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2026 SAU Annual Meeting Report: Advances in Precision Oncology, Tumor-host Interaction, and Translational Research in Urologic Malignancies

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ABSTRACT

The Serican Academy of Urology (SAU) 4th annual meeting was held during Jun 21-25, 2026, at West Yellowstone, Montana. The meeting provided a dynamic platform for exchanging ideas among basic scientists, translational researchers, and clinicians dedicated to prostate cancer and urologic science. The meeting placed increased emphasis on integrating tumor-intrinsic molecular mechanisms with the tumor microenvironment, illustrating how cancer evolution is governed by dynamic interactions among genetic alterations, immune regulation, metabolism, and tissue-specific metastatic niches, and showcasing novel therapeutic targets and drug development approaches. The scientific program reflected the rapidly evolving landscape of urologic oncology. Major themes included precision medicine, cancer genetics, epigenetic regulation, tumor metabolism, immunotherapy, transcriptional and spatial biology, DNA damage response, and translational therapeutic development. Throughout the meeting, speakers highlighted how advances in cancer biology, genomics, single-cell and spatial multi-omics technologies, and innovative therapeutic platforms are reshaping our understanding of tumor biology while accelerating the translation of laboratory discoveries into clinical applications.

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Opening Session: Keynote Lectures

The conference officially opened with welcoming remarks from the President of SAU, Dr. Benyi Li (University of Kansas Medical Center), who emphasized the importance of collaboration among basic scientists, translational investigators, and clinician-scientists in accelerating discoveries that improve patient care. He also highlighted the continued growth of the SAU meeting as an important platform for fostering collaborations within the academic urology research community.

The keynote session featured three distinguished speakers who received the 2026 SAU Life-Time Achievement Award and the 2025/2026 SAU Rising Star Awards.

Dr. **Jason Luo** (Johns Hopkins University; 2026 SAU Life-Time Achievement Awardee) delivered the opening keynote entitled *"Germline Genetics of Prostate Cancer: Uncovering Missing Heritability through Ultra-Rare Variant Discovery."* Prostate cancer possesses one of the strongest inherited components among common malignancies; however, currently recognized susceptibility genes explain only a portion of familial risk. Dr. Luo presented large-scale germline sequencing studies demonstrating that ultra-rare deleterious variants contribute substantially to the unexplained heritability of prostate cancer. Through gene burden analyses, his group identified previously underappreciated DNA repair genes, including MMS22L and TONSL, as candidate susceptibility genes associated with aggressive disease. Importantly, incorporating these ultra-rare variants into existing risk prediction models significantly improved patient stratification beyond conventional polygenic risk scores. These findings provide a strong rationale for expanding clinical germline testing panels and illustrate how comprehensive genomic profiling may further personalize cancer screening, surveillance, and therapeutic decision-making.

Dr. Jason Luo (Left)

Dr. Xin Lu (Left)

The second keynote was presented by Dr. **Xin Lu** (University of Notre Dame; 2026 SAU Rising Star Awardee), who discussed *"Enabling and Engineering Immunotherapy."* His laboratory has pioneered the identification of tumor-intrinsic mechanisms that suppress anti-tumor immunity and developed innovative strategies to overcome immunotherapy resistance in prostate cancer. Dr. Lu's presentation highlighted two ongoing collaborative research directions that illustrate how mechanistic cancer biology can relate to translational and engineering-based approaches. The first focused on a GU tumor model in which therapeutic combinations were evaluated to determine whether tumor-directed treatment could alter immune signaling and improve responsiveness to immunotherapy. This work explores how selected treatment regimens may reshape the immune contexture of tumors and identify features associated with therapeutic benefit. The second direction highlighted an emerging cell-free immunotherapy platform developed through collaboration between cancer biology and biomolecular engineering. This project seeks to use engineered nanoscale biological carriers to coordinate immune activation and immune modulation within a single therapeutic strategy. Preclinical studies are being used to assess delivery, immune engagement, and antitumor activity while further optimizing the platform for future translational development. By integrating tumor biology, immune profiling, preclinical modeling, therapeutic testing, and engineering innovation, our goal is to develop new strategies that can overcome immunotherapy resistance and ultimately benefit patients with difficult-to-treat cancers.

