2018 CANCER PROGRAM

Annual Report with 2017 statistics

Wake Forest®
Baptist Health

TABLE OF CONTENTS

Message from the Director	**1**
Cancer Registry	**2**
Cancer Committee Members/ Cancer Registry Staff	**4**
Cancer Activities	**5**
Cancer Data	**33**
Published Abstracts	**39**

"Our Comprehensive Cancer Center continues to conduct research that will benefit our patients through precision medicine, clinical trials, new discoveries and more."

—-Boris Pasche, MD, PhD, FACP / Director, Comprehensive Cancer Center

COMPREHENSIVE CANCER CENTER
OF WAKE FOREST BAPTIST HEALTH

The Wake Forest Baptist Health Comprehensive Cancer Center is among a distinguished group of cancer centers acknowledged as the nation's leaders in the fight against cancer.

Established in the early 1960s, our Cancer Center became a National Cancer Institute (NCI)-designated cancer center in 1974. Demonstrating its continued commitment to excellence, the Cancer Center received the additional NCI designation as a "Comprehensive" Cancer Center in 1990. It is currently recognized as one of only 49 NCI comprehensive cancer centers in the nation. *U.S. News & World Report* ranks the Cancer Center as the best cancer hospital both in North Carolina and its neighboring states – Georgia, South Carolina, Tennessee and Virginia.

The Cancer Center's mission is to reduce cancer incidence, morbidity and mortality in the catchment area, nationally and internationally through cutting-edge research and treatments, education and outreach, and multidisciplinary training. The catchment area includes the Piedmont and southern Appalachian region, an area of 58 contiguous counties in North Carolina, Tennessee, Virginia and West Virginia.

The region served by the Cancer Center has significant health disparities issues when compared to national averages for cancer incidence and mortality. To target these issues, the Cancer Center conducts basic, clinical and population research on the prevention, detection and treatment of cancer, translating this knowledge into strategies to improve patient outcomes and reduce the occurrence of cancer. In addition, the Cancer Center established an Office of Cancer Health Equity in 2014 that is focused on conducting culturally relevant navigation, offering ongoing community outreach and engagement opportunities, and providing education and resources to patients throughout our catchment area.

There are 129 nationally and internationally renowned experts at the Cancer Center who provide specialized treatment through 13 disease-oriented and thematic teams: brain (neuro-oncology), breast, cancer survivorship and control, gastrointestinal, genitourinary, gynecologic, head and neck, hematologic malignancies, lung, melanoma, pediatric oncology, precision medicine and phase I, and sarcoma.

Research activities at the Cancer Center are led by 158 faculty members from 35 departments who conduct research across four programs: Cancer Prevention and Control, Neuro-Oncology, Cancer Genetics and Metabolism, and Signaling and Biotechnology.

The Cancer Center is committed to building interdepartmental and transdisciplinary research teams, continuing to excel in research excellence while serving as the main tertiary referral center for the catchment area. Strong collaborations have been established with other entities within Wake Forest to advance the mission of the Cancer Center, such as the Clinical and Translational Science Institute, the Center for Precision Medicine, the Sticht Center for Healthy Aging and Alzheimer's Prevention, the Translational Alcohol Research Center, the Tobacco Control Center of Excellence, the Institute for Regenerative Medicine, the Maya Angelou Center for Health Equity and the Virginia Tech-Wake Forest University School of Biomedical Engineering and Science. Collaborations between research faculty conducting laboratory science and clinical research ensure that our patients are offered novel therapies and fast access to advanced cancer care.

With nearly 200 clinical trials offered to patients each year, the Cancer Center provides more cancer-related clinical trials than any other hospital in western North Carolina. These trials provide the opportunity for patients to have access to the newest therapies, prevention techniques and survivorship strategies. Patients receive treatment in our state-of-the-art facility, an 11-story cancer hospital, which houses all inpatient and outpatient clinical services, an oncology intensive care unit, an outpatient pharmacy, imaging, cancer patient support services and more. Having all services related to a patient's cancer journey in one building provides an exceptional environment for patients, family members and caregivers. Additionally, the Cancer Center has expanded its clinical and research activities to several hospitals in the region including Davie, High Point, Lexington and Wilkes medical centers in the Wake Forest Baptist Health system.

CANCER REGISTRY

The Cancer Registry works with physicians, administration, 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 functions in accordance with guidelines set by the American College of Surgeons (ACS) and the North Carolina Central Cancer Registry. It plays an important role in ensuring that the cancer program is accredited by the ACS' Commission on Cancer and that the Breast Care Center is accredited by the National Accreditation Program for Breast Centers.

The Cancer Registry manages and analyzes 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.

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), prognostic indicators, treatment, recurrence and outcome information.

The Cancer Registry collects the cancer data if patients are seen at the following locations:

- Medical Plaza – Clemmons
- Medical Plaza – Premier
- Provider-based clinics (Lexington, Elkin and Mount Airy)
- Statesville practice
- Wake Forest Baptist Health Davie Medical Center
- Wake Forest Baptist Health Lexington Medical Center
- Wake Forest Baptist Health Wilkes Medical Center
- Wake Forest Baptist Medical Center (main campus)

In 2018, High Point Medical Center became a part of Wake Forest Baptist Health. The High Point Medical Center's Cancer Registry maintains the collection of cancer data for that facility.

The Cancer Registry manages and analyzes clinical cancer information for the purpose of education, research, and outcome measurement.

The Cancer Registry continues to participate in the ACS' Rapid Quality Reporting System (RQRS). RQRS is a reporting and quality improvement tool that provides real clinical-time assessment of hospital-level adherence to quality of cancer care measures. The ACS requires only the submission of breast, colon and rectal cancer cases. Submission of all sites is projected to be required by 2020.

Lifelong follow-up is performed annually on 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, cancer cases are reported to the North Carolina Central Cancer Registry. The data submitted is shared with the North American Association of Central Cancer Registries and the U.S. Centers for Disease Control and Prevention's National Program of Cancer Registries. In addition, newly diagnosed cancer cases are submitted to the Commission on Cancer's National Cancer Database, a comparative database for ongoing assessment of cancer patient care that is a joint project of the American College of Surgeons 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 cancer data professionals.

CANCER COMMITTEE

The Cancer Committee is one of the major components of being an approved cancer program of the American College of Surgeons (ACS). 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

- Clinical and programmatic goals are established, implemented and monitored each year.
- 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 and 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.
- A patient navigation process, driven by a community needs assessment, is established to address health care disparities and barriers to care for patients.
- A process to disseminate a treatment summary and follow-up plan to patients who have completed cancer treatment is developed, implemented and monitored.
- Benchmark reports from the ACS' National Cancer Database are evaluated to improve the quality of care.
- A process to integrate psychosocial distress screening is monitored each year.
- The effectiveness of community outreach activities is monitored each year.
- The percentage of patients accrued to cancer-related clinical trials is monitored each year.
- The American Joint Committee on Cancer's 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.
- Nursing competency is evaluated annually as well as the rate of oncology-certified nurses to RNs.
- The Cancer Registry data and activities are evaluated and monitored for case-finding, accuracy of data collection, abstracting timeliness, quality, follow-up and data reporting.
- A subcommittee monitors the activities of the Breast Care Center.
- ACS' standards are established, implemented, monitored, evaluated, achieved and documented to ensure Commission on Cancer and NAPBC accreditation.
- The rectal cancer program director presents annually to the cancer committee for the National Accreditation Program for Rectal Cancer.

CANCER COMMITTEE MEMBERS

Edward Levine, MD, Chair \ Surgical Oncology

Caitlin Bozick, MS, CGC \ Genetic Counselor

Typhany Morrison-Brooks \ Cancer Services

Akiko Chiba, MD / Surgical Oncology

Wendy Cox \ Sr. Business Analyst, Oncology Service Line

Kelly Cronin, MD \ Diagnostic Radiology

Kathy Flowers, MBA, BSN, RN, NE-BC \ Manager, Radiation Oncology

Janet Forrest, MHA, FACHE \ Administrative Director, Oncology Service Line

Carl Robert Grey, MD \ Palliative/Supportive Care

Kathryn Greven, MD \ Radiation Oncology

Marissa Howard-McNatt, MD \ Surgical Oncology / Breast Care Center / Cancer Liaison Physician

Inez Inman, BS, RHIT, CTR \ Cancer Registry

Carrie Klamut \ American Cancer Society

Richard McQuellon, PhD, HSP-P \ Psychosocial Oncology and Cancer Patient Support Programs

Reggie Munden, MD, DMD, MBA \ Interim VP Cancer Services

Stacey S. O'Neill, MD, PhD \ Pathology

Amy Pace, MSW \ Care Coordination

William Jeff Petty, MD \ Hematology / Oncology

Susan Poindexter, BSN, RN \ Nursing Education Coordinator, Hematology / Oncology

Rebecca Rankin \ Director of Administration, Comprehensive Cancer Center

Brandy Strickland Snyder, PharmD \ Pharmacy

Shanna Steelman, WHNP \ Breast Care Center

Thuy Vu, MS, CGC \ Genetic Counselor

Wendy Watson, RD, CSO, LDN \ Nutritionist

CANCER REGISTRY STAFF

Inez Inman, BS, RHIT, CTR \ Manager

Janice Boggs, RHIT, CTR \ Oncology Data Analyst

Jenean Burris, RHIT, CTR \ Oncology Data Analyst

Cindy McAlpin, BA, CTR \ Oncology Data Analyst

Tammie Miller, RRT, CTR \ Oncology Data Analyst

Pamela Childress-Obenauf, BA, CTR \ Oncology Data Analyst

Kimberly Ortiz, BS, CTR \ Oncology Data Analyst

Shawnetta Peebles, RHIT, CTR \ Oncology Data Analyst

Michael Serwint, MD, CTR \ Oncology Data Analyst

Querube Storti, RRT, CTR \ Oncology Data Analyst

Terri Swan, CTR \ Oncology Data Analyst

2018 CANCER ACTIVITIES

More than 450 patients were seen in the survivor's clinic making it the busiest year to date.

BREAST CARE CENTER

The multimodality Breast Care Center celebrated its 19th anniversary in January 2019. In 2018, 360 patients were seen with breast cancer in the Breast Care Center. The center's goal is to provide state-of the-art care for the full spectrum of breast diseases in a patient-focused environment. All new cases are reviewed by our multimodality team with the mammographers, genetic counselors, a radiation oncologist and other oncologists before the patient is seen in clinic.

Typically, patients are seen by a multidisciplinary group consisting of surgeons, a radiation oncologist, a plastic surgeon, nurse practitioners, a genetic counselor and a medical oncologist, if necessary. The Breast Care Center had its National Accreditation Program for Breast Centers (NAPBC) certification renewed in 2018, with full continuing accreditation of the center.

Our breast surgery team consists of two breast surgery trained physicians: Marissa Howard-McNatt, MD, as the director of the center, and Akiko Chiba, MD, who completed her breast surgery fellowship at Mayo Clinic. Edward Levine, MD, our division head and surgical oncologist, also sees breast cancer patients. Our medical oncology team is represented by Alexandra Thomas, MD, who is the leader of the breast hematology oncology division. She is also the co-leader of the Breast Disease Oriented Team, along with Dr. Howard-McNatt. The other breast medical oncologists include Susan Melin, MD, Tiffany Avery, MD, Katherine Ansley, MD, Steven Sorscher, MD, and Heidi Klepin, MD, in the breast hematology and oncology section. Doris Brown, MD, PhD, heads the breast radiation oncology section.

This Breast Care Center's 3-D tomosynthesis mammography unit continues to thrive, with locations at the Comprehensive Cancer Center, Medical Plaza – Clemmons and Wake Forest Baptist Health Outpatient Imaging. Screening and diagnostic imaging are offered on the unit. The number of mammograms increased in 2018 due to the use of tomosynthesis. In February 2018, we adopted the SAVI SCOUT® surgical guidance system. This system uses nonradioactive, electromagnetic wave technology to detect a reflector that is placed in the target tissue days to weeks before surgery. Since that time, we have performed 122 Savi localization procedures.

The Savi system has enabled the surgeons to have their first case (7 am) in the operating room be an image-guided lumpectomy. This saves both time and money as the operating team is not waiting for a patient to arrive from mammography. The Savi system also has enabled the mammographers to increase their biopsy procedure volume. Overall, the Savi system has had a successful implementation at our institution.

The Breast Cancer Survivor's Clinic in Clemmons is thriving. More than 450 patients were seen in the survivor's clinic making it the busiest year to date. Run by nurse practitioners, the clinic sees patients who are more than two years out from their initial breast cancer diagnosis. The survivor's clinic not only provides monitoring of these patients but in-depth psychosocial and health maintenance of these high-risk women. In combination with the benign breast clinic in Clemmons, a total of 778 patients were seen at the Clemmons location in 2018.

The Breast Care Center hosted the 13th Annual Breast Cancer Symposium in October 2018. Lectures covered a wide range of topics, from genetics and imaging to treatment and survivorship issues for breast cancer patients. The annual event provides 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, which actively supports cooperative group breast trials from the NRG Oncology, the Alliance and SWOG Cancer Research Network. The Breast Care Center also has a variety of institutional research initiatives that have led to several publications in prestigious journals, including Annals of Surgical Oncology during the past year, and several presentations at national meetings including the Society of Surgical Oncology Annual Cancer Symposium, the American Society of Breast Surgeons and the San Antonio Breast Cancer Symposium.

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 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, and referrals for home health or DME (durable medical equipment), hospice or 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.

COMMUNITY OUTREACH / PUBLIC EDUCATION

One of the Comprehensive Cancer Center's goals is promoting public awareness of cancer. Prevention and early detection are stressed through educational programs and activities. The following were highlights of our public awareness program:

- Seasons of Survival – Discussion of medical management, exercise, nutrition, relaxation and stress management techniques.
- Fair of Community Resources / Hispanic Support Group / Provide resource information.
- Health fair at churches – Distribution of cancer information pamphlets.
- Kick Butts Day – A national day of activism, organized by the Campaign for Tobacco-free Kids, that empowered youth to stand out, speak up and seize control against Big Tobacco. Presentations included lung cancer prevention, symptoms and treatment.
- Strollin' Colon – Health fair regarding colorectal cancer awareness.
- Community Mural Art Project – Community project focused on increasing health/wellness, drug prevention and positive youth engagement.
- N.C. Cancer Prevention and Control 11th Annual Cancer Survivorship Summit – Provided survivorship resources and other cancer information.
- Relay for Life – Educational materials regarding melanoma and breast cancer.
- Lung Cancer Initiative of N.C.: A Network of Hope and Action – Presentations included gamma knife, lung cancer with brain metastases, robotic surgery, lung cancer immunotherapy and low-dose CT lung cancer screening.
- Colon Cancer Coalition Race – Get Your Rear in Gear.
- Athena's Run – Educational information and statistics on gynecologic cancer.
- 17th Annual Pink Ribbon Talks: Breast Cancer Survivor Conference.
- Breast Cancer Awareness – Importance of screening and testing options.
- 4 U Day – Games, make-up, food and information.
- LUNGe Forward 5K and 1K Run, Walk & Rally – Proceeds benefited the Lung Cancer Initiative of N.C.
- Updates in lung cancer from American Society of Clinical Oncology.
- Smoking Cessation Youth Camp Day.
- Post-traumatic Stress After Cancer.
- Living on the Edge GYN Survivor Conference.
- Oral cancer screening.

CANCER PREVENTION AND CONTROL RESEARCH PROGRAM

The Cancer Prevention and Control (CPC) Program is focused on scientific discovery across the cancer continuum that translates into clinical, community and policy strategies to improve cancer outcomes. Program members prioritize research relevant to the Wake Forest Baptist Comprehensive Cancer Center (WFBCCC) catchment area: 4.1 million residents in 58 counties, predominantly Appalachian (n=46) and non-metropolitan/rural (n=37) regions.

The 23,100 annual new cancer cases and 9,000 cancer deaths in the WFBCCC catchment area are 3% and 5% higher than nationwide rates for all cancers combined. The CPC Program conducts locally relevant, rigorous and translatable research across three specific aims:

1) Promote healthy lifestyles that reduce the risk of cancer incidence, morbidity and mortality;

2) Improve survivorship experiences and outcomes; and

3) Accelerate the discovery, efficacy, and implementation of best and promising practices in cancer prevention and control.

Our program includes 34 scientific members in 15 departments and sections. Program members have secured over $9.2 million in extramural cancer-related research funding to achieve these aims. Some of the major ongoing projects include:

PRIMARY PREVENTION AND EARLY DETECTION OF CANCER

- Evaluating New Nicotine Standards for Cigarettes
- Effective Communication on Tobacco Product Risk and FDA Authority
- Comparing Graphic to Text-only Warning Labels to Discourage Cigarillo Smoking by Young Adults
- The National Coalition Network for Tobacco and Cancer-free Living Centers for Disease Control and Prevention
- Building Social Networks to Improve Physical Activity and Weight Loss in Latino Parents
- Mobile Health Intervention for Family Smoking Cessation in Romania
- Tobacco Use During the Transition to Adulthood
- Consumer Perceptions of Health Claims in Vape Shops
- Synaptic Correlates of Vulnerability and Resilience to Alcohol-use Disorders
- Wake Forest Translational Alcohol Research Center

SURVIVORSHIP

- A Prospective Study of the Impact of Breast Cancer on Symptoms and Functioning
- A Stepped-care Telehealth Approach to Treat Distress in Rural Cancer Survivors
- Work Ability in Young Adult Survivors: A Quantitative Investigation
- Understanding and Predicting Fatigue, Cardiovascular Decline and Events After Breast Cancer Treatment
- Prepare to Care, A Supported Self-Management Intervention for Head and Neck
- Optimizing Health-related Quality of Life Measurement in Adolescent and Young Adults
- Influence of Prostate Cancer Treatment on Work Experience with Focus on Race and Income
- EHealth Mindful Movement and Breathing to Improve Gynecologic Cancer Surgery Outcomes
- Targeting IRE-1A to Protect Against Radiation Therapy-induced Bone Loss
- Brain Mechanisms Supporting Mindfulness Mediation-based Chronic Pain Relief

EFFICACY AND IMPLEMENTATION OF BEST AND PROMISING CPC PRACTICES

- Effectiveness and Implementation of mPATH-CRC: A Mobile Health System for Colorectal Cancer Screening
- Consumer Perceptions of Health Claims in Vape Shops
- Implementation of Smoking Cessation Services within NCI NCORP Community Sites with Lung Cancer Screening Programs
- The Quit Kit: Pilot test of a Novel, Clinic-based Strategy to Promote Smoking Cessation

A full range of surgical options for gynecologic cancers is offered, including radical cytoreductive and exenterative procedures as well as laparoscopic and robotic-assisted.

GYNECOLOGIC ONCOLOGY

As an integral part of the Comprehensive Cancer Center, the Section on Gynecologic Oncology provides comprehensive care for patients with pre-malignant and malignant gynecologic disease.

This includes surgical management, chemotherapy and radiation therapy in conjunction with colleagues in radiation oncology. There is a strong collaborative relationship with surgical oncology, medical oncology and interventional radiology. In 2018, Gynecologic Oncology treated over 200 newly diagnosed gynecologic malignancies, predominantly diseases of the uterine corpus and ovary.

The Section on Gynecologic Oncology provides expert consultation and management of gynecologic malignancies diagnosed regionally including the Comprehensive Cancer Center's 19-county service area. Evaluation at outreach clinics is offered in Greensboro, Hickory and Lexington to allow patients improved access to subspecialty cancer care. Inpatient and outpatient care is coordinated by a nurse navigator, two nurse practitioners and additional dedicated nursing and administrative support staff.

The full range of surgical options for gynecologic cancers is offered, including radical cytoreductive and exenterative procedures as well as minimally invasive surgery whenever feasible. Under the leadership of Michael Kelly, MD, use of laparoscopic and robotic-assisted surgical techniques has grown substantially. As a result, many patients can be discharged the same day or within 24 hours of surgery. In this regard, early recovery after surgery is a major focus in the surgical management of gynecologic malignancies.

Patients with gynecologic cancers are offered participation in clinical trials initiated by investigators at Wake Forest Baptist Health, as well as through national collaborative groups (for example, NRG Oncology) and partnerships with industry. Open trials emphasize the management of newly diagnosed and recurrent ovarian cancer using novel chemotherapy and biological agents.

The Comprehensive Cancer Center, through Surgical Oncology, is nationally recognized for its peritoneal malignancy program incorporating hyperthermic intraperitoneal chemotherapy (HIPEC). Gynecologic Oncology is presently using this modality in gynecologic malignancies. There is now a protocol incorporating HIPEC in newly diagnosed ovarian and peritoneal cancer. In development are protocols using HIPEC in recurrent ovarian carcinoma and second-look minimally invasive procedures.

A dedicated, multidisciplinary tumor board composed of gynecologic oncologists, radiation oncologists, gynecologic pathologists and diagnostic radiologists meets regularly to discuss challenging cases.

In September 2017, David Shalowitz, MD, joined the Gynecologic Oncology faculty. In addition to his clinical practice, he leads the section's research efforts in cancer care delivery and health policy. This involves local, regional and national investigations of gynecologic cancer care delivery including quality improvement initiatives to ensure that patients receive the highest standard of care.

In August 2018, Janelle Pakish, MD, joined the Gynecologic Oncology faculty after completing a fellowship in gynecologic oncology at MD Anderson Cancer Center. In addition to clinical gynecologic oncology, she has an interest in clinical trials and immunotherapy in gynecologic malignancies.

The Section on Gynecologic Oncology includes:

» Samuel S. Lentz, MD, Professor and Section Head

» Michael G. Kelly, MD, Associate Professor

» David I. Shalowitz, MD, MSHP, Assistant Professor

» Janelle B. Pakish, MD, MS, Assistant Professor

HEAD AND NECK ONCOLOGY

Head and neck cancer continues to constitute a significant proportion of cancers seen at Wake Forest Baptist Health.

In 2017, 520 patients were seen with tumors of the oral cavity, oropharynx, larynx, salivary gland, sinonasal cavity, thyroid and other head and neck sites. Our Cancer Center is among the busiest hospitals in the Southeast and Mid-Atlantic in the treatment of head and neck cancer patients, which demonstrates our referring providers' confidence in our team's care delivery. Members of our team have subspecialty training and years of experience focused on the treatment and survivorship of head and neck cancer patients.

The number of patients treated includes a large incidence of oral cavity and laryngeal cancers, most of which are tobacco-related. In addition, our team cares for an increasing population of patients with HPV-associated oropharyngeal cancers, mirroring the national trend.

The coordination of multiple disciplines in the care of head and neck cancer patients is essential. A multidisciplinary Head and Neck Oncology Tumor Board meets weekly and is staffed by representatives of the following departments:

- Otolaryngology: J. Dale Browne, MD, Christopher Sullivan, MD, Joshua Waltonen, MD, and Hafiz Patwa, MD (General Head and Neck Oncology / Skull Base Surgery / Thyroid Tumors / Head and Neck Cancer Reconstruction)
- Radiation Oncology: Kathryn Greven, MD, and Bart Frizzell, MD
- Medical Oncology: Mercedes Porosnicu, MD, and Thomas Lycan, DO
- Dentistry Division: Judith Messura, DMD, and David Kretzschmar, DDS
- Pathology
- Diagnostic Radiology
- Speech and Language Pathology
- Nutrition

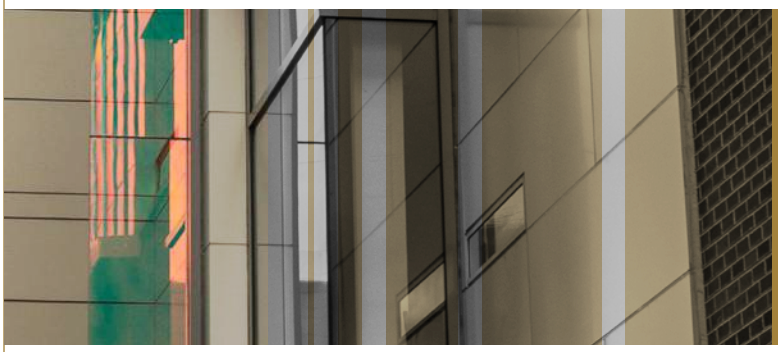
Consultations with adjunctive services are coordinated. Each new patient is evaluated by appropriate team members, and a treatment plan is recommended to the patient and referring physician. Resident attendance at the clinics is encouraged for educational benefits. In addition to discussion of new cases, didactic lectures are presented, and progress of new or ongoing clinic trials is described.

These conferences facilitate more effective physician consultative planning and management decisions. Involvement of a dedicated head and neck cancer nurse navigator allows for efficiency in scheduling appointments and improving patient convenience.

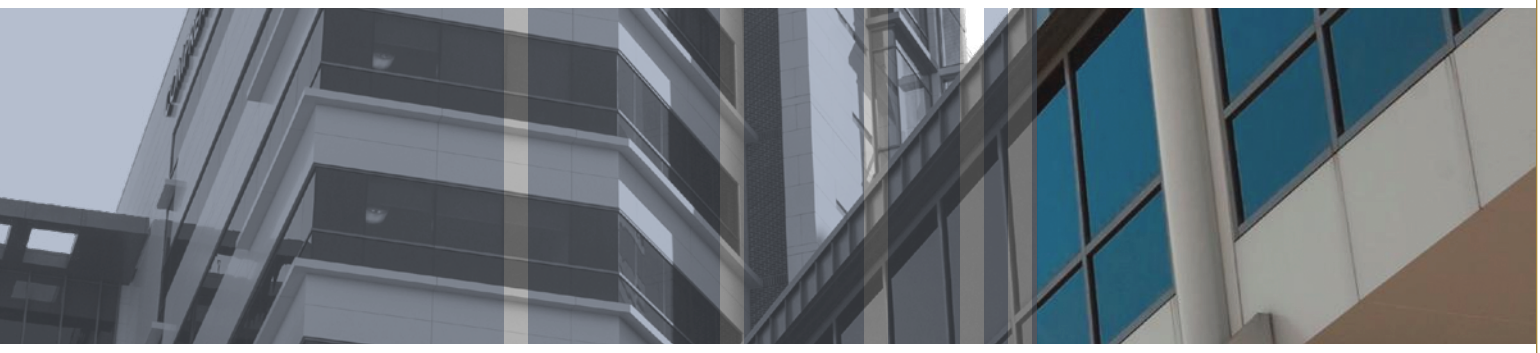
Current surgical, radiation and chemotherapeutic strategies emphasize state-of-the-art techniques that are designed to maximize cure rates while preserving function. Surgeons have expertise in free tissue transfer with microvascular reconstruction, allowing restoration of form and function that may be disrupted during large head and neck ablative surgeries.

Approximately 100 microvascular free flap procedures are performed each year. Minimally invasive surgical techniques available to select patients include endoscopic transoral laser resection of laryngeal tumors and transnasal endoscopic resection of skull base. In addition, we have a robust experience in transoral robotic surgery, especially for the increasingly common HPV-related oropharyngeal cancers. Advanced protocols using the most up-to-date strategies for radiotherapy and chemotherapy are offered to appropriate patients in either definitive or adjunct treatment settings. The Gamma Knife stereotactic radiation unit is nationally known and available as well for select patients.

Multiple research trials are underway, an important component of the treatment and surveillance of head and neck cancer patients. Several publications in prestigious journals and presentations at national meetings result each year from these trials.



Current surgical, radiation and chemotherapeutic strategies emphasize state-of-the-art techniques that are designed to maximize cure rates while preserving function.



HEMATOLOGY AND ONCOLOGY

The Section on Hematology and Oncology is composed of 42 MD and PhD full-time faculty who are involved in clinical and translational research and emphasize access to the most effective treatments and clinical trials. With advances in biologic agents and immunotherapy, the value of subspecialty care and access to novel agents through clinical trials has continued to increase. Our physicians emphasize clinical research and the multidisciplinary care of patients with all types of cancer.

Participation of hematology and oncology physicians is critical to the success of tumor board conferences that emphasize communication and consensus recommendations for patients. These conferences exist for the cancers most commonly diagnosed at our institution including breast, colon, head and neck, leukemia, lung, lymphoma and prostate. The full spectrum of hematologic and oncologic disorders is expertly treated by the section's faculty.

Specific areas of research focus include the Prostate, Breast and Brain Tumor Centers of Excellence within the Comprehensive Cancer Center. Other areas of subspecialty expertise include bone marrow and stem cell transplants, head and neck cancers, gastrointestinal cancers, genitourinary cancers, specialized geriatric oncologic care, leukemia and lymphoma, lung cancer, melanoma, myelodysplasia, myeloma and sarcoma.

Hematology-focused 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 more than two decades ago, continues to be led and staffed by section faculty as well. A multidisciplinary Precision Oncology Program has leveraged state-of-the-art tumor genome sequencing technology to identify and match specific cancer genetic signatures with treatments targeting genes that drive the cancers growth.

The goals of these and other team efforts are to:

- Individualize the care of patients with cancer and blood disorders.
- Meet the medical, emotional and informational needs of patients and their families.
- Provide access to cutting-edge clinical trials.

The section maintains a longstanding commitment to training the hematology and oncology practitioners of the future—15 clinical fellows are continuously enrolled in our three-year Hematology and Oncology Fellowship Training Program, which is accredited by the Accreditation Council for Graduate Medical Education. The training program also participates in and is compliant with the Quality Oncology Practice Initiative, which is 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. Hematology and Oncology faculty members remain committed to the educational mission of the Wake Forest School of Medicine and play major teaching roles in the medical student curriculum and the internal medicine resident and physician assistant student training programs. They also serve as clinical and research mentors for a large number of medical students, residents, graduate students and post-doctoral fellows involved in cancer-related bench or clinical research activities.

As a group, Section of Hematology and Oncology faculty remain committed to providing state-of-the-art novel therapies to our patients. The clinical mission of the

CONTINUED

section is also supported by 25 physician assistants and nurse practitioners. Multiple faculty members serve in leadership positions within a variety of national oncology cooperative trial groups including:

- The Alliance for Clinical Trials in Oncology (a merging of the cooperative groups Cancer and Leukemia Group B, North Central Clinical Trials Group and American College of Surgeons Oncology Group).
- Adult Brain Tumor Consortium.
- The Wake Forest National Cancer Institute Community Oncology Research Program (NCORP) Research Base (NCORP is a National Cancer Institute-funded cooperative group headquartered at Wake Forest that develops and leads cancer prevention and control clinical trials and cancer care delivery research protocols within a network of community oncology practices across the country).

In 2018, section members enrolled approximately 576 patients on a full spectrum of treatment, non-treatment and ancillary clinical trials including phase I, II and III cooperative group, investigator-initiated and industry-sponsored studies.

As part of our educational mission, section faculty lead the Charles L. Spurr Piedmont Oncology Symposium, which was established over 30 years ago as the Piedmont Oncology Association by Dr. Spurr, the founding director of our Cancer Center. The symposium occurs semiannually and brings together regional and national experts to provide CME updates for hematology and oncology physicians, fellows, nurses and research staff throughout the Southeast. This symposium facilitates the dissemination of research to busy general oncologists in our region.

A number of faculty members also maintain active funded basic and translational science laboratories in addition to their clinical duties. The focus of these lab efforts includes:

- Developing new treatment strategies for patients with melanoma.
- Finding novel therapeutics for patients with acute leukemias, and understanding the mechanisms of resistance of current leukemia therapies.
- Evaluating novel therapeutics to prevent and treat graft-versus-host disease.

