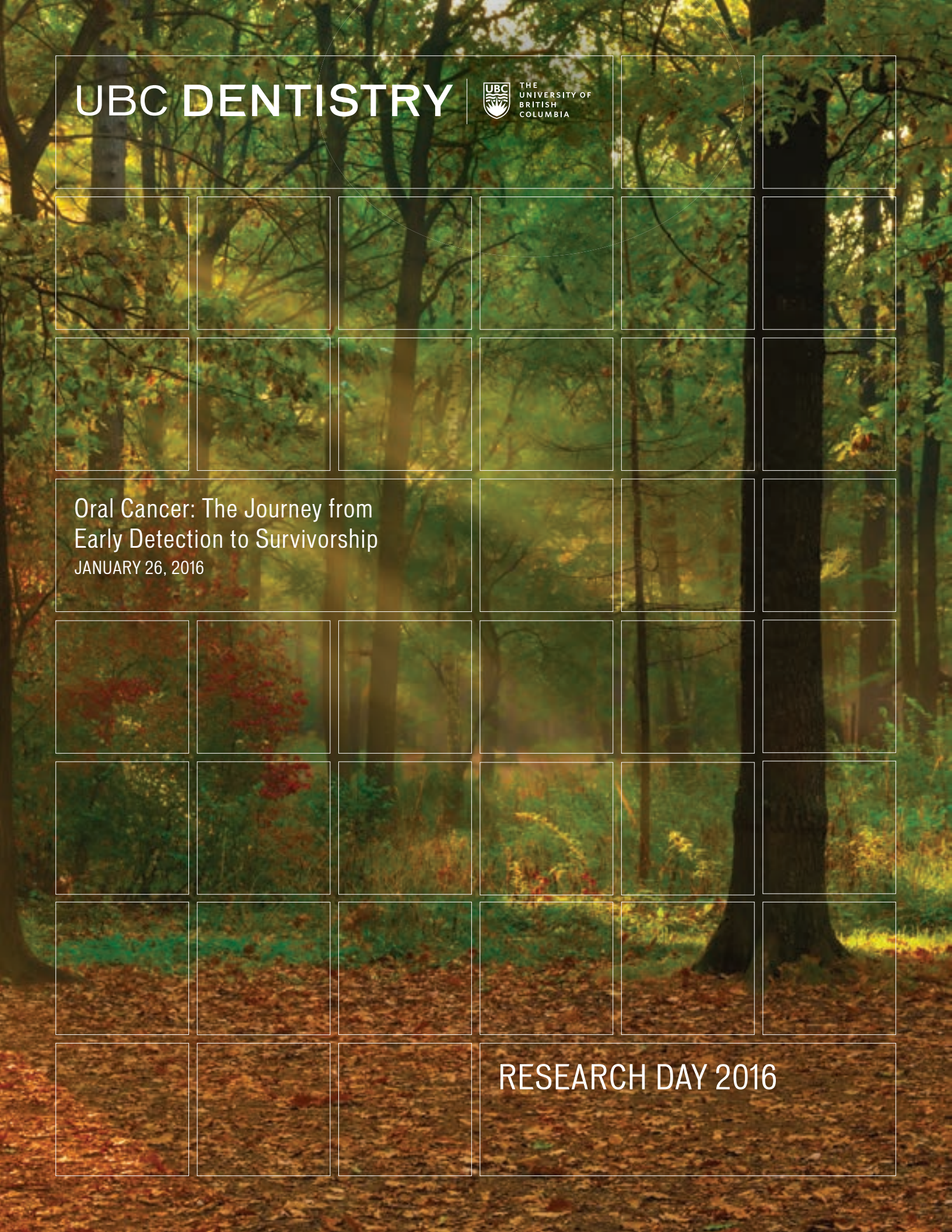

UBC DENTISTRY

THE UNIVERSITY OF BRITISH COLUMBIA

Oral Cancer: The Journey from Early Detection to Survivorship

JANUARY 26, 2016

RESEARCH DAY 2016

Advancing oral health through outstanding education, research, and community service.

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MESSAGE FROM THE DEAN

Research Day 2016

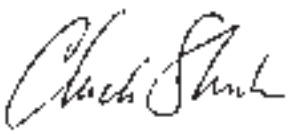
Our ninth annual research day will return to a topic that is extremely important to all oral health professionals: oral cancer. There has been some very important progress in the early diagnosis and management of oral cancer, which makes a second research day on this topic particularly appropriate. UBC faculty members and the BC Cancer Agency have made important contributions to these new research and clinical advances. The presentations in this research day program will emphasize the new advances that are resulting in improved outcomes for patients diagnosed with oral cancer.

Oral cancer remains a significant health problem and the incidence of oral cancer has not changed dramatically despite the well-understood factors that contribute to the etiology. The oral cancer research group at the BC Cancer Agency is internationally recognized for their outstanding research accomplishments. It is a pleasure to have these leading investigators presenting most of the program today. The COOLS clinical trial is a particularly noteworthy achievement that is led by our faculty colleague Dr. Catherine Poh. The instrument used in the trial was developed at the Cancer Agency and this new clinical application has a tremendous potential to reduce the recurrence of oral cancer, thereby greatly improving clinical outcomes. All of the faculty members speaking in the program today are outstanding and make impressive contributions to help patients in their oral cancer treatment and post-treatment recovery.

We are delighted to have a diverse group of speakers. They will provide material related to clinical risk factors, oral cancer epidemiology, molecular changes linked to malignant progression, the COOLS project, prosthetic treatments after cancer therapy, and the future progress in oral cancer research. A patient will also discuss the experience of receiving an oral cancer diagnosis and the treatment obtained to eliminate the cancer, a critically important perspective for any oral health professional who performs an oral cancer examination. These presentations should provide an important perspective on the problems and potential advances related to oral cancer.

Enjoy the day, and I hope you learn new information related to the diagnosis, prognosis, and treatment of oral cancer. Performing a thorough oral cancer examination is one of the most important activities you can do for your patients. UBC Dentistry is a world leader in this area and will remain a resource for you and your patients throughout your career.

Thank you for your participation.



Charles F. Shuler, DMD, PhD
Professor and Dean, UBC Faculty of Dentistry

ORAL CANCER CASE

Mr. R., a 53-year-old male, presented for a recall dental appointment with no concerns. Mr. R. is a former smoker and non-drinker. He smoked for 18 months and quit 27 years ago. He is exposed to second-hand smoke daily. Mr. R.'s medical history includes an irregular heartbeat, depression, and anxiety. He takes propranolol 10 mg TID, Wellbutrin (bupropion) 100 mg TID, diazepam 2 mg BID, and 81 mg ASA.

Upon intraoral examination, a 20×10 mm white lesion was discovered on the left ventral tongue. The lesion had diffuse margins, a non-homogeneous appearance, and a smooth and grainy texture. No other intraoral lesions were found and the extraoral examination was negative.

Mr. R. was referred to an oral medicine specialist for follow-up and possible biopsy. However, at his 6-month recall, he reported he had called the specialist but could not afford the consult fee. Instead, he went to his family doctor and was prescribed an antifungal. Intraorally, the lesion was still present but appeared to be smaller in size. At the following recall visit, the lesion was still present and Mr. R. now reported tongue sensitivity to processed foods such as microwave dinners. Mr. R.'s general dentist performed a biopsy. The histopathologic diagnosis was carcinoma *in situ*. Mr. R. was immediately referred to the BC Cancer Agency for treatment and follow-up.

