RESEARCH REPORT 2013

DIVISION OF UROLOGY
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UCSD Urology continues to strengthen the synergy between our clinical practices and basic and translational research as evidenced by our designation as a clinical department of the UC San Diego Health System in March 2013. Many exciting developments have happened over the past two years, including the addition of two new faculty: Dr. Hsieh joined Urology in 2012 and we now offer a Men’s Health program in male fertility and sexual health; Dr. Buckley joined us in 2013 to practice complex urinary reconstruction, currently the only surgeon in San Diego specializing in this area. We established the UC San Diego-Kaiser Endourology/Laparoscopic Fellowship and reinstated the annual Prentiss Lecture Series as part of our Visiting Professor Grand Rounds Program. Our first speaker in 2013 was Peter R. Carroll, MD, MPH, the Ken and Donna Derr-Chevron Distinguished Professor and Chair of Urology at UC San Francisco.

Our achievements have been recognized nationally by a continued uptick in *U.S. News & World Report* rankings – UCSD Urology was ranked #22 for 2013-2014, the highest position in the program's history. We have been ranked in the top 50 nationally four times in the past six years, which is a great statement about our collective progress in building a distinguished and outstanding department. We are headed in the right direction.

*Our mission is to provide the highest quality compassionate care, research and training.*

We have significantly enhanced collaborations with world-class basic scientists at UCSD and nationally. Discoveries by our faculty include patenting the only FDA-approved oral therapy for interstitial cystitis/painful bladder syndrome, and the first clinical trial ever performed to examine the effect of diet on bladder cancer. Urology physicians are also helping to develop pioneering scarless surgery techniques at the Center for the Future of Surgery.

Our faculty explore the risk factors, prognostic factors and clinical and pathologic details that correlate with outcomes for men and women with urologic malignancies. Some recent observations and discoveries include: the stage and size migration of kidney cancer in the United States and how that has impacted survival from kidney cancer; the role of partial kidney removal, rather than complete kidney removal, for kidney cancer patients to prevent anemia, acidosis, cardiovascular disease and sexual dysfunction; and the role of ethnicity and obesity on prostate cancer severity and outcomes. We have also contributed to the understanding of prostate-specific antigen velocity, specific biopsy results, prostate volume and nerve sparing on prostate cancer outcomes.
Our multidisciplinary approach led to the development of two specialized treatment centers. The Women’s Pelvic Medicine Center is the only multidisciplinary center in the region dedicated to women’s pelvic floor disorders, and one of only five medical centers in the nation that belong to the NIH-funded Urinary Incontinence Treatment Network and Pelvic Floor Disorders Network. The Comprehensive Kidney Stone Center uses the most modern and minimally invasive techniques available. The Center has a dedicated metabolic program designed to determine the cause of kidney stones, and is also focused on prevention. In addition, faculty in the Pediatric Urology Section at Rady Children’s Hospital-San Diego are creating a comprehensive database to further surgical outcome research in the care of pediatric patients, and are conducting clinical trials to investigate novel forms of medications for children with neurogenic bladder.

Future plans for the Department of Urology include our ability to provide state-of-the-art care to more patients when the Hospitals for Advanced Surgery and Cancer Care are completed in 2016. Both are part of the new UC San Diego Jacobs Medical Center, the largest hospital project in Southern California. UCSD surgeons have pioneered innovations in robotic technology, miniaturized microsurgery, single-incision laparoscopy and natural orifice transluminal surgery. Our new operating rooms are designed to accommodate these lifesaving techniques while promoting surgical safety. The Hospital for Advanced Surgery is designed for what we do today and for what we predict we will do in the future.

The following pages provide a summary of our current research projects. We are grateful to the community partners and philanthropists who support our mission. The achievements noted here would not be possible without them.

