Scientific Program

Omics in Urologic Research–
New Frontiers Driving Precision Medicine

General Sessions will be located in Coronado

THURSDAY, NOVEMBER 13, 2014

2:00 – 7:30 p.m. **Registration**

West Wing Foyer

2:30 – 5:00 p.m. **Board of Directors Meeting**

5:45 – 6:00 p.m. **Welcome & Introductory Remarks**

Jill Macoska, PhD
SBUR President
University of Massachusetts, Boston
Boston, MA

6:00 – 7:00 p.m. **Leland W.K. Chung Lecture**

Multi-Faceted Roles of piRNAs in the Germline

Haifan Lin, PhD
Yale University
New Haven, CT

The research that will be presented has immediate implications to the diagnosis of male infertility and opens a novel opportunity for developing male contraceptives as well as treatment for male infertility.

7:00 – 7:15 p.m. **Travel Award Winner**

Targeting Motifs on the Androgen Receptor: A Novel Therapeutic Strategy for Prostate Cancer

Preethi Ravindranathan, MS
University of Texas Southwestern Medical Center
Dallas, TX

See full abstract on page 27

7:15 – 7:30 p.m. **Prostate Cancer Biorepository Network (PCBN)**

Bruce Trock, PhD
Johns Hopkins University
Baltimore, MD

FRIDAY, NOVEMBER 14, 2014

7:00 – 8:00 a.m. **Continental Breakfast**

Cortez

8:00 a.m. – Noon **Plenary Session I:**

Omics: Drivers from Bench to Bedside

8:00 – 8:10 a.m. **Session Overview**

Moderators:

Jill Macoska, PhD
University of Massachusetts, Boston
Boston, MA

Qianben Wang, PhD
Ohio State University
Columbus, OH

8:10 – 8:35 a.m. **Insights to Neuroendocrine Transdifferentiation**

Colin Collins, PhD
Vancouver Prostate Centre
Vancouver, Canada

Patient-derived tumor xenografts combined with advanced "omic" analyses are powerful systems for determining the mechanisms by which resistance to therapy emerges in prostate cancer patients. Data will be presented that supports a mechanism for neuroendocrine transdifferentiation that may not require clonal selection. Further, a treatment-induced stress response gene has been identified that can suppress apoptosis and promote proliferation and invasion. Finally, insights to therapeutic resistance in prostate cancer patients gained from circulating tumor DNA will be discussed.

8:35 – 9:00 a.m. **Omics Analysis of Smooth Muscle Identifies a Novel PDGF-MYC Regulatory Network**

Rosalyn Adam, PhD
Boston Children's Hospital
Boston, MA

The molecular networks that regulate smooth muscle remodeling in the lower urinary tract are poorly understood. Integration of quantitative proteomics and transcriptomics profiles from primary human smooth muscle cells revealed MYC and AP-1 as master regulators of growth factor-induced transcriptional networks. Pharmacologic inhibition of MYC and AP-1 attenuated smooth muscle cell growth and migration in vitro, whereas genetic deletion of AP-1 in vivo attenuated expression of the fibrosis-inducers CTGF and TNC. These findings implicate MYC and AP-1 as novel targets for pharmacologic intervention in fibroproliferative expansion of smooth muscle.

9:00 – 9:25 a.m. **Leveraging Metabolomic Strategies in Lethal Prostate Cancer**

Ganesh Palapattu, MD
University of Michigan
Ann Arbor, MI

Castrate-resistant prostate cancer (CRPC), a lethal disease that accounts for ~30,000 deaths in the United States annually, is characterized by intact androgen signaling despite systemic androgen ablation. While metabolic alterations are thought to be important in prostate cancer progression, little is known about the biochemical changes that characterize and drive this process. Using a novel integromics approach coupled with metabolomic strategies, our work seeks to shed new light on the biologic processes dysregulated in CRPC with an eye towards novel therapy development.

