

# 2011 Cancer Program Annual Report

with 2010 statistics



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## The Comprehensive Cancer Center of Wake Forest University

Director Frank M. Torti, MD, MPH

The Comprehensive Cancer Center of Wake Forest University (CCCWFU) has been continuously designated by the NCI since 1974. This designation was recently renewed for another five-year period through 2017. In addition, we are ranked by *US News & World Report* as one of the nation's top cancer hospitals for 2011–2012. Construction is also under way on a \$150 million, seven-story expansion of the Cancer Center, which will include 280,000 square feet of additional space to house all inpatient surgical and medical oncology, as well as the administrative offices of the Cancer Center.

The mission of the Cancer Center is to improve the lives of cancer patients by focusing basic, clinical and population sciences on the problems of cancer prevention, early diagnosis and novel treatment. The membership of the CCCWFU is comprised of more than 121 faculty from 34 departments at WFBMC and Wake Forest University. The Center's research is divided into four programs: Cell Growth and Survival, Cellular Damage and Defense, Clinical Research, and Cancer Prevention and Control. To

facilitate the scientific and translational goals of the programs, the CCCWFU has established three Centers of Excellence, in brain, breast and prostate cancer.

The CCCWFU recognizes the importance of building cross-departmental and transdisciplinary team approaches to advance the science and treatment of cancer. Teams have been developed in cancer genomics, tumor microenvironment, nanotechnology, novel anticancer drugs, natural products, cancer survivorship and cancer health disparities. Collaborations with other centers and schools within the institution are an essential element to the success of this research. The Cancer Center has strong connections with the Wake Forest Institute of Regenerative Medicine, the Center for Nanotechnology and Molecular Materials, the Wake Forest University Departments of Physics and Chemistry, and the WFU-Virginia Tech School of Biomedical Engineering and Sciences.

The Cancer Center is the primary tertiary referral center for patients in a geographic region encompassing

nearly 9 million people. The CCCWFU provides a multidisciplinary approach to treatment in a state-of-the-art facility, and provides patients with access to nearly 250 clinical trials. The Cancer Center was founded with a strong community orientation, and continues this tradition by addressing cancer issues that are important to the region's substantial numbers of African Americans, Latinos, Native Americans, and pockets of rural and urban poor. The CCCWFU actively partners with the Maya Angelou Center for Health Equity at Wake Forest School of Medicine. Founded by the renowned poet, the Angelou Center works to address health disparities across our region and the nation.

The focus of the Cancer Center's community outreach is providing culturally relevant access to education for cancer patients, their families, and the public regarding advancements in cancer prevention, early detection, treatment and survivorship.

## Cancer Committee

The Cancer Committee is one of the major components of an American College of Surgeons (ACoS) approved cancer program. The committee is responsible for planning, initiating, stimulating and assessing all cancer-related activities. The committee must be a multidisciplinary, standing committee that meets at least quarterly.

### Activities

- The Cancer Program Annual Report is compiled and published as an educational activity of the committee. Published journal articles and abstracts are included.
- Quality management activities/improvements are planned, reviewed and implemented each year.
- Studies that measure quality and outcomes are completed so that patients receive care that is comparable to national standards.
- The AJCC TNM staging by the managing physician is monitored.
- Cancer conferences are reviewed and monitored for frequency, multidisciplinary attendance, total case presentation and prospective case presentation.
- The College of American Pathology's scientifically validated data elements outlined on the surgical case summary checklist of the CAP publication, Reporting on Cancer Specimens are reviewed and monitored.
- The cancer registry data and activities are evaluated and monitored for casefinding, accuracy of data collection, abstracting timeliness, follow-up and data reporting.
- A subcommittee monitors the activities of the Breast Care Center.

## Cancer Registry

The Cancer Registry is an integral part of our cancer program and functions in accordance with guidelines set by the American College of Surgeons (ACoS). The Cancer Registry works with physicians, administrators, researchers and health care planners to provide support for cancer program development, ensure compliance with reporting standards, and serve as a valuable resource for cancer information with the ultimate goal of preventing and controlling cancer.

The Cancer Registry is involved in managing and analyzing clinical cancer information for the purpose of education, research and outcome measurement. The primary functions of the Cancer Registry are to collect relevant data, conduct lifetime follow-up and disseminate cancer information. The registry also participates in hospital-based, state and national studies and research projects.

The Cancer Registry collects all malignant neoplasms and benign brain and central nervous system neoplasms. The registry also collects selected benign neoplasms and metastatic squamous cell and basal cell carcinoma of the skin approved by the Cancer Committee. The cancer data set includes patient demographics, cancer identification, extent of disease (stage), treatment, recurrence and outcome information.

Follow-up is performed annually on all patients in the registry. Follow-up directly benefits patients and physicians by reminding them of the need for medical checkups. Continued surveillance ensures early detection of possible recurrence or a new primary. Outcome data provides survival information reflecting the effectiveness of treatment modalities.

The Cancer Registry fulfills requests for cancer data from staff physicians, allied health professionals, outside institutions, and requests for follow-up information from other cancer registries. All data requests are handled with the utmost care for the patient's confidentiality.

The Cancer Registry maintains data management and regulatory reporting on cancer statistics for various health care agencies. As required by law, newly diagnosed cancer cases are reported to the North Carolina Central Cancer Registry (NC-CCR). The data submitted is shared with the North American Association of Central Cancer Registries (NAACCR) and the Center for Disease Control and Prevention's National Program of Cancer Registries (CDC-NPCR). In addition, cancer cases are submitted to the ACoS' Commission on Cancer's National Cancer Data Base (NCDB). The NCDB is a comparative database for ongoing assessment of cancer patient care and is a joint project of the ACoS and the American Cancer Society.

The Association of North Carolina Cancer Registrars helps cancer registrars in the state maintain their continuing education hours by providing up-to-date educational workshops. The National Cancer Registrars Association serves as the premier education, credentialing and advocacy resource for the cancer data professionals.

## Breast Care Center

The multimodality breast care clinic celebrated its 11th anniversary in January 2011. The center has treated more than 2,000 breast cancer patients since we opened. The goal is to provide state-of-the-art multimodality care for the full spectrum of breast diseases in a patient-focused environment. All new cases are reviewed by a multimodality team before patients are seen in clinic.

In April 2009 the Breast Care Center received accreditation from the National Accreditation Program for Breast Centers. The center passed a stringent approval process, exceeding requirements in all of the required areas of breast care, ranging from screening to diagnosis and therapy to reconstruction. This accreditation is the product of expertise from a wide variety of disciplines working together for the benefit of our patients. The center will seek renewal of this accreditation in 2012.

The Breast Care Center hosted the Sixth Annual Breast Cancer Symposium at the Bridger Field House at Wake Forest University in September 2011. Lectures covered a variety of topics related to breast cancer: genetics to imaging to treatment and survivorship issues. This annual event is intended to provide continuing education to community providers with the goal of improving health care for those with breast disease.

Research is a key component of the Breast Care Center. The center actively supports cooperative group breast trials from the NSABP, CALGB and ACOSOG. It also has a variety of institutional research initiatives that have led to publications in prestigious journals and affects the care of breast cancer patients far beyond the center.

## Cancer Prevention and Control Program

The Cancer Prevention and Control Program has close to 40 funded cancer control projects with more than \$10 million on breast, prostate and colon cancer currently under way. These projects focus on molecular epidemiology and genetics (including gene/diet interactions), cancer prevention, rural/minority health, tobacco control, survivorship (including symptom management, quality of life) and access to care. In these areas, investigators are exploring the role of the genes and gene/environment interactions in susceptibility to cancer, developing unique approaches to educating health care providers and patients to promote tobacco cessation, and understanding factors involved in the decision to initiate tobacco use and patterns leading to dependence. Investigators have been exploring the role of nutritional self-management among rural older adults, and have been developing interventions to reduce exposure to agricultural pesticides. Investigators are exploring quality of life in health and well-being among cancer survivors, specifically women with breast cancer and men with prostate cancer.

Some of the major ongoing projects include:

### Molecular Epidemiology/Genetics

- Genetic Susceptibility to Prostate Cancer Progression
- Interaction of Germline and Somatic Changes in Prostate Cancer Progression
- Clinical Validity and Utility of Genomic Targeted Chemoprevention of Prostate Cancer
- Confirmation of SNPs Associated with Aggressive Prostate Cancer in a GWAS
- Pro- and Anti-Inflammatory Cytokines in Colorectal Cancer

- Genetic variants in the Genome Predisposing to Aggressive Prostate Cancer
- Systematic Search for Gene-Gene Interaction Effect on Prostate Cancer Risk

### Tobacco Control

- Implementation and Dissemination of Tobacco Cessation Strategies in Free Clinics
- Smokeless Tobacco Use in College Students

### Rural/Minority Health

- Reducing Farmworker Pesticide Exposure
- Exploring Health Communications Among Farmworkers
- Community Participatory Approach to Measuring Farmworker Pesticide Exposure
- Prevalence and Health Status of Cancer Survivors in the Rural US
- Survivorship Care Planning and Communication for Rural Breast Cancer Survivors

### Survivorship

- Phase III Trial of Donepezil in the Irradiated Brain
- Yoga During Breast Cancer Treatment: Establishing Community-Based Partnerships
- Post-traumatic Growth in Breast Cancer Survivors
- Paricalcitol for Palliation in Advance Prostate Cancer: A Phase II Trial
- Effects of Hormone Replacement Therapy on Cognitive Aging
- Quality of Care in Older Breast Cancer Survivors
- Effectiveness of Integral Yoga on Objective and Subjective Hot Flashes

## Psychosocial Oncology Services

The Comprehensive Cancer Center has two programs designed to address the emotional needs of patients and family members. The unique integration of psychosocial support and counseling services into the Hematology and Oncology Clinic distinguishes our Comprehensive Cancer Center from many others in the nation and strengthens our capability of providing multidimensional care. Such an integrative model allows for interdisciplinary collaboration and the delivery of mental health services in conjunction with medical care.