For more information on UCSD Urology patient care, visit: health.ucsd.edu/urology

For more information on the Department of Urology, visit: urology.ucsd.edu

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<tr>
<td>Christopher J. Kane, MD, FACS          Professor and Chief of Urology, Interim Chair of Surgery</td>
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<td>Gina Cambareri, MD                     Pediatric Urology Fellow, 2013-15</td>
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<td>Seth D. Cohen, MD                      Sexual Medicine Fellow, 2013-14</td>
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<td>Hak J. Lee, MD                         Society of Urologic Oncology Fellow, 2013-15</td>
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<td>Michael A. Liss, MD                    Society of Urologic Oncology Fellow, 2012-14</td>
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<td>Puneeta Ramachandra, MD</td>
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<td>David Wenzler, MD</td>
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<td>Hossein Mirheydar, MD</td>
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<td>Sam Park, MD</td>
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<td>Nishant Patel, MD</td>
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<td>Gloria Delmios, RN</td>
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<td>Dora Downey, NP</td>
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<td>Flo Flockhart</td>
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<td>Ivanka Kodzic</td>
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<td>Beth Manderson, RN</td>
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<td>Elana Musser</td>
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<td>Arcelli Tabago, RN</td>
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**RESEARCH ASSOCIATES, VISITING SCHOLARS & STUDENTS**

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<tr>
<th>Name</th>
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<tr>
<td>Sulabha Argade, PhD</td>
<td>Research Associate</td>
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<td>Zoltan Berecz</td>
<td>Undergraduate Research Student</td>
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<td>Takeshi Hirata, MD</td>
<td>International Visiting Scholar, Japan</td>
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<td>Seung Chol Park, MD</td>
<td>International Visiting Scholar, South Korea</td>
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<td>Timothy Shaw</td>
<td>Undergraduate Research Student</td>
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<td>Angela Wang</td>
<td>Undergraduate Research Student</td>
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<td>Hana Yoon, MD</td>
<td>International Visiting Scholar, South Korea</td>
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<td>Fenghal Zhou, MD</td>
<td>International Visiting Scholar, China</td>
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<td>Wei Zhou, MD</td>
<td>International Visiting Scholar, China</td>
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**RESEARCH & ADMINISTRATIVE SUPPORT STAFF**

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<tr>
<th>Name</th>
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<tr>
<td>Darlene Vergara</td>
<td>Operational Administrator</td>
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<tr>
<td>Ramona Aragon</td>
<td>Executive Assistant</td>
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<tr>
<td>Jessica Thompson</td>
<td>Executive Assistant</td>
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I am involved in research on both the national and regional levels. My focus is on the medical and surgical treatments for urinary incontinence and pelvic floor disorders in women, lower urinary tract symptoms and urinary incontinence in men, and neurogenic bladder in both men and women. I am the principal investigator for the UCSD clinical site in the Urinary Incontinence Treatment Network, a multicenter, nationwide National Institutes of Health (NIH) clinical research program. UCSD is one of nine centers in the national program, whose purpose is to determine the most effective ways of evaluating and treating patients with urinary incontinence. I am also a co-investigator in the Pelvic Floors Disorder Network, a multi-institutional clinic trials network funded by the NIH to conduct research on female pelvic floor dysfunction. Additionally, I am the principal investigator at UCSD for a number of industry-sponsored studies in the fields of urinary incontinence, neurourology and voiding dysfunction.

**RESEARCH ACTIVITIES AND PROJECTS**

- NIH Clinical Trials
  - Urinary Incontinence Treatment Network (UITN): The goal of this network is to study urinary incontinence by designing and performing high quality studies.
  - Pelvic Floor Disorders Network (PFDN): The goal of this network is to study clinical and health aspects of pelvic floor disorders in women by designing and performing high quality studies.
- Industry Clinical Trials
  - A Multicenter, Long-Term Follow-up Study of the Safety and Efficacy of Two Dose Levels of BOTOX® (Botulinum Toxin Type A) Purified Neurotoxin Complex in Patients with Urinary Incontinence Due to Neurogenic Detrusor Overactivity
- Basic Science
  - Neurogenic bladder – exploring nerve transfer techniques to improve lower urinary tract function in patients with spinal cord injury.

