

# BOARD OF REGENTS BRIEFING PAPER

1. **Agenda Item Title:** Request for approval for starting salary in excess of salary schedule maximum.

**Meeting Date:** March 1 – 2, 2012

## 2. BACKGROUND & POLICY CONTEXT OF ISSUE:

Board of Regents approval is required for salaries above the salary maximum. UNLV School of Dental Medicine requests such approval for the appointment of James Mah, DDS, MSc, MRCD, DMSc, as Professor-In-Residence of Clinical Sciences, Orthodontics.

## 3. SPECIFIC ACTIONS BEING RECOMMENDED OR REQUESTED:

President Smatresk requests approval to hire Dr. James Mah, for the position of Professor-In-Residence of Clinical Sciences, Orthodontics at a salary of \$200,000 per annum, which exceeds the established maximum salary of \$173,800 (Procedures & Guidelines Manual Chapter 3, Section 1, page 7).

## 4. IMPETUS (WHY NOW?):

The School of Dental Medicine (SDM) Orthodontics Program is currently low on full-time Orthodontic faculty due to the departure of two full-time faculty 18 months ago (both left for private-practice). The program has been meeting educational requirements with part-time faculty while searches have been conducted. Due to the high demand of qualified Orthodontic faculty in the United States, it is difficult to find strong applicants. The national salary range for a dental specialist in Orthodontics is \$143,000 to \$270,000. The financial incentive for Orthodontists to go into private practice makes it difficult for educational institutions to compete for faculty.

The Orthodontics Program is scheduled for Accreditation in April 2013 and it is important that the full-time faculty to resident ratio meets accreditation standards.

The current search has identified Dr. James Mah as an exceptional candidate who has been a part-time faculty member at the SDM for several years. Dr. Mah is a Diplomate of the American Board of Orthodontists and is Board Certified by the American Dental Association National Dental Board. He is licensed in Nevada, California, Massachusetts and Alberta, British Columbia.

## 5. BULLET POINTS TO SUPPORT REQUEST/RECOMMENDATION:

- Dr. Mah has demonstrated proven clinical, faculty and research ability to assume this position
- Dr. Mah's professional Education includes:
  - Doctor of Dental Surgery, University of Alberta
  - Certificate in Orthodontics, University of Alberta
  - Master of Science, University of Alberta
  - Doctor of Medical Science, Harvard Medical School
  - Orthopaedic Research, Children's Hospital, Boston
- Dr. Mah's research and clinical experience will be utilized by both the Orthodontic Residents and the Pre-Doctoral students doing rotations in Orthodontics.
- The funding for this position is funded by self-supporting budgets and does not require state funding.

**6. POTENTIAL ARGUMENTS AGAINST THE REQUEST/RECOMMENDATION:**

Approving individual contracts above salary schedule may cause inequity between faculty in the School of Dental Medicine.

**7. ALTERNATIVE(S) TO WHAT IS BEING REQUESTED/RECOMMENDED:**

The salary is disallowed and the recruitment of high-end specialty faculty is deferred until salary schedule issues are redefined.  
Hire a more junior and less accomplished individual at a lower salary.

**8. COMPLIANCE WITH BOARD POLICY:**

Consistent With Current Board Policy: Title #\_2\_ Chapter #\_5\_ Section #\_5.4.1.& 5.5.2 \_\_\_\_\_  
 Amends Current Board Policy: Title #\_\_\_\_\_ Chapter #\_\_\_\_\_ Section # \_\_\_\_\_  
 Amends Current Procedures & Guidelines Manual: Chapter #\_\_\_\_\_ Section # \_\_\_\_\_  
 Other:  
 Fiscal Impact: Yes  No \_\_\_\_\_  
Explain: Dr. Mah's salary will be \$200,000 from self-supporting budgets.

# **CURRICULUM VITAE**

**JAMES MAH**

## **I. BIOGRAPHIC INFORMATION**

### **UNIVERSITY EDUCATION**

Postdoctoral Education: 1995-1996, Orthopaedic Research, Children's Hospital, Boston

Doctoral Education: 1992-1995, Doctor of Medical Science, Harvard Medical School

Professional Education:     1989-92: Master of Science, University of Alberta  
  1989-92: Certificate in Orthodontics, University of Alberta  
  1984-88: Doctor of Dental Surgery, University of Alberta

Undergraduate Education: 1982-86: Bachelor of Science

### **ACADEMIC APPOINTMENTS**

Dec. 2011 to present	Visiting Professor of Clinical Sciences, University of Nevada, Las Vegas
Jan. 2007 to present	Director of Orthodontic Research, University of Nevada, Las Vegas
July 2005 to 2011	Director of Redmond Imaging Center, University of Southern California
July 2005 to 2011	Associate Clinical Professor, Department of Orthodontics, University of Nevada, Las Vegas
July 2004 to 2011	Associate Clinical Professor in the Division of Craniofacial Sciences and Therapeutics, University of Southern California
Dec. 1998 to 2011	Director of the Craniofacial Virtual Reality Laboratory, University of Southern California
Aug. 1998 to July 2004	Assistant Professor in the Division of Craniofacial Sciences and Therapeutics, University of Southern California

### **OTHER PREVIOUS APPOINTMENTS**

- 1996- 98      Research Associate, Department of Orthopaedics, Children's Hospital, Boston
- 1992- 98      Instructor in Orthodontics, Harvard School of Dental Medicine, Boston
- 1992-95      Lecturer in Oral Biology, Harvard School of Dental Medicine, Boston
- 1991-92      Instructor in Orthodontics, Faculty of Dentistry, University of Alberta, Edmonton
- 1990-95      Instructor, Satellite Dental Clinic Program, University of Alberta
- 1989-92      Instructor in Pedodontics, Faculty of Dentistry, University of Alberta, Edmonton
- 1989-91      Clinical Supervisor, Dental Assisting Program, N.A.I.T., Edmonton, Alberta

**HONORS, AWARDS, FELLOWSHIPS**

- 2005    University of Michigan, Moyers Symposium “Edison” Honor
- 2002    University of Michigan, Moyers Symposium “Edison” Honor
- 2001    American Association of Orthodontists Foundation Corporate Center Award
- 2000    WJB Houston Research Grant, European Orthodontic Society
- 2000    American Association of Orthodontists Foundation Faculty Development Award
- 1999    American Association of Orthodontists Foundation Biomedical Research Award
- 1998    American Association of Orthodontists Foundation Faculty Development Award
- 1998    Cleft Palate Foundation Research Award
- 1998    WJB Houston Research Grant, European Orthodontic Society
- 1997    American Association of Orthodontists Foundation Biomedical Research Award
- 1995    Gordon Research Conference Award
- 1994    9th Meeting on Vitamin B6 and Carbonyl Catalysis, 3rd Symposium on PQQ and  
          Quinoproteins Young Investigator Fellowship, Capri, Italy
- 1992    Medical Research Council of Canada Dental Fellowship
- 1992    Alberta Heritage Foundation for Medical Research Dental Fellowship

1991 Canadian Foundation for the Advancement of Orthodontic Education

1989 McIntyre Award

1982 Alexander Rutherford Heritage Scholarship

## **PROFESSIONAL ORGANIZATIONS**

2006 – present	Institute for Corrective Jaw Surgery, Santa Barbara, CA
2006 – present	American Dental Association
1998-present	Pacific Coast Society of Orthodontists
1997-present	American Cleft Palate-Craniofacial Association
1996-present	American Society of Bone and Mineral Research
1996-present	European Orthodontic Society
1996-present	Harvard Odontological Society
1996-present	World Federation of Orthodontists
1995-present	Harvard Society for the Advancement of Orthodontics
1992-present	International Association for Dental Research
1992- present	Member of the Royal College of Dentists
1992-present	College of Dental Surgeons of British Columbia
1992-present	Certified Specialist in Orthodontics in British Columbia
1989-1992	Alberta Society of Orthodontists
1989-1992	Canadian Association of Orthodontists
1989-1992	American Association of Orthodontists
1989-1992	Pacific Coast Society of Orthodontists
1992-1998	New England Society of Orthodontists
1988-1992	Alberta Dental Association
1988-1992	Canadian Dental Association

## **BOARD CERTIFICATION AND/OR LICENSURE**

Specialty Certification: Diplomate of the American Board of Orthodontists, 2005, 2011

State Licensure: Nevada, California, Massachusetts, Alberta, British Columbia

National Licensure: American Dental Association National Dental Board Certificate

National Dental Examination Boards (Canada)

## II. ADMINISTRATIVE AND SERVICE ACTIVITIES

### ADMINISTRATIVE APPOINTMENTS

1998 – 2011            Co-Director of Predoctoral Orthodontics at USC  
1996 – 1998            Director of Predoctoral Orthodontics at HSDM

### COMMITTEE ACTIVITIES

#### USC School of Dentistry:

2001                    USC Task Force on Faculty Compensation  
2001                    USC Information Technology Committee  
1999                    USC Teaching and Learning Sub-Committee  
1999                    USC Technology Sub-Committee  
1998 to present      USC Ethics Committee  
1998 to 2000        USC Safety Committee

#### Regional, National, International

1998 to 2002        American Dental Association's Orthodontics and Pediatric  
Dentistry Test Construction Committee  
2001                    American Dental Association's Part II Practice Analysis  
Committee  
2003 to 2005        Director, Craniofacial Biology Group of the IADR

### EDITORIAL POSITIONS

1999- present    Editorial Advisory Board of "Orthodontic Products" Magazine  
1999-present    Associate Editor Harvard Society for the Advancement of Orthodontics Bulletin