### The Cancer Patient Support Program (CPSP)

The mission of the Cancer Patient Support Program is to provide social support for cancer survivors and family members with the goal of enhancing quality of life during the diagnosis and treatment process. Services from this program are provided at no charge to the patient or family members.

There are six full-time equivalent staff members and about 30 weekly core volunteers who provide a variety of services in the clinic and hospital each week. Services delivered by our professional staff include individual and family counseling, inpatient consultation/liaison work, music/harp therapy, orientation to the cancer center, support groups and education, and training for staff within Wake Forest Baptist Medical Center. We also support inpatient therapeutic massage on a referral basis and assist with financial and temporary housing support for patients in need.

Volunteers are active in hospital visitation and providing hospitality and refreshments in the Hematology and

Oncology and Radiation Oncology clinics. These core volunteers are supported by another group of about 80 community volunteers who are active in an annual Winterlark fundraiser, the annual Survivor's Day Celebration and numerous celebration activities throughout the year.

### The Psychosocial Oncology Program (POP)

The Psychosocial Oncology Program began as the Psychological Services arm of the Cancer Center in 1988, with the purpose of providing psychological assessment and counseling for patients and family members suffering from more intense psychological disturbance. Patients often need help with symptom management, including anxiety and depression, family conflict and communication conflicts with the health care team. Additional services include general supportive counseling and specific behavioral procedures, including relaxation training and stress management. This program also provides psychological screening and quality-of-life assessment for all bone marrow transplant patients before transplantation.

The Psychosocial Oncology Program (POP) also maintains active research and teaching agendas. Among others, current lines of research focus on the long term quality of life of patients undergoing various treatments as well as the variables affecting patients' and caregivers' attitudes toward the completion of Advance Directives. Staff members publish and present findings at local and national venues and look to research findings to inform their clinical practice. Teaching activities have

included a psychosocial seminar for fellows, lectures to first- and second-year medical students on medicine and psychosocial and ethical issues in oncology, and chemotherapy classes within the hospital. This program is funded through fee-for-service activity and grants.

The Cancer Patient Support and Psychosocial Oncology Programs have been designed to meet a wide range of patient needs. Most cancer patients and their families do not need intensive psychosocial care, but rather supportive services provided through our volunteers and professional counselors. We are positioned to take care of intensely disturbed patients as well as those proceeding through a "normal" crisis during diagnosis and treatment. In our own studies conducted in the outpatient clinic, we have seen that a new cancer diagnosis is extremely distressing and yet can be modified by a simple orientation procedure.

These two programs represent unique offerings within the administrative structure of the Comprehensive Cancer Center and Section of Hematology and Oncology. Notwithstanding services available at the Medical Center including Psychiatry, Social Work and Pastoral Care, the Cancer Patient Support and Psychosocial Oncology programs are accessible within the Hematology and Oncology clinic, are highly visible and very well-received. These programs help patients and family members maintain quality of life during and after treatment.

## Department of Care Coordination

Nurse case managers and social workers are integral members of the health care team providing services to patients and families. Staff members work collaboratively with the other team members to assure that patients and family members' needs are addressed.

Arrangements for post-discharge care are handled by the case manager or

social worker. Services may include crisis intervention and counseling, referrals for home health or DME (durable medical equipment), hospice or to other local resources.

Patients being followed in the outpatient oncology clinics also have the services of a social worker available to them. The social worker follows

patients who may need counseling or crisis intervention, assistance with transportation to and from medical appointments, referrals to local resources and information regarding medication assistance programs.

## Oncology Outreach

Cancer Center affiliations and oncology regional practices leverage the vast expertise and resources of the Cancer Center to bring new, forward-reaching technologies and treatments, sub-specialty care and research advancements to patients in their community environment.

### Affiliations:

Affiliations offer non-clinical activities such as professional education and program development customized to the needs of the affiliate organization. An affiliation continues with the Cancer Center of High Point Regional Health System (HPRHS).

### Regional Oncology Practices:

The Department of Radiation Oncology provides services located in High Point Regional Health System in High Point, Hugh Chatham Memorial Hospital in Elkin, Cancer Center of Davidson County, Caldwell Memorial Hospital in Lenoir and Iredell Memorial Hospital in Statesville (radiation physics services only).

Regional Hematology and Medical Oncology practices provide services that include: diagnosis and treatment of cancer, treatment of benign and malignant blood disorders, chemotherapy treatment, and laboratory services. Practices are located in Elkin, High Point, Lexington and Mount Airy.

A board-certified gynecologic oncologist supports Hickory-area physicians by providing a local, specialized clinic several days per month.

### COMMUNITY OUTREACH

The Cancer Center sponsors and staff participates in a variety of community events and educational programs including:

- Forsyth County Cancer Care Coalition
- Susan G. Komen for the Cure® Race for the Cure, NC Triad Affiliate
- American Cancer Society Relay for Life

- NC Advisory Committee on Cancer Coordination and Control
- North Carolina Comprehensive Cancer Program Survivorship Summit
- Hospice Foundation of America's Annual End-of-Life Teleconference
- Cancer Survivor's Day
- Cancer Services, Inc. Wrapped Up in Ribbons
- Livestrong Cancer Transitions: Moving Beyond Treatment
- Livestrong at the YMCA
- Colon Cancer Coalition Get Your Rear in Gear Race

## Orthopaedic Surgery

The Department of Orthopaedic Surgery is committed to the care of the tumor patient. Within the department, there are three orthopaedic oncologists (William G. Ward Sr., MD, Scott Wilson, MD, and Cynthia Emory, MD) and one full-time physician's assistant, Gene Thiebaud. They see orthopaedic oncology patients all day every Tuesday in the Comprehensive Cancer Center. There is also a Thursday morning clinic, and patients can be seen on other days by special arrangement. On Tuesdays, the musculoskeletal radiologists and the pathologists are immediately available for consultation and collaboration, contributing greatly to the team approach. All three surgeons schedule their elective surgical cases on Mondays, Thursdays or Fridays, allowing collaboration and a team approach rarely available for difficult cases. They also often collaborate with other surgical specialists at Wake Forest Baptist Medical Center, including general surgical oncologists, spine surgeons, pediatric surgeons and plastic surgeons, to name a few.

The three main diagnostic groups encountered and treated in Orthopaedic Oncology are primary soft tissue tumors (benign and malignant), primary bone tumors (benign and malignant) and metastatic bone lesions with actual or impending pathologic fractures. Each year, well over 400 operations are performed for orthopedic tumors or tumor-related conditions. Many patients with these problems require more than one operation, beginning with an initial biopsy. The biopsy must be carefully planned so as not to complicate the future definitive tumor resection. Most biopsies are now performed as simple needle biopsies in the clinic, avoiding the cost, risk, pain, tumor violation and inconvenience of open biopsies. This has contributed to our exceedingly low tumor recurrence rate after tumor resection.

New technologies are routinely embraced. We recently performed an intra-operative CT scan-correlated,

computer-navigated pelvic tumor resection, adding this state-of-the-art sophisticated technique to our repertoire.

Limb salvage operations, with resection of malignant bone tumors followed by innovative reconstruction techniques such as massive modular endoprostheses, massive allograft utilization and massive free vascularized bone and tissue transfers, are routinely performed and have allowed functional limbs to be saved that previously would have required amputation. These techniques frequently must be combined with preoperative and postoperative chemotherapy and radiation therapy. An extremely close working relationship with faculty members from these areas has facilitated the evolution of the team approach to the treatment of bone and soft tissue sarcomas. The majority of patients with primary malignant tumors of bone and soft tissue previously required amputation. Patients with these tumors are now routinely treated with limb salvage techniques. Our numbers continue to increase. For instance, Dr. Ward, the senior member of the group, has performed more than 5,000 tumor related surgeries to date, including resection or stabilization of more than 1,200 malignant tumors. This patient population includes more than 675 individual sarcoma resections (estimated to be just over 0.3 percent of all reported extremity sarcomas treated in the U.S. during this time frame), with more than 87 percent of these resections performed with limb-sparing techniques. This represents a tremendous advance from just 30 years ago, when many would have required amputation. In a recently performed study, our 10-year survival rate for non-metastatic primary extremity osteosarcoma was determined to be 71 percent, a tremendous accomplishment of which the team is very proud. In addition, more than 90 percent of patients with metastatic lesions of bone with actual or impending pathologic fractures are treated so as to preserve

a functional limb; some of these procedures utilize bone replacing endoprostheses. These techniques also have been applied to the treatment of bone defects and bone deficiencies from causes other than cancer, such as massive osteolysis after failure of total joint replacements, thus adding additional capabilities to the general orthopaedic treatment at the Medical Center.