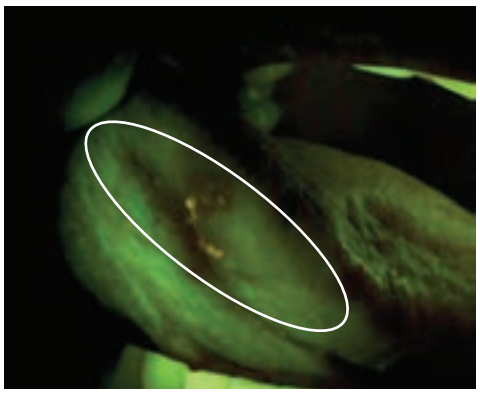
[Case courtesy of Dr. Denise Laronde]

Case Learning Objectives:

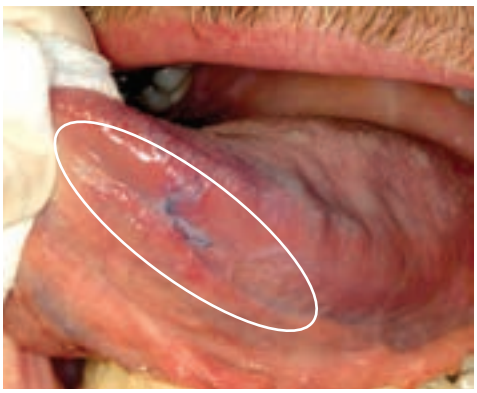
At the end of the day, participants are expected to be able to:

- Recognize the clinical risk factors associated with malignant transformation.
- Discuss the changing demographics of oropharyngeal cancers in BC.
- Explain the changes in toluidine blue staining that are associated with malignant transformation.
- Identify the changes in genetic markers associated with dysplastic to malignant transformation.
- Describe surgical adjunct approaches that are used to more effectively excise cancerous areas.
- Describe prosthodontics rehabilitation approaches.

A. A white diffuse lesion on the left ventral tongue.



B. Fluorescence imaging enhances the margins of the same lesion.



C. The same lesion stained with toluidine blue.

UBC Dentistry Research Day 2016
Oral Cancer: The Journey from Early Detection to Survivorship

Tuesday, January 26, 2016
Alma Mater Society Student Nest, Great Hall

8:00 – 8:30	**REGISTRATION & CONTINENTAL BREAKFAST**
8:30 – 8:45	**WELCOME** **Dr. Charles Shuler,** Professor and Dean, UBC Faculty of Dentistry **INTRODUCTION & OVERVIEW OF THE DAY** **Dr. Edward Putnins,** Professor and Associate Dean of Research & Graduate/Postgraduate Studies, UBC Faculty of Dentistry
8:45 – 9:20	**CLINICAL RISK FACTORS OF ORAL LESIONS** **Dr. Bertrand Chan,** Clinical Assistant Professor, Department of Oral Biological & Medical Sciences, UBC Faculty of Dentistry "What is the evidence to support the clinician's decision to follow-up a lesion?"
9:20 – 9:45	**BIRTH COHORT AND CALENDAR PERIOD TRENDS IN RISING INCIDENCE RATES OF OROPHARYNGEAL CANCERS IN BRITISH COLUMBIA** **Dr. Ajit Auluck,** Postdoctoral Research Fellow, Simon Fraser University, Burnaby, BC, Canada "How do the inter-relationships between the age of disease onset, year of disease diagnosis, and year in which subjects were born impact the rising incidence of oropharyngeal cancers in British Columbia?"
9:45 – 10:10	**MOLECULAR ANALYSIS AND CHANGES IN TOLUIDINE BLUE OVER TIME: PREDICTING MALIGNANT PROGRESSION** **Ms. Leigha Rock,** PhD Student, Department of Oral Biological & Medical Sciences, UBC Faculty of Dentistry "Are changes in toluidine blue status over time associated with high-risk molecular patterns and malignant transformation of low-grade dysplasia?"
10:10 – 10:40	**COFFEE BREAK**
10:40 – 10:55	**A SURVIVOR'S STORY** **Mrs. Brenda Currie** and **Mr. Daniel St. Andrews**
10:55 – 11:30	**CANADIAN OPTICALLY GUIDED APPROACH FOR ORAL LESIONS SURGICAL (COOLS) TRIAL** **Dr. Catherine Poh,** Associate Professor, Department of Oral Biological & Medical Sciences, UBC Faculty of Dentistry "How does a new technology affect the management of oral cancer?"
11:30 – 11:45	**RESEARCH POSTER AWARDS PRESENTATION** **Dr. Ravindra Shah,** Associate Professor and Director, International Relations, UBC Faculty of Dentistry Undergraduate & Graduate Students
11:45 – 12:55	**LUNCH (BOX LUNCH PROVIDED) & RESEARCH POSTER VIEWING** Posters by undergraduate students, graduate students, postdoctoral fellows, research associates, visiting scientists, and faculty members
12:55 – 1:30	**THE IMPACT OF ONCOLOGIC TREATMENTS ON PROSTHETIC REHABILITATION** **Dr. Caroline Nguyen,** Assistant Professor, Department of Oral Health Sciences, UBC Faculty of Dentistry "What are the challenges the dental oncology team faces following modern cancer treatments?"
1:30 – 2:45	**NEXT GEN FOR ORAL CANCER: LESSONS LEARNED AND A VISION FOR THE FUTURE (KEYNOTE ADDRESS)** **Dr. Miriam Rosin,** Professor, Department of Biomedical Physiology & Kinesiology, Simon Fraser University, Burnaby, BC, Canada; Director, BC Oral Cancer Prevention Program and Senior Scientist, BC Cancer Agency, Vancouver, BC, Canada "How do we evolve a new framework that will change the outcome of oral cancer?"
2:45 – 3:00	**WRAP-UP & DISCUSSION**

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MESSAGE FROM THE ASSOCIATE DEAN OF RESEARCH

Thank you for attending the Ninth Annual UBC Dentistry Research Day.

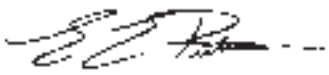
Due to its location or "innocent" appearance, early stage oral cancer detection can be challenging. This is exemplified by the clinical case selected for this research day. Unquestionably, early cancer detection saves lives and it is therefore paramount that we all work to ensure patient health. Research Day 2016 revisits this important topic with a focus on early detection, risk factors, and treatment approaches. All of these areas must be addressed in order to improve patient outcomes and quality of life. We are very fortunate to have graduate students, full- and part-time faculty, and alumni working in these areas and they will present on this important topic.

We will begin the morning by looking at clinical risk factors associated with oral cancer progression, changing trends in cancer incidence rates, and molecular and biological changes associated with progressing dysplasia. After our morning break, we will hear about exciting research that is being done to reduce postsurgical cancer recurrence and prosthodontic approaches being used to manage these patients postsurgically. Our day will finish with our keynote address by Dr. Miriam Rosen, who will provide her forward-looking thoughts on the diagnosis and management of oral cancer.

