

SCIENTIFIC PROGRAM

Urologic Disease Heterogeneity - Requiring a Multidisciplinary Research Approach

General sessions will be located in the Omni – Broadway Ballroom F

THURSDAY, NOVEMBER 21, 2013

- Noon - 8:00 p.m.** **Registration**
Broadway Ballroom Foyer
- 2:30 - 5:00 p.m.** **Board of Directors Meeting**
Music Row 2
- 5:45 - 6:00 p.m.** **Welcome & Introductory Remarks**
Marianne Sadar, PhD
SBUR President
Genome Sciences Center
Vancouver, BC

- 6:00 - 7:00 p.m.** **Leland W.K. Chung Lecture**
**Systems Carcinogenesis:
Looking Outside the Paradigm**
Lynn Hlatky, PhD
GRI and Tufts University School of Medicine
Boston, MA

Cancers are classically thought to arise from single cells that have randomly acquired a number of genetic mutations which drive their carcinogenic transformation. Yet, cancer is also very much a systems-level disease, where interactions of tumor cells with host differentiated and progenitor cells, or among tumors cells themselves, profoundly modulate the most fundamental aspects of cancer—growth, metastatic spread, and response to treatment. Thus, an appropriate interpretation of gene network signaling in cancer cells needs to take into account interactions at the cellular, tissue and organismal levels. This presentation discusses the development of an augmented carcinogenesis paradigm that incorporates not only the well-established oncogene dysregulations known to drive individual cancer cell behavior, but also identifies key population-level dynamics, including intercellular interactions that can vitally contribute to carcinogenic transformation, cancer self-renewal and tumor progression.

7:00 - 7:30 p.m.

CTC Technology in Solid Tumors

Edwin Posadas, MD
Cedars-Sinai Medical Center
Los Angeles, CA

Circulating tumor cells (CTCs) have become the focus of intensive research in the area of solid tumor oncology, especially in the area of prostate cancer. With the introduction of technologies capable of isolating these rare events from the pool of cells in the circulation, an opportunity has arisen to use CTCs to gain new insights into an underlying cancer. While initial studies of CTCs focused on the importance of enumeration of these cells, newer technologies and approaches now allow for biochemical characterization of these cells. As such, CTCs contain the potential of serving as “liquid biopsies” of disease such as prostate cancer where traditional biopsy may be difficult and therefore allow for more rapid advances in the field of urologic oncology.

7:30 – 7:50 p.m.

Travel Award Winner



A Novel Approach to Differentiate ABCG2-Expressing Prostate Cells

Neha Sabnis
Roswell Park Cancer Institute
Buffalo, NY

Open evening in Nashville – Dinner on own

FRIDAY, NOVEMBER 22, 2013

General sessions will be located in the Omni – Broadway Ballroom F

- 7:00 - 8:00 a.m.** **Continental Breakfast**
Broadway Ballroom E
- 8:00 - 11:45 a.m.** **Plenary Session I: Host and Disease, Turning the Tables**
- 8:00 - 8:10 a.m. **Session Overview**
Moderator: Conor Lynch, PhD
Moffitt Cancer Center
Tampa, FL
- 8:10 - 8:40 a.m. **Vaccine Immunotherapy of Prostate Cancer:
From Mice to Men**
David M. Lubaroff, PhD
University of Iowa
Iowa City, IA

The presentation will discuss the use of immunotherapy, particularly vaccine immunotherapy for the treatment of prostate cancer. The development and testing of a therapeutic adenovirus/PSA (Ad5-PSA)

8:40 - 9:10 a.m.

vaccine will be presented. Preclinical mouse studies demonstrated the ability of the vaccine to induce strong anti-prostate cancer immune responses and the destruction of tumors. Clinical trials in prostate cancer patients demonstrated the safety of the vaccine and the development of antigen-specific immune responses. Clinical endpoints in the Phase I and II trials will also be presented.