Benign lesions of bone and soft tissues are encountered more frequently than primary malignant tumors of these tissues, and they account for many surgical cases. Furthermore, many benign bone and soft tissue lesions are treated without surgery, the diagnosis being confirmed by a variety of studies, including plain radiographs, nuclear bone scans, CT scans, MR imaging, and needle or open biopsy. This reliance on sophisticated radiographic imaging has led to a close working relationship with the faculty members from the bone radiology section of the Department of Radiology.

Because of the complexity of bone tumor cases, interdepartmental communications are frequent. These interesting cases provide the clinical material for multiple studies and research articles. Studies are always under way, including multi-institutional as well as interdepartmental studies. Multiple Orthopaedic Oncology teaching conferences are also completed within the residency program and our regularly scheduled multidisciplinary conference allows our team to review the clinical, radiographic and histologic/pathology material of complex cases.

Appointments for evaluation of bone and soft tissue tumors can be made by calling the appointment coordination team at 336-716-8093 on Mondays, Wednesdays, Thursdays or Fridays, or at 336-713-3601 on Tuesdays. A special effort is made to see all new tumor patients within one week, and most can be seen within 24 to 48 hours, as appropriate.

## Palliative Care Program

The Palliative Care Program provides effective and efficient care in a compassionate, holistic and humane manner to patients with a serious, chronic or life-threatening illness. The philosophy of care focuses on reducing suffering from illness-associated symptoms and improving overall quality of life. Care encompasses recognition that comfort and psycho-social/emotional support of the patient and their family are essential.

The program provides house-wide consultation services and a specialized inpatient unit focusing on the needs of the patient and family. An interdisciplinary team of doctors, nurse practitioners, nurses, pharmacists, social workers and chaplains helps provide this comprehensive care.

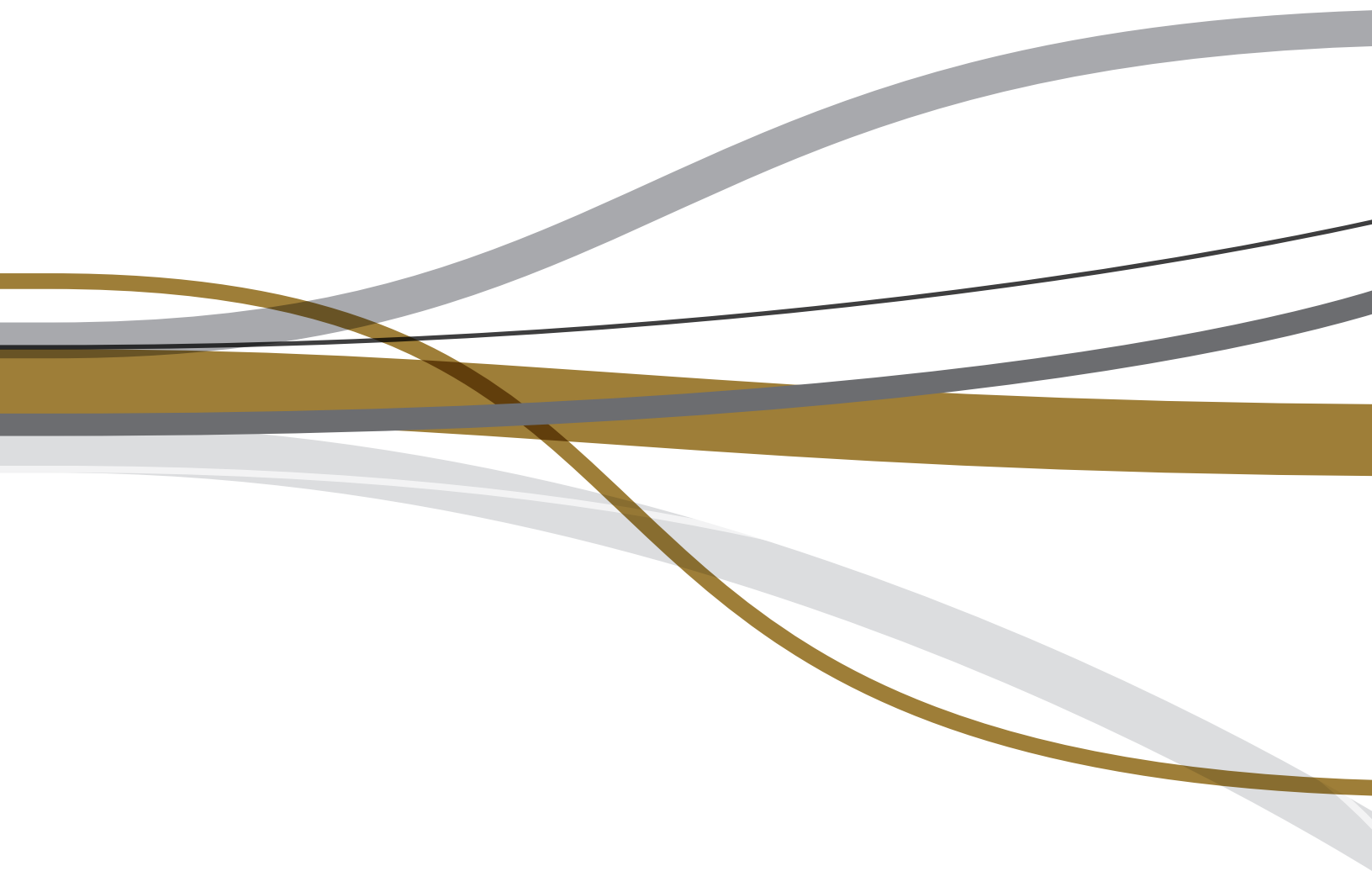
Consultative and support services are available to patients and their families throughout their hospital stay and assistance is provided with planning for post-hospital care. Assistance may include: discussion of health care options, pain and symptom management, advance care planning, or planning for discharge with consideration of the patient's autonomy and personal choices.

The Palliative Care inpatient unit is located on the 11th floor of Ardmore Tower West. The unit provides the following services:

- Expert symptom management for patients, such as pain, anxiety and shortness of breath.

- Supportive care for patients whose focus of care has been changed to comfort measures.
- A private room/supportive environment for families after patient life support withdrawal.
- A transition location for patients waiting to be discharged to home, nursing home or hospice.

Families may stay close to their loved ones with open visitation and can even stay overnight. The staff is trained to manage the symptoms associated with chronic/serious illness and support the emotional and spiritual needs of patients and family members.





## Pediatric Oncology

Pediatric Oncology is staffed by five pediatric hematologists/oncologists: Marcia Wofford, MD, Tom McLean, MD, Sharon Castellino, MD, Natalia Dixon, MD, and Kevin Buckley, MD. The section also has three pediatric nurse practitioners, a physician assistant, a doctor of pharmacy, three clinical research associates, and numerous dedicated pediatric hematology/oncology nurses for clinic and hospital work, as well as a home and school visitation program for children with cancer.

The Pediatric Oncology Psychosocial Team is composed of a social worker, psychologist, counselor, child life specialist, art therapist and chaplain. We receive professional support from therapists, nutritionists and pediatric pharmacists. There is a weekly Pediatric Oncology team meeting as well as a pediatric tumor conference every other week, which includes pediatric surgeons, radiation oncologists, pathologists, radiologists, residents and medical students.

There is a dedicated, long-term follow-up program with a focus on education and cancer control for adolescent and young adult survivors. The Children's Cancer Support Program (CCSP) is staffed with a full-time counselor/director, with the focus being patient education as well as many levels of individual and group, social and psychological support for active and off-therapy patients and families. The CCSP conducts a support group for adolescents and has a Pediatric "PAL" program that pairs interested medical students with specific patients for emotional and psychosocial support.

The program gets about 70 new oncology patients per year. It accepts newly diagnosed patients up to age 18.

A dedicated hematology/oncology unit in Brenner Children's Hospital contains 16 private inpatient beds, five outpatient clinic rooms, and a day hospital/observation area. Our referral base is from the Piedmont and central/western North Carolina as well as southwest Virginia and southern West Virginia. Most referrals come from pediatricians and family practitioners.

We are active members of the Children's Oncology Group (COG).

- Dr. Wofford is section chief of Pediatric Hematology/Oncology and vice chair of education in the Department of Pediatrics. She is also director of the Pediatrics Residency Program and clerkship director for the in-patient pediatric rotation.
- Dr. McLean serves as the COG principal investigator. In this role, he oversees pediatric clinical oncology protocols at the institution. He is a member of the Integrative Therapies Subcommittee of COG.
- Dr. Castellino has an interest in childhood cancer survivorship and late effects of childhood cancer treatment. She is actively involved in the COG Long Term Followup guidelines as a co-chair of the Section on Gastroenterology and Hepatic

Late Effects. She has received grant funding from the Lance Armstrong Foundation for a pilot study of donepezil in childhood cancer survivors treated with cranial radiation therapy.

- Dr. Dixon is the director of the pediatric hemoglobinopathy and hemophilia programs. Her primary interests are in pediatric hematology; specifically, anemia, general non-malignant hematology, hemoglobinopathies, and thrombotic and hemorrhagic disorders in children.
- Dr. Buckley's interests include general pediatric hematology/oncology, infections in immunocompromised populations and immune reconstitution after non-myeloablative chemotherapy. In addition to pediatric hematology/oncology, Dr. Buckley is board-certified in pediatric infectious diseases.

