University of Pittsburgh
School of Dental Medicine

Spring Research Symposium

Wednesday, April 14, 2001
9:00 am – 1:00 pm
Room 458 Salk Hall

University of Pittsburgh - School of Dental Medicine
Spring Research Symposium
Wednesday, April 4, 2001

3:00-3:15	Welcome	-	Dr. Thomas W. Braun, Dean
	Introduction	-	Dr. Mary L. Marazita, Assistant Dean for Research

Oral Presentations

3:15-3:30 Dr. Thomas C. Hart, Division of Oral Biology
Founder Effect for Exon CTSC Mutation in PLS Patients

3:30-3:45 Dr. Mark Mooney, Division of Oral Biology
Healing of Rabbit Calvarial Defects Using Caprotite Bone Scaffolds

3:45-4:00 Dr. M. John Novak, Division of Surgical Dental Sciences
Redefining the Biologic Width in Severe, Generalized Periodontitis

Dean's Research Scholarship Program, Summer 2000:

4:00-4:05 Amanda DeGregorio (Mentor, Dr. Theresa Whiteside, Pathlogy, School of Medicine)
A Study on the Optimal Conditions for Cell Proliferation in Various Strains of Head and Neck Squamous Cell Carcinomas

4:05-4:10 John Kim (Mentor, Dr. Susanne Gollin, Human Genetics, GSPH)
A Study of VEGFB Copy Number in Oral Carcinoma Cells

4:10-4:15 Simon Shung (Mentor, Dr. Sudha Agarwal)
Protein-Binding and Properties of Novel Peptide-Based Urethane Polymers

4:15-4:20 Pittsburgh Chapter AADR Student Research Award – Dr. Mary Marazita

Summaries of AADR, IADR, and ICHG Poster Presentations

4:20-4:25 Dr. Walter Bretz, Division of Restorative Dental Sciences
Periodontal Probing Refusal, Oral and Systemic Health Variables in an Elderly Population

4:25-4:30 Jaime Cernansky, 3rd Year First Professional Student
Tensile Strain Antagonizes Interleukin-1β Actions in Periodontal Ligament Cells

4:30-4:35 Sherri Lyn Chong, 3rd Year First Professional Student
Rescue of Coronal Suture Synostosis with TGF-b3 in Craniosynostotic Rabbits

4:35-4:40 Dr. Walter Bretz, Division of Restorative Dental Sciences
Periodontal Pathogens and Periodontal Diseases in an Elderly Population 70+

4:40-4:45 Dr. Kathleen Dobrosielski-Vergona, Division of Oral Biology
Oral Health Care Needs of Alzheimer's Patients in Nursing Homes

4:45-4:50 Bryan Dougherty, Division of Surgical Dental Sciences
Evidence for Genetic Heterogeneity in *secB* Genes from *Actinobacillus actinomycetemcomitans*

4:50-4:55	Dr. Pouran Famili, Division of Surgical Dental Sciences Study of the Effect of FK506 vs. Cyclosporin on Gingiva Overgrowth
4:55-5:00	Dr. Curtis Harper, Orthodontics Resident Detection of Apoptosis in Rat Interfrontal Sutures Using Annexin
5:00-5:05	Dr. Brion Maher, Division of Oral Biology An Item Response Theory Approach to Phenotype Refinement for Genetic Studies
5:05-5:10	Manuel Pelaez, 3rd Year First Professional Student Functional Analyses of Type IV Secretion Genes in *Actinobacillus actinomycetemcomitans*
5:10-5:15	Dr. Supakit Peanchitlertkajorn, Orthodontics Resident Chromosome 17: Gene Mapping Studies of Cleft Lip With or Without Cleft Palate in Chinese Families
5:15-5:20	Cynthia Sclater, 4th Year First Professional Student Analysis of *Actinobacillus actinomycetemcomitans* Strains Harboring Type IV Secretion Genes
5:20-5:25	Erin Taylor, 3rd Year First Professional Student An Analysis of Oral Cancer in Pennsylvania Counties
5:25-5:30	Dr. Robert Weyant, Division of Pediatric and Development Dental Sciences Markers of Chronic Inflammation, Dental Morbidity and Periodontal Infections in an Elderly Population
5:30-6:00	Poster Viewing/Questions – Room 457 Salk Hall
5:30-7:00	Refreshments

Abstract provided for each speaker/poster presenter in alphabetical order in handout.

UNIVERSITY OF PITTSBURGH

SCHOOL OF DENTAL MEDICINE

Spring Research Symposium

ABSTRACTS

The abstracts on the following pages are associated with the meetings listed below (Note: abstracts not provided for the Dean's Research Scholarship Program students):

AADR - American Association for Dental Research
Chicago, IL, March 7-10, 2001

ICHG - International Congress of Human Genetics
Vienna, Austria, May 15-19, 2001

IADR - International Association for Dental Research
Chiba, Japan, June 27-30, 2001

ASDA - American Student Dental Association
School of Dental Medicine
Wednesday, April 21, 2001

DR. WALTER BRETZ **IADR, SYS CONDITIONS, BEHAV & PERIODONTAL DIS, POSTER**

Periodontal Probing Refusal, Oral Health Status, Medical and Serum Risk Markers in an Elderly Population.

R WEYANT, W BRETZ*, P CORBY, N MARKOVIC, S KRITCHEVSKY, A NEWMAN (Univ. of Pittsburgh, Pittsburgh, PA, USA).

The HealthABC study is a longitudinal study of older adults to determine the effects of body composition and weight related health conditions on mobility impairment. In a subset of this cohort associations of periodontal infections with coronary heart disease (CHD) are being determined. This report details the findings of comparisons of oral and systemic health variables among four groups of participants (mean age=73 yrs): 1) edentulous participants (n=194); 2) participants not probed because they required pre-medication (n=441); 3) participants receiving a full mouth probing (n=1171); 4) and participants refusing probing (n=39). Tooth/decay counts, presence of root fragments, tooth mobility, the GI and PI, markers of chronic inflammation (IL-6, CRP, PAI, TNF) and HDL/LDL cholesterol were measured in all participants. Medical CHD risk factors (diabetes, diastolic blood pressure, current tobacco use, mean # of drinks/week) were obtained by a face-to-face interview. Data were analyzed using one-way ANOVA and chi-square analysis. Refusal cases had increased rates of decay, root fragments, and tooth mobility, higher mean GI and PI, and fewer teeth than all other groups. The % differences in these parameters ranged from at least 37% to 71%, corresponding to a 1.5 to 5.0-fold difference. Pairwise differences were significant between refusal cases and other groups in at least one group comparison ($p<0.05$). The levels of serum CHD risk factors were consistently higher in refusal cases than in other groups (range at least 8% to 29% higher). Refusal cases were proportionally more diabetic, current smokers, and had higher diastolic blood pressure. Notably, refusal cases consumed lower mean numbers of alcoholic drinks/week than other participant groups, i.e., less that 2 ($p=0.05$). Participants refusing periodontal probing have worse oral health status, and increased CHD risk factors and markers of chronic inflammation. Eliminating these individuals from investigations may introduce bias in studies looking at the effects of oral/dental health on medical conditions. NIH grant #AG62101.