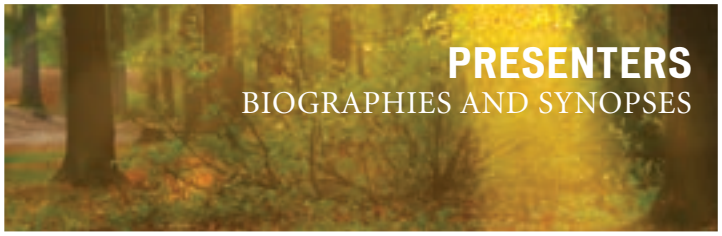
We are honoured to have with us Mr. Daniel St. Andrews, an oral cancer survivor, who will briefly speak about his personal oral cancer survivorship journey. In concert, Mrs. Brenda Currie, a UBC alumna, will speak about an oral cancer fundraising opportunity. Together they are working to help us understand the journey faced by a patient receiving a cancer diagnosis as well as highlighting an exciting opportunity by which we can all support this area of research.

In addition, please do read through this research day program booklet to see the other exciting research currently being done by our faculty and students at the University of British Columbia. In closing, this book and day is made possible by the efforts of many people on the Research Day Organizing Committee. I would like to personally thank Manuela Boscenco, Ingrid Ellis, Denise Laronde, Kimberly Schultz, and Terry Wintonyk, who have worked very hard to make this day a success.

Do enjoy Research Day 2016.



Edward E. Putnins, DMD, PhD, DipPerio
Professor and Associate Dean of Research, Graduate & Postgraduate Studies



PRESENTERS
BIOGRAPHIES AND SYNOPSES

BERTRAND CHAN
AJIT AULUCK
LEIGHA ROCK
BRENDA CURRIE
DANIEL ST. ANDREWS
CATHERINE POH
CAROLINE NGUYEN
MIRIAM ROSIN

BERTRAND CHAN, MBBS, BDS, MSc, FRCD(C)

Dr. Bertrand Chan is a Clinical Assistant Professor in the Department of Oral Biological & Medical Sciences at the UBC Faculty of Dentistry. He obtained his specialty training in oral medicine and pathology at UBC and is a board-certified oral medicine specialist. Dr. Chan is the oral medicine leader of the BC Oral Cancer Prevention Program, an attending staff member at Vancouver General Hospital, a consulting staff member at the BC Cancer Agency, and runs a private clinic in Vancouver.

CLINICAL RISK FACTORS OF ORAL LESIONS

Oral lesions can be diverse and their clinical features can vary across a wide spectrum. Clinicians may be baffled by some unusual presentations and patients may be anxious about certain findings, thus causing undue stress to both the clinician and patient. This presentation aims to provide some guidelines on how to proceed with certain oral lesions and will indicate what the red flags for clinicians are. We will also go over oral cancer screening, investigation, and referral pathways.

AJIT AULUCK, PhD

Dr. Ajit Auluck completed his doctoral studies in 2012 at the UBC Faculty of Dentistry with funding from the Canadian Institutes of Health Research. He then became a clinician scientist in the BC Oral Cancer Prevention Program and a postdoctoral fellow at Simon Fraser University. Dr. Auluck does interdisciplinary research in the areas of cancer epidemiology, psychosocial oncology, qualitative research, and clinical studies. He is currently working with an international team on epidemiological studies and sharing his recent research.

BIRTH COHORT AND CALENDAR PERIOD TRENDS IN RISING INCIDENCE RATES OF OROPHARYNGEAL CANCERS IN BRITISH COLUMBIA

Globally the rates of oropharyngeal cancers are increasing but the natural history of the disease is not well understood. Cancer registries provide an invaluable resource for conducting epidemiological studies to understand the interactions between different parameters that could contribute to the increased cancer burden. One such epidemiological method is the Age-Period-Cohort (APC) analysis, which help us understand the relationships between time of diagnosis (age of disease onset), calendar period of disease (year of disease diagnosis), and year in which subjects were born (birth cohorts). A novel epidemiological approach using rigorous statistical method was applied to over 15,000 cases from the BC Cancer Registry; this will help to inform the policies and practices needed to control the rising incidence of oropharyngeal cancers in BC.

LEIGHA ROCK, DipDH, BDSc

Ms. Leigha Rock is a PhD student at the UBC Faculty of Dentistry. She has a diploma in dental hygiene and a Bachelor of Science in Dental Hygiene (UBC). Ms. Rock is a member of the BC Oral Cancer Prevention Program, where her research focuses on the molecular analysis and examination of the clinical behaviour of oral premalignant lesions over time in order to further develop a risk model to predict the malignant transformation of low-grade oral premalignant lesions.

MOLECULAR ANALYSIS AND CHANGES IN TOLUIDINE BLUE OVER TIME: PREDICTING MALIGNANT PROGRESSION

Potentially malignant oral lesions with evidence of dysplasia are at a greater risk of progressing to oral cancer. However, not all of them will progress, and predicting which low-grade dysplasia (mild or moderate dysplasia) are at risk of progression is challenging. Finding markers for this has the potential to guide management and improve patient outcomes. This session will present a study that sought to identify if clinicopathological patterns in toluidine blue uptake over time can predict malignant progression, and to determine whether the interaction of molecular changes (loss of heterozygosity) and temporal toluidine blue patterns are associated with progression.

BRENDA CURRIE, DipDH, BDSc, MSc

Mrs. Brenda Currie is a three-time graduate of the UBC Faculty of Dentistry: she received her Diploma in Dental Hygiene in 1976, her BDSc (DH) in 2004, and an MSc in 2007 focusing on oral cancer screening in a high-risk and vulnerable population. Mrs. Currie studied with the BC Oral Cancer Prevention Program in a community outreach research group affiliated with the BC Cancer Agency, UBC, and the Portland Dental Clinic in the Downtown Eastside. Her passion and focus remain in supporting oral cancer research.

TASTE FOR LIFE, AN EVENING TO CONQUER ORAL CANCER

Mrs. Currie is the founder and chair of Taste for Life, An Evening to Conquer Oral Cancer, which raises funds for oral cancer research that aims to improve oral cancer outcomes and survivorship both in the community and globally. This year, having raised over $350,000, Taste for Life celebrates its 5th year of supporting oral cancer research.

DANIEL ST. ANDREWS

Mr. Daniel St. Andrews retired from the business world in 2005 at the age of 55. In 2009, he was diagnosed with stage III throat cancer and was given a 40% chance of surviving. Mr. St. Andrews received both radiation and chemo treatments at the Cancer Centre in Surrey, BC. He has been a volunteer at the Fraser Valley Cancer Centre i n Surrey since 2011.

A SURVIVOR'S STORY

Mr. St. Andrews was a guest speaker at the Taste for Life, An Evening to Conquer Oral Cancer dinner in Vancouver in April 2015 and is a member of the Advisory Board. He is also a member of the Measurement Steering Committee of the Canadian Partnership Against Cancer.

CATHERINE POH, DDS, PhD, CertOralPath

Dr. Catherine Poh is an Associate Professor at the UBC Faculty of Dentistry and a Clinician Scientist at the BC Cancer Agency's Research Centre. She is one of the two practicing oral maxillofacial pathologists in BC. Dr. Poh is active in developing processes by which new research findings can be transferred to dental communities. Her primary research involves the application of molecular and imaging tools for community screening, early detection, and management of cancerous and precancerous oral lesions.