## **BOARD POSITIONS**

- 2003                      Scientific Advisory Committee, 2<sup>nd</sup> International Conference on Advanced Digital Technology in Head and Neck Reconstruction: Future Directions
- 2000-2005                Board of Directors of Conferences on Orthodontic Advances in Science and Technology (COAST)
- 1997-present            Board of Directors of Biological Mechanisms of Tooth Movement Conferences

## **CONTINUING EDUCATION PRESENTATIONS**

The Risk:Benefit of 3-D Imaging in Orthodontics, The Soho Symposium, London, UK, Dec 2, 2011

Cone-Beam CT Certification Program for Dentistry, University of Alberta, Edmonton, Alberta, Canada, Nov 25-27, 2011

28<sup>th</sup> International Congress of Oral Implantologists, Keynote Lecture, COEX, Seoul, Korea, Oct 6-9, 2011

Cone Beam CT (CBCT) Certificate Program for Dentistry, and for Dental Hygienists and CDAs, University of British Columbia, Sept 17 - 18, 2011

Cone Beam (CT) Radiography: A Certification Program for Dentists with Staff Training. University of Nevada, Las Vegas, NV, Aug 5-6, 2011

Challenges in the Big Black Box of Orthodontic Imaging and Changes Using 3-D Imaging American Association of Orthodontists 111<sup>th</sup> Annual Session, Chicago, IL, May 17, 2011

Orthodontic Controversies and Challenges with New Imaging, American Association of Orthodontists 111<sup>th</sup> Annual Session, Chicago, IL, May 15, 2011

Clinical Efficiencies in Orthodontics, University of Nevada, Las Vegas, NV, Apr 4, 2011

Cone Beam (CT) Radiography: A Certification Program for Dentists. University of Nevada, Las Vegas, NV, Mar 17-18, 2011

Cone-Beam CT Certification Program for Dentists, University of Alberta, Edmonton, Alberta, Canada, Nov 19-20, 2010

Need for CBCT in Orthodontics. Greater Philadelphia Society of Orthodontists, Nov 10, 2010

3-Dimensional Radiographic Imaging using CBCT, American Academy of Pediatric Dentistry, Chicago, IL, May 28, 2010

Cone-Beam CT in Dentistry. USC Part-time Faculty Association, University of Southern California, May 25, 2010

Technotherapy in Orthodontics, American Association of Orthodontics Annual Scientific Program, Washington, DC, May 1, 2010

Workshop - 3D Radiographic Analysis in Orthodontics. 3-D Facial Imaging Research Group, Eindhoven, The Netherlands, Mar 26, 2010

Advanced Software Features for Diagnosis and Treatment Analysis in 3D. 3-D Facial Imaging Research Group, Eindhoven, The Netherlands, Mar 26, 2010

The 3D Adventure. Dolphin Imaging Orthodontic User's Meeting. Las Vegas, NV, Mar 5, 2010

Current Technology and Future Directions of 3-D. University of Southern California, Feb 23, 2010

Evolution of Imaging in Orthodontics, Universität München, Hotel Stanglwirt, Austria, Jan 17, 2010

Clinical Applications of CBCT in Orthodontics, Universität München, Hotel Stanglwirt, Austria, Jan 18, 2010

Limitations of Tooth Movement in Practical Periodontics for your Orthodontic Treatment Plans, Jan 8, 2010, University of Nevada, Las Vegas

Orthodontic Diagnosis and Treatment Planning with CBCT. Mid-Atlantic Orthodontic Society. 2009 MASO Annual Session, Atlantic City, NJ Nov.4-6, 2009

3-D Imaging with Cone-Beam CT for the General Dentist. USC International Restorative Symposium: Interdisciplinary Approaches to Restorative Care, Los Angeles, CA Oct. 9-10, 2009

3-D Imaging in Orthodontics. University of Praha, Praha, Czech Republic. Oct. 3, 2009

3-D Imaging in Orthodontics and Orthognathics. Diagnosis, Facial Planning and Treatment of Combined Orthodontic and Orthognathic Surgery Cases, Praha, Czech Republic, Oct. 1-2, 2009

3-D Imaging in Orthodontics and Orthognathic Treatment. 1<sup>st</sup> Baltic Sea Conference in Orthognathic Surgery and Orthodontics, Vilnius, Lithuania, Sept 25-27, 2009

Cone-Beam CT in Dentistry, Burkhart Dental Digital Fall Focus, Seattle, WA, Sept 24, 2009

Lies, Damned Lies and Cone-Beam. ISI 3<sup>rd</sup> International Conference on 3-D Imaging: An Interdisciplinary Approach to 3-D Treatment Planning, Chicago, IL, Jun 19-20, 2009

3-Dimensional Imaging with Cone-Beam CT, University of Las Vegas, Nevada, Aug 28, 2009

Evolution of Imaging Technologies in Orthodontics, SEDO Spanish Orthodontic Meeting, Valencia, Spain, Jun 3-6, 2009

3-D Imaging in Orthodontics, Nevada Orthodontic Society, University of Las Vegas, NV, Mar 20, 2009

3-Dimensional Imaging is the Future of Orthodontics, Kodak Dental Systems Orthodontic User's Meeting, Atlanta, GA Mar 14, 2009

Cone-Beam CT in Orthodontics, 3M Unitek Symposium in Dubai: Future of Intelligent Orthodontics, Dubai, UAE, Mar 6-7, 2009

3-D Treatment and Applications. The Arnett Multidisciplinary Foundation Meeting, San Diego, CA, Jan 22-24, 2009

Cone-Beam CT in Orthodontics. InvisAlign Summit for Orthodontic Practices, Las Vegas, NV Nov 20. 2008

3-D Visualization for Diagnosis and Orthodontic Treatment. Northern California Angle Society, Walnut Creek, CA, Nov. 11, 2008

Cone-beam CT in Orthodontics. NewConn Orthodontic Society, New York University, New York, NY, Oct. 25, 2008

Technology Day 2008: Roundtable Discussion. American Dental Association, 149<sup>th</sup> Annual Session 2008, San Antonio, TX, October 15, 2008

Diagnostic Protocol with CBCT. American Dental Association, 149<sup>th</sup> Annual Session 2008, San Antonio, TX, October 16-19, 2008

Clinical Strategies and Applications of CBCT. American Dental Association, 149<sup>th</sup> Annual Session 2008, San Antonio, TX, October 16-19, 2008

Cone-Beam CT: The Information Super-highway for Orthodontists. Pacific Coast Society of Orthodontists Central Region. Walnut Creek, CA, Sept. 26, 2008

HDTV for Orthodontics - Conebeam CT, Canadian Association of Orthodontists 60<sup>th</sup> Scientific Session, Winnipeg, Manitoba, Canada, Sept. 11-13, 2008

3-D Symposium 2008, Newport Beach, CA, Aug 1-2, 2008

Technotherapy in Orthodontics. American Association of Orthodontists 108<sup>th</sup> Annual Session. Denver, CO, May 17, 2008

Evolution of Imaging Technologies for Orthodontics. American Association of Orthodontists 108<sup>th</sup> Annual Session. Denver, CO, May 19, 2008

Cone Beam CT in Dentistry, University of Hong Kong, Hong Kong, China, Apr 3, 2008

Old Lessons with New Imaging. Asia Pacific Orthodontic Congress. Bangkok, Thailand, Mar 28-30, 2008

3-D Orthodontic Applications – Practical Examples and Current Studies. 3D Summit on Digital Dentistry, Phoenix, AZ, Mar 13-15, 2008

Cone Beam CT Applications in Orthodontics, British Columbia Society of Orthodontists. Vancouver, British Columbia, Feb 18, 2008

Computer-Generated Orthodontic Appliances. American Association of Orthodontists MidWinter Conference, Las Vegas, Feb 8-10, 2008

Introduction to Cone Beam CT. Biennial Symposium on Surgical Orthodontics, Haarlem, The Netherlands, Nov 29, 2007

Orthodontic planning and treatment. Biennial Symposium on Surgical Orthodontics, Haarlem, The Netherlands, Nov 29, 2007

Fundamentals of Cone-beam CT and Clinical Applications. University of Nevada, Las Vegas First Alumni Meeting, Las Vegas, NV October 26, 2007

Cone-beam Computed Tomography (CBCT) Imaging for Temporary Anchorage Devices (TADs) and Clinical Applications. The Art and Science of Temporary Anchorage Devices Conference, Scottsdale, AZ, Oct 19 - 20, 2007

Cone-beam CT: The Information Superhighway for Orthodontists, Pacific Coast Society of Orthodontists, Oct. 16, 2007

Into the Third Dimension: The Present Future of Dental Care. American Dental Association, 148<sup>th</sup> Annual Session, 2007, San Francisco, CA, September 27, 2007 AM Session

Into the Third Dimension: The Present Future of Dental Care. American Dental Association, 148<sup>th</sup> Annual Session, 2007, San Francisco, CA, September 27, 2007 PM Session

Image Guidance, Models and Appliances for Dental Implantology, Orthodontics and Oral Surgery. American Dental Association, 148<sup>th</sup> Annual Session, San Francisco, CA, September 29, 2007

Virtual Orthodontic Care. American Association of Orthodontists 107<sup>th</sup> Annual Session, Seattle, May 18 - 22, 2007

Orthodontic Arch Wires, Technology Forum, at the American Association of Orthodontists 107<sup>th</sup> Annual Session, Seattle, May 18 - 22, 2007

Cone Beam CT Technology, Different Systems, Radiation Exposure Australian Society of Orthodontists Foundation, Melbourne, Australia, April 20-21, 2007

Applications of CBCT in Orthodontics – Analysis & Case Reports, Australian Society of Orthodontists Foundation, Melbourne, Australia, April 20-21, 2007

Digital Modeling of Teeth & Skeleton: Digital Models, Storage, Model Construction, Applications for Manufacturing, Australian Society of Orthodontists Foundation, Melbourne, Australia, April 20-21, 2007

3-D Imaging. The Edward H. Angle Society of Orthodontists. The Valley Hunt Club, Pasadena, CA, October 27, 2006.