Breaking the Vicious Cycle of Prostate to Bone Metastases

Conor Lynch, PhD
*Moffitt Cancer Center
Tampa, FL*

Bone metastasis is a common event during prostate cancer progression with the resultant lesions being incurable and significantly contributing to morbidity associated with the disease. In the bone microenvironment, metastatic prostate cancer cells manipulate the bone coupling process to generate areas of extensive osteoclast and osteoblast activity resulting in pathological bone destruction and formation respectively. This heightened bone turnover promotes the growth of the metastases thereby generating a “vicious cycle.” Our group focuses on understanding the molecular mechanisms that facilitate communication between the prostate metastases and the bone microenvironment, with a special emphasis on matrix metalloproteinases (MMPs), parathyroid hormone related peptide (PTHrP) and transforming growth factor β (TGF β). Understanding the interplay between these molecules can lead to the development of inhibitors will break the “cycle” and ultimately provide new therapies for the treatment of this clinically significant problem.

9:10 - 9:40 a.m.

NGF and TRP Channels in Urinary Bladder Function

Margaret A. Vizzard, PhD
*University of Vermont
Burlington, VT*

Interstitial cystitis/painful bladder syndrome and overactive bladder are chronic urological conditions with sensory-based symptoms including—urgency and frequency with or without pain. We have hypothesized that patients’ symptoms reflect a change in the afferent limb of the micturition reflex. In these NIH/NIDDK supported studies, we are evaluating if changes in the expression, function and interactions of the sensory transducer, transient receptor potential vanilloid family member 4 (TRPV4), underlie micturition reflex plasticity. We will discuss studies that provide mechanistic insight into nerve growth factor-regulation of TRPV4 as well as the contribution of TRPV4 to voiding function and pelvic sensitivity using transgenic mice and animal models with voiding dysfunction. These studies have a goal of identifying additional lower urinary targets with therapeutic potential to improve urinary bladder function and visceral sensation.

9:40 - 9:55 a.m.

Break

9:55 - 10:15 a.m.

Travel Award Winner



Commensal Bacteria Modulate T-cell Responses To Ameliorate Pain In Murine Experimental Autoimmune Prostatitis (EAP)

Stephen Murphy, PhD
*Northwestern University
Chicago, IL*

10:15 - 10:45 a.m.

TGF-Beta Mediated Vicious Cycle in Tumor Progression

Chung Lee, PhD
UC Irvine, Irvine, CA & Northwestern University, Chicago, IL

The purpose of this lecture is to describe the importance of the role of TGF-beta signaling in cancer progression and metastasis. It will provide an explanation on the mechanism of the so called “TGF-beta paradox” between cancer and non-cancer cells. The lecture will also offer the implications of TGF-beta mediated vicious cycle in tumor progression in ways for cancer treatment and a method to predict aggressiveness of the cancer in question.

10:45 - 11:15 a.m.

Adult Muscle Derived Cells for Stress Urinary Incontinence

Melissa Kaufman, MD
*Vanderbilt University
Nashville, TN*

Surgical interventions for patients with stress urinary incontinence, although efficacious, are currently associated with a significant complication profile. Augmentation of urethral sphincter function with autologous muscle-derived cells represents a novel potential therapeutic option. Regeneration of the sphincter complex has been demonstrated in animal models and evidence for clinical efficacy and safety continues to be evaluated in ongoing randomized Phase III trials.

11:15 - 11:45 am

Deciphering MicroRNA Code in Pain and Inflammation: Lessons from Bladder Pain Syndrome

Katia Monastyrskaya, PhD
*University of Bern
Bern, Switzerland*

MicroRNAs are quickly winning recognition as potential therapeutic agents; however, their functional validation remains difficult, as they are predicted to act on multiple target genes. We performed a comparative miRNA expression study of Bladder Pain Syndrome/ Interstitial Cystitis (BPS/IC) and Bladder Outlet Obstruction (BOO)

with Detrusor Overactivity (DO). Using in vitro cell-based models and the information about validated miRNA targets, we delineated the signaling pathways, activated in BPS and highlighted many parallels with its common co-morbidities inflammatory bowel disease, asthma and autoimmune diseases. In BOO patients, miRNA profiling showed activation of TGF-beta and WNT-dependent induction of epithelial-mesenchymal transition, cytoskeletal and extracellular matrix remodeling pathways.

* ESUR Speaker

12:00 - 1:00 p.m.

Lunch

Broadway Ballroom G-K

1:00 - 1:15 p.m.