POSTER NOT DISPLAYED

J Den Res IADR Abstr 80:2001, in press.

JAIME CERNANSKY (3 RD Year) **AADR, HATTON COMPETITION, POSTER**

Tensile Strain Antagonizes Interleukin-1β Actions in Periodontal Ligament Cells.

J. CERNANSKY*, P. LONG, G. YANG, M.J. BUCKLEY, N.P. PIESCO, S. AGARWAL (Univ. of Pittsburgh, Pittsburgh, PA).

The most dramatic changes incident to orthodontic tooth movement occur in the periodontal ligament (PDL). PDL cells perceive mechanical signals and respond to it *via* interleukin-1β (IL-1β) production. Since bone is synthesized at the tension sites despite the presence of IL-1β, we hypothesized that tensile strain may inhibit IL-1β actions to facilitate bone formation at tension sites. To test this hypothesis *in vitro* human PDL cells obtained from the root surfaces of healthy 3rd molars were cultured in Bioflex plates, and subjected to equibiaxial cyclic tensile strain (CTS, 6 to 15% elongation) in the presence or absence of IL-1β for 4, 24 or 48 hrs. mRNA expression for multiple proinflammatory genes was assessed by reverse transcriptase/polymerase chain reaction. Protein synthesis was assessed by Western blot analysis. Results show that low magnitude CTS (6%) inhibits IL-1β -induced mRNA expression and protein synthesis of cyclooxygenase (82%) and matrix metalloproteases [MMP-1 (93%), MMP-3 (91%)]. Whereas, higher magnitudes of CTS (10 to 15%) did not suppress IL-1 actions. CTS (6%) also abrogates IL-1β -induced inhibition of tissue inhibitors of metallo-protease-II and collagen type I induction. Furthermore, CTS inhibits IL-1β-induced nuclear factor (NF)-κB nuclear translocation, which consequently results in the suppression of proinflammatory gene induction. Interestingly, CTS did not down regulate IL-1 receptors (IL-1R) on PDL cells suggesting that IL-1R down regulation may not be the mechanism of CTS action. Present observations are the first to show that low magnitude tensile strain antagonizes IL 1 β in PDL cells, and that it acts upstream of mRNA induction *via* inhibition of NF- κB nuclear translocation in the IL-1β signal transduction cascade. AAOMSF, NIH 1R15DE12976.

J Dent Res AADR Abstr 80 (1631):239, 2001.

SHERRI LYN CHONG (3RD Year) **AADR, CRANIOFACIAL BIOLOGY/SYMPOSIUM, POSTER**

Rescue of Coronal Suture Synostosis with TGF-*b*3 in Craniosynostotic Rabbits.

S. L. CHONG*, R. MITCHELL, A. MOURSI, P. WINNARD, H.W. LOSKEN, O. OZERDEM, K. KEELER, L. OPPERMAN, M.I. SIEGEL, M.P. MOONEY (Univ. Pittsburgh, Pittsburgh PA; Ohio State Univ, Columbus OH; Baylor College of Dentistry, Dallas, TX).

Recent studies have shown high levels of transforming growth factor-*b*3 (TGF-*b3*) in patent rat anterior frontal sutures and low levels in fusing posterior frontal sutures. It has been suggested that an under expression of TGF-*b*3 may also be responsible, in part, for premature suture fusion in certain craniosynostotic conditions. The purpose of this study was to determine if TGF-*b*3 would affect a synostosing coronal suture in a rabbit model of familial craniosynostosis. Twelve, 25 day old New Zealand white rabbits with coronal suture synostosis occurring at 42-84 days postnatal were divided into 3 groups: 1) an untreated, sham control group (n=3); 2) a protein control group with Bovine Serum Albumin (BSA) in a collagen vehicle (n=3); and, 3) an experimental group with TGF-b3 in a collagen vehicle (n=6). At 10 days of age, all rabbits had amalgam markers placed on either side of the coronal suture (CS) to monitor suture growth. At 25 days of age, periosteal tunnels (3mm wide by 10mm long) were created in the midline and extended laterally over both coronal sutures. The tunnels in Group 1 were closed immediately. The tunnels in Group 2 rabbits were micro injected with 0.1cc of a slow resorbing (90-180 day) collagen gel (NeuColl Inc., Palo Alto, CA) and BSA (500ng/suture). The tunnels in Group 3 rabbits were micro injected with 0.1cc of collagen gel and TGF-*b*3 (500ng/suture). Serial radiographs were obtained at 10, 25, 42, and 84 days of age and the sutures were then harvested for histomorphometric analysis. Preliminary radiographic analysis revealed no significant differences ($p>0.05$) in coronal suture marker separation among the three groups. However, qualitative histologic examination revealed patent coronal sutures with relatively thin osteogenic fronts and wide sutural ligaments in rabbits injected with TGF-*b*3 compared to the other two groups. We also observed asymmetrical differences in suture morphology between the endo- and ectocortical surfaces in rabbits injected with TGF-*b*3 not found in controls. These preliminary results suggest that TGF-*b*3 has a gradient effect on suture morphology but not on growth. These findings support previous data, which show that there are dural-derived growth factors that are responsible for suture fusion and the manipulation of such growth factors may have clinical applications in the treatment of craniosynostosis. Collagen provided by NeuColl, Inc. Supported in part by grants from Children's Hospital of Pittsburgh and NIH (DE13078).

J Dent Res AADR Abstr 80 (426):89, 2001.

DR. PATRICIA CORBY **IADR, ORAL MICROBIOL HOST MARKERS OF PERIO DIS, ORAL**

Periodontal Pathogens and Periodontal Diseases in an Elderly Population 70+.

R.J. WEYANT, W.A. BRETZ, P.M.A. CORBY*, N. MARKOVIC, V. ZAJACK, S. KRITCHEVSKY, A. NEWMAN (University of Pittsburgh, Pittsburgh, PA).

The HealthABC study is a longitudinal cohort study looking at the effects of body composition and weight related health conditions on incident mobility impairment. The aim of this study was to validate the use of the BANA test for *T. denticola* (TD), *P. gingivalis* (PG) *and B. forsythus* (BF) and to correlate it with the rate of periodontal diseases in a subset of participants (n=508). Demographic data, history of diabetes, and current tobacco use were obtained by a face-to-face interview. Periodontal clinical and microbiological evaluations were performed including probing depth and attachment loss in 6 sites/tooth, and the PI and GI (4 sites/tooth). Subgingival plaque samples were collected from 4 molar teeth or from the most posterior adjacent tooth when present. These plaque samples were assayed with the BANA test for TD, PG and BF. Regression analysis and correlation coefficients were employed to analyze the data. A BANA test ratio indicator variable (# of BANA-(+) sites/total # of sites) was developed to reflect a gradient of the microbial load of participants. The mean age of participants was 73.3 $\pm$ 3.6 years. 12% of participants presented with low microbial loads of BANA-(+) species. 36% and 52% of participants had, respectively, moderate and high BANA-(+) microbial loads. This BANA test ratio was positively and highly correlated to the number and extent of pocket depths ≥4mm ($p=0.000$), number of sites with attachment loss ≥3mm ($p=0.019$), mean pocket depth ($p=0.000$) and mean GI ($p=0.027$). Regression models adjusted for age, current tobacco usage, history of diabetes, mean pocket depth, and mean GI indicated that a gradient of BANA-(+) microbial load could significantly predict the extent of pocket depths ≥4mm in participants ($p=0.007$). Overall inter-scorer reliability (dentists *vs.* hygienists) for BANA test results was excellent ($r=0.82$, $p<0.05$) Periodontal anaerobic infections were associated with periodontal destruction in this elderly population when periodontal diseases' clinical parameters and risk factors were accounted for. NIH grant #AG62101.