9:25 – 9:50 a.m. **Dissecting the Functional Roles of the Full-Length Androgen Receptor and Its Splice Variants in a Clinically Relevant Context**

Jun Luo, PhD
Johns Hopkins University
Baltimore, MD

Constitutively active androgen receptor splice variants (AR-Vs) represent an emerging mechanism of resistance to potent AR-targeting therapies. However, in resistant tumors AR-Vs continue to coexist with the more abundant full-length androgen receptor. It is therefore critical to dissect their respective roles. We will discuss the clinical relevance of the different genomic functions mediated by the different androgen receptor molecules.

9:50 – 10:05 a.m. **Break**

10:05 – 10:30 a.m. **Epigenetic Modifiers in Prostate Cancer**

Sooryanarayana Varambally, PhD
University of Michigan
Ann Arbor, MI

Multiple molecular aberrations are involved in prostate cancer initiation and progression to aggressive disease that include both genetic as well as epigenetic events. Epigenetic alterations that take place during prostate cancer progression occur at both DNA and histone protein levels. Histone modifying enzymes EZH2 and MMSET are commonly overexpressed in prostate cancer. These histone modifiers harbor enzymatic activity and regulate the expression of multiple genes and microRNAs, leading to altered cellular homeostasis. These histone modifying enzymes could potentially serve as effective therapeutic targets.

10:30 – 10:55 a.m. Metabolic Reprogramming by Histone Methylases in Prostate Cancer Therapeutic Resistance

Hongwu Chen, PhD
University of California, Davis
Sacramento, CA

Tumor metabolism reprogramming is strongly implicated in cancer therapeutic resistance. However, the underlying mechanism is unclear. Our recent findings highlight that some of the key metabolic enzymes and a histone methylase form a novel autoregulatory loop to reprogram glucose metabolism for cellular ROS rebalance and therapeutic resistance. Thus, our study may reveal new targets for sensitization of prostate cancer tumors to anti-androgen therapy.

10:55 – 11:20 a.m. Recent Insights into Androgen Metabolism in Prostate Cancer

Nima Sharifi, MD
Cleveland Clinic
Cleveland, OH

Prostate cancer resistance to testosterone deprivation occurs through androgen metabolism-dependent processes that allow the tumor to sustain physiologically significant concentrations of biologically active androgens. Identification of the metabolic perturbations that enable resistance is expected to yield new insights into new treatment modalities and patient selection. This presentation will discuss some of the relevant alterations in enzyme components and pathways of androgen metabolism.

11:20 – 11:45 a.m. Lessons from Surveying the DNA Methylation Cityscape of Lethal Metastatic Prostate Cancer

Srinivasan Yegnasubramanian, MD, PhD
Johns Hopkins University
Baltimore, MD

Alterations in DNA methylation are a hallmark of human cancers, including prostate cancer. We carried out genome-scale analyses of DNA methylation alterations in lethal metastatic prostate cancers and created DNA methylation “cityscapes” to visualize these complex data. These analyses revealed that each individual developed a unique DNA methylation signature that was largely maintained across all metastases within that individual. By analyzing their frequency, clonal maintenance, and correlation with expression, we nominated potential “driver” DNA methylation alterations that could be prioritized for development as epigenetic biomarkers and therapeutic targets.

11:45 a.m. – Noon **Travel Award Winner**

PCSD1, A New Patient-derived Model of Bone Metastatic Prostate Cancer, Is Castrate-resistant In the Bone-niche

Christina Jamieson, PhD
University of California, San Diego
Jolla, CA

See full abstract on page 28

Noon – 1:00 p.m. **Lunch**

Cortez Ballroom

1:00 – 1:15 p.m. **AUA Research Department Update**

Carolyn Best, PhD
American Urological Association
Linthicum, MD

The field of urologic research has been chronically underfunded for many years, contributing to a critical shortage of researchers that would develop new treatments for patients with urologic diseases and conditions. To address this major need, the American Urological Association (AUA) Office of Research is working to increase support for research through funding, education, and advocacy. Through the Urology Care Foundation, over 600 research scholarships totaling over $20 million have been provided, and a strategic curriculum of conferences that provide opportunities for collaborating, networking, and improving grant-writing is offered each year with proven results. Moreover, efforts in research advocacy have sharply increased as "promotion of urology/cancer research funding" recently became an AUA legislative priority. The Office of Research strategic plan includes major initiatives to increase support for urologic research and researchers with the ongoing goal of major impact for urology patients and providers.