CANADIAN OPTICALLY GUIDED APPROACH FOR ORAL LESIONS SURGICAL (COOLS) TRIAL

The treatment of early-stage oral cancer is an essential component of effective oral cancer management. Even with treatment, there are high rates of second oral malignancies, with up to a third of such patients suffering a recurrence or a second primary cancer despite intensive follow-up. In September 2010, the Terry Fox Research Institute funded the COOLS trial, a pan-Canadian phase III randomized surgical trial. The study's overall objective is to establish evidence that would support a change in clinical practice to the use of fluorescence visualization-guided surgery to reduce local recurrence. The novel optical technology should result in less frequent local follow-up treatments, improved patient quality of life, and a reduced financial burden on the system. Ultimately, with reduced disease recurrence comes reduced mortality.

KEYNOTE ADDRESS

CAROLINE NGUYEN, DMD, MS, CertProsth

Dr. Caroline Nguyen completed her DMD at the University of Montreal in 2006, her MS and Certificate in Prosthodontics at the University of Maryland in 2009, and her Fellowship in Maxillofacial Prosthodontics and Oral Oncology at the University of Texas MD Anderson Cancer Center in 2010. She currently serves as Assistant Professor at the University of British Columbia, as Provincial Practice Leader in Maxillofacial Prosthodontics for the British Columbia Cancer Agency, and is involved in clinical research on the side-effects of medications and radiation therapy on oral health. Dr. Nguyen is a Fellow in Prosthodontics of the Royal College of Dentists of Canada and a Diplomate of the American Board of Prosthodontics. She is the current Vice President for the Association of Prosthodontists of Canada, Table Clinics Chair for the American College of Prosthodontics, and a Prosthodontics Board Examiner for the Royal College of Dentists of Canada.

THE IMPACT OF ONCOLOGIC TREATMENTS ON PROSTHETIC REHABILITATION

Head and neck cancer patients have to deal with multiple complications following their oncologic treatments. In recent years, the introduction of intensity-modulated radiation therapy (IMRT) has allowed for more healthy tissue sparing, which potentially opened the doors to more prosthodontic treatment options for cancer survivors. This presentation will discuss the differences between conventional beam radiation therapy and IMRT on patient saliva, potential implant placement, and risk of osteoradionecrosis.

MIRIAM ROSIN, BSc(Hons), PhD

Dr. Miriam Rosin is the Founding Director of the BC Oral Cancer Prevention Program at the BC Cancer Agency. She is also a Professor at Simon Fraser University and a Clinical Professor at the University of British Columbia. Dr. Rosin is a leading translational researcher and scientist on oral cancer prevention, control, and treatment. Her research interests include development of strategies for the engagement and empowering of screening and referral networks for dental health professionals, development of clinical models for risk assessment and management, and creation and validation of technology to drive change in cancer control processes in order to remove barriers to oral cancer and precancer patient flow through the health system.

NEXT GEN FOR ORAL CANCER: LESSONS LEARNED AND A VISION FOR THE FUTURE

Over the past decade, BC has evolved a comprehensive strategy for oral cancer control that has at its heart a network of dental health practitioners who refer patients forward for assessment and care. This effort has created a pipeline for research into the development of innovative molecular and adjunctive tools to facilitate clinical decision-making, with these tools now validated in hospital clinics and ready for translation to the community. This presentation will describe a framework for future community cancer prevention research and plans to facilitate capacity-building in BC, including a description of the recently established NextGen clinic that will provide a venue for the tailoring of these validated approaches within the community setting and for catalyzing research at the community level.

POSTER ABSTRACTS

Poster Competition Judges

DR. RAVINDRA SHAH (Chair)
DR. FERNANDA ALMEIDA
DR. DIETER BRÖMME
DR. MARIO BRONDANI
DR. S. ROSS BRYANT
DR. RICARDO CARVALHO
DR. JEFFREY COIL
DR. ADRIAN DANESCU
DR. NANCY FORD
DR. LARI HÄKKINEN
DR. ADRIANA MANSO
DR. KAVITA MATHU-MUJU
DR. CAROLINE NGUYEN
DR. GETHIN OWEN
DR. BENJAMIN PLISKA
DR. CATHERINE POH
DR. CLIVE ROBERTS
DR. N. DORIN RUSE
DR. YA SHEN
DR. RANA TARZEMANY
DR. CHRISTOPHER WYATT

1 **Enriching for the Odontoblast Proteome within Human Dental Pulp**

Abbey SR*, Eckhard U, Matthew I, Overall CM

Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

2 **Antimicrobial Efficacy of Calcium Hydroxide, Iodine, and Centrimide Against Biofilms**

Almari HM*, Shen Y, Haapasalo M

Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

3 **Systematic Review of Psychosocial Theories Relevant to Oral Impairment/Disability**

Al-Sahan M*, Bryant SR, MacEntee MI

Division of Prosthodontics & Dental Geriatrics, Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

4 **Suppression of αvβ6 Integrin Expression by Polymicrobial Oral Biofilms**

Bi J*[1], Koivisto L[1], Saran VV[1], Pang A[1,2], Li M[1,2], Jiang G[1], Owen GR[1], Aurora S[1], Wang Z[1], Shen Y[1], Haapasalo M[1], Häkkinen L[1], Larjava H[1]

[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada; [2]Center of Stomatology, Tongji Hospital & Medical College, Huazhong University of Science & Technology, Wuhan, China

5 **Chronic Periodontitis is Associated with Platelet Factor 4 (PF4) Secretion**

Brosseau-Nault M*[1], Kizhakkedathu JN[2,3,4], Kim H[1,2]

[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada (UBC); [2]Centre for Blood Research, UBC; [3]Department of Pathology & Laboratory Medicine, UBC; [4]Department of Chemistry, Faculty of Science, UBC

6 **Dimensional Changes in the Palate Following Early Posterior Crossbite Treatment**

Bukhari A*, Kennedy D, Hannam A, Aleksejūnienė J, Yen E

Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

7 **Immediate Shear Bond Strengths and Mechanical Properties of Glass-Ionomer Cements**

Chander K*[1], Campbell K[2], Carvalho RM[1], Manso AP[1]

[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada (UBC); [2]Department of Oral Health Sciences, Faculty of Dentistry, UBC

8 **Oral Cancer Screening and Sociodemographic Factors Among British Columbians**

Chang HL*[1], Borugian M[2], Laronde DM[1,2]

[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada; [2]BC Cancer Research Centre, Vancouver, Canada

9 **Regulation of Connexin-43 Expression in Human Gingival Fibroblasts**

Cheng J*, Tarzemany R, Jiang G, Larjava H, Häkkinen L

Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

10 **Evaluating HIV Screening in Dental Education Settings**

Chong K*[1], Donnelly L[2], Brondani M[1]

[1]Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada (UBC); [2]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, UBC

11 **Analysis of Soft Palate Morphogenesis Supports Regional Regulation of Fusion**

Dool CJ*, Danescu A, Mattson M, Diewert VM, Richman JM
Department of Oral Health Sciences, Faculty of Dentistry, Life Sciences Institute, The University of British Columbia, Vancouver, Canada

12 **Effects of Contact Facilitating Surfaces on RAW264.7 Macrophage Cytokine Secretion**

Fang A*, Ho Q, Waterfield JD, Brunette DM
Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

13 **Curing Effectiveness of 4-mm Resin Layers Using 2 LED Units**

Feng I*[1], Peres BU[1], Rodrigues RV[1,2], Carvalho LD[1], Esteves A[3], Carvalho RM[1], Manso AP[1]
[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada (UBC); [2]Department of Restorative Dentistry, Piracicaba Dental School, State University of Campinas, Piracicaba, Brazil; [3]Department of Oral Health Sciences, Faculty of Dentistry, UBC