**SELECTED PUBLICATIONS**


**COLLABORATORS**

- Charles W. Nager, MD  
  UCSD Department of Reproductive Medicine 
  Division of Urogynecology

- Emily S. Lukacz, MD  
  UCSD Department of Reproductive Medicine 
  Division of Urogynecology

- Kaiser Permanente Pelvic Floor Group  
  Shawn Menefee, MD, Karl Luber, MD, Keisha Dyer, MD, Gouri Diwadkar, MD, Jasmine Tan Kim, MD, Lynn Hall, RNP

- Urinary Incontinence Treatment Network  
  Michael Albo, MD, Linda Brubaker, MD, Toby Chai, MD, Elizabeth Gormley, MD, Kimberly Kenton, MD, Ziya Kirkali, MD, Stephen Kraus, MD, John Kusek, MD, Gary Lemack, MD, Wendy Leng, MD, L. Keith Lloyd, MD, Charles Nager, MD, Peggy Norton, MD, Ingrid Nygaard, MD, Holly Richter, PhD, MD, Larry Sirls, MD, Anne Stoddard, ScD, Sharon Tennstedt, PhD, Philippe Zimmern, MD, Halina Zyczynski, MD

- Pelvic Floor Disorders Network  
  Michael Albo, MD, Cindy Amundsen, MD, Matthew Barber, MD, Howard Goldman, MD, W. Thomas Gregory, MD, Katherine Hartmann, MD, PhD, Cheryl Iglesia, MD, Alayne Markland, DO, MSc, Shawn Menefee, MD, Pamela Moalli, MD, PhD, Deborah Myers, MD, Charles Nager, MD, Maria Paraiso, MD, Rebecca Rogers, MD, Sandip Vasavada, MD, Anthony Visco, MD
• Urethral Stricture or Obstruction
• Complications Following Prostate Cancer Treatment
• Adult Hypospadias and Revision Repair
• Trauma to the Genitourinary System
• Urologic Disease in Resource-poor Countries

My clinical research focuses on urethral reconstruction, urinary fistula repair, complications from prostate cancer therapy, genitourinary reconstruction, and trauma. I’m currently the only surgeon in San Diego specializing in complex urinary reconstruction. My goal is to provide not only the highest level of current care, but also be at the forefront of developing new methods to deliver innovative care for both reconstruction and trauma.

RESEARCH ACTIVITIES AND PROJECTS

• Adjunctive Methods to Improve Treatment of Urethral Stricture Disease
• Incidence, Management, and Outcomes of Lower Urinary Tract Trauma
• Current Practice Patterns of the treatment of Male Anterior Urethral Stricture Disease
• Anatomic Investigation of the Lower Urinary Tract

SELECTED PUBLICATIONS


COLLABORATORS

• Jeff Carney, MD
  Grady Memorial Hospital
• Chris Heyns, MD
  Stellenbosch University, South Africa
• Jack McAninch, MD
  UC San Francisco
• John G. Meara, MD
  Harvard Medical School
• Elizabeth Wick, MD
  Johns Hopkins University
My research focuses on urologic oncology and renal cell carcinoma. In collaboration with Dr. Kane and our colleagues at UCSD, we reported the first cases in the literature for single incision laparoscopic radical nephrectomy with renal vein thrombectomy and cytoreductive single incision laparoscopic radical nephrectomy – high risk and complex procedures that push the boundaries of minimally invasive surgery. In addition, my team was the second in the world to report single incision laparoscopic partial nephrectomy and nephroureterectomy. I also participated in a multicenter study of robotic partial nephrectomy, which demonstrated the feasibility of a technical modification to further reduce damage to the kidney during kidney-preserving surgery (robotic partial nephrectomy). In the field of experimental surgery, I have pioneered a new approach for nephrectomy (Transrectal NOTES in a preclinical model), which was also the first report of its type. I serve on the AUA Clinical T1 Renal Mass and Follow up of Localized Renal Neoplasm Guideline Panels and the NCCN Guideline Panel for Renal Cell Carcinoma.