The 2026 Special Lecture was delivered by Dr. **Helen He Zhu** (Shanghai Jiao Tong University; 2025 SAU Rising Star Awardee), who presented groundbreaking work entitled *"A tale of two malignancies: the divergent roles of Gremlin1."* The inevitable occurrence of castration-resistant prostate cancer (CRPC) after the use of first- or second-generation androgen receptor pathway inhibitors poses a significant challenge in the treatment of prostate cancer (PCa). Secreted proteins have demonstrated great potential as therapeutic targets for cancer treatment. By screening the expression profile of secreted proteins in CRPC samples, we found that Gremlin1 is upregulated in CRPCs, especially in the AR-negative and neuroendocrine-negative prostate cancer subtype (DNPC). Gremlin1 promotes castration-resistant growth of prostate cancer independently of its previously reported function in

Dr. Helen He Zhu (Left)

antagonizing the bone morphogenetic protein (BMP) signaling pathway. Instead, Gremlin1 acts as a novel FGFR1 ligand that activates the downstream MEK/ERK signaling pathway. Importantly, we developed a Gremlin1-blocking antibody and found that it exerts a strong inhibitory impact and displays a synergistic effect with androgen deprivation therapy. Conversely, we reveal a novel tumor-suppressing function of Gremlin1 in CML that is distinct from its tumor-promoting roles in PCa. Gremlin1 marks a unique stromal cell population in the spleen. It suppresses the apoptosis of leukemia stem cells (LSCs) by antagonizing the BMP pathway. Therefore, Gremlin1 is a multifaceted protein whose functions depend on tissue context and binding partners.

Session 1: Transcription and Epigenetics in Cancer

Chaired by Dr. Will Fong (University of Kentucky), this session highlighted emerging mechanisms by which transcriptional and epigenetic regulation drive cancer progression and therapeutic resistance in urologic cancers. Dr. Will Fong demonstrated that TRIM28 links metabolic reprogramming to histone lysine lactylation in castration-resistant prostate cancer (CRPC). By promoting glycolysis and H3K18 lactylation at androgen receptor (AR)-bound enhancers, TRIM28 enhances AR signaling and tumor growth, while inhibition of lactate production synergizes with AR blockade to suppress CRPC progression. Dr. Kexin Xu (University of Virginia) presented single-cell multi-omics analyses identifying the bromodomain-containing protein ATAD2 as a critical cofactor for glucocorticoid receptor (GR)-driven enzalutamide resistance. Targeting ATAD2 using a novel PROTAC effectively inhibited resistant prostate cancer cells, providing a promising strategy to overcome therapeutic resistance. Dr. Hongbin Liu (Tulane University) reported that ribosomal proteins interact with the developmental regulator SIX2 to promote translational reprogramming and tumorigenesis in Wilms tumor, suggesting new therapeutic opportunities in pediatric kidney cancer. Finally, Dr. Ping Yi (University of Houston) presented Cryo-electron microscopy studies revealing that estrogen receptor α directly engages nucleosomal DNA and remodels chromatin through interactions with core histones, providing new structural insights into hormone receptor-mediated transcriptional regulation.

Session 2: Cancer Etiology

Co-chaired by Drs. Huadong Pei (Georgetown University) and Qi-En Wang (The Ohio State University), this session focused on the molecular mechanisms underlying cancer initiation, genome instability, and therapeutic resistance. Dr. Huadong Pei presented a nutrient-sensing mechanism linking glucose and lipid metabolism to nucleotide biosynthesis and DNA damage repair in prostate cancer. His work demonstrated that O-GlcNAcylation-dependent activation of ZDHHC5 promotes PRPS1 palmitoylation, enhancing nucleotide synthesis and conferring resistance to chemotherapy and radiotherapy, thereby identifying a metabolic vulnerability associated with genome stability. Dr. Qi-En Wang reported that ATM deficiency promotes bladder cancer stemness by activating the cGAS-STING–JAK-STAT signaling axis, leading to SOX2 upregulation and enhanced tumor-initiating capacity. These findings establish a mechanistic link between defective DNA damage response and cancer stem cell maintenance. Dr. Li Jia (Harvard Medical School) reviewed emerging therapeutic strategies targeting non-BRCA DNA repair alterations in MMS22L and NDUFAF4 in prostate cancer, emphasizing the expanding clinical opportunities for precision medicine beyond BRCA1/2 mutations. Dr. Xuefeng Liu (The Ohio State University) discussed non-canonical functions of telomerase in virus-associated cancers, highlighting novel biological activities independent of telomere maintenance. The session concluded with a presentation by Dr. Hailiang Hu (Southern University of Science and Technology), who reported a new tryptophan catabolism pathway, TDO2-Kyn-AhR, and demonstrated that its dysregulation promotes tumor dormancy and disease recurrence in prostate cancer, providing new insights into the metabolic regulation of cancer persistence and therapeutic resistance.