14 **Caregiver Burden and Coping in Pre-Surgical Treatment for Cleft Lip**

Gibson TL*, Pocock PR, Yen EHK, Aleksejūnienė J
Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

15 **Regional Developmental Patterns of the Human Mandible**

Hossini K*, Diewert VM
Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

16 **Selective Inhibition of Collagenase and Elastase Activity of Cathepsin K**

Jamroz A*[1,2], Panwar P[1,2], Law S[2,3], Brömme D[1,2,3]
[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada (UBC); [2]Centre for Blood Research, UBC; [3]Department of Biochemistry & Molecular Biology, Faculty of Medicine, UBC

17 **Platelet Factor 4 Upregulates MMP-1 Production in Gingival Fibroblasts**

Javaid M*[1], Biddle C[1,2], Tsai CLM[1], Häkkinen L[1], Kim H[1,2]
[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada (UBC); [2]Centre for Blood Research, UBC

18 **Fibroblast Response to Surface Topography and Surface Chemistry**

Kashani SG*, Owen GR, Häkkinen L, Larjava H
Laboratory of Periodontal Biology, Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

19 **Cathepsin K Activity and Potent Inhibitors**

Kiani R*[1], Brömme D[2]
[1]School of Kinesiology, Faculty of Education, The University of British Columbia, Vancouver, Canada (UBC); [2]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, UBC

20 **Technical Advances in Magnetic Resonance Imaging of Human Fetal Specimens**

Kim J*, Richman JM
Department of Oral Health Sciences, Faculty of Dentistry, Life Sciences Institute, The University of British Columbia, Vancouver, Canada

21 **3D Analysis of Mandibular Deciduous Tooth Crypts Using Micro-CT**

Korada A*, Diewert VM, Richman JM

Department of Oral Health Sciences, Faculty of Dentistry, Life Sciences Institute, The University of British Columbia, Vancouver, Canada

22 **Mandibular Molar Root Canal Filling Quality—a Micro-CT Study**

Lai W*, Shen Y, Haapasalo M

Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada

23 **Oral Cancer and Biopsy Trends Among South Asians in BC**

Lavallee J*[1,2], Zhang L[1], Rosin MP[2,3], Laronde D[1,2]

[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada; [2]BC Cancer Research Centre, Vancouver, Canada; [3]School of Kinesiology, Simon Fraser University, Burnaby, Canada

24 **Dentofacial Characteristics of Pediatric Obstructive Sleep Apnea: a Systematic Review**

Lee J*[1], Chadha NK[2], Pliska BT[1]

[1]Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada; [2]Division of Pediatric Otolaryngology, BC Children's Hospital, Vancouver, Canada

25 **Screening Oral Lesions Improves Patient Outcome**

Lee NV*[1], Wu M[1], Liu KYP[1,2], Tam DM[1], Poh CF[1,2]

[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada; [2]BC Cancer Agency/Research Centre, Vancouver, Canada

26 **Acrylic Repositioning Stent Fabrication for Use in Head-Neck IMRT**

Lee VSK*[1], Nguyen CH[1], Poh C[2], Wu J[3]

[1]Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada; [2]Oral Oncology Department, BC Cancer Agency, Vancouver, Canada (BCCA); [3]Provincial Head & Neck Tumour Group, BCCA

27 ***In Vitro* Evaluation of Cathepsin K Inhibitors Through Molecular Docking**

Li J*[1], Law S[1,2], Brömme D[1,2,3]

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28 **Can Pathological Characteristics Predict Regional Failure in Oral Cancer Patients?**

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29 **Rate of Dental Extractions Following Intensity Modulated Radiation Therapy (IMRT)**

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30 **Validation of an Actionable LOH Test for Predicting Cancer Progression**

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31 **Prediction of Refractory Treatment for Oropharyngeal Carcinomas in BC**

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[1]Department of Oral Biological & Medical Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, Canada; [2]BC Cancer Agency/Research Centre, Vancouver, Canada; [3]Federal University of Sergipe, São Cristóvão, Brazil

32 **Effect of NaOH Solutions on Planktonic Bacteria, Biofilms, and LPS**

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33 **Marginal Fit of Conventional and Digital Lithium Disilicate Crowns**

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34 **Endoscopy Prediction of Oral Appliance Outcomes in Obstructive Sleep Apnea**

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35 **Distinct Pro-Fibrotic and Contractile Properties of Dermal and Gingival Fibroblasts**

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36 **Bond Strength of Orthodontic Brackets to Lithium Disilicate Ceramic**

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37 **Nanocrystal Cellulose (NCC) as a Reinforcing Agent for Electrospun Nanofibres**

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38 **Molecular Analysis and Temporal Toluidine Blue Patterns—Predicting Malignant Progression**

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39 **Treatment of Cleft Patients at BC Children's Hospital**

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40 **Oral Biofilm Modifies Integrin αvβ6 Localization in Gingival Epithelial Cells**

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41 **Oral Hygiene Improvement with a Long-Term Care Oral Health Coordinator**

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42 **A Waiting-Room Based Dental Health Promotion for Caregivers at UBC**

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43 **Expression and Function of Connexin-43 in Human Gingival Wound Healing**

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44 **MMP Processing Regulates High Mobility Group Box 1 (HMGB1) Activities**

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45 **Dosimetry Analysis of Panoramic-Imaging Devices in Different-Sized Phantoms**

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46 **"CAD-on" Crowns—a Fracture Mechanics Characterization**

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47 **Identifying the Risk of Oral Cancer Recurrences with Clinicopathological Markers**

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48 **Quality of the Root Filling in Minimally Instrumented Root Canals**

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49 **Sclerotherapy for the Treatment of Venous Malformations**

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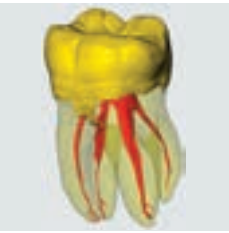
GRADUATE RESEARCH OPPORTUNITIES

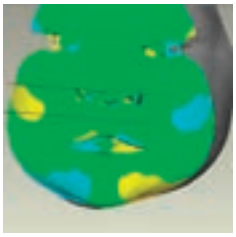
PhD or MSc in Craniofacial Science

The UBC Faculty of Dentistry offers advanced study leading to a PhD or MSc in Craniofacial Science. The PhD program requires the successful completion of a research-specific curriculum, a comprehensive exam, and defense of a research-based thesis. A minimum of four years of full-time study is typically required. The MSc program requires successful completion of a research-specific didactic curriculum in conjunction with a research-based thesis. This program typically requires two years of full-time study; however, an extended part-time option for an MSc degree is available. Research options in one of the following three broad areas of study are available:

- Population health research explores the complex interactions (social, cultural, environmental) that affect the oral health of individuals, communities, and populations.
- Oral health-related clinical research includes both interventional and observational studies focusing on the following: disease prevention, diagnosis, risk, treatment, prognosis, and health care.
- Basic science research in the areas of biomaterials, cell biology, developmental biology, microbiology, and molecular biology.

These graduate programs are available as stand-alone degrees or may be completed as a combined diploma in a clinical specialty with a PhD or MSc degree (see criteria below). Clinical specialty training options are available in the following areas.





Endodontics

PhD or MSc combined with a Diploma in Endodontics
- PhD degree (minimum 6 years) or MSc degree (minimum 3 years)
- Diploma in Endodontics

Graduates will be eligible to take the examinations for specialty certification in endodontics offered by the Royal College of Dentists of Canada and the American Board of Endodontics.