Hospital-based activity for the section continues to be centered around five inpatient services:

- Two general hematology and oncology services.
- A leukemia service.
- A blood and marrow transplant service.
- A hospitalist-run service that pairs hospitalists and hematologist/oncologist consultants to care for patients with medical complications of their malignant and hematologic disorders.

Hematology and Oncology faculty continuously staff a busy inpatient consult service. A smooth transition between inpatient and outpatient care is a major goal of our efforts to provide outstanding patient care.

In addition to the inpatient and outpatient activities at Wake Forest Baptist Medical Center in Winston-Salem, Hematology and Oncology faculty also maintain full-time, full-service practices in Clemmons, Elkin, High Point, Lexington, Mount Airy and Statesville.

A strong relationship exists with the Veterans Administration facilities in Kernersville and Salisbury. The oncology services for these facilities are primarily provided by cross-appointed faculty members and members of the Hematology and Oncology Section. These locations allow military service members and their dependents to receive cancer and blood-disorder care much closer to home than was previously possible.

In 2018, section members enrolled approximately 576 patients on a full spectrum of treatment, non-treatment and ancillary clinical trials including phase I, II and III cooperative group, investigator-initiated and industry-sponsored studies.

OPHTHALMOLOGY

The Wake Forest Baptist Health Eye Center and the Department of Ophthalmology offer comprehensive ophthalmic tumor diagnosis and treatment to people in western North Carolina, South Carolina, eastern Tennessee, southwestern Virginia and West Virginia. Primary and secondary neoplasms of the eye, ocular adnexa and orbit are evaluated and treated using state-of-the-art technology.

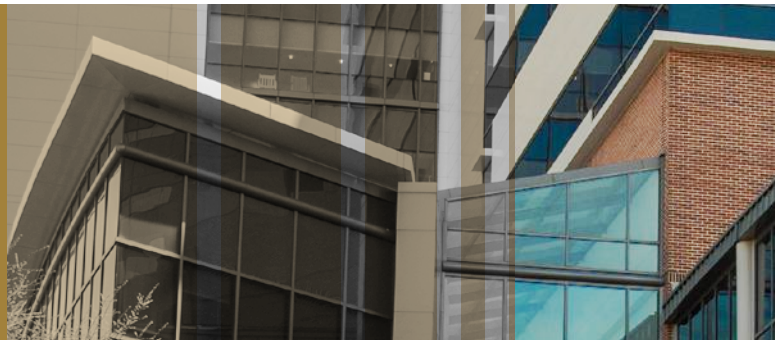
The most common primary malignant intraocular neoplasm in adults is choroidal melanoma. The incidence of choroidal melanoma is about six people per 1 million population, and 30 to 40 new patients with this diagnosis are evaluated and treated annually at the Eye Center. Large intraocular melanomas are often treated by enucleation or removal of the eye. Currently, most eyes can now be salvaged and treated by iodine 125 radioactive plaque application. This treatment is a combined surgical-radiation modality in which a radioactive implant is sutured to the eye wall overlying the tumor, delivering a dose of radiation to the melanoma in order to cause regression. This procedure has been performed at our institution for over 25 years and is performed by Craig Greven, MD, in conjunction with the Department of Radiation Oncology and Kathryn Greven, MD. Another technique, transpupillary thermotherapy, is a laser procedure that can be used to treat small melanomas of the choroid as well.

Tumors of the eyelids and orbit are managed by Alejandra Valenzuela, MD, of the orbital and oculoplastic surgery service. Lymphoma, a malignancy with frequent orbit involvement in adults, and rhabdomyosarcoma, the most common primary malignant orbital tumor in childhood, often present to the orbital service for evaluation. Our surgeons work closely with physicians in the departments of Neurosurgery, Otolaryngology and Hematology / Oncology to provide a multidisciplinary approach to tumors occurring in the sinuses and anterior cranial fossa that may encroach upon the eye and orbit. For tumors that occur on the eyelids and face, Dr. Valenzuela works closely with colleagues in the Department of Dermatology, who use techniques to minimize eyelid and facial tissue loss with tumor removal that, in turn, minimizes the complexity of oculofacial repairs enhancing functional and cosmetic outcomes.

Malignant tumors of the ocular surface are treated by Matthew Giegengack, MD, a corneal and external disease specialist. Malignancies of ocular surface may be treated surgically, with cryotherapy or with topical chemotherapy. Many of these management strategies have been developed at our Eye Center. Treatment regimens are tailored to the individual patient and may include one or all three modalities in an effort to preserve vision and limit complications of treatment. In addition to treatment of neoplasms, Dr. Giegengack is expert in ocular surface reconstruction.

Eye Center physicians use a multidisciplinary approach in the management of ocular and orbital neoplasms. The collaborative efforts of the Eye Center and other specialists at Wake Forest Baptist allow state-of-the-art oncologic treatment for patients.

There are three primary categories of tumors treated by Orthopaedic Oncology: soft-tissue tumors, bone tumors, and bone lesions.



ORTHOPAEDIC ONCOLOGY

Orthopaedic Oncology, part of the Cancer and Musculoskeletal service lines, is committed to the comprehensive and specialized care of patients with tumors.

Within these service lines, there are two fellowship-trained orthopaedic oncologists, Scott Wilson, MD, and Cynthia Emory, MD, MBA, who see adult and pediatric patients in the Comprehensive Cancer Center three days a week and can see new patients within 24 to 72 hours of referral. Colleagues in Medical Oncology, Radiation Oncology, Musculoskeletal Radiology and Pathology are immediately available for consultation and collaboration, contributing greatly to the team approach. Drs. Wilson and Emory facilitate the needs of patients, often collaborating with other surgical specialists at the medical center—including surgical oncologists, spine surgeons, pediatric surgeons, vascular surgeons and plastic surgeons—to maximize patient outcomes and the treatment of complex conditions.

There are three primary categories of tumors treated by Orthopaedic Oncology: benign and malignant soft-tissue tumors, benign and malignant bone tumors, and metastatic bone lesions.

Every year, more than 500 operations are performed for orthopaedic tumors or tumor-related conditions. Initiation of treatment typically starts with a biopsy to determine the type of tumor. Most biopsies are now performed as small needle biopsies in the office, avoiding the cost, risk, pain and inconvenience of an open biopsy in the operating room. Patients will often know their diagnosis on the same day as their office biopsy, facilitating rapid implementation of treatment.

New technologies are routinely embraced. The orthopaedic oncology surgeons use intraoperative CT and computer navigation for complex pelvic tumor surgery, improving the accuracy of identifying exactly where the tumor is in multiple dimensions. Limb-sparing operations, where resection of malignant bone tumors is followed by innovative reconstruction techniques—including modular endoprostheses, allograft utilization, and vascularized bone and tissue transfers—are often performed, allowing limbs to be saved that previously would have required amputation.

Patients with these tumors are routinely treated with limb salvage techniques due to advances in earlier detection and adjuvant treatment with chemotherapy and or radiotherapy. An extremely close working relationship with faculty from both Medical Oncology and Radiation Oncology has further developed our multidisciplinary team approach for the treatment of bone and soft-tissue sarcomas.

Benign lesions of bone and soft tissues are encountered more frequently than primary malignant tumors and account for many of the surgeries performed. However, many benign bone and soft-tissue lesions can be treated without surgery, with the diagnosis obtained by a variety of studies including 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 faculty members from the musculoskeletal radiology section of the Department of Radiology.

Because of the complexity of tumors, interdepartmental communication is critical. Being part of one Comprehensive Cancer Center ensures that we have seamless communication, not only to improve patient care but also to improve the patient experience. These collaborations also lead to innovative research with colleagues in several other departments and other academic centers. The Orthopaedic Oncology team recently completed a multicenter clinical trial that investigated a novel surgical treatment for metastatic tumors of the arm with an innovative and minimally invasive implant to improve patients' pain and function. This device was recently approved by the Food and Drug Administration, and this device has created a new and minimally invasive surgical option for patients that previously did not exist.

Regular orthopaedic oncology teaching conferences are part of the core curriculum to train the next generation of orthopaedic surgeons in addition to an annual orthopaedic oncology review course. Multidisciplinary conferences enable the Orthopaedic Oncology team to review the clinical findings in conjunction with the radiology and pathology of tumors with colleagues from other disciplines so that the team can make optimal treatment recommendations for patients.

PALLIATIVE / SUPPORTIVE CARE

SUPPORTIVE CARE OUTPATIENT ONCOLOGY CLINIC

Jennifer Gabbard, MD, and Carl Grey, MD, available on the third floor of the Comprehensive Cancer Center, assist patients in managing any uncontrolled symptom related to their cancer in general or related to side effects of treatment, such as pain, fatigue, nausea, shortness of breath, loss of appetite, anxiety, depression, neuropathy (nerve pain), etc., that can interfere with everyday functioning.

They also can address emotional issues, such as the stress of having a serious illness and loss of identity. The goal of the clinic is to provide a safe haven for patients and their families and to improve overall quality of life and function. The Supportive Care team is also available upon request for patients who are admitted to the hospital. Interested patients should speak with their primary oncologist for a referral.

Jennifer Gabbard, MD

Carl Grey, MD

PATIENT FAMILY ADVISORY COUNCIL

The Patient Family Advisory Council of the Comprehensive Cancer Center started in May 2013 and is dedicated to bringing patient volunteers and medical center staff together to enhance and promote our family-centered care philosophy.

Patients or family members share personal experiences and perspective with the goal of improving the overall care and experience. The team partners to improve policy and procedures, gives valuable input to various initiatives across Wake Forest Baptist Health and participates in giving back to others.

The council sponsors a Coffee Time meeting quarterly, alternating between inpatient and outpatient settings within the Cancer Center. This time is spent in dialogue with current patients and families sharing stories of past and present journeys. In addition, it is a time to learn about immediate concerns that need to be addressed. The team has provided feedback for the Quietness Campaign, participated in Just for You Day and Celebration for Life events, been involved in medical resident training, and implemented food delivery for Gamma Knife patients and families.

PEDIATRIC ONCOLOGY

The Pediatric Oncology Program sees approximately 70 new oncology patients per year. A dedicated hematology/oncology unit in Brenner Children's Hospital contains 16 private inpatient beds, six outpatient clinic rooms and a day hospital/observation area. Both the inpatient unit and outpatient clinic underwent renovations in 2018. Patients come 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.

Pediatric Oncology is staffed by seven pediatric hematologists/oncologists:

- Marcia Wofford, MD, associate dean for student affairs for Wake Forest School of Medicine, who continues to practice pediatric hematology/oncology.
- Tom McLean, MD, who is section chief of Pediatric Hematology/Oncology, medical director of the inpatient and outpatient pediatric hematology/oncology services, and mentor for the medical school's learning communities ("houses").
- Natalia Dixon, MD, who oversees 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.
- Kevin Buckley, MD, whose interests include general pediatric hematology/oncology, infections in immunocompromised populations and immune reconstitution after chemotherapy. In addition to pediatric hematology/oncology, he is also board certified in pediatric infectious diseases.
- Thomas Russell, MD, who practices general pediatric hematology/oncology and has expertise in pediatric sarcomas. He is also associate director of the Pediatrics Residency Program.
- David Kram, MD, who practices general pediatric hematology/oncology and has developed expertise in pediatric neuro-oncology, working in collaboration with members of the Cancer Center's Brain Tumor Center of Excellence.
- Cristina Fernandes, MD, who practices general pediatric hematology/oncology and has expertise in long-term follow-up of pediatric cancer survivors.

Pediatric Oncology has four pediatric nurse practitioners, two physician assistants, three doctors of pharmacy and two clinical research associates. There are 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, counselor, psychologist, child life specialist, art therapist and chaplain. Pediatric Oncology receives professional support from therapists, nutritionists and pediatric pharmacists.

Brenner Children's Hospital contains 16 private inpatient beds, six outpatient clinic rooms and a day hospital/observation area.

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.

The Children's Cancer Support Program (CCSP), staffed with a full-time counselor/director, focuses on patient education as well as many levels of individual and group, social and psychological support for on-therapy and off-therapy patients and families. The CCSP has a "Peds Pal" program that pairs interested medical students with specific patients for emotional and psychosocial support.

Pediatric Oncology is an active member of the Children's Oncology Group (COG). Pediatric Oncology also has active COG members from the disciplines of surgery, pathology, radiation oncology, radiology, nursing, pharmacy, cytogenetics and data management. The primary research conducted by Pediatric Hematology/Oncology is enrollment of patients into COG clinical trials, although section members are also involved in several investigator-initiated research projects, including an innovative male fertility program.

Over 50,000 prescriptions were dispensed in the Cancer Center community pharmacy in 2018, with over 5,758 prescriptions for oral chemotherapy.

PHARMACY

Oncology pharmacists serve an important role on the multidisciplinary team for cancer patients and provide medication management services across the care continuum. Pharmacists work closely with other health care professionals to develop institutional guidelines and assist with evidence-based decisions for treating patients. Pharmacy staff also assist patients through transitions of care, oral chemotherapy management, infusion therapy and self-care at home.

Advancements in cancer treatments have become more complex involving immunotherapy, targeted therapies and pharmacogenomic testing. Aggressive approvals of new oncologic drugs by the Food and Drug Administration in 2018 resulted in a total of 16 new therapies.

In the acute care setting, the pharmacy team completes admission medication reconciliation, patient education and discharge medication review and facilitates delivery of medications to the bedside. The pharmacy team is actively involved with the patient care team in ensuring that medications are appropriate—patient safety is a top priority.

In the ambulatory setting, the pharmacy team supports safe and effective processing of intravenous chemotherapy orders in eight infusion clinics. Using several important safety checks in verifying and compounding chemotherapy, the pharmacy team prepared over 49,500 patient-specific infusions during the 2018 fiscal year.

The Pharmacy Department is a global leader in adopting automated intravenous medication preparation for hazardous drugs. Using high-precision robotics helps ensure safety in preparation for patients and family members, and it protects employees. Over the last year, 85% of all chemotherapy was made on the chemotherapy robot at the Wake Forest Baptist Medical Center campus in Winston-Salem.

In addition to compounding services, clinical pharmacists are embedded in the ambulatory multispecialty medical oncology clinic to provide direct patient and provider education, monitor adherence, improve access to medications and serve as an authoritative resource on the optimal use of medications to treat cancer patients.

In the home setting, Wake Forest Baptist Health's community and specialty pharmacies provide home infusion therapies, drug-specific pharmaceutical care plans and routine patient follow-up. Pharmacists secure access to limited distribution oral oncology agents through Wake Forest Baptist Health-operated pharmacies. Over 50,000 prescriptions were dispensed in the Cancer Center community pharmacy in 2018, with over 5,758 prescriptions for oral chemotherapy.

The pharmacy team works proactively with insurance companies to minimize the time from physician prescribing to delivery to the patient. The pharmacy also has a dedicated team of pharmacy technicians that assists with prior authorizations and other medication-related needs and provides on-call services 24/7.

The Department of Pharmacy also fulfills an educational and research mission. The Investigational Drug Service provides oversight of approximately 250 investigational drug studies through protocol review and research committee participation. Pharmacy staff are responsible for preparing, verifying orders, dispensing and managing inventory of investigational medications to ensure compliance with research standards. The team works closely with research coordinators and the medical team to provide patient education and other pharmacy needs.

The postgraduate specialty pharmacy residency program expanded in 2018 and trains pharmacists to care for cancer patients. Pharmacists also educate medical students and residents through participation on the patient care team. The Department of Pharmacy works with three regional schools of pharmacy, and students are also incorporated into the pharmacy care model.

PHILANTHROPY

REMARKABLE BREAKTHROUGHS BEGIN WITH CONSIDERATE, CARING DONORS

The Comprehensive Cancer Center thrives on the generosity of individual donors whose foresight embraces possibilities for life-saving innovations. In addition to federal grants, foundation and industry support, philanthropists offering gifts large and small demonstrate a remarkable commitment to our mission.

In 2018, patients, families and others in this community contributed just over $4.3 million. Their support touches every area of the Cancer Center, from clinical care and patient support through the Cancer Patient Support Program to research. Many of the contributions made in 2018 fueled high-risk/high-reward oncology research.

One example of an inspiring partnership for giving is the one formed with Wake Forest University undergraduate students nearly 40 years ago. The students host a series of campus fundraising events honoring the memory and spirit of alumnus Brian Piccolo, and their proceeds support research at the Cancer Center. In 2018, the amount raised for the year topped $500,000 for the first time in the history of the Piccolo Fund.

Individual contributors also make a tremendous impact for the Cancer Center, where every dollar given touches the lives of patients and families. In 2018, Stephen Doughton Jr. and his family, including his parents Susan and Mark, hosted their 11th annual golf tournament. The event raised $35,000 for leukemia research, reflecting their commitment to the Cancer Center's Hematology and Oncology Program that saved Stephen's life following his diagnosis of chronic myelogenous leukemia in 2006.

"It is incredibly touching to see my patients like Stephen, now with children of their own, reaching out to be a part of finding cures for blood cancers," said Bayard Powell, MD, chief of the Section on Hematology and Oncology. "The Doughtons have been a driver of groundbreaking research. I really enjoy playing in their golf tournament every year– great people and a great cause."

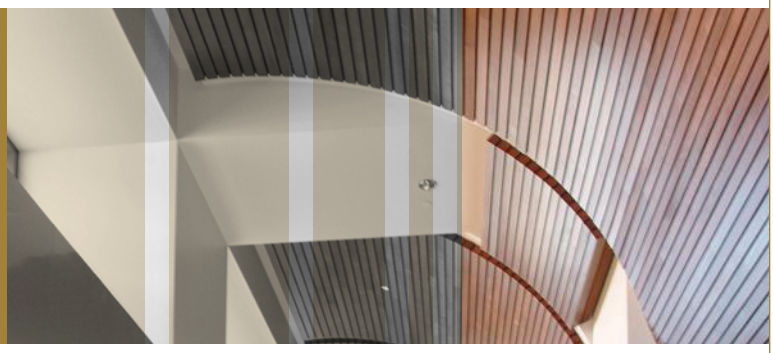
Sometimes philanthropy takes the form of a legacy or estate gift that endows a fund, as Vincent DeLuca of Bedford, Virginia, was moved to do. Vincent and his wife Elizabeth were so touched by her nursing care team that it inspired them to create the Elizabeth DeLuca Continuing Education Fund. Vincent endowed the fund through an estate gift honoring Elizabeth upon her passing. Elizabeth's legacy and this fund will ensure that nurses and nurse aides are continuously offered opportunities to advance themselves professionally and to learn leading-edge oncology patient care.

More modest gifts also contribute to patient aid and research, and pooled contributions can truly bring hope to patients and families. As Janet Stephens Forrest, MHA, FACHE, administrative director of the Oncology Service Line, expressed on learning of Vincent DeLuca's gift, "The philanthropic spirit that lives in many generous individuals makes Wake Forest Baptist Health the leading institution it is today."

For more information about how you can support Wake Forest Baptist Health's Comprehensive Cancer Center, please contact Allison Brouillette at 336-716-2275 or **abrouill@wakehealth.edu**.

Oncology nurses and staff

Clinical and basic research activities are funded by grants totaling $1.3 million from the NIH, NCI, foundations/societies and industry.



RADIATION ONCOLOGY

Radiation Oncology continues to grow as it strives to become a top 10 radiation oncology department nationally. There are currently 10 radiation oncologists, 10 radiation physicists and two radiation biologists in the department.

The department is located in the outpatient Comprehensive Cancer Center building and provides 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 and currently has seven serving. The ratio of applicants to positions is about 100 to one. 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 received a National Institutes of Health/National Cancer Institute T32 Training Grant in 2005 that ended in 2015. Four trainees have completed the program, which focuses on translational radiation oncology for post-doctoral fellows in clinical radiation oncology, biology and physics.

Clinical and basic research activities are funded by grants totaling $1.3 million from the NIH, NCI, foundations/societies and industry. 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. Researchers have partnered with NASA to investigate countermeasures for knee and hip joint degradation during spaceflight. 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. Our physics department has ongoing studies to provide efficacy testing of products designed to improve irradiation-induced cutaneous damage.

The Gamma Knife Stereotactic Radiosurgery Program was initiated in 1999 and continues to be one of the seven busiest in the United States, treating approximately 45 patients per month. The Stereotactic Body Radiotherapy Program is one of the select few in the nation, with nearly a decade of experience treating more than 5,500 patients in that time. Other 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.

Radiation Oncology has three affiliated practices in west central North Carolina that are staffed with physicians and physicists from Wake Forest Baptist Health: Hugh Chatham Memorial Hospital in Elkin, Wake Forest Baptist Health Lexington Medical Center Radiation Oncology and Iredell Memorial Hospital in Statesville. Iredell Memorial Hospital physicians joined our professional staff in February 2014, adding to the physics services previously provided. In total, Radiation Oncology and its affiliated practices treat more than 180 patients per day with radiation therapy, making this the largest provider of radiation therapy services in the Piedmont Triad and north central North Carolina.

In the past year, the main campus and regional practices consulted over 3,500 patients, saw 5,500 in follow-up and treated approximately 2,500 with external beam radiation therapy and approximately 1,500 with special procedures including Gamma Knife / Stereotactic radiosurgery, prostate and gynecologic brachytherapy, total body irradiation and image-guided radiation.

In summary, the Department of Radiation Oncology is well positioned locally, regionally, nationally and internationally as a leader in the treatment and research of radiation therapy for malignant and select benign diseases.

The SCTCT Program has performed transplants on more than 2,500 patients since the first transplant was performed in May 1990.

STEM CELL TRANSPLANT AND CELLULAR THERAPY PROGRAM (FORMERLY BLOOD AND MARROW TRANSPLANT PROGRAM)

In fall 2018, the Blood and Marrow Transplant Program was officially renamed the Stem Cell Transplant and Cellular Therapy Program (SCTCT). This name change reflects the addition of clinical trials to include immune cellular therapy, which is a type of cancer treatment that uses genetically modified cells from a patient's own immune system to find and attack cancer cells. Currently there are two clinical trials open using cellular therapy with the anticipation of other trials opening as well as offering cellular therapy commercially in 2019.

The SCTCT Program has performed transplants on more than 2,500 patients since the first transplant was performed in May 1990, and it serves patients from the Piedmont region and surrounding states. In 2018, 112 patients with a spectrum of hematologic malignancies and diseases of the bone marrow received autologous or allogeneic stem cell transplants. Patients also received cellular therapy interventions including donor lymphocyte infusions to counter relapsed disease and stem cell re-in¬fusions to treat graft rejection.

There has been tremendous growth in the Bone Marrow Transplant Program by offering transplants to a population of patients who previously would not have been able to proceed to transplant due to age or lack of a matched human leukocyte antigens (HLA) donor. The oldest transplant patient in 2018 was 78 years old, and this was accomplished through a partnership between the SCTCT Program and the Physical Medicine and Rehabilitation Clinic to identify the rehabilitation needs for patients older than 65 before and after the actual transplant. Patients who do not have an HLA-matched donor now may be able to proceed with transplant if a haplo-identical related donor is available.

Autologous transplants provided in the Outpatient Transplant Program expanded beyond myeloma to include patients with lymphoma. This would not have been possible without the partnership from nursing, pharmacy and the SCTCT nurse coordinators. Data shows that providing transplants in the outpatient setting improves quality of the experience and decreases the overall financial burden of care.

The SCTCT Program is made up of a multidisciplinary team that includes physicians, advanced practice providers, pharmacists, nurse coordinators, financial coordinators, psychologists, social workers, nurses, dieticians, physical therapists, the stem cell processing team, the apheresis team and the HLA tissue typing specialists. SCTCT physicians work with collaborators throughout the institution to provide clinical trials to optimize transplant outcomes through post-transplant therapies to suppress disease recurrence, develop novel therapeutics for relapsed and refractory hematologic malignancies, identify protocols to treat graft versus host disease, create protocols to measure treatment toxicities and develop interventions to mitigate the toxic effects of chemotherapy.

The SCTCT Program is accredited by the Foundation of Accreditation of Cellular Therapy and maintains a quality management plan that monitors and measures all aspects of bone and marrow transplant. Strong performance and quality metrics have allowed the SCTCT Program to be included in the excellence networks with many of the larger insurer groups. The quality initiatives include building and maintaining community partnerships throughout the institution and the state; following SCTCT survivor health concerns; identifying outcome predictors to assess fitness for transplant in patients older than 65; and patient satisfaction and medication adherence through enhanced education before the transplant, during the transplant and before discharge.

CANCER SECOND OPINION PROGRAM

The Cancer Center Second Opinion Program was launched February 2017 under the direction of the Oncology Service Line. The mission of the program is to create an exceptional patient experience by providing patients diagnosed outside our facility/affiliates with a complete and expedited second opinion; to empower patients with knowledge of their condition and treatment options; and to elicit comprehensive clinical recommendations that lead to the highest quality and timely treatment options.

The Second Opinion Program team consists of a clinical navigator, patient advocate and medical records specialist. This team provides initial intake, ensuring medical records are gathered and reviewed to provide a "concierge" service for the patient. In conjunction with the multidisciplinary cancer specialists and their clinic staff, the patient is provided exceptional service, ending with a personalized care management plan.

Since the program's launch, 268 patients have been enrolled and 233 completed full evaluations. Of these patients, 52% have chosen to stay for all or a portion of their care at our Cancer Center. Among second-opinion patients, 4% have had a diagnosis change while coming through this program, and 22% of patients have had a different treatment recommendation compared to their outside provider.

It remains evident that the Cancer Second Opinion Program continues to succeed in providing patients an exceptional service while pulling together our great resources at the Cancer Center.

Programs and services are integrated into the ongoing care of patients in order to make professional assistance available easily and in concert with medical care.

SUPPORTIVE CARE AND SURVIVORSHIP SERVICES

The Comprehensive Cancer Center at Wake Forest Baptist Health provides programs and services that are integrated into the ongoing care of patients in order to make professional assistance available easily and in concert with medical care. For example, all patients are screened periodically for distress when they are seen by their cancer health care provider. The integration of personalized, patient-centered care at the point of delivery of medical services is a unique aspect of care at our Cancer Center.

The Psychosocial Oncology and Cancer Patient Support programs were designed to address the emotional distress and psychosocial needs of patients and family members. The mission of these programs is to reduce suffering and enhance quality of life of patients as well as caregivers during the diagnosis, treatment and survivorship process, from the beginning of care throughout the life span. These programs are woven into a broader network of professional services that are part of the supportive care and survivorship services network for our health system and community. Research has shown that patients who access three or more supportive care services are likely to have increased satisfaction and better overall outcomes.

Access to such services is readily available to all of our patients treated in medical oncology, surgical oncology and radiation oncology. Many studies have reported the efficacy of psychosocial interventions and the importance of quality of life to patients. One example of an innovative program integrated into the care of our patients is the interactive group drumming intervention study conducted by Ruth Moskop, PhD, and John Beck, a faculty member with the

CONTINUED

University of North Carolina School of the Arts and Wake Forest University. They are providing a directed study on the benefits of therapeutic drumming on stem cell transplant patients as well as an informal drumming circle for all patients and family members.

The Psychosocial Oncology and Cancer Patient Support programs are staffed by approximately 25 volunteers and six professionals trained in counseling, administrative support and therapeutic music. We also have massage therapy, musicians, tai chi and yoga available for patients and families. Most of our volunteers are either veteran cancer patients themselves or have been caregivers for patients over the years. They bring deep listening and empathy that have been finely tuned through their own experience. Volunteers provide hospitality, empathic listening and a welcome presence for all patients attending our cancer center. One of our volunteers, paraphrasing Mother Teresa, commented, "I may not be able to do great things as a volunteer, but I can do small things with great love." Both professional staff and volunteers perform a very important navigation function by helping to connect patients and families to needed services.

A hallmark of our program is the integration of our services into the ongoing medical care of patients. For example, we can see patients for counseling or other services such as massage while they are being seen for medical treatment. It is not uncommon for our staff to be counseling with a patient during their chemotherapy treatment. This reduces the necessity for travel and overall cost to the patient for their care. This dimension of integrated psychosocial care is rare in cancer care facilities given the logistical challenge to doing so. Fortunately, we are supported by an annual fundraiser called Winterlark, private philanthropy and institutional funds to provide these services to patients with cancer and caregivers without charge.

The Psychosocial Oncology and Cancer Patient Support programs provide counseling services, patient education, patient advocacy, educational/support groups, teaching, financial aid and research activities nested within the Section of Hematology and Oncology in the Comprehensive Cancer Center. We also are able to provide specialized cancer recovery and survivorship-skills training for patients.

The psychosocial care of distressed patients is linked to important outcomes. For example, successful treatment of depression can enhance recovery as well as reduce the cost of treating patients.

The supportive care and survivorship network within Wake Forest Baptist provides many other services, such as massage therapy, healing touch, Reiki (a form of alternative medicine in which the practitioner transfers "universal energy" to the patient to encourage healing), therapeutic music, recreation therapy, supportive chaplain services, palliative care, social work services, nutritional guidance and patient financial assistance. We also have identified additional services in the community and in our own integrative medicine clinic (for example, acupuncture) that can be helpful to patients. Supportive care and survivorship services are made available by a host of professionals within our institution (see below for details).

The Psychosocial Oncology and Cancer Patient Support programs facilitate many of these professional services during the course of patient care. While a significant proportion of cancer patients may need professional psychosocial care, all of our patients can benefit from kindness, deep listening and compassion.

The Psychosocial Oncology and Cancer Patient Support programs promote these qualities in all of our health care providers and support staff. We provide the type of care that facilitates physical, emotional and spiritual healing in patients. We know that the quality of life of our patients can be enhanced by timely and early interventions to help patients maintain their lifestyle even while undergoing life-changing therapies in a cancer center. As one patient suggested, "I'm not going to give up my life just because I'm in treatment. I intend to live. I intend not only to survive but to thrive through my treatment with all the help I can get."

SUPPORTIVE CARE AND SURVIVORSHIP SERVICES

- **Gentle Yoga**: These classes are open to cancer patients and survivors and their close family members or friends. Mats and equipment are available. Classes are held in the Meditation Room, second floor, outpatient Cancer Center. Individual sessions may be set up free of charge.
- **Guided Imagery and Hypnosis**: Suggestive guidance in a trance state helps patients manage pain and nausea and improve coping.
- **Massage Therapy**: Eight types of massage are offered in the Cancer Center, at the Sticht Center and at Medical Plaza – Miller.
- **Meditation Room**: Located on the second floor of the outpatient Cancer Center, this room is set aside for quiet meditation or prayer.
- **Mindful-based Stress Reduction**: Learn practices to cultivate calmness and relaxation.
- **Therapeutic Music**: Light relaxing music is offered through a trained harpist and a group of volunteer musicians.

SUPPORTIVE SERVICES

- **Genetic Counseling**: Conducts risk assessment for hereditary cancer syndromes.
- **Nutrition Counseling and Education**: Available at the outpatient Cancer Center to help manage treatment-related nutrition side effects such as weight loss, nausea, sore or dry mouth, constipation or diarrhea, taste changes and difficulty swallowing. Symptoms can often be minimized with some dietary changes.
- **Palliative Care**: Enhances quality of life, and prevents and relieves suffering of patients with serious and/or terminal illness.
- **Pastoral Care**: Chaplains are available for individual consultation, prayer and planning of advance directives. A chaplain leads a brief meditation on the first Wednesday of every month at 1:30 pm in the Meditation Room on the second floor of the Cancer Center. Additionally, services are held in Davis Memorial Chapel on Sunday at 10 am and Monday, Wednesday and Friday at noon.
- **Conversations of Love (Advance Directive Education)**: In an informal setting, one of Wake Forest Baptist's chaplains leads discussions about how individual values shape goals for medical care during times of illness, and how advance care planning can assist in ensuring that these goals be honored during moments of serious illness. Through proactive conversations with loved ones, family members and friends can provide a gift of love through understanding the goals of care.
- P**atient Financial Resources Services**: Resource recovery specialists provide financial relief to patients and families who do not have the resources to pay for health care services. These specialists will assist patients and families in establishing payment plans, pursuing financial assistance from Medicaid and agency programs, and applying for charity care and other discounts.
- **Patient Advocate**: Cancer Services Inc. assists patients and families in addressing the financial and social challenges that people with cancer often encounter.
- **Physical Therapy (PT) and Occupational Therapy (OT)**: PT rehabilitates gross motor skills. OT improves specific movements and tasks. Lymphedema management helps reduce enlargement, fullness and achiness after a lumpectomy.
- **Social Work Services**: Located on the third floor of the outpatient Cancer Center, Social Work Services can assist with finding financial resources, coping with illness, caregiver stress, working with the medical team to set up and coordinate home care, ordering medical equipment, and general information and referral.