AUA Office of Research Update

Leo Giambarresi, PhD

*American Urological Association
Linthicum, MD*

The mission of the American Urological Association (AUA) Office of Research is to stimulate progress on multiple fronts with the goal of advancing urology research. Given the economic and political times that we face which are creating extremely high levels of uncertainty about the future of research funding, the pace of activity in executing the mission has never been higher. This presentation will discuss activities of the Office of Research, its grant programs, and the Research Council Workgroups in building foundations that will foster future successes. It will also preview research-related symposia, seminars and other activities planned for the 2014 AUA Annual Meeting May 16-21 in Orlando, Florida.

1:15 - 5 p.m.

Plenary Session II: Re-thinking our Basic and Clinical Understanding of Urogenital Diseases

1:15 - 1:25 p.m.

Session Overview

Moderator: William Ricke, PhD

*University of Wisconsin
Madison, WI*

1:25 - 1:55 p.m.

Hypospadias and Penile Development

Gerald Cunha, PhD

*UC San Francisco
San Francisco, CA*

For a variety of reasons, hypospadias research has been hampered as a result of the lack of objective criteria for murine hypospadias and an absence of understanding the morphogenesis of penile urethra in the mouse. Our presentation will detail when murine hypospadias can be diagnosed by simple observations and will elucidate the morphogenetic process and the cellular/tissue mechanisms involved in normal and abnormal development of the mouse penile urethra. Relevance to human hypospadias will be stressed.

1:55 - 2:25 p.m.

Prostate Bacteria Influence Disease Mechanisms in Chronic Prostatitis

Praveen Thumbikat, DVM, PhD

*Northwestern University
Chicago, IL*

The work presented will emphasize the role of pathogenic and commensal microflora in the prostate on immune response and inflammation. These studies are expected to lead to a greater appreciation of bacterial influence on prostate disease pathogenesis.

2:25 - 2:55 p.m.

Prostate-Specific Membrane Antigen Theranostics in Advanced Prostate Cancer

Scott Tagawa, MD

*Weill Cornell Medical College
New York, NY*

Prostate-specific membrane antigen is the most highly restricted and expressed cell surface protein in prostate cancer. Its expression as well as relationship to the androgen receptor pathway makes it relevant for both therapeutics and diagnostics. The availability of both monoclonal antibodies and small molecules which have already been tested in humans makes PSMA Theranostics an important and clinically relevant topic for men with prostate cancer today and likely of increasing importance in the near future.

2:55 - 3:10 p.m.

Break

3:10 - 3:40 p.m.

An Interplay Between Transcription and Metabolic Reprogramming in Prostate Cancer

Ian Mills, PhD

*Centre for Molecular Medicine Norway
Oslo, Norway*

Prostate cancer is characterised by changes in the metabolic activity and stress response of prostate cells during the emergence of localised disease. Some of these changes are maintained in progression to castrate-resistance and help to sustain androgen levels and AR activity. This presentation will highlight the potential and challenges associated with targeting metabolic pathways in a prevention setting and as adjunct treatments to enhance the effectiveness of anti-androgens and chemotherapy.

* ESUR Speaker

3:40 – 4:10 p.m.

Androgen Receptor Coactivators Inhibiting Prostate Cancer Growth

Peng Lee, MD, PhD

*New York University Langone Medical Center
New York, NY*

Most of the AR coactivators facilitate prostate cancer growth, we have identified the function of several AR coactivators in inhibiting prostate cancer growth. The finding that dysregulation of these growth inhibiting AR coactivators leads to prostate cancer growth can provided insights for novel treatment strategy.

4:10 - 4:40 p.m.

Controlled Expression of ING4 by Myc is Required for Prostate Epithelial Differentiation, Survival, and Suppression of Tumorigenesis

Cindy Miranti, PhD

*Van Andel Research Institute
Grand Rapids MI*

The molecular reason for why specific oncogenic events such as Myc overexpression, Ets fusions, and Pten loss, as opposed to others, are critical for prostate cancer development is poorly understood. Our studies demonstrate how Myc and Pten control normal prostate epithelial differentiation, and why their misregulation leads to oncogenesis. These studies provide insight into different mechanisms that may allow us to determine why some tumors are aggressive and others are not.

4:40 - 5:00 p.m.

Travel Award Winner**Role of Epigenetic Regulation of Detrusor Pyroptosis In Bladder Inflammation**

Subhash Haldar, PhD

*Cedars-Sinai Medical Center
Los Angeles, CA*

5:00 - 5:10 p.m.