Introduction to Cone-Beam CT for Dental Imaging, American Dental Association, October 16, 2006. Las Vegas, NV

Clinical Applications of 3-D Imaging Using Cone-Beam CT. American Dental Association, October 16, 2006. Las Vegas, NV

3-D Modeling in Orthodontics, British Orthodontic Conference. October 8-11, 2006, Edinburgh, UK

Cone-Beam CT: 3-Dimensional Imaging for Dentistry, West Virginia University, September 8, 2006

3-Dimensional Imaging and Orthodontic Analysis, American Association of Orthodontists 106<sup>th</sup> Annual Session, Las Vegas, May 6 - 9, 2006

Balance between technology /innovation and tradition in an orthodontic office, American Association of Orthodontists 106<sup>th</sup> Annual Session, Las Vegas, May 6 - 9, 2006

3-Dimensional Imaging for the Common Orthodontic Practice. Dolphin Imaging Meeting. Phoenix AZ, Mar 2-4, 2006.

New Frontiers in Dentistry – 3-D Imaging and Clinical Applications, University of Oklahoma, Feb 11, 2006.

Green Bay Orthodontics Study Club, Feb 8, 2006, Current Status of Cone-Beam CT.

The 3D's of Cone Beam CT: Developments, Dental applications, and Dilemmas, American Association of Dental Maxillofacial Radiology Technicians, Phoenix, Oct 27-29, 2005

Volumetric Imaging – A New Look for Orthodontics. American Association of Orthodontists 105<sup>th</sup> Annual Session, San Francisco, May 20 - 24, 2005

3-Dimensional Evolution in Orthodontics - What is the Role of Staff Members? American Association of Orthodontists 105<sup>th</sup> Annual Session, San Francisco, May 20 - 24, 2005

The Virtual Patient: 3 Dimensional Imagery in the 21<sup>st</sup> Century. Illinois Society of Orthodontists. April 11, 2005.

3-Dimensional Radiographic Analysis for Orthodontics. Society of Italian Orthodontists, Rome, Italy, Mar 3-6, 2005

The cone beam decision: Features, technology and software of the current systems" Moyers Symposium, University of Michigan, Ann Arbor Feb 26-27, 2005

3-Dimensional Radiographic Imaging and Clinical Applications. Nevada Dental Association Mid-Winter Meeting, Feb 25, 2004

3-Dimensional Imaging in Dentistry – Technology and Clinical Applications. Minnesota Association of Orthodontists, Minneapolis, MN, Jan 7, 2005.

Master's Course in Craniofacial Imaging for Dentistry. Queen Alexandra Hospital, Cosham, United Kingdom. November 30, 2004

Office of the Future. Dental Association of Thailand. June 17-19, 2004, Bangkok, Thailand

Advanced Applications of 3-Dimensional Technology in Orthodontics. American Association of Orthodontists 104<sup>th</sup> Annual Session, Orlando. Scheduled for April 30 to May 4, 2004

Cone-beam volumetric tomography: What is it and what are its clinical applications? Indiana University, Indianapolis, Indiana, April 16, 2004.

Three-dimensional Craniofacial Imaging. American Association of Orthodontists and the American Association of Oral and Maxillofacial Surgeons meeting of Advances in Orthodontics and Dentofacial Surgery. Feb 6-8, 2004.

3-D Visualization and Application of Volumetric Skeletal Imaging, University of Alberta Alumni Meeting, Edmonton, Alberta. Nov 22, 2003.

The Virtual Craniofacial Patient: A Platform for the Future of Digital Orthodontics. The 36<sup>th</sup> Annual Scientific Congress of the Korean Association of Orthodontists. Keynote Lecture. Oct 31 – Nov 1, 2003, Busan, Korea

Volumetric Imaging and Visualization for Dentistry. University of Medicine and Dentistry of New Jersey, Oct. 2, 2003.

Evolution in 3-Dimensional Technologies for Orthodontics. New Jersey Association of Orthodontists. Oct. 1, 2003

3-D Visualization and Treatment Simulation in Orthodontics. American Association of Orthodontists 103<sup>rd</sup> Annual Session, Hawaiian Islands, May 2 - 9, 2003

Your Role in the Orthodontic Office of the Future. American Association of Orthodontists 103<sup>rd</sup> Annual Session, Hawaiian Islands, May 2 - 9, 2003

Fred West Memorial Lecture, University of the Pacific, San Francisco, CA, March 8, 2003

3-Dimensional Craniofacial Modeling Harvard School of Dental Medicine, Boston, MA, June 4, 2003

The Virtual Craniofacial Patient. University of Southern California, School of Engineering, IEEE Conference on Virtual Reality- IMSC Demonstrations - March 24, 2003.

3-Dimensional Skeletal Visualization for Orthodontics. University of Paris, Feb 17, 2003.

Moore's Law in Orthodontics. 4<sup>th</sup> Asian Pacific Orthodontic Conference, Singapore. Nov. 21 – 24, 2002

Virtual Reality Applications in Orthodontics. New York University, New York, NY, November 15, 2002.

Data Integration from Imaging Sources to Create a Virtual Patient. Craniofacial Imaging in the 21<sup>st</sup> Century – New Approaches, Challenges and Applications. Pacific Grove, CA. Sept. 6-9, 2002

New Concepts in Diagnostics. Association of Thai Orthodontists, Bangkok, Thailand. Bangkok, Thailand, July 14, 2002

Computed tomography in treatment simulation and management of impacted teeth. Harvard School of Dental Medicine, Boston, MA, June 5, 2002

Craniofacial CT for three-dimensional structural analysis, functional simulation and potential reconstruction of human face. Weintraub Center for Craniofacial Reconstruction, University of California, Los Angeles, May 21, 2002

Susceptibility to Apical Root Resorption in Orthodontic Treatment. International Association for Dental Research, 80<sup>th</sup> General Session and Exhibition, San Diego, CA, March 7, 2002

The Virtual Craniofacial Patient – A Platform for the Future of Craniofacial Healthcare. Moyers Symposium, University of Michigan, Ann Arbor, Feb 23,24, 2002

3-Dimensional Approaches to Orthodontics. Orthodontics “r” Us Study Club, Los Angeles, CA November 1, 2001

3-Dimensional Imaging and Appliance Construction in Orthodontics. Hong Kong Society of Orthodontists, Hong Kong, September 4, 2001

Current Science and Clinical Management of Apical Root Resorption. Hong Kong Society of Orthodontists, Hong Kong, September 4, 2001

Orthodontics in the Digital Age. Association of Thai Orthodontists, Bangkok, Thailand. July 20, 2001

Technology in Graduate Orthodontic Education. Khon Kaen University, Khon Kaen, Thailand, July 17, 2001

Efficiency of Elastomeric, Steel and Self-ligating Mechanisms. Khon Kaen University, Khon Kaen, Thailand, July 17, 2001

The Virtual Craniofacial Patient Project . Massachusetts General Hospital, Dept of Oral and Maxillofacial Surgery Grand Rounds. Boston, June 6, 2001.

Efficiency of Elastomeric, Steel and Self-ligating Mechanisms. Harvard Society for the Advancement of Orthodontics Annual Meeting. Harvard School of Dental Medicine, Boston, June 6, 2001.

The Virtual Craniofacial Patient Project . Harvard Society for the Advancement of Orthodontics Annual Meeting. Harvard School of Dental Medicine, Boston, June 4, 2001.

Orthodontics in 3D. American Association of Orthodontists 101<sup>th</sup> Annual Session, Toronto Canada, May 5 - 8, 2001

The Heritage Lecture with Dr. Jack Dale, American Association of Orthodontists 101<sup>th</sup> Annual Session, Toronto Canada, May 5-8, 2001

Comparative Efficiency of Self-Ligating, Steel and Elastomeric Ligating Methods in the Typodont Model. Technology Forum. American Association of Orthodontists 101<sup>th</sup> Annual Session, Toronto Canada, May 5-8, 2001

The Virtual Craniofacial Patient Project. Oregon Health Sciences Center April 10, 2001

Orthodontics Specialty Seminar. University of Southern California. March 12, 2001

New Paradigms in Orthodontics. The Alberta Society of Orthodontists. March 16,17, 2001



The 3D Virtual Patient: In Your Office Today. The E-Office: The Future of Orthodontics.  
Newport Beach, March 2,3, 2001

A Glimpse into the Future of Dentistry. University of Southern California School of Dentistry  
ADVANCE, January 26,27, 2001

Advances in Basic Sciences of Orthodontics. The Association of Philippine Orthodontists 2<sup>nd</sup>  
National Congress, Manila, August 16, 2000

3-Dimensional Technologies in Orthodontics. The Association of Philippine Orthodontists 2<sup>nd</sup>  
National Congress, Manila, August 16, 2000

3-Dimensional Imaging in Dentistry. Weintraub Center mini-conference, University of  
California, Los Angeles, August 4, 2000.