In addition to the pediatric hematologists/oncologists, we have active COG members from the disciplines of surgery, pathology, radiation oncology, nursing, pharmacy, cytogenetics and data management.

## Department of Pharmacy

The Department of Pharmacy provides pharmaceutical care services to adult and pediatric hematology and oncology patients. The pharmacists dispense drug information to the medical staff through participation on rounds, which helps to ensure appropriate and cost-effective patient care. Educating the patient about their medications at admission and discharge helps to maximize drug therapy and increase compliance. The Department of Pharmacy collaborates with several research projects within the hematology and oncology section and presents them at local, state and national pharmacy meetings. Pharmacists provide education to other members of the health care team, such as nurses, pharmacy students and residents.

## Public Education

One of the goals of the cancer program is to promote public awareness of cancer. Prevention and early detection of cancer are stressed through educational programs and activities. Promotional, community and outreach activities for the 2010-11 fiscal year included but were not limited to the following:

- Cancer Survivors' Day
- Skin Cancer Screening
- Enhancing Wellness Through Mind-Body Connection
- Head and Neck Cancer Screening
- Look Good, Feel Better
- Gyn Oncology Survivors Dinner
- Healthy Living for Cancer Survivors
- Hope Lung Cancer 5K Race
- Gentle Yoga for Cancer Survivors
- The Art of Conversation Through Serious Illness: Lessons for Caregivers
- Prostate Cancer: What Every Man Needs to Know
- Secrets Victoria Doesn't Know
- Meet the Expert: Dr. K.C. Balaji Discusses Prostate Cancer
- Breast Health
- Anxiety, Sadness and Hope During Cancer Survivorship
- The Sun and Your Skin
- Randon and Lung Cancer
- 12th Annual Susan G. Komen NC Triad Race for the Cure
- Cancer Transitions: Moving Beyond Treatment
- N.C. Cancer Survivorship Summit
- Colon Cancer: Early Detection

## Radiation Oncology

The Department of Radiation Oncology continues to grow as a leader in radiation oncology nationally. There are currently 12 radiation oncologists, 13 radiation physicists and three radiation biologists. The department enjoys the Outpatient Comprehensive Cancer Center building with multidisciplinary cancer care from medical and surgical oncology as well as diagnostic radiology. With in-department CT/PET and MRI scanners as radiation therapy simulation devices, the department is one of the most technologically sophisticated in the world.

The Radiation Oncology Residency Training Program attracts high quality residents. There are currently six in the program. The ratio of applicants to positions is approximately 100 to 1. Radiation physics and both classical/molecular radiation biology are taught to the residents, who also spend six to 12 months performing basic laboratory research. The department is the recipient of an NIH/NCI T32 Training Grant established in 2005. Focused on translational radiation oncology for post-doctoral fellows in clinical radiation oncology, biology and physics, the program now has four trainees.

Clinical and basic research activities are at an all-time high with NIH/NCI grants, foundation/society grants and industry grants totaling \$3 million. Novel radiation dose modifying agents and the study of radiation injury to the normal tissues are two areas under active investigation in the Radiation Biology laboratories. Bio-anatomic radiation therapy treatment planning and delivery, integrating functional and bio-physiological imaging with MRI, MR spectroscopy and positron emission tomography are all areas of active investigation by the Radiation Physics Section.

The Gamma Knife Stereotactic Radiosurgery (GKSRS) Program was initiated in 1999 and is now the fourth

busiest in the United States, treating about 30 patients per month. The Stereotactic Body Radiotherapy (SBRT) program is one of the select few centers in the nation with nearly a decade of experience, and has treated more than 3,400 patients. Other new programs and technologies now in clinical use include high-dose rate brachytherapy, brachytherapy simulation and treatment planning utilizing the Integrated Brachytherapy Unit, fractionated stereotactic radiotherapy, intensity modulated radiation therapy, image-guided radiation therapy and Volumetric Arc Therapy (VMAT).

The Department of Radiation Oncology has five affiliated practices in west central North Carolina that are staffed with physicians and physicists from Wake Forest including Hugh Chatham Memorial Hospital in Elkin, Cancer Center of Davidson County, Caldwell Memorial Hospital in Lenoir and Iredell Memorial Hospital in Statesville (radiation physics services only). In total, the department and its affiliated practices treat more than 150 patients per day with radiation therapy, making it the largest provider of radiation therapy services in the Piedmont Triad and north-central North Carolina.

In the past year, the Wake Forest, High Point, Hugh Chatham, Lexington and Caldwell Memorial practices consulted 2,500 patients, saw more than 5,200 in follow-up, treated more than 1,700 with external beam radiation therapy and treated more than 700 with special procedures including GK/SRS, prostate and gynecologic brachytherapy, total body irradiation and image guided radiation. In summary, the Department of Radiation Oncology is positioned locally, regionally, nationally and internationally as a leader in the treatment and research of radiation therapy for malignant and select benign diseases.

## Hematology and Oncology

The Section on Hematology and Oncology emphasizes clinical and translational research and the multidisciplinary care of patients with cancer and hematologic disease. The full spectrum of hematologic and oncologic disorders are expertly treated by the section's faculty while areas of special multidisciplinary focus include the Prostate, Breast and Brain Tumor Centers of Excellence within the Comprehensive Cancer Center. Other areas of expertise include clinical and research programs involving patients with leukemia and lymphoma, lung cancer, head and neck cancers, gastrointestinal cancers, genitourinary cancers, sarcoma, melanoma, and those requiring marrow and stem cell transplants or specialized geriatric oncologic care. Hematology faculty lead the institution's apheresis program and Special Hematology lab in addition to managing a busy protocol support laboratory and maintaining multidisciplinary clinics for patients with a variety of benign hematologic conditions. A nationally recognized Psychosocial Oncology program, established two decades ago, continues to be led by section faculty as well. The goals of these and other team efforts are to optimize the care of patients with cancer; to meet the medical, emotional and informational needs of patients and their families; and to enhance the opportunity for focused clinical and translational research.

A total of 31 MD and PhD members compose the full-time faculty of the Section of Hematology and Oncology, and the clinical mission of the section is also supported by 23 physician extenders. In 2010, this group accounted for a total of more than 2,850 new patient encounters and 48,000 return outpatient visits. The marrow transplant

service provided 100 patients with potentially life-saving bone marrow or stem cell transplants in 2011. In addition, the section maintains a longstanding commitment to training the hematology and oncology practitioners of the future; 12 clinical fellows are continuously enrolled in our three-year, ACGME-accredited Hematology and Oncology Fellowship training program. The clinical program is now also participating in the QOPI initiative—a program instituted by the American Society of Clinical Oncology to ensure patient-centered quality care and provide a mechanism for continuous quality assessment and quality improvement within our patient care programs.

As a group, Hematology and Oncology faculty remain committed to providing state-of-the-art novel therapies to our patients. Multiple faculty members serve in leadership positions within a variety of national oncology cooperative trial groups including:

- The Alliance for Clinical Trials in Oncology. This is a merging of the cooperative groups CALGB (Cancer and Leukemia Group B), NCCTG (North Central Clinical Trials Group) and ACOSOG (American College of Surgeons Oncology Group).
- ABTC (Adult Brain Tumor Consortium).
- Comprehensive Cancer Center of Wake Forest University Research Base (A National Cancer Institute funded cooperative group research base headquartered at Wake Forest that provides cancer prevention and control clinical trials to a network of community oncology practices across the country).

In 2010, section members enrolled more than 450 patients on a full spectrum of

clinical trials including phase I, II and III cooperative group, investigator-initiated and industry sponsored studies. As part of our educational mission, section faculty continue to lead the Piedmont Oncology Association (POA). Established more than 30 years ago by Dr. Charles Spurr, the POA meets semi-annually, and brings together regional and national experts to provide CME updates for hematology and oncology physicians, nurses and research staff throughout the Southeast.

Hospital-based activity for the section continues to be centered on five inpatient services: two general Hematology and Oncology services, a leukemia service, a blood and marrow transplant (BMT) service and a co-management service that pairs hospitalists and hematologists/oncologists to care for patients with medical complications of their malignant and hematologic disorders. In addition, Hematology and Oncology faculty continuously staff a busy inpatient consult service. A smooth transition between inpatient and outpatient care is a goal of our efforts to provide excellent patient care.

In addition to the inpatient and outpatient activities at Wake Forest Baptist Medical Center in Winston-Salem, Hematology and Oncology faculty maintain full-time, full-service practices in Elkin, Lexington and Mount Airy. A newer regional practice based at the Veterans Hospital in Salisbury, NC is staffed by three full-time faculty members and allows military service members and their dependents to receive cancer and blood disorder care much closer to home than was previously possible. A new full-time and full-service practice site in Clemmons, NC is expected to open in mid-2012.

## Surgical Oncology

The Surgical Oncology Service is a key component of the Comprehensive Cancer Center. The service is extensively involved in multimodality consultations for the care of patients with melanoma, sarcoma, endocrine tumors and diseases of the breast, as well as the full spectrum of gastrointestinal malignancy from esophagus to anus.