Moderated Discussion

William Ricke, PhD

*University of Wisconsin
Madison, WI*

5:10 - 7:10 p.m.

Poster Session I & Networking Reception**Poster # P1 – P48***Broadway Ballroom E*

Join old and new friends and colleagues for a light reception and scientific poster session. Afterwards, kick up your heels in downtown Nashville and take advantage of local restaurants, music and night-life.

SATURDAY, NOVEMBER 23, 2013

7:00 - 8:00 a.m.

Continental Breakfast*Broadway Ballroom E*

8:00 - 11:30 a.m.

Plenary Session III: Translating Technology

8:00 - 8:10 a.m.

Session Overview

Moderator: Edwin Posadas, MD

*Cedars-Sinai Medical Center
Los Angeles, CA*

8:10 - 8:40 a.m.

Proteomic Analysis for Bladder Cancer Biomarkers: From Discovery to Implementation

Antonia Vlahou, PhD

*Biomedical Research Foundation Academy of Athens
Athens, Greece*

Main issues related to biomarker discovery, examples from application of proteomics technologies towards the identification of clinically relevant bladder cancer biomarkers in urine, and overview of planned studies targeting biomarker validation will be presented.

* ESUR Speaker

8:40 – 9:10 a.m.

Multispectral Imaging and Stromal Heterogeneity in Prostate and Breast Cancer

Richard Levenson, MD

*University of California Davis
Davis, CA*

Molecular analysis has revealed immense complexity in cancer genomes and expression profiles, critical aspects of which can now be captured using spatially resolved, multiplexed molecular techniques. However, tumor-centric complexity should not overshadow the critical roles that the host (stromal) compartments play in determining treatment response and ultimate outcomes. These features include both immunological as well as tissue structural elements whose roles can be explored using novel imaging and image analysis research tools that may prove also to have clinical utility.

9:10 – 9:40 a.m.

Applications of RNA Aptamers as Targeting Agents

Shawn Lupold, PhD

*Johns Hopkins University
Baltimore, MD*

Radiation therapy is one of two primary treatments for clinically-localized prostate cancer and is the principal therapy for locally-advanced disease associated with a higher grade, stage and/or PSA. While the success rate for both radiation and surgery is high for low-risk, organ-confined disease, the estimated ten year disease-free-survival for advanced PCa is less than 50%. Therefore, a means to improve

the treatment of patients with clinically-localized high stage and/or grade prostate cancer would significantly decrease the morbidity and mortality of this disease. This seminar will address the experimental development of aptamer-siRNA chimera as radiation sensitizing agents to improve the therapeutic index for the treatment of these patients.

9:40 – 10:00 a.m.

Travel Award Winner

Probing the Effects of Tumor Microenvironment on Angiogenesis Using Tissue Recombination and Microfluidic Multiculture Models

Ashleigh Theberge, PhD
*University of Wisconsin
Madison, WI*

10:00 – 10:15 a.m.

Break

10:15 – 10:45 a.m.

A Novel Hydrogel with Urologic Applications

Diane Felsen, PhD
*Weill Cornell Medical College
New York, NY*

Most biomaterials which have been developed are biodegradable, which limits their utility. We have developed a hydrogel which is non-biodegradable, and which also elicits very little foreign body response. The water content of the hydrogel can be varied, resulting in distinct formulations, which may have usefulness in urologic applications.

10:45 - 11:30 a.m.

AUA Lecture

Insights into Benign Bladder Disease: We are Not in Kansas Anymore

Darius Bägli, MD
*Hospital for Sick Children, University of Toronto
Toronto, CA*

Dr. Bägli's lecture will summarize mechanistic insights into the functional relationship of bladder cellular responses to mechanical and extracellular environmental stimuli, with emphasis on the role of the mammalian target of rapamycin. Additional discussion will highlight the potential role of epigenetic mechanisms in regulating bladder cell phenotype and gene expression via extracellular matrix and infection challenges.

11:30 a.m. - 2:00 p.m. **Break (lunch on own)**

2:00 – 5:15 p.m.

Plenary Session IV: Stem Cells are Part of the Urologic Tissue Heterogeneity and Therapeutic Solutions

2:00 - 2:10 p.m.

Session Overview

Moderator: George Christ, PhD
*Wake Forest University
Winston-Salem, NC*

2:10 - 2:40 p.m.