Session 3: Bioinformatics and New Technologies

Co-chaired by Drs. Linghua Wang (MD Anderson Cancer Center) and Jonathan Zhao (Emory University), this session showcased emerging computational and technological innovations that are transforming cancer research and precision oncology. Dr. Linghua Wang presented cutting-edge approaches integrating spatial transcriptomics and artificial intelligence (AI) to decipher the cellular organization and communication networks within the tumor microenvironment,

providing new insights into tumor immunity and therapeutic response. Dr. Jonathan Zhao introduced innovative DNA methylation detection technologies that enable highly sensitive epigenetic profiling for prostate cancer diagnosis and disease monitoring. Dr. Yibin Deng (University of Minnesota) demonstrated how generative AI can accelerate the de novo design of next-generation cancer immunotherapies, highlighting the growing role of AI in therapeutic development. Dr. Shang Su (Louisiana State University) described a computational framework integrating protein-protein interaction networks and *in silico* structural modeling to develop peptide-based PROTAC degraders targeting previously undruggable proteins.

Session 4: New Targets in Cancer

Co-chaired by Drs. Meng Zhang (Emory University) and Hansen He (University of Toronto), this session highlighted emerging therapeutic targets and innovative treatment strategies for urologic malignancies. Dr. Meng Zhang discussed tumor surface protein heterogeneity in prostate cancer and its implications for biomarker development and precision therapeutics. Dr. Hansen He presented recent advances in RNA biology and RNA-based therapies, illustrating how dysregulated RNA modifications and post-transcriptional regulation contribute to prostate cancer progression and represent promising therapeutic opportunities. Dr. Hong Sun (New York University) demonstrated that Isorhapontigenin suppresses invasive bladder cancer by targeting the RACK1/HIF1A signaling axis, revealing a novel mechanism for inhibiting tumor progression. Dr. Jindan Yu (Emory University) presented new therapeutic strategies targeting molecular vulnerabilities in prostate cancer by discussing the canonical and non-canonical roles of EZH2 in prostate cancer and a novel PROTAC targeting EZH2 in prostate cancer.

Session 5: Cancer Metabolism and Tumor Microenvironment

Co-chaired by Drs. Ming Chen (Duke University) and Guocan Wang (MD Anderson Cancer Center), this session focused on the interplay between tumor metabolism and the tumor microenvironment in driving cancer progression and therapeutic response. Dr. Guocan Wang demonstrated that targeting ACOD1-mediated immunometabolic reprogramming restores anti-tumor immunity by disrupting suppressive myeloid cell function in prostate cancer. Dr. Zhipeng Wang (University of Miami) identified a novel ketogenesis-induced cysteine crotonylation pathway that regulates prostate cancer metabolism, highlighting a previously unrecognized post-translational modification linking metabolic adaptation to tumor progression. Dr. Jun Sun (University of Illinois Chicago) discussed the critical role of host-microbial interactions in tumorigenesis, emphasizing how the microbiome shapes immune responses and cancer development. Dr. Di Zhao (MD Anderson Cancer Center) presented evidence that SPOP mutations and CHD1 loss exert opposing effects on ferroptosis susceptibility through regulation of the MYC–ACSL4 axis. Restoration of ACSL4 expression by cholesterol-lowering agents re-sensitized resistant tumors to GPX4 inhibition, suggesting a biomarker-driven combinatorial strategy for targeting genetically defined prostate cancer subtypes.

Session 6: Clinical Research

Co-chaired by Drs. Lingbin Meng and Peng Wang (The Ohio State University), this session highlighted recent advances in translational and clinical research aimed at improving cancer diagnosis, prognostication, and therapeutic intervention. Dr. Lingbin Meng presented clinical evidence supporting circulating tumor DNA as an emerging biomarker for predicting treatment response and survival in bladder cancer. Dr. Peng Wang reported a National Cancer Database analysis comparing treatment strategies for localized neuroendocrine bladder cancer, providing valuable evidence to guide clinical management of this rare malignancy. Dr. Yibo Fan (University of Houston) employed single-cell approaches to define cancer cell states associated with peritoneal metastasis in gastric adenocarcinoma, revealing cellular heterogeneity that may influence metastatic progression and therapeutic response. Dr. Song Li (University of Pittsburgh) highlighted advances in nanoparticle-based therapeutic delivery and translational technologies, underscoring continued efforts to bridge mechanistic discoveries with clinical applications in cancer immunochemotherapy.