The clinical service includes seven fellowship-trained surgical oncologists, surgical oncology fellows, four surgical house officers, two to three medical students, three advanced practitioners and three nurses. Edward Levine, MD (Chief of the Service), Russell Howerton, MD, Perry Shen, MD, John Stewart, MD, Marissa Howard-McNatt, MD, Kostas Votanopoulos, MD, and Jennifer Cannon, MD, serve as the clinical faculty. Additionally, specialized advanced nurses support the breast care clinic, inpatient surgical oncology and gastrointestinal tumor care. The clinical research effort is supported by two research nurses and three data managers. In 2011, the surgical oncologists performed 1,501 major operative procedures and saw 8,155 outpatients in their new clinic in the Cancer Center building.

### Clinical initiatives:

The multimodality Breast Care Clinic (BCC) is an integral part of the surgical oncology service and sees more than 100 breast patients every week, with more than 220 new cancer cases evaluated in 2011. The BCC is staffed by surgical oncology, medical oncology, radiation oncology, advanced nursing practitioners, plastic surgeons, research nurses, clinic navigators and a genetic counselor. The BCC was among the first to be recognized and certified by the NAPBC. The BCC facilitates complex multimodality care in a setting that fosters participation in state-of-the-art research trials. Dr. Howard-McNatt became the director of this clinic in the fall, replacing Dr. Levine, who led the effort for the previous 12 years.

Esophageal cancer is evaluated by a multimodality team led by Dr. Levine. The team was previously awarded grants from the National Cancer Institute to evaluate new imaging technology to define the patients who achieve a complete response to chemotherapy and radiation. The multimodality team has published its results widely, and it serves as a regional reference clinic for care of patients with cancer of the esophagus.

A clinical immunotherapy service has been initiated by Dr. Stewart. This immunotherapy program treats patients with metastatic melanoma and renal cell cancer with high dose interleukin-2 therapy, as well as a variety of immune therapy research trials. This effort is supported by Robin Petro, RN, who has specialized experience in clinical immunotherapy.

Hepatopancreaticobiliary (or "HPB" surgery for short) relates to complex liver and pancreas surgery evaluations and are led by Dr. Shen and supported by a multimodality conference. Dr. Howerton joined the surgical oncology service this year with his robust practice in HPB. Dr. Shen leads a clinical team now working on minimally invasive approaches to hepatic resection and has performed several successful "robotic" resections. Newer approaches to liver surgery have afforded improved outcomes not only to patients with primary hepatic tumors, but those with cancers metastatic to the liver as well.

Dr. Votanopoulos recently joined the faculty and has initiated efforts to bring surgical oncology expertise beyond the main campus to our affiliated Veterans Administration Hospital in Salisbury, N.C. He leads the General Surgery effort at the VA while maintaining an active practice on the main campus.

Dr. Jennifer Cannon joined the surgical oncology team last year, bringing additional expertise in the care of endocrine tumors. She has already

expanded the capabilities for treatment of the full spectrum of endocrine tumors.

Our innovative treatment with cytoreductive surgery and Hyperthermic IntraPERitoneal Chemotherapy (HIPEC) for malignancies that have spread throughout the peritoneal cavity is nationally and internationally recognized. We currently perform about 100 cases annually, which is one of the largest experiences in the world with this complex modality. This HIPEC program continues to draw patients from around the country and is linked to a variety of research initiatives, including the largest quality of life study for HIPEC patients worldwide.

Education: House staff and medical students on the service are extensively involved in multimodality consultations for the care of cancer patients with melanoma, sarcoma, endocrine tumors and diseases of the breast, as well as the full spectrum of gastrointestinal malignancies from esophagus to anus. This includes pre- and post-operative care, in addition to operative management. Considerable clinical expertise is available to serve patients who require cancer staging, treatment and follow-up because of primary, recurrent or metastatic malignancy. A substantial portion of clinical effort is also devoted to the resection of metastatic disease, including that to the liver, lung, peritoneum and lymph nodes. Extensive clinical experience in a tertiary referral setting provides the surgical know-how for dealing with rare and unusual neoplasms. The BCC also hosts house officers from Gynecology, Internal and Family medicine.

A weekly multidisciplinary/multimodality surgical oncology conference, which serves as the CME-accredited "Tumor Board" for the institution, meets on Fridays at noon in the Cancer Center. This is supplemented by an HPB tumor conference meeting twice monthly on Tuesdays at noon. Additionally, the

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Surgical Oncology service sponsored the 6th annual breast cancer conferences (with the regional Susan G. Komen for the Cure), and a gastrointestinal symposium highlighted with nationally known speakers. The service sponsored a visiting professor in December (Richard Alexander, MD, from the University of Maryland).

A surgical oncology fellowship was initiated in 2010. The two-year fellowship is for general surgeons seeking additional qualifications and training in advanced techniques in surgery and oncology training. Our first fellow, Chukwemeka Ihemelandu, MD, was joined this year by our second fellow, Naeem Newman, MD.

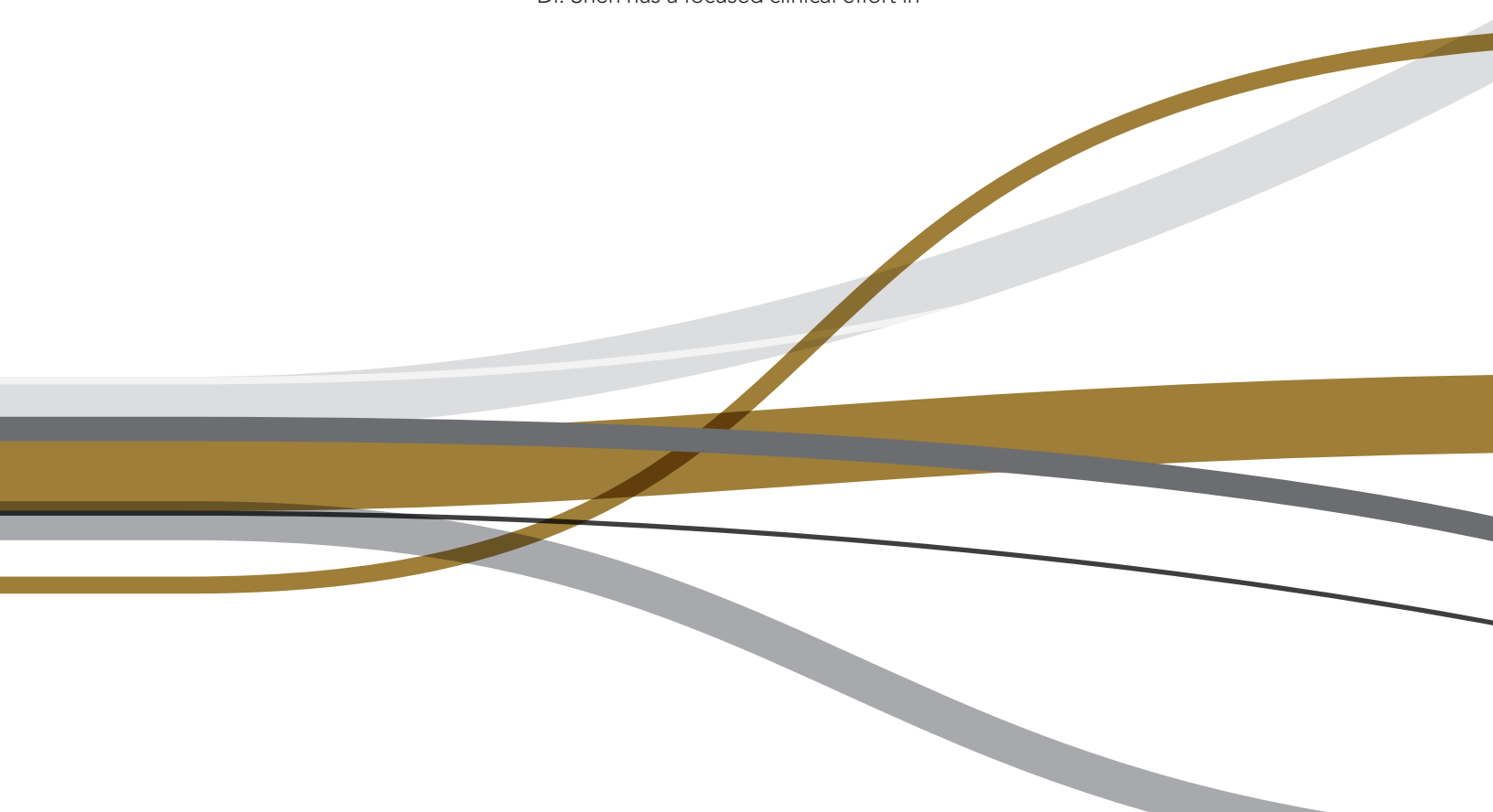
Research: The Surgical Oncology Service actively supports research in basic science, translational science and clinical arenas. The service is active in supporting clinical trials. Clinical trials in association with the National Surgical Adjuvant Breast and Bowel Project (NSABP) and the American College of Surgeons Oncology Group (ACOSOG), are coordinated by Dr. Levine, who serves as the principal

investigator. Dr. Shen is the current chair of the surgical subcommittee of the Cancer and Leukemia Group B (CALGB), and supports participation in CALGB trials. Surgical Oncology also collaborates with investigators in RTOG, NCI (Surgery Branch), as well as other members of the Cancer Center, including Public Health Sciences, Exercise Physiology, Gastroenterology, Cancer Biology, Radiology, Nuclear Medicine, Medical and Radiation Oncology. In 2011, the Surgical Oncology service enrolled 205 patients on treatment protocols and 948 on tissue procurement studies. Currently, the clinical and research faculty of the Surgical Oncology service hold more than \$750,000 in active extramural funding for cancer research.