SUPPORTIVE CARE AND SURVIVORSHIP SERVICES – 2018 CLINICAL TRACKING

CLINICAL CONTACTS	ANNUAL TOTAL
Support Room Hem/Onc (# pts)	567 contacts
Support Room Radiation (# pts)	327 contacts
Patient/Family Contact: (Unscheduled: Clinic/Hospital)	98 contacts
Outpatient Counseling Session (# pts)	834 contacts
HOA, HOB, HOC (# pts)	256 contacts
Solid Tumor: Inpt Interview/Ind Counseling (#pts)	4 contacts
Leukemia: Inpt Interview / Ind Counseling (#pts)	636 contacts
BMT Assessment (#pts)	187 contacts
BMT: Inpt Interview / Ind Counseling (#pts)	158 contacts
Surgical Onc: Inpt Interview / Ind Counseling (#pts)	208 contacts
GynOnc: Inpt Interview / Ind Counseling (#pts)	8 contacts
RadOnc: Inpt Interview / Ind Counseling (#pts)	1 contact
Crisis Intervention (#pts)	23 contacts
Student Intern Patient Contacts (#pts)	864 contacts
Student Intern Hours	928 hours
Phone Contact (Pt-Related)	1130 contacts
Financial Aid to Patients	706 contacts

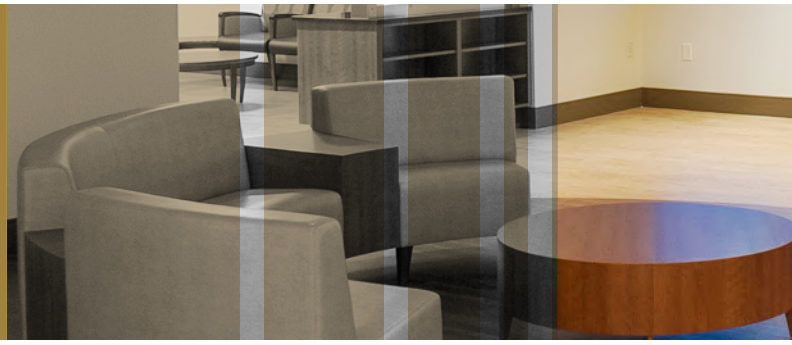
SUPPORT GROUPS	
Coffee & Conversation for Caregivers	67 attended
CPSP Welcome Hour	87 attended
AYA Support Group	27 contacts
Seasons of Survival	16 contacts
TOTAL OUTPATIENT CONTACTS	**1,119 contacts**
TOTAL INPATIENT CONSULTS	**1,271 contacts**

SUPPORTIVE CARE SERVICES	
Harp Therapy (#pts)	208 contacts
Mind-Body Classes (i.e., tai chi and yoga)	245 contacts
Massage (#pts)	757 contacts
Drum Circle (#pts)	160 contacts
Total Hours of Live Music	263 hours
TOTAL SUPPORTIVE CARE CONTACTS	**1,370 contacts**

VOLUNTEER SERVICES	
Support Room Hem/Onc	27,189 contacts
Support Room Radiation	11,813 contacts
Resource Room	159 contacts
Total Hours	3,142 hours
TOTAL CONTACTS	**39,161 contacts**

MEETINGS / EVENTS	
Volunteer Education / Meetings	3 volunteers
Community Liaison / Meetings	20 liaisons
Community Presentation (including support groups)	32 presentations
Teaching Students / Residents / Fellows on-campus	48 presentations
Health Team Meetings / Rounds	14 meetings
Committee Meetings (medical center)	57 meetings
Medical Center Staff Support / Consult with Interdisciplinary Staff	103 events
Staff Development (education conferences / staff meetings)	86 events

1,491 major operative cases and more than 8,472 outpatient visits in 2018.



SURGICAL ONCOLOGY

Surgical Oncology is a key component of the Comprehensive Cancer Center. It is extensively involved in multimodality consultations for the care of patients with diseases of the breast, endocrine tumors, melanoma and sarcoma as well as the full spectrum of gastrointestinal malignancy from esophagus to anus. The service is very busy, with 1,491 major operative cases and more than 8,472 outpatient visits in 2018.

The clinical service includes eight fellowship-trained surgical oncologists, two surgical oncology fellows, four surgical house officers, two to three medical students, five advanced practitioners and four clinic nurses. Edward Levine, MD (chief of the service), Russell Howerton, MD, Perry Shen, MD, Marissa Howard-McNatt, MD, Kostas Votanopoulos, MD, PhD, Jennifer Cannon, MD, Clancy Clark, MD, and Akiko Chiba, MD, serve as the clinical faculty. Specialized advanced practitioners Shanna Steelman, NP, and Renee Haynes, NP support the breast care clinic, with surgical oncology care support from Nathan Ogilvie, PA (inpatient), and Stephanie Staley, NP (outpatient).

CLINICAL INITIATIVES

The multimodality Breast Care Clinic (BCC) was founded in January 2000 and is an integral part of Surgical Oncology. The BCC evaluates about 125 breast patients every week, with 379 new breast cancer cases evaluated in 2018. The BCC is staffed by surgical oncology, medical oncology, radiation oncology, advanced nursing practitioners, plastic surgeons, research nurses, clinic navigators and genetic counselors.

The BCC was among the first to be recognized by and continues to be certified by the National Accreditation Program for Breast Centers, and accreditation was renewed for three years in 2018. The BCC facilitates complex multimodality care in a setting that fosters participation in state-of-the-art research trials. Dr. Howard-McNatt is the director of the clinic and supervised an expansion of the clinic to the Clemmons office. Last year, we expanded our faculty with the addition of Dr. Chiba to the breast service with Drs. Howard-McNatt and Levine. The clinical work in breast cancer works hand in hand with the research team in the BCC.

In 2018, the BCC cared for 356 cases compared to 365 new breast cancer patients in 2016; 350 in 2015; 347 in 2014; 277 in 2013; 235 in 2012; 252 in 2011; 184 in 2010; and 211 in 2009. This represents a nearly two-fold increase in new breast cancer cases over the past decade. The BCC enjoys one of the best payor mixes in the institution, and competes well within Forsyth County for patients. The clinic in Clemmons is doing well and is predominantly for benign breast disease and survivorship; the clinic is nearly full in its seventh year of operation. Within the Cancer Center, the breast surgery effort strongly supports the breast cancer disease-oriented team, which Dr. Howard-McNatt co-chairs.

Dr. Howard-McNatt updated the biopsy technique for non-palpable breast tumors. The Savi System (SAVI SCOUT®) surgical guidance system uses non-radioactive, electromagnetic wave technology to detect a reflector that is placed in the target tissue days to weeks before surgery. Since we adopted the system in February 2018, we have performed 122 Savi localization procedures, and the overall number of image guided lumpectomies has increased from 181 in 2017 to 219 as of November 2018. The Savi system enables patients to be the first case in an operating room (7 am) since the patient can have the Savi placed weeks in advance of the surgery and in lieu of starting with a wire localization procedure. This is more convenient for patients and saves both time and money as the operating team is not waiting for a patient to arrive from needle localization in mammography. This new technology is the first upgrade for localizing breast lesions in decades. This also will enable breast cancer surgeries to be performed off campus.

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, which could help define the patients who achieve a complete response to chemotherapy and radiation. The results of these research efforts have been

published and are widely cited, and our multimodality team serves as a regional reference clinic for care of patients with cancer of the esophagus. Newer approaches to therapy, including minimally invasive esophagectomy, are now part of the standard care for these patients. The team includes not only surgical oncology but radiation and medical oncology, as well as gastroenterologists with specific experience and expertise in esophageal cancer. These efforts are supported by an advanced nurse coordinator.

HepatoPancreaticoBiliary (HPB) surgery, which relates to complex liver and pancreas surgery, is led by Dr. Shen with Drs. Clark and Howerton. Dr. Shen heads a clinical team supported by a weekly CME-accredited HPB multimodality conference. The group is now working on minimally invasive approaches to hepatic resection, including several successful robotic resections. This year, Dr. Shen introduced a new therapy for pancreatic (and other) cancers: IRreversible Electroporation (IRE). IRE allows for treatment of locally advanced tumors that were not previously operable, and we are among the first centers to offer this treatment. 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. Extensive experience with newer approaches to pancreatic tumors and disease has led to streamlined care plans for patients as well as research initiatives for pancreatic patients.

The HPB service has continued to expand and lead the region for complex consultations. Last year, clinic time was added in Greensboro for Drs. Shen and Clark to further expand the HPB efforts. The HPB surgery program performed a total of 125 cases in 2018. The following is the breakdown of cases and mortality/LOS outcomes:

- Hepatobiliary procedures: 68 (90-day mortality 2.9%), 32% of cases were performed using minimally invasive techniques (laparoscopic or robotic) with a median LOS of four days.
- Pancreatic procedures: 57 (90-day mortality 1.8%), 26 Whipple operations with no deaths. 12% of cases were performed using minimally invasive techniques (laparoscopic or robotic) with a median LOS of seven days.

These mortality outcomes are comparable to the best cancer centers in the United States. The robotic surgery program continues to grow with Dr. Shen recently performing his 100th robotic procedure.

Dr. Votanopoulos continues his efforts to bring surgical oncology expertise beyond the main campus. He leads the general surgery effort at the Veterans Administration Hospital in Salisbury, while maintaining an increasingly active practice at the Cancer Center on the main campus. He has a broad-based surgical oncology practice and has been increasingly active in research. Dr. Votanopoulos has initiated research into using organoids grown from fresh harvested tumor tissue in collaboration with the regenerative medicine team. This has led to grant applications with major presentations/publications in 2018. The potential of this approach resulted in his being honored with a Dean's Hero Award with research funding support.

Dr. Cannon brings additional expertise in the care of endocrine tumors to the Surgical Oncology team. She has already expanded the capabilities for treatment of the full spectrum of endocrine tumors of the thyroid and parathyroid. She has also initiated minimally invasive adrenal gland (adrenalectomy) procedures.

Our Hyperthermic IntraPeritoneal Chemotherapy (HIPEC) Program, led by Dr. Levine, celebrated its 27th anniversary on Dec. 30. Our total experience (now 1,561 cases in 1,401 patients) is truly first class. The program continues to flourish despite several new centers in the region and many more nationally now competing with us. Drs. Levine, Shen and Votanopoulos performed 85 HIPEC cases in 2018. All cases are followed in our prospective data registry, which is one of the largest experiences with this complex modality worldwide. The HIPEC team, led by Dr. Levine and supported by MD Anderson and the University of Pittsburgh, published the first randomized trial for cancer of the appendix (for any stage of disease) this year: "A Multicenter Randomized Trial to Evaluate Hematologic Toxicities after HIPEC with Oxaliplatin or Mitomycin in Patients with Appendiceal Tumors," *Journal of the American College of Surgeons*, 2018; 226: 434-445.

This HIPEC program continues to draw patients from around the country and is linked to a variety of research initiatives, such as the largest quality-of-life study for HIPEC patients. Dr. Levine was awarded a research grant from the Smith Family Foundation to continue to lead the field with groundbreaking research into the genetics of cancer of the appendix, which has led to the first whole exome sequencing of the DNA from these unusual tumors.

CONTINUED

EDUCATION

Surgical Oncology faculty members are dedicated to teaching the next generation of physicians to care for those with oncologic diseases. Trainees on service are included as part of the team bringing clinical expertise to patients who require cancer staging, treatment and follow-up due to malignancy.

Extensive clinical experience in a tertiary referral setting provides the surgical know-how for dealing with rare and unusual neoplasms. Fellows, house staff, and the medical and physician assistant students on the service are extensively involved in multimodality consultations for the care of cancer patients with diseases of the breast, endocrine tumors, melanoma and sarcoma as well as the full spectrum of gastrointestinal malignancies, from esophagus to anus. This includes preoperative and postoperative care in addition to operative management. The Breast Cancer Center also hosts house officers from Gynecology, Internal Medicine and Family Medicine.

A weekly multidisciplinary/multimodality surgical oncology conference, led by Dr. Levine, meets Fridays at noon in the Cancer Center and serves as the CME-accredited "tumor board" for the institution. This is supplemented by a CME-accredited HPB tumor conference meeting, led by Dr. Shen, each Tuesday at noon. On Oct. 12, 2018, Surgical Oncology sponsored its 13th annual breast cancer symposium, led by Dr. Howard-McNatt.

Our 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. All of the fellows who have completed the program have obtained faculty positions, at Georgetown, Johns Hopkins (two), Louisiana State University, Eastern Virginia University, the Medical College of Wisconsin and Hoekstra University. The American Board of Surgery created the certification program in Surgical Oncology in 2013. Our application to the Board of Surgery for accreditation was approved in 2014, and our fellowship is now fully accredited. It is one of only 25 programs in North America to be so honored. In 2017, we graduated/placed our seventh Surgical Oncology fellow (Michael Kuncewitch, MD) and recruited of our ninth and 10th Surgical Oncology fellows (Omeed Moaven, MD, and Chris Mangieri, MD).

RESEARCH

Surgical Oncology actively supports research in basic science, translational science and clinical arenas. The surgical oncology research program led to 66 authorships for faculty in 51 individual peer-reviewed manuscripts in 2018. These publications span the gamut from basic science to translational and clinical issues relevant to several tumors. Further, our efforts to make research available to trainees has borne fruit, as nine residents and fellows were co-authors on our manuscripts in 2018. Our clinical research was highlighted by a publication, coauthored by Dr. Levine, in the *New England Journal of Medicine* on the practice changing MSLT-2 trial, which showed that complete lymphadenectomy is not routinely required for melanoma metastatic to sentinel lymph nodes.

Surgical Oncology also collaborates with investigators in the Alliance group, as well as other members of the Comprehensive Cancer Center, including Public Health Sciences, Exercise Physiology, Gastroenterology, Cancer Biology, Radiology, Nuclear Medicine, Medical Oncology and Radiation Oncology. Clinical trials in association with the NRG are coordinated by Dr. Levine, who serves as the principal investigator.

In 2018, Surgical Oncology enrolled nearly 150 patients on treatment protocols and 2,106 on tissue-procurement studies. The surgical oncology faculty had a total of 21 research protocols open during 2018. Currently, the clinical and research faculty of Surgical Oncology holds more than $500,000 in active extramural funding, as well as receiving significant philanthropic assets for cancer research.

Translational research projects evaluating genetic and proteomic changes associated with cancer of the breast, GI and hepatobiliary malignancy, as well as peritoneal carcinomatosis, are ongoing. Dr. Levine continued studies of the genetics of cancer of the appendix, and published new data on genomic signatures predictive of outcomes for this disease. Dr. Votanopoulos continues to be prolific in publication of manuscripts related to gastric and appendiceal cancer as well as HIPEC procedures. His published manuscript on organoids grown from tumors (removed by our team) was honored by a Dean's Hero award this year. It was a first-in-class manuscript on the growth of organoids with immune function. Drs. Shen and Clark have a focused clinical effort in pancreatic and hepatobiliary malignancy evaluating innovative ways to treat primary and metastatic liver tumors. Dr. Clark has also initiated innovative research evaluating Fitbit data for predicting outcomes for older patients undergoing major cancer surgery. Drs. Howard-McNatt and Chiba both published research this year evaluating breast cancer care and treatment.

The surgical oncology research team recently merged with the Comprehensive Cancer Center research program entirely. Drs. Shen, Howard-McNatt and Votanopoulos are co-leaders of the GI, Breast and Melanoma DOT's, respectively. Dr. Levine remains senior advisor to the Cancer Center director, institutional principal investigator for the NRG cooperative oncology group, and director of the Tumor Tissue Pathology Resource lab (Tumor Bank).

CANCER SURVIVORSHIP PROGRAM

Wake Forest Baptist Medical Center is strategically expanding its overall Cancer Survivorship Program.

In 2018, we began to broaden and intensify our focus on cancer survivors. Stacy Wentworth, MD, joined our faculty as medical director of cancer survivorship. She will be working with teams already taking care of our cancer survivors to enhance and grow our survivorship services.

This year, plans were approved for a dedicated Cancer Survivorship Clinic located on the second floor of the Comprehensive Cancer Center. Expected to open in spring 2019, this clinic will serve as a hub for cancer survivorship services and a connection point for cancer survivorship offerings across the system and in the community. Weekly disease-focused clinics staffed by advance practice providers from the patient's medical care team, as well as volunteers and members of the Cancer Patient Support team, will focus on connecting our cancer survivors to resources to aid them on their journey to wellness after treatment.

This year, survivorship was also added to the care of early stage lung cancer patients. This pilot program targeted patients receiving surgery or radiation for their lung cancer. It adds to the growing number of disease-specific survivorship clinics that we offer including breast, lymphoma, bone marrow transplant and more.

The Urologic Oncology program brings together clinicians from multiple departments in the Medical Center to provide multidisciplinary cancer care and carry out innovative clinical trials to improve care of patients with genitourinary malignancies.

UROLOGIC ONCOLOGY

The Urologic Oncology Program within the Comprehensive Cancer Center brings together clinicians from multiple departments within Wake Forest Baptist Health to facilitate the provision of multidisciplinary cancer care to carry out innovative clinical trials to improve the care of patients with genitourinary malignancies.

Through the activities of the genitourinary oncology group, special expertise is directed toward the diagnosis, staging, treatment and follow-up of patients with tumors of the bladder, kidney/ureter, prostate, testis and other genitourinary sites. The latest techniques including laparoscopic and robotic approaches are offered to patients.

The genitourinary clinical trial group established about five years ago consists of basic scientists, urological, medical and radiation oncologists. They oversee the success of numerous in-house, industry and cooperative oncology group trials through Alliance, the National Institute of Health and the Radiation Therapy Oncology Group. Through these mechanisms, patients have access to clinical trials for most genitourinary malignancies that incorporate multiple modalities of treatment to produce the best possible treatment outcome. Between 2010 and 2018, accrual to genitourinary oncology clinical trials has more than tripled. In addition to the clinical activities noted above, the urologic group also supports, through additional collaborations, significant translational and basic research efforts in Urologic Oncology.

The Section of Urologic Oncology, part of the Department of Urology, includes Ronald Davis, MD, MBA, Ashok Hemal, MD, Ram A. Pathak, MD, and Dan Rukstalis, MD. The group works closely with rest of the genitourinary oncology team, including Rhonda Biting, MD, Michael Goodman, MD, and Christopher Thomas, MD, from Medical Oncology, and Bart Frizzell, MD, from Radiation Oncology besides a team from basic research.

CONTINUED

DEPARTMENTAL INITIATIVES

Upper Tract Urothelial Carcinoma

Urothelial carcinoma of the ureter can be a potentially difficult diagnosis with a wide variety of treatments offered. Both Drs. Hemal and Pathak offer minimally invasive alternatives to the traditional open surgery. They also have co-authored several publications and have given both national and international talks about the subject. The procedure, as it stands today, was pioneered at Wake Forest Baptist by Dr. Hemal and has since been refined with the newer generations of the robot in his recent publication (Hemal AK *J Endourol* 2018; 32:133-138). The key to the success of robotic surgery lies in the management of the distal ureter as mentioned in their recent publication (Pathak RA, Hemal AK. *Eur Urol Focus* 2018; 4:657-661). In their meta-analysis, a total of 204 patients underwent robot-assisted radical nephroureterectomy with a mean operating time of 229.7 minutes, mean blood loss of 189 ml, and mean length of stay of 3.65 days. They have also developed a step-by-step overview of the procedure and disseminated this knowledge at national and international conferences and were featured in the February 2019 issue of *AUA Newsmagazine* of the American Urological Association.

Prostate Cancer

Prostate cancer, from localized to metastatic, is treated by the team of urologists, radiation oncologists and dedicated genitourinary oncologists. Drs. Hemal, Pathak and Rukstalis offer surgical extirpative therapy for prostate cancer.

Drs. Hemal and Pathak have pioneered a new treatment for low-risk, localized prostate cancer, robotic total prostatectomy, which involves removal of the totality of prostate tissue, sparing the seminal vesicles and vas deferens and preserving erectile function, antegrade ejaculation and urinary continence.

Drs. Pathak and Hemal have presented their data regarding robotic prostatectomy across the Centers for Disease Control's classes of obesity at the Southeast Section AUA findings that surgeon experience is critical in managing patients with difficult anatomy. Patients had similar perioperative parameters with no increase in complications across all obesity classes.

Drs. Pathak and Hemal have also recently developed an individualized, patient-specific treatment strategy to approach lymph node dissection in patients with prostate cancer. In their manuscript, they offer lymph node dissection to certain highly suspicious, low-risk and all intermediate and high-risk patients (Pathak RA, Hemal AK *Transl Androl Urol* 2018; 7:S498-504). The use of fluorescence enhancement during lymph node dissection greatly improves lymph node positivity rate and is laying the groundwork for potential sentinel lymph node biopsy. They have showcased their work in video format (Pathak RA, Hemal AK J*ournal of Endourology: Part B: Videourology 2018*).

Diagnosis of prostate cancer can be greatly enhanced by improvement in imaging techniques. Dr. Rukstalis investigated newer imaging modalities for the detection of prostate cancer. He served as co-author of the AUA policy statement on the use of multiparametric magnetic resonance imaging (mpMRI) in the diagnosis, staging and management of prostate cancer. Improved imaging capability such as MRI has made a difference in prostate cancer detection and treatment.

The policy statement concludes that information obtained by mpMRI "represents a significant addition to traditional imaging techniques for the management of prostate cancer. mpMRI has the potential to improve the timely identification of clinically significant prostate cancer. Enhanced targeting approaches has the potential to reduce the cost of care through the reduction of unnecessary or inaccurate prostate biopsy procedures."

Dr. Rukstalis also offers focal cryoablation for appropriately selected patients and has given talks at various meetings regarding the role of ultrasound and early detection of prostate cancer.

Kidney Cancer

Kidney cancer has been a strong focus and initiative of the department this year. Localized kidney cancer is best managed by surgical therapy. The department offers minimally invasive options including robot-assisted partial nephrectomy by Drs. Hemal, Pathak and Rukstalis and laparoscopic cryoablation by Dr. Rukstalis. Depending on the mass size and morphology, certain treatments are preferred.

Dr. Hemal has published extensively this year on the surgical management of renal masses via partial nephrectomy. The purpose of partial nephrectomy, otherwise known as nephron-sparing surgery, is to save the kidney and remove the cancerous mass. Dr. Hemal and his team have developed a nomogram to predict the loss in nephrons after partial nephrectomy by using various patient parameters (Hemal AK *Eur Urol* 2018; 74:833-839).

Moreover, in patients with a solitary kidney, nephron-sparing surgery is paramount as it prevents patients from needing dialysis. Dr. Hemal was part of a multi-institutional publication describing the perioperative and functional outcomes after partial nephrectomy in patients with a solitary kidney. They found that when patients underwent partial nephrectomy, there was no significant compromise to renal function up to two years post-surgery (Hemal AK *J Robot Surg* 2018; doi:10.1007/s11701-018-0883-5).

Critical to performing a partial nephrectomy is the temporary cessation of blood flow to the kidney to allow

for safe excision of the renal malignancy. Dr. Hemal and team investigated this further by examining the warm ischemia time (WIT) among 600 patients undergoing robotic partial nephrectomy. They found that extended WIT was associated with poorer outcomes, indicating the importance of surgeon and hospital experience to limit the WIT to less than 20 minutes (Hemal *Urology* 2018; 120:156-161).

As part of another multi-institutional study, Dr. Hemal and team investigated robotic partial nephrectomy in patients with large renal masses and found that for T2a tumors (tumors greater than 7 cm but less than 10 cm), robotic partial nephrectomy represents a feasible operation with a high chance of success in appropriately selected patients (Hemal AK *BJU Int* 2018; 121:908-915).

Bladder Cancer

Bladder cancer is the fourth most common cancer in men and fifth most common malignancy overall. In the developed world, the vast majority of bladder cancer is urothelial carcinoma. Nonmuscle invasive bladder cancer (NMIBC) is of a lower stage and is treated by trans-urethral resection. If multiple and/or high-grade tumors are identified, resection may be followed by a six-week course of intravesical Bacillus Calmette-Guerin (BCG). This treatment is performed using live bacillus bacteria that have been weakened. The bacteria are instilled within the bladder. The temporary presence of the bacteria stimulates the patient's immune system to fight the bladder cancer. This is the most effective therapy for NMIBC, with response rates reported as high as 75% since its first documented use over 40 years ago. Typically, one-third of patients will fail to respond to BCG. However, the actual mechanism by which BCG is able to stimulate a patient's immune system to fight urothelial cancers in the bladder remains unknown.

The Wake Forest Baptist Health team led by Dr. Davis is using a novel blood-based assay to quantify a patient's immune system functionality. This test is largely based on the ability of granulocytes, a sub-type of white blood cells, to kill cancer cells in a laboratory setting. This assay was developed by biochemist Zheng Cui, MD, PhD, associate professor of pathology at Wake Forest Baptist Health. They enrolled 19 patients diagnosed with NMIBC and took blood samples before they underwent intravesical BCG treatment. These blood samples were run through the laboratory assay to calculate individualized "cancer-killing activity" scores for each patient. Of the 19 patients enrolled, 13 had a definitive clinical response to intravesical BCG, while six patients were definitive non-responders.

One variation of our assay was able to give a correct prediction of response to intravesical BCG for 14 of 19 patients. A second variation of our assay was able to give a correct prediction of response to intravesical BCG for 10 of 19 patients. Based on these preliminary results, the clinical response to intravesical BCG treatment may be predictable using this novel blood-based assay. Planning for future investigations is underway.

For muscle-invasive bladder cancer, the gold standard treatment is radical cystectomy and urinary diversion (continent or incontinent). Drs. Hemal and Pathak offer robotic cystectomy and totally intracorporeal diversion as a totally noninvasive manner to treat muscle-invasive bladder cancer. They reviewed the role of preoperative nutritional status, sarcopenia and frailty in patients undergoing cystectomy and actively counsel patients on the importance of overall health status and optimization before surgery (Pathak RA, Hemal AK *Transl Androl Urol* 2018; 7:S763-764). Moreover, apart from surgeon experience, the robotic team, which includes nurses, surgical technologists and bedside assistants, is key to performing robotic surgery, especially for patients with bladder cancer. Drs. Pathak and Hemal recently wrote an editorial regarding the rates and predictors of conversion to open surgery from laparoscopic or robotic surgery published in the *Journal of Endourology*. They found implementation of robotic technology to the management of muscle-invasive bladder cancer allows for better dissection, hemostasis and surgical proficiency (Pathak RA, Hemal AK *J Endourol* 2018; 32:495).

Molecular-guided Robotic Surgery Using Indocyanine Green and Near-infrared Fluorescence

Image-guided surgery involves using various adjunctive technologies that assist the surgeon in real time. An example of image-guided surgery in the field of robotic urology is molecular-guided surgery, utilizing indocyanine green (ICG) and near-infrared fluorescence. ICG is a nontoxic molecule that can be injected into the patient's bloodstream or pathologic organ of interest to delineate special properties of the tumor. For example, in patients undergoing partial nephrectomy, ICG greatly facilitates the procedure and has been shown to decrease the amount of time the kidney is clamped during the operation. In addition, it has shown several other benefits in upper tract urothelial carcinoma, adrenal cancer, bladder cancer, prostate cancer and cancers of the retroperitoneum. Recently, Drs. Pathak and Hemal published a video presentation that delves into the role of fluorescence-guided surgery in robotic uro-oncologic cases (Pathak RA, Hemal AK *Journal of Endourology: Part B: Videourology 2018*). They showcased current publications in the field and showed sample surgical clips with accompanying narration to demonstrate the benefits of image-guided surgery.

CONTINUED

2018 PUBLICATIONS

Book Published by Springer, "Robotics in Genitourinary Surgery," Second Edition (2018), Ashok K. Hemal & Mani Menon, Editors.

Pathak RA, Hemal AK. Developing a Personalized Template for Lymph Node Dissection during Radical Prostatectomy. *Transl Androl Urol* 2018; 7(4):S498-504.

Pathak RA, Hemal AK. Editorial Comment on: Rates and Predictors of Conversion to Open Surgery During Minimally Invasive Radical Cystectomy by Ko et al. *J Endourol* 2018; 32:495.

Patel M, Pathak RA, Hemal AK. Technical and Technological Advances in Robotic Partial Nephrectomy: Chapter 43. In: Hemal A, Menon M (eds), *Robotic in Genitourinary Surgery*. Springer, Cham 2018 595-603.

Pathak RA, Hemal AK. Techniques and Outcomes of Robot-assisted Nephro-ureterectomy for Upper Tract Urothelial Carcinoma. *Eur Urol Focus* 2018; 4(5):657-661.

Pathak RA, Edge C, Thomas G, Thiel D, Broderick G, La Rosa D, Lannen A, Moore M, Frank R, Igel T. Vasectomy Simulation Curriculum and Trainer with Enhanced Face, Content and Construct Validity. *Urology Practice* 2018; 6:1-5.

Pathak RA, Hemal AK. Utilization of Fluorescence-enhanced Molecular Imaging in Robotic-assisted Uro-oncologic Surgery. J Endourol: Part B Videouorlogy 2018 http://doi.org/10.1089/vid.2018.0030.

Pathak RA, Hemal AK. Frailty and Sarcopenia Impact Surgical and Oncologic Outcomes after Radical Cystectomy in Patients with Bladder Cancer. TAU 2018; 7(Suppl 6):S763-764.

Paulucci DJ, Beksac AT, Porter J, Abaza R, Eun DD, Bhandari A, Hemal AK, Badani KK. A Multi-institutional Propensity Score Matched Comparison of Transperitoneal and Retroperitoneal Partial Nephrectomy for cT1 Posterior Tumors. [ncbi.nlm.nih.gov]. J Laparoendosc *Adv Surg Tech A*. Epub 2018 Aug 14.

Peak TC, Russell GB, Dutta R, Rothberg MB, Chapple AG, Hemal AK. A National Cancer Database-based Nomogram to Predict Lymph Node Metastasis in Penile Cancer [ncbi.nlm.nih.gov]. *BJU Int*. 2018 Dec 11.

Martini A, Cumarasamy S, Beksac AT, Abaza R, Eun DD, Bhandari A, Hemal AK, Porter JR, Badani KK. A Nomogram to Predict Significant Estimated Glomerular Filtration Rate Reduction After Robotic Partial Nephrectomy [ncbi.nlm.nih.gov]. *Eur Urol*. 2018 Dec; 74(6):833-839.