Research Focus
- eradication of microorganisms from the root canal system
- development of unique *in vitro* and *ex vivo* models for biofilms which simulate oral *in vivo* biofilms
- industry collaborations on new devices to improve antimicrobial solutions
- safety and effectiveness of instrument systems to deliver disinfecting agents into the root canal
- impact of file design on the eradication of root canal microbes

Clinical Training
- treatment management (including surgery) of diseases and trauma of the tooth root and pulp

Criteria
- Applicants must hold a DMD or its equivalent

Orthodontics

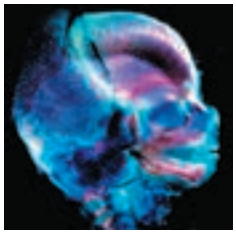
PhD or MSc combined with a Diploma in Orthodontics
- PhD degree (minimum 6 years) or MSc degree (minimum 3 years)
- Diploma in Orthodontics

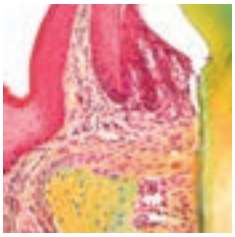
Graduates will be eligible to take the examinations for specialty certification in orthodontics offered by the Royal College of Dentists of Canada and the American Board of Orthodontics.

Research Focus
- craniofacial morphology and function in different populations
- efficiency and efficacy of treatment modalities
- societal and economic strategies that govern access to care
- craniofacial molecular and cellular control mechanisms
- impact of biomaterials on delivering orthodontic mechanics

Clinical Training
- diagnosis, prevention and treatment management of abnormal congenital or developmental relationships of the dentofacial anatomy from infancy to adulthood in diverse populations

Criteria
- Applicants must hold a DMD or its equivalent
- Postgraduate clinical and/or academic experience preferred





Pediatric Dentistry

PhD or MSc combined with a Diploma in Pediatric Dentistry
- PhD degree (minimum 6 years) or MSc degree (minimum 3 years)
- Diploma in Pediatric Dentistry

Graduates will be eligible to take the examination for specialty certification in pediatric dentistry offered by the Royal College of Dentists of Canada and the diplomate examination of the American Board of Pediatric Dentistry.

Research Focus
- biomedical research (craniofacial development)
- clinical research (facial symmetry of cleft lip and palate)
- population health and health services research (oral health promotion and access to care for disadvantaged children)

Clinical Training
- diagnostic, preventive, therapeutic and consultative expertise for children and adolescents including those with special healthcare needs at BC Children's Hospital Dental Department, Oral Health Centre at UBC Vancouver, and community settings throughout the province

Criteria
- Applicants must hold a DMD or its equivalent

Periodontics

PhD or MSc combined with a Diploma in Periodontics
- PhD degree (minimum 6 years) or MSc degree (minimum 3 years)
- Diploma in Periodontics

This program is recognized by the American Dental Association and the Academy of Periodontology. Graduates will be eligible to take the examination for fellowship in the Royal College of Dentists of Canada and the board examination of the American Academy of Periodontology.

Research Focus
- molecular pathology of periodontal disease
- periodontal and skin wound healing
- clinical aspects of tissue healing around implants
- stem cell-mediated regeneration of lost tissues

Clinical Training
- management of tooth-supporting structures using non-surgical and surgical procedures
- tooth replacement with implants when needed

Criteria
- Applicants must hold a DMD or its equivalent

Prosthodontics

PhD or MSc combined with a Diploma in Prosthodontics
- PhD degree (minimum 6 years) or MSc degree (minimum 3 years)
- Diploma in Prosthodontics

Graduates will be eligible to take the examinations for specialty certification in prosthodontics offered by the Royal College of Dentists of Canada and the American Board of Prosthodontics.

Research Focus
- biomaterials
- caries management
- community healthcare needs
- geriatric dentistry
- oral cancer rehabilitation
- oral implants and related prostheses
- psychosocial aspects of aging
- xerostomia

Clinical Training
- diagnosis, restoration and maintenance of oral function, comfort, appearance and health of patients by the restoration of natural teeth and/or the replacement of missing teeth and contiguous oral and maxillofacial tissues with artificial substitutes
  - aesthetics/cosmetic dentistry
  - crowns, bridges, veneers, inlays
  - complete and removable partial dentures
  - dental implants
  - digital dentistry
  - TMD-jaw joint problems
  - traumatic injuries to the structures of the mouth

Criteria
- Applicants must hold a DMD or its equivalent

Dental Public Health

MPH combined with a Diploma in Dental Public Health
- Master of Public Health degree from the UBC School of Population & Public Health
- Diploma in Dental Public Health from the UBC Faculty of Dentistry

This 2.5 year combined Dental Public Health degree is a non-thesis, course-based program that connects the academic, service, and international research excellence of the Faculty of Dentistry with the interdisciplinary academic environment offered by the School of Population & Public Health.

Research Focus
- community-based health programs and interventions
- health disparities and determinants of oral health
- health policy and critical issues in dental public health
- program evaluation and oral health services utilization
- access to care by marginalized communities, including First Nations and Inuit populations
- data analysis on health expenditures and on provincial, national, and international data sets

Field Experience
- practicum placement at local, national, or international organizations
- development of a major project via a learning contract
- production of a peer-reviewed publication
- hands-on activities

Criteria
- Applicants must hold either a DMD or its equivalent, or a BDSc (Dental Hygiene) or equivalent dental hygiene education with a 4-year bachelor's degree

For more information on postgraduate programs visit www.dentistry.ubc.ca/postgrad or contact: Vicki Koulouris
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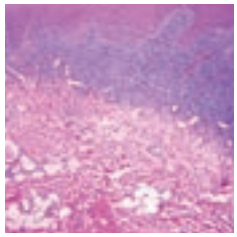
POSTGRADUATE OPPORTUNITIES



General Practice Residency Program

UBC Dentistry and affiliated teaching hospitals offer positions in a one- or two-year hospital-based dental residency program (General Practice Residency, or GPR) beginning in June of each year. The residencies are full-time salaried hospital resident positions with union benefits, including one month of vacation.

The GPR program is centered at Vancouver General Hospital in the oral health ambulatory care unit, the wards, the operating room, and the emergency room. Most resident activities relate to the evaluation and provision of care to patients who are medically complex, hospitalized, have complex orofacial problems, need the operating room, or have attended the hospital emergency department.

Residents will also participate in specialty clinics in oral medicine, endodontics, pediatric dentistry, and oral and maxillofacial surgery with some experiences in IV sedation, as well as off-service rotations that may include OMFS, pathology, ENT, plastic surgery, anaesthesia, and the ER. Please note that this is not an advanced education in general dentistry (AEGD) program.

Residents successfully completing this program should be qualified to enter any advanced graduate program, to work within a hospital dental service, practice in an urban or remote area utilizing a hospital, the Emergency Room and Operating Room, and be able to work collaboratively and professionally with other medical and dental specialists.

Selection is by application and personal interview. Eligible candidates must be graduates of an accredited Canadian or US dental school; foreign graduates are eligible to apply provided they have passed the National Dental Examining Board of Canada (NDEB) examinations.

The application form and an information sheet are available for download in PDF format. Applications may be obtained at www.dentistry.ubc.ca, under education/postgraduate programs.

