LUNCH & LEARNING

Thursday, March 23, 2017 and Friday, March 24, 2017
12:30 p.m. – 1:45 p.m.

During lunch, you may discuss topics of current interest with the researchers as identified below. There is a $65 fee to cover the cost of lunch and attendance will be limited to 10 persons per table, including the speaker. Assignments are processed on a first-come, first-served basis. If a table fills up, you can request to be placed on a waiting list. If you purchased a ticket in advance, it will be included in your registration materials with your meeting badge. Space permitting, tickets will be sold on site.

Thursday, March 23, 2017; 12:30 p.m. – 1:45 p.m

Table #1: Longitudinal Patterns of Oral Disease Progression
Speaker: Alexandre Vieira (University of Pittsburgh, Penn., USA)
Sponsoring Group/Network(s): Cariology Research Group, Clinical and Translational Science Network
Dental caries, periodontal diseases, oral inflammation are all conditions that have been historically measured by scoring systems motivated by field applications. They have been widely used to determine disease status and infer disease severity. With many molecular applications at our disposal nowadays, we have relied on these classic disease measurements but there is a growing perception that the oversimplified disease definitions are hindered discovery. Definitions that rely on longitudinal data may be more robust and meaningful.

Table #2: Current Methods of Staging Caries Process and Enabling Dentists to Manage Caries
Speaker: Rahena Akhter (Charles Sturt University, Sydney, Australia)
Sponsoring Group/Network(s): Cariology Research Group
The aim of this lunch and learning session is to provide an overview of the International Caries Detection and Assessment System (ICDAS) and its associated International Caries Classification and Management System (ICCMS), and outline how it is being used for staging of the caries process in order to enable dentists to manage caries appropriately.

ICDAS employs an evidence-based and preventively oriented approach, is a detection and assessment system classifying stages of the caries process on the basis of histological extent and activity, is designed for use in the four domains of clinical practice, education, research and public health. ICDAS provides flexible and increasingly internationally adopted methods for classifying stages of the caries process and the activity status of lesions which can be incorporated into the ICCMS. The most common methods among dentists for the clinical detection and assessment of pit and fissure caries are visual/tactile and visual inspection aided by radiographs. This system relies

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on good visual inspection without destruction of incipient caries that might occur in enamel by the use of sharp explorers. This “diagnosis” will eventually lead to proper treatment approach for dealing with carious teeth regardless of its severity. The ICCMS provides options to enable dentists to integrate and synthesize tooth and patient information, including caries risk status, in order to plan, manage and review caries in clinical and public health practice.

**Table #3:** 3-D Printing and Laser-Sintering: Dental Applications  
**Speaker:** Faleh Tamimi (McGill University, Montreal, Quebec, Canada)  
**Sponsoring Group/Network(s):** Dental Materials Group  
In this session we will discuss the most recent developments in rapid prototyping technologies and their implications in dentistry. The Lab of Dr Tamimi has made important contributions in the field of 3D printed ceramics for craniofacial bone regenerations and he is currently working with industrial partners in the development of partial dentures made with laser-sintering technologies.

**Table #4:** Monomer Chemistries in Dental Composites: Current Trends and Future Perspectives  
**Speaker:** Carmem Pfeifer (Oregon Health & Science University, Portland, USA)  
**Sponsoring Group/Network(s):** Dental Materials Group  
This session will cover recent developments in monomer systems for dental composites and dental adhesives. Current commercially available materials, with emphasis in new and emerging technologies, will be presented. Potential areas for improvement will be discussed, in light of the most updated research in development in the field. Structure-property relationships, and

**Table #5:** Sensory Testing in Orofacial Pain Evaluation  
**Speaker:** Maria Pigg (Malmo University, Sweden)  
**Sponsoring Group/Network(s):** International RDC/TMD Consortium Network, Neuroscience  
Assessment of somatosensory function is recommended in complex orofacial pain investigations. Abnormal function may indicate pain mechanisms and possible intervention targets. This session describes and discusses screening with simple tools available to every dentist as well as comprehensive evaluation requiring quantitative sensory tests (QST) from a clinical and research perspective.