Freedman BI, Kistler AL, Skewes-Cox P, Ganem D, Spainhour M, Turner J, Divers J, Langefeld CD, Murea M, Hicks PJ, Hemal AK, Snipes JA, Zhao L, Abend JR, Lyles DS, Ma L, Skorecki KL. JC Polyoma Viruria Associates with Protection from Chronic Kidney Disease Independently from Apolipoprotein L1 Genotype in African Americans [ncbi.nlm.nih.gov]. *Nephrol Dial Transplant*. 2018 Nov 1; 33(11):1960-1967.

Gul Z, Blum KA, Paulucci DJ, Abaza R, Eun DD, Bhandari A, Hemal AK, Porter J, Badani KK. A Multi-institutional Report of Peri-operative and Functional Outcomes after Robot-assisted Partial Nephrectomy in Patients with a Solitary Kidney [ncbi.nlm.nih.gov]. *J Robot Surg*. 2018 Oct 12.

Rosen DC, Kannappan M, Paulucci DJ, Beksac AT, Attalla K, Abaza R, Eun DD, Bhandari A, Hemal AK, Porter J, Badani KK. Reevaluating Warm Ischemia Time as a Predictor of Renal Function Outcomes After Robotic Partial Nephrectomy [ncbi.nlm.nih.gov]. *Urology*. 2018 Oct; 120:156-161.

Beksac AT, Paulucci DJ, Gul Z, Reddy BN, Kannappan M, Martini A, Sfakianos JP, Gin GE, Abaza R, Eun DD, Bhandari A, Hemal AK, Porter J, Badani KK. Risk Factors and Prognostic Implications for Pathologic Upstaging to T3a after Partial Nephrectomy [ncbi.nlm.nih.gov]. *Minerva Urol Nefrol*. 2018 Sep 19.

Sood A, Ghani KR, Hemal AK. Reply to Yuqi Xia, Weimin Yu, and Fan Cheng's Letter to the Editor re: Ryan Swearingen, Akshay Sood, Rabii Madi, et al. Zero-fragment Nephrolithotomy: A Multi-center Evaluation of Robotic Pyelolithotomy and Nephrolithotomy for Treating Renal Stones. *Eur Urol*. 2017; 72:1014-21 [ncbi.nlm.nih.gov]. *Eur Urol*. 2018 Sep; 74(3):e77-e78.

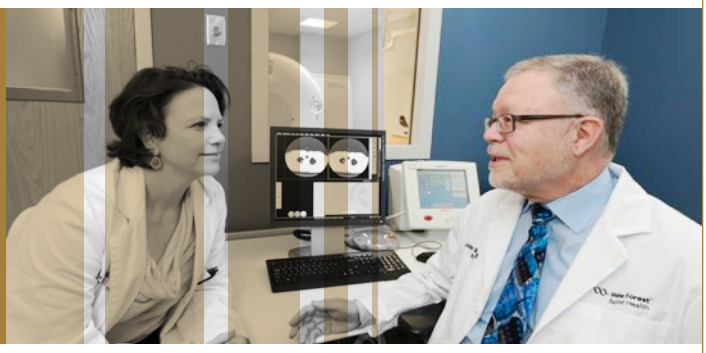
Delto JC, Paulucci D, Helbig MW, Badani KK, Eun D, Porter J, Abaza R, Hemal AK, Bhandari A. Robot-assisted Partial Nephrectomy for Large Renal Masses: A Multi-institutional Series. [ncbi.nlm.nih.gov]. *BJU Int*. 2018 Jun; 121(6):908-915.

Tracey AT, Eun DD, Stifelman MD, Hemal AK, Stein RJ, Mottrie A, Cadeddu JA, Stolzenburg JU, Berger AK, Buffi N, Zhao LC, Lee Z, Hampton L, Porpiglia F, Autorino R. Robotic-assisted Laparoscopic Repair of Ureteral Injury: An Evidence-based Review of Techniques and Outcomes [ncbi.nlm.nih.gov]. *Minerva Urol Nefrol*. 2018 Jun; 70(3):231-241. doi: 10.23736/S0393-2249.18.03137-5.

Krane LS, Hemal AK. Editorial Comment on: Predictive Factors for Achieving Superior Pentafecta Outcomes Following Robot-assisted Partial Nephrectomy in Patients with Localized Renal Cell Carcinoma by Kang et al. (From: Kang M, Gong I-H, Park HJ, et al. *J Endourol* 2017; 31:1231-1236).]. *J Endourol*. 2018 Feb; 32(2):175.

Patel MN, Hemal AK. Does Advancing Technology Improve Outcomes? Comparison of the Da Vinci Standard/S/Si to the Xi Robotic Platforms During Robotic Nephroureterectomy [ncbi.nlm.nih.gov]. *J Endourol*. 2018 Feb; 32(2):133-138.

The Thoracic Oncology Program offers more than 20 ongoing clinical research trials and a robust second opinion program, and is a Lung Cancer Screening Center of Excellence.



THORACIC ONCOLOGY

The Thoracic Oncology Program is a multidisciplinary working group composed of Thoracic Surgery, Medical Oncology, Interventional Pulmonary Medicine, Interventional Radiology and Radiation Oncology.

Lung cancer is the number one cause of cancer death in both men and women in the United States and worldwide. It is the number one cancer seen, diagnosed and treated at Wake Forest Baptist Health. L. James Wudel Jr., MD, and William Jeffery Petty, MD, lead the Thoracic Oncology Program. Dr. Wudel is associate professor in the Department of Cardiothoracic Surgery and director of Thoracic Surgical Oncology. He is recognized as one of the top robotic thoracic surgeons in the world. He has performed more than 1,000 robotic thoracic procedures to date, including lung resections, surgery for esophageal cancer and surgery for mediastinal tumors.

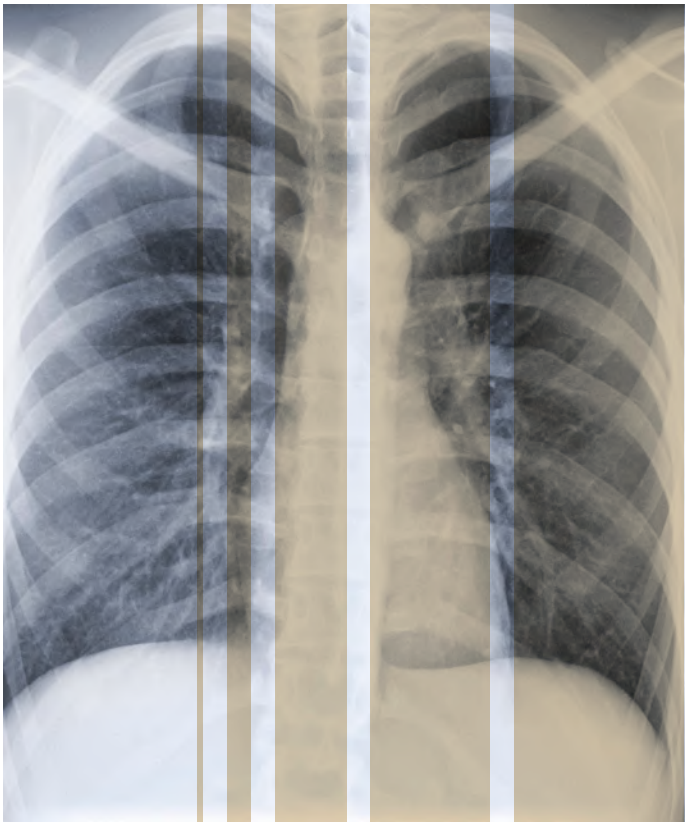
Dr. Petty is professor in the Department of Hematology and Oncology and associate professor in the Department of Cancer Biology. He is considered a national expert on lung cancer and is recognized for his many contributions to the field of lung cancer research. He is one of *U.S. News & World Report's* "Best Doctors."

The Thoracic Oncology Program is coordinated by Scarlett Hutchens, RN. The program meets weekly and is staffed by representatives from the following departments:

- Cardiothoracic Surgery: Peter Smit, MD, and L. James Wudel Jr., MD
- Radiation Oncology: William Blackstock, MD, Michael Farris, MD, and Corbin Helis, MD
- Medical Oncology: Tamjeed Ahmed, MD, Stefan Grant, MD, Thomas Lycan, MD, William Petty, MD ,and Jimmy Ruiz, MD
- Interventional Pulmonary Medicine: Christina Bellinger, MD, Jonathan Bishop, MD, Travis Dotson, MD, Andrew Namen, MD, and Karl Thomas, MD
- Interventional Radiology: Trevor Downing, MD

The Thoracic Oncology Program uses state-of-the-art techniques and technology to diagnose and treat lung cancer, including bronchoscopy with endobronchial ultrasound for staging and diagnosis, bronchoscopy with electromagnetic navigational localization and biopsy, percutaneous radiofrequency tumor ablation, and ground-breaking precision medicine and personalized genomic medicine.

The Thoracic Oncology Program offers more than 20 ongoing clinical research trials and a robust second opinion program, and is a Lung Cancer Screening Center of Excellence.



2017 CANCER DATA

2017 CANCER REGISTRY DATABASE

TOTAL CASES*	NUMBER	PERCENT
Lung	624	12.9
Breast	443	9.1
Prostate	342	7
Colorectal	317	6.5
Brain, CNS	290	6
Melanoma of skin	274	5.6
Oral cavity, pharynx	273	5.6
Leukemia	201	4.1
Kidney, renal pelvis	200	4.1
NH Lymphoma	188	3.9
Bladder	163	3.4
Pancreas	157	3.2
Thyroid	138	2.8
Uterus	117	2.4
Larynx	92	1.9
Multiple myeloma	84	1.7
Connective tissue	80	1.6
Esophagus	73	1.5
Liver, intrahepatic bile duct	70	1.4
Stomach	70	1.4
Ovary	61	1.3
Other endocrine	61	1.3
Unknown primary	61	1.3
Other female	60	1.2
Mets SCCa/BCCa	41	0.8
Other skin	40	0.8
Cervix	31	0.6
Anus, anal canal	31	0.6
Retroperitoneum	28	0.6
Small intestine	27	0.6
Hodgkins disease	27	0.6
Gallbladder, biliary	26	0.5
Other urinary	26	0.5
Bone	25	0.5
CMPD, MDS	24	0.5
Eye	22	0.5
Nasal, sinus	18	0.4
Other male	16	0.3
Testis	10	0.2
Ill-defined	8	0.2
Thymus	7	0.1
Other Hematopoietic	6	0.1
Pleura, mediastinum, heart	5	0.1
Other digestive	2	0.04
Trachea	1	0.02
Total Cases	**4860**	**100**

GENDER	NUMBER	PERCENT
Male	2594	53.4
Female	2266	46.6
RACE		
White	4137	85.1
Black	625	12.9
Other	98	2
ETHNICITY-HISPANIC		
Male	53	1.1
Female	43	0.9
CLASS OF CASE		
Analytic/new dx	4256	87.6
Non-analytic/recurr	525	10.8
Dx workup	79	1.6
RESIDENCE		
North Carolina	4138	85.1
Other States in USA	719	14.8
Outside of USA	3	0.06
PATIENT HISTORY		
Family History	3140	64.7
Tobacco History	2965	61.1
cigarette	861	
cigar/pipe	21	
snuff/chew/smokeless	88	
combination use	13	
previous use	1982	
Alcohol History (2 or more drinks/day)	692	14.3
current use	518	
past history	174	
PRIMARY NEOPLASMS		
One primary only	3342	68.8
First of two primaries	232	4.8
Second primary	809	16.6
Third primary	170	3.5
Fourth primary	34	0.7
Fifth primary	12	0.2
Sixth primary	3	0.06
Seventh primary	1	0.02
Ninth primary	1	0.02
Benign neoplasms	256	5.3

*Includes malignant, in-situ, selected benign cases, newly diagnosed, recurrent and diagnostic workup cases

COMPARISON OF 2017 WFBMC, STATE AND NATIONAL DATA

	WFBMC		NORTH CAROLINA		USA	
PRIMARY SITE	CASES	PERCENT	CASES	PERCENT	CASES	PERCENT
Lung	554	16.5	8,888	15	222,500	13.2
Breast	335	10	8,468	14.3	255,180	15.1
Prostate	270	8	7,577	12.8	161,360	9.6
Colorectal	254	7.6	4,602	7.8	135,430	8
Oral cavity, pharynx	245	7.3	1,532	2.6	49,670	2.9
Melanoma of skin	185	5.5	2,805	4.7	87,110	5.2
Leukemia	182	5.4	1,486	2.5	62,130	3.7
Kidney, renal pelvis	176	5.2	2,054	3.5	63,990	3.8
Bladder (includes in-situ)	163	4.8	2,516	4.2	79,030	4.7
NH Lymphoma	155	4.6	2,082	3.5	72,240	4.3
Pancreas	145	4.3	1,551	2.6	53,670	3.2
Thyroid	122	3.6	1,401	2.4	56,870	3.4
Uterus	105	3.1	1,667	2.8	61,380	3.6
Brain, CNS	97	2.9	744	1.3	23,800	1.4
Larynx	75	2.2	528	0.9	13,360	0.8
Connective Tissue	72	2.1	381	0.6	12,390	0.7
Multiple myeloma	63	1.9	934	1.6	30,280	1.8
Liver, intrahepatic bile duct	62	1.8	983	1.7	40,710	2.4
Stomach	60	1.8	796	1.3	28,000	1.7
Esophagus	53	1.6	561	0.9	16,940	1
Ovary	38	1.1	712	1.2	22,440	1.3
Small intestine	24	0.7	365	0.6	10,190	0.6
All other sites	370	11	6,716	11.3	130,110	7.7
Total Cases	**3,361**	**100**	**59,349**	**100**	**1,688,780**	**100**

NOTE: Includes newly diagnosed invasive cancer cases (includes bladder in-situ cases). Excludes basal and squamous cell skin cancers, in-situ (except for bladder), benign neoplasms, non-analytic cases, and diagnostic workups.

WFBMC—exact figures
NC—estimated numbers from NC Central Cancer Registry Facts and Figures 2017
USA—estimated numbers from American Cancer Society Cancer Facts and Figures 2017

PRIMARY SITE DISTRIBUTION 2017

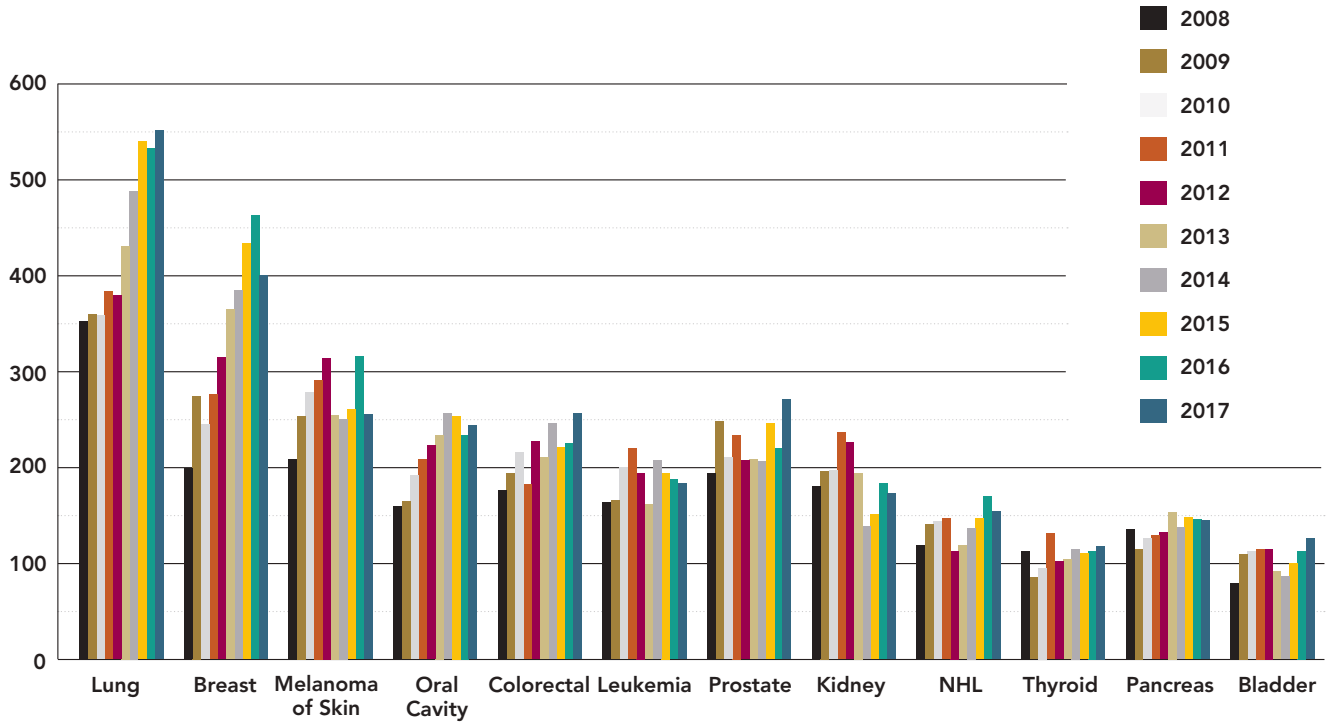
Site	Total	Class of Case*			Gender, Race, and Ethnicity							
		A	NA	C	white		black		other		hispanic	
					male	female	male	female	male	female	male	female
Total Cases	**4860**	**4256**	**525**	**79**	**2180**	**1861**	**311**	**314**	**50**	**48**	**53**	**43**
Oral cavity, pharynx	**273**	**248**	**18**	**7**	**187**	**63**	**13**	**5**	**2**	**1**	**2**	**0**
lip	15	12	3	0	14	1	0	0	0	0	0	0
tongue	94	85	8	1	61	26	3	1	2	0	1	0
gum	10	9	1	0	5	5	0	0	0	0	0	0
floor of mouth	15	15	0	0	10	3	2	0	0	0	0	0
palate	12	12	0	0	6	3	2	0	0	1	0	0
other mouth	27	24	2	1	17	9	0	1	0	0	0	0
salivary, malignant	17	15	1	1	10	4	1	2	0	0	0	0
tonsil	52	49	1	2	41	4	5	1	0	0	1	0
oropharynx	16	13	1	2	11	5	0	0	0	0	0	0
nasopharynx	3	2	1	0	2	1	0	0	0	0	0	0
pyriform sinus	2	2	0	0	2	0	0	0	0	0	0	0
hypopharynx	8	8	0	0	7	1	0	0	0	0	0	0
other oral cavity	2	2	0	0	1	1	0	0	0	0	0	0
Digestive system	**773**	**665**	**76**	**32**	**376**	**241**	**68**	**54**	**10**	**12**	**8**	**4**
esophagus	73	61	5	7	54	12	5	0	0	0	1	1
stomach	70	63	3	4	35	17	6	6	2	1	3	0
small intestine	27	24	2	1	15	9	0	2	0	0	1	0
colon	195	160	35	0	79	77	14	18	1	5	0	1
rectosigmoid	31	20	9	2	14	12	2	2	0	1	0	0
rectum	91	75	11	5	49	23	11	4	1	2	1	0
anus/anal canal	31	31	0	0	9	10	5	3	3	0	1	0
liver	70	62	7	1	36	14	11	4	2	1	1	1
gallbladder	11	10	1	0	3	4	2	1	0	1	0	0
biliary	15	12	1	2	9	5	0	1	0	0	0	0
pancreas	157	146	2	9	71	58	12	13	1	1	0	1
other digestive	2	1	0	1	2	0	0	0	0	0	0	0
Respiratory system	**742**	**660**	**62**	**20**	**351**	**284**	**60**	**36**	**5**	**3**	**2**	**1**
nasal cavity	12	11	1	0	6	4	0	2	0	0	0	0
sinuses	6	5	1	0	4	1	0	1	0	0	0	0
larynx	92	79	13	0	64	19	9	0	0	0	0	0
lung-non small cell	547	488	40	19	242	219	45	32	4	3	1	1
lung-small cell	77	69	7	1	32	37	5	1	1	0	1	0
thymus	7	7	0	0	3	4	0	0	0	0	0	0
trachea	1	1	0	0	0	0	1	0	0	0	0	0
Pleura, mediastinum, heart	**5**	**4**	**1**	**0**	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**0**
Bone	**25**	**23**	**2**	**0**	**10**	**9**	**1**	**1**	**1**	**0**	**3**	**0**
Hematopoietic system	**315**	**267**	**48**	**0**	**144**	**100**	**26**	**25**	**6**	**1**	**10**	**3**
multiple myeloma	84	63	21	0	33	25	11	14	0	0	0	1
lymphoid leukemia	68	53	15	0	34	18	4	2	4	1	4	1
myeloid leukemia	115	111	4	0	53	41	8	8	1	0	4	0
other leukemia	18	18	0	0	8	5	3	0	0	0	1	1
CMPD,MDS	24	18	6	0	12	10	0	0	1	0	1	0
other	6	4	2	0	4	1	0	1	0	0	0	0

Site	Total	Class of Case*			Gender, Race and Ethnicity							
		A	NA	C	white		black		other		hispanic	
					male	female	male	female	male	female	male	female
Skin	**355**	**316**	**37**	**2**	**227**	**116**	**5**	**2**	**4**	**0**	**1**	**0**
melanoma	274	258	15	1	178	92	1	0	2	0	1	0
other skin	40	35	5	0	22	12	4	2	0	0	0	0
mets SCCa/BCCa	41	23	17	1	27	12	0	0	2	0	0	0
Retroperitoneum	**28**	**25**	**3**	**0**	**7**	**17**	**1**	**3**	**0**	**0**	**0**	**0**
Connective tissue	**80**	**72**	**6**	**2**	**38**	**30**	**2**	**7**	**1**	**0**	**2**	**0**
Breast	**443**	**400**	**36**	**7**	**1**	**345**	**1**	**76**	**0**	**12**	**1**	**7**
Female genital system	**269**	**241**	**26**	**2**	**0**	**208**	**0**	**43**	**0**	**10**	**0**	**8**
vulva	44	42	2	0	0	30	0	11	0	2	0	1
vagina	8	7	0	1	0	4	0	4	0	0	0	0
cervix	31	27	4	0	0	20	0	7	0	2	0	2
uterus	117	106	10	1	0	94	0	14	0	5	0	4
ovary, malignant	47	38	9	0	0	41	0	5	0	0	0	1
ovary, borderline	14	14	0	0	0	12	0	1	0	1	0	0
other female	8	7	1	0	0	7	0	1	0	0	0	0
Male genital system	**368**	**296**	**71**	**1**	**282**	**0**	**68**	**0**	**8**	**0**	**10**	**0**
penis	11	11	0	0	11	0	0	0	0	0	0	0
prostate	342	270	71	1	260	0	67	0	7	0	8	0
testis	10	10	0	0	8	0	0	0	0	0	2	0
other male	5	5	0	0	3	0	1	0	1	0	0	0
Urinary system	**389**	**332**	**55**	**2**	**232**	**103**	**29**	**16**	**4**	**2**	**3**	**0**
kidney	190	170	19	1	100	63	14	10	1	0	2	0
renal pelvis	10	8	2	0	4	3	0	2	0	1	0	0
ureter	11	11	0	0	7	3	1	0	0	0	0	0
bladder	163	131	31	1	112	50	13	4	3	1	0	0
other urinary	15	12	3	0	9	4	1	0	0	0	1	0
Eye	**22**	**21**	**1**	**0**	**10**	**9**	**1**	**0**	**1**	**0**	**1**	**0**
Brain, CNS	**290**	**270**	**20**	**0**	**104**	**150**	**6**	**17**	**4**	**1**	**1**	**7**
brain, CNS malignant	100	97	3	0	48	43	2	4	0	0	0	3
brain, CNS benign	190	173	17	0	56	107	4	13	4	1	1	4
Thyroid/Endocrine	**199**	**176**	**22**	**1**	**60**	**93**	**11**	**14**	**0**	**5**	**6**	**10**
thyroid	138	122	15	1	39	70	3	11	0	5	2	8
adrenal	6	5	1	0	3	3	0	0	0	0	0	0
other, malignant	2	2	0	0	0	0	0	0	0	0	2	0
other, benign	53	47	6	0	18	20	8	3	0	0	2	2
Lymphoma	**215**	**176**	**37**	**2**	**113**	**69**	**12**	**12**	**3**	**1**	**2**	**3**
NH Lymphoma	188	155	31	2	103	59	8	11	3	1	1	2
Hodgkins disease	27	21	6	0	10	10	4	1	0	0	1	1
Unknown Primary	**61**	**57**	**3**	**1**	**30**	**20**	**6**	**3**	**1**	**0**	**1**	**0**
Ill-defined	**8**	**7**	**1**	**0**	**5**	**2**	**1**	**0**	**0**	**0**	**0**	**0**

*Class of Case: A=analytic, newly diagnosed; NA=non-analytic, first seen with recurrent disease; C=diagnositc workup. Reportable by Agreement per Cancer Committee and sq intraepithelial neoplasia grade III are included under column A.

NOTE: Numbers include Wake Forest Baptist Medical Center main campus, provider-based clinics (Elkin, Lexington, Mt. Airy), Statesville practice, Davie Medical Center, Medical Plaza-Clemmons

COMPARISON OF WFBMC MOST PREVALENT SITES BY YEAR newly diagnosed cases



2018 PUBLISHED ABSTRACTS

Published Abstracts:

CGM = Cancer Genetics and Metabolism Program

CPC = Cancer Prevention and Control Program

NRO = Neuro-Oncology Program

SBT = Signaling and Biotechnology Program

1. Alphonse-Sullivan N, Taksler GB, Lycan T, Weaver KE (CPC), McTyre ER, Watabe K (NRO), Tatter SB, Isom S, Chan MD (NRO), Munley MT, Ruiz J (NRO), et al. Sociodemographic predictors of patients with brain metastases treated with stereotactic radiosurgery. Oncotarget. 2017;8(60): 101005-101. PMC5731851.

2. Arcury TA (CPC), Quandt SA, Sandberg JC (CPC), Miller DP, Jr. (CPC), Latulipe C, Leng X, Talton JW, Melius KP, Smith A, Bertoni AG. Patient Portal Utilization Among Ethnically Diverse Low Income Older Adults: Observational Study. JMIR Med Inform. 2017;5(4): e47. PMC5705857.

3. Avis NE (CPC), Coeytaux RR, Levine B, Isom S, Morgan T. Trajectories of response to acupuncture for menopausal vasomotor symptoms: the Acupuncture in Menopause study. Menopause. 2017;24(2): 171-179. PMC5266651.

4. Avis NE (CPC), Colvin A, Karlamangla AS, Crawford S, Hess R, Waetjen LE, Brooks M, Tepper PG, Greendale GA. Change in sexual functioning over the menopausal transition: results from the Study of Women's Health Across the Nation. Menopause. 2017;24(4): 379-390. PMC5365345.

5. Avis NE (CPC), Levine B, Marshall SA, Ip EH (CPC). Longitudinal Examination of Symptom Profiles Among Breast Cancer Survivors. J Pain Symptom Manage. 2017;53(4): 703-710. PMC5373990.

6. Batchelor TT, Gerstner ER, Ye X, Desideri S, Duda DG, Peereboom D, Lesser GJ (NRO), Chowdhary S, Wen PY, Grossman S, Supko JG. Feasibility, phase I, and phase II studies of tandutinib, an oral platelet-derived growth factor receptor-beta tyrosine kinase inhibitor, in patients with recurrent glioblastoma. Neuro Oncol. 2017;19(4): 567-575. PMC5464374.

7. Bawa-Khalfe T, Yang FM, Ritho J, Lin HK (SBT), Cheng J, Yeh ET. SENP1 regulates PTEN stability to dictate prostate cancer development. Oncotarget. 2017;8(11): 17651-1766. PMC5392276.

8. Blevins LK, Parsonage D, Oliver MB, Domzalski E, Swords WE, Alexander-Miller MA (SBT). A Novel Function for the Streptococcus pneumoniae Aminopeptidase N: Inhibition of T Cell Effector Function through Regulation of TCR Signaling. Front Immunol. 2017;8: 1610. PMC5711787.

9. Blum W, Sanford BL, Klisovic R, DeAngelo DJ, Uy G, Powell BL (CGM), Stock W, Baer MR, Kolitz JE, Wang ES, Hoke E, et al. Maintenance therapy with decitabine in younger adults with acute myeloid leukemia in first remission: A phase 2 cancer and leukemia group B study (CALGB 10503). Leukemia. 2017;31(1): 34-39. PMC5214595.

10. Bonakdar M, Graybill PM, Davalos RV (NRO). A microfluidic model of the blood-brain barrier to study permeabilization by pulsed electric fields. RSC Adv. 2017;7(68): 42811-4281. PMC5753766.

11. Caress JB, Johnson JO, Abramzon YA, Hawkins GA (CGM), Gibbs JR, Sullivan EA, Chahal CS, Traynor BJ. Exome sequencing establishes a gelsolin mutation as the cause of inherited bulbar-onset neuropathy. Muscle Nerve. 2017;56(5): 1001-1005. PMC5494018.

12. Carpenter RL, Chan M (NRO), Zhu D, Watabe K (NRO), Metheny-Barlow L (NRO), Debinski W (NRO), Pasche BC (SBT), Qasem S (CGM), Xing F, Liu Y, Lo HW (NRO), et al. Combined inhibition of AKT and HSF1 suppresses breast cancer stem cells and tumor growth. Oncotarget. 2017;8(43): 73947-7396. PMC5650314.

13. Casimo K, Levinson LH, Zanos S, Gkogkidis CA, Ball T, Fetz E, Weaver KE (CPC), Ojemann JG. An interspecies comparative study of invasive electrophysiological functional connectivity. Brain Behav. 2017;7(12): e00863. PMC5745242.

14. Chen T, Li J, Xu M, Zhao Q, Hou Y, Yao L, Zhong Y, Chou PC, Zhang W (CGM), Zhou P, Jiang Y. PKCepsilon phosphorylates MIIP and promotes colorectal cancer metastasis through inhibition of RelA deacetylation. Nat Commun. 2017;8(1): 939. PMC5643311.

15. Cheung EO, Cohn MA, Dunn LB, Melisko ME, Morgan S, Penedo FJ, Salsman JM (CPC), Shumay DM, Moskowitz JT. A randomized pilot trial of a positive affect skill intervention (lessons in linking affect and coping) for women with metastatic breast cancer. Psychooncology. 2017;26(12): 2101-2108. PMC5550341.

16. Chilton FH (CPC), Dutta R, Reynolds LM, Sergeant S, Mathias RA, Seeds MC. Precision Nutrition and Omega-3 Polyunsaturated Fatty Acids: A Case for Personalized Supplementation Approaches for the Prevention and Management of Human Diseases. Nutrients. 2017;9(11). PMC5707637.

17. Chouliaras K, Levine EA (CGM), Fino N, Shen P (SBT), Votanopoulos KI. Prognostic Factors and Significance of Gastrointestinal Leak After Cytoreductive Surgery (CRS) with Heated Intraperitoneal Chemotherapy (HIPEC). Ann Surg Oncol. 2017;24(4): 890-897. PMC5567826.

18. Cornacchione Ross J (CPC), Noar SM, Sutfin EL (CPC). Systematic Review of Health Communication for Non-Cigarette Tobacco Products. Health Commun. 2017: 1-9. PMC5999530.

19. Duggan KT, Duffus SH, D'Agostino RB, Jr. (NRO), Petty WJ (CGM), Streer NP, Stephenson RC. The Impact of Hospice Services in the Care of Patients with Advanced Stage Nonsmall Cell Lung Cancer. J Palliat Med. 2017;20(1): 29-34.