POSTER NOT DISPLAYED

J Dent Res IADR Abstr 80:2001, in press.

ANDREW DIAMOND (3RD Year) **ASDA, POSTER**

Comparison Of Periodontal Plastic Surgery Techniques: Free Gingival Grafts, Tissue Grafts and Guided Tissue Regeneration

A. DIAMOND, L. HUYNH, L. MOTA (University of Pittsburgh, Pittsburgh, PA).

Periodontal Plastic Surgery is comprised of procedures designed to prevent or correct anatomical, developmental, traumatical, or plaque disease-induced defects of the gingiva, alveolar mucosa, or bone. The treatment of marginal tissue recession and the predictable coverage of denuded roots with gingival tissue are an important goal in Periodontics in order to reduce tooth sensitivity, improve esthetics/cosmetics, manage defects resulting from caries and/or cervical abrasions and to manage defects that fail to respond to plaque removal. The amount of recession is clinically assessed by measuring the distance in mm between the cemento-enamel junction and the gingival margin. Several surgical techniques have been described to obtain this goal. Indications for these techniques are: halting progressive recession, preserving a band of keratinized tissue, facilitating plaque control, improving esthetics, and the treatment of root sensitivity. The purpose of this presentation is to perform a comparison of the different surgical techniques utilized in Periodontics for the treatment of gingival recession. Clinical outcomes following the Free Gingival Graft, the Connective Tissue Graft and Guided Tissue Regeneration were evaluated and compared. An evaluation of animal and human data was performed to evaluate the clinical and histological aspects of periodontal plastic surgery. The variables assessed included post-surgical probing depths, attachment gain, width of keratinized gingiva, post-surgical gingival height and root coverage. Biological knowledge and technical skills are needed to produce surgical procedures that can enhance periodontal function and esthetics. Results from this evaluation indicate that in order to decrease probing depths and increase clinical attachment levels most effectively a guided tissue regeneration technique should be used. In addition, to decrease gingival recession and increase keratinized tissue most effectively a free gingival graft technique should be used. Finally, to obtain the most amount of root coverage, according to our results, a connective tissue graft should be utilized.

DR. KATHLEEN DOBROSIELSKI-VERGONA **AADR, GERIATRIC ORAL RESEARCH, POSTER**

Oral Health Care Needs of Alzheimer's Patients in Nursing Homes.

K. A. DOBROSIELSKI-VERGONA*, (Univ. of Pittsburgh, PA).

Alzheimer's Disease (AD) is the most common form of a major disorder of old age, dementia. Changes in the AD patient's ability to provide his/her oral hygiene require great diligence on the part of the health care provider. This study assessed the oral health care that is provided to residents with presumed AD in nursing homes (NH) in Southwestern Pennsylvania (the geographic area surrounding the U. of Pittsburgh)**.** A survey was designed to learn how oral health was assessed and maintained for these patients (IRB#990389). According to the Alzheimer's Association, there are 23 NH in Southwestern PA with an Alzheimer's Unit. The Director of Nursing from each of these NH completed self-administered questionnaires of 12 items. Data from the returned questionnaires (100% response rate) revealed that most often (78%), nurses perform the oral health assessment on admission, although therapists and social services also performed this task. The oral criteria most likely to be recorded on admission was dentures (19/23); least likely, edentulism (1/23) and loose teeth (1/23). Most facilities (52%) offer a yearly oral exam. Dental treatment is provided, either within (13/23) or outside (7/23) the AD unit. The source of payment is out-of-pocket (47%), Medicaid (37%), or Medicare (16%). Uncooperative behavior of the patient, lack of time, staff, and specialized training were reported as barriers to optimum oral health care for these residents. Additional staff with specialized training and increased government reimbursement of dental treatment was suggested to improve the oral health care of these nursing home residents. In conclusion**,** there is a wide variability in the professional category of the caregivers serving AD patients, the type of services provided and the source of payment for dental treatment among these neighboring facilities.

J Dent Res AADR Abstr 80 (1782):258, 2001.

BRYAN DOUGHERTY, B.S. **AADR, PERIODONTAL RESEARCH, POSTER**

Evidence for Genetic Heterogeneity in *secB* Genes from *Actinobacillus actinomycetemcomitans*.

K.F. NOVAK, K. ETESSAMI, B.A.DOUGHERTY* (University of Pittsburgh School of Dental Medicine, Pittsburgh, Pennsylvania).

The Sec system is a highly conserved, well-characterized mechanism by which Gram-negative bacteria transport proteins across the inner membrane to the periplasmic space. In this system, SecB acts as the major chaperone for export, forming a complex with preproteins. It was hypothesized that *Actinobacillus actinomycetemcomitans* utilizes a system similar to the Sec system of *E. coli* to transport proteins, and therefore would harbor a gene homologous to *secB*. The purpose of this study was to clone and determine the nucleotide sequence of the *secB* gene from *Actinobacillus actinomycetemcomitans* strain VT725. Strain VT725 was selected based on our previous molecular characterization and functional analyses of a *secA* gene from this strain. The database for *Haemophilus influenzae* (NCBI) was searched for sequences encoding a protein homologous with the *E. coli secB* gene. Once identified, the *H. influenzae* sequence was then used to find a similar sequence in the University of Oklahoma database for *A. actinomycetemcomitans* strain HK1651. PCR primers were designed based on the *A. actinomycetemcomitans* HK1651 database sequence and used to amplify a *secB* gene from *A. actinomycetemcomitans* strains VT725 and HK1651. The resulting PCR products were cloned and the nucleotide sequences determined for four clones. The predicted protein from strain VT725 shared 54% homology with the SecB of *E. coli* and 81% with *H. influenzae*. Surprisingly, the VT725 predicted protein shared only 97% homology with *A. actinomycetemcomitans* HK1651. These differences were not due to conservative substitutions at the amino acid level. These results confirm that *A. actinomycetemcomitans* harbors DNA homologous to *secB*, an essential gene of the Sec system of *E. coli* and *H. influenzae*. However, there appears to be heterogeneity between *A. actinomycetemcomitans* strains with respect to the amino acid sequences of their SecB proteins.

J Dent Res AADR Abstr 80 (363):81, 2001.

DR. POURAN FAMILI **AADR, PERIODONTAL RESEARCH, POSTER**

Prevalence of Periodontal Disease in First Year Dental Student with Family History of Diabetes.

P. FAMILI, R. MILLER, A. SEYEDAIN, A. GOLDSMITH, J. CLOSE (University of Pittsburgh School of Dental Medicine, Department of Periodontics).

