

## Kidney and Renal Pelvis Cancer Site Survey

National Institute of Environmental Health Sciences (NIEHS). Target tissues for aristolochic acid (AA) are the renal cortex and urothelium of the upper urinary tract (renal pelvis and ureter). In humans, the effects of this nephrotoxin, when ingested orally, are manifested in so-called Balkan endemic nephropathy. Ureters are being used by Dr. Romanov to isolate and culture primary urothelial cells. Functional genomics (microarray and micro RNA) studies on these cultured cells are then performed following treatment of these cultures with AA. These studies have been reported at national and international meetings. Dr. Romanov also is involved in NIEHS PPG research designed to identify genes responsible for susceptibility to AAN. He and Tom Rosenquist, PhD, Department of Pharmacology, have developed a mouse model of AAN that mimics all aspects of the human disease. Using inbred strains of mice, they have identified quantitative trait loci conferring sensitivity to the toxin. This advance has enabled the demarcation of human genes responsible for AAN.

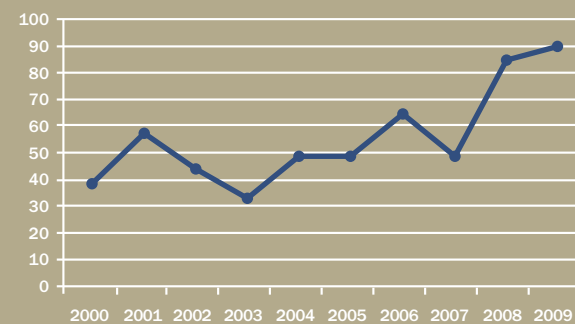
- Shenhong Wu, MD, PhD, is currently investigating the optimal and safe use of new agents, including bevacizumab, sorafenib, and sunitinib in kidney cancer, prostate cancer, and other cancers. Dr. Wu's studies have been published in national journals such as the *Journal of the American Medical Association* (JAMA), *Lancet Oncology*, and the *Journal of the American Society of Nephrology* and reported at major medical conferences.

Kidney cancer develops most often in people over 40. Risk factors that increase a person's chance of developing the disease and have been associated by research with the onset of kidney cancer are smoking, obesity, high blood pressure, long-term dialysis, gender, Von Hippel-Landau syndrome, and occupations related to workplace exposure to certain chemicals. Most people with these risk factors do not develop kidney cancer, and most people who do develop the disease have no risk factors. Concerns about risk should be discussed with the person's physician with appropriate surveillance scheduled.

Cancer that forms in the tissues of the kidneys in adults includes renal cell carcinoma that forms in the lining of the tubules in the kidney that filter the blood and remove waste products, and renal pelvis carcinoma that forms in the center of the kidney where urine collects. In children, kidney cancer includes Wilms' tumor, which usually develops in young children. Treatment includes surgery and may also include chemotherapy and immunotherapy.

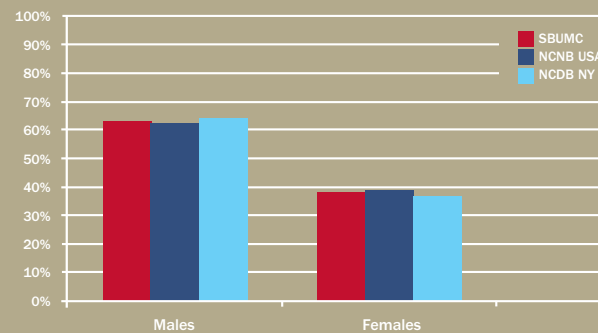
### Kidney and Renal Pelvis Cancer:

New patients by year first seen at SBUMC from 2000-2009



### Kidney and Renal Pelvis Cancer: Gender Incidence

Stony Brook University Medical Center (SBUMC) vs. National Cancer Data Base (NCDB) NY and USA patients diagnosed (2000-2007)

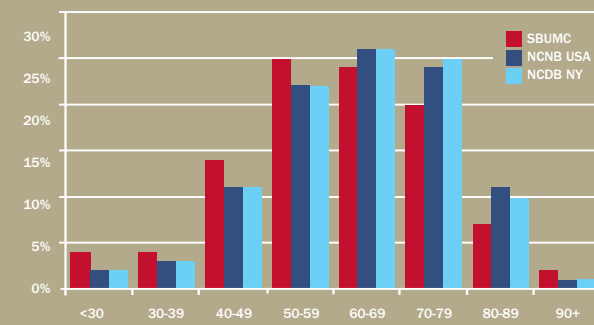


The number of adult kidney cancer patients first seen at Stony Brook University Medical Center (SBUMC) for their initial diagnosis and treatment has increased over the past five years. A site survey of these patients first encountered at SBUMC in 2000-2007 demonstrated a higher onset in the fourth and fifth decade than the national average of the sixth to the seventh decade, indicating that SBUMC clinicians are seeing patients diagnosed at a younger age than the national average. There is a higher incidence among males compared to females both at SBUMC and nationally. More than 50% of patients with kidney and renal pelvis cancer are diagnosed with localized tumors. Tumor spread to each of the other

stages/categories of regional tissue, regional lymph nodes or distant metastatic sites occurs in 12 to 18% of patients. The primary treatment is most often surgery. Chemotherapy and immunotherapy may have a role in the treatment of individual kidney cancer patients and this is determined by consultation with oncology specialists who evaluate each individual patient in the light of available standard or emerging therapies. Patient outcomes at SBUMC are relatively in line with national statistics. Factors that affect five-year survival include the stage of the disease at diagnosis, treatment modalities utilized, and the patient's other medical conditions as determined at the time of initial diagnosis and evaluation.

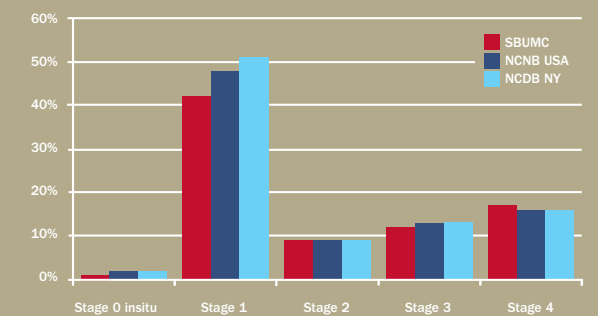
### Kidney and Renal Pelvis Cancer: Age at Diagnosis

299 cases at SBUMC vs. 251,117 in NCDB USA, and 15,381 NCDB NY in 2000-2007



### Kidney and Renal Pelvis Cancer: Stage at Diagnosis

299 patients at SBUMC vs. 251,117 NCDB USA, and 15,381 NCDB NY, 2000-2007



### Kidney and Renal Pelvis Cancer: Treatment Modalities

Utilized as initial therapy for 399 patients at SBUMC, 2000-2009

Treatment Modality	Percentage of patients treated	Treatment sub-type	Percentage of patients treated
Surgery	90%	Radical Nephrectomy	50%
		Simple Nephrectomy	30%
		Partial Nephrectomy	20%
Systemic Therapy	10%	Chemotherapy	9%
		Immunotherapy	1%

### 5-Year Survival by Stage

SBUMC (n=172); NCDB USA (n=72,675); NCDB Region NY, NJ, PA (n=11,001); Diagnosis years 1998-2002

	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	All Stages
SBUMC	100%	84.1%	86.7%	43.8%	3.3%	59.3%
NCDB USA	74.2%	81.9%	75.2%	55.8%	9.2%	61.6%
NCDB Region NY, NJ, PA	80.5%	83.2%	75.6%	55.6%	8.4%	63.1%

All causes.