**RESEARCH ACTIVITIES AND PROJECTS**

- Randomized Clinical Trial for Radical versus Partial Nephrectomy for Clinical T1b and T2a Renal Mass
- Characterization of Metabolic Sequelae of Renal Surgery: A Prospective Study
- Impact of Acute Changes in Renal Function on Markers of Endothelial Health and Erectile Function
- Feasibility of NOTES Nephrectomy and Partial Nephrectomy in Porcine Kidney

**SELECTED PUBLICATIONS**


**COLLABORATORS**
• Steven Campbell, MD, PhD
  Cleveland Clinic
• Donna Hansel, MD, PhD
  UCSD Dept of Anatomic Pathology
• Jihad Kaouk, MD
  Cleveland Clinic
• Jim Y. Wan, PhD
  UT Health Science Center, Memphis
My research focuses on both male infertility and sexual dysfunction. For male infertility, I am actively engaged in both basic science and clinical projects. With the support of a biology grant from California Institute for Regenerative Medicine, we are studying the regulation of spermatogonial stem cells through collaboration with Dr. Miles Wilkinson of Sanford Consortium for Regenerative Medicine. I am also conducting a prospective study on using testicular sperm for the treatment of elevated sperm DNA fragmentation index in cases of failed IVF or recurrent pregnancy loss. For sexual dysfunction, my focuses are on hypogonadism and outcomes of penile prosthetic surgery. With the support of a grant from the Sexual Medicine Society of North America, I am conducting a prospective study on the effect of testosterone therapy on opiate-induced hypogonadism in collaboration with UCSD Center for Pain Medicine. I am also studying the effect of weight loss on sex hormone abnormality through collaboration with UCSD Bariatric and Metabolic Institute. Utilizing UCSD’s access to the California population database, I am engaged in the first longitudinal big data analysis of outcomes after penile prosthetic surgery in collaboration with Dr. David Chang, Director of Outcomes Research, UCSD Department of Surgery.

RESEARCH ACTIVITIES AND PROJECTS

- The Effect of Testosterone Replacement Therapy on Opiate-induced Hypogonadism
- New Regulators of Spermatogonial Stem Cells: Rhox Homeobox Transcription Factors
- Sonographic and Magnetic Resonance Imaging of Testicular Obstruction
- Comparison of Medical vs. Surgical Weight Loss on Hormonal Abnormalities
- Effect of fertility on long term health outcomes
- Testicular sperm aspiration for the treatment of elevated sperm DNA fragmentation index and failed IVF
- Reoperation of Penile Prosthetic Surgery: A longitudinal analysis of California population database

SELECTED PUBLICATIONS

COLLABORATORS

- Lejla Aganovic, MD  
  UCSD Dept of Radiology
- Eduardo L. Grunvald, MD  
  UCSD Dept of Internal Medicine
- Lauren Weiss, PhD  
  UCSD Dept of Pediatrics
- Christina Chambers, MD  
  UCSD Dept of Pediatrics
- H. Irene Su, MD  
  UCSD Dept of Reproductive Medicine
- Mark S. Wallace, MD  
  UCSD Center for Pain Medicine
- Miles F. Wilkinson, PhD  
  UCSD Dept of Reproductive Medicine
My research focus is on unmet needs in urologic and bone metastatic cancer. We have established novel patient-derived bone metastasis xenograft models for prostate cancer and in vitro long-term 3D-culture models with human mesenchymal stem cells. My group was the first to show that the bone niche supports castration resistant growth of a femoral bone metastatic prostate cancer. We identified gene networks associated with prostate cancer growth in the bone microenvironment. We also established a complementary in vitro co-culture model system in which prostate cancer cells induced osteoblast differentiation of bone marrow stromal cells. These findings support our hypothesis that crosstalk with the bone microenvironment leads to therapy-resistant growth of cancers. Translating these findings into novel therapeutic applications will improve and eventually transform patient care. In 2013 we received a significant three-year grant from The Leo and Anne Albert Charitable Trust.

RESEARCH ACTIVITIES AND PROJECTS

- Generating Novel Patient-derived Bone Metastasis Xenograft Models for Prostate Cancer
- Targeted Anti-inflammatory Protein Therapeutic for Castrate-resistant Prostate Cancer
- Pre-clinical Testing of Novel Splicing Inhibitors for Bone Metastatic Prostate Cancer in the Stem Cell Niche
- The Role of Aging of the Bone Niche and the Tumor Microenvironment in Promoting the Pathogenesis and Progression of Prostate Cancer
- Nerve-Specific Fluorescent Peptide Agents for Peripheral Nerve Imaging in Surgery