The E-Office in Orthodontics. Harvard Society for the Advancement of Orthodontics Annual  
Meeting. Forsythe Dental Center, Boston, June 6, 2000.

Role of Technology in Orthodontics. Harvard Society for the Advancement of Orthodontics  
Annual Meeting. Forsythe Dental Center, Boston., June 9, 2000

The E-Office in Orthodontics. Harvard Society for the Advancement of Orthodontics Meeting.  
Athens, Greece May 31-June 1, 2000

The E-Office in Orthodontics. Technology Forum. American Association of Orthodontists 100<sup>th</sup>  
Annual Session, Chicago, IL, April 28 – May 3, 2000

Development of a Biochemical Marker for Root Resorption. American Association of  
Orthodontists 100<sup>th</sup> Annual Session, Chicago, IL, April 28 – May 3, 2000

Emerging Technologies in Orthodontics, Whistler, Canada, April 14, 2000

Introduction to Orthodontics, USC, March 21, 2000

Diagnosis of Malocclusion, UCLA, December 10, 1999

Development of a Biochemical Marker for Root Resorption. Biological Mechanisms of Tooth  
Movement and Craniofacial Adaptation, Seoul, Korea, October 7 – 10, 1999

Etiology of Malocclusion at the Genetics of the Human Dentition Workshop, NIDCR,  
Washington, D.C, September 13, 1999

Emerging Technologies in Orthodontics – Biotechnology. Harvard Society for the Advancement  
of Orthodontics Annual Meeting. Forsythe Dental Center, Boston., June 9, 1999

Emerging Technologies in Orthodontics – Computer Technology. Harvard Society for the Advancement of Orthodontics Annual Meeting. Forsythe Dental Center, Boston, June 8, 1999

Computerized Archwire Bending – Intraoral 3-D Scanner and Bending Robot. American Association of Orthodontists 99<sup>th</sup> Annual Session, San Diego, CA, May 14-18, 1999

Can Superelastic Wires be Individualized to Make Lingual Treatment More Practical? American Association of Orthodontists 99<sup>th</sup> Annual Session, San Diego, CA, May 14-18, 1999

Computerized Wire Bending Utilizing a 3-D Scanner and Wire Bending Robot. The 3rd Asian-Pacific Orthodontic Conference in Taipei, Taiwan. Nov 21-24, 1998

Pyrrroloquinoline Quinone (PQQ) Participates in Mitochondrial Complex I with NADH and Ubiquinone in State 3 Oxphos-Coupled Electron Transport. Gordon Research Conference, Ventura, CA. Feb. 1995

### III. TEACHING ACTIVITIES

#### COURSES DEVELOPED AND/OR PRESENTED

##### University Courses:

- 2002 – 2011           Orthodontic PBL Cases, Laboratory, Seminars  
Fall semester, DDS program, ASPID program, ~175-180 students, four-unit course
- 1998 – 2011   Co-Director of ORTH 501ab “Orthodontic Seminars for General Dentistry”  
Summer semester, DDS program, ISP program, ~175-180 students, one-unit course
- 2001 – 2006           Course Director of ORTH 709 “Information Technology II”  
Spring semester, Graduate program, 6 students, two-unit course
- 1998 – June 2002   Co-Director of INDD 501 “Applied Growth and Development”  
Fall semester, DDS program, ~145 students, one-unit course
- 1998 – June 2002   Co-Director of INDD 601 “Orthodontic-Pedodontic Selective”  
Spring semester, DDS program, 20 students, one-unit course
- 1998 – June 2002   Co-Director of ORTH 521 “Preclinical Orthodontics”  
Fall semester, DDS program, ISP program, ~175 students, three-unit course
- 1998 – June 2002   Course Director of CBY 575b “Biological Basis of Orofacial Disease”  
Summer semester, Graduate program, 6 students, one-unit course
- 1999 – present Lecturer in CBY 672 “Growth and Development”  
Fall semester, Graduate program, 6-10 students, 8 hours lecture
- 1999 – present Lecturer in ORTH 703 “Biomechanics”  
Fall semester, Graduate program, 6 students, 8 hours lecture
- 1999 – present Lecturer in CBY 583 “Cleft Lip & Palate”  
Summer semester, 6-10 students, 8 hours lecture
- 2000 – present Lecturer in DIAG 615 “Imaging Selective”  
Summer semester, 6-8 students, DDS program, 1 hour lecture, 2 hours lab
- 2002   Lecturer in CBY 587 “Cell and Molecular Biology of Craniofacial Tissues”  
Spring semester, 3 students, Graduate program, 1.5 hours lecture

1995 – 1998 Treatment of the Child and Adolescent Block (Pediatric Dentistry and Orthodontics) in PBL Curriculum at HSDM

1994-98 Course Director of "Craniofacial Embryology and Development" at HSDM

1996-98 Lecturer in "Molecular and Cellular Biology" at HSDM

1995 Lecturer in "Reconstructive Biotechnology" at HSDM

1994 Lecturer in Oral Biology at HSDM

1992-95 Lecturer at Harvard School of Dental Medicine in Orthodontics, HSDM

<b>Students Mentored:</b>	<b>Dates:</b>	<b>Post-mentoring:</b>
Emanuel Stefan Alexandroni	2009-present	Ongoing Master's Research
Krystal Benjamein	2003	Graduate School, DMD 2008
Emanuel Stefan Alexandroni,	2002	DMD 2008
Leah Walker, DDS, 2002	2002	Graduate Orthodontics 2004 - 2006
Ben Sun, DDS, 2004	2002 – 2003	Children's Hospital, Boston Pediatric Dentistry 2004-2007, Private Practice
M.Chad Hawkins, DDS, 2002	2001-2002	U.S. Army, Orthodontics 2007
David Li, DDS, 2002	2000-2002	USC Graduate Orthodontics 2002 - 2005
Mathew Freeman, DDS, 2002	2000-2002	USC Graduate Orthodontics 2002 - 2005
Richard Curtis, DDS, 2001	2000-2001	USC Graduate Orthodontics 2001 - 2004
Jerry Johnson, DDS, 2001	2000-2001	USC Graduate Orthodontics 2001 - 2004
Paul Sokolowski, DDS, 2000	1999-2000	USC Graduate Orthodontics 2000 – 2003
Marci Levine, DMD, 2000	1997-1999	Massachusetts General Hospital, Oral and Maxillofacial Surgery, 1999 – 2005
Iwei Huang, DMD, 1998	1996-1998	Univ.of Illinois, Orthodontics, MSc 2001

Shaul Yehezkel, DMD, 1997	1996- 1997	HSDM Pediatric Dentistry, 1999; UCLA Orthodontics, 2001
Joseph Hung, DMD, 1997	1996-1997	HSDM, Orthodontics, MSc, 2000
Kressi Tiziani, DMD, 1996	1994-1996	HSPH, MPH, 1997; Univ. of Minnesota, Orthodontics, MSc, 1999
Jasmine Gorton, DMD, 1996	1994-1996	UCSF, Orthodontics, MSc, 2001

**MSc Students Mentored:**

**Dates:**

**Post-mentoring:**

Soraya Chinaea	2010-2011	Private practice in Orthodontics
Jordan Millar, DDS	2004-2007	Private practice in Orthodontics
Kalpitkumar Gajera, MSc	2002 -2004	Computer Science
Ahmed Memon MSc	2002 – 2004	Computer Science
Katayoun Adab, DDS, PhD	2000 – 2003	Private practice in Orthodontics
Richard Curtis, DDS	2001 – 2004	Private practice in Orthodontics
Jerry Johnson, DDS	2001 – 2004	Private practice in Orthodontics
Dan Nguyen, DDS	2001 – 2002	Private practice in Orthodontics
Patti Panucci, DDS	2000 – 2003	Private practice in Orthodontics
Christine Lee, DMD	2000 – 2003	Private practice in Orthodontics
Thomas Lee, DDS	2000 – 2002	Private practice in Orthodontics
Shawn Yu, DMD	1999 – 2001	Private practice in Orthodontics
James Bryan, DDS	1998- 1999	Private practice in Orthodontics
Joseph Hung, DMD	1997-2000	Private practice in Orthodontics
Susan So, DMD	1997-2000	Private practice in Orthodontics
Neelanjani Prasad, DMD	1996-1999	Private practice in Orthodontics
John Huang, DMD, DMSc	1995-1998	UCSF, Assistant Professor

**Mentored Visiting Professors:**

Jeong Han Ahn, Seoul National University, 2010-2011

Jeong Ho Choi, Seoul National University, 2009-2010

Yi Liu, Peking University, 2008-2009

Soo-Byung Park, Pusan University, Korea, 2001 - 2002

Fumio Nigishi , Tokyo Dental College, 2001 - 2002

## IV. SCHOLARLY ACTIVITIES

### PUBLICATIONS

**Mah JK**, Liu Y, Enciso R, Huang JC, Choo H. Advanced Applications of Cone-beam CT in Orthodontics, Seminars in Orthodontics, Volume 17, Issue 1, March 2011, Pages 55-71

**Mah JK**, Huang JC, Choo H. Practical applications of cone-beam computed tomography in orthodontics. J Am Dent Assoc. 2010 Oct;141 Suppl 3:7S-13S.

**Mah JK**, Alexandroni S. Cone-beam CT in the Management of Impacted Canines, Seminars in Orthodontics, Volume 16, Issue 3, September 2010, Pages 199-204

Edwards CW, **Mah J**. Temporary anchorage device behavior to shear tensile forces in the porcine mandible. World Journal of Orthodontics, 2010;11:362–368

Saxe AK, Louie LJ, **Mah J**. Efficiency and effectiveness of suresmile. World J Orthod. 2010 Spring;11(1):16-22.