The pattern of dental disease in the human population can be affected by variables such as age, sex, race, occupation, and social behavior. Prevalence of periodontal disease varies with race, age, smoking and diabetes. Schlossuan in 1990 did a cross-sectional study on these subjects. They evaluated 3,219 subjects aged 5 to over 95 years, for their diabetic status and for evidence of periodontal disease. In all age groups subjects with diabetes had a higher prevalence of periodontal disease. Based on epidemiological studies, both insulin and noninsulin dependent diabetes is significant risk factors for periodontal disease. Although their increase in susceptibility to infections and impaired host responses are likely, it is still unclear why diabetics are at a higher risk for severe peritonitis. The purpose of this cross-sectional study was to compare the prevalence of periodontal disease in first year dental students at the University of Pittsburgh School of Dental Medicine with a family history of diabetes and students without any family history of diabetes. The periodontal examination included probing depth and attachment loss measurements, plus plaque and bleeding indices. 81 students participated in this study. 23 presented with a family history of diabetes. 50 were male and 31 were female. Out of the 81 students 56 were white, 2 were African American, 7 were Hispanic and 12 were “other”. Statistical evaluation showed no relationship between periodontal disease and the family history of diabetes.

J Dent Res, AADR Abstr 80 (386):84, 2001.

DR. POURAN FAMILI **IADR, POSTER**

Study of the Effect of FK506 vs. Cyclosporine on Gingiva Overgrowth.

A. PONTIKAS, P. FAMILI, J.M. CLOSE (University of Pittsburgh, Pittsburgh, Pennsylvania).

A variety of drugs have been found to produce gingival overgrowth in patients taking them. The anti-rejection drug cylcosporine has been found to exhibit gingival hyperplasia in approximately 30% of patients. FK506 is structurally different from cyclosporine, but has similar ability to inhibit the rejection of transplanted organs. The purpose of this study was to find the prevalence of gingival hyperplasia in patients who had undergone a transplant and were taking either FK506 or cyclosporine. Fifty patients participated in this study. Thirty-four were taking FK506, eleven were taking cyclosporine, and five were taking a combination of both drugs. An analysis of variance groups across pre and post drug administration times. At pre-administration, no significant differences were found on hyperplasia between the two drug type groups; at post-administration the groups differed significantly ($p = .005$) There was no significant pre to post change in the FK506 group ($p = .083$), but in cylosporine group a significant change was found ($p = .008$). The difference in post administration hyperplasia proportions between the FK506 and cyclosporine groups was 12.5% versus 61.5% respectively. These results indicate that FK506 is associated with notably less gingival hyperplasia than cyclosporine. The findings are consistent with the results of previous studies found in the literature.

POSTER NOT DISPLAYED

J Dent Res, IADR Abstr 80:2001, in press.

DR. CURTIS HARPER **AADR, CRANIOFACIAL BIOLOGY/SYMPOSIUM, POSTER**

Detection of Apoptosis in Rat Interfrontal Sutures Using Annexin V.

C.O.HARPER*, J.J.SCIOTE, R.MITCHELL, I.MJ.MATHIJSSEN[1], M.I.SIEGEL, M.P.MOONEY (Univ. of Pittsburgh, Pittsburgh PA, [1] Erasmus Medical Center, Rotterdam, The Netherlands).

It has been suggested that apoptosis along osteogenic front, is involved in calvarial suture patency while changes in apoptotic rates may lead to normal or premature (craniosynostosis) suture fusion. This hypothesis was tested with a well-documented rat calvarial suture model in which the anterior portion of the interfrontal suture normally fuses from 12-22 days of age while the other sutures remain patent. Twenty-four, neonates (n=12) and 15-day (n=12) old Sprauge-Dawley rats were sedated and the anterior (AIFS) and posterior interfrontal sutures (PIFS) and sagittal sutures were exposed. Annexin V Biotin (0.5-1*u*l) (AV-B, 500mg/ml; APOPTEST-biotin kit, NeXins Research BV, The Netherlands) was placed on the sutures using a Hamilton micro-pipetting system. Sutures were harvested 30 minutes later, fixed, and decalcified. The annexin was detected using an avidin staining solution (1:200), which was allowed to bind for twenty-four hours and then stained with DAB (0.05%). Apoptotic cells along the sutural margins were visually located using light microscopy and staining intensity was examined. Preliminary results show that in neonatal rats, apoptotic cell staining intensity was similar among all three, patent sutures. In contrast, in 15-day-old rats, more intense staining was seen overall compared to neonates while the PIFS showed bony bridging and a slight decrease in staining compared to the other two patent sutures. Results suggest that apoptosis in the sutural osteogenic fronts may be a mechanism maintaining suture patency while genetic or age related changes in apoptotic rates might produce normal suture fusion. These findings also suggest that abnormal apoptosis may be one of the pathogenic mechanism underlying premature suture fusion (craniosynostosis). Supported by the AAOF and NeXins Research, Netherlands.

J Dent Res AADR Abstr 80 (426):89, 2001.

DR. THOMAS C. HART **AADR, PERIODONTAL RESEARCH, ORAL**

Founder Effect for Exon 6 CTSC Mutation in PLS Patients.

Y. ZHANG, T. LUNDGREN, S. RENVERT, D.N. TATAKIS, E. FIRATLI, T.C. HART* (U. Pittsburgh, PA, U. Kristianstad, Sweden, Loma Linda U. CA, U. Istanbul, Turkey)

Papillon Lefevre syndrome (PLS) is characterized by severe periodontitis and palmoplantar hyperkeratosis. The condition is inherited as an autosomal recessive trait, and genetic mutations of the cathepsin C gene (CTSC) have been found in PLS patients. A characteristic of PLS is the variety of CTSC mutations that appear to have arisen independently. To date more than 25 different CTSC mutations have been identified. To determine the etiology of PLS in patients from Saudi Arabia, we sequenced the CTSC genes from affected probands of five different families. All probands had been surgically treated for severe PLS associated with periodontitis and genomic DNA prepared from gingival biopsies. The CTSC gene was amplified by PCR using 8 sets of oligonucleotide primers that spanned the CTSC exons and splice sites. Sequence analysis identified a nucleotide 815 mutation (G to C) in exon 7, changing amino acid 300 from a G to an N in the fifth proband. Genetic halotype analysis was performed for DNA markers that flank the CTSC gene. Results for the genetic interval D11S4175 to D11S937 revealed a common ancestral hplotype for all four probands with the R272P mutation. This haplotype was not present in a Turkish PLS patient with an Exon 6 R272P mutation, nor in 5 other PLS probands with different CTCS mutations. The exon 7 G300N mutation identified in this study represents a novel cathepsin C mutation for PLS. The presence of a common haplotype in four independent probands who share a similar cathepsin CR272P substitution mutation is consistent with a founder effect for this mutation in this population. DE12920

J Dent Res AADR Abstr 80 (1219):188, 2001.

DR. BRION S. MAHER **ICHG, POSTER**

An Item Response Theory Approach to Phenotype Refinement for Genetic Studies.

B.S. MAHER, M.M. VANYUKOV, M.L. MARAZITA, H.F. SIMKEVITZ, L. KIRISCI, R.E. FERRELL, G.P. KIRILLOVA, R.E. TARTER (University of Pittsburgh, Pittsburgh, PA).