Session 7: Cancer Metastasis

Co-chaired by Drs. Xiaohong Li and Jianmin Zhang (University of Toledo), this session focused on mechanisms driving metastatic progression and organ-specific tumor colonization. Dr. Xiaohong Li showed that loss of PTH1R in mesenchymal cells markedly inhibits prostate cancer bone metastasis

and decreases IL33 expression in osteoblasts, highlighting stromal PTH1R signaling as a key component of the metastatic bone niche. Dr. Jianmin Zhang identified CAMK1D as a candidate therapeutic target in metastatic triple-negative breast cancer, linking this understudied kinase to tumor proliferation, migration, and metastatic colonization. Dr. Xiaoqi Liu (University of Kentucky) discussed the PLK1/HOXB13 axis in prostate cancer progression, emphasizing the importance of kinase-transcription factor signaling in advanced disease. Dr. Jian Zhang (Southern University of Science and Technology) presented a novel model in which spontaneous fusion between disseminated prostate cancer cells and bone marrow cells generates myeloid-like hybrid tumor cells with enhanced metastatic capacity, immunosuppressive activity, EMT features, and therapy resistance. Together, these studies underscored the central role of the metastatic niche, stromal signaling, kinase pathways, and cellular plasticity in cancer dissemination.

Session 8: Therapy Resistance in Cancer

Co-chaired by Drs. Zhenbang Chen (Meharry Medical College) and Dinglan Wu (The Chinese University of Hong Kong), this session highlighted molecular and microenvironmental mechanisms underlying therapy resistance. Dr. Shumei Song (Coriell Institute for Medical Research) presented the role of Hippo/YAP signaling in gastroesophageal cancer stem cell traits, therapy resistance, peritoneal metastasis, and remodeling of an immunosuppressive tumor microenvironment. Dr. Dinglan Wu identified the neuropeptide precursor VGF as a driver of neuroendocrine differentiation and immune suppression in advanced prostate cancer, suggesting that the VGF/TLQP-21 axis may represent a new therapeutic target. Dr. Feng Yang (Baylor College of Medicine) discussed MAPK4 as a non-canonical kinase that promotes therapy resistance beyond prostate cancer through activation of oncogenic signaling pathways including AR, GATA2, and AKT. Dr. Zhenbang Chen demonstrated that KDM5B promotes therapy-induced neuroendocrine prostate cancer through direct regulation of SOX9, and that Kdm5b deficiency suppresses neuroendocrine progression in genetically engineered mouse models.

Session 9: Basic Biology of GU Cancers

Co-chaired by Drs. Yuanyuan Zhang (Wake Forest University) and Yi Lu (Southern University of Science and Technology), this session covered fundamental mechanisms in genitourinary cancer biology and translational opportunities. Dr. Yuanyuan Zhang described urine-derived stem cells from clear cell renal cell carcinoma patients, which retain tumor-associated molecular and chromosomal features and may provide a non-invasive platform for disease modeling, early detection, and personalized therapy. Dr. Zhou Wang (University of Pittsburgh) challenged the conventional model of glucocorticoid receptor trafficking by showing that nuclear GR undergoes ligand-regulated degradation rather than nuclear export in prostate cancer cells. Dr. Zhibing Zhang (Wayne State University) discussed MEIG1 as a potential target for male-based contraception, expanding the biological scope of the meeting beyond oncology. Dr. Haitao Wen (The Ohio State University) showed that mitochondrial calcium signaling suppresses ferroptosis-mediated antitumor immunity through MCU-dependent acetyl-CoA production and GPX4 acetylation. Dr. Houjian Cai (University of Georgia) presented progress toward gene therapy for castration-resistant prostate cancer using EV-mediated delivery of a myristoylated Cas9/sgRNA RNP system, while Dr. Qi Chen (University of Kansas) discussed high-dose intravenous vitamin C combined with chemotherapy for cisplatin-ineligible bladder cancer patients. Dr. Yaru Xu (Yale University) further reported that genome-wide CRISPRi screening identified the lncRNA CRNDE as a regulator of lineage plasticity and metastatic rewiring in prostate cancer.