Liu Y, **Mah J**, Xu TM. Validity of tooth volume determinations using cone beam computed tomography. Beijing Da Xue Xue Bao. 2010 Feb 18;42(1):98-102.

Kim, YI, Park SB, Son WS, Kim SS, Kim YD, **Mah J**. Treatment of an ankylosed maxillary incisor by intraoral alveolar bone distraction osteogenesis. Am J Orthod Dentofacial Orthop 2010 138(2):215-20

Blakey R, **Mah J**. Effects of surface conditioning on the shear bond strength of orthodontic brackets bonded to temporary polycarbonate crowns. Am J Orthod Dentofacial Orthop 2010 July;138(1):72-8

Zhao Y, Nguyen M, Gohl E, **Mah JK**, Sameshima G, Enciso R. Oropharyngeal airway changes after rapid palatal expansion evaluated with cone-beam computer tomography. Am J Orthod Dentofacial Orthop 2010;137:S71-8

Choi JH, **Mah JK**. A Novel Method for Comparison of CBCT Volumes, J Clin Orthod 2010;44(5):303-12

The validity of in vivo tooth volume determinations from cone-beam computed tomography. Liu Y, Olszewski R, Alexandroni ES, Enciso R, Xu T, **Mah JK**. Angle Orthod. 2010 Jan;80(1):160-6.

Precision of bracket placement on dental models. Lai ML, **Mah J**. J Clin Orthod. 2009 Aug;43(8):524-8.

Retention of thermoformed aligners with attachments of various shapes and positions. Jones ML, **Mah J**, O'Toole BJ. J Clin Orthod. 2009 Feb;43(2):113-7

- Cruz RM, Krieger H, Ferreira RGM, **Mah J**, Hartsfield J, Oliveira S. Major Gene and Multifactorial Inheritance of Mandibular Prognathism. *Am J Med Genet.* 2008 Jan 1;146A(1):71-7
- Cha JY, **Mah J**, Sinclair P. Incidental Findings in the Maxillofacial Area with 3-dimensional cone-beam imaging. *Am J Orthod Dentofacial Orthop.* 2007 Jul;132(1):7-14
- Farman AG, Levato CM, Scarfe WC. **Mah J**. Education in the round: Multidimensional imaging for dentistry. *Inside Dentistry.* 2007
- Mah J**, Redmond R. The evolution of digital study models. *Journal of Clinical Orthodontics*, XLI (9) 2007; 557
- Stites T, Storms D, Bauerly K, **Mah J**, Harris C, Fascetti A, Rogers Q, Tchapanian E, Satre M, Rucker RB. Pyrroloquinoline quinone modulates mitochondrial quantity and function in mice. *J Nutr.* 2006 Feb;136(2):390-6.
- Walker L, Enciso R, **Mah J**. Three-dimensional Localization of Maxillary Canines with Cone-beam Computed Tomography. *Am J Orthod Dentofacial Orthop.* 2005 Oct;128(4):418-23
- Ogawa T, Enciso R, Memon A, **Mah JK**, Clark GT. Evaluation of 3D airway imaging of obstructive sleep apnea with cone-beam computed tomography. *Stud Health Technol Inform.* 2005;111:365-8.
- Fauquet C, Galletti C, Mujagic M, Palot C, Weichmann D, **Mah J**. Digital conception and manufacturing of the Lingualcare™ bracket. *Journal of Clinical Orthodontics*, 2005
- Huang JH, Bumann A, **Mah J**. 3-Dimensional Radiographic Analysis for Orthodontics. *Journal of Clinical Orthodontics*, 2005, 39(7), 421-428
- Mah J**, Bergstrand F. Temporary Anchorage Devices: A Status Report. *Journal of Clinical Orthodontics.* 2005, 39(3), 132-136
- Enciso R, Danforth RA, Alexandroni ES, Memon A, **Mah J**. Third Molar Impaction Diagnosis with Cone-beam Computerized Tomography. *Proceedings of the 19th International Congress of CARS Computer Assisted Radiology and Surgery, Berlin, Germany, 22-25 June 2005*
- Three-dimensional analysis of impacted canines using volumetric imaging. Walker L, Enciso R, Hatcher DC, **Mah J**. *American Journal of Orthodontics and Dentofacial Orthopedics*, 2005:418-423
- Kim TK, Kim JT, **Mah J**, Yang WS, Baek SH. First or second premolar extraction effects on facial vertical dimension. *Angle Orthod.* 2005 Mar;75(2):177-82.



**Mah J**, Hung J, Wang J, Salih E. The efficacy of various alloplastic bone grafts on the healing of rat calvarial defects. *Eur J Orthod*. 2004 Oct;26(5):475-82.

Enciso R, Alexandroni ES, Benyamein K, Keim R, **Mah J**. Precision, repeatability and validation of indirect 3D anthropometric measurements with light-based imaging techniques. 2004 IEEE International Symposium on Biomedical Imaging: From Nano to Macro. Co-sponsored by NIH and IEEE. April 15-18,2004, Arlington VA.

**Mah J**, Hatcher D. Advances in Orthodontics & Dentofacial Surgery - Three dimensional craniofacial imaging. *American Journal of Orthodontics and Dentofacial Orthopedics* 2004;126;308-9.

Ko Y, Baek SH, **Mah J**, Yang WS. Determinants of successful chin-cup therapy in skeletal Class III malocclusion from longitudinal results. *American Journal of Orthodontics & Dentofacial Orthopedics*. 126(1):33-41, 2004.

**Mah J**. Histochemical Study of the Fetal Human Temporomandibular Joint Articular Disc. *European Journal of Orthodontics* 2004;26;359-365.

Nahm DS, Kim HJ, **Mah J**, Baek SH. In vitro expression of matrix metalloproteinase-1, tissue inhibitor of metalloproteinase-1 and transforming growth factor-beta1 in human periodontal ligament fibroblasts. *European Journal of Orthodontics*. 26(2):129-35, 2004

**Mah J**, Prasad N. Dentine phosphoproteins in gingival crevicular fluid during root resorption. Bioassay for Root Resorption. *European Journal of Orthodontics*. 2004; 26(1);25-30.

Nahm DS, Kim HJ, **Mah J**, Baek SH. *in vitro* expression of MMP-1, TIMP-1 and TGF- $\beta$ 1 in human periodontal ligament fibroblasts. *European Journal of Orthodontics* 2004;26(2);129-135

**Mah J**, Danforth RA, Bumann A, Hatcher D. Radiation absorbed in maxillofacial imaging with a new dental CT. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics* 2003;96(4), 508-513.

Enciso R, Memon A, Neumann U, **Mah J**. The virtual craniofacial patient project - Proc. 3D MODELLING 2003, MEDICAL 3D session, Harbour Conferences, 2003, pp1-10.

Enciso R, Memon A, Fidaleo DA, Neumann U, **Mah J**. The virtual craniofacial patient: 3D jaw modeling and animation. *Studies in Health Technology & Informatics*. 94:65-71, 2003.

Danforth RA, Dus I, **Mah J**. 3-D Volume imaging in dentistry: A new dimension *Journal of the California Dental Association* 2003;31(11):817-823.

**Mah J.**, Enciso R, Jorgensen M. 3-Dimensional volumetric imaging in management of impacted cuspids. *Journal of the California Dental Association* 2003;31(11):835-841.

Enciso R, Shaw A., Neumann U., **Mah J.** - 3D Head Anthropometric Analysis. SPIE, Vol. 5029 "Progress in Biomedical Optics and Imaging" Series, Vol. 4, No. 20, ISSN 1605-7422, SPIE Press, R. L. Galloway, Jr. (ed), 2003; pp. 590-597.

Enciso R, **Mah J.** 3D Tooth Shape from Radiographs Using Thin-Plate Splines. Medicine Meets Virtual Reality 11 .Studies in Health Technology and Informatics. Volume 94.ISBN 1 58603 320 4. James D. Westwood et al. (eds), IOS Press. 2003; pp. 62-64.

Enciso, R., Memon, A., Fidaleo, D., Neumann, U., and **Mah, J.** - The Virtual Craniofacial Patient: 3D Jaw Modeling and Animation. Medicine Meets Virtual Reality 11 .Studies in Health Technology and Informatics. Volume 94.ISBN 1 58603 320 4. James D. Westwood et al. (eds), IOS Press. 2003; pp. 65-71.

**Mah J,** Hatcher DC. Current Status and Future Needs in Craniofacial Imaging. In the Proceedings of the Conferences on Orthodontic Advances in Science and Technology, Monterey September 2002. Orthod Clin Res 2003, 6 (supplement); 10-16.

Chang S, Plotkin DR, Mulligan R, Polido JC, **Mah J,** Meara JG. Teledentistry in Rural California: A USC Initiative. Journal of the California Dental Association, 2003, 31(8), 601-608.

Enciso, R., Memon, A., and **Mah, J.** 3D Visualization of the Craniofacial Patient: Volume Segmentation, Data Integration and Animation. In the Proceedings of the Conferences on Orthodontic Advances in Science and Technology, Monterey September 2002. Orthod Clin Res 2003, 6 (supplement); 66-71.