Translational research projects evaluating genetic and proteomic changes associated with malignant melanoma, cancer of the breast, GI and hepatobiliary malignancy as well as peritoneal carcinomatosis are ongoing. Dr. Levine has initiated such studies of the basic genetics of cancer of the appendix. Dr. Shen has a focused clinical effort in

pancreatic and hepatobiliary malignancy. He initiated clinical research projects evaluating innovative ways to treat primary and metastatic liver tumors. His effort has been expanded to support implantable hepatic arterial perfusion pumps in conjunction with novel ablative technologies. Dr. Stewart's more basic research has been awarded a grant from the National Cancer Institute to evaluate potential applications for oncolytic viruses in solid tumors. He is also interested in immunotherapy and clinical proteomics, as well as delivery of cancer care to underserved populations. Dr. Howard-McNatt published research this year evaluating breast reconstruction and the effect of genetic testing for familial breast cancer on surgical decision-making.

These efforts led to the publication of 17 peer-reviewed manuscripts in 2011 as well as major presentations at leading surgical and oncology societies. These publications span the gamut from basic science to translational and clinical issues, and include the first genomic study of cancer of the appendix this year.



## Cancer Registry Database

In 2010, the number of cases entered into the cancer registry database totaled 4,424 (includes malignant, in-situ, selected benign cases; newly diagnosed, recurrent and consult cases).

<b>Total Cases—2010</b>	<b>#</b>	<b>%</b>	<b>Gender</b>	<b>#</b>	<b>%</b>
Lung	449	10.2	Male	2,331	52.7
Colorectal	358	8.1	Female	2,093	47.3
Melanoma of skin	309	7			
Breast	308	7			
Prostate	260	5.9			
Brain, CNS	259	5.9			
Leukemia	252	5.7			
Kidney, renal pelvis	231	5.2			
Oral cavity, pharynx	226	5.1			
NH Lymphoma	203	4.6			
Bladder	158	3.6			
Pancreas	147	3.3			
Uterus	104	2.3			
Thyroid	104	2.3			
Connective tissue	96	2.2			
Plasma cell tumors	92	2.1			
CMPD, MDS, other	87	2			
Ovary	67	1.5			
Other Endocrine	64	1.4			
Liver	60	1.3			
Stomach	59	1.3			
Larynx	58	1.3			
Esophagus	57	1.3			
Other female	38	0.9			
Unknown primary	35	0.8			
Cervix	35	0.8			
Bone	35	0.8			
Eye	34	0.8			
Hodgkins disease	31	0.7			
Small intestine	27	0.6			
Gallbladder, biliary	27	0.6			
Retroperitoneum	24	0.5			
Other urinary	24	0.5			
Testis	23	0.5			
Other skin	19	0.4			
Mets SCCa/BCCa	17	0.4			
Nasal, sinus	16	0.4			
Ill-defined	9	0.2			
Peripheral nervous sys	4	0.1			
Other digestive	4	0.1			
Mediastinum, pleura	2	0.05			
Other male	1	0.09			
Thymus	1	0.09			
<b>Total</b>	<b>4,424</b>	<b>100</b>			

<b>Gender</b>	<b>#</b>	<b>%</b>
Male	2,331	52.7
Female	2,093	47.3

<b>Race</b>	<b>#</b>	<b>%</b>
White	3,755	84.9
Black	609	13.8
Other	39	0.9
Unknown	21	0.5

<b>Class of Case</b>	<b>#</b>	<b>%</b>
Analytic/new dx	3,504	79.2
Non-analytic/recurr	426	9.6
Consultations	494	11.2

<b>Residence</b>	<b>#</b>	<b>%</b>
North Carolina	3,692	83.5
Other states in USA	730	16.5
Outside of USA	2	0.05

<b>Patient History</b>	<b>#</b>	<b>%</b>
Family History	2,585	58.4
Tobacco History	2,391	54.1
cigarette	957	
cigar/pipe	39	
snuff/chew/smokeless	73	
combination use	4	
previous use	1,318	
Alcohol History	559	12.6
current use	301	
past history	258	
(2 or more drinks/day)		

<b>Primary Neoplasms</b>	<b>#</b>	<b>%</b>
One primary only	3,190	72.1
First of two primaries	185	4.2
Second primary	651	14.7
Third primary	110	2.5
Fourth primary	24	0.5
Fifth primary	8	0.2
Sixth primary	1	0.09
Benign neoplasms	255	5.8

## Primary Site Distribution 2010

Site	Total	Class of Case*			Gender and Race							
		A	NA	C	white male	white female	black male	black female	other male	other female	unk male	unk female
<b>Total cases</b>	<b>4424</b>	<b>3504</b>	<b>426</b>	<b>494</b>	<b>2015</b>	<b>1740</b>	<b>292</b>	<b>317</b>	<b>15</b>	<b>24</b>	<b>9</b>	<b>12</b>
<b>Oral cavity, pharynx</b>	<b>226</b>	<b>193</b>	<b>14</b>	<b>19</b>	<b>124</b>	<b>79</b>	<b>12</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
lip	7	7	0	0	4	3	0	0	0	0		
tongue	46	37	4	5	33	12	0	0	0	0	0	1
gum	13	10	2	1	7	6	0	0	0	0		
floor of mouth	12	12	0	0	10	1	1	0	0	0		
palate	16	13	2	1	3	9	2	2	0	0		
other mouth	13	11	1	1	8	3	1	1	0	0		
salivary, malignant	14	13	1	0	8	4	1	1	0	0		
salivary, benign	36	36	0	0	9	22	2	3	0	0		
tonsil	32	24	3	5	22	6	2	2	0	0		
oropharynx	12	10	0	2	8	3	0	1	0	0		
nasopharynx	11	10	0	1	4	6	1	0	0	0		
pyriform sinus	11	8	1	2	7	2	2	0	0	0		
pharynx, nos	3	2	0	1	1	2	0	0	0	0		
<b>Digestive system</b>	<b>739</b>	<b>532</b>	<b>90</b>	<b>117</b>	<b>347</b>	<b>249</b>	<b>78</b>	<b>59</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>1</b>
esophagus	57	37	2	18	47	2	6	2	0	0		
stomach	59	44	3	12	31	13	11	2	1	0	1	
s intestine	27	19	4	4	8	11	4	4	0	0		
colon	239	146	67	26	92	96	21	29	0	0	1	0
rectosigmoid	17	8	1	8	7	8	0	0	1	0	1	0
rectum	89	63	10	16	46	29	7	6	0	0	0	1
anus/anal canal	13	10	1	2	4	6	3	0	0	0		
liver	60	52	1	7	32	12	14	2	0	0		
gallbladder	11	9	0	2	3	8	0	0	0	0		
biliary	16	15	0	1	6	7	1	2	0	0		
pancreas	147	127	1	19	70	55	11	11	0	0		
other digestive	4	2	0	2	1	2	0	1	0	0		
<b>Respiratory system</b>	<b>524</b>	<b>420</b>	<b>52</b>	<b>52</b>	<b>286</b>	<b>167</b>	<b>40</b>	<b>26</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>
nasal cavity	6	4	0	2	2	3	1	0	0	0		
sinuses	10	8	1	1	5	4	0	1	0	0		
larynx	58	46	9	3	41	8	8	0	0	0	1	0
lung-non small	396	322	34	40	213	127	29	23	2	0	1	1
lung-small cell	53	40	8	5	25	24	2	2	0	0		
thymus	1	0	0	1	0	1	0	0	0	0		
<b>Mediastinum, pleura</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Bone</b>	<b>35</b>	<b>32</b>	<b>2</b>	<b>1</b>	<b>15</b>	<b>14</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>		
<b>Hematopoietic system</b>	<b>431</b>	<b>281</b>	<b>35</b>	<b>115</b>	<b>202</b>	<b>155</b>	<b>30</b>	<b>36</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>
plasma cell tumors	92	47	11	34	34	31	15	12	0	0		
lymphoid leukemia	67	45	6	16	32	23	3	6	0	2	1	0
myeloid leukemia	165	142	10	13	75	65	11	11	3	0		
other leukemia	10	5	0	5	4	5	0	1	0	0		
leukemia/lymphoma	10	10	0	0	6	4	0	0	0	0		
CMPD, MDS, other	87	32	8	47	52	27	1	6	1	1		