Substantial evidence suggests that the liability to attention deficit hyperactivity disorder (ADHD) is highly heritable. To disentangle the complex system of the determination of this latent quantitative trait, it is critically important to use informative phenotypic definitions. Item response theory is capable of providing unbiased trait estimates that take into account both the individual trait level and the properties of the trait's indicators (items). Segregation analysis in a sample of 602 families supported a transmissible, but non-Mendelian, sex-dependent effect for ADHD symptom count. In a clinical subgroup of 184 pedigrees, segregation analysis supported a dominant Mendelian model. Factor analysis of the ADHD symptoms yielded two factors representing the dimensions underlying ADHD liability (inattention and hyperactivity-impulsivity). Item response theory modeling was applied to derive latent trait estimates for the dimensions, using information from multiple instruments and raters. Measured genotype analysis (MGA) was conducted to examine the relationship between the latent traits and polymorphisms at several candidate genes of the dopamine system in a sub-sample of 169 Caucasian males. Significant association was detected between a polymorphism in the DRD2 gene and IRT-derived indices of attention ($p=0.0249$) and activity-impulsiveness ($p=0.0066$). Moderate association was found between the DRD4 gene and the IRT-derived attention index ($p=0.0389$).

DR. MARY L. MARAZITA **AADR, CRANIOFACIAL BIOLOGY/SYMPOSIUM, POSTER**

Assessment of Candidate Genetic Regions for Oral-Facial Clefts in China.

M.L. MARAZITA*, M.E. COOPER, B.S. MAHER, Y. LIU, L.L. FIELD (Univ. of Pittsburgh, Zhabei Eye Hospital, Shanghai, China, Univ. of British Columbia).

Gene mapping studies of oral-facial clefts have utilized both linkage and association methods although no one locus has clearly emerged as the "necessary" locus for development of cleft lip with or without cleft palate (CL/P) or CP. On the contrary, the genetic etiology of oral-facial clefts appears more complex, with several loci showing significant results in at least some studies. Loci on chromosomes 2, 4, 6, 14, 17 and 19 have all had positive findings, primarily in populations of European Caucasian descent. The purpose of this study was to evaluate those regions in our study population from Shanghai, China. 10 markers from those regions were assessed (TGFA, MSX1, D4S194, D4S175, F13A1, GATA185H, D17S250, D17S579, D19S49, APOC2). 60 multiplex families were included, 43 whose probands had cleft lip and cleft palate (CL+CP) and 17 with cleft lip alone (CL). LOD scores were calculated between each of the 10 markers and CL/P, as well as model-free statistics of linkage (SimIBD) and association (TDT). None of the markers showed significantly positive LOD scores with CL/P. A significantly positive result (p=0.01) was seen under the model-free linkage approach for APOC2 on chromosome 19, and a positive TDT result (p=0.004) was obtained for D19S49, near APOC2. These results indicate that most of the genetic regions with positive Results in Caucasian families are not involved in Chinese CL/P, although there is some positive evidence for the candidate region on chromosome19. Supported by USPS grant DE09886.

J Dent Res AADR Abstr 80 (430):89, 2001.

DR. MARK MOONEY **AADR, CRANIOFACIAL BIOLOGY/DENTAL MATERIALS, ORAL**

Healing of Rabbit Calvarial Defects Using Caprotite Bone Scaffolds.

M.P. MOONEY*, S.M.S. BIDIC, J.W. CALVERT, K. MARRA, P. KUMTA, P. CAMPBELL, R. MITCHELL, WILLIAM WIGGINTON, A.A. EL-GHERIANI, J. O. HOLLINGER, L. WEISS (Univ. of Pittsburgh and Carnegie Mellon Univ., Pittsburgh, PA).

Oncologic surgery, trauma, and congenital disorders often leave patients with large, bony defects that require reconstruction. Autologous, cancellous bone is the most successful bone grafting material, however, limited supply and donor site morbidity necessitate the search for possible synthetic bone substitutes. Favorable results have been reported with various constructs for bone replacement, but strength, resorption, osteoconductivity, and osteoinductivity issues remain problematic. Our group has developed a novel bone scaffold composite called Caprotite, formed from a combination of PLGA , PCA , and hydroxyapatite. The present study investigated the ability of this porous, biocompatible, resorbable, polymer-ceramic composite scaffold material seeded with bone marrow cells to heal calvarial defects in a rabbit model. Bilateral, 8mm circular defects were created in the parietal bones of twenty, 12-week-old New Zealand White rabbits. The 40 calvarial defects were divided into four groups of 10 each as follows: 1) control; 2) defects filled with autologous calvarial bone grafts; 3) defects filled with Caprotite disks; and 4) defects filled with Caprotite disks seeded with autologous bone marrow stromal cells harvested from the femur. Three-dimensional, CT scans of the defects were obtained at 0, 6, and 12 weeks postoperatively. The defects were then harvested at 12 weeks postoperatively for histomorphometric evaluation. Quantitative analysis of the 3-D CT scans revealed significant ($p< 0.001$) new bone formation in the defects in all four groups by 12 weeks postoperatively. The defects with autologous bone grafts were completely filled (100%) in with new bone, followed by control defects (50.9 +/- 27.3%), defects with seeded Caprotite disks (36.7 +/-12.1%), and defects with unseeded Caprotite disks (27.7 +/- 9.1%). No significant differences ($p>0.05$) were noted in percent new bone formation between the last three groups. Histological examination showed more mineralization in the control defects compared to the implant groups. However, defects with seeded Caprotite disks were more ossified compared to unseeded disks. Preliminary results suggest that Caprotite scaffolds in rabbit calvarial defects did not significantly enhance osseous defect healing compared to controls, however, defects with seeded disks were more ossified than defects filled with unseeded disks. Caprotite pore size and manufacturing techniques may be confounding variables responsible for the present results. Supported in part by grants from the Pittsburgh Tissue Engineering Initiative (PTEI) and the Robotics Institute, Carnegie Mellon University, Pittsburgh, PA, USA.

J Dent Res AADR Abstr 80 (777):133, 2001.

UMA NAIR (4 TH Year) **AADR, 2000**

Tissue Engineered Vital Bone Graft-Assisted Repair and Restoration of Rabbit Mandible.

U.P. NAIR*, A. SEYEDAIN, N. P. PIESCO, R. GASSNER, M.P. MOONEY, M. NAIR, S. AGARWAL (University of Pittsburgh School of Dental Medicine, Pittsburgh, PA).