Oral Medicine and Oral Pathology Residency Program

This hospital-based postgraduate specialist residency is a four-year program leading to a certificate and eligibility for the Royal College of Dentists of Canada Fellowship examination.

Local hospital-based training sites

- UBC-affiliated teaching hospitals: BC Cancer Agency, Vancouver Hospital & Health Sciences Centre, St. Paul's Hospital

Clinical practice component (training diagnosis, assessment, and management)

- oral mucosal disease
- orofacial disorders associated with aging, systemic disease, and medical therapies
- non-surgical salivary gland disorders
- rotations in internal medicine, rheumatology, neurosciences, dermatology, diagnostic pathology, oncology, otolaryngology, surgical pathology (including autopsy), head and neck pathology, and dermatopathology
- OM pathway: additional training in dental management of medically complex patients and diagnosis and treatment of orofacial pain and neurosensory disorders
- OP pathway: additional training in surgical and anatomical histopathology and laboratory procedures, techniques, and diagnosis

Didactic component

- postgraduate-level seminars, case presentations, and literature reviews
- teaching rounds
- ongoing basic and/or clinical research studies

· CLINICAL RESEARCH, TECHNOLOGY TRANSFER & DENTAL MATERIALS SCIENCES RESEARCH CLUSTER
· COMMUNITY & EDUCATIONAL RESEARCH CLUSTER
· iMATRIX RESEARCH CLUSTER

RESEARCH CLUSTERS

CLINICAL RESEARCH, TECHNOLOGY TRANSFER & DENTAL MATERIALS SCIENCES RESEARCH CLUSTER

This cluster encompasses groups engaged in research on cancer diagnosis and prevention, dental biofilms, dental hygiene, dental instruments and materials, dental sleep medicine, forensic dentistry, and interactive dental anatomy. Our areas of expertise include biomaterials, dental morphology, obstructive sleep apnea, oral cancer, and root canal irrigation. We study matters such as bacterial eradication, cellular interactions, cephalometrics, community outreach programs, computational fluid dynamics, diagnostic tools, DNA analysis, fracture mechanisms, molecular markers, novel disinfection strategies, oral care products, surface characterization, and treatment strategies.

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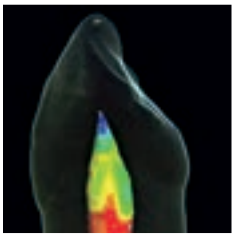
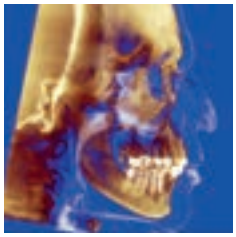
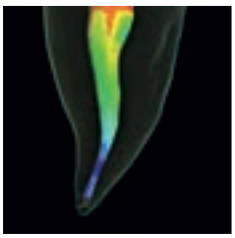

COMMUNITY & EDUCATIONAL RESEARCH CLUSTER

The research in this cluster relates to three of the four Canadian Institutes of Health Research themes: health services research; social, cultural, environmental, and population health; and clinical research—and to a range of educational studies. These domains are loosely interconnected and employ various quantitative and qualitative research methods and knowledge transfer. Our members conduct studies on diverse topics such as healthcare promotion, oral implants, dental caries, systematic literature reviews, and community service learning.

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Advancing oral health through outstanding education, research, and community service.

iMATRIX RESEARCH CLUSTER

iMatrix is an interactive research cluster combining the research interests of 12 highly active laboratories in oral and biomedical sciences. We conduct basic science research in areas such as cancer, cell behaviour, craniofacial development, integrins, molecular biology, periodontal disease, proteases, proteomics, and wound healing. Highly motivated undergraduate and graduate students, postdoctoral fellows and other trainees, as well as interested collaborators, are welcome to contact our member laboratories.
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DIETER BRÖMME
Lysosomal proteases and their role in health and disease: protease mechanisms, inhibitors, mouse disease models
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Regulation of cell behaviour on implant surfaces by substratum topography
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Prenatal development of the human face: 3D analyses of growth and variations contributing to cleft lip, cleft palate, and jaw discrepancies
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Micro-computed tomography, small animal imaging, cone beam CT
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Cell to extracellular matrix interactions in wound healing
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Biochemical signalling mechanisms that regulate platelet function
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Cell adhesion, integrins and signalling in wound healing and periodontal disease
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CHRISTOPHER OVERALL
Proteomic investigation of inflamed periodontal and synovial tissues and cancer to elucidate proteolytic mechanisms of cell signalling and in regulating inflammation
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EDWARD PUTNINS
Regulation and protection of mucosal and skin epithelial cell barrier integrity during inflammation
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JOY RICHMAN
Evolution and development of the face and teeth using bird and reptilian models
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CLIVE ROBERTS
Extracellular matrix remodelling and cell biology in inflammation, fibrosis, and wound healing
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CHARLES SHULER
Studies focused on characterizing the molecular mechanisms regulating secondary palatal fusion with specific emphasis on the TGFβ signalling pathway
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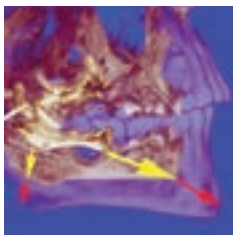

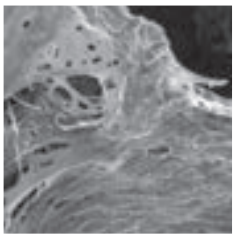

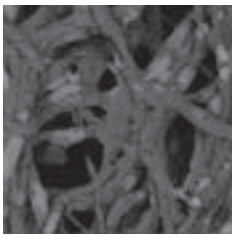

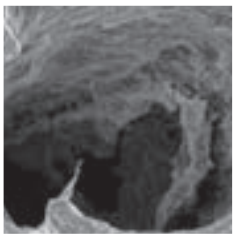

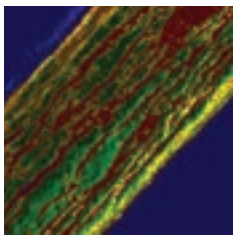

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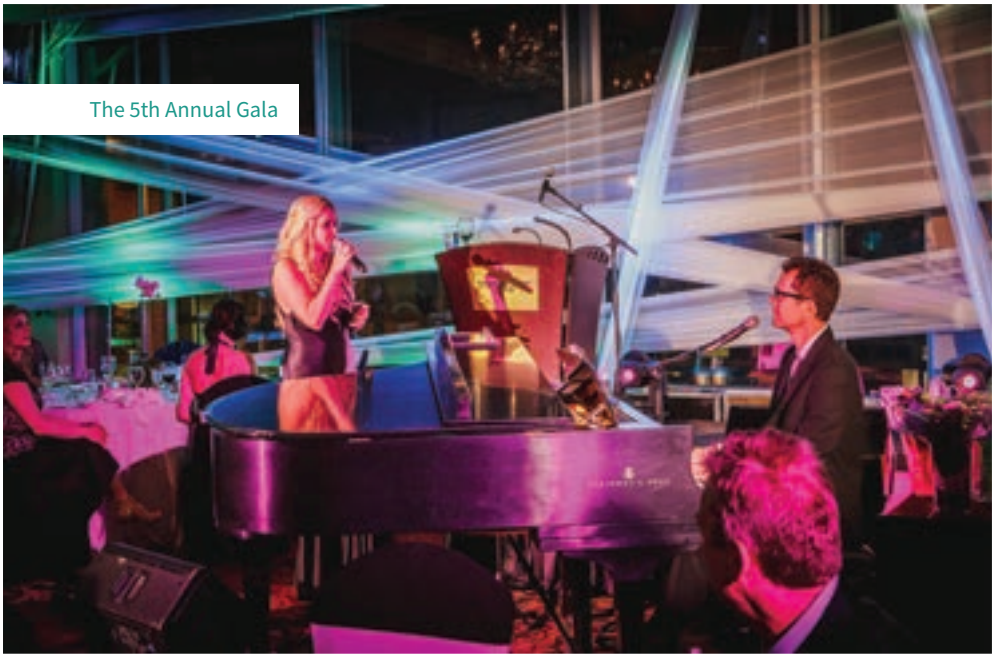

