

## AAO Foundation Award Final Report

Principal Investigator	Sundaralingam Premaraj
Award Type	AAOF Subtelny Baker, Eastman Teaching Fellowship
Project Title	
Project Year	2008
Institution	University of Nebraska Medical Center College of Dentistry
Summary/Abstract (250 word maximum)	<p>The award was used to supplement my salary. Activities during the award period:</p> <p><b><u>GRANT SUPPORT:</u></b></p> <ol style="list-style-type: none"> <li>1. Orthodontic Loading of Alveolar Bone <i>in vivo</i> Reduces Osteocyte Expression of SOST/Sclerostin Principal Investigator: Sundaralingam Premaraj, BDS, MS, PhD Funding: UNMC College of Dentistry, Seed grant, \$ 5000, July 2008</li> <li>2. In Vitro evaluation of corrosion and cytotoxicity of orthodontic mini-implants made of titanium alloys, University of Nebraska Medical Center Student Summer Research fellowship-2008, \$ 500</li> <li>3. Expression Profiles of Wnt Signaling Pathway Genes in Periodontal Ligament Cells (PDL) Subjected to Static Compressive Load, University of Nebraska Medical Center Student Summer Research fellowship-2008, \$ 500</li> <li>4. Prostaglandin E2 Activates Wnt/beta-catenin Signaling in Periodontal Ligament Cells, University of Nebraska Medical Center Student Summer Research fellowship, April 2009 , \$ 500</li> <li>5. Static Tensile Loading Activates Wnt/beta-catenin Signaling in Periodontal Ligament Cells, University of Nebraska Medical Center Student Summer Research fellowship, April 2009 , \$ 500</li> </ol> <p><b><u>RESEARCH:</u></b></p> <ol style="list-style-type: none"> <li>1. Role of Wnt/beta catenin signaling in orthodontic mechano-transduction</li> <li>2. Preliminary data gathered in the above project used in the following research grant applications <ol style="list-style-type: none"> <li>a. 2009 AAOF Biomedical research award ( not funded)</li> <li>b. 2009 AAOF Postdoctoral research award ( not funded)</li> </ol> </li> <li>3. I will be submitting a NIH R03 application in October 2009</li> </ol> <p><b><u>MENTORSHIP:</u></b> <b>MASTERS STUDENT, THESIS ADVISOR</b></p> <ol style="list-style-type: none"> <li>1. MS Medical Sciences Interdepartmental Area, Dr. Quinn Draper, DMD, Section of Orthodontics, A Comparison of treatment outcomes of the MARA and Herbst functional appliances, Degree expected 12/2009</li> </ol>

2. MS Medical Sciences Interdepartmental Area, Dr. Ann Granicz, DMD, Section of Orthodontics, Degree expected 12/2010
3. MS Medical Sciences Interdepartmental Area, Dr. Isabela Souza, BDS, Dept. of Oral Biology, Role of Wnt/Beta catenin signaling in orthodontic mechano-transduction, Degree expected 07/2010

**MASTERS STUDENT, THESIS COMMITTEE MEMBER**

1. MS Medical Sciences Interdepartmental Area, Dr. Steven Swenson, DDS, Section of Orthodontics, Accuracy of Dolphin 3D<sup>®</sup> Cephalometric analysis using CBCT vs. traditional radiography, Degree awarded 12/2008
2. MS Medical Sciences Interdepartmental Area, Dr. Jarom Sauble, DMD, Section of Orthodontics, The effect of head orientation on panoramic images taken with panoramic and CBCT machines, Degree awarded 12/2008
3. MS Medical Sciences Interdepartmental Area, Dr. Ammon Anderson, DDS, Section of Endodontics, Mechanism of BMP-induced dentinogenesis, Degree expected 12/2009

**DENTAL STUDENTS, RESEARCH ADVISOR**

1. Bronsen Schliep, In Vitro evaluation of corrosion and cytotoxicity of orthodontic mini-implants made of titanium alloys, 06/2008 -present
2. Joshua Barta, Expression Profiles of Wnt Signaling Pathway Genes in Periodontal Ligament Cells (PDL) Subjected to Static Compressive Load, 06/2008 – present
3. Melissa Guerrero, Static Tensile Loading Activates Wnt/beta-catenin Signaling in Periodontal Ligament Cells, 06/2009- present
4. Jessamy Stengle, Prostaglandin E2 Activates Wnt/beta-catenin Signaling in Periodontal Ligament Cells, 06/2009- 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

	<p><b>B. Clinic and Special Services:</b> Intramural Faculty practice</p> <p><b>C. Professional Societies, Reviews and Consultations:</b></p> <ol style="list-style-type: none"> <li>1. Education Committee, American Cleft Palate-Craniofacial Association</li> <li>2. Reviewer of abstracts and manuscripts, Midwest Student Biomedical Research Forum</li> <li>3. Ad hoc reviewer- Bone</li> <li>4. Judge, Research presentations, Midwest Student Biomedical Research Forum</li> <li>5. Secretary-treasurer, Nebraska Society of Orthodontics</li> <li>6. Reviewer of abstracts, 2010 American Dental Education Association annual sessions</li> </ol>
<p>Were the original, specific aims of the proposal realized?</p>	<p>Yes</p>
<p>Were the results published? If not, are there plans to publish? If not, why not?</p>	<p>Manuscript is in preparation</p>
<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>	<ol style="list-style-type: none"> <li>1. "Molecular Biology of Tooth Movement: An understanding of Current Concepts," Rising Stars in Orthodontics, 108<sup>th</sup> Annual sessions of American Association of Orthodontists, Denver, CO, USA.</li> <li>2. S. Jayappa, B. McIntyre, J. Thoendel, A. Moursi, S. Premaraj, Effects of Transforming growth factor-beta3 on osteoblast apoptosis, proliferation and differentiation, Abstract presented, 149<sup>th</sup> Annual meeting of ADA, October 16-19, 2008, San Antonio, TX.</li> </ol>