20. Eden K, Rothschild DE, McDaniel DK, Heid B, Allen IC (SBT). Noncanonical NF-kappaB signaling and the essential kinase NIK modulate crucial features associated with eosinophilic esophagitis pathogenesis. Dis Model Mech. 2017;10(12): 1517-1527. PMC5769607.

21. Farr DE, Thomas A (SBT), Khan SA, Schroeder MC. Male Breast Cancer as a Second Primary Cancer: Increased Risk Following Lymphoma. Oncologist. 2017;22(8): 895-900. PMC5553961.

22. Fortunato JE, D'Agostino RB, Jr. (NRO), Lively MO (SBT). Pepsin in saliva as a biomarker for oropharyngeal reflux compared with 24-hour esophageal impedance/pH monitoring in pediatric patients. Neurogastroenterol Motil. 2017;29(2).

23. Gauvreau CL, Fitzgerald NR, Memon S, Flanagan WM, Nadeau C, Asakawa K, Garner R, Miller AB, Evans WK, Wolfson M (CPC), Coldman AJ, et al. The OncoSim model: development and use for better decision-making in Canadian cancer control. Curr Oncol. 2017;24(6): 401-406. PMC5736482.

24. Giannini CM, Irby MB, Skelton JA (CPC), Gesell SB (CPC). Feasibility of a Friendship Network-Based Pediatric Obesity Intervention. Child Obes. 2017;13(1): 18-24. PMC5335769.

25. Gifford AR, Lawrence JA, Baker LD, Naughton M, Case D (CPC), Craft S, Rapp S (NRO), Griffin L, Lesser GJ (NRO), Klepin HD (CGM), Williamson J, et al. National Institute on Aging / Alzheimer's Association criteria for Mild Cognitive Impairment applied to chemotherapy treated breast cancer survivors. J Oncol Research. 2017;1(1). PMC5985141.

26. Gold EB, Crawford SL, Shelton JF, Tepper PG, Crandall CJ, Greendale GA, Matthews KA, Thurston RC, Avis NE (CPC). Longitudinal analysis of changes in weight and waist circumference in relation to incident vasomotor symptoms: the Study of Women' Health Across the Nation (SWAN). Menopause. 2017;24(1): 9-26. PMC5177513.

27. Granberg KJ, Annala M, Lehtinen B, Kesseli J, Haapasalo J, Ruusuvuori P, Yli-Harja O, Visakorpi T, Haapasalo H, Nykter M, Zhang W (CGM). Strong FGFR3 staining is a marker for FGFR3 fusions in diffuse gliomas. Neuro Oncol. 2017;19(9): 1206-1216. PMC5570261.

28. Gupta S, Li J, Kemeny G, Bitting RL (SBT), Beaver J, Somarelli J, Ware KE, Gregory S, Armstrong AJ. Whole genomic copy number alterations in circulating tumor cells from men with abiraterone or enzalutamide resistant metastatic castration-resistant prostate cancer. Clin Cancer Res. 2017;23(5): 1346-1357.

29. Harlow SD, Karvonen-Gutierrez C, Elliott MR, Bondarenko I, Avis NE (CPC), Bromberger JT, Brooks MM, Miller JM, Reed BD. It is not just menopause: symptom clustering in the Study of Women's Health Across the Nation. Womens Midlife Health. 2017;3. PMC5760187.

30. Hilakivi-Clarke L, Warri A, Bouker KB, Zhang X, Cook KL (SBT), Jin L, Zwart A, Wang Y, Xuan J (CGM), Wang X, Clarke R, et al. Effects of In Utero Exposure to Ethinyl Estradiol on Tamoxifen Resistance and Breast Cancer Recurrence in a Preclinical Model. J Natl Cancer Inst. 2017;109(1).

31. Ip EH (CPC), Barnard R, Marshall SA, Lu L, Sink K, Wilson V, Chamberlain D, Rapp SR (NRO). Development of a video-simulation instrument for assessing cognition in older adults. BMC Med Inform Decis Mak. 2017;17(1): 161. PMC5719572.

32. Joe RM, Flores A, Doche ME, Cline JM (CGM), Clutter ES, Vander PB, Riedel H, Argetsinger LS, Carter-Su C. Phosphorylation of the Unique C-terminal Tail of the Alpha Isoform of the Scaffold Protein SH2B1 Controls the Ability of SH2B1alpha to Enhance Nerve Growth Factor Function. Mol Cell Biol. 2017. PMC5829484.

33. Johnston H, McTyre ER, Cramer CK, Lesser GJ (NRO), Ruiz J (NRO), Bourland JD (CGM), Watabe K (NRO), Lo HW (NRO), Qasem S (CGM), Tatter SB, Chan MD (NRO), et al. Stereotactic radiosurgery in the treatment of brain metastases from gynecologic primary cancer. J Radiosurg SBRT. 2017;5(1): 55-61. PMC5675508.

34. Kruspe S, Dickey DD, Urak KT, Blanco GN, Miller MJ, Clark KC, Burghardt E, Gutierrez WR, Phadke SD, Thomas A (SBT), Ginader T, et al. Rapid and Sensitive Detection of Breast Cancer Cells in Patient Blood with Nuclease-Activated Probe Technology. Mol Ther Nucleic Acids. 2017;8: 542-557. PMC5577414.

35. Lanier CM, McTyre E, LeCompte M, Ruiz J (NRO), Hughes R, Watabe K (NRO), Lo HW (NRO), Tatter SB, Munley MT, Tatter SB, Chan MD (NRO), et al. The number of prior lines of systemic therapy as a prognostic factor for patients with brain metastases treated with stereotactic radiosurgery: Results of a large single institution retrospective analysis. Clin Neurol Neurosurg. 2017;165: 24-28.

36. LeCompte MC, McTyre E, Henson A, Farris M, Okoukoni C, Tatter SB, Munley MT, Ruiz J (NRO), Watabe K (NRO), Lo HW (NRO), Chan M (NRO), et al. Survival and Failure Outcomes Predicted by Brain Metastasis Volumetric Kinetics in Melanoma Patients Following Upfront Treatment with Stereotactic Radiosurgery Alone. Cureus. 2017;9(12): e1934. PMC5807024.

37. Lee CW, Md AI, Schneider DF, Leverson GE, Tran TB, Poultsides GA, Postlewait LM, Maithel SK, Votanopoulos KI, Levine EA (CGM), Shenoy R, et al. Minimally Invasive Resection of Adrenocortical Carcinoma: a Multi-Institutional Study of 201 Patients. J Gastrointest Surg. 2017;21(2): 352-362. PMC5263186.

38. Li W, Sigley J, Baker SR, Helms CC, Kinney MT, Pieters M, Brubaker PH, Cubcciotti R, Guthold M (CGM). Nonuniform Internal Structure of Fibrin Fibers: Protein Density and Bond Density Strongly Decrease with Increasing Diameter. Biomed Res Int. 2017;2017: 6385628. PMC5654258.

39. Lodge MA, Holdhoff M, Leal JP, Bag AK, Nabors LB, Mintz A (SBT), Lesser GJ (NRO), Mankoff DA, Desai AS, Mountz JM, Lieberman FS, et al. Repeatability of 18F-FLT PET in a Multi-Center Study of Patients with High Grade Glioma. J Nucl Med. 2017;58(3): 393-398. PMC5331936.

40. Ma L, Chou JW, Snipes JA, Bharadwaj MS, Craddock AL, Cheng D, Miller LD (CGM), Langefeld CD, Parks JS (CGM), Hawkins GA (CGM), Freedman BI, et al. APOL1 Renal-Risk Variants Induce Mitochondrial Dysfunction. J Am Soc Nephrol. 2017;28(4): 1093-1105. PMC5373457.

41. Marur S, Li S, Cmelak AJ, Gillison ML, Zhao WJ, Ferris RL, Westra WH, Gilbert J, Bauman JE, Wagner LI (CPC), Trevarthen DR. E1308: Phase II Trial of Induction Chemotherapy Followed by Reduced-Dose Radiation and Weekly Cetuximab in Patients With HPV-Associated Resectable Squamous Cell Carcinoma of the Oropharynx- ECOG-ACRIN Cancer Research Group. J Clin Oncol. 2017;35(5): 490-497. PMC5455313.

42. Milliron BJ, Vitolins MZ (CPC), Gamble E, Jones R, Chenault MC, Tooze JA (CPC). Process Evaluation of a Community Garden at an Urban Outpatient Clinic. J Community Health. 2017;42(4): 639-648. PMC5447497.

43. Mogal HD, Clark C (SBT), Dodson R, Fino NF, Howard-McNatt M (CGM). Outcomes After Mastectomy and Lumpectomy in Elderly Patients with Early-Stage Breast Cancer. Ann Surg Oncol. 2017;24(1): 100-107.

44. Mogal HD, Howard-McNatt M (CGM), Dodson R, Fino NF, Clark CJ (SBT). Quality of life of older African American breast cancer survivors: a population-based study. Support Care Cancer. 2017;25(5): 1431-1438.

45. Moore JB (CPC), Carson RL, Webster CA, Singletary CR, Castelli DM, Pate RR, Beets MW, Beighle A. The Application of an Implementation Science Framework to Comprehensive School Physical Activity Programs: Be a Champion! Front Public Health. 2017;5: 354. PMC5760502.

46. Muthukaruppan A, Lasham A, Woad KJ, Black MA, Blenkiron C, Miller LD (CGM), Harris G, McCarthy N, Findlay MP, Shelling AN, Print CG. Multimodal Assessment of Estrogen Receptor mRNA Profiles to Quantify Estrogen Pathway Activity in Breast Tumors. Clin Breast Cancer. 2017;17(2): 139-153.

47. Nadasan V, Foley KL (CPC), Penzes M, Paulik E, Mihaicuta S, Abram Z, Balint J, Csibi M, Urban R. The Short-term Effects of ASPIRA: A Web-based, Multimedia Smoking Prevention Program for Adolescents in Romania: A Cluster Randomized Trial. Nicotine Tob Res. 2017;19(8): 908-915. PMC5896509.

48. Nickkholgh B, Sittadjody S, Rothberg MB, Fang X, Li K, Chou JW, Hawkins GA (CGM), Balaji KC (NRO). Beta-catenin represses protein kinase D1 gene expression by non-canonical pathway through MYC/MAX transcription complex in prostate cancer. Oncotarget. 2017;8(45): 78811-7882. PMC5668000.

49. Nightingale CL (CPC), Pereira DB, Curbow BA, Wingard JR, Carnaby GD. A Prospective Biopsychosocial Investigation Into Head and Neck Cancer Caregiving. Biol Res Nurs. 2017;19(1): 87-96. PMC5515676.

50. Okoukoni C, McTyre ER, Ayala Peacock DN, Peiffer AM, Strowd R, Cramer C, Hinson WH, Rapp S (NRO), Metheny-Barlow L (NRO), Shaw EG (CPC), Chan MD (NRO). Hippocampal dose volume histogram predicts Hopkins Verbal Learning Test scores after brain irradiation. Adv Radiat Oncol. 2017;2(4): 624-629. PMC5707405.

51. Pan J, Ip EH (CPC), Dube L. An alternative to post hoc model modification in confirmatory factor analysis: The Bayesian lasso. Psychol Methods. 2017;22(4): 687-704. PMC5745070.

52. Park SH, Eber MR, Tsuzuki S, Booker ME, Sunil AG, Widner DB, Parker RA, Peters CM, Shiozawa Y (SBT). Adeno-associated virus serotype rh10 is a useful gene transfer vector for sensory nerves that innervate bone in immunodeficient mice. Sci Rep. 2017;7(1): 17428. PMC5727257.

53. Peterson LL, Hurria A, Feng T, Mohile SG, Owusu C, Klepin HD (CGM), Gross CP, Lichtman SM, Gajra A, Glezerman I, Katheria V, et al. Association between renal function and chemotherapy-related toxicity in older adults with cancer. J Geriatr Oncol. 2017;8(2): 96-101. PMC5373948.

54. Powell BL (CGM). Vascular ring presenting as dysphagia in an adult woman: a case report. Ann R Coll Surg Engl. 2017;99(1): e3-e5. PMC5392786.

55. Proffitt JM, Glenn J, Cesnik AJ, Jadhav A, Shortreed MR, Smith LM, Kavanagh K, Cox LA, Olivier M (CGM). Proteomics in non-human primates: utilizing RNA-Seq data to improve protein identification by mass spectrometry in vervet monkeys. BMC Genomics. 2017;18(1): 877. PMC5683380.

56. Randolph DM, McTyre E, Klepin H (CGM), Peiffer AM, Ayala-Peacock D, Lester S, Laxton AW, Dohm A, Tatter SB, Shaw EG (CPC), Chan MD (NRO). Impact of radiosurgical management of geriatric patients with brain metastases: Clinical and quality of life outcomes. J Radiosurg SBRT. 2017;5(1): 35-42. PMC5675506.

57. Rodman C, Almeida-Porada G (SBT), George SK, Moon J, Soker S (SBT), Pardee T (CGM), Beaty M, Guida P, Sajuthi SP, Langefeld CD, Porada CD (SBT), et al. In vitro and in vivo assessment of direct effects of simulated solar and galactic cosmic radiation on human hematopoietic stem/progenitor cells. Leukemia. 2017;31(6): 1398-1407. PMC5870806.

58. Roelands J, Decock J, Boughorbel S, Rinchai D, Maccalli C, Ceccarelli M, Black M, Print C, Chou J, Miller LD (CGM), Quinn C, et al. A collection of annotated and harmonized human breast cancer transcriptome datasets, including immunologic classification. F1000Res. 2017;6: 296. PMC5820610.

59. Rolong A, Schmelz EM, Davalos RV (NRO). High-frequency irreversible electroporation targets resilient tumor-initiating cells in ovarian cancer. Integr Biol (Camb). 2017;9(12): 979-987.

60. Rosas S, Marquez-Lara A, Jinnah AH, Roche MW, Willey JS (CPC), Gwam C, Emory CL. Hemiarthroplasty for Fractures of Metastatic Bone Disease Have Different Outcomes Compared to Fractures Without Metastasis: A Matched-Pair Analysis. Surg Technol Int. 2017;31: 339-345.

61. Seyler TM, Bracey DN, Plate JF, Lively MO (SBT), Mannava S, Smith TL, Saul JM, Poehling GG, Van Dyke ME, Whitlock PW. The Development of a Xenograft-Derived Scaffold for Tendon and Ligament Reconstruction Using a Decellularization and Oxidation Protocol. Arthroscopy. 2017;33(2): 374-386.

62. Sittadjody S, Saul JM, McQuilling JP, Joo S, Register TC, Yoo JJ, Atala A (SBT), Opara EC. In vivo transplantation of 3D encapsulated ovarian constructs in rats corrects abnormalities of ovarian failure. Nat Commun. 2017;8(1): 1858. PMC5717171.

63. Smith TT, Rupprecht LE, Denlinger-Apte RL, Weeks JJ, Panas RS, Donny EC (CPC), Sved AF. Animal Research on Nicotine Reduction: Current Evidence and Research Gaps. Nicotine Tob Res. 2017;19(9): 1005-1015. PMC5896531.

64. Soto-Pantoja DR (SBT), Wilson AS, Clear KY, Westwood B, Triozzi PL (SBT), Cook KL (SBT). Unfolded protein response signaling impacts macrophage polarity to modulate breast cancer cell clearance and melanoma immune checkpoint therapy responsiveness. Oncotarget. 2017;8(46): 80545-8055. PMC5655219.

65. Steffen LE, Johnson A, Levine BJ, Mayer DK, Avis NE (CPC). Met and Unmet Expectations for Breast Reconstruction in Early Posttreatment Breast Cancer Survivors. Plast Surg Nurs. 2017;37(4): 146-153. PMC5951716.

66. Sutfin EL (CPC), Cornacchione Ross J (CPC), Lazard AJ, Orlan E, Suerken CK, Wiseman KD, Reboussin BA, Wolfson M (CPC), Noar SM. Developing a Point-of-Sale Health Communication Campaign for Cigarillos and Waterpipe Tobacco. Health Commun. 2017; 1-9.

67. Vallabhaneni KC, Penfornis P, Xing F, Hassler Y, Adams KV, Mo YY, Watabe K (NRO), Pochampally R. Stromal cell extracellular vesicular cargo mediated regulation of breast cancer cell metastasis via ubiquitin conjugating enzyme E2 N pathway. Oncotarget. 2017;8(66): 109861-109. PMC5746349.

68. Vergo MT, Whyman J, Li Z, Kestel J, James SL, Rector C, Salsman JM (CPC). Assessing Preparatory Grief in Advanced Cancer Patients as an Independent Predictor of Distress in an American Population. J Palliat Med. 2017;20(1): 48-52.

69. Votanopoulos KI, Shen P (SBT), Stewart JH, Levine EA (CGM). Outcomes of Cytoreductive Surgery (CRS) with Hyperthermic Intraperitoneal Chemotherapy (HIPEC) in Patients Older than 70 Years; Survival Benefit at Considerable Morbidity and Mortality: A Reply. Ann Surg Oncol. 2017;24(Suppl 3): 602.

70. Weaver RG, Moore JB (CPC), Turner-McGrievy B, Saunders R, Beighle A, Khan MM, Chandler J, Brazendale K, Randell A, Webster C, Beets MW. Identifying Strategies Programs Adopt to Meet Healthy Eating and Physical Activity Standards in Afterschool Programs. Health Educ Behav. 2017;44(4): 536-547.

71. Weber GM, Adams WG, Bernstam EV, Bickel JP, Fox KP, Marsolo K, Raghavan VA, Turchin A, Zhou X (CGM), Murphy SN, Mandl KD. Biases introduced by filtering electronic health records for patients with "complete data". J Am Med Inform Assoc. 2017;24(6): 1134-1141. PMC6080680.

72. Wu CY, Cherng JY, Yang YH, Lin CL, Kuan FC, Lin YY, Lin YS, Shu LH, Cheng YC, Lin HK (SBT), Lu MC, et al. Danshen improves survival of patients with advanced lung cancer and targeting the relationship between macrophages and lung cancer cells. Oncotarget. 2017;8(53): 90925-9094. PMC5710895.

73. Wu K, Xing F, Wu SY, Watabe K (NRO). Extracellular vesicles as emerging targets in cancer: Recent development from bench to bedside. Biochim Biophys Acta. 2017;1868(2): 538-563. PMC5675795.

74. Xian X, Ding Y, Dieckmann M, Zhou L, Plattner F, Liu M, Parks JS (CGM), Hammer RE, Boucher P, Tsai S, Herz J. LRP1 integrates murine macrophage cholesterol homeostasis and inflammatory responses in atherosclerosis. Elife. 2017;6. PMC5690284.

75. Xiao J, Salsbury FR, Jr. (CGM). Molecular dynamics simulations of aptamer-binding reveal generalized allostery in thrombin. J Biomol Struct Dyn. 2017;35(15): 3354-3369.

76. Xu Y, Dong X, Qi P, Ye Y, Shen W, Leng L, Wang L, Li X, Luo X, Sun P (SBT), Na L, et al. Sox2 Communicates with Tregs Through CCL1 to Promote the Stemness Property of Breast Cancer Cells. Stem Cells. 2017;35(12): 2351-2365. PMC5958902.

77. Yang Y, Opara EC, Liu Y, Atala A (SBT), Zhao W. Microencapsulation of porcine thyroid cell organoids within a polymer microcapsule construct. Exp Biol Med (Maywood). 2017;242(3): 286-296. PMC5384501.

78. Yasukawa M, Liu Y, Hu L, Cogdell D, Gharpure KM, Pradeep S, Nagaraja AS, Sood AK, Zhang W (CGM). ADAMTS16 mutations sensitize ovarian cancer cells to platinum-based chemotherapy. Oncotarget. 2017;8(51): 88410-8842. PMC5687615.

79. Zhou Y, Lovell D, Bethea M, Yoseph B, Poteracki J, Soker S (SBT), Criswell T. The Impact of Age on Skeletal Muscle Progenitor Cell Survival and Fate After Injury. Tissue Eng Part C Methods. 2017;23(12): 1012-1021. PMC6112161.

80. Zhu S, Lin G, Song C, Wu Y, Feng N, Chen W, He Z, Chen YQ (SBT). RA and omega-3 PUFA co-treatment activates autophagy in cancer cells. Oncotarget. 2017;8(65): 109135-109. PMC5752509.

81. Abel GA, Klepin HD (CGM). Frailty and the management of hematologic malignancies. Blood. 2018;131(5): 515-524.

82. Abunimer AN, Mohammed H, Cook KL (SBT), Soto-Pantoja DR (SBT), Campos MM, Abu-Asab MS. Mitochondrial autophagosomes as a mechanism of drug resistance in breast carcinoma. Ultrastruct Pathol. 2018;42(2): 170-180. PMC6060621.

83. Addington EL, Sohl SJ (CPC), Tooze JA (CPC), Danhauer SC (CPC). Convenient and Live Movement (CALM) for women undergoing breast cancer treatment: Challenges and recommendations for internet-based yoga research. Complement Ther Med. 2018;37: 77-79. PMC5886746.

84. Akter S, Fu L, Jung Y, Conte ML, Lawson JR, Lowther WT (SBT), Sun R, Liu K, Yang J, Carroll KS. Effect of Immediate vs Gradual Reduction in Nicotine Content of Cigarettes on Biomarkers of Smoke Exposure: A Randomized Clinical Trial. Nat Chem Biol. 2018;14(11): 995-1004. PMC6192846.

85. Al-Barakati HJ, McConnell EW, Hicks LM, Poole LB (CGM), Newman RH, Kc DB. SVM-SulfoSite: A support vector machine based predictor for sulfenylation sites. Sci Rep. 2018;8(1): 11288. PMC6062547.

86. Allen JK, Armaiz-Pena GN, Nagaraja AS, Sadaoui NC, Ortiz T, Dood R, Ozcan M, Herder DM, Haemerrle M, Marini FC (SBT), Rupaimoole R, et al. Sustained adrenergic signaling promotes intratumoral innervation through BDNF induction. Cancer Res. 2018;78(12): 3233-3242. PMC6004256.

87. Almeida-Porada G (SBT), Rodman C, Kuhlman B, Brudvik E, Moon J, George S, Guida P, Sajuthi SP, Langefeld CD, Walker SJ, Porada CD (SBT), et al. Exposure of the Bone Marrow Microenvironment to Simulated Solar and Galactic Cosmic Radiation Induces Biological Bystander Effects on Human Hematopoiesis. Stem Cells Dev. 2018;27(18): 1237-1256.

88. Amblard I, Mercier F, Bartlett DL, Ahrendt SA, Lee KW, Zeh HJ, Levine EA (CGM), Baratti D, Deraco M, Piso P, Morris DL, et al. Cytoreductive surgery and HIPEC improve survival compared to palliative chemotherapy for biliary carcinoma with peritoneal metastasis: A multi-institutional cohort from PSOGI and BIG RENAPE groups. Eur J Surg Oncol. 2018;44(9): 1378-1383.

89. Anderson RG, Ghiraldeli LP, Pardee TS (CGM). Mitochondria in cancer metabolism, an organelle whose time has come?, Biochim Biophys Acta. 2018;1870(1): 96-102.

90. Andrews JE, Moore JB (CPC), Weinberg RB, Sissine M, Gesell S (CPC), Halladay J, Rosamond W, Bushnell C, Jones S, Means P, King NMP, et al. Ensuring respect for persons in COMPASS: a cluster randomised pragmatic clinical trial. J Med Ethics. 2018;44(8): 560-566. PMC6073919.

91. Andrews RN, Caudell DL (SBT), Metheny-Barlow LJ (NRO), Peiffer AM, Tooze JA (CPC), Bourland JD (CGM), Hampson RE, Deadwyler SA (SBT), Cline JM (CGM). Fibronectin Produced by Cerebral Endothelial and Vascular Smooth Muscle Cells Contributes to Perivascular Extracellular Matrix in Late-Delayed Radiation-Induced Brain Injury. Radiat Res. 2018;190(4): 361-373. PMC6191839.

92. Apple AC, Schroeder MP, Ryals AJ, Wagner LI (CPC), Cella D, Shih PA, Reilly J, Penedo FJ, Voss JL, Wang L. Hippocampal functional connectivity is related to self-reported cognitive concerns in breast cancer patients undergoing adjuvant therapy. Neuroimage Clin. 2018;20: 110-118. PMC6077172.

93. Arcury TA (CPC), Sandberg JC (CPC), Melius KP, Quandt SA, Leng X, Latulipe C, Miller DP, Jr. (CPC), Smith DA, Bertoni AG. Older Adult Internet Use and eHealth Literacy. J Appl Gerontol. 2018; 7334648188.

94. Arcury TA (CPC), Sandberg JC (CPC), Talton JW, Laurienti PJ, Daniel SS, Quandt SA. Mental Health Among Latina Farmworkers and Other Employed Latinas in North Carolina. Rural Ment Health. 2018;42(2): 89-101. PMC6141195.

95. Atkins HM, Appt SE, Taylor RN, Torres-Mendoza Y, Lenk EE, Rosenthal NS, Caudell DL (SBT). Systemic Iron Deficiency in a Nonhuman Primate Model of Endometriosis. Comp Med. 2018;68(4): 298-307. PMC6103425.

96. Avis NE (CPC), Colvin A, Bromberger JT, Hess R. Midlife Predictors of Health-Related Quality of Life in Older Women. J Gerontol A Biol Sci Med Sci. 2018;73(11): 1574-1580. PMC6175022.

97. Avis NE (CPC), Johnson A, Canzona MR, Levine BJ. Sexual functioning among early post-treatment breast cancer survivors. Support Care Cancer. 2018;26(8): 2605-2613. PMC6019113.

98. Avis NE (CPC), Levine BJ, Danhauer S (CPC), Coeytaux RR. A pooled analysis of three studies of nonpharmacological interventions for menopausal hot flashes. Menopause. 2018.

99. Azagba S, Wolfson M (CPC). E-cigarette use and quantity of cigarette smoking among adolescent cigarette smokers: A finite mixture model analysis. Drug Alcohol Depend. 2018;185: 33-39.

100. Balamayooran G, Atkins HM, Whitlow CT (CGM), Aycock ST, Nader MA (CPC), Cline JM (CGM), Caudell DL (SBT). Labyrinthitis Ossificans in a Cynomolgus Macaque (Macaca fascicularis). Comp Med. 2018. PMC6008717.

101. Beets MW, Brazendale K, Glenn Weaver R, Turner-McGrievy GM, Huberty J, Moore JB (CPC), Mahmud Khan M, Ward DS. Economic evaluation of a group randomized controlled trial on healthy eating and physical activity in afterschool programs. Prev Med. 2018;106: 60-65.

102. Beets MW, Glenn Weaver R, Brazendale K, Turner-McGrievy G, Saunders RP, Moore JB (CPC), Webster C, Khan M, Beighle A. Statewide dissemination and implementation of physical activity standards in afterschool programs: two-year results. BMC Public Health. 2018;18(1): 819. PMC6029349.

103. Bell EH, Zhang P, Fisher BJ, Macdonald DR, McElroy JP, Lesser GJ (NRO), Fleming J, Chakraborty AR, Liu Z, Becker AP, Fabian D, et al. Association of MGMT Promoter Methylation Status With Survival Outcomes in Patients With High-Risk Glioma Treated With Radiotherapy and Temozolomide: An Analysis From the NRG Oncology/RTOG 0424 Trial. JAMA Oncol. 2018;4(10): 1405-1409. PMC6117103.

104. Bellinger CR (CPC), Sharma D, Dotson T, Ruiz J (NRO), Parks G, Haponik EF. Protocol to Improve Genotyping of Non-Small-Cell Lung Cancer Diagnosed Using EBUS-TBNA. South Med J. 2018;111(10): 601-606.

105. Berger AC, Korkut A, Kanchi RS, Hegde AM, Lenoir W, Liu W, Liu L (CGM), Fan H, Shen H, Ravikumar V, Rao A, et al. A Comprehensive Pan-Cancer Molecular Study of Gynecologic and Breast Cancers. Cancer Cell. 2018;33(4): 690-705.e9. PMC5959730.

106. Besser LM, Rodriguez DA, McDonald N, Kukull WA, Fitzpatrick AL, Rapp SR (NRO), Seeman T. Neighborhood built environment and cognition in non-demented older adults: The Multi-Ethnic Study of Atherosclerosis. Soc Sci Med. 2018;200: 27-35. PMC5893410.

107. Beverly CM, Naughton MJ, Pennell ML, Foraker RE, Young G, Hale L, Feliciano EMC, Pan K, Crane TE, Danhauer SC (CPC), Paskett ED. Change in longitudinal trends in sleep quality and duration following breast cancer diagnosis: results from the Women's Health Initiative. NPJ Breast Cancer. 2018;4: 15. PMC6026122.

108. Bhatt NB, Pandya DN, Dezarn WA, Marini FC (SBT), Zhao D (NRO), Gmeiner WH (CGM), Triozzi PL (SBT), Wadas TJ (SBT). Practical Guidelines for Cerenkov Luminescence Imaging with Clinically Relevant Isotopes. Methods Mol Biol. 2018;1790: 197-208.

109. Bhatt NB, Pandya DN, Rideout-Danner S, Gage HD, Marini FC (SBT), Wadas TJ (SBT). A comprehensively revised strategy that improves the specific activity and long-term stability of clinically relevant (89)Zr-immuno-PET agents. Dalton Trans. 2018;47(37): 13214-1322. PMC6192516.

110. Bhatt NB, Pandya DN, Wadas TJ (SBT). Recent Advances in Zirconium-89 Chelator Development. Molecules. 2018;23(3).

111. Bhonsle S, Lorenzo M, Safaai-Jazi A, Davalos RV (NRO). Characterization of Nonlinearity and Dispersion in Tissue Impedance during High Frequency Electroporation. IEEE Trans Biomed Eng. 2018;65(10): 2190-2201.

112. Bhutiani N, Scoggins CR, McMasters KM, Ethun CG, Poultsides GA, Pawlik TM, Weber SM, Schmidt CR, Fields RC, Shen P (SBT), Hatzaras I, et al. The impact of caudate lobe resection on margin status and outcomes in patients with hilar cholangiocarcinoma: a multi-institutional analysis from the US Extrahepatic Biliary Malignancy Consortium. Surgery. 2018;163(4): 726-731.

113. Bianchi-Smiraglia A, Bagati A, Fink EE, Affronti HC, Lipchick BC, Moparthy S, Long MD, Rosario SR, Lightman SM, Moparthy K, Nikiforov MA (CGM), et al. Inhibition of the aryl hydrocarbon receptor/polyamine biosynthesis axis suppresses multiple myeloma. J Clin Invest. 2018;128(10): 4682-4696. PMC6159960.

114. Birdee GS, Wallston KA, Ayala SG, Ip EH (CPC), Sohl SJ (CPC). Development and psychometric properties of the Self-efficacy for Mindfulness Meditation Practice scale. J Health Psychol. 2018;: 1359105318.

115. Bishop AC, Libardoni M, Choudary A, Misra BB, Lange K, Bernal J, Nijland M, Li C, Olivier M (CGM), Nathanielsz PW, Cox LA (CGM). Nonhuman primate breath volatile organic compounds associate with developmental programming and cardio-metabolic status. J Breath Res. 2018;12(3): 036016.

116. Blum WF, Klammt J, Amselem S, Pfaffle HM, Legendre M, Sobrier ML, Luton MP, Child CJ, Parks JS (CGM), Zimmermann AG, Quigley CA, et al. Screening a large pediatric cohort with GH deficiency for mutations in genes regulating pituitary development and GH secretion: Frequencies, phenotypes and growth outcomes. EBioMedicine. 2018;36: 390-400. PMC6197701.