1:15 – 2:55 p.m. **Plenary Session II**

Emerging Transcriptomics and Novel Pathways

1:15 – 1:25 p.m. **Session Overview**

Moderators:

Shawn Lupold, PhD
Johns Hopkins University
Baltimore, MD

Jin-Tang Dong, PhD
Emory University, School of Medicine
Atlanta, GA

1:25 – 1:50 p.m. **miRNAs in Urologic Disease**

Rajvir Dahiya, PhD
University of California, San Francisco
San Francisco, CA

Our lab has been working in the field of non-coding RNAs for several years. We have identified the role of miRNAs in the initiation, progression and metastasis of urological cancers. We are working on the utility of non-coding RNAs as therapeutic targets, diagnostic and prognostic genetic biomarkers for urological malignancies using various in vitro and in vivo models.

1:50 – 2:15 p.m. **The Challenges and Value of Interrogating the Transcriptome of a Single Disseminated Prostate Cancer Cell from a Patient**

Hung-Ming Lam, PhD
University of Washington
Seattle, WA

We conducted the first clinical profiling of single disseminated tumor cells (DTC) in cancer patients. Specifically, we analyzed individual cells isolated from the bone marrow of two groups of prostate cancer patients: advanced disease and no evidence of disease, uncovering that the alternation of the p38 pathway is associated with PCa DTC dormancy in patient samples. Furthermore, the present work highlights the heterogeneity and possible plasticity of DTC present within and among patients. This clinical transcriptomic profiling of DTC opens the door for the biological study of DTC and the understanding of clinical cancer dormancy.

2:15 – 2:40 p.m. **Therapeutic Targeting and Mechanistic Dissection of mTOR Regulated mRNA Translation in Cancer**

Andrew Hsieh, MD
Fred Hutchinson Cancer Research Center
Seattle, WA

Deregulation of the protein synthesis machinery is emerging as an important characteristic of epithelial cancer initiation and progression. The oncogenic PI3K-AKT-mTOR signaling pathway is a critical regulator of protein synthesis and is significantly deregulated in the majority of cancers including malignancies of the prostate. Our laboratory has determined that mTOR mediates the translation of specific mRNA species to direct cancer cell behaviors including metastasis. Moreover, our work has demonstrated the pharmacologic potential of targeting upstream regulators of the translation machinery. These findings support a critical role for post-transcriptional gene regulation in cancer biology and highlight the potential of therapeutically targeting the fundamental process of mRNA translation in human disease.

2:40 – 2:55 p.m. **Travel Award Winner**

Extracellular Hsp90 (ehsp90) is A Novel Regulator of Epithelial Polarity

Michael Hance, PhD
Medical University of South Carolina
Charleston, SC

See full abstract on page 29

2:55 – 3:10 p.m. **Break**

3:10 – 3:35 p.m. **Mechanisms of ETS Transcription Factor Function in Prostate Epithelial Cells**

Peter Hollenhorst, PhD
Indiana University Bloomington
Bloomington, IN

Chromosome rearrangements that result in over-expression of the ETS transcription factors ERG, ETV1, ETV4, or ETV5 occur in more than half of all prostate cancers. Understanding the functional differences between these oncogenic ETS proteins and the 12-15 ETS factors that are normally expressed in prostate cells will allow the design of more specific therapeutics. We find that oncogenic ETS proteins compete with ETS proteins normally expressed in prostate for binding of a cis-regulatory sequence that can activate cell migration genes. Furthermore, switching the ETS protein bound to this sequence alters RAS/ERK and PI3K/AKT regulation of this gene expression program.

3:35 – 4:00 p.m. **AKT – A Key Regulator for Metastasis and Angiogenesis of Prostate Cancer**

Chendil Damodaran, PhD
University of Louisville
Louisville, KY

Our lab is interested in the identification of minimally toxic natural compounds, including dietary supplements with potent anticancer activities, and translating them in the clinic for cancer prevention and individualized treatment for cancer patients. Specifically, we identified several natural compounds and synthesized their next generation analogs that target AKT and Notch-1 signaling in genitourinary and gastrointestinal carcinomas. Some of these compounds have potent antitumor and anti-metastatic activities in cell culture and mouse models of prostate and colon carcinomas.