SELECTED PUBLICATIONS


COLLABORATORS
• Michael Burkart, PhD  UCSD Department of Chemistry and Biochemistry
• Dennis Carson, MD  UCSD Department of Medicine
• Michael Karin, PhD  UCSD Department of Pharmacology
• Anna Kulidjian, MD  UCSD Department of Orthopedic Surgery
• Roger Tsien, PhD  UCSD Department of Pharmacology
My research is focused on the identification of populations at high risk for the development of prostate cancer through genetic testing, and to determine the implications of such results on targeted prostate cancer screening and prevention. Together with collaborators at Wake Forest University, this work has received funding from several sources, including a multidisciplinary NIH grant to study the clinical validity and utility of genomic-targeted prostate cancer chemoprevention using the 5 alpha reductase class of medications. In addition, I am coordinating further research examining the impact of robotic technology on outcomes for patients undergoing bladder removal for management of bladder cancer and gene therapy for difficult bladder cancer cases.

**RESEARCH ACTIVITIES AND PROJECTS**

- Genetic Profiling in PCPT: Prostate Cancer Risk, PSA Levels, and Chemoprevention
- Clinical Validity and Utility of Genomic Targeted Chemoprevention of Prostate Cancer
- Gene therapy clinical trials for bladder cancer patients
- Outcomes of Robotic Assisted Radical Cystectomy

**SELECTED PUBLICATIONS**


**COLLABORATORS**

- Henrik Grönberg, MD, PhD, Karolinska Institute
- Ashok K. Hemal, MD, Wake Forest University
- William B. Isaacs, PhD, Johns Hopkins University
Dr. Kader and Dr. Derweesh were the Co-Directors of the 2013 UCSD Urology Postgraduate Course.
My research interests are primarily prostate cancer and kidney cancer risk assessment and outcomes. We established an IRB-approved, HIPPA-compliant relational urologic oncology database. Our prospective entry of data for patients with urologic cancers cared for at UC San Diego allows us to link our biospecimens with detailed information concerning diagnostic and clinical details, medical history, family history, and cancer-specific details such as grade, stage, outcomes, complications, quality of life, and survival. This infrastructure provides a very valuable resource for analyzing factors associated with prognosis and recurrence. I am also co-investigator of the Shared Equal Access Regional Cancer Hospital (SEARCH) database group, a multicenter relational database concerning prostate cancer outcomes among a large cohort of men cared for at the San Diego VA Medical Center.

We examined the role of prostate specific antigen (PSA) velocity both before treatment and after biochemical recurrence for men with prostate cancer. Now PSA velocity is incorporated into risk nomograms, largely because of those contributions. We have also examined the influence of obesity in prostate cancer development and the outcomes after treatment. We discovered that obese men have lower PSA values for their particular prostate cancer tumor burden largely because of increased volume of distribution, a hemodilution phenomenon. This was the first time hemodilution was discovered as a mechanism for a lower measurement of a tumor marker in obese patients.

I collaborate with the world-renowned lab of Dr. Michael Karin, Dr. Christina Jamieson and Dr. Steve Howell, designing studies to examine the inhibition of B-cell recruitment and CXCL13/CXCR5 signaling in prostate cancer. We are particularly interested in translating the remarkable discoveries of the Karin lab into meaningful therapeutics for men with prostate cancer. We currently have a phase 1 neoadjuvant trial of B cell inhibition prior to radical prostatectomy for men with high risk prostate underway at UC San Diego.

I also collaborate with the Department of Radiology to conduct a preclinical evaluation of a receptor-targeted near-infra-red (NIR) optical imaging agent for sentinel lymph node mapping during robot-assisted surgery, with the ultimate objective of having the surgery team prepare a receptor-targeted NIR probe for a “first-in-human” clinical trial.