**Table #6:** Application of CRISPR/Cas9 Technology in Mineralized Tissue Research  
**Speaker:** Yongbo Lu (Texas A&M, Baylor College of Dentistry, Dallas, USA)  
**Sponsoring Group/Network(s):** Mineralized Tissue Research Group  
Clustered regularly interspaced short palindromic repeats (CRISPR)/CRISPR-associated protein (Cas) systems were originally discovered in bacteria and archaea. They provide bacteria and archaea with adaptive immunity against bacteriophage and DNA plasmids. Among all the CRISPR/CAS systems discovered to date, the type II system from Streptococcus pyogenes (S. pyogenes) is the best studied system and has been adapted for genome editing. The engineered type II system requires only two key components, an RNA-guided DNA endonuclease Cas9 and a single guided RNA (sgRNA), to introduce a double stranded break (DSB) at the target DNA site on the genomic DNA. The DSBs introduced by CRISPR/Cas9 are usually repaired by non-homologous end-joining (NHEJ), resulting in nonspecific insertions or deletions (indels) at the DNA target sites. If a single-stranded oligodeoxynucleotide (ssODN), containing the desired modified nucleotides flanked by arms with homology to the DNA target site, is supplied as a DNA repair template, DSBs may be repaired by homology-directed repair (HDR), through which a precise genomic modification can be introduced at the DNA target site in mammalian cells. Due to its ease of operation and high targeting efficiency, CRISPR/Cas9 technology has been rapidly employed to edit the mammalian genomes in biomedical research, including generating gene knockout mammalian cells, generating gene knockout...
(or knockin) organisms and gene therapy, etc. More recently, CRISPR/Cas9 has also been used to generate animal models of human genetic diseases that primarily affect the mineralized tissues.

**Table #7:** For M.S., Ph.D., D.M.D./Ph.D. Students: What’s Next?
**Speaker:** Brian Foster (NIH/NIAMS; The Ohio State University, Columbus, USA)
**Sponsoring Group/Network(s):** National Student Research Group
MS, PhD, DMD/PhD students make up an important subset of dental professionals and make up a large percentage of the attendees at AADR/IADR. These students are scientists and clinician-scientists who are the future leaders of dental institutions. Mentoring and providing them with a space for networking and collaboration is crucial for the advancement of our dental profession. Learning how to be an effective professional and leader in academic dentistry is fundamental to their growth as well. The speaker will provide advice on different career options available in academic settings and focus on discussion points such as, how and where to find opportunities, how to negotiate, how to continue developing mentor relationships and being a mentor to others and how to collaborate with other scientists.

**Table #8:** How to Assess Long-term Success of Periodontal Therapy?
**Speaker:** Peter Eickholz (JWG-University of Frankfurt, Germany)
**Sponsoring Group/Network(s):** Periodontal Research Group
The periodontal community is convinced that regular supportive periodontal treatment is the key to long-term prevention of tooth loss. How can we be sure? Most of the evidence originates from retrospective cohort studies. Why don’t we have randomized controlled clinical trials (RCT)? Do we need RCTs? Should we do them?

**Table #9:** Neutrophils in Periodontal Inflammation
**Speaker:** Josefine Hirschfeld (University of Birmingham, England)
**Sponsoring Group/Network(s):** Periodontal Research Group
In this session the role of neutrophil granulocytes in chronic and aggressive periodontitis will be discussed. Their contribution to both host defense and periodontal tissue destruction as well as the interactions between neutrophils and oral microorganisms will be highlighted. Neutrophils as potential therapeutic targets will be debated.

**Table #10:** Getting from Discovery to Clinical Value
**Speaker:** Kenneth Kornman (Interleukin Genetics, Inc., Waltham, Mass., USA)
**Sponsoring Group/Network(s):** Periodontal Research Group, Women in Science Network
Healthcare advances require scientific discovery, but translation from discovery to clinical value involves different thought processes and methods. This session will discuss critical differences between discovery and clinical utility and will show multiple examples of how to study and demonstrate clinical utility.