4:00 – 4:25 p.m. **Differential Roles of ERα and ERβ in Bladder and Kidney Cancers**

ShuYuan Yeh, PhD
University of Rochester
Rochester, NY

There are two major types of estrogen receptors, ERα and ERβ. To date, the roles of estrogen receptors in urological diseases remains

to be further elucidated. Our goal is to delineate the mechanisms and differential roles of ERα and ERβ in urological diseases including abnormal prostate growth, bladder and kidney cancers. Multiple in vitro and in vivo biological test evidences will be presented to prove ERα and ERβ are important not only for female, but also in male urological diseases. Our studies show in vivo evidence supporting that anti-estrogens or selective ER modulators (SERMs) could be developed as therapeutic drugs in bladder and kidney cancers both in men and women.

4:25 – 4:55 p.m. **International Scholars Lecture**

A Novel Ras-GTPase Activating Protein Suppresses Castration-Resistant Prostate Cancer

Kaijie Wu, MD, PhD
Xi'an Jiaotong University
China

In collaboration with Dr. Jer-Tsong Hsieh, we underlined that the loss of DAB2IP gene, a novel member of Ras-GTPase activating protein families, could not only facilitate the incidence and development of castration-resistant prostate cancer (CRPC) through both AR-dependent and AR-bypass signaling pathways, but also signify the chemoresistance of metastatic CRPC to docetaxel treatment. All these findings may provide a new diagnostic biomarker or therapeutic target for CRPC.

5:00 – 7:00 p.m. **Poster Session I & Networking Reception**

Poster # P1 – P50

Cortez

Light hors d'oeuvres and cash bar

SATURDAY, NOVEMBER 15, 2014

7:00 – 8:00 a.m. **Continental Breakfast**

Cortez

8:00 – 11:40 a.m. **Plenary Session III**

Models and Disparities in Urologic Disease

8:00 – 8:10 a.m. **Session Overview**

Moderators:

Simon Hayward, PhD
Vanderbilt University
Nashville, TN

Travis Jerde, PhD
Indiana University, School of Medicine
Indianapolis, IN

8:10 – 8:35 a.m. **Hormone Action and Fibrosis in the Development of Lower Urinary Tract Dysfunction**

William Ricke, PhD
University of Wisconsin
Madison, WI

Hormone regulation and medical treatment of BPH/LUTS has largely been associated with the androgen pathway and prostatic hyperplasia. Our work implicates the testosterone metabolite, estradiol-17 beta, as a key mediator of lower urinary tract dysfunction as well as the development of fibrotic tissue. Currently there are no medical therapies for the treatment of BPH/LUTS targeting estrogen or fibrosis pathways. We propose targeting the estrogen pathway or its downstream effectors for the prevention or treatment of BPH/LUTS.

8:35 – 9:00 a.m. **Molecular Pathways of Urothelial Tumorgenesis: Insights From Genetically Engineered Mice**

Xu-Rue Wu, MD
New York University School of Medicine
New York, NY

The last 15 years have seen steady progress in using genetically engineered mouse models (GEMMs) to dissect the molecular pathways of bladder cancer. As we enter the era of whole-genome analysis, human-relevant GEMMs remain powerful tools for defining the molecular drivers of the phenotypic variants of bladder cancer, identifying the combinatorial prognostic indicators and serving as vivo platforms for therapeutic and preventive studies.

9:00 – 9:25 a.m. **Inflammation Models for BPH Uncover an Impact on Steroidogenesis**

Donald DeFranco, PhD
University of Pittsburgh
Pittsburgh, PA

Benign prostate hyperplasia (BPH) is a common disorder that affects ageing men and can trigger lower urinary tract symptoms. While inflammation contributes to symptomatic BPH, potent anti-inflammatory drugs such as NSAIDs are only minimally effective. Our work examines the molecular basis for the lack of efficacy of NSAIDs for treatment of BPH and reveals new molecular and metabolic biomarkers that could both predict response to NSAIDs and lead to development of new agents that enhance anti-inflammatory drug action in BPH patients.