Kang BS, Baek SH, **Mah J,** Yang WS. 3-Dimensional relationship between the critical contact angle and the torque angle. Am J Orthod Dentofac Orthop, 2003;123:64-73

**Mah J,** Hayashi K, Mizoguchi I. Scanning Facial Surfaces with a Three-Dimensional Laser Scanner. Journal Of Clinical Orthodontics. 2003, 37(6), 299-301.

**Mah J,** Freshwater M. 3D Digital dental models using laser technology. Journal of Clinical Orthodontics. 2003, 37(2), 101-103

**Mah J,** 3D imaging in private practice. Am J Orthod Dentofacial Orthop. 2002 Jun;121(6):14A.

Salih E, Wang J, **Mah J,** Fluckiger R. Natural variation in the extent of phosphorylation of bone phosphoproteins as a function of *in vivo* new bone formation induced by demineralized bone matrix in soft tissue and bony environments. Biochemical Journal. 2002, 364(Pt 2):465-74

**Mah J.** Predictive Orthodontics: A New Paradigm in Computer-assisted Treatment Planning and Therapy. Seminars in Orthodontics, 2002;8:2-5

**Mah J,** Ritto AK. Imaging in Orthodontics: Present and Future. Journal of Clinical Orthodontics. 2002, 36(11), 619-625

**Mah J**, Haeger RS. How I use the internet in my office. *Journal of Clinical Orthodontics*. 2002, 36(8), 447-450

**Mah, J** and Bumann A. Technology to create the 3-dimensional patient record. *Seminars in Orthodontics* 2001, (7), 199-208.

**Mah J**, and Sachdeva R. Computer-assisted Orthodontic Treatment . *American Journal of Orthodontics and Dentofacial Orthopedics*. 2001, 120(1), 85-9.

**Mah, J**. Do you have a satellite office in Cyberspace? *American Journal of Orthodontics and Dentofacial Orthopedics*. 117(5)622-3 May 2000.

**Mah, J**, Carvalho RS, Bumann A. Current status of root resorption Biological Mechanisms of Tooth Eruption and Craniofacial Adaptation. Davidovitch Z, **Mah J**. (eds), Harvard Society for the Advancement of Orthodontics, Boston, MA., 2000, 195-200

Wang J, **Mah J**, Glimcher M, Salih E. Expression of Bone Microsomal Casein Kinase II, Bone Sialoprotein, and Osteopontin during the Repair of Calvarial Defects. *Bone*. 22(6):621-8, 1998

Paz MA, Martin P, Flückiger R, **Mah J**, and Gallop PM. The Catalysis of Redox-Cycling by Pyrroloquinoline Quinone (PQQ), PQQ Derivatives and Isomers and the Specificity of Inhibitors. *Analytical Biochemistry*, 1996, 238: 145-9.

Flückiger R, Paz MA, **Mah J**, Bishop A, Gallop PM: Characterization of the Glycine-Dependent Redox-Cycling Activity in Animal Fluids and Tissues Using Specific Inhibitors and Activators: Evidence for the Presence of PQQ. *Biochem Biophys Res Com* 1993;196(1):61-8.

### **Published Papers in Other Journals**

**Mah J**. Seasoned Practitioner's Corner. Dr. Terry McDonald Interviews Dr. James Mah. *PCSO Bulletin*, Summer 2011, p17-19

Huang JC, Choo HR, **Mah J**. 3-D Cephalometrics in Clinical Practice: CBCT for You and Me *PCSO Bulletin*

**Mah J**. 3-Dimensional Visualization of Impacted Maxillary Cuspids. *American Association of Dental Maxillofacial Radiographic Technicians*. Winter 2003. p1,14-16.\*

\* Invited paper by the American Association of Dental Maxillofacial Radiographic Technicians

**Mah, J** and Hatcher DC. Imaging trends and applications for the millenium. *Orthodontic Products* Jan/Feb 2000, 14-18

Salih E, Huang JC, Gouverneur M, Ly D, **Mah J**, Glimcher MJ. Protein Kinases that Phosphorylate the Extracellular Matrix Phosphoproteins of Mineralizing Tissues. In *Biological*

Mechanisms of Tooth Eruption, Resorption and Replacement by Implants. Davidovitch Z, **Mah J.** (eds), Harvard Society for the Advancement of Orthodontics, Boston, MA. 1998, 133-147

Wang J, **Mah J**, Glimcher MJ, Salih E. Biochemical Changes During New Bone Formation in the Cranial and Subcutaneous Tissue Environments. In Biological Mechanisms of Tooth Eruption, Resorption and Replacement by Implants. Davidovitch Z, **Mah J.** (eds), Harvard Society for the Advancement of Orthodontics, Boston, MA. 1998, 123-132

**Mah J**, Grageda E. Advances in Imaging for Orthodontic Practice. Orthodontic Products. June 1999, 26-8

**Mah J.** Rapid Orthodontic Extrusion as an Adjunctive Procedure to Prosthetic Restoration. Orthodontic Products. Mar 1999, 26-9

### **Manuscripts Submitted for Publication**

Rana P, Teeters CA, Bullen Ryan, Ditmeyer M, **Mah J**, Kingsley K, Howard K. A pilot study investigating the presence of *Aggregatibacter actinomycetemcomitans* in subgingival plaque of adult patients undergoing orthodontic treatment. Submitted to World Journal of Orthodontics.

Cruz RM, Hartsfield Jr J, Koller D, Pereira RW, **Mah J**, Nogueira LR, Oliveira, SF. Absence of Linkage of Microsatellites Markers Close to Six Candidate *Loci* to Mandibular Prognathism in Affected Brazilian Families, Submitted to American Journal of Orthodontics and Dentofacial Orthopedics

Kim YI, Kim YD, Kim SS, **Mah J**, Park SB. The Treatment of an Ankylosed Maxillary Incisor by Intraoral Alveolar Bone Distraction Osteogenesis. Submitted to the American Journal of Orthodontics and Dentofacial Orthopaedics

Lee S, Ditmeyer M, **Mah J.** Dimensional Accuracy of OrthoCAD, eModels and Digimodel Digital Orthodontic Study Models. Submitted to the Journal of Clinical Orthodontics

Kermani S, Ditmeyer M, **Mah J.** 3-Dimensional Analysis of Polyvinyl Siloxane (PVS) Stability Over Time. Submitted to the Journal of Clinical Orthodontics

Wolf M, Ditmeyer M, **Mah J.** Dental Arch Form Morphology Determined from Cone-Beam CT Images. Submitted to American Journal of Orthodontics and Dentofacial Orthopedics.

Asrar S, Ditmeyer M, **Mah J.** Determination of root surface area using conebeam CT. Submitted to American Journal of Orthodontics and Dentofacial Orthopedics

Picard A, Rabbio M, **Mah J**. Case Report: Internal Root Resorption Associated with Temporary Anchorage Device and Periodontal Scaling. Submitted to the Journal of Clinical Orthodontics

Simister D, Ditmeyer M, **Mah J** Evaluation of Ultrasonic Jaw Motion Tracking for the Determination of Hinge Axis Location. Submitted to the Journal of Clinical Orthodontics

Bolesta JA, Harper SJ, **Mah J**. Evaluating the clinical significance of the HLD (CalMod) index. Submitted to American Journal of Orthodontics and Dentofacial Orthopedics

Chow JG, Ditmeyer M, **Mah J** 3-Dimensional Analysis of Alginate Stability Over Time. Submitted to the Journal of Clinical Orthodontics

Mai K, **Mah J** Accuracy of Five Interocclusal Recording Materials Using Digimodel Digital Models. Submitted to the Journal of Clinical Orthodontics

Picard A, **Mah J**. Assessment of the Maxillary Midpalatal Suture using Cone-beam CT. Submitted to American Journal of Orthodontics and Dentofacial Orthopedics

Shaw P, **Mah J** Dimensional Accuracy of several Lateral Cephalometric and Cone-beam CT devices. Submitted to American Journal of Orthodontics and Dentofacial Orthopedics

Mamidi S, **Mah J**. Correlation of Optimal Force values and root volume. Submitted to the World Journal of Orthodontics

Smith TA, Ditmeyer M, **Mah J**. Hounsfield Unit Standard and Correlation with Bone Mineral Density in Cone Beam CT. Submitted to the Journal of Clinical Orthodontics

Ardalani S, Ditmeyer M, **Mah J**. A three-dimensional evaluation of the Upper airway volume using cone beam computer tomography (CBCT) in Class I, Class II, and Class III adolescent orthodontic patients. Submitted to the Journal of Clinical Orthodontics

Garner T, Ditmeyer M, **Mah J**. Evaluation of Upper Airway Volume Using Cone Beam Computer Tomography (CBCT) Imaging In Class I, Class II, and Class III Orthodontic Patients. Submitted to the Journal of Clinical Orthodontics

Wong E, **Mah J**. Comparisons of shear bond strength of different bracket materials and bonding procedures on acrylic denture teeth. Submitted to American Journal of Orthodontics and Dentofacial Orthopedics

### **Manuscripts In-Preparation**

Vu H, Moon HB, **Mah J**. Finite Element Analysis of Closing Loops. To be submitted to American Journal of Orthodontics and Dentofacial Orthopedics.

### **Published Chapters**

Huang JH, Bumann A, **Mah J**. The Cone-Beam Decision in Orthodontics. In “Digital Radiography and Three-Dimensional Imaging” pp. 59-75, J.A. McNamara, Kapila S. D, editors, vol 43, Craniofacial Growth Series, Center for Human Growth and Development, School of Dentistry, The University of Michigan, Ann Arbor, MI 48109, ISBN 0-929921-39-9.