**Table #11:** Management of Clinical Trials in Periodontal Research
**Speaker:** MaryAnn Cugini (The Forsyth Institute, Boston, Mass., USA)
**Sponsoring Group/Network(s):** Periodontal Research Group, Women in Science Network
This lunch and Learn session will provide the learner with the opportunity to discuss issues related to the successful completion of periodontal clinical trials from calibration of examiners to patient recruitment strategies.
Table #12: The Next Red Complex? Sequencing and Cultivating New Periodontal Pathogens
Speaker: Flavia Teles (University of North Carolina, Chapel Hill, USA)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network

Uncultivated and unrecognized bacterial taxa comprise almost 50% of the oral microbiome. Their role in periodontal health and disease is unknown and will only be fully realized once they are identified, cultivated and characterized. Their study may lead to new compounds and metabolic pathways and better strategies for periodontal treatment.

Table #13: Targeting Endogenous Regulators of Inflammation as Therapeutics in Periodontitis
Speaker: Sinem Sahingur (Virginia Commonwealth University, Richmond, USA)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network

Targeting endogenous regulators of inflammation has emerged as promising therapeutics to promote resolution and preserve tissue homeostasis in many chronic inflammatory conditions including periodontal diseases. The discussion will focus on the newly emerging inhibitors of inflammation and provide perspectives for future investigations to study their role as a limiting factor in periodontal inflammation.

Table #14: Biomarkers of Periodontal Disease Progression in Gingival Crevicular Fluid
Speaker: Ricardo Teles (University of North Carolina, Chapel Hill, USA)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network

Periodontal diseases result from interactions between specific subgingival microbial species and the susceptible host. GCF provides a non-invasive, easily collected fluid to measure in vivo the inflammatory mediators released during disease processes that affect the periodontium. Despite the abundance of the studies in the literature reporting biomarkers that could be associated with periodontal disease or severity of the disease, little is known if any of those biomarkers are indicative of disease progression. In this session, novel approaches in detecting biomarkers that could be predictive of disease progression will be discussed.

Table #15: Treatment of Peri-Implant Diseases
Speaker: Karin Jepsen (University of Bonn, Germany)
Sponsoring Group/Network(s): Periodontal Research Group

Peri-implantitis is an inflammatory disease with a high and increasing prevalence resulting in peri-implant bone loss. Proposed treatment strategies include implant surface decontamination, adjunctive antibiotics, resective surgery with and without implantoplasty, as well as regenerative approaches aiming at the surgical reconstruction of the defects. At present there is no established and predictable treatment concept available for the management of peri-implantitis. Therefore, prevention of peri-implantitis by the management of peri-implant mucositis is of upper most importance.
Table #16: Fluoride in Dental Biofilm: Accumulation, Release and Role in Caries Process  
**Speaker:** Livia Tenuta (Piracicaba Dental School, University of Campinas, Brazil)  
**Sponsoring Group/Network(s):** Cariology Research Group

Fluoride is by far the most effective anti-caries agent, and to increase its availability in dental biofilm - a central site for the caries process - is the objective of most the fluoride approaches used today. Dental biofilm can accumulate fluoride, either bound to bacterial cells and proteins via calcium bridging, or by the precipitation of minerals, such as calcium fluoride. Approaches to increase such accumulation, such as the use of a calcium pre-rinse before fluoride treatment, have shown promising results. In this discussion, we will present the current evidence on the role of such fluoride biofilm reservoirs in the caries process.

Table #17: Bonding and Cementing Zirconia Restorations  
**Speaker:** Liang Chen (BISCO, Inc., Schaumburg, Ill., USA)  
**Sponsoring Group/Network(s):** Dental Materials Group

Zirconia restoration is becoming more and more popular. However, the traditional bonding method for silica-based porcelain ceramics is not effective for zirconia bonding. In the Lunch & Learn session, we will discuss: when we can cement zirconia, and when we should bond zirconia; what is the best protocol for cementing and bonding zirconia, including cleaning of saliva contamination.