9:25 – 9:40 a.m. **Travel Award Winner**

Spontaneous Development of Urinary Tract Infection in a Murine Model of Type II Diabetes

Sara Colopy, DVM, PhD, DACVS
University of Wisconsin
Madison, WI

See full abstract on page 30

9:40 – 9:55 a.m. **Break**

9:55 – 10:20 a.m. **Understanding Novel Mechanisms in Prostate Cancer Using Pten Mouse Model**

Zhenbang Chen, PhD
Meharry Medical College
Nashville, TN

PTEN deletion and mutation are frequently found in prostate cancer specimens, and Pten loss in mice leads to invasive cancer. We recently discovered that MET elevation is associated with Pten inactivation, and MET is accumulated in nucleus of prostate cancer cells upon androgen depletion in vitro and in vivo. Our findings suggest that targeting nuclear MET may be a novel strategy to control castration-resistant prostate cancer.

10:20 – 10:45 a.m. **Association of CCR9 in Prostate Cancer Disparity**

Shailesh Singh, PhD
Morehouse School of Medicine
Atlanta, GA

This study will provide potential involvements of CC chemokine receptor-9 (CCR9) in disparity associated with prostate cancer progression and therapeutic outcomes.

10:45 – 11:10 a.m. **Functional Biomarkers for African-American Prostate Cancer Patients**

Clayton Yates, PhD
Tuskegee University
Tuskegee, AL

In the Yates Laboratory we explore the molecular mechanisms that drive tumor aggressiveness in African-American prostate cancer patients. Specifically, using novel PCa cell lines developed in my laboratory, we explore the molecular mechanism associated with epigenetic regulation of genes and miRNAs that are silenced through DNA methylation. Understanding the epigenetic regulators that promote metastasis is crucial for the development of targeted cancer therapies.

11:10 – 11:50 a.m. **AUA Lecture**

The Future of Prostate Cancer Early Detection

Ian Thompson, Jr., MD
University of Texas Health Science Center at San Antonio
San Antonio, TX

Prostate cancer detection is highly controversial due to the delayed detection of some lethal cancers, as well as the overdetection of tumors that will never harm the patient. Using current technologies, individualized patient risks can be assessed for the range of outcomes of prostate biopsy (no cancer, low-grade cancer, potentially lethal high-grade cancer) to aid patients and their physicians to make an individualized, informed decision for management. These technologies will be discussed in detail. Opportunities will be discussed for integration of future biomarkers to further improve this approach.

Noon – 3:00 p.m. **Break (lunch on own)**

3:00 – 5:05 p.m. **Plenary Session IV:**

Molecular Markers and Targets for Urologic Diseases

3:00 – 3:10 p.m. **Session Overview**

Moderators:

Vinata Lokeshwar, PhD
University of Miami, Miller School of Medicine
Miami, FL

Aria Olumi, MD
Massachusetts General Hospital
Boston, MA

3:10 – 3:35 p.m. **Genomic Approaches to Biomarker Development in Urologic Diseases**

James Brooks, MD
Stanford University
Stanford, CA

In addition to providing insights into the underlying molecular scripts that regulate physiologic, developmental and pathological states, genomic profiling provides a wealth of candidate biomarkers for disease states. For translation of elected biomarkers to be successful, complimentary technologies and expertise must be brought to bear on the problems inherent in clinical implementation. The Brooks group works at the interface of discovery and translation and issues related to biomarker discovery, validation, and development will be presented.

3:35 – 4:00 p.m. **Molecular Markers Related with Chemo- or Radio-Therapy in Urologic Malignancies**

JT Hsieh, PhD
University of Texas Southwestern
Dallas, TX

Identify a new predictive marker for drug-resistant renal cancer. Unveil mechanisms associated with drug-resistant renal cancer. Develop new targeted therapeutic strategy to lethal phenotype of renal cancer.