TASTE FOR LIFE

An Evening To Conquer Oral Cancer

Thursday April 21, 2016
Vancouver Terminal City Club

BC CANCER FOUNDATION partners in discovery
OrCa BC Oral Cancer Prevention Program
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UBC DENTISTRY

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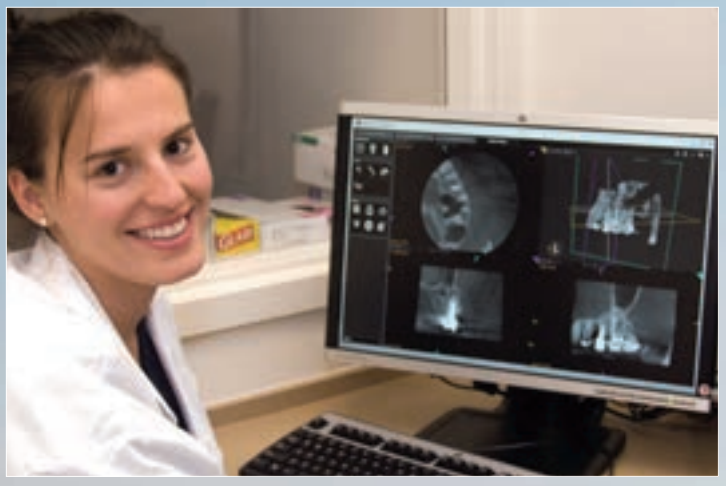
GRADUATE and POSTGRADUATE STUDIES



GRADUATE PROGRAMS

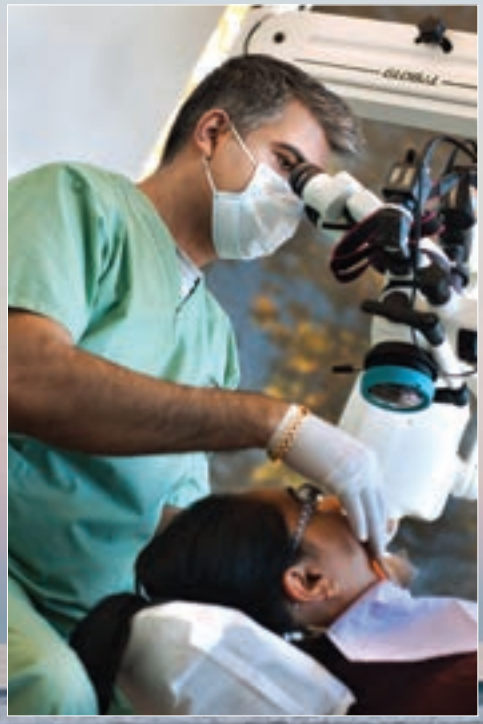
Craniofacial Science

SPECIALTY GRADUATE PROGRAMS

Endodontics
Orthodontics
Pediatric Dentistry
Periodontics
Prosthodontics
Dental Public Health

POSTGRADUATE PROGRAMS

General Practice Residency Program
Oral Medicine and Oral Pathology Residency Program



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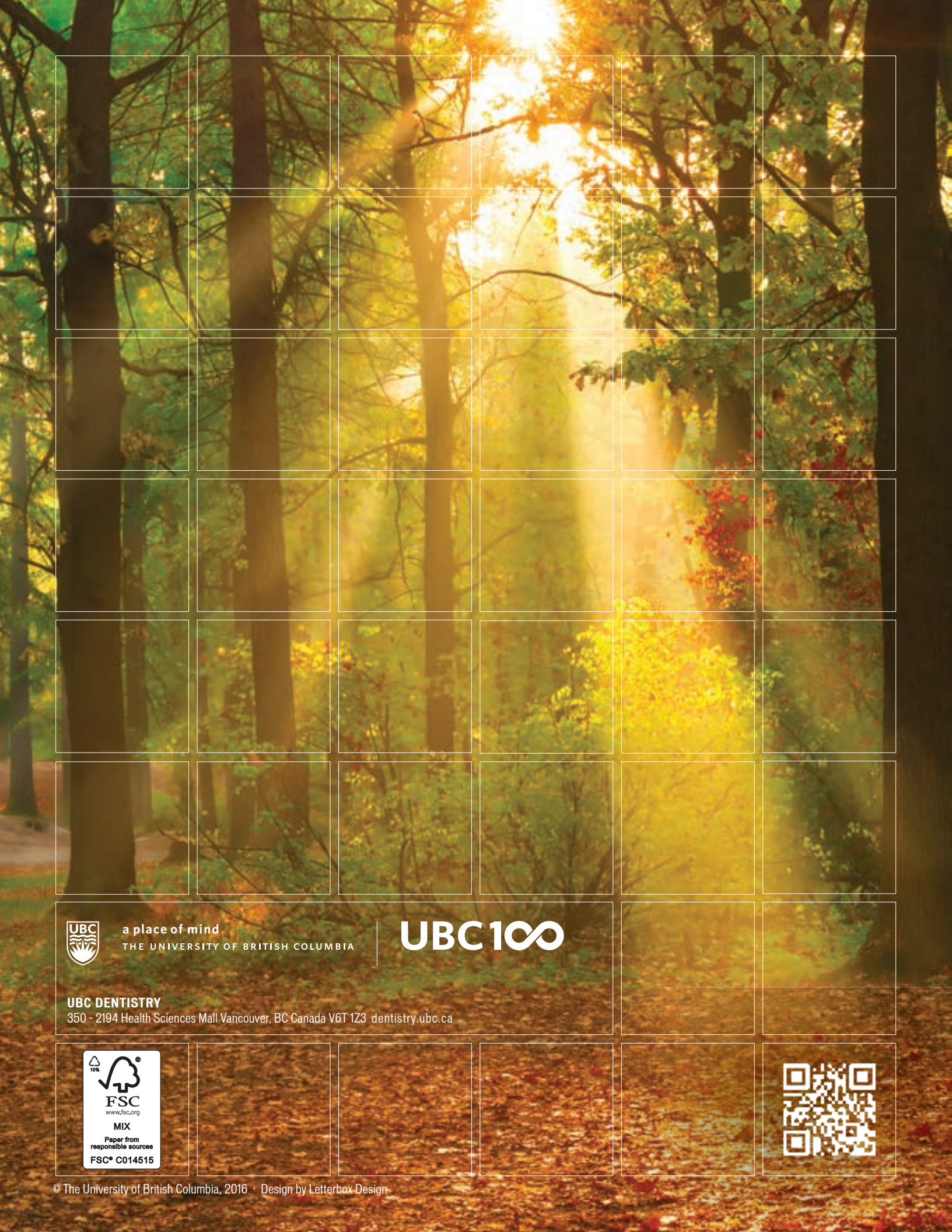

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