RESEARCH ACTIVITIES AND PROJECTS

- Inhibition of B-cell Recruitment and CXCL13/CXCR5 Signaling in Prostate Cancer
- Testing Fluorescently Labeled Probes for Nerve Imaging during Surgery
- Robotic Sentinel Lymph Node Mapping via Receptor-Targeted Optical Imaging
- Kidney Cancer Risk Assessment and Outcomes
- Prostate Cancer Prognosis and Treatment
SELECTED PUBLICATIONS


COLLABORATORS

- Michael Burkart, PhD  
  UCSD Department of Chemistry and Biochemistry
- Michael Karin, MD  
  UCSD Department of Pharmacology
- Frederick Millard, MD  
  UCSD Moores Cancer Center
- Roger Tsien, PhD  
  UCSD Department of Pharmacology
- David Vera, PhD  
  UCSD Department of Radiology

UC San Diego Health System CEO Paul Viviano and Dr. Kane at the 1st Annual Pedal the Cause in 2013
The work in our laboratory focuses on the causes, diagnosis, and treatment of interstitial cystitis (IC). We have identified a defect in the urinary protein known as Tamm-Horsfall protein (THP), which is present in patients with IC. In the THP of IC patients, there is a direct correlation between reduced sialic acid levels and the high prevalence of nucleotides associated with it. These unique nucleotide isomers identified in our laboratory are very consistent in all IC patients that have them, suggesting biological significance. This study provides additional evidence that THP is abnormal and its binding to nucleotides can adversely affect its protective function in IC patients. Currently we are isolating and indentifying urine metabolites that injure bladder epithelium and cause IC.

RESEARCH ACTIVITIES AND PROJECTS

- Development of Bladder Instillation Therapy for IC Patients using Heparin and Alkalinized Lidocaine
- Tamm-Horsfall Protein–associated Nucleotides in Interstitial Cystitis Patients
- Identification of Urine Metabolites that Injure Bladder Epithelium and Cause IC

SELECTED PUBLICATIONS


COLLABORATORS

- James Koziol, PhD, The Scripps Research Institute
- Jeffrey G. Proctor, MD, Georgia Urology, Stockbridge, GA
- Yongxuan Su, UCSD Department of Chemistry & Biochemistry
My research focuses on translational epidemiology of urological neoplasms, with an emphasis on modifiable risk factors for and prevention of prostate cancer, benign prostatic hyperplasia, bladder cancer, and adverse patient safety events. I pursue multidisciplinary collaborative research with basic scientists, epidemiologists, and biostatisticians in several hypothesis-driven projects. I am a principal investigator on projects funded by the Department of Defense and the National Institutes of Health (NCI and NIDDK).

**RESEARCH ACTIVITIES AND PROJECTS**

- PI for CALGB 70807, The Men’s Eating and Living (MEAL) Study, a national, randomized clinical trial of dietary intervention for prostate cancer patients on active surveillance
- PI for a randomized clinical trial of dietary intervention for bladder cancer
- Co-PI for an NIDDK-funded observational study of modifiable risk factors for prostate disease in older men
- Collaborate with Dr. David Chang on outcome studies related to diffusion of surgical innovations and patient safety

**SELECTED PUBLICATIONS**


**COLLABORATORS**
• John Pierce, PhD     UCSD Department of Family and Preventive Medicine
• Elizabeth Barrett-Connor, MD     UCSD Department of Family and Preventive Medicine
• Karen Messer, PhD     UCSD Division of Biostatistics & Bioinformatics
• Loki Natarajan, PhD     UCSD Division of Biostatistics & Bioinformatics
• James Marshall, PhD     Roswell Park Cancer Institute
• James Mohler, MD     Roswell Park Cancer Institute
• Lynn Marshall, ScD     Oregon Health Sciences University
My research at the San Diego VA Medical Center is focused on developing new, minimally invasive technologies for early diagnosis of urological diseases. I am also involved in basic science research studies in physiology and diseases in urology. I enjoy collaborating with other disciplines, and recently worked with the Department of Radiology to publish an article on MR imaging of scrotal tumors and pseudotumors. Another aspect of interest is the progressive changes in resident education, which has been evaluated and presented at national Urology meetings. A manuscript regarding this topic is in progress.