4:00 – 4:25 p.m. **VHL-HIF Signaling Reprograms Cancer Metabolism: Opportunities for RCC Therapy**

Othon Iliopoulos, MD
Massachusetts General Hospital Cancer Center
Boston, MA

In the Iliopoulos Laboratory we identify and validate therapeutic targets for renal cell carcinoma based on the signature molecular anatomy of these tumors. Specifically, we discovered inhibitors of HIF2a, which is a hallmark of renal cancers, and we linked hypoxia and HIF2a expression to changes in renal cell carcinoma metabolism. We showed that renal cell metabolic changes can be exploited for drug development. Clinical trials based on these findings are underway.

4:25 – 4:50 p.m. **The Complex Actions of Hedgehog Signaling in Prostate Growth Regulation**

Wade Bushman, MD, PhD
University of Wisconsin
Madison, WI

My presentation will emphasize the diverse actions of Hh signaling in development, growth, neoplasia and regeneration.This will be of interest to a wide audience interested in urogenital tract development, regeneration and cancer.

4:50 – 5:05 p.m. **Travel Award Winner**

Development and Characterization of a Patient-derived Bladder Cancer Xenograft (PDX) Platform for Drug Development and Precision Medicine

Amy Pan
University of California, Davis
Sacramento, CA

See full abstract on page 31

5:15 – 7:15 p.m. **Poster Session II & Networking Reception**

Poster # P51 – P102

6:15 p.m. **Awards Program**

Cortez

Light hors d'oeuvres and cash bar

SUNDAY, NOVEMBER 16, 2014

7:00 – 8:00 a.m. **Continental Breakfast**

Cortez

8:00 a.m. – Noon **Plenary Session V**

Emerging Treatment Strategies for Advanced Urologic Cancer

8:00 – 8:10 a.m. **Session Overview**

Moderators:

JT Hsieh, PhD
University of Texas Southwestern
Dallas, TX

Hari Koul, PhD
Louisiana State University, Shreveport
Shreveport, LA

8:10 – 8:35 a.m. **Targeting miRNAs as Novel Therapy**

Ralph deVere White, MD
University of California, Davis
Sacramento, CA

This talk will focus on miR-124 which targets the androgen receptor transcript, acting as a tumor suppressor to broadly limit the growth of prostate cancer (CaP). miR-124 inhibited proliferation of CaP cells in vitro and sensitizes them to inhibitors of androgen receptor signaling (ARSIs). Notably, miR-124 could restore the apoptotic response of cells resistant to enzalutamide, a drug approved for the treatment of castration-resistant CaP. We employed xenograft models to examine the effects of miR-124 in vivo when complexed with polyethylenimine (PEI)-derived nanoparticles. Intravenous delivery of miR-124 was sufficient to inhibit tumor growth and to increase tumor cell apoptosis alone and in combination with enzalutamide. Mechanistic investigations revealed that miR-124 directly downregulated AR splice variants AR-V4 and V7 along with EZH2 and Src. Taken together, our results offer a preclinical rationale to evaluate miR-124 for cancer treatment.

8:35 – 9:00 a.m. **Peptidomimetic Targeting of Critical AR-coregulator Interactions in Prostate Cancer**

Ganesh Raj, MD, PhD
University of Texas Southwestern
Dallas, TX

Therapeutic agents that disrupt protein-protein interactions potentially offer a highly selective approach to blocking fundamental processes of growth, differentiation and death. Here we describe our experience with peptidomimetics, or peptide-like agents in prostate and breast cancers.

9:00 – 9:25 a.m. **Wnt5A/BMP-6 Loop and Castration Resistance in Prostate Cancer Bone Metastases**

Isaac Kim, MD, PhD
Rutgers Cancer Institute of New Jersey
New Brunswick, NJ

Multiple studies have demonstrated the efficacy of early androgen deprivation in men with non-curable prostate cancer. Yet, castration is associated with complications that involve multiple organ systems. In the present study, we report that bone microenvironment induces castration resistance in prostate cancer cells via the Wnt5a/BMP6 loop. These findings suggest that androgen deprivation therapy should be initiated prior to the onset of bone metastasis.