Table #18: Bioremineralizing Adhesives For Long-lasting Restorations  
**Speaker:** Salvatore Sauro (Universidad CEU Cardenal Herrera, Valencia, Spain)  
**Sponsoring Group/Network(s):** Dental Materials Group

Dental adhesive systems have improved considerably over the last ten years, although shortcomings such as post-operative sensitivity, premature bond reduction, interface and marginal degradation, and biocompatibility are still considered important issues with such materials. Enzymatic degradation of collagen fibrils within the hybrid layer and hydrolysis of polymers are the major factors thought to destabilize the resin-dentine interface. However, “smart” resin-based materials that can interact therapeutically with dental hard tissues and reduce the degradation of the resin-dentine interface via remineralization of the mineral-depleted dental hard tissues can improve the durability of resin-dentine bonds. Innovative approaches to remineralize the resin-dentine interface may protect hybrid layers from different types of degradations over time, and have a therapeutic role in caries prevention. Experimental adhesive systems containing ion-releasing fillers with advanced remineralizing properties and matrix metallo-proteinases (MMP) inhibitors have been developed and used in combination with resin primers containing Ca-sequestering polyanion acids poly(aspartic acid) (PASA) or poly(acrylic acid) (PAA) and biomimetic analogues of collagen phosphoproteins such as sodium trimetaphosphate to remineralize resin-dentine interfaces. This biomimetic approach is able to evoke a “bottom-up” remineralization that restores the original stiffness (i.e. Young’s Modulus) of water-rich/resin-poor dentine-bonded interfaces. It will interesting to consider the commercialization of resin-based materials such as flowable composites and “smart” adhesive systems containing biomimetic reagents that can remineralize and prevent degradation of resin-dentine bonds to enhance their clinical longevity.
Table #19: Design & Process Optimization Using Response Surface Methods  
**Speaker:** Jason Griggs (University of Mississippi, Jackson, USA)  
**Sponsoring Group/Network(s):** Dental Materials Group  
Would you like to determine what formulation, process, or combination of design parameters will yield the maximum lifetime for a product? Minimize cost? Minimize technique sensitivity? Participants will be presented with several examples of how to conduct design optimization using response surface methods, as well as, a list of software packages that allow researchers to automate this approach.

Table #20: Support to Thrive  
**Speaker:** Leona Walsh (Postgraduate Medical & Dental Education, Wales Deanery, Wales)  
**Sponsoring Group/Network(s):** Education Research Group  
Practice to aid remediation. Participants will hear an evidence-informed introduction to managing trainees/residents with support needs, discuss support strategies, identify available resources, resolve the challenges and learn ideas and evidence to apply to their programs to minimize trainee/resident attrition.

Table #21: The Impact of Compromised Oral Health on Eating Experience in Older People.  
**Speaker:** Paula Moynihan (Newcastle University, England)  
**Sponsoring Group/Network(s):** Geriatric Oral Research Group, Nutrition Research Group  
This session aims to raise awareness of the impact of compromised oral health (tooth loss, dry mouth) on eating-related quality of life. Objectives: to i) discuss evidence pertaining to the impacts of oral conditions on eating experience in elders and ii) provide examples of methods to measure altered eating experience.

Table #22: Standardized Assessment Protocol for Temporomandibular Disorders  
**Speaker:** Michail Koutris (Academic Centre for Dentistry Amsterdam (ACTA), Netherlands)  
**Sponsoring Group/Network(s):** International RDC/TMD Consortium Network  
The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) is a validated classification system for the commonest TMDs developed for research and clinical purposes. The discriminative value rests on the proper use of the self-report instruments and examination procedures. This session will focus on understanding the DC/TMD protocol and the decision trees.