Repair and restoration of bony defects has been a challenge for orofacial surgeons. We examined the effectiveness of tissue engineered vital bone grafts (TEBG) for the repair and restoration of bone in the craniofacial complex. TEBG were prepared *in vitro* by culturing syngeneic bone marrow stromal cells (BMSC) on a delivery matrix synthesized with 50 % poly L-lactide and 50% poly L-glycolide (PLGA). Two walled mandibular defects (2/side) were made with a 6 mm trephine on the inferior margin of mandibles in New Zealand rabbits (n=20). The defect sites were subjected to the following treatments: (a) untreated controls; (b) delivery matrix alone; (c) cell suspension of osteoblasts (2 x 106/0.1 ml tissue culture medium); or (d) TEBG comprising of delivery matrix impregnated with 2 x 106 osteoblasts. Each rabbit received all four treatments, and the treatment sites were randomized. Rabbits (n=5) were sacrificed 3, 6, 9, or 12 weeks post-surgically to assess bone healing by histologic, histomorphometric and tomographic analysis. The unfilled control sites, sites filled with polymer matrix alone, and filled with BMSC suspension alone, showed extensive fibrous tissue formation with less than 5% ossification at each time point. The sites filled with TEBG exhibited vascularized ossified tissue filling more than 50% of the defect within 3 weeks of healing, and more than 90% filling with cancellous osseous tissue in rabbits sacrificed 6, 9, or 12 weeks post-surgery. Maturation of cancellous bone into lamellar bone was observed 12 weeks post-surgically. Cancellous osseous tissue formation occurred during the first 6 weeks of treatment despite its association with a minimal foreign body reaction around undegraded PLGA polymer. Foreign body reactions were not observed 9 or 12 weeks post-surgically. The data suggest that TEBG fabricated with autologous BMSC hold significant potential for the repair and restoration of large non-healing and load bearing bony defects and may prove to be superior to conventional methods presently being used. Supported by PTEI, Pittsburgh, NIDCR and Atrix Labs, Fort Collins, CO.

J Dent Res AADR Abstr 79:527, 2000.

DR. M. JOHN NOVAK **AADR, PERIODONTAL RESEARCH, ORAL**

Redefining the Biologic Width in Severe, Generalized Periodontics.

M.J. NOVAK*, H.M. ALBATHER, J.M. CLOSE (Univ. of Pittsburgh, Pittsburgh, PA).

The biologic width has previously been described for a healthy periodontium and consists of the combined width of the junctional epithelium and the suprabony connective tissue attachment. However, no information exists on the variability in the biologic width that may exist around periodontitis-affected teeth, especially in severe, aggressive disease. This study was designed to evaluate the biologic width in patients with severe periodontitis associated with a generalized, horizontal pattern of bone loss. Twenty-eight patients, 29-45 yrs of age, were evaluated clinically and radiographically for proximal measures of pocket depth, attachment level, and associated alveolar bone height. The biologic width was calculated from the levels of clinical attachment and alveolar bone for each measurable surface. Inter-correlation coefficients and p-values were calculated for pocket depths, attachment levels, bone levels, and biologic width. In addition, the data were compared with previously published values for health teeth using a multivariate, one-sample t-test. The results indicated that the biologic width around teeth in patients with severe, generalized disease was significantly wider than that observed in health ($p \leq 0.001$) and that shallow sites on an affected tooth had an increased biologic width when compared to deeper sites on the same tooth. When mean values for affected teeth (3.9 ± 1.04mm) were compared with those previously recorded for healthy, erupted teeth (1.77mm), a significant increase in the biologic width in disease was observed ($p \leq 0.001$). These results suggest in generalized, aggressive disease, horizontal bone loss exceeds attachment loss resulting in an increased biologic width, especially at shallow sites on affected teeth, and that corrective periodontal surgery may need to protect against loss of this soft tissue support.

J Dent Res AADR Abstr 80 (164):56, 2001.

MANUEL PELAEZ (3 RD Year) **AADR, MICROBIOL/IMMUNOL INF CONT, POSTER**

Functional Analyses of Type IV Secretion Genes in *Actinobacillus actinomycetemcomitans*

K.F. NOVAK, B.A. DOUGHERTY, M. PELAEZ* (University of Pittsburgh School of Dental Medicine, Pittsburgh, Pennsylvania)

Seven genes encoding a potential Type IV secretion system have been identified in the chromosome of *Actinobacillus actinomycetemcomitans* strain VT747 and on a plasmid (pVT745) in strain VT745. These genes encode predicted proteins that share significant homology with Type IV secretion proteins in *Bordetella pertussis* (*ptl* operon) and *Agrobacterium tumefaciens* (*virB* operon), where they are involved in protein secretion and DNA transport, respectively. Results of previous studies have demonstrated that pVT745 is a conjugative plasmid and that a secondary plasmid, pMMB67, can be mobilized from this strain. It was hypothesized that (1) the Type IV secretion genes on pVT745 are responsible for these two functions and (2) the Type IV VT747 chromosomal genes also play a role in the transport of DNA. The purpose of this study was to compare wild-type versus mutant strains of VT745 for their conjugative abilities, and wild-type VT747 for its ability to mobilize pMMB67. A spectinomycin resistance gene was inserted by homologous recombination into a non-essential region of pVT745, providing the wild-type donor strain. A similar technique was used to disrupt the *ptlC/virB4* homolog on pVT745. The VT745 wild-type and mutant strains were used as donors in matings with a spontaneous rifampicin-resistant mutant of *A. actinomycetemcomitans* strain, HK1651. Transconjugants were selected on spectinomycin and rifampicin. Wild-type mating efficiency was 10^{-6} transconjugants/donor while the mutant strain yielded no transconjugants. Plasmid pMMB67 was introduced by electroporation into strain VT747 and used as the donor in mating experiments with HK1651Rif. VT745 harboring pMMB67 served as a positive control. VT745 mobilized pMMB67 at a frequency of 10^{-6}, while VT747 was unable to mobilize this plasmid. These results demonstrate that the Type IV secretion system on pVT745 is involved in DNA transport. However, this system does not appear to play a role in DNA transport in strain VT747. Supported by NIDCR Grant DE12220.

J Dent Res AADR Abstr 80 (362):81, 2001.

DR. SUPAKIT PEANCHITLERTKAJORN **ICHG, POSTER**

Chromosome 17: Gene Mapping Studies of Cleft Lip with or without Cleft Palate in Chinese Families.

S. PEANCHITLERTKAJORN, M.E. COOPER, Y. LIU, L.L. FIELD, M.L. MARAZITA. (Univ. of Pittsburgh, PA, USA; Zhabei Eye Hospital, Shanghai, China; Univ. of British Columbia, Vancouver, Canada)

Involvement of loci on chromosome 17 (including RARA) in non-syndromic oral clefts has been reported in Caucasian populations, although never investigated in Asian populations. Further support is provided by gene mapping studies of spontaneous clefting in mice that found a major oral cleft gene on murine chromosome 11, homologous to human chromosome 17. Therefore, the purpose of this study was to investigate several loci on chromosome 17, including RARA, in our oral cleft study population from Shanghai, China. 17 markers, spanning chromosome 17 and roughly 10cM apart, were assessed. 36 multiplex families participated in this study. There were 23 families whose probands had cleft lip and cleft palate (CLP) and 13 with cleft lip alone (CL). LOD scores (single point and multipoint), model free linkage analyses (SimIBD), as well as allelic association tests (TDT, Fisher's exact tests, and Chi square tests) were performed on the total family sample, families with CLP probands (CLP subgroup), and families with CL probands (CL subgroup). LOD scores from the single point analyses were inconclusive, whereas those from multipoint analyses rejected linkage except for a few regions in the CL subgroup. However, positive results were found using the model-free linkage and association methods. The markers with positive results varied across the CL and CLP subgroups. However, the RARA region and loci nearby yielded consistently positive results. Therefore, genetic variation within the RARA locus or nearby appear to be involved in non-syndromic oral clefts formation in this population. Furthermore, based on the differing pattern of results in the CL versus CLP subgroups, it appears that the formation of CL and CLP is either due to differing alleles at the same genetic locus, or to different but related (and/or linked) genes, that modify the severity and expression of oral clefting.