117. Boatman JA, Vock DM, Koopmeiners JS, Donny EC (CPC). Estimating causal effects from a randomized clinical trial when noncompliance is measured with error. Biostatistics. 2018;19(1): 103-118. PMC6075374.

118. Bolduc JA, Nelson KJ, Haynes AC, Lee J, Reisz JA, Graff AH, Clodfelter JE, Parsonage D, Poole LB (CGM), Furdui CM (CGM), Lowther WT (SBT). Novel hyperoxidation resistance motifs in 2-Cys peroxiredoxins. J Biol Chem. 2018;293(30): 11901-1191. PMC6066324.

119. Bonin K, Smelser A, Moreno NS, Holzwarth G, Wang K, Levy P, Vidi PA (CGM). Structured illumination to spatially map chromatin motions. J Biomed Opt. 2018;23(5): 1-8. PMC5987180.

120. Bracey DN, Seyler TM, Jinnah AH, Lively MO (SBT), Willey JS (CPC), Smith TL, Van Dyke ME, Whitlock PW. A Decellularized Porcine Xenograft-Derived Bone Scaffold for Clinical Use as a Bone Graft Substitute: A Critical Evaluation of Processing and Structure. J Funct Biomater. 2018;9(3). PMC6164666.

121. Brenes GA (CPC), Divers J, Miller ME, Danhauer SC (CPC). A randomized preference trial of cognitive-behavioral therapy and yoga for the treatment of worry in anxious older adults. Contemp Clin Trials Commun. 2018;10: 169-176. PMC6042466.

122. Bromberger JT, Schott LL, Avis NE (CPC), Crawford SL, Harlow SD, Joffe H, Kravitz HM, Matthews KA. Psychosocial and health-related risk factors for depressive symptom trajectories among midlife women over 15 years: Study of Women's Health Across the Nation (SWAN). Psychol Med. 2018: 1-10.

123. Brovold M, Almeida JI, Pla-Palacin I, Sainz-Arnal P, Sanchez-Romero N, Rivas JJ, Almeida H, Dachary PR, Serrano-Aullo T, Soker S (SBT), Baptista PM. Naturally-Derived Biomaterials for Tissue Engineering Applications. Adv Exp Med Biol. 2018;1077: 421-449.

124. Brownson RC, Eyler AA, Harris JK, Moore JB (CPC), Tabak RG. Getting the Word Out: New Approaches for Disseminating Public Health Science. J Public Health Manag Pract. 2018;24(2): 102-111. PMC5794246.

125. Bukowy JD, Dayton A, Cloutier D, Manis AD, Staruschenko A, Lombard JH, Solberg Woods LC (CPC), Beard DA, Cowley AW, Jr. Region-based Convolutional Neural Nets for Localization of Glomeruli in Trichrome-stained Whole Kidney Sections. J Am Soc Nephrol. 2018;29(8): 2081-2088. PMC6065078.

126. Bullock MW, De Gregorio M, Danelson KA, Willey JS (CPC), Seem ME, Plate JF, Lang JE, Shields JS. Quantifying the force transmission through the pelvic joints during total hip arthroplasty: A pilot cadaveric study. Clin Biomech (Bristol, Avon). 2018;58: 69-73.

127. Cantrell W, Huang Y, Menchaca AA, Kulik G (SBT), Welker ME (CGM). Synthesis and PI3 Kinase Inhibition Activity of a Wortmannin-Leucine Derivative. Molecules. 2018;23(7).

128. Cassidy RN, Tidey JW, Cao Q, Colby SM, McClernon FJ, Koopmeiners JS, Hatsukami D, Donny EC (CPC). Age Moderates Smokers' Subjective Response to Very Low Nicotine Content Cigarettes: Evidence from a Randomized Controlled Trial. Nicotine Tob Res. 2018.

129. Chen X, Gu J, Wang X, Jung JG, Wang TL, Hilakivi-Clarke L, Clarke R, Xuan J (CGM). CRNET: an efficient sampling approach to infer functional regulatory networks by integrating large-scale ChIP-seq and time-course RNA-seq data. Bioinformatics. 2018;34(10): 1733-1740. PMC5946876.

130. Chen X, Mims J, Huang X, Singh N, Motea EA, Planchon SM, Beg M, Tsang AW (SBT), Porosnicu M (CGM), Kemp ML, Furdui C (CGM), et al. Modulators of Redox Metabolism in Head and Neck Cancer. Antioxid Redox Signal. 2018;29(16): 1660-1690.

131. Chen-Scarabelli C, Hundley WG (CPC), Scarabelli TM. Cardio-oncology: an evolving hybrid subspecialty. Future Cardiol. 2018;14(3): 197-201.

132. Chiba A, Raman R, Thomas A (SBT), Lamy PJ, Viala M, Pouderoux S, Mott SL, Schroeder MC, Thezenas S, Jacot W. Serum Vitamin D Levels Affect Pathologic Complete Response in Patients Undergoing Neoadjuvant Systemic Therapy for Operable Breast Cancer. Clin Breast Cancer. 2018;18(2): 144-149. PMC6140343.

133. Chmielewski JP, Bowlby SC, Wheeler FB, Shi L, Sui G, Davis AL, Howard TD, D'Agostino RB (NRO), Miller LD (CGM), Sirintrapun SJ, Kridel SJ (CGM), et al. CD38 Inhibits Prostate Cancer Metabolism and Proliferation by Reducing Cellular NAD+ Pools. Mol Cancer Res. 2018.

134. Cho HJ, Verbridge SS (NRO), Davalos RV (NRO), Lee YW. Development of an In Vitro 3D Brain Tissue Model Mimicking In Vivo-Like Pro-inflammatory and Pro-oxidative Responses. Ann Biomed Eng. 2018;46(6): 877-887.

135. Chopra R, Levi-Polyachenko N (SBT), Smeltzer MS. Introduction to the special issue on thermal therapy and infectious diseases. Int J Hyperthermia. 2018;34(2): 133-134.

136. Chouliaras K, Newman NA, Shukla M, Swett KR, Levine EA (CGM), Sham J, Mann GN, Shen P (SBT). Analysis of recurrence after the resection of pancreatic neuroendocrine tumors. J Surg Oncol. 2018;118(3): 416-421.

137. Chung HF, Pandeya N, Dobson AJ, Kuh D, Brunner EJ, Crawford SL, Avis NE (CPC), Gold EB, Mitchell ES, Woods NF, Bromberger JT. The role of sleep difficulties in the vasomotor menopausal symptoms and depressed mood relationships: an international pooled analysis of eight studies in the InterLACE consortium. Psychol Med. 2018;48(15): 2550-2561. PMC6087679.

138. Clark CJ (SBT), Hildreth A, Migaly J, Sieren L, Carter J, Stewart JHt. Supervisor, Colleague, or Assistant: General Surgery Resident Perceptions of Advanced Practitioners. Am Surg. 2018;84(2): 294-299.

139. Cline JM (CGM), Dugan G, Bourland JD (CGM), Perry DL, Stitzel JD, Weaver AA, Jiang C, Tovmasyan A, Owzar K, Spasojevic I, Batinic-Haberle. Post-Irradiation Treatment with a Superoxide Dismutase Mimic, MnTnHex-2-PyP(5+), Mitigates Radiation Injury in the Lungs of Non-Human Primates after Whole-Thorax Exposure to Ionizing Radiation. Antioxidants (Basel). 2018;7(3). PMC5874526.

140. Colaco M, Igel DA, Atala A (SBT). The potential of 3D printing in urological research and patient care. Nat Rev Urol. 2018;15(4): 213-221.

141. Connolly NP, Shetty AC, Stokum JA, Hoeschele I, Siegel MB, Miller CR, Kim AJ, Ho CY, Davila E, Rossmeisl JH (NRO), Devine SE, et al. Cross-species transcriptional analysis reveals conserved and host-specific neoplastic processes in mammalian glioma. Sci Rep. 2018;8(1): 1180. PMC5775420.

142. Cuellar LE, Anampa-Guzman A, Holguin AM, Velarde J, Portillo-Alvarez D, Zuniga-Ninaquispe MA, Luna-Reyes ER, Vasquez J, Jeter JM, Winkfield KM (CPC). Prognostic factors in HIV-positive patients with non-Hodgkin lymphoma: a Peruvian experience. Infect Agent Cancer. 2018;13: 27. PMC6069811.

143. Cuffe H, Liu M, Key CC, Boudyguina E, Sawyer JK, Weckerle A, Bashore A, Fried SK, Chung S, Parks JS (CGM). Targeted Deletion of Adipocyte Abca1 (ATP-Binding Cassette Transporter A1) Impairs Diet-Induced Obesity. Arterioscler Thromb Vasc Biol. 2018;38(4): 733-743. PMC5864538.

144. Delgado V, Hundley WG (CPC). Added Value of Cardiovascular Magnetic Resonance in Primary Mitral Regurgitation. Circulation. 2018;137(13): 1361-1363.

145. Dermody SS, McClernon FJ, Benowitz N, Luo X, Tidey JW, Smith TT, Vandrey R, Hatsukami D, Donny EC (CPC). Effects of reduced nicotine content cigarettes on individual withdrawal symptoms over time and during abstinence. Exp Clin Psychopharmacol. 2018;26(3): 223-232. PMC5986583.

146. Devarasetty M, Mazzocchi AR, Skardal A (SBT). Applications of Bioengineered 3D Tissue and Tumor Organoids in Drug Development and Precision Medicine: Current and Future. BioDrugs. 2018;32(1): 53-68.

147. Divers J, Langefeld CD, Lyles DS (SBT), Ma L, Freedman BI. Protective association between JC polyoma viruria and kidney disease. Curr Opin Nephrol Hypertens. 2018.

148. Dodson RM, Kuncewitch M, Votanopoulos KI, Shen P (SBT), Levine EA (CGM). Techniques for Cytoreductive Surgery with Hyperthermic Intraperitoneal Chemotherapy. Ann Surg Oncol. 2018;25(8): 2152-2158.

149. Dohm A, McTyre ER, Laxton AW, Watabe K (NRO), Xing F (NRO), Tatter SB, Ruiz J (NRO), Munley MT, Qasem S, Lo HW (NRO), Chan MD (NRO), et al. Staged Stereotactic Radiosurgery for Large Brain Metastases: Local Control and Clinical Outcomes of a One-Two Punch Technique. Neurosurgery. 2018;83(1): 114-121.

150. Dohm AE, Hughes R, Wheless W, Lecompte M, Lanier C, Ruiz J (NRO), Watabe K (NRO), Xing F (NRO), Su J, Tatter S, Chan MD (NRO), et al. Surgical resection and postoperative radiosurgery versus staged radiosurgery for large brain metastases. J Neurooncol. 2018.

151. Dutta S, Rivetti C, Gassman NR, Young CG, Jones BT, Scarpinato K, Guthold M (CGM). Analysis of single, cisplatin-induced DNA bends by atomic force microscopy and simulations. J Mol Recognit. 2018;31(10): e2731. PMC6168373.

152. Egan KL, Wolfson M (CPC), Dudley WN, Francisco VT, Strack RW, Wyrick DL, Perko MA. Diffusion of medication drop-boxes in North Carolina from 2007 to 2016. Addict Behav. 2018;86: 44-50. PMC6091874.

153. Eisfeld AK, Kohlschmidt J, Mrozek K, Blachly JS, Walker CJ, Nicolet D, Orwick S, Maharry SE, Carroll AJ, Powell BL (CGM), de la Chapelle. Mutation patterns identify adult patients with de novo acute myeloid leukemia aged 60 years or older who respond favorably to standard chemotherapy: an analysis of Alliance studies. Leukemia. 2018;32(6): 1338-1348. PMC5992022.

154. Eisfeld AK, Kohlschmidt J, Mrozek K, Mims A, Walker CJ, Blachly JS, Nicolet D, Orwick S, Powell BL (CGM), Carroll AJ, Bloomfield CD. NF1 mutations are recurrent in adult acute myeloid leukemia and confer poor outcome. Leukemia. 2018.

155. Espeland MA, Chen JC, Weitlauf J, Hayden KM, Rapp SR (NRO), Resnick SM, Garcia L, Cannell B, Baker LD, Sachs BC, Tindle HA, et al. Trajectories of Relative Performance with 2 Measures of Global Cognitive Function. J Am Geriatr Soc. 2018;66(8): 1575-1580. PMC6167188.

156. Estabrook R, Cella D, Zhao F, Manola J, DiPaola RS, Wagner LI (CPC), Haas NB. Longitudinal and dynamic measurement invariance of the FACIT-Fatigue scale: an application of the measurement model of derivatives to ECOG-ACRIN study E2805. Qual Life Res. 2018;27(6): 1589-1597. PMC6004788.

157. Ethun CG, Lopez-Aguiar AG, Anderson DJ, Adams AB, Fields RC, Doyle MB, Chapman WC, Krasnick BA, Weber SM, Shen P (SBT), Salem A, et al. Transplantation Versus Resection for Hilar Cholangiocarcinoma: An Argument for Shifting Treatment Paradigms for Resectable Disease. Ann Surg. 2018;267(5): 797-805. PMC6002861.

158. Etter NM, Hapner ER, Barkmeier-Kraemer JM, Gartner-Schmidt JL, Dressler EV (CGM), Stemple JC. Aging Voice Index (AVI): Reliability and Validity of a Voice Quality of Life Scale for Older Adults. J Voice. 2018.

159. Faig J, Haughton M, Taylor RC, D'Agostino RB, Jr. (NRO), Whelen MJ, Porosnicu Rodriguez KA, Bonomi M (CGM), Murea M, Porosnicu M (CGM). Retrospective Analysis of Cisplatin Nephrotoxicity in Patients With Head and Neck Cancer Receiving Outpatient Treatment With Concurrent High-dose Cisplatin and Radiotherapy. Am J Clin Oncol. 2018;41(5): 432-440. PMC5145782.

160. Fanning J, Walkup MP, Ambrosius WT, Brawley LR, Ip EH (CPC), Marsh AP, Rejeski WJ. Change in health-related quality of life and social cognitive outcomes in obese, older adults in a randomized controlled weight loss trial: Does physical activity behavior matter?, J Behav Med. 2018;41(3): 299-308. PMC5996373.

161. Fargue S, Milliner DS, Knight J, Olson JB, Lowther WT (SBT), Holmes RP. Hydroxyproline Metabolism and Oxalate Synthesis in Primary Hyperoxaluria. J Am Soc Nephrol. 2018;29(6): 1615-1623. PMC6054332.

162. Farris M, McTyre ER, Okoukoni C, Dugan G, Johnson BJ, Blackstock AW (CGM), Munley MT, Bourland JD (CGM), Cline JM (CGM), Willey JS (CPC). Cortical Thinning and Structural Bone Changes in Non-Human Primates after Single-Fraction Whole-Chest Irradiation. Radiat Res. 2018;190(1): 63-71. PMC6036641.

163. Feliz-Mosquea YR, Christensen AA, Wilson AS, Westwood B, Varagic J, Melendez GC, Schwartz AL, Chen QR, Mathews Griner L, Guha R, Soto-Pantoja (SBT), et al. Combination of anthracyclines and anti-CD47 therapy inhibit invasive breast cancer growth while preventing cardiac toxicity by regulation of autophagy. Breast Cancer Res Treat. 2018;172(1): 69-82. PMC6195817.

164. Fink EE, Moparthy S, Bagati A, Bianchi-Smiraglia A, Lipchick BC, Wolff DW, Roll MV, Wang J, Liu S, Bakin AV, Nikiforov MA (CGM), et al. XBP1-KLF9 Axis Acts as a Molecular Rheostat to Control the Transition from Adaptive to Cytotoxic Unfolded Protein Response. Cell Rep. 2018;25(1): 212-223.e4.

165. Foley KL (CPC), Hebela N, Keenan MA, Pignolo RJ. Histopathology of periarticular non-hereditary heterotopic ossification. Bone. 2018;109: 65-70.

166. Forsythe SD, Devarasetty M, Shupe T, Bishop C, Atala A (SBT), Soker S (SBT), Skardal A (SBT). Environmental Toxin Screening Using Human-Derived 3D Bioengineered Liver and Cardiac Organoids. Front Public Health. 2018;6: 103. PMC5932352.

167. Foster BM, Zaidi D, Young TR, Mobley ME, Kerr BA (SBT). CD117/c-kit in Cancer Stem Cell-Mediated Progression and Therapeutic Resistance. Biomedicines. 2018;6(1). PMC5874688.

168. Fouad TM, Ueno NT, Yu RK, Ensor JE, Alvarez RH, Krishnamurthy S, Lucci A, Reuben JM, Yang W, Willey JS (CPC), Valero V, et al. Distinct epidemiological profiles associated with inflammatory breast cancer (IBC): A comprehensive analysis of the IBC registry at The University of Texas MD Anderson Cancer Center. PLoS One. 2018;13(9): e0204372. PMC6152950.

169. Freedman BI, Kistler AL, Skewes-Cox P, Ganem D, Spainhour M, Turner J, Divers J, Langefeld CD, Hemal AK, Lyles DS (SBT), Skorecki KL, et al. JC polyoma viruria associates with protection from chronic kidney disease independently from apolipoprotein L1 genotype in African Americans. Nephrol Dial Transplant. 2018.

170. Fukuda S, Enkhbaatar P, Nelson C, Cox RA, Wolfson MR (CPC), Shaffer TH, Williams RO, 3rd, Surasarang SH, Sawittree S, Florova G, Komissarov AA. Lack of durable protection against cotton smoke-induced acute lung injury in sheep by nebulized single chain urokinase plasminogen activator or tissue plasminogen activator. Clin Transl Med. 2018;7(1): 17. PMC6006005.

171. Furgurson KF, Sandberg JC (CPC), Hsu FC, Mora DC, Quandt SA, Arcury TA (CPC). HPV Knowledge and Vaccine Initiation Among Mexican-Born Farmworkers in North Carolina. Health Promot Pract. 2018;: 1524839918.

172. Furgurson KF, Sandberg JC (CPC), Hsu FC, Mora DC, Quandt SA, Arcury TA (CPC). Cancer Knowledge Among Mexican Immigrant Farmworkers in North Carolina. J Immigr Minor Health. 2018.

173. Gaffley M, Villa A, Vu T, Steelman S, Howard-McNatt M (CGM). Do All BRCA 1 and 2 Carriers with a Known and Unknown Breast Cancer Choose Bilateral Mastectomies?, Am Surg. 2018;84(9): 1544-1545.

174. Gajra A, McCall L, Muss HB, Cohen HJ, Jatoi A, Ballman KV, Partridge AH, Sutton L, Parker BA, Klepin HD (CGM), Hurria A, et al. The preference to receive chemotherapy and cancer-related outcomes in older adults with breast cancer CALGB 49907 (Alliance). J Geriatr Oncol. 2018;9(3): 221-227. PMC5967401.

175. Gao T, Gillispie GJ, Copus JS, Pr AK, Seol YJ, Atala A (SBT), Yoo JJ, Lee SJ. Optimization of gelatin-alginate composite bioink printability using rheological parameters: a systematic approach. Biofabrication. 2018;10(3): 034106. PMC6040670.

176. Garland M, Addis D, Russell G, Clark C (SBT), Levine E (CGM), Howerton R, Votanopoulos K, Dobson S, Shen P (SBT). The Effect of Regional Anesthesia on Oncologic Outcomes after Resection of Colorectal Hepatic Metastases. Am Surg. 2018;84(1): e29-32. PMC5909186.

177. Garland M, Hsu FC, Clark C (SBT), Chiba A, Howard-McNatt M (CGM). The impact of obesity on outcomes for patients undergoing mastectomy using the ACS-NSQIP data set. Breast Cancer Res Treat. 2018;168(3): 723-726.

178. Garza-Morales R, Gonzalez-Ramos R, Chiba A, Montes de Oca-Luna R, McNally LR (SBT), McMasters KM, Gomez-Gutierrez JG. Temozolomide Enhances Triple-Negative Breast Cancer Virotherapy In Vitro. Cancers (Basel). 2018;10(5). PMC5977117.

179. Ghandhi SA, Turner HC, Shuryak I, Dugan GO, Bourland JD (CGM), Olson JD, Tooze JA (CPC), Morton SR, Batinic-Haberle I, Cline JM (CGM), Amundson SA. Whole thorax irradiation of non-human primates induces persistent nuclear damage and gene expression changes in peripheral blood cells. PLoS One. 2018;13(1): e0191402. PMC5774773.

180. Ghosh S, Mallick S, Das U, Verma A, Pal U, Chatterjee S, Nandy A, Saha KD, Maiti NC, Baishya B, Gmeiner WH (CGM), et al. Curcumin stably interacts with DNA hairpin through minor groove binding and demonstrates enhanced cytotoxicity in combination with FdU nucleotides. Biochim Biophys Acta. 2018;1862(3): 485-494.

181. Godwin RC, Macnamara LM, Alexander RW (CGM), Salsbury FR, Jr. (CGM). Structure and Dynamics of tRNA(Met) Containing Core Substitutions. ACS Omega. 2018;3(9): 10668-1067. PMC6166219.

182. Gong K, Guo G, Gerber DE, Gao B, Peyton M, Huang C, Minna JD, Hatanpaa KJ, Kernstine K, Zhao D (NRO), Xie Y, et al. TNF-driven adaptive response mediates resistance to EGFR inhibition in lung cancer. J Clin Invest. 2018;128(6): 2500-2518. PMC5983340.

183. Goswami I, Perry JB, Allen ME, Brown DA, von Spakovsky MR, Verbridge SS (NRO). Influence of Pulsed Electric Fields and Mitochondria-Cytoskeleton Interactions on Cell Respiration. Biophys J. 2018;114(12): 2951-2964. PMC6026445.

184. Goyal A, Carter JB, Pashtan I, Gallotto S, Wang I, Isom S, Ng A, Winkfield KM (CPC). Very low-dose versus standard dose radiation therapy for indolent primary cutaneous B-cell lymphomas: A retrospective study. J Am Acad Dermatol. 2018;78(2): 408-410. PMC5961938.

185. Goyal NG, Ip EH (CPC), Salsman JM (CPC), Avis NE (CPC). Spirituality and physical health status: a longitudinal examination of reciprocal effects in breast cancer survivors. Support Care Cancer. 2018.

186. Goyal NG, Levine BJ, Van Zee KJ, Naftalis E, Avis NE (CPC). Trajectories of quality of life following breast cancer diagnosis. Breast Cancer Res Treat. 2018;169(1): 163-173.

187. Griesenauer RH, Weis JA (SBT), Arlinghaus LR, Meszoely IM, Miga MI. Toward quantitative quasistatic elastography with a gravity-induced deformation source for image-guided breast surgery. J Med Imaging (Bellingham). 2018;5(1): 015003. PMC5803550.

188. Gross AL, Payne BR, Casanova R, Davoudzadeh P, Dzierzewski JM, Farias S, Giovannetti T, Ip EH (CPC), Marsiske M, Rebok GW, Schaie KW, et al. The ACTIVE conceptual framework as a structural equation model. Exp Aging Res. 2018;44(1): 1-17. PMC5793899.

189. Guillen-Ahlers H, Rao PK, Perumalla DS, Montoya MJ, Jadhav AYL, Shortreed MR, Smith LM, Olivier M (CGM). Adaptation of Hybridization Capture of Chromatin-associated Proteins for Proteomics to Mammalian Cells. J Vis Exp. 2018;(136). PMC6101452.

190. Guragain M, Jennings-Gee J, Cattelan N, Finger M, Conover MS, Hollis T (CGM), Deora R. The transcriptional regulator BpsR controls the growth of Bordetella bronchiseptica by repressing genes involved in nicotinic acid degradation. J Bacteriol. 2018;200(12). PMC5971473.

191. Haas KM (SBT), Johnson KL, Phipps JP, Do C. CD22 Promotes B-1b Cell Responses to T Cell-Independent Type 2 Antigens. J Immunol. 2018;200(5): 1671-1681. PMC5821584.

192. Hall ME, Jordan JH, Juncos LA, Hundley WG (CPC), Hall JE. BOLD magnetic resonance imaging in nephrology. Int J Nephrol Renovasc Dis. 2018;11: 103-112. PMC5856054.

193. Halvorson EE, Peters TR, Skelton JA (CPC), Suerken C, Snively BM, Poehling KA. Is weight associated with severity of acute respiratory illness?, Int J Obes (Lond). 2018;42(9): 1582-1589. PMC6110981.

194. Hampson RE, Song D, Robinson BS, Fetterhoff D, Dakos AS, Roeder BM, She X, Wicks RT, Witcher MR, Whitlow CT (CGM), Deadwyler SA (SBT), et al. Developing a hippocampal neural prosthetic to facilitate human memory encoding and recall. J Neural Eng. 2018;15(3): 036014.

195. Hansen WB, Chen SH, Saldana S, Ip EH (CPC). An Algorithm for Creating Virtual Controls Using Integrated and Harmonized Longitudinal Data. Eval Health Prof. 2018;41(2): 183-215.

196. Hari P, Reece DE, Randhawa J, Flomenberg N, Howard DS (CGM), Badros AZ, Rapoport AP, Meisenberg BR, Filicko-Ohara J, Phillips GL, Vesole DH. Final outcomes of escalated melphalan 280 mg/m(2) with amifostine cytoprotection followed autologous hematopoietic stem cell transplantation for multiple myeloma: high CR and VGPR rates do not translate into improved survival. Bone Marrow Transplant. 2018.

197. Haro MA, Dyevoich AM, Phipps JP, Haas KM (SBT). Activation of B-1 cells promotes tumor cell killing in the peritoneal cavity. Cancer Res. 2018.

198. Hashmi SK, Lee SJ, Savani BN, Burns L, Wingard JR, Perales MA, Palmer J, Chow E, Meyer E, Rodriguez C (SBT), Mohty M, et al. ASBMT Practice Guidelines Committee Survey on Long-Term Follow-Up Clinics for Hematopoietic Cell Transplant Survivors. Biol Blood Marrow Transplant. 2018;24(6): 1119-1124.

199. Hatsukami DK, Luo X, Jensen JA, al'Absi M, Allen SS, Carmella SG, Chen M, Cinciripini PM, Denlinger-Apte R, Drobes DJ, Donny EC (CPC), et al. Effect of Immediate vs Gradual Reduction in Nicotine Content of Cigarettes on Biomarkers of Smoke Exposure: A Randomized Clinical Trial. Jama. 2018;320(9): 880-891.

200. Hayden KM, Baker LD, Bray G, Carvajal R, Demos-McDermott K, Hergenroeder AL, Hill JO, Horton E, Jakicic JM, Rapp SR (NRO), Neiberg RH, et al. Long-term impact of intensive lifestyle intervention on cognitive function assessed with the National Institutes of Health Toolbox: The Look AHEAD study. Alzheimers Dement (Amst). 2018;10: 41-48. PMC5675717.

201. He H, Holl K, DeBehnke S, Yeo CT, Hansen P, Gebre AK, Leone-Kabler S, Ruas M, Parks JS (CGM), Parrington J, Solberg Woods L (CPC). Tpcn2 knock-out mice have improved insulin sensitivity and are protected against high-fat diet induced weight gain. Physiol Genomics. 2018;50(8): 605-614. PMC6139634.

202. He LJ, Yang DL, Li SQ, Zhang YJ, Tang Y, Lei J, Frett B, Lin HK (SBT), Li HY, Chen ZZ, Xu ZG. Facile construction of fused benzimidazole-isoquinolinones that induce cell-cycle arrest and apoptosis in colorectal cancer cells. Bioorg Med Chem. 2018;26(14): 3899-3908.

203. Hedrick VE, Myers EA, Zoellner JM (CPC), Duffey KJ, Davy BM. Validation of a Rapid Method to Assess Habitual Beverage Intake Patterns. Nutrients. 2018;10(1). PMC5793311.

204. Heiselman JS, Clements LW, Collins JA, Weis JA (SBT), Simpson AL, Geevarghese SK, Kingham TP, Jarnagin WR, Miga MI. Characterization and correction of intraoperative soft tissue deformation in image-guided laparoscopic liver surgery. J Med Imaging (Bellingham). 2018;5(2): 021203. PMC5729961.

205. Henry TR, Marshall SA, Avis NE (CPC), Levine BJ, Ip EH (CPC). Concordance networks and application to clustering cancer symptomology. PLoS One. 2018;13(3): e0191981. PMC5851541.

206. Holmila RJ, Vance SA, Chen X, Wu H, Shukla K, Bharadwaj MS, Mims J, Poole LB (CGM), King SB (CGM), Singh R (SBT), Furdui CM (CGM), et al. Mitochondria-targeted Probes for Imaging Protein Sulfenylation. Sci Rep. 2018;8(1): 6635. PMC5923234.

207. Hong DS, Moore KN, Patel MR, Grant SC (CGM), Burris HA, William WN, Jones S, Meric-Bernstam, Infante J, Eng C, Bendell JC, et al. Evaluation of Prexasertib, a Checkpoint Kinase 1 Inhibitor, in a Phase Ib Study of Patients with Squamous Cell Carcinoma. Clin Cancer Res. 2018;24(14): 3263-3272. PMC6050086.

208. Hong JC, Ayala-Peacock DN, Lee J, Blackstock AW (CGM), Okunieff P, Sung MW, Weichselbaum RR, Kao J, Urbanic JJ, Milano MT, Chmura SJ, et al. Classification for long-term survival in oligometastatic patients treated with ablative radiotherapy: A multi-institutional pooled analysis. PLoS One. 2018;13(4): e0195149. PMC5896920.

209. Hormuth DA, 2nd, Eldridge SL, Weis JA (SBT), Miga MI, Yankeelov TE. Mechanically Coupled Reaction-Diffusion Model to Predict Glioma Growth: Methodological Details. Methods Mol Biol. 2018;1711: 225-241.

210. Hormuth DA, 2nd, Weis JA (SBT), Barnes SL, Miga MI, Quaranta V, Yankeelov TE. Biophysical Modeling of In Vivo Glioma Response After Whole-Brain Radiation Therapy in a Murine Model of Brain Cancer. Int J Radiat Oncol Biol Phys. 2018;100(5): 1270-1279. PMC5934308.

211. Hoth JJ, Smith LM, Furdui CM (CGM), Wells JD, Yoza BK, McCall CE. Antioxidant treatment after injury suppresses second hit immune priming. J Trauma Acute Care Surg. 2018;85(2): 367-374.

212. Hu JJ, Urbanic JJ, Case LD (CPC), Takita C, Wright JL, Brown DR, Langefeld CD, Lively MO (SBT), Mitchell SE, Lesser GJ (NRO), Shaw EG (CPC), et al. Association Between Inflammatory Biomarker C-Reactive Protein and Radiotherapy-Induced Early Adverse Skin Reactions in a Multiracial/Ethnic Breast Cancer Population. J Clin Oncol. 2018;36(24): 2473-2482. PMC6097833.

213. Huang KL, Mashl RJ, Wu Y, Ritter DI, Wang J, Oh C, Paczkowska M, Reynolds S, Wyczalkowski MA, Zhang W (CGM), Scott AD, et al. Pathogenic Germline Variants in 10,389 Adult Cancers. Cell. 2018;173(2): 355-370.e1. PMC5949147.

214. Hughes RT, McTyre ER, LeCompte M, Cramer CK, Munley MT, Laxton AW, Tatter SB, Ruiz J (NRO), Pasche B (SBT), Watabe K (NRO), Chan MD (NRO). Clinical Outcomes of Upfront Stereotactic Radiosurgery Alone for Patients With 5 to 15 Brain Metastases. Neurosurgery. 2018.

