style-type: none"> 1. Premaraj, S, I. Souza, T. Premaraj, Mechanical loading activates beta-catenin signaling in periodontal ligament cells, The Angle Orthodontist, 2011 (epub) <p>PUBLISHED ABSTRACTS:</p> <ol style="list-style-type: none"> 1. S. Premaraj, I. Souza, T. Premaraj, Nitric Oxide Mediates Mechanical loading-induced beta-catenin signaling in PDL cells, J Dent Res., 90 (Spec Iss A): 1527, 2011 2. C. Parks, J. Shin, T. Premaraj, S. Premaraj, FAK Regulates Activation of Beta-Catenin Signaling in Compressed PDL Cells, J Dent Res., 90 (Spec Iss A): 3651, 2011 3. L. Petersen, J. Shin, T. Premaraj, S. Premaraj, PGE2 mediates mechanical loading-induced up-regulation of Cx43 in PDL cells, J Dent Res., 90 (Spec Iss A): 3646, 2011 4. J. Stengle, L. Talluri, I. Souza, T. Premaraj, and S. Premaraj, Prostaglandin E2 Activates Beta-Catenin Signaling In Periodontal Ligament (PDL) Cells, J Dent Res., 89 (Spec Iss B): 3748, 2010. 5. S. Premaraj, I. Souza, M. Talluri, M. Guerrero, J. Barta, T. Premaraj: Mechanical strain activates beta-catenin signaling in periodontal ligament cells, J. Dent. Res 89 (Spec Iss A), 2010.
<p>Have the results of this proposal been presented? If so, when and where? If not, are there plans to do so? If not, why not?</p>	<p style="text-align: center;">NA</p>