9:25 – 9:55 a.m. **International Scholars Lecture**

Prodrug-Activator Gene Therapy Mediated by Retroviral Replicating Vectors for Prostate Cancer

Shuichi Kamijima, MD, PhD
Toho University Sakura Medical Center
Chiba, Japan

Retroviral replicating vectors (RRV) achieve highly efficient gene transfer through entire tumors in preclinical models, and RRV-mediated prodrug-activator gene therapy for cancer is being evaluated in clinical trials currently on-going at multiple sites throughout the United States. To further improve the tumor specificity and safety profile of this vector system, we have developed modified RRV in which the wild-type viral promoter is replaced by a prostate-specific synthetic promoter, i.e. ARR2PB (androgen-dependent) or PSES (androgen ablation-independent). Both of these modified RRV showed selective targeting of prostate cancer cells in vitro and in vivo, and reduced systemic biodistribution to normal tissues, while retaining the ability to achieve efficient tumor transduction and therapeutic efficacy in prostate cancer models. Furthermore, PSES-regulated RRV achieved significant tumor growth inhibition in a castration-resistant LNCaP tumor model, which indicates the potential of this novel gene therapy strategy for treatment of castration-resistant prostate cancer.

9:55 – 10:05 a.m. **Break**

10:05 – 10:20 a.m. **NIDDK Vision for Urologic Research**

Ziya Kirkali, MD
NIDDK/NIH
Bethesda, MD

10:20 – 10:45 a.m. **Improving Bladder Cancer Precision Medicine with the Patient-Derived Xenograft Platform and Nanotheranostics - From Bench to Bedside**

Chong-Xian Pan, MD, PhD,
University of California, Davis
Sacramento, CA

In Dr. Pan's lab, we developed a patient-derived xenograft (PDX) platform that can facilitate precision cancer medicine, drug development and clinical trial design. The PDX platform has several advantages not paralleled by cell lines, their derived xenografts, and the clinical setting: 1) Unlike cell lines that have been maintained in vitro for a long time and may acquire genetic aberrations that are dramatically different from human cancers, PDXs are directly derived from unselected and uncultured clinical cancer specimens, and share similar genetic background as clinical cancers. Therefore, the efficacy and mechanistic studies in PDXs can be more applicable into clinical practice. 2) Unlike at the clinical setting that only a few drugs are used to treat patients at a time, many identical PDXs can be generated that allows screening of many individual drugs or in combination to search for the most efficacious drugs or combination. 3) Unlike at the clinical setting where multiple biopsies are not practical, multiple biopsies at different time points and treatments can be performed with PDXs that allows for mechanistic studies. We have established 19 bladder cancer PDXs, and performed whole exome and transcriptome sequencing in the first 8 PDXs. Based on the studies in PDXs, a Phase II clinical trial for targeted therapy, and a Phase I clinical trial for cytotoxic chemotherapy are being planned. In addition, a Phase II microdosing trial to identify chemoresistance is currently going after finishing a Phase I trial.

10:45 – 11:10 a.m. **Targeting Androgen Receptor as New Therapy to Suppress Prostate, Bladder and Kidney Cancers**

Chawnshang Chang, PhD
University of Rochester
Rochester, NY

From targeting androgens with ADT-antiandrogens to targeting androgen receptor (AR) may better suppress prostate cancer at castration-resistant stage. Targeting AR is the new potential therapy to suppress bladder cancer. Targeting AR is the new potential therapy to suppress kidney cancer.

11:10 – 11:35 a.m. **Targeting Androgen Action for Treatment of Prostate Cancer: Does the Post-Receptor Level Provide Novel Opportunities?**

Hannelore Heemers, PhD
Roswell Park Cancer Institute
Buffalo, NY

The standard of care for patients who suffer from non-organ confined prostate cancer (CaP) is androgen deprivation therapy (ADT). Currently, ADT limits the availability of ligand for androgen receptor (AR) or interrupts AR-ligand interaction. Both forms of ADT induce remission, but are not curative and are associated with severe side effects. Interference with the molecular regulation of AR-dependent transcription and the action of AR target genes may lead to novel, more CaP-specific selective forms of ADT.

11:35 – 11:45 a.m. **Farewell**

Jill Macoska, PhD
SBUR President

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!