215. Hundley WG (CPC), Jordan JH. When Left Ventricular Extracellular Volume Fraction Changes After Anthracyclines: Is it Due to a Change in the Numerator, Denominator or Both?, JACC Cardiovasc Imaging. 2018;11(8): 1056-1058.

216. Hunsberger JG, Shupe T, Atala A (SBT). An Industry-Driven Roadmap for Manufacturing in Regenerative Medicine. Stem Cells Transl Med. 2018;7(8): 564-568. PMC6090514.

217. Hurria A, Soto-Perez-de-Celis E, Allred JB, Cohen HJ, Arsenyan A, Ballman K, Le-Rademacher J, Klepin HD (CGM), Mandelblatt J, Lafky JM, et al. Functional Decline and Resilience in Older Women Receiving Adjuvant Chemotherapy for Breast Cancer. J Am Geriatr Soc. 2018.

218. Hyler AR, Baudoin NC, Brown MS, Stremler MA, Cimini D, Davalos RV (NRO), Schmelz EM. Fluid shear stress impacts ovarian cancer cell viability, subcellular organization, and promotes genomic instability. PLoS One. 2018;13(3): e0194170. PMC5864000.

219. Ibelli T, Templeton S, Levi-Polyachenko N (SBT). Progress on utilizing hyperthermia for mitigating bacterial infections. Int J Hyperthermia. 2018;34(2): 144-156.

220. Jimenez H, Blackman C, Lesser G (NRO), Debinski W (NRO), Chan M (NRO), Sharma S, Watabe K (NRO), Lo HW (NRO), Thomas A (SBT), Blackstock W (CGM), Pasche B (SBT), et al. Use of non-ionizing electromagnetic fields for the treatment of cancer. Front Biosci (Landmark Ed). 2018;23: 284-297.

221. Jin G, Xu C, Zhang X, Long J, Rezaeian AH, Liu C, Furth ME, Kridel S (CGM), Pasche B (SBT), Bian XW, Lin HK (SBT). Atad3a suppresses Pink1-dependent mitophagy to maintain homeostasis of hematopoietic progenitor cells. Nat Immunol. 2018;19(1): 29-40. PMC5905408.

222. Jinnah AH, Zacks BC, Gwam CU, Kerr BA (SBT). Emerging and Established Models of Bone Metastasis. Cancers (Basel). 2018;10(6). PMC6024970.

223. John WS, Martin TJ, Solingapuram Sai KK, Nader SH, Gage HD, Mintz A (SBT), Nader MA (CPC). CHRONIC Delta9-THC IN RHESUS MONKEYS: EFFECTS ON COGNITIVE PERFORMANCE AND DOPAMINE D2/D3 RECEPTOR AVAILABILITY. J Pharmacol Exp Ther. 2018;364(2): 300-310. PMC5774214.

224. Jordan JH, Castellino SM, Melendez GC, Klepin HD (CGM), Ellis LR, Lamar Z (CGM), Vasu S, Kitzman DW, Ntim WO, D'Agostino RB (NRO), Hundley WG (CPC), et al. Left Ventricular Mass Change After Anthracycline Chemotherapy. Circ Heart Fail. 2018;11(7): e004560.

225. Jordan JH, Todd RM, Vasu S, Hundley WG (CPC). Cardiovascular Magnetic Resonance in the Oncology Patient. JACC Cardiovasc Imaging. 2018;11(8): 1150-1172.

226. Joshu CE, Barber JR, Coresh J, Couper DJ, Mosley TH, Vitolins MZ (CPC), Butler KR, Nelson HH, Prizment AE, Tooze JA (CPC), Platz EA, et al. Enhancing the Infrastructure of the Atherosclerosis Risk in Communities (ARIC) Study for Cancer Epidemiology Research: ARIC Cancer. Cancer Epidemiol Biomarkers Prev. 2018;27(3): 295-305. PMC5835193.

227. Juliano RL, Wang L, Tavares F, Brown EG, James L, Ariyarathna Y, Ming X (SBT), Mao C, Suto M. Structure-activity relationships and cellular mechanism of action of small molecules that enhance the delivery of oligonucleotides. Nucleic Acids Res. 2018;46(4): 1601-1613. PMC5829638.

228. Kabat GC, Kim MY, Chlebowski RT, Vitolins MZ (CPC), Wassertheil-Smoller S, Rohan TE. Serum lipids and risk of obesity-related cancers in postmenopausal women. Cancer Causes Control. 2018;29(1): 13-24.

229. Kabat GC, Kim MY, Lane DS, Zaslavsky O, Ho GYF, Luo J, Nicholson WK, Chlebowski RT, Barrington WE, Vitolins MZ (CPC), Lin X, et al. Serum glucose and insulin and risk of cancers of the breast, endometrium, and ovary in postmenopausal women. Eur J Cancer Prev. 2018;27(3): 261-268.

230. Kazi A, Fazzi A, Krebs NM, Merchlinski AJ, Kline B, Veldheer S, Richie JP, Jr., Foulds J, Lane T, Donny EC (CPC), Muscat JE. Cigarette Management System: An operating procedures guide to obtaining and managing investigational tobacco products for regulatory science research. Contemp Clin Trials Commun. 2018;11: 69-74. PMC6024157.

231. Kim G, Kurnit KC, Djordjevic B, Singh C, Munsell MF, Wang WL, Lazar AJ, Zhang W (CGM), Broaddus R. Nuclear beta-catenin localization and mutation of the CTNNB1 gene: a context-dependent association. Mod Pathol. 2018;31(10): 1553-1559. PMC6168348.

232. Kim JH, Seol YJ, Ko IK, Kang HW, Lee YK, Yoo JJ, Atala A (SBT), Lee SJ. 3D Bioprinted Human Skeletal Muscle Constructs for Muscle Function Restoration. Sci Rep. 2018;8(1): 12307. PMC6098064.

233. King JL, Reboussin BA, Cornacchione Ross J (CPC), Sutfin EL (CPC). Waterpipe tobacco package warning exposure's impact on risk perceptions and use among young adults in the USA: a longitudinal analysis of the population assessment of tobacco and health study. Tob Control. 2018.

234. King JL, Reboussin D, Cornacchione Ross J (CPC), Wiseman KD, Wagoner KG, Sutfin EL (CPC). Polytobacco Use Among a Nationally Representative Sample of Adolescent and Young Adult E-Cigarette Users. J Adolesc Health. 2018;63(4): 407-412.

235. Kirkpatrick JP, Laack NN, Halasz LM, Minniti G, Chan MD (NRO). Proton Therapy for Brain Metastases: A Question of Value. Int J Radiat Oncol Biol Phys. 2018;101(4): 830-832.

236. Kirkpatrick SI, Reedy J, Krebs-Smith SM, Pannucci TE, Subar AF, Wilson MM, Lerman JL, Tooze JA (CPC). Applications of the Healthy Eating Index for Surveillance, Epidemiology, and Intervention Research: Considerations and Caveats. J Acad Nutr Diet. 2018;118(9): 1603-1621.

237. Klepin HD (CGM), Wildes TM. Fighting for the integration of geriatric principles into oncology. J Geriatr Oncol. 2018;9(6): 705-706.

238. Krasnick BA, Jin LX, Davidson JTt, Sanford DE, Ethun CG, Pawlik TM, Poultsides GA, Tran T, Idrees K, Shen P (SBT), Chapman WC, et al. Adjuvant therapy is associated with improved survival after curative resection for hilar cholangiocarcinoma: A multi-institution analysis from the U.S. extrahepatic biliary malignancy consortium. J Surg Oncol. 2018;117(3): 363-371. PMC5924689.

239. Krebs-Smith SM, Pannucci TE, Subar AF, Kirkpatrick SI, Lerman JL, Tooze JA (CPC), Wilson MM, Reedy J. Update of the Healthy Eating Index: HEI-2015. J Acad Nutr Diet. 2018;118(9): 1591-1602.

240. Kumar JSD, Solingapuram Sai KK, Prabhakaran J, Oufkir HR, Ramanathan G, Whitlow CT (CGM), Dileep H, Mintz A, Mann JJ. Radiosynthesis and in Vivo Evaluation of [(11)C]MPC-6827, the First Brain Penetrant Microtubule PET Ligand. J Med Chem. 2018;61(5): 2118-2123.

241. Kuncewitch M, Levine EA (CGM), Shen P (SBT), Votanopoulos KI. The Role of Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy for Appendiceal Tumors and Colorectal Adenocarcinomas. Clin Colon Rectal Surg. 2018;31(5): 288-294. PMC6123008.

242. Lake BB, Rossmeisl JH (NRO), Cecere J, Stafford P, Zimmerman KL. Immunosignature Differentiation of Non-Infectious Meningoencephalomyelitis and Intracranial Neoplasia in Dogs. Front Vet Sci. 2018;5: 97. PMC5958519.

243. Lalani N, Winkfield KM (CPC), Soto DE, Yeap BY, Ng AK, Mauch PM, Jimenez RB. Management and outcomes of women diagnosed with primary breast lymphoma: a multi-institution experience. Breast Cancer Res Treat. 2018;169(1): 197-202.

244. Lamar ZS (CGM), Dothard A, Kennedy L, Isom S, Robinson M, Vaidya R, Hurd D (CPC), McClain D, Lesser G (NRO). Hyperglycemia during first-line R-CHOP or dose adjusted R-EPOCH chemotherapy for non-Hodgkin lymphoma is prevalent and associated with chemotherapy alteration - a retrospective study. Leuk Lymphoma. 2018;59(8): 1871-1877. PMC6005713.

245. Laramie MD, Smith MK, Marmarchi F, McNally LR (SBT), Henary M. Small Molecule Optoacoustic Contrast Agents: An Unexplored Avenue for Enhancing In Vivo Imaging. Molecules. 2018;23(11).

246. Latouche EL, Arena CB, Ivey JW, Garcia PA, Pancotto TE, Pavlisko N, Verbridge SS (NRO), Davalos RV (NRO), Rossmeisl JH (NRO). High-Frequency Irreversible Electroporation for Intracranial Meningioma: A Feasibility Study in a Spontaneous Canine Tumor Model. Technol Cancer Res Treat. 2018;17: 1533033818. PMC6077896.

247. Lazard AJ, Horrell L, Pikowski J, Cornacchione Ross J (CPC), Noar SM, Sutfin EL (CPC). Message and Delivery Preferences for Online Tobacco Education among Adolescents and Young Adults. J Health Commun. 2018;23(8): 735-742.

248. Leak Bryant A, Coffman EM, Phillips B, Gray TF, Knafl GJ, Klepin HD (CGM), Wood WA, Muss H, Reeve BB. Symptoms, Mobility and Function, and Quality of Life in Adults With Acute Leukemia During Initial Hospitalization. Oncol Nurs Forum. 2018;45(5): 653-664.

249. Lebovitz Y, Ringel-Scaia VM, Allen IC (SBT), Theus MH. Emerging Developments in Microbiome and Microglia Research: Implications for Neurodevelopmental Disorders. Front Immunol. 2018;9: 1993. PMC6129765.

250. Lee SJ, Wang HJ, Kim TH, Choi JS, Kulkarni G, Jackson JD, Atala A (SBT), Yoo JJ. In Situ Tissue Regeneration of Renal Tissue Induced by Collagen Hydrogel Injection. Stem Cells Transl Med. 2018;7(2): 241-250. PMC5788870.

251. Leitao L, Alves CJ, Alencastre IS, Sousa DM, Neto E, Conceicao F, Leitao C, Aguiar P, Almeida-Porada G (SBT), Lamghari M. Bone marrow cell response after injury and during early stage of regeneration is independent of the tissue-of-injury in 2 injury models. Faseb j. 2018; fj20180061.

252. Levick SP, Soto-Pantoja DR (SBT), Bi J, Hundley WG (CPC), Widiapradja A, Manteufel EJ, Bradshaw TW, Melendez GC. Doxorubicin-Induced Myocardial Fibrosis Involves the Neurokinin-1 Receptor and Direct Effects on Cardiac Fibroblasts. Heart Lung Circ. 2018.

253. Levine EA (CGM). Current Management of Peritoneal Surface Malignancy. Surg Oncol Clin N Am. 2018;27(3): xv-xvi.

254. Levine EA (CGM), Votanopoulos KI, Shen P (SBT), Russell G, Fenstermaker J, Mansfield P, Bartlett D, Stewart JH. A Multi-Center Randomized Trial to Evaluate Hematologic Toxicities after Hyperthermic Intraperitoneal Chemotherapy with Oxaliplatin or Mitomycin in Patients with Appendiceal Tumors. J Am Coll Surg. 2018;226(4): 434-443. PMC5890298.

255. Levit LA, Singh H, Klepin HD (CGM), Hurria A. Expanding the Evidence Base in Geriatric Oncology: Action Items From an FDA-ASCO Workshop. J Natl Cancer Inst. 2018.

256. Lewis KH, Skelton JA (CPC), Hsu FC, Ezouah P, Taveras EM, Block JP. Implementing a novel electronic health record approach to track child sugar-sweetened beverage consumption. Prev Med Rep. 2018;11: 169-175. PMC6031146.

257. Li X, Ortega VE, Ampleford EJ, Graham Barr R, Christenson SA, Cooper CB, Couper D, Dransfield MT, Han MLK, Hawkins GA (CGM), Hoffman EA, et al. Genome-wide association study of lung function and clinical implication in heavy smokers. BMC Med Genet. 2018;19(1): 134. PMC6090900.

258. Li X, Pasche B (SBT), Zhang W (CGM), Chen K. Association of MUC16 Mutation With Tumor Mutation Load and Outcomes in Patients With Gastric Cancer. JAMA Oncol. 2018.

259. Littrell J, Tsaih SW, Baud A, Rastas P, Solberg Woods L (CPC), Flister MJ. A High-Resolution Genetic Map for the Laboratory Rat. G3 (Bethesda). 2018;8(7): 2241-2248. PMC6027877.

260. Liu G, Wu R, Yang B, Deng C, Lu X, Walker SJ, Ma PX, Mou S, Atala A (SBT), Zhang Y. Human Urine-Derived Stem Cell Differentiation to Endothelial Cells with Barrier Function and Nitric Oxide Production. Stem Cells Transl Med. 2018;7(9): 686-698. PMC6127250.

261. Liu L (CGM), Ruiz J (NRO), O'Neill SS, Grant SC (CGM), Petty WJ (CGM), Yang M, Chen K, Topaloglu U, Pasche B (SBT), Zhang W (CGM). Favorable outcome of patients with lung adenocarcinoma harboring POLE mutations and expressing high PD-L1. Mol Cancer. 2018;17(1): 81. PMC5897927.

262. Liu M, Chuang Key CC, Weckerle A, Boudyguina E, Sawyer JK, Gebre AK, Spoo W, Makwana O, Parks JS (CGM). Feeding of tobacco blend or nicotine induced weight loss associated with decreased adipocyte size and increased physical activity in male mice. Food Chem Toxicol. 2018;113: 287-295.

263. Liu M, Dressler EV (CGM). A predictive probability interim design for phase II clinical trials with continuous endpoints. Stat Med. 2018;37(12): 1960-1972.

264. Liu M, Thakkar JP, Garcia CR, Dolecek TA, Wagner LM, Dressler EVM (CGM), Villano JL. National cancer database analysis of outcomes in pediatric glioblastoma. Cancer Med. 2018;7(4): 1151-1159. PMC5911617.

265. Liu Y, Yonemura Y, Levine EA (CGM), Glehen O, Goere D, Elias D, Morris DL, Sugarbaker PH, Tuech JJ, Cashin P, Spiliotis JD, et al. Cytoreductive Surgery Plus Hyperthermic Intraperitoneal Chemotherapy for Peritoneal Metastases From a Small Bowel Adenocarcinoma: Multi-Institutional Experience. Ann Surg Oncol. 2018;25(5): 1184-1192. PMC5891561.

266. Loh KP, Klepin HD (CGM). Geriatric Assessment in Older Patients with Acute Myeloid Leukemia. Cancers (Basel). 2018;10(7). PMC6070943.

267. Loh KP, Klepin HD (CGM). Geriatric assessment in acute myeloid leukemia: current and future landscape. Blood Adv. 2018;2(18): 2418. PMC6156887.

268. Loh KP, Ramsdale E, Culakova E, Mendler JH, Liesveld JL, O'Dwyer KM, McHugh C, Gilles M, Lloyd T, Klepin HD (CGM), Mohile SG, et al. Novel mHealth App to Deliver Geriatric Assessment-Driven Interventions for Older Adults With Cancer: Pilot Feasibility and Usability Study. JMIR Cancer. 2018;4(2): e10296.

269. Low EK, Brudvik E, Kuhlman BM, Wilson PF, Almeida-Porada GM (SBT), Porada CD (SBT). Microgravity Impairs DNA Damage Repair in Human Hematopoietic stem/progenitor cells and Inhibits Their Differentiation into Dendritic Cells. Stem Cells Dev. 2018;27(18): 1257-1267.

270. Lu Y (SBT), Shi XF, Salsbury FR, Jr. (CGM), Derreumaux P. Influence of electric field on the amyloid-beta(29-42) peptides embedded in a membrane bilayer. J Chem Phys. 2018;148(4): 045105.

271. Lu Y (SBT), Wang Q, Xue G, Bi E, Ma X, Wang A, Qian J, Dong C, Yi Q. Th9 Cells Represent a Unique Subset of CD4(+) T Cells Endowed with the Ability to Eradicate Advanced Tumors. Cancer Cell. 2018;33(6): 1048-1060. PMC6072282.

272. Lucas AR, Bass MB, Rothrock NE, O'Connor ML, Sorkin MR, Nawyn J, Albinali F, Wagner LI (CPC). Development of an eHealth System to Capture and Analyze Patient Sensor and Self-Report Data: Mixed-Methods Assessment of Potential Applications to Improve Cancer Care Delivery. JMIR Med Inform. 2018;6(4): e46.

273. Lucas AR, Klepin HD (CGM), Porges SW, Rejeski WJ. Mindfulness-Based Movement. Integr Cancer Ther. 2018;17(1): 5-15. PMC5482784.

274. Luo X, Huang S, He N, Liu C, Chen Y, Liu Y, Mi X, Li N, Sun P (SBT), Li Z, Xiang R, et al. Inflammatory Human Umbilical Cord-Derived Mesenchymal Stem Cells Promote Stem Cell-Like Characteristics of Cancer Cells in an IL-1beta-Dependent Manner. Biomed Res Int. 2018;2018: 7096707. PMC5835289.

275. Ma S, Hsieh YP, Ma J, Lu C (SBT). Low-input and multiplexed microfluidic assay reveals epigenomic variation across cerebellum and prefrontal cortex. Sci Adv. 2018;4(4): eaar8187. PMC5906078.

276. Maggiore RJ, Callahan KE, Tooze JA (CPC), Parker IR, Hsu T, Klepin HD (CGM). Geriatrics Fellowship Training and the Role of Geriatricians in Older Adult Cancer Care: A Survey of Geriatrics Fellowship Directors. Gerontol Geriatr Educ. 2018;39(2): 170-182. PMC5796867.

277. Mancone S, Lycan T, Ahmed T, Topaloglu U, Dothard A, Petty WJ (CGM), Strowd RE. Severe neurologic complications of immune checkpoint inhibitors: a single-center review. J Neurol. 2018.

278. Mao C, Zhao Y, Li F, Li Z, Tian S, Debinski W (NRO), Ming X (SBT). P-glycoprotein targeted and near-infrared light-guided depletion of chemoresistant tumors. J Control Release. 2018;286: 289-300. PMC6138550.

279. Marincola Smith P, Kiernan CM, Tran TB, Postlewait LM, Maithel SK, Prescott J, Pawlik T, Wang TS, Glenn J, Levine EA (CGM), Shenoy R, et al. Role of Additional Organ Resection in Adrenocortical Carcinoma: Analysis of 167 Patients from the U.S. Adrenocortical Carcinoma Database. Ann Surg Oncol. 2018;25(8): 2308-2315. PMC6061942.

280. Marshall SA, Ip EH (CPC), Suerken CK, Arcury TA (CPC), Saldana S, Daniel SS, Quandt SA. Relationship between maternal depression symptoms and child weight outcomes in Latino farmworker families. Matern Child Nutr. 2018;14(4): e12614.

281. Mathieu JE, Wolfson MA (CPC), Park S. The evolution of work team research since Hawthorne. Am Psychol. 2018;73(4): 308-321.

282. Matz EL, Terlecki R, Zhang Y, Jackson J, Atala A (SBT). Stem Cell Therapy for Erectile Dysfunction. Sex Med Rev. 2018.

283. Mauney CH, Hollis T (CGM). SAMHD1: Recurring roles in cell cycle, viral restriction, cancer, and innate immunity. Autoimmunity. 2018;51(3): 96-110. PMC6117824.

284. Mazzocchi A, Devarasetty M, Huntwork RC, Soker S (SBT), Skardal A (SBT). Optimization of collagen type I-hyaluronan hybrid bioink for 3D bioprinted liver microenvironments. Biofabrication. 2018;11(1): 015003.

285. Mazzocchi AR, Rajan SAP, Votanopoulos KI, Hall AR (SBT), Skardal A (SBT). In vitro patient-derived 3D mesothelioma tumor organoids facilitate patient-centric therapeutic screening. Sci Rep. 2018;8(1): 2886. PMC5811529.

286. McCabe-Lankford EE, Brown TL, Levi-Polyachenko NH (SBT). Assessing fluorescence detection and effective photothermal therapy of near-infrared polymer nanoparticles using alginate tissue phantoms. Lasers Surg Med. 2018.

287. McCrory MC, Wang SS, Shetty AK, McLean TW (SBT), Lantz PE, Cannon ML. Sudden Cardiac Arrest Due to Hemophagocytic Lymphohistiocytosis in a Child. J Emerg Med. 2018.

288. McDaniel DK, Ringel-Scaia VM, Coutermarsh-Ott SL, Allen IC (SBT). Utilizing the Lung as a Model to Study Nanoparticle-Based Drug Delivery Systems. Methods Mol Biol. 2018;1831: 179-190.

289. McGough EL, Kelly VE, Weaver KE (CPC), Logsdon RG, McCurry SM, Pike KC, Grabowski TJ, Teri L. Limbic and Basal Ganglia Neuroanatomical Correlates of Gait and Executive Function: Older Adults with Mild Cognitive Impairment and Intact Cognition. Am J Phys Med Rehabil. 2018;97(4): 229-235.

290. McKenna MT, Weis JA (SBT), Quaranta V, Yankeelov TE. Variable Cell Line Pharmacokinetics Contribute to Non-Linear Treatment Response in Heterogeneous Cell Populations. Ann Biomed Eng. 2018;46(6): 899-911. PMC5935587.

291. McTyre E, Ayala-Peacock D, Contessa J, Corso C, Chiang V, Chung C, Fiveash J, Ahluwalia M, Kotecha R, Chao S, Chan M (NRO), et al. Multi-institutional competing risks analysis of distant brain failure and salvage patterns after upfront radiosurgery without whole brain radiotherapy for brain metastasis. Ann Oncol. 2018;29(2): 497-503.

292. Melendez GC, Jordan JH, D'Agostino RB, Jr. (NRO), Lesnefsky EJ, Hundley WG (CPC). Accelerated Left Ventricular Interstitial Collagen Deposition After Receiving Doxorubicin in Hypertension. J Am Coll Cardiol. 2018;72(13): 1555-1557.

293. Melvin RL, Xiao J, Berenhaut KS, Godwin RC, Salsbury FR (CGM). Using correlated motions to determine sufficient sampling times for molecular dynamics. Phys Rev E. 2018;98(2-1): 023307.

294. Mercier F, Passot G, Villeneuve L, Levine EA (CGM), Yonemura Y, Goere D, Sugarbaker PH, Marolho C, Bartlett DL, Glehen O. Peritoneal Carcinomatosis of Urachus Origin Treated by Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy (HIPEC): An International Registry of 36 Patients. Ann Surg Oncol. 2018;25(4): 1094-1100.

295. Michaelis LC, Klepin HD (CGM), Walter RB. Advancements in the management of medically less-fit and older adults with newly diagnosed acute myeloid leukemia. Expert Opin Pharmacother. 2018;19(8): 865-882.

296. Miller DP, Jr. (CPC), Denizard-Thompson N, Weaver KE (CPC), Case LD (CPC), Troyer JL, Spangler JG (CPC), Lawler D, Pignone MP. Effect of a Digital Health Intervention on Receipt of Colorectal Cancer Screening in Vulnerable Patients: A Randomized Controlled Trial. Ann Intern Med. 2018;168(8): 550-557. PMC6033519.

297. Misra BB, Bassey E, Bishop AC, Kusel DT, Cox LA (CGM), Olivier M (CGM). High Resolution GC/MS Metabolomics of Non-Human Primate Serum. Rapid Commun Mass Spectrom. 2018.

298. Misra BB, Langefeld CD, Olivier M (CGM), Cox LA (CGM). Integrated Omics: Tools, Advances, and Future Approaches. J Mol Endocrinol. 2018.

299. Mohile SG, Dale W, Somerfield MR, Schonberg MA, Boyd CM, Burhenn PS, Canin B, Cohen HJ, Holmes HM, Klepin HD (CGM), Janelsins MC, et al. Practical Assessment and Management of Vulnerabilities in Older Patients Receiving Chemotherapy: ASCO Guideline for Geriatric Oncology. J Clin Oncol. 2018;36(22): 2326-2347. PMC6063790.

300. Mokhtari S, Baptista PM, Vyas DA, Freeman CJ, Moran E, Brovold M, Llamazares GA, Lamar Z (CGM), Porada CD (SBT), Soker S (SBT), Almeida-Porada (SBT). Evaluating Interaction of Cord Blood Hematopoietic Stem/Progenitor Cells with Functionally Integrated Three-Dimensional Microenvironments. Stem Cells Transl Med. 2018;7(3): 271-282. PMC5827742.

301. Mokhtari S, Colletti E, Yin W, Sanada C, Lamar Z (CGM), Simmons PJ, Walker S, Bishop C, Atala A (SBT), Porada CD (SBT), Almeida-Porada (SBT). A human bone marrow mesodermal-derived cell population with hemogenic potential. Leukemia. 2018;32(7): 1575-1586. PMC6035774.

302. Mollica MA, Weaver KE (CPC), McNeel TS, Kent EE. Examining urban and rural differences in perceived timeliness of care among cancer patients: A SEER-CAHPS study. Cancer. 2018;124(15): 3257-3265.

303. Moore JB (CPC). The Search for Elusive Progress Against the Epidemic of Childhood Obesity. J Public Health Manag Pract. 2018;24(3): 193-194.

304. Munden RF, Carter BW, Chiles C (CPC), MacMahon H, Black WC, Ko JP, McAdams HP, Rossi SE, Leung AN, Boiselle PM, Kent MS, et al. Managing Incidental Findings on Thoracic CT: Mediastinal and Cardiovascular Findings. A White Paper of the ACR Incidental Findings Committee. J Am Coll Radiol. 2018;15(8): 1087-1096.

305. Nader MA (CPC), Ateyya H, El-Shafey M, El-Sherbeeny NA. Sitagliptin enhances the neuroprotective effect of pregabalin against pentylenetetrazole-induced acute epileptogenesis in mice: Implication of oxidative, inflammatory, apoptotic and autophagy pathways. Neurochem Int. 2018;115: 11-23.

306. Nagpal R, Shively CA, Appt SA, Register TC, Michalson KT, Vitolins MZ (CPC), Yadav H. Gut Microbiome Composition in Non-human Primates Consuming a Western or Mediterranean Diet. Front Nutr. 2018;5: 28. PMC5996930.

307. Naughton MJ, Case LD (CPC), Peiffer A, Chan M (NRO), Stieber V, Moore D, Falchuk S, Piephoff J, Edenfield W, Shaw EG (CPC), Rapp SR (NRO), et al. Quality of life of irradiated brain tumor survivors treated with donepezil or placebo: Results of the WFU CCOP research base protocol 91105. Neurooncol Pract. 2018;5(2): 114-121. PMC5946897.

308. Nelson KJ, Bolduc JA, Wu H, Collins JA, Burke EA, Reisz JA, Klomsiri C, Wood ST, Furdui CM (CGM), Poole LB (CGM), Loeser RF, et al. H2O2 oxidation of cysteine residues in c-Jun N-terminal kinase 2 (JNK2) contributes to redox regulation in human articular chondrocytes. J Biol Chem. 2018;293(42): 16376-1638. PMC6200941.

309. Nelson RA, Jr., Schronce T, Huang Y, Albugami A, Kulik G (SBT), Welker ME (CGM). Synthesis and PI 3-Kinase Inhibition Activity of Some Novel 2,4,6-Trisubstituted 1,3,5-Triazines. Molecules. 2018;23(7).

310. Ngankeu A, Ranganathan P, Havelange V, Nicolet D, Volinia S, Powell BL (CGM), Kolitz JE, Uy GL, Stone RM, Kornblau SM, Andreeff M, et al. Discovery and functional implications of a miR-29b-1/miR-29a cluster polymorphism in acute myeloid leukemia. Oncotarget. 2018;9(4): 4354-4365. PMC5796978.

311. Niazi MKK, Abas FS, Senaras C, Pennell M, Sahiner B, Chen W, Opfer J, Hasserjian R, Louissaint A, Jr., Shana'ah A, Gurcan MN (CGM), et al. Nuclear IHC enumeration: A digital phantom to evaluate the performance of automated algorithms in digital pathology. PLoS One. 2018;13(5): e0196547. PMC5944932.

312. Niazi MKK, Lin Y, Liu F, Ashok A, Marcellin MW, Tozbikian G, Gurcan MN (CGM), Bilgin A. Pathological image compression for big data image analysis: Application to hotspot detection in breast cancer. Artif Intell Med. 2018.

313. Niazi MKK, Senaras C, Pennell M, Arole V, Tozbikian G, Gurcan MN (CGM). Relationship between the Ki67 index and its area based approximation in breast cancer. BMC Cancer. 2018;18(1): 867. PMC6122570.

314. Niazi MKK, Tavolara TE, Arole V, Hartman DJ, Pantanowitz L, Gurcan MN (CGM). Identifying tumor in pancreatic neuroendocrine neoplasms from Ki67 images using transfer learning. PLoS One. 2018;13(4): e0195621. PMC5896941.

315. Noar SM, Rohde JA, Horvitz C, Lazard AJ, Cornacchione Ross J (CPC), Sutfin EL (CPC). Adolescents' receptivity to E-cigarette harms messages delivered using text messaging. Addict Behav. 2018.

316. Nobles JD, Perez A, Skelton JA (CPC), Spence ND, Ball GD. The engagement pathway: A conceptual framework of engagement-related terms in weight management. Obes Res Clin Pract. 2018;12(2): 133-138.

317. Nunez Lopez YO, Messi ML, Pratley RE, Zhang T, Delbono O (SBT). Troponin T3 associates with DNA consensus sequence that overlaps with p53 binding motifs. Exp Gerontol. 2018;108: 35-40. PMC5994179.

318. Nzou G, Wicks RT, Wicks EE, Seale SA, Sane CH, Chen A, Murphy SV, Jackson JD, Atala AJ (SBT). Human Cortex Spheroid with a Functional Blood Brain Barrier for High-Throughput Neurotoxicity Screening and Disease Modeling. Sci Rep. 2018;8(1): 7413. PMC5943588.

319. O'Brien TJ, Bonakdar M, Bhonsle S, Neal RE, 2nd, Aardema CH, Jr., Robertson JL, Goldberg SN, Davalos RV (NRO). Effects of internal electrode cooling on irreversible electroporation using a perfused organ model. Int J Hyperthermia. 2018; 1-12.