**Mah J**. Jacobson R. 3-Dimensional Imaging in Orthodontics. In: Radiographic Cephalometry. 2006

**Mah J**, Hatcher D, Harrell W. 3-Dimensional Diagnosis and Treatment Planning (Chapter). In: Principles of Orthodontics, Graber T, Vanarsdale (eds). 2005

**Mah J**, Enciso R. The Virtual Craniofacial Patient – A Platform for the Future of Craniofacial Healthcare. In "Information Technology and Orthodontic Treatment", pp. 167-184, J.A. McNamara editor, vol. 40, Craniofacial Growth Series, Center for Human Growth and Development, School of Dentistry, The University of Michigan, Ann Arbor, MI 48109, ISBN 0-929921-36-4.

**Mah, J**, Grubb J, Silberstein R. Dental Development, Book Chapter.in Essentials for Orthodontic Practice, Riolo M, Avery J (eds). 2003

### **Published Books and Monographs**

Davidovitch Z, **Mah J.** (eds) Biological Mechanisms of Tooth Eruption, Movement and Resorption 5<sup>th</sup> Edition. Amari Press, 2006

Davidovitch Z, **Mah J.** (eds) Biological Mechanisms of Tooth Movement and Craniofacial Adaptation 4<sup>th</sup> Edition. Amari Press, 2004

Bumann A, Lotzmann U, **Mah J.** TMJ Disorders and Orofacial Pain. The Role of Dentistry in a Multidisciplinary Diagnostic Approach. In: Rateitschak KH and Wolf HF. Color Atlas of Dental Medicine. 2003.

**Mah J.** Orthodontic Practitioner's Handbook. 1<sup>st</sup> Edition. ISBN0-9662831-4-7. Boabab Publishing Inc. 2003

Davidovitch Z, **Mah J.** (eds) Biological Mechanisms of Tooth Movement, and Craniofacial Adaptation 3<sup>rd</sup> Edition. EBSCO Media, 2000

Davidovitch Z, **Mah J.** (eds) Biological Mechanisms of Tooth Eruption, Resorption, and Replacement by Implants 2<sup>nd</sup> Edition. EBSCO Media, 1998

### **Books, Monographs, Chapters In Preparation**

Bumann A, **Mah J.** Color Atlas of Cone-Beam CT and Dental Applications.

**Mah J.** (Invited Guest Editor of Special Issue of Seminars in Orthodontics) Three-Dimensional Visualization and Therapeutics.

**Mah J.** 3-Dimensional Craniofacial Imaging- A Clinical Update: Practical Reviews in Orthodontics

### **Published Abstracts**

Pittman L, Reynolds D, Sparks R, Ngan P, **Mah J.**, Gunel E. Oropharyngeal Airway Dimension of Patients with Different Malocclusions. IADR/AADR/CADR 89th General Session and Exhibition. March 16-19, 2011, San Diego, CA USA

Martin C, Becht M, Ngan P, Razmus T, **Mah J.** 3D Cone Beam to Evaluate Masseter Muscle Morphology. International Association of Dental Research 88<sup>th</sup> General Session & Exhibition, Washington, VA. Presentation Date March 4, 2010.

Garcia F, Rawle CA, Chrzan B, **Mah J.** Cone Beam CT Investigation of the Maxillary Morphology of Patients with Impacted Canines. Poster presentation at the 109th American

Association of Orthodontist's Annual Session Scientific Program. Presentation Date May 4, 2009

Garcia F, Rawle CA, Chrzan B, **Mah J.** Cone Beam CT Investigation of the Maxillary Morphology of Patients with Impacted Canines. International Association of Dental Research 87<sup>th</sup> General Session & Exhibition, Presentation Date April 2, 2009

Lai M, **Mah J.** Orthodontist's Bracket Placement Repeatability. International Association of Dental Research. 86<sup>th</sup> General Session & Exhibition, July 2-5, 2008, Toronto, Ontario, Canada

Bumann A, Kulick R, Netuschil L, Wiemer K, **Mah J.** Development of a new MMP-8 chairside test for periodontal follow-up in orthodontics. 82nd Congress of The European Orthodontic Society July 4-8, 2006, Vienna, Austria

Enciso R, Danforth RA, Alexandroni ES, Memon A, **Mah J.** Third Molar Impaction Diagnosis with Cone-beam Computerized Tomography. Accepted for presentation and publication in the proceedings of the 19th International Congress of CARS Computer Assisted Radiology and Surgery, Berlin, Germany, 22-25 June 2005

Bumann A, Huang JH, **Mah J.** 3-Dimensional Radiographic Analysis for Orthodontics. 81st Congress Of The European Orthodontic Society June 3-7, 2005, Amsterdam, Netherlands

Enciso R, Alexandroni ES, Benyamein K, Keim R, **Mah J.** Precision, repeatability and validation of indirect 3D anthropometric measurements with light-based imaging techniques. 2004 IEEE International Symposium on Biomedical Imaging: From Nano to Macro. Co-sponsored by NIH and IEEE. April 15-18, 2004, Arlington VA.

Millar J, Enciso R, Bumann A, **Mah J.** 3-Dimensional biomechanical model of the human TMJ. Abstracted accepted for presentation at the IADR Meeting March 10-13, 2004.

Alexandroni ES, Enciso R, Benyamein K, Keim RG, **Mah J.** Validation of light based 3D imaging system. Abstracted accepted for presentation at the IADR Meeting March 10-13, 2004.

Enciso R, Danforth R, Alexandroni ES, Memon A, **Mah J.** - : New Developments On Third Molar Impactions Diagnostic: Using 3d Volume Rendering And 3d Modelling Techniques – American Academy of Oral and Maxillofacial Radiology meeting in December 2003.

Bumann A, Winsauer H, Haass C, **Mah J.** Temporary anchorage pins (TAPS) und symphysen-distraktionsosteogenesis als alternativen zur extraktionstherapie. Deutsche Gesellschaft fur Kieferorthopadie e.V. 76. Wissenschaftliche Jahrestagung. September 10-14, 2003 Munchen, Germany

Bumann A, **Mah J.** Elektronische Analyse atologischer Faktoren (EAEF™) im Rahmen der klinischen Funktionsanalyse.. Deutsche Gesellschaft fur Kieferorthopadie e.V. 76. Wissenschaftliche Jahrestagung. September 10-14, 2003 Munchen, Germany



Bumann A, **Mah J**. Specific TMJ findings during orthodontic treatment assessed by manual functional analysis. European Orthodontic Society. June 10-14, 2003, Prague, Czech Republic

Bumann A, **Mah J**. Computer-assisted evidence-based TMJ evaluation with the manual functional analysis. European Orthodontic Society. June 10-14, 2003, Prague, Czech Republic

**Mah J**, Lee T, Minkin C. Osteoclastic recognition and activity at various regions of the dental root. European Orthodontic Society. June 10-14, 2003, Prague, Czech Republic

Wiemer K, **Mah J**, Bumann A. Absolute orthodontic anchorage with temporary anchorage pins (TAP). American Association of Orthodontists 103<sup>rd</sup> Annual Session. May 2-6,2003. Honolulu, Hawaii

Enciso R, **Mah J**. The Virtual Craniofacial Patient: 3D Jaw Modeling and Animation. The 11th Annual Medicine Meets Virtual Reality Conference January 22 - 25, 2003 / Newport Beach, California

Enciso R, **Mah J**. 3D Tooth Shape from Radiographs Using Thin-Plate Splines. The 11th Annual Medicine Meets Virtual Reality Conference January 22 - 25, 2003 / Newport Beach, California

Danforth RA, **Mah J**, Hatcher D. Radiation Absorbed in Maxillofacial Imaging with a New Dental CT. Annual Session of the American Academy of Oral and Maxillofacial Radiology, 53rd annual session, Feb 95:(2) 240, 2003

Sheridan J, Rejmanek D, Loftus J, **Mah J**, Rosen J , Smith D. Pyrroloquinoline Quinone as a Novel Therapeutic Chelating Agent to Reduce Tissue Lead Levels and Toxicity. Society of Toxicology. 2002

Bumann A, **Mah J**, Carvalho RS. Time-effective TMJ diagnosis as integral part of orthodontic treatment planning. XVI SIDO National Congress, Genoa, 2001, October 25-27

Stites TE, **Mah J**, Fluckiger R, Rucker R. Dietary deficiency of pyrroloquinoline quinone (PQQ) alters mitochondrial function in young mice. FASEB J 10 (3): 4622-4622 MAR 8 1996

**Mah J**, Paz MA, Rosen JF. Lead Toxicity Targets to Pyrroloquinoline Quinone (PQQ) in Mitochondrial Complex I and in Red Cells. The Toxicologist 1995:15:11.

**Mah J**, Paz MA, Flückiger R, Gallop PM: Coenzyme PQQ in Mitochondrial Complex I NADH:CoQ Oxidoreductase. 3rd Symposium on PQQ and Quinoproteins in Capri, Italy 1994:224.

Gallop PM, **Mah J**, Flückiger R: [PQQ:AntiPQQ]: Regulation of Cytosolic and Mitochondrial Oxidoreductive Processes. 3rd Symposium on PQQ and Quinoproteins in Capri, Italy 1994:221.

**Mah J**, Paz MA, Flückiger R, Gallop PM: Aging, Mitochondria and Superoxide: Cofactor PQQ in NADH:Co-Q Reductase (ND1), a mDNA-Encoded Subunit in Complex I. J Gerontol. 1993.