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CYNTHIA SCLATER (4 TH Year) **AADR, MICROBIOL/IMMUNOL INF CONT, POSTER**

Analysis of *Actinobacillus actinomycetemcomitans* Strains Harboring Type IV Secretion Genes.

K.F. NOVAK, B.A. DOUGHERTY, C. SCLATER* (University of Pittsburgh School of Dental Medicine, Pittsburgh, Pennsylvania)

Seven genes encoding a Type IV secretion system have been cloned and their nucleotide sequences determined from two *Actinobacillus actinomycetemcomitans* strains, VT747 and VT745. These genes encode predicted proteins that share significant homology with Type IV secretion proteins found in *Bordetella pertussis* and *Agrobacterium tumefaciens*. It was hypothesized that other *A. actinomycetemcomitans* strains also would harbor these genes. The purpose of the present study was to evaluate 61 additional *A. actinomycetemcomitans* strains for the presence of these genes, and to characterize these strains by hybridization pattern and ribotyping. Genomic DNA was isolated from these 61 strains, digested with *Hin*cII, prepared for Southern blots, and probed with ^{32}P-labeled DNA fragments representing internal segments of all seven of the cloned Type IV genes. Resulting autoradiographs demonstrated that six (10%) of the strains examined harbored all seven genes; one (2%) harbored six of the genes and seven (10%) harbored five of the genes. The remaining forty-seven strains (78%) apparently did not harbor any of these genes. Six different hybridization patterns could be detected (Patterns 1-6). To further evaluate genetic variability in the strains harboring these genes, genomic DNA was isolated and digested with either *Hin*cII or *Eco*RI. Southern blots were prepared and hybridized with a ^{32}P-labeled fragment of 16S rRNA amplified by PCR from *A. actinomycetemcomitans* genomic DNA. Resulting autoradiographs demonstrated that five of the seven strains with hybridization Pattern 1 were the same ribotype, and both Pattern 3 strains were the same ribotype. However, Patterns 2, 4, 5 and 6 strains all represented distinct ribotypes. These results demonstrate that a large percentage of *A. actinomycetemcomitans* strains do not harbor this Type IV system, and that there is genetic variability among *A. actinomycetemcomitans* strains that do. Supported by the AADR Student Research Fellowship and NIDCR Grant DE12220

J Dent Res AADR Abstr 80 (365):81, 2001.

IYAD SOOD (3RD Year) **ASDA, POSTER**

Guided Tissue Regeneration (GTR) Treatment of Vertical Defects with Resorbable and Non-Resorbable Barriers.

I. SOOD and H. COSTA

It has been estimated that approximately one out of four individuals might be affected by periodontal disease. This inflammatory condition if left untreated will result in loss of connective tissue attachment and loss of alveolar bone with negative consequences for the dentition and the individual (periodontal pockets, bone loss, furcation involvement, tooth mobility, tooth loss, etc.). Several procedures have been designed for the treatment of the anatomical defects produced by periodontitis, evolving from root debridement and soft tissue curettage to various forms of periodontal surgery including the placement of physical barriers and/or grafting materials. Physical barriers have been used as adjuncts to gingival flap surgery interposed between the connective tissue of the periodontal flap and the curetted root surface. The purpose of the physical barrier is to deflect the gingival connective tissue and the apically migrating oral epithelium away from the root surface and to create a protected space over the defect. The presence of the barrier allows for cells of the remaining periodontal structures to repopulate the defect. This technique is presently known as Guided Tissue Regeneration (GTR). The therapeutic effects of GTR using bioresorbable and non-resorbable barriers to treat intrabony/vertical defects were analyzed. Although some slight differences existed, both resorbable and non-resorbable barriers appeared to offer similar outcomes in the treatment of vertical defects.

ERIN TAYLOR (3RD Year) **AADR, IMPLANTOL RES/ORAL HLTH RES, POSTER**

An Analysis of Oral Cancer in Pennsylvania Counties.

E. TAYLOR * and K. DOBROSIELSKI-VERGONA+ (Univ. of Pittsburgh, Pittsburgh, PA)

The prevention and early detection of oral cancer is a priority area of "Healthy People 2010" and the Surgeon General's Report on Oral Health. The most successful interventions will rely on the knowledge of the specific demographics and epidemiology of oral cancer in selected regions within each State. The analysis herein will serve to develop public health strategies that offer the most promise of reducing oral cancer in Pennsylvania. Standardized incidence rates (SIR), average annual age-adjusted death rates (DR) and incidence rates (IR) were collected for each of the 67 counties in Pennsylvania. In addition, known risk factor behaviors for oral cancer (smoking and alcohol) for each county were compared with these mortality and incidence rates. Finally, the demographic profile of each county was considered to identify potential socio-economic risk factors for each geographic region. Philadelphia county has the highest IR for buccal cavity and pharyngeal cancer (21.1 vs. 13.5 for the entire State). The county with the highest DR for these cancers is Montour, with a rate of 9.7, compared to the 3.5 value for all counties combined. The risk factors that showed the highest correlation with either incidence or mortality from oral cancer were smoking, chronic drinking, poverty, rural environment, and no health care insurance. We conclude that the incidence and mortality of oral cancer are affected by behavior and socio-economic factors in particular counties in Pennsylvania. Education targeted to health care professionals and the most susceptible populations in Pennsylvania have the potential of reducing oral cancer. +Univ. of Pittsburgh Cancer Institute.

J Dent Res AADR Abstr 80 (1424):213, 2001.

JUAN TEODORO (3RD Year) **ASDA, POSTER**

Evaluation of Maxillary Sinus Augmentation for the Placement of Dental Implants in Maxillary Posterior Edentulous Areas.

J. TEODORO, L. MOTA

Dental implants represent an important and valuable therapeutic alternative in the restoration of function and esthetics for the edentulous patient. Sufficient bone dimension (both height and width) is a prerequisite for the placement of dental implants. The posterior maxilla often represents a challenge to the clinician due to a lack of adequate amounts of bone. This review of the most current literature describes the surgical technique for maxillary sinus augmentation (M.S.A.) and the placement of dental implants. It also evaluates the success rate of this surgical technique and its potential complications. In addition, a comparison of the survival rates of implants placed in the various grafting material utilized for M.S.A. was performed. The 15 human studies reviewed indicate a success rate for M.S.A. grafts to average 99.8%. Minimal complications were reported, ranging from sinusitis (12%) to infections (5%). Survival rates for the implants placed in autogenous grafts ranged from 75.3% to 100%. Survival rates for Allograft and/or alloplast materials ranged from 87% to 100%. Combinations (autogenous with others) ranged from 93% to 100%. The 3 animal studies showed a 100% success rate for M.S.A. grafts and a 100% survival rate for implants when using autogenous and/or alloplast materials. In conclusion, our study indicates maxillary sinus augmentation to be a safe and effective alternative for providing adequate bone dimension for the placement of implants. Complicatons reported were minimal and for the most part subsided shortly after the procedure. The overall survival rates for implants in grafted sinuses are optimal (75.3% to 100%).