Hormonal Regulation of Prostate Stem and Progenitor Cells

Gail Prins, PhD
*University of Illinois at Chicago
Chicago, IL*

The presented findings support the hypothesis that human prostate stem and early stage progenitor cells are direct steroid targets, potentially contributing to their transformation and tumor initiating capacity. Importantly, the present findings that prostate stem-progenitor cells express SRs provides a unique therapeutic opportunity to specifically target prostate cancer stem-like cells with steroidal agonists or antagonists to block their self-renewal, trigger apoptosis or maintain a differentiated status for effectual management of prostate cancer.

2:40 - 3:10 p.m.

Stem Cells for Bladder Reconstruction

George Christ, PhD
*Wake Forest University
Winston-Salem, NC*

Although the regenerative powers of the mammalian bladder have been known for decades, the overwhelming majority of animal studies have examined regeneration after implantation of scaffolds with or without cells for bladder augmentation. Few studies have characterized de novo bladder regeneration after trigone-sparing STC alone (i.e., subtotal cystectomy in the absence of any exogenous intervention). To put this in proper perspective, recent studies have demonstrated complete functional rodent bladder regeneration after STC, with surgical removal of 70% to 80% of the bladder. That regenerative response is a very different phenomenon from the process studied in the bladder augmentation models commonly used to evaluate the effects of various stem cells and tissue-engineering biomaterials on bladder regrowth. This talk will highlight the importance of understanding de novo bladder regeneration per se, to the improved selection of stems cells and biomaterials for bladder reconstruction.

3:10 - 3:40 p.m.

Prostate Epithelial Lineage Hierarchy and Cells-of-Origin for Prostate Cancer

Li Xin, PhD

*Baylor College of Medicine
Houston, TX*

The cellular origin for cancer is one of the factors that determine disease aggressiveness. Understanding prostate epithelial lineage hierarchy serves as a prerequisite to understand the cellular origin for prostate cancer. Our studies revealed how prostate epithelial lineage hierarchy is maintained at physiological and pathological conditions, as well as the susceptibilities of individual prostate cell lineages to oncogenic transformation.

3:40 - 3:55 p.m.

Break

3:55 - 4:25 p.m.

Cell Based Therapy for BPH, Erectile Dysfunction and Prostate Cancer

Samuel Denmeade, MD

*Johns Hopkins University
Baltimore, MD*

Mesenchymal Stem Cells can leave the bone marrow and selectively home to tumor sites in response to inflammatory signals present in the tumor microenvironment. This homing property could be therapeutically exploited through the development of mesenchymal stem cell "Trojan Horses" that can be engineered to deliver toxins to sites of tumor. As the first step in this process, we have initiated a clinical trial in which we will inject unmodified allogeneic human bone marrow derived mesenchymal stem cells into men prior to prostatectomy to assess the degree to which these cells home to sites of prostate cancer. These studies hold the potential to define a new type of cellular based therapy for prostate cancer.

4:25 - 5:05 p.m.

International Scholars Lecture: Targeting Host - Derived CCL2 in EMT - Mediated Chemoresistance in Prostate Cancer

Jian Zhang, MD, PhD

*Guangxi Medical University
Nanning, Guangxi, China*

This highly clinical relevant project seeks to investigate the effects of tumor microenvironment on prostate cancer progression, specifically on CCL2/CCR2's contribution to skeletal metastasis and EMT-mediated chemoresistance. In this work, we performed mechanistic in vitro and in vivo experiments to define CCL2 production from the tumor microenvironment. The findings from this study may be translated into clinical settings and significantly impact the therapeutic field.

5:05 - 5:15 p.m.

Moderated Discussion

Moderator: George Christ, PhD

*Wake Forest University
Winston-Salem, NC*

5:15 - 7:15 p.m.

Poster Session II & Networking Reception**Poster # P49 – P96***Broadway Ballroom E*

Join old and new friends and colleagues for a light reception and scientific poster session. Afterwards, kick up your heels in downtown Nashville and take advantage of local restaurants, music and nightlife.

SUNDAY, NOVEMBER 24, 2013

7:00 - 8:00 a.m.

Continental Breakfast*Broadway Ballroom E***8:00 a.m. - 12:00 p.m. Plenary Session V: Trying to Put it All Together, What Makes Therapeutic Intervention Elusive?**

8:00 - 8:10 a.m.