Keynote Presentation 3: Tumor-Specific lncRNA IGF1R-AS1 and Oncogenic MYC Signaling

The third keynote presentation was delivered by Dr. Qi Cao (Northwestern University), the awardee of the 2026 SAU Research Excellence Award. Dr. Cao discussed tumor-specific lncRNA IGF1R-AS1 as a trans-regulator of chromatin interactions associated with oncogenic MYC signaling. His work identified IGF1R-AS1 as a super-enhancer-associated lncRNA that is highly expressed in prostate and lung cancers. Mechanistically, IGF1R-AS1 interacts with chromatin remodeling complexes and architectural proteins to promote long-range chromatin looping between distal MYC enhancers and the MYC promoter, thereby increasing MYC expression and tumorigenic potential. This presentation provided compelling evidence that tumor-specific lncRNAs can function beyond local gene regulation to reshape 3D chromatin architecture and activate oncogenic transcriptional programs. These findings establish IGF1R-AS1 as a

potentially important driver and therapeutic vulnerability in MYC-driven malignancies.

Grant Application and Publication Forum

Drs. Jane Wang and Song Li (University of Pittsburgh) jointly delivered a talk to introduce their experience in winning their first multi-PI R01, offering crucial insights into how to develop organic and multi-discipline collaborations, generate strong multi-PI grants, and comprehensively address comments from grant reviewers. Then, Dr. Linghua Wang (MD Anderson Cancer Center) talked about the lessons she learned during her successful path to publication in high-profile journals, from project design and manuscript preparation to building constructive relationships with editors and strategically addressing reviewers' comments. These invaluable experiences in grant applications and publications will shed light on future research and collaborations in the society.

Professional Development and Women's Forum

Co-chaired by Drs. Xiaohong Li (University of Toledo) and Kexin Xu (University of Virginia), the Professional Development and Women's Forum provided a valuable platform for career development and mentorship. Dr. Helen He Zhu (Shanghai Jiao Tong University), introduced by Dr. Jindan Yu (Emory University), delivered an inspiring keynote, *"Bringing It All Back Home: My Take on Building a Career in the East,"* sharing her experience establishing a successful research program after returning to China. A lively roundtable discussion followed, covering career development across international settings, transitions between academia and industry, and strategies for building, managing, and sustaining high-performing research teams. The session fostered open dialogue and offered practical guidance for investigators at all career stages.

Award Ceremony

As tradition, the SAU presented multiple awards to our excellent members for their outstanding contributions to the Academy and the community, in addition to the three awards mentioned earlier. The Mentor awardee is **Yuanyuan Zhang, MD/PhD,** a physician/scientist and professor at the Wake Forest University who trained more 50 urologists in his career. The SAU Dedicated award is presented to **Xiaohong Li, PhD,** from the University of Toledo, for her hard work in organizing the SAU meetings and numerous activities. The Research Excellent award is presented to **Qi Cao, PhD,** a scientist from Northwest University who made huge contributions in prostate cancer research. Meanwhile, two other awards, The Editor of the Year and The Author of the Year were presented to **Zongbing You, MD/PhD,** and


YUANYUAN ZHANG, MD


SJM AUTHOR OF THE YEAR:
XUEFENG LIU, MD


SAU DEDICATED SERVICE AWARD:
XIAOHONG LI, PHD


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Xuefeng Liu, MD, for their excellent contributions to the Serican Journal of Medicine in 2026. A special award was created this year, entitled by a longtime sponsor, the MCE Impact Award, for the outstanding leadership role in urological research and career development. The awardee for the first time is **Jian Zhang, MD/PhD,** from Southern University of Science & Technology for his extraordinary work in medical research and infrastructure development.

Conclusion

The 2026 SAU Annual Meeting showcased the rapid progress being made in urologic cancer research through multidisciplinary approaches spanning cancer genetics, epigenetics, tumor metabolism, immunology, artificial intelligence, and precision medicine. The meeting highlighted innovative technologies and mechanistic discoveries that are advancing our understanding of tumor biology while accelerating the development of biomarker-driven therapies. Equally important, the career development and grant writing forums fostered collaboration and mentorship within the academic urology community. Overall, the meeting successfully promoted scientific exchange, interdisciplinary collaboration, and translational research, reinforcing the Society of Academic Urologists' mission to advance research and improve outcomes for patients with genitourinary malignancies.

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