## Primary Site Distribution 2010

Site	Total	Class of Case*			Gender and Race							
		A	NA	C	white male	white female	black male	black female	other male	other female	unk male	unk female
<b>Skin</b>	<b>345</b>	<b>309</b>	<b>21</b>	<b>15</b>	<b>217</b>	<b>119</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
melanoma	309	281	15	13	194	111	0	3	0	0	1	0
other skin	19	15	2	2	12	2	2	2	1	0		
mets SCCa/BCCa	17	13	4	0	11	6	0	0	0	0		
<b>Retro, peritoneum</b>	<b>24</b>	<b>17</b>	<b>4</b>	<b>3</b>	<b>9</b>	<b>13</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>		
<b>Peripheral nervous sys</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Connective tissue</b>	<b>96</b>	<b>79</b>	<b>10</b>	<b>7</b>	<b>42</b>	<b>42</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>0</b>		
<b>Breast</b>	<b>308</b>	<b>247</b>	<b>31</b>	<b>30</b>	<b>2</b>	<b>242</b>	<b>2</b>	<b>54</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>1</b>
<b>Female genital system</b>	<b>244</b>	<b>219</b>	<b>15</b>	<b>10</b>	<b>0</b>	<b>205</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>1</b>
vulva	29	28	1	0	0	23	0	6	0	0		
vagina	7	6	0	1	0	7	0	0	0	0		
cervix	35	13	2	4	0	28	0	5	0	2		
uterus	104	96	5	3	0	89	0	10	0	4	0	1
ovary	67	55	7	2	0	58	0	8	0	1		
other female	2	2	0	0	0	0	0	2	0	0		
<b>Male genital system</b>	<b>294</b>	<b>239</b>	<b>32</b>	<b>23</b>	<b>234</b>	<b>0</b>	<b>57</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>
penis	10	9	1	0	9	0	1	0	0	0		
prostate	260	212	28	20	202	0	56	0	2	0		
testis	23	17	3	3	22	0	0	0	0	0	1	0
other male	1	1	0	0	1	0	0	0	0	0		
<b>Urinary system</b>	<b>413</b>	<b>344</b>	<b>53</b>	<b>16</b>	<b>258</b>	<b>114</b>	<b>22</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
kidney	221	199	15	7	126	64	19	11	0	0	1	0
renal pelvis	10	10	0	0	5	3	0	2	0	0		
ureter	5	5	0	0	3	1	0	1	0	0		
bladder	158	113	36	9	113	39	3	3	0	0		
other urinary	19	17	2	0	11	7	0	1	0	0		
<b>Eye</b>	<b>34</b>	<b>30</b>	<b>3</b>	<b>1</b>	<b>19</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Brain, CNS</b>	<b>259</b>	<b>222</b>	<b>18</b>	<b>19</b>	<b>89</b>	<b>129</b>	<b>10</b>	<b>27</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>
brain, malignant	104	87	7	10	50	46	2	5	1	0		
brain, benign	155	135	11	9	39	83	8	22	0	1	0	2
<b>Thyroid/Endocrine</b>	<b>168</b>	<b>147</b>	<b>14</b>	<b>7</b>	<b>46</b>	<b>85</b>	<b>14</b>	<b>16</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>4</b>
thyroid	104	96	7	1	29	59	1	8	0	3	0	4
adrenal	4	4	0	0	1	2	0	1	0	0		
other, malignant	1	1	0	0	0	1	0	0	0	0		
other, benign	59	46	7	6	16	23	13	7	0	0		
<b>Lymphoma</b>	<b>234</b>	<b>162</b>	<b>28</b>	<b>44</b>	<b>103</b>	<b>93</b>	<b>14</b>	<b>20</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>
NHL	203	145	20	38	89	82	12	16	0	3	0	1
Hodgkins	31	17	8	6	14	11	2	4	0	0		
<b>Unknown Primary</b>	<b>35</b>	<b>24</b>	<b>0</b>	<b>11</b>	<b>13</b>	<b>15</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>		
<b>Ill-defined</b>	<b>9</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		

\*Class of Case:

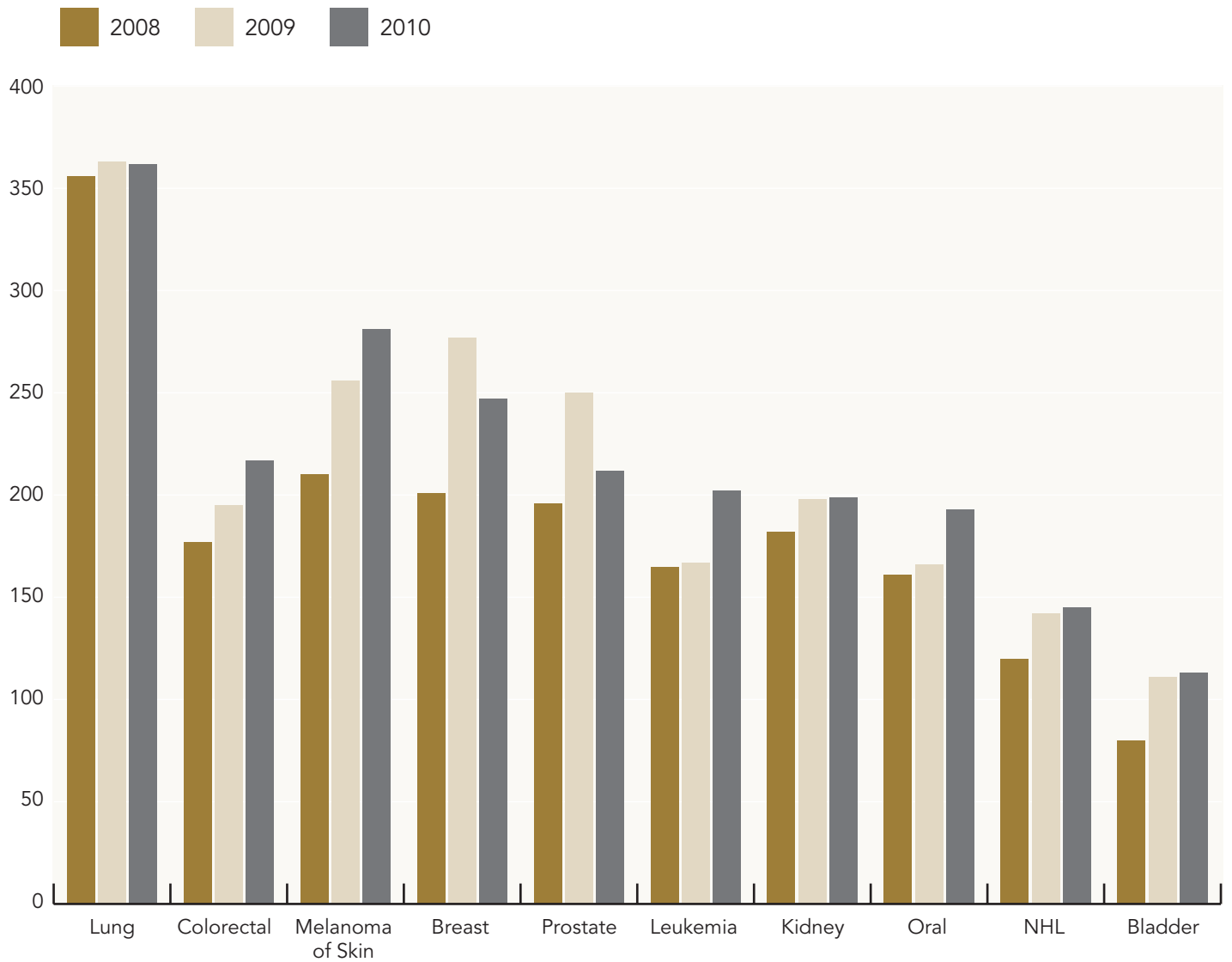
A – analytic, newly diagnosed

NA – non-analytic, recurrence

C – consultations, second opinions



## Comparison of Wake Forest Baptist Medical Center Most Prevalent Sites by Year Newly diagnosed cases



## Publications

CGS = Cell Growth and Survival Program  
 CDD = Cellular Damage and Defense Program  
 CRP = Clinical Research Program  
 CPC = Cancer Prevention and Control Program