Table #23: Is Oral Microbiome The 'Canary in the Coal Mine' of Human Health and Disease?  
**Speaker:** Bruce Paster (The Forsyth Institute, Boston, Mass., USA)  
**Sponsoring Group/Network(s):** Periodontal Research Group, Women in Science Network  
The oral microbiome is incredibly complex. Collectively, there are approximately 700 predominant taxa. We can rapidly determine bacterial associations with oral health and disease, that oral bacteria may serve as biomarkers for non-oral diseases, and that oral microbial profiles may have potential use to assess disease risk.

Table #24: Oral and Systemic Links: Where are the Confounders?  
**Speaker:** Effie Ioannidou (University of Connecticut, Farmington, USA)  
**Sponsoring Group/Network(s):** Periodontal Research Group, Women in Science Network  
This Lunch and Learn session aims to assess the current evidence on the oral-systemic interplay utilizing the Bradford Hill criteria for causation. More importantly, this session aims to be interactive with productive discussion based on data deriving from selected published evidence with a goal to evaluate research bias and validity.
Table #25: Dental Implants in Patients with Periodontitis: Risk Factors and Follow-up
Speaker: Jamil Shibli (University of Guarulhos, Brazil)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network
Implant supported restorations have presented higher success rates, although peri-implant diseases have been described mainly in subjects with risk factors as history of periodontitis. Therefore, new insights about how manage this situation on daily clinical practice must be focuses on previous clinical evaluation of untreated periodontal sites, compliance and maintenance program.

Table #26: Evidence for Role of Newly Identified Bacterial Species in Periodontal Etiology
Speaker: Marcelo Faveri (Guarulhos University, Brazil)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network
The complex periodontal microbial ecology has been studied for more than a century. This session aims to discuss the results of independent-culture diagnostic methods introduced about a decade ago that have pointed out to the existence of new periodontal pathogens, including species from the Archaea Domain.

Table #27: Host-Pathogen Interaction at Mucosal Surfaces
Speaker: Shannon Wallet (University of Florida, Gainesville, USA)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network
In this session, the role of mucosal immunology and understanding the role of host-pathogen interactions at the mucosal surfaces in immune modulation will be discussed. In this context, both host defense and bacterial etiology of diseases including periodontal diseases, cancer and other immunological diseases will be highlighted.

Table #28: Effects of Aging on the Gingival Transcriptome in Health and Periodontal disease
Speaker: Octavio Gonzalez (University of Kentucky, Lexington, USA)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network
This session will review the state of the evidence about the potential molecular causes of age-related chronic inflammatory disease and discuss the main findings about variations in the gingival transcriptome associated with aging that could be contributing to higher frequency and severity of periodontitis in the elderly.

Table #29: The Metatranscriptome of the Oral Microbiome in Periodontal Disease Progression
Speaker: Jorge Frias-Lopez (University of Florida, Gainesville, USA)
Sponsoring Group/Network(s): Periodontal Research Group, Women in Science Network
The oral microbiome is one of the most complex microbial communities in the human body. Although the circumstances where the healthy microbial community becomes dysbiotic are unknown, it is known that the dysbiosis in microbial oral community gives rise to periodontitis which is a polymicrobial inflammatory disease. Metatranscriptomic approaches have recently begun to identify functional signatures of the oral community associated with the progression of the disease. In this session, we will present this novel approach in understanding how community-wide changes in gene expression associated with changes in metabolic activities lead to dysbiosis in the oral microbiome. An in-depth assessment of their involvement in the regulation of activities including association with progression of the periodontal disease will be executed.
Table #30: Seal in Deep Caries-Fact or Fiction? What Treatment is Best?

Speaker: Edward Lynch (University of Warwick, England)

Sponsoring Group/Network(s): Pharmacology/Therapeutics/Toxicology

Dr. Edward Lynch will provide an evidence based discussion on efficacy of sealing off deep carious lesion. This session will educate attendees on relevant evidence-based studies related to minimally invasive restorations and tooth preservation for managing deep carious lesions.