RESEARCH ACTIVITIES AND PROJECTS

- Urine TMPRSS2:ERG Fusion Transcript Stratifies Prostate Cancer Risk in Men with Elevated Serum PSA
- Magnetic Resonance Imaging of Scrotal Tumors and Pseudotumors
- Prostate Atypia: Clinical and Pathological Variables Associated with Cancer Diagnosis on Repeat Biopsy

SELECTED PUBLICATIONS


COLLABORATORS

- Japanese Urological Association
- Dr. Lejla Aganovic  
  UCSD Department of Radiology
- Dr. Jessica Wang-Rodriguez  
  UCSD Department of Pathology
Dr. Kyoko Sakamoto performing robotic surgery at the San Diego VA Medical Center
As professor emeritus, my current focus is on clinical activities and patient care. In the past, the vast majority of my research has been in prostate disease, specifically prostate cancer. This includes the evaluation and use of chemotherapy in various stages of prostate and bladder cancer, the use of cryosurgery as an alternative for treatment of localized prostate cancer, and the use of radical perineal prostatectomy as an alternative to standard radical retropubic prostatectomy.

**SELECTED PUBLICATIONS**


**COLLABORATORS**

- Gerald R. Murphy, MD, DSc	n Roswell Park Memorial Institute
- Multiple principal investigators	n National Cancer Institute, NIH
My research is focused on four main areas. Collaborating with Dr. Argeade, we are evaluating the role of THP in kidney stone patients. Preliminary evidence suggests THP levels are low among kidney stone formers; we seek to confirm these findings and provide more comprehensive detailed role of THP in nephrolithiasis. In collaboration with NMCSD and NHRC, we are investigating the incidence of nephrolithiasis and the rate of undergoing a procedure in US Military service members stratified by occupation and an upcoming deployment. We will also determine the number of medical evacuations for kidney stones from areas of operation, as well as the number of aviation mishaps with symptomatic stones listed as a causative factor. We are also investigating the risk of radiation exposure to health care workers, with a particular focus on kidney stone surgery procedures. Lastly, our most recent collaboration involves a joint NMCSD and UCSF project investigating the association of nephrolithiasis with cardiovascular disease. We demonstrated that statins appear to be associated with reduced risk of nephrolithiasis and are investigating if hyperlipidemia itself therefore increases the risk of nephrolithiasis. Prospective studies are ongoing in this arena with UCSF.

**RESEARCH ACTIVITIES AND PROJECTS**

- Role of Tamm Horsfall Protein (THP) in Nephrolithiasis
- Incidence, Treatment, and Threat of Nephrolithiasis among US Military Members from All Services Branches Stratified by Military Specialty
- Risk of Radiation Exposure to Health Care Workers with a Focus on Kidney Stone Surgery Procedures
- Association of nephrolithiasis and cardiovascular disease

**SELECTED PUBLICATIONS**


**COLLABORATORS**
UC President Janet Napolitano was briefed by Associate Vice Chancellor and UC San Diego Health System CEO Paul Viviano about UCSD’s plans to enhance medical care for San Diegans. Dr. Santiago Horgan, Director of the Center for the Future of Surgery, provided her with an opportunity to experience the surgery simulations provided to UC San Diego medical students. Dr. Roger Sur participated in the October 2013 tour.
My research is focused on the identification of pediatric patients who have vesicoureteral reflux, and what are the best outcomes in the treatment of the disease. Presently, we are creating an extensive database of the experience of therapy provided at Rady Children’s Hospital San Diego, which for the past 45 years has provided pediatric urology in San Diego. This data will be compared and contrasted with a national database of children’s hospitals to further surgical outcome research in the care of pediatric patients who have vesicoureteral reflux.

RESEARCH ACTIVITIES AND PROJECTS

- Vesicoureteral Reflux: Characterization and Surgical Outcomes of Therapy

SELECTED PUBLICATIONS

DIVISION OF UROLOGY

MADHU ALAGIRI, MD | ASSOCIATE PROFESSOR

PEDIATRIC UROLOGY

- Complex Hypospadias Repair
- Disorders of Sexual Differentiation and Development
- Minimally Invasive Treatment of Vesicoureteral Reflux

My research focuses on developing new and less invasive techniques for diagnosing and treating urologic problems in children. My laboratory has developed hypospadias repair techniques that do not require postoperative dressings or catheters, and has also developed a technique for the correction of vesicoureteral reflux using a miniinguinal incision that does not require tubes or catheters. More recently, my laboratory is seeking a minimally invasive method to identify vesicoureteral reflux in children without the need for bladder catheterization or ionizing radiation.