- Bates JT, Graff AH, Phipps JP, Grayson JM (CGS), Mizel SB. Enhanced Antigen Processing of Flagellin Fusion Proteins Promotes the Antigen-Specific CD8(+) T Cell Response Independently of TLR5 and MyD88. *Journal of Immunology*. 2011;186(11): 6255-6262 PMID pending.
- Blanks MJ, Stehle JR, Du W, Adams JM, Willingham MC (CGS), Allen GO, Hu JJ, Lovato J, Molnar I, Cui Z. Novel innate cancer killing activity in humans. *Cancer Cell International*. 2011;11: PMC3170245.
- Briggs CM, Holder RC, Reid SD, Parks GD (CGS). Activation of human macrophages by bacterial components relieves the restriction on replication of an interferon-inducing parainfluenza virus 5 (PIV5) P/V mutant. *Microbes and Infection*. 2011;13(4): 359-368 PMC3056918.
- Broet P, Dalmaso C, Tan EH, Alifano M, Zhang SL, Wu J, Lee MH, Regnard JF, Lim D, Miller LD (CGS), Agasthian T, et al. Genomic Profiles Specific to Patient Ethnicity in Lung Adenocarcinoma. *Clinical Cancer Research*. 2011;17(11): 3542-3550 PMID pending.
- Busick RY, Yammani RD, Alexander-Miller MA (CGS). Differentiation-Dependent Differences in Murine T Cell Susceptibility to Negative Regulation by the Lung. *American Journal of Respiratory Cell and Molecular Biology*. 2011;44(5): 597-605 PMC3095980.
- Cary ZD, Willingham MC (CGS), Lyles DS (CGS). Oncolytic Vesicular Stomatitis Virus Induces Apoptosis in U87 Glioblastoma Cells by a Type II Death Receptor Mechanism and Induces Cell Death and Tumor Clearance In Vivo. *Journal of Virology*. 2011;85(12): 5708-5717 PMC3126314.
- Chung S, Sawyer JK, Gebre AK, Maeda N, Parks JS (CGS). Adipose tissue ATP binding cassette transporter A1 contributes to high-density lipoprotein biogenesis in vivo. *Circulation*. 2011;124(15): 1663-72 PMC3202242.
- Clark KM, Johnson JB, Kock ND, Mizel SB, Parks GD (CGS). Parainfluenza virus 5-based vaccine vectors expressing vaccinia virus (VACV) antigens provide long-term protection in mice from lethal intranasal VACV challenge. *Virology*. 2011;419(2): 97-106 PMC3177979.
- Clausen KA, Blish KR, Birse CE, Triplett MA, Kute TE, Russell GB, D'Agostino RB (CPC), Miller LD (CGS), Torti FM (CDD), Torti SV (CDD). SOSTDC1 differentially modulates Smad and beta-catenin activation and is down-regulated in breast cancer. *Breast Cancer Research and Treatment*. 2011;129(3): 737-746 PMID pending.
- Daou S, Mashtalir N, Hammond-Martel I, Pak H, Yu H, Sui GC (CGS), Vogel JL, Kristie TM, Affar E. Crosstalk between O-GlcNAcylation and proteolytic cleavage regulates the host cell factor-1 maturation pathway. *Proceedings of the National Academy of Sciences of the United States of America*. 2011;108(7): 2747-2752 PMC3041071.
- Davies AH, Barrett I, Pambid MR, Hu K, Stratford AL, Freeman S, Berquin IM (CGS), Pelech S, Hieter P, Maxwell C, Dunn SE. YB-1 evokes susceptibility to cancer through cytokinesis failure, mitotic dysfunction and HER2 amplification. *Oncogene*. 2011;30(34): 3649-3660 PMC3121916.
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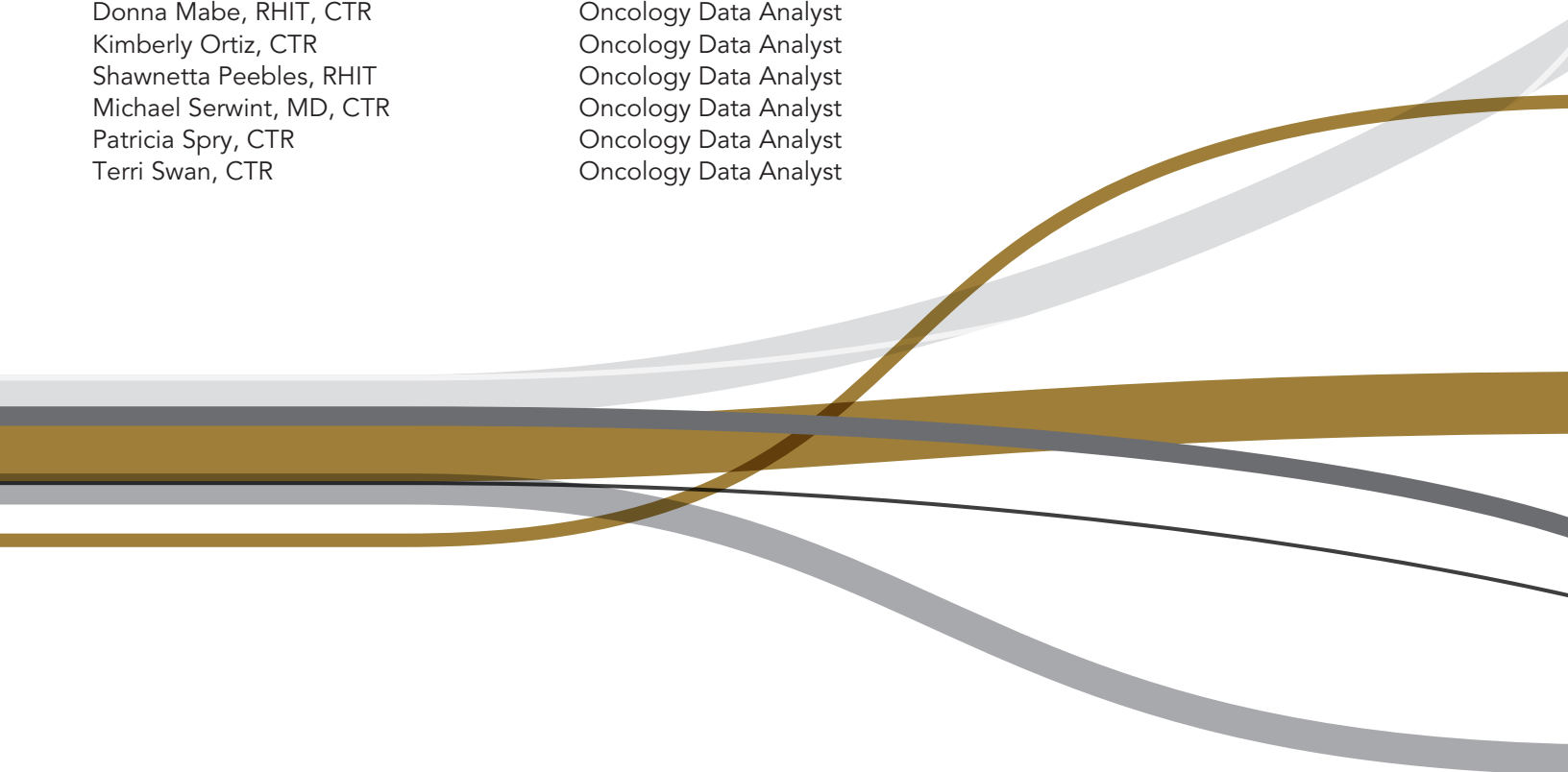
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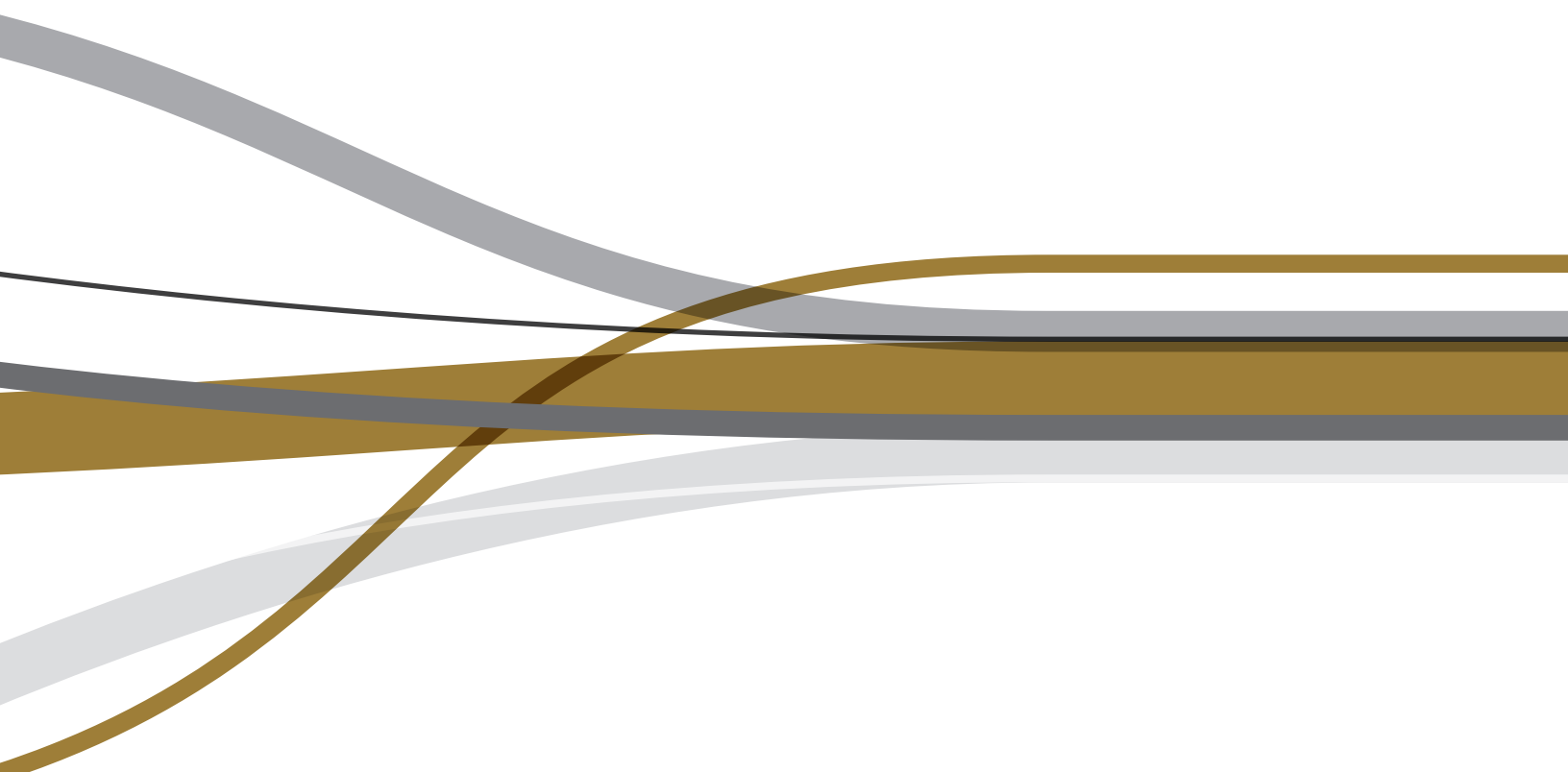
## Cancer Committee Members

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