DR. ROBERT WEYANT **IADR, SYS CONDITIONS, BEHAV & PERIODONTAL DIS, POSTER**

Markers of Chronic Inflammation, Dental Morbidity and Periodontal Infections in an Elderly Population 70+.

RJ WEYANT*, WA BRETZ, PMA CORBY, N MARKOVIC, S KRITCHEVSKY, A NEWMAN (University of Pittsburgh, USA)

The HealthABC study is a longitudinal study looking at the effects of body composition and weight related health conditions on mobility impairment. The aim of this study was to assess the levels of markers for chronic inflammation and to correlate these with dental morbidity and periodontal infections in a subset of participants 70+ years (n=508). Serum IL-6, CRP, PAI, and TNF were measured in all participants. History of diabetes, arthritis, emphysema, hypertension and current tobacco use were obtained by a face-to-face interview. Periodontal examination was performed including probing depth and attachment loss in 6 sites/tooth, and the PI and GI (4 sites/tooth). Subgingival plaque samples were collected from 4 molar teeth or from the most posterior adjacent tooth when present. These plaque samples were assayed with the BANA test for *T. denticola, P. gingivalis* and *B. forsythus*. Regression analysis and correlation coefficients were used in the data analysis. A BANA test dichotomous variable was created (participants with no BANA-(+) sites *vs.* those with one or more BANA-(+) sites). The mean age of participants was 73.3 $\pm$ 3.6 years. 7% of participants presented with no BANA-(+) species in the teeth sampled. Tooth counts were inversely related to the levels of IL-6 and CRP ($p<0.002$). The # of sites with attachment loss $\geq$ 3mm were positively correlated with IL-6 serum levels. Participants with no BANA-(+) teeth had decreased levels of all inflammatory markers. Only CRP levels, however, were significantly lower in patients with no BANA-(+) sites ($p=0.001$). Regression models adjusted for current tobacco usage, history of diabetes, arthritis, emphysema, hypertension, and # of teeth indicated that BANA-negative participants could marginally predict decreased CRP serum levels ($p=0.065$). Dental morbidity was correlated with increased CRP and IL-6 serum levels in this elderly population. The absence of periodontal anaerobic infections was moderately associated with decreased levels of CRP in the presence of established risk factors for elevated CRP. NIH grant #AG62101.

POSTER NOT DISPLAYED

J Dent Res IADR Abstr 80: 2001, in press.

University of Pittsburgh - School of Dental Medicine
Spring Research Symposium – Wednesday, April 4, 2001 - 5:30-6:00 pm

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Room 457 Salk Hall

No. Presenter/Authors/Title

1. Jaime Cernansky, 3rd Year First Professional (Mentor-Dr. Sudha Agarwal)
J. CERNANSKY*, P. LONG, M.J. BUCKLEY, N.P. PIESCO, S. AGARWAL
Tensile Strain Antagonizes Interleukin-1β Actions in Periodontal Ligament Cells

2. Sherri Lyn Chong, 3rd Year First Professional (Mentor-Dr. Mark Mooney)
S.L. CHONG*, R. MITCHELL, A. MOURSI, P. WINNARD, H.W. LOSKEN, O. OZERDEM, K. KEELER, L. OPPERMAN, M.I. SIEGEL, M.P. MOONEY
Rescue of Coronal Suture Synostosis with TGF-*b*3 in Craniosynostotic Rabbits

3. Andrew Diamond, 3rd Year First Professional (Mentor-Dr. Luis Mota)
A. DIAMOND*, L. HUYNH, L, L. MOTA
Comparison of Periodontal Plastic Surgery Techniques: Free Gingival Grafts, Tissue Grafts and Guided Tissue Regeneration

4. Dr. Kathleen Dobrosielski-Vergona, Division of Oral Biology
K.A. DOBROSIELSKI-VERGONA*
Oral Health Care Needs of Alzheimer's Patients in Nursing Homes

5. Bryan Dougherty, Division of Surgical Dental Sciences
K.F. NOVAK, K. ETESSAMI, B.A. DOUGHERTY*
Evidence for Genetic Heterogeneity in *secB* Genes from *Actinobacillus actinomycetemcomitans*

6. Dr. Pouran Famili, Division of Surgical Dental Sciences
P. FAMILI,* R. MILLER, A. SEYEDAIN, A. GOLDSMITH, J. CLOSE
Prevalence of Periodontal Disease in First Year Dental Student with Family History of Diabetes

7. Dr. Curtis Harper, Orthodontics Resident
C.O. HARPER*, J.J. SCIOTE, R. MITCHELL, I.M.J. MATHIJSSEN, M.I. SIEGEL, M.P. MOONEY
Detection of Apoptosis in Rat Interfrontal Sutures Using Annexin V.

8. Dr. Brion Maher, Division of Oral Biology
B.S. MAHER*, M.M. VANYUKOV, M.L. MARAZITA, H.F. SIMKEVITZ, L. KIRISCI, R.E. FERRELL, G.P. KIRILLOVA, R.E. TARTER
An Item Response Theory Approach to Phenotype Refinement for Genetic Studies

9 Dr. Mary L. Marazita, Division of Oral Biology
M.L. MARAZITA*, M.E. COOPER, B.S. MAHER, Y. LIU, L.L. FIELD
Assessment of Candidate Genetic Regions for Oral-Facial Clefts in China

10. Uma Nair, 4th Year First Professional (Mentor-Dr. Sudha Agarwal)
U.P. NAIR, S.A. SEYDAIN, N.P. PIESCO, R. GASSNER, M.P. MOONEY, M. NAIR, S. AGARWAL
Tissue Engineered Vital Bone Graft-Assisted Repair and Restoration of Rabbit Mandible.

11. Manuel Pelaez, 3rd Year First Professional (Mentor-Dr. Karen F. Novak)
K.F. NOVAK, B.A. DOUGHERTY, M. PELAEZ*
Functional Analyses of Type IV Secretion Genes in *Actinobacillus actinomycetemcomitans*

12. Cynthia Sclater, 4th Year First Professional (Mentor-Dr. Karen F. Novak)
K.F. NOVAK, B.A. DOUGHERTY, C. SCLATER*
Analysis of *Actinobacillus actinomycetemcomitans* Strains Harboring Type IV Secretion Genes

13. Iyad Sood 3rd Year First Professional (Mentor-Dr. Luis Mota)
I. SOOD, H. ACOSTA, L. MOTA
Guided Tissue Regeneration Treatment of Vertical Defects with Resorbable and Non-Resorbable Barriers

14. Erin Taylor, 3rd Year First Professional (Mentor-Dr. K. Dobrosielski-Vergona)
E. TAYLOR* AND K. DOBROSIELSKI-VERGONA
An Analysis of Oral Cancer in Pennsylvania Counties

15. Juan Teodoro, 3rd Year First Professional (Mentor-Dr. Luis Mota)
J. TEODORO*, L. MOTA
Evaluation of Maxillary Sinus Augmentation for the Placement of Dental Implants in Maxillary Posterior Edentulous Areas

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