**Mah J**, Paz MA, Flückiger R, Gallop PM: Methoxatin (PQQ) Isolation from Rabbit and Rat Mitochondria: PQQ Interacts with Thyroxine and Mediates Electron Transport and Oxidative-Phosphorylation Processes. FASEB J 1993;7(7):A53.

Paz MA, **Mah J**, Flückiger R, Gallop PM: Cofactor PQQ in Mitochondrial Complex I, is the Target for Rotenone, MPP+ and Iodonium Compounds. ASBMB/DBC-Joint Meeting addendum 1993:LB80.

**Mah J**. Histochemical and Immunohistochemical Analysis of the Fetal Human Temporomandibular Joint Articular Disc. American Association of Orthodontists Scientific Sessions Abstract. May 1992

### **Dissertations and Theses**

Pyrrroloquinoline Quinone (PQQ) in Eukaryotic Energy Metabolism. Doctorate of Medical Sciences Dissertation, 1995

Biochemistry and Histology of the Fetal Human Temporomandibular Joint Articular Cartilage, Master of Science Dissertation, 1992

### **CONFERENCES ORGANIZED**

Biological Mechanisms of Tooth Movement and Craniofacial Adaptation, Nov 7-10, 2005, Phuket, Thailand Davidovitch Z, **Mah J**

Biological Mechanisms of Tooth Movement and Craniofacial Adaptation, August 18-21, 2003, New York, NY. Davidovitch Z, **Mah J**

Conferences on Orthodontic Advances in Science and Technology, September 6-9, 2002, Monterey, CA, Kapila K, Kronmiller J, King G, Wheeler T. **Mah J**.

Biological Mechanisms of Tooth Eruption and Craniofacial Adaptation. Davidovitch Z, **Mah J**, 1999, Seoul, Korea

Biological Mechanisms of Tooth Eruption, Resorption and Replacement by Implants. Davidovitch Z, **Mah J**, 1997, Toledo, Spain.

## **MANUALS, SYLLABI, PROGRAMMED INSTRUCTION, FILM STRIPS, VIDEO TAPES**

Problem Based Learning in Orthodontics – A Laboratory Manual, August 2002

Cephalometric Workshop Manual for Dental Students, October 2001

Current Status of Root Resorption: Practical Reviews in Orthodontics, July 1999

Treatment of the Child and Adolescent Block Laboratory Manual, 1998

How to Insert and Check Headgear, Instructional Video, 1997

## **NEWS**

Solving a 2000 year old Mystery. USC Health Sciences Newsletter. Mar 28, 2007

A step beyond X-rays. 3D imaging is the latest new tool in dental arsenals. National Post Saturday, May 24, 2003

Dental Developments: Say “Ah” USC Trojan Family Magazine, Spring 2003 p26-33.

Virtual Dentistry Takes Root – Cutting-edge 3D imaging tools can alleviate pain, increase accuracy. Technology Television, Sept 6, 2002  
(<http://www.techtv.com/news/scitech/story/0,24195,3398577,00.html>)

Virtual Techniques Improving Dental Reality, Article in Los Angeles Times, July 15, 2002, page S6

Lab Developing Virtual Patients for Dentists, Surgeons, Article in USC Chronicle, March 4, 2002;21(21): page 8

USC Working to Develop Virtual Reality Patients, Journal of the California Dental Association 2002;30(5):346

Taking Images of Teeth, Article on the American Society of Mechanical Engineers Wirewatch, Mechanical Engineering-CIME 16, August 2001

## **GRANTS AND CONTRACTS FUNDED**

Practiceworks, Kodak Dental Systems – USCSD Agreement

Sponsor: Carestream Health

Role: Director of Redmond Imaging Center

Project: N/A

Total Costs: \$100,000

Sirona-USCSD Agreement

Sponsor: Sirona Dental Systems

Role: Principal Investigator

Project Period: February 2008 – Jan 2013

Total Direct Costs: Galileos CBCT cost \$185,000

Prosody and articulatory dynamics in spoken language.

NIH: NIH R-01 Grant # DC03172 (Renewal)

Role: Consultant

Project Period: September 2007 - August 2011

Total Direct Costs: \$910,000

Biological Mechanisms of Tooth Movement and Craniofacial Adaptation

NIH: NIDCR-13

Role: Principal Investigator

Project Period: September 2005 - August 2006

Total Direct Costs: \$35,000

3-Dimensional Root Morphology

Align Technologies

Role: Principal Investigator

January 1, 2004 to December 31, 2005

\$50,000

3D Digital Faces for Communication

USC Annenberg Center for Communication

Role: Co-Principal Investigator

January 1, 2004 to April 30, 2004

\$5,000

Augmented Reality for Enhancing Medical Training and Education

USC Annenberg Center for Communication

Role: Co-Principal Investigator

January 1, 2004 to April 30, 2004

\$5,000

CHLA/USC Teledentistry Project: Virtual diagnosis and treatment planning for underserved communities – Phase I

McAlister Foundation  
Role: Principal Investigator  
July 1, 2002 to June 30, 2005  
\$450,000

CHLA/USC Teledentistry Project: Virtual diagnosis and treatment planning for underserved communities – Phase II  
California Wellness Foundation  
Role: Principal Investigator  
July 1, 2002 to June 30, 2005  
\$150,000

Prosody and articulatory dynamics in spoken language.  
NIH: NIH R-01 Grant # DC03172  
Role: Consultant  
Project Period: September 2002 - August 2006  
Total Direct Costs: \$910,000

Creation of the 3-Dimensional Virtual Orthodontic Patient.  
American Association of Orthodontists Foundation Corporate Center Award  
Role: Principal Investigator  
July 1, 2001 to June 30, 2004  
\$75,000

Craniofacial Imaging in the 21st Century  
NIH R13 DE14919-01  
Role: Co-Investigator  
Project Period: 08/01/2002 - 07/31/2003  
Total direct costs: \$35,000

The Efficacy of Pyrroloquinoline Quinone as a Therapeutic Chelating Agent to Reduce Tissue Pb Levels and Toxicity  
Charitable Leadership Foundation  
Consultant  
July 15, 2000 – July 15, 2002  
\$250,000

Comparative Efficiency of Elastomeric, Steel and Self-Ligating Methods in the Typodont Model 3M Unitek  
Principal Investigator  
October, 2000 – June, 2001  
\$10,000

Phosphorylated Proteins of the Dental Root and their Role in Osteoclastic Recognition and Activity  
American Association of Orthodontists Foundation Biomedical Research Award

Principal Investigator  
July 1, 2000 to June 30, 2001  
\$15,000

Genetics of the “Habsburg jaw”.  
European Orthodontic Society Research Grant Application  
Principal Investigator  
July 1, 2000-June 30, 2001  
\$15,000

Clarity Clinical Efficiency Study  
3M Unitek  
Principal Investigator  
June, 2000 – 2002  
\$25,000

Integration of light based 3-D scans with CT images.  
Sun Microsystems Academic Equipment Grant  
Principal Investigator  
June, 2000  
\$15,000

Efficacy of PerioStat (Doxycycline) in the Prevention of Orthodontic Root Resorption.  
CollaGenex Pharmaceuticals, Inc.  
Principal Investigator  
December 1999 – December 2001  
\$125,000

Genetic Determination of Facial Morphology: Identification of Genes for Mandibular  
Prognathism by Positional Cloning  
American Association of Orthodontists Foundation Biomedical Research Award  
Principal Investigator  
July 1, 1999 to June 30, 2000  
\$15,000

When is a Child Growing? Studies on the Dynamic Cellular and Molecular Events of the  
Developing Skeleton  
American Association of Orthodontists Foundation Faculty Development Award  
Principal Investigator  
July 1, 1998-June 30, 1999  
\$15,000

Efficacy of FDA-approved Bone Implant Materials  
Cleft Palate Foundation Research Award  
Principal Investigator  
November 1, 1998-October 30, 1999

\$5000

Dentin Phosphophoryn (DPP) in Gingival Crevicular Fluid as an Indicator of Root Resorption  
WJB Houston Research Grant, European Orthodontic Society

Principal Investigator

July 1, 1998-June 30, 1999

\$15,000

Development of a Biochemical Assay for Root Resorption: Immunological Quantitation of  
Dentin Phosphophoryn in Gingival Crevicular Fluid

American Association of Orthodontists Foundation Biomedical Research Award

Principal Investigator

July 1, 1997- June 30, 1998

\$15,000

## **CURRENT RESEARCH INTERESTS**

Craniofacial imaging, data acquisition, modeling, analysis, treatment simulation

Etiology and diagnosis of apical root resorption associated with orthodontic treatment

Genetics of facial form

## **COURSES ATTENDED**

Sexual Harassment Prevention Training with Unlawful Harassment Supplement, November 1, 2007

CITI Course on the Protection of Human Research Subjects, September 4, 2006

Preventing Workplace Harassment – California Supervisor’s Supplement, April 25, 2006

HIPAA Privacy Education Program, May 20, 2003

Understanding the Fundamentals: Responsibilities and Requirements for the Protection of Human Subjects in Research, University of Southern California, Certificate valid October 2000 – October 2003

## **SCIENTIFIC REVIEWER**

### **Journals**

American Journal of Orthodontics and Dentofacial Orthopedics

American Association of Orthodontists Research Awards

Biochimica et Biophysica Acta

International Journal of Oral & Maxillofacial Surgery

Journal of Clinical Orthodontics

Korean Journal of Orthodontics

Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology

Archives of Oral Biology

Dentomaxillofacial Radiology

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Research Council of Canada, Natural Sciences and Engineering

National Institute of Dental and Craniofacial Research