RESEARCH ACTIVITIES AND PROJECTS

- Ten-year Review of my Experience with the Inguinal Approach to Ureteral Reimplantation
- New Protocol to Identify Vesicoureteral Reflux Without the Use of a Catheter and Minimal Radiation
- New Surgical Technique to Treat Congenital Buried Penis in the Pediatric Population

SELECTED PUBLICATIONS

My research is centered on the care of children with spina bifida, as well as leveraging emerging technology for clinical research and surgical refinement. Clinical research informatics, and multi-institutional prospective or retrospective clinical studies are all part of my current effort. I have been collaborating with the basic science lab of the UCSD Department of Anesthesiology for study and therapy of the neurogenic bladder in animal models. Partnering with UCSD faculty, staff and students at the School of Medicine and at the undergraduate level has expanded our research efforts into projects that vary from determining the quality of life of children with spina bifida in Nicaragua to the use of REDCap for NIH funded summer scholarships for medical students. We are also collaborating with the faculty at USD in determining themes associated with obesity in the adolescent spina bifida population. I have great enthusiasm for our continued efforts in all research arenas involving pediatric urology, and look forward to continued collaborations throughout UCSD and Rady Children’s Hospital-San Diego.

RESEARCH ACTIVITIES AND PROJECTS

- PCORI Tier 1 Grant: Addressing obesity in Latino adolescents with spina bifida: Parental and patient themes
- UCSD Academic Senate Grant: We are devising a novel minimally invasive model of micturition in rats in conjunction with the Dept of Anesthesiology to determine the utility of spinal stem cell therapy for treatment of neurogenic bladder in spinal cord injured rats.
- Multi-center EMR: We are part of a multi-institutional collaboration with Children’s Hospital Colorado and University of Virginia utilizing Epic electronic medical records to create automated patient registries for determining variability in practice patterns in children with prenatal hydronephrosis, VUR and hypospadias
- RCHSD Surgical Research Grant: Data extraction of the Epic EHR for comparative effectiveness research
- Investigating outcomes of urological conditions based on inquiry of the Pediatric Health Information System.

SELECTED PUBLICATIONS


**COLLABORATORS**

- Ruth Bush, PhD  
  USD/Rady Children's Hospital San Diego
- Sean Corbett, MD  
  Pediatric Urology, University of Virginia
- Vijaya Vemulakonda, MD, JD  
  Pediatric Urology, Univ. of Colorado
- Tony Yaksh, PhD  
  UCSD Department of Anesthesiology
My research efforts during my career have involved providing a database in pediatric urology that allowed for evidence-based decisions regarding diagnosis and management. At the time I began my career, there was relatively little information available about the urologic problems of children and their management. I believe my efforts in some small way have provided a great deal more information than was previously available. Because I now have some long-term information about the management of these problems, my efforts are now concentrated largely on collating and evaluating the results of treatment of vesicoureteral reflux and hypospadias. My hobby has been urologic history and I am currently working on a history of pediatric urology in the Western Section of the American Urological Association and an article about Dr. Peter Remondino, an early San Diego physician.

RESEARCH ACTIVITIES AND PROJECTS

- History of Pediatric Urology in the Western Section of the American Urological Association
- Peter C. Remondino, MD: The Man, His Book, and His Library
- Management of Spina bifida in Children
- Long-term Outcomes of Onlay Graft Repair of Proximal Hypospadias

SELECTED PUBLICATIONS


COLLABORATORS

- Steven Lerman, MD UC Los Angeles
- Irene McAleer, MD UC Irvine
- John Brock, MD Vanderbilt University
- Howard Snyder, MD University of Pennsylvania
- Margit Fisch, MD Hamburg University, Germany
- Scott Sparks, MD George Washington University
- Alan L Kaplan, MD UC Los Angeles
- MM Koraitim, MD University of Alexandria, Egypt
DIVISION OF UROLOGY

SARAH MARIETTI SHEPHERD, MD | ASSISTANT PROFESSOR

PEDIATRIC UROLOGY

- Pediatric Stone Disease
- Vesicoureteral Reflux
- Minimally Invasive Surgery

RESEARCH ACTIVITIES AND PROJECTS

- Identification of radiation exposure risk to caregivers when diapered age children undergo nuclear renal scans
- Identification of spina bifida patients at risk for stone disease

SELECTED PUBLICATIONS