Session Overview

Moderator: Allen Gao, PhD

*University of California Davis
Davis, CA*

8:10 - 8:30 a.m.

NIDDK Strategic Plan

Deborah Hoshizaki, PhD

*NIDDK/NIH
Bethesda, MD*

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) is committed to supporting basic and clinical research in kidney and urologic diseases. Deborah will share with you emerging opportunities and current strategies in funding at the NIDDK to help guide you in supporting your exciting research.

8:30 - 9:00 a.m.

Biological Significance and Therapeutic Implications of Glutamate and Its Receptor (GRM1) in Prostate Cancer

Shahriar Koochekpour, MD, PhD
*Roswell Park Cancer Institute
 Buffalo, NY*

This study highlights the biological and clinical relevance or significance of glutamate and glutamate receptor-GRM1 in PCa. GRM1 tissue expression may have potential diagnostic utility in discriminating between clinically aggressive and non-aggressive tumors. GRM1-targeted therapy or inhibition of extracellular glutamate release may provide novel therapeutic opportunities and prevent castrate-recurrent progression of prostate cancer.

9:00 - 9:30 a.m.

Novel Cancer Secreted Factors Driving Fusion - Independent EZH2 Upregulation

Jennifer Isaacs, PhD
*Medical University of South Carolina
 Charleston, SC*

The EMT pathway is considered of central importance in the progression of localized to invasive prostate cancer. Epigenetic changes associated with EMT, such as deregulation of Polycomb activity, are common events in prostate cancer. Our findings highlight that signaling events, such as those initiated by tumor secreted extracellular Hsp90 (eHsp90) may be sufficient to drive Polycomb-dependent EMT and consequent tumor invasion. Thus, our work may reveal new vulnerabilities in prostate cancer amenable to therapeutic intervention.

9:30 - 9:45 a.m.

Break

9:45 - 10:15 a.m.

Anti-Diabetic Drugs as Therapeutic Agents for Prostate Cancer

LaMonica Stewart, PhD
*Meharry Medical College
 Nashville, TN*

At present, there are no therapeutic strategies that cure advanced forms of prostate cancer. Our research has demonstrated that two types of anti-diabetic drugs, the thiazolidinediones and the biguanide metformin, regulate the activity of the androgen receptor within castration-resistant human prostate cancer cells. These structurally different compounds also modulate other signaling pathways that control prostate cancer growth and progression. While some of these compounds pose a safety risk for patients, newer drug derivatives may serve as effective chemotherapeutic and/or chemopreventive agents for early and late stage prostate cancer.

10:15 - 10:45 a.m.

Prostate Cancer Genomics

Himisha Beltran, MD
*Weill Cornell Medical College
 New York, NY*

Recent next-generation sequencing studies have provided insight into the genomic landscape of prostate cancer and a movement toward developing a molecular sub-classification system for the disease. Genomic studies have also provided insight into mechanisms of tumor resistance and have identified potential new therapeutic targets. This talk will highlight the potential clinical utility of next generation sequencing and how genomics may eventually be applied towards developing personalized treatment approaches for prostate cancer patients.

10:45 - 11:15 a.m.

Ubiquitin Ligase Siah2 in Castration-Resistant Prostate Cancer

Jianfei Qi, PhD
*University of Maryland School of Medicine
 Baltimore, MD*

Ubiquitin ligase Siah2 is able to promote selective AR activity and thereby contribute to the castration resistance of prostate cancer. It is also able to enhance HIF activity and thus induce the neuroendocrine differentiation, which is associated with the resistance of prostate cancer to therapies. Therefore, our results suggest that Siah2 may serve as a potential target against the advanced prostate cancer.

11:15 - 11:35 a.m.

Travel Award Winner**Dynamic Expression Of 5-alpha Reductase 2 In Aging Prostate Is Regulated By DNA Methyltransferase 1**

Rongbin Ge, MD, PhD
*Massachusetts General Hospital
 Boston, MA*

11:35 - 11:45 a.m.

Moderated Discussion

Moderator: Allen Gao, PhD
*University of California Davis
 Davis, CA*

11:45 a.m. – Noon

Farewell

Marianne Sadar, PhD
*SBUR President
 Genome Sciences Center
 Vancouver, BC*

To claim CME credits, an email with a link and instructions will be sent to you at the conclusion of the meeting. Thank you for attending!