320. Packer RA, Rossmeisl JH (NRO), Kent MS, Griffin JFt, Mazcko C, LeBlanc AK. Consensus recommendations on standardized magnetic resonance imaging protocols for multicenter canine brain tumor clinical trials. Vet Radiol Ultrasound. 2018;59(3): 261-271. PMC5942214.

321. Paek MS, Nightingale CL (CPC), Tooze JA (CPC), Milliron BJ, Weaver KE (CPC), Sterba KR. Contextual and stress process factors associated with head and neck cancer caregivers' physical and psychological well-being. Eur J Cancer Care (Engl). 2018;27(2): e12833. PMC5867245.

322. Palakshappa D, Skelton JA (CPC). What a Summer Nutrition Benefit Program Could Mean for Clinicians and Their Patients. Pediatrics. 2018;141(4).

323. Panigrahi GK, Ramteke A, Birks D, Abouzeid Ali HE, Venkataraman S, Agarwal C, Vibhakar R, Miller LD (CGM), Agarwal R, Abd Elmageed ZY, Deep G (SBT). Exosomal microRNA profiling to identify hypoxia-related biomarkers in prostate cancer. Oncotarget. 2018;9(17): 13894-1391. PMC5862624.

324. Parashar A, Hundley WG (CPC). The Role of Cardiovascular Magnetic Resonance for Surveillance of Cardiac Performance upon Receipt of Potentially Cardiotoxic Cancer Therapeutics. Curr Cardiol Rep. 2018;20(12): 142.

325. Pardee TS (CGM), Anderson RG, Howard DS (CGM), Isom S, Ghiraldeli LP, Miller LD (CGM), Chou JA, Hurd D (CPC), Zhang W (CGM), Ellis LR, Powell BL (CGM), et al. A phase I study of CPI-613 in combination with high dose cytarabine and mitoxantrone for relapsed or refractory acute myeloid leukemia. Clin Cancer Res. 2018;24(9): 2060-2073. PMC5932089.

326. Park SH, Eber MR, Taichman RS, Shiozawa Y (SBT). Determining Competitive Potential of Bone Metastatic Cancer Cells in the Murine Hematopoietic Stem Cell Niche. Methods Mol Biol. 2018.

327. Park SH, Eber MR, Widner DB, Shiozawa Y (SBT). Role of the Bone Microenvironment in the Development of Painful Complications of Skeletal Metastases. Cancers (Basel). 2018;10(5). PMC5977114.

328. Park SH, Keller ET, Shiozawa Y (SBT). Bone Marrow Microenvironment as a Regulator and Therapeutic Target for Prostate Cancer Bone Metastasis. Calcif Tissue Int. 2018;102(2): 152-162. PMC5807175.

329. Patterson SA, Deep G (SBT), Brinkley TE. Detection of the receptor for advanced glycation endproducts in neuronally-derived exosomes in plasma. Biochem Biophys Res Commun. 2018;500(4): 892-896. PMC6082160.

330. Peak TC, Praharaj PP, Panigrahi GK, Doyle M, Su Y, Schlaepfer IR, Singh R (SBT), Vander Griend D, Atala A (SBT), Hemal A, Deep G (SBT), et al. Exosomes secreted by placental stem cells selectively inhibit growth of aggressive prostate cancer cells. Biochem Biophys Res Commun. 2018;499(4): 1004-1010. PMC5929996.

331. Penzes M, Foley KL (CPC), Nadasan V, Paulik E, Abram Z, Urban R. Bidirectional associations of e-cigarette, conventional cigarette and waterpipe experimentation among adolescents: A cross-lagged model. Addict Behav. 2018;80: 59-64. PMC5807159.

332. Petty WJ (CGM), Urbanic JJ, Ahmed T, Hughes R, Levine B, Rusthoven K, D'Agostino RB (NRO), Ruiz JR (NRO), Lally BE, Chan M (NRO), Blackstock AW, (CGM). Long Term Outcomes of a Phase II Trial of Chemotherapy with Consolidative Radiation Therapy for Oligometastatic Non-Small Cell Lung Cancer. Int J Radiat Oncol Biol Phys. 2018;102(3): 527-535.

333. Phipps JP, Haas KM (SBT). An Adjuvant That Increases Protective Antibody Responses to Polysaccharide Antigens and Enables Recall Responses. J Infect Dis. 2018.

334. Poorman CE, Ethun CG, Postlewait LM, Tran TB, Prescott JD, Pawlik TM, Wang TS, Glenn J, Hatzaras I, Levine EA (CGM), Phay JE, et al. A Novel T-Stage Classification System for Adrenocortical Carcinoma: Proposal from the US Adrenocortical Carcinoma Study Group. Ann Surg Oncol. 2018;25(2): 520-527. PMC6087546.

335. Porter KJ, Alexander R, Perzynski KM, Kruzliakova N, Zoellner JM (CPC). Using the Clear Communication Index to Improve Materials for a Behavioral Intervention. Health Commun. 2018;: 1-7.

336. Portillo-Ledesma S, Randall LM, Parsonage D, Dalla Rizza J, Karplus PA, Poole LB (CGM), Denicola A, Ferrer-Sueta G. Differential Kinetics of Two-Cysteine Peroxiredoxin Disulfide Formation Reveal a Novel Model for Peroxide Sensing. Biochemistry. 2018;57(24): 3416-3424.

337. Praharaj PP, Bhutia SK, Nagrath S, Bitting RL (SBT), Deep G (SBT). Circulating tumor cell-derived organoids: Current challenges and promises in medical research and precision medicine. Biochim Biophys Acta. 2018;1869(2): 117-127. PMC6054479.

338. Pratt KJ, Skelton JA (CPC). Family Functioning and Childhood Obesity Treatment: a Family Systems Theory-Informed Approach. Acad Pediatr. 2018;18(6): 620-627.

339. Prazeres P, Turquetti AOM, Azevedo PO, Barreto RSN, Miglino MA, Mintz A, Delbono O (SBT), Birbrair A. Perivascular cell alphav integrins as a target to treat skeletal muscle fibrosis. Int J Biochem Cell Biol. 2018;99: 109-113. PMC6159891.

340. Pridham KJ, Le L, Guo S, Varghese RT, Algino S, Liang Y, Fajardin R, Rodgers CM, Simonds GR, Kelly DF (CGM), Sheng Z. PIK3CB/p110beta is a selective survival factor for glioblastoma. Neuro Oncol. 2018;20(4): 494-505. PMC5909664.

341. Puppala S, Li C, Glenn JP, Saxena R, Gawrieh S, Quinn A, Palarczyk J, Dick EJ, Jr., Nathanielsz PW, Cox LA (CGM). Primate fetal hepatic responses to maternal obesity: epigenetic signalling pathways and lipid accumulation. J Physiol. 2018.

342. Qi B, Crawford AJ, Wojtynek NE, Holmes MB, Souchek JJ, Almeida-Porada G (SBT), Ly QP, Cohen SM, Hollingsworth MA, Mohs AM. Indocyanine green loaded hyaluronan-derived nanoparticles for fluorescence-enhanced surgical imaging of pancreatic cancer. Nanomedicine. 2018;14(3): 769-780. PMC5899013.

343. Rahbar E, Waits CMK, Kirby EH, Jr., Miller LR, Ainsworth HC, Cui T, Sergeant S, Howard TD, Langefeld CD, Chilton FH (CPC). Allele-specific methylation in the FADS genomic region in DNA from human saliva, CD4+ cells, and total leukocytes. Clin Epigenetics. 2018;10: 46. PMC5889567.

344. Raj S, Miller LD (CGM), Triozzi PL (SBT). Addressing the Adult Soft Tissue Sarcoma Microenvironment with Intratumoral Immunotherapy. Sarcoma. 2018;2018: 9305294. PMC6109466.

345. Ramirez MU, Stirling ER, Emenaker NJ, Roberts DD, Soto-Pantoja DR (SBT). Thrombospondin-1 interactions regulate eicosanoid metabolism and signaling in cancer-related inflammation. Cancer Metastasis Rev. 2018.

346. Ramkissoon LA, Britt N, Guevara A, Whitt E, Severson E, Sathyan P, Gay L, Elvin J, Ross JS, Lesser GJ (NRO), Stogner-Underwo. Precision Neuro-oncology: the Role of Genomic Testing in the Management of Adult and Pediatric Gliomas. Curr Treat Options Oncol. 2018;19(8): 41.

347. Rao PK, Merath K, Drigalenko E, Jadhav AYL, Komorowski RA, Goldblatt MI, Rohatgi A, Sarzynski MA, Gawrieh S, Olivier M (CGM). Proteomic characterization of high-density lipoprotein particles in patients with non-alcoholic fatty liver disease. Clin Proteomics. 2018;15: 10. PMC5839024.

348. Reedy J, Lerman JL, Krebs-Smith SM, Kirkpatrick SI, Pannucci TE, Wilson MM, Subar AF, Kahle LL, Tooze JA (CPC). Evaluation of the Healthy Eating Index-2015. J Acad Nutr Diet. 2018;118(9): 1622-1633.

349. Ren X, Foster BM, Ghassemi P, Strobl JS, Kerr BA (SBT), Agah M. Entrapment of Prostate Cancer Circulating Tumor Cells with a Sequential Size-Based Microfluidic Chip. Anal Chem. 2018;90(12): 7526-7534.

350. Renfrow JJ, Soike MH, Debinski W (NRO), Ramkissoon SH, Mott RT, Frenkel MB, Sarkaria JN, Lesser GJ (NRO), Strowd RE. Hypoxia-inducible factor 2alpha: a novel target in gliomas. Future Med Chem. 2018;10(18): 2227-2236.

351. Reynolds LM, Howard TD, Ruczinski I, Kanchan K, Seeds MC, Mathias RA, Chilton FH (CPC). Tissue-specific impact of FADS cluster variants on FADS1 and FADS2 gene expression. PLoS One. 2018;13(3): e0194610. PMC5874031.

352. Rimkus TK, Carpenter RL, Sirkisoon SR, Zhu D, Pasche B (SBT), Chan MD (NRO), Lesser GJ (NRO), Tatter SB, Watabe K (NRO), Debinski W (NRO), Lo HW (NRO). Truncated glioma-associated oncogene homolog 1 (tGLI1) mediates mesenchymal glioblastoma via transcriptional activation of CD44. Cancer Res. 2018;78(10): 2589-2600. PMC5955849.

353. Rivas F, Zahid OK, Reesink HL, Peal BT, Nixon AJ, DeAngelis PL, Skardal A (SBT), Rahbar E, Hall AR (SBT). Label-free analysis of physiological hyaluronan size distribution with a solid-state nanopore sensor. Nat Commun. 2018;9(1): 1037. PMC5847568.

354. Roberge D, Brown PD, Whitton A, O'Callaghan C, Leis A, Greenspoon J, Smith GL, Hu JJ, Nichol A, Winch C, Chan MD (NRO). The Future Is Now-Prospective Study of Radiosurgery for More Than 4 Brain Metastases to Start in 2018! Front Oncol. 2018;8: 380. PMC6146211.

355. Rodrigues ACZ, Messi ML, Wang ZM, Abba MC, Pereyra A, Mintz A, Zhang T, O'Meara M, Furdui C (CGM), Lopez EIS, Delbono O (SBT), et al. The Sympathetic Nervous System Regulates Skeletal Muscle Motor Innervation and Acetylcholine Receptor Stability. Acta Physiol (Oxf). 2018; e13195.

356. Rogers LC, Davis RR, Said N (SBT), Hollis T (CGM), Daniel LW (SBT). Blocking LPA-dependent signaling increases ovarian cancer cell death in response to chemotherapy. Redox Biol. 2018;15: 380-386. PMC5767563.

357. Rohde JA, Noar SM, Horvitz C, Lazard AJ, Cornacchione Ross J (CPC), Sutfin EL (CPC). The Role of Knowledge and Risk Beliefs in Adolescent E-Cigarette Use: A Pilot Study. Int J Environ Res Public Health. 2018;15(4). PMC5923872.

358. Rosenthal S, Gray M, Fatima H, Sair HI, Whitlow CT (CGM). Functional MR Imaging: Blood Oxygen Level-Dependent and Resting State Techniques in Mild Traumatic Brain Injury. Neuroimaging Clin N Am. 2018;28(1): 107-115.

359. Rosko AE, Olin RL, Artz A, Wildes TM, Stauder R, Klepin HD (CGM). A call to action in hematologic disorders: A report from the ASH scientific workshop on hematology and aging. J Geriatr Oncol. 2018;9(4): 287-290.

360. Ross CL, Pettenati MJ, Procita J, Cathey L, George SK, Almeida-Porada G (SBT). Evaluation of Cytotoxic and Genotoxic Effects of Extremely Low-frequency Electromagnetic Field on Mesenchymal Stromal Cells. Glob Adv Health Med. 2018;7: 2164956118. PMC5960853.

361. Roth Stefaniak K, Epley CC, Novak JJ, McAndrew ML, Cornell HD, Zhu J, McDaniel DK, Davis JL, Allen IC (SBT), Morris AJ, Grove TZ. Photo-triggered release of 5-fluorouracil from a MOF drug delivery vehicle. Chem Commun (Camb). 2018;54(55): 7617-7620.

362. Rothschild DE, McDaniel DK, Ringel-Scaia VM, Allen IC (SBT). Modulating inflammation through the negative regulation of NF-kappaB signaling. J Leukoc Biol. 2018. PMC6135699.

363. Ruiz J (NRO), Miller AA, Tooze JA (CPC), Crane S, Petty WJ (CGM), Gajra A, Klepin HD (CGM). Frailty assessment predicts toxicity during first cycle chemotherapy for advanced lung cancer regardless of chronologic age. J Geriatr Oncol. 2018.

364. Rupprecht LE, Kreisler AD, Spierling SR, de Guglielmo G, Kallupi M, George O, Donny EC (CPC), Zorrilla EP, Sved AF. Self-administered nicotine increases fat metabolism and suppresses weight gain in male rats. Psychopharmacology (Berl). 2018;235(4): 1131-1140.

365. Russell TB (CPC), Rinker EK, Dillingham CS, Givner LB, McLean TW (SBT). Pneumocystis Jirovecii Pneumonia During Sirolimus Therapy for Kaposiform Hemangioendothelioma. Pediatrics. 2018;141(Suppl 5): S421-s424.

366. Saez D, Dushime R, Wu H, Ramos Cordova LB, Shukla K, Brown-Harding H, Furdui CM (CGM), Tsang AW (SBT). Sulforaphane Promotes Chlamydial Infection by Suppressing Mitochondrial Protein Oxidation and Activation of Complement C3. Protein Sci. 2018.

367. Salsman JM (CPC), Park CL, Hahn EA, Snyder MA, George LS, Steger MF, Merluzzi T, Cella D. Refining and supplementing candidate measures of psychological well-being for the NIH PROMIS(R): qualitative results from a mixed cancer sample. Qual Life Res. 2018.

368. Samanci MY, Calendo G, Baker ST, Erkmen K, Weaver MW, Wolfson MR (CPC). Neuroprotective effects of nasopharyngeal perfluorochemical cooling in a rat model of subarachnoid hemorrhage. World Neurosurg. 2018.

369. Samykutty A, Grizzle WE, Fouts BL, McNally MW, Chuong P, Thomas A (SBT), Chiba A, Otali D, Woloszynska A, Said N (SBT), McNally LR (SBT), et al. Optoacoustic imaging identifies ovarian cancer using a microenvironment targeted theranostic wormhole mesoporous silica nanoparticle. Biomaterials. 2018;182: 114-126.

370. Samykutty A, Thomas A (SBT), McNally M, Chiba A, McNally LR (SBT). Osteopontin-targeted probe detects orthotopic breast cancers using optoacoustic imaging. Biotech Histochem. 2018;: 1-7.

371. Sandler RA, Geng K, Song D, Hampson RE, Witcher MR, Deadwyler SA (SBT), Berger TW, Marmarelis VZ. Designing Patient-Specific Optimal Neurostimulation Patterns for Seizure Suppression. Neural Comput. 2018;30(5): 1180-1208.

372. Santoriello D, Husain SA, De Serres SA, Bomback AS, Crew RJ, Vasilescu ER, Serban G, Campenot ES, Kiryluk K, Hawkins GA (CGM), Freedman B, et al. Donor APOL1 high-risk genotypes are associated with increased risk and inferior prognosis of de novo collapsing glomerulopathy in renal allografts. Kidney Int. 2018.

373. Sapoznik E, Niu G, Zhou Y, Prim PM, Criswell TL, Soker S (SBT). A real-time monitoring platform of myogenesis regulators using double fluorescent labeling. PLoS One. 2018;13(2): e0192654. PMC5812636.

374. Schimizzi GV, Jin LX, Davidson JTt, Krasnick BA, Ethun CG, Pawlik TM, Poultsides G, Shen P (SBT), Idrees K, Isom CA, Fields RC, et al. Outcomes after vascular resection during curative-intent resection for hilar cholangiocarcinoma: a multi-institution study from the US extrahepatic biliary malignancy consortium. HPB (Oxford). 2018;20(4): 332-339. PMC5970648.

375. Schroeder MC, Rastogi P, Geyer CE, Jr., Miller LD (CGM), Thomas A (SBT). Early and Locally Advanced Metaplastic Breast Cancer: Presentation and Survival by Receptor Status in Surveillance, Epidemiology, and End Results (SEER) 2010-2014. Oncologist. 2018;23(4): 481-488. PMC5896714.

376. Seidenberg AB, Orlan EN, Travers MJ, Sutfin EL (CPC). Air quality and presence of air ventilation systems inside waterpipe cafes in North Carolina. Tob Control. 2018.

377. Selicean SE, Tomuleasa C, Grewal R, Almeida-Porada G (SBT), Berindan-Neagoe I. Mesenchymal stem cells in myeloproliferative disorders - focus on primary myelofibrosis. Leuk Lymphoma. 2018;: 1-10.

378. Senaras C, Niazi MKK, Sahiner B, Pennell MP, Tozbikian G, Lozanski G, Gurcan MN (CGM). Optimized generation of high-resolution phantom images using cGAN: Application to quantification of Ki67 breast cancer images. PLoS One. 2018;13(5): e0196846. PMC5942823.

379. Sendi H, Mead I, Wan M, Mehrab-Mohseni M, Koch K, Atala A (SBT), Bonkovsky HL, Bishop CE. miR-122 inhibition in a human liver organoid model leads to liver inflammation, necrosis, steatofibrosis and dysregulated insulin signaling. PLoS One. 2018;13(7): e0200847. PMC6053181.

380. Serban MA, Skardal A (SBT). Hyaluronan chemistries for three-dimensional matrix applications. Matrix Biol. 2018.

381. Sharma P, Debinski W (NRO). Receptor-Targeted Glial Brain Tumor Therapies. Int J Mol Sci. 2018;19(11).

382. Shaw PA, Deffner V, Keogh RH, Tooze JA (CPC), Dodd KW, Kuchenhoff H, Kipnis V, Freedman LS. Epidemiologic analyses with error-prone exposures: review of current practice and recommendations. Ann Epidemiol. 2018.

383. Shen W, Xie J, Zhao S, Du R, Luo X, He H, Jiang S, Hao N, Sun P (SBT), Chen Y, Liu Y, et al. ICAM3 mediates inflammatory signaling to promote cancer cell stemness. Cancer Lett. 2018;422: 29-43. PMC5928798.

384. Shi X, Wang X, Wang TL, Hilakivi-Clarke L, Clarke R, Xuan J (CGM). SparseIso: a novel Bayesian approach to identify alternatively spliced isoforms from RNA-seq data. Bioinformatics. 2018;34(1): 56-63. PMC5870564.

385. Shively CA, Register TC, Appt SE, Clarkson TB, Uberseder B, Clear KYJ, Wilson AS, Chiba A, Tooze JA (CPC), Cook KL (SBT). Consumption of Mediterranean versus Western Diet Leads to Distinct Mammary Gland Microbiome Populations. Cell Rep. 2018;25(1): 47-56.e3.

386. Singh H, Hurria A, Klepin HD (CGM). Progress Through Collaboration: An ASCO and U.S. Food and Drug Administration Workshop to Improve the Evidence Base for Treating Older Adults With Cancer. Am Soc Clin Oncol Educ Book. 2018;(38): 392-399.

387. Sirkisoon SR, Carpenter RL, Rimkus T, Anderson A, Harrison A, Lange AM, Jin G, Watabe K (NRO), Lo HW (NRO). Interaction between STAT3 and GLI1/tGLI1 oncogenic transcription factors promotes the aggressiveness of triple-negative breast cancers and HER2-enriched breast cancer. Oncogene. 2018;37(19): 2502-2514. PMC5948110.

388. Skinner AC, Ravanbakht SN, Skelton JA (CPC), Perrin EM, Armstrong SC. Prevalence of Obesity and Severe Obesity in US Children, 1999-2016. Pediatrics. 2018;141(3). PMC6109602.

389. Smith TT, Hatsukami DK, Benowitz NL, Colby SM, McClernon FJ, Strasser AA, Tidey JW, White CM, Donny EC (CPC). Whether to push or pull?, Nicotine reduction and non-combusted alternatives - Two strategies for reducing smoking and improving public health. Prev Med. 2018;117: 8-14. PMC6163095.

390. Soike MH, Hughes RT, Farris M, McTyre ER, Cramer CK, Bourland JD (CGM), Chan MD (NRO). Does Stereotactic Radiosurgery Have a Role in the Management of Patients Presenting With 4 or More Brain Metastases?, Neurosurgery. 2018.

391. Soike MH, McTyre ER, Hughes RT, Farris M, Cramer CK, Munley MT, Tatter SB, Ruiz J (NRO), Bourland JD (CGM), Watabe K (NRO), Chan MD (NRO), et al. Initial brain metastasis velocity: does the rate at which cancers first seed the brain affect outcomes?, J Neurooncol. 2018.

392. Soike MH, McTyre ER, Shah N, Puchalski RB, Lo HW (NRO), Tatter SB, Miller LD (CGM), Debinski W (NRO), Lesser GJ (NRO), Strowd RE (NRO), Chan MD (NRO), et al. Glioblastoma radiomics: can genomic and molecular characteristics correlate with imaging response patterns?, Neuroradiology. 2018;60(10): 1043-1051.

393. Soto-Perez-de-Celis E, Sun CL, Tew WP, Mohile SG, Gajra A, Klepin HD (CGM), Owusu C, Gross CP, Muss HB, Lichtman SM, Chapman AE, et al. Association between patient-reported hearing and visual impairments and functional, psychological, and cognitive status among older adults with cancer. Cancer. 2018;124(15): 3249-3256.

394. Spangler JG (CPC), Song EY, Egan KL, Wagoner KG (CPC), Reboussin BA, Wolfson M (CPC), Sutfin EL (CPC). Correlates of Alcohol Mixed with Energy Drink Use Among First Year College Students: Clinical and Research Implications. J Caffeine Adenosine Res. 2018;8(3): 107-112. PMC6150939.

395. Sparano JA, Gray RJ, Makower DF, Pritchard KI, Albain KS, Hayes DF, Geyer CE, Jr., Dees EC, Goetz MP, Wagner LI, Jr. (CPC), Lively T, et al. Adjuvant Chemotherapy Guided by a 21-Gene Expression Assay in Breast Cancer. N Engl J Med. 2018;379(2): 111-121. PMC6172658.

396. Spradling-Reeves KD, Glenn JP, Lange KJ, Kuhn N, Coalson JJ, Nijland MJ, Li C, Nathanielsz PW, Cox LA (CGM). The non-human primate kidney transcriptome in fetal development. J Med Primatol. 2018;47(3): 157-171. PMC5963710.

397. Stillman AE, Oudkerk M, Bluemke DA, de Boer MJ, Bremerich J, Garcia EV, Gutberlet M, van der Harst P, Hundley WG (CPC), Jerosch-Herold, Kuijpers D, et al. Correction to: Imaging the myocardial ischemic cascade. Int J Cardiovasc Imaging. 2018;34(9): 1503.

398. Stub T, Quandt SA, Arcury TA (CPC), Sandberg JC (CPC), Kristoffersen AE. Attitudes and knowledge about direct and indirect risks among conventional and complementary health care providers in cancer care. BMC Complement Altern Med. 2018;18(1): 44. PMC5793440.

399. Stutsrim A, Howard-McNatt M (CGM). Pure Ductal Carcinoma in situ of the Male Breast. Am Surg. 2018;84(8): e333-e334.

400. Su W, Hong L, Xu X, Huang S, Zhang W (CGM), Li L, Xu Y, Debinski W (NRO), Hu WY, Wu X, Sun P (SBT), et al. miR-30 disrupts senescence and promotes cancer by targeting both p16(INK4A) and DNA damage pathways. Oncogene. 2018;37(42): 5618-5632. PMC6195819.

401. Sun C, Lu C (SBT). Microfluidics-Based Chromosome Conformation Capture (3C) Technology for Examining Chromatin Organization with a Low Quantity of Cells. Anal Chem. 2018;90(6): 3714-3719. PMC5861017.

402. Sun Y, Bao W, Liu B, Caan BJ, Lane DS, Millen AE, Simon MS, Thomson CA, Tinker LF, Vitolins MZ (CPC), Snetselaar LG,. Changes in Overall Diet Quality in Relation to Survival in Postmenopausal Women with Breast Cancer: Results from the Women's Health Initiative. J Acad Nutr Diet. 2018;118(10): 1855-1863.

403. Surasarang SH, Sahakijpijarn S, Florova G, Komissarov AA, Nelson CL, Perenlei E, Fukuda S, Wolfson MR (CPC), Shaffer TH, Idell S, Williams RO, 3r. Nebulization of Single-Chain Tissue-Type and Single-Chain Urokinase Plasminogen Activator for Treatment of Inhalational Smoke-Induced Acute Lung Injury. J Drug Deliv Sci Technol. 2018;48: 19-27. PMC6095669.

404. Sweeney DC, Douglas TA, Davalos RV (NRO). Characterization of Cell Membrane Permeability In Vitro Part II: Computational Model of Electroporation-Mediated Membrane Transport. Technol Cancer Res Treat. 2018;17: 1533033818. PMC6149036.

405. Sweeney DC, Weaver JC, Davalos RV (NRO). Characterization of Cell Membrane Permeability In Vitro Part I: Transport Behavior Induced by Single-Pulse Electric Fields. Technol Cancer Res Treat. 2018;17: 1533033818. PMC6154305.

406. Taylor JM, McTyre ER, Tatter SB, Laxton AW, Munley MT, Chan MD (NRO), Cramer CK. Gamma Knife Stereotactic Radiosurgery for the Treatment of Brain Metastases from Primary Tumors of the Urinary Bladder. Stereotact Funct Neurosurg. 2018;96(2): 108-112.

407. Tran TB, Worhunsky DJ, Squires MH, Jin LX, Spolverato G, Votanopoulos KI, Weber SM, Schmidt C, Levine EA (CGM), Fields RC, Pawlik TM, et al. Clinicopathologic score predicting lymph node metastasis in T1 gastric cancer. Surgery. 2018;163(4): 889-893.

408. Traore MA, Sahari A, Behkam B (SBT). Construction of Bacteria-Based Cargo Carriers for Targeted Cancer Therapy. Methods Mol Biol. 2018;1831: 25-35.

409. Tsai EB, Chiles C (CPC), Carter BW, Godoy MCB, Shroff GS, Munden RF, Truong MT, Wu CC. Incidental Findings on Lung Cancer Screening: Significance and Management. Semin Ultrasound CT MR. 2018;39(3): 273-281.

410. Turcotte LM, Wang T, Hemmer MT, Spellman SR, Arora M, Couriel D, Alousi A, Pidala J, McIver Z (CGM), Ahmed I, Beitinjaneh A,. Donor body mass index does not predict graft versus host disease following hematopoietic cell transplantation. Bone Marrow Transplant. 2018;53(7): 932-937. PMC6041147.

411. Upshaw JN, O'Neill A, Carver JR, Dimond EP, Denlinger CS, Kircher SM, Wagner LI (CPC), Ky B, Brell JM. Fluoropyrimidine Cardiotoxicity: Time for a Contemporaneous Appraisal. Clin Colorectal Cancer. 2018.

412. Varghese RT, Young S, Pham L, Liang Y, Pridham KJ, Guo S, Murphy S, Kelly DF (CGM), Sheng Z (NRO). Casein Kinase 1 Epsilon Regulates Glioblastoma Cell Survival. Sci Rep. 2018;8(1): 13621. PMC6134061.

413. Vasu S, Kohlschmidt J, Mrozek K, Eisfeld AK, Nicolet D, Sterling LJ, Becker H, Metzeler KH, Papaioannou D, Powell BL (CGM), Kolitz JE, et al. Ten-year outcome of patients with acute myeloid leukemia not treated with allogeneic transplantation in first complete remission. Blood Adv. 2018;2(13): 1645-1650. PMC6039651.

414. Viala M, Chiba A, Thezenas S, Delmond L, Lamy PJ, Mott SL, Schroeder MC, Thomas A (SBT), Jacot W. Impact of vitamin D on pathological complete response and survival following neoadjuvant chemotherapy for breast cancer: a retrospective study. BMC Cancer. 2018;18(1): 770. PMC6066931.

415. Vitolins MZ (CPC), Case LD (CPC), Rapp SR (NRO), Lively MO (SBT), Shaw EG (CPC), Naughton MJ, Giguere J, Lesser GJ (NRO). Self-reported adherence and biomarker levels of CoQ10 and alpha-tocopherol. Patient Prefer Adherence. 2018;12: 637-646. PMC5923253.

416. Votanopoulos KI, Bartlett D, Moran B, Haroon CM, Russell G, Pingpank JF, Ramalingam L, Kandiah C, Chouliaras K, Shen P (SBT), Levine EA (CGM). PCI is Not Predictive of Survival After Complete CRS/HIPEC in Peritoneal Dissemination from High-Grade Appendiceal Primaries. Ann Surg Oncol. 2018;25(3): 674-678. PMC5890297.

417. Votanopoulos KI, Shen P (SBT), Skardal A (SBT), Levine EA (CGM). Peritoneal Metastases from Appendiceal Cancer. Surg Oncol Clin N Am. 2018;27(3): 551-561.

418. Votanopoulos KI, Sugarbaker P, Deraco M, Morris D, Glehen O, Elias D, De Simone M, Robella M, Heyd B, Shen P (SBT), Levine EA (CGM), et al. Is Cytoreductive Surgery with Hyperthermic Intraperitoneal Chemotherapy Justified for Biphasic Variants of Peritoneal Mesothelioma?, Outcomes from the Peritoneal Surface Oncology Group International Registry. Ann Surg Oncol. 2018;25(3): 667-673.

419. Vukelic S, Xu Q, Seidel-Rogol B, Faidley EA, Dikalova AE, Hilenski LL, Jorde U, Poole LB (CGM), Lassegue B, Zhang G, Griendling KK. NOX4 (NADPH Oxidase 4) and Poldip2 (Polymerase delta-Interacting Protein 2) Induce Filamentous Actin Oxidation and Promote Its Interaction With Vinculin During Integrin-Mediated Cell Adhesion. Arterioscler Thromb Vasc Biol. 2018;38(10): 2423-2434. PMC6206888.

420. Wagner LI (CPC), Zhao F, Goss PE, Chapman JW, Shepherd LE, Whelan TJ, Mattar BI, Bufill JA, Schultz WC, LaFrancis IE, Nagargoje GG, et al. Patient-reported predictors of early treatment discontinuation: treatment-related symptoms and health-related quality of life among postmenopausal women with primary breast cancer randomized to anastrozole or exemestane on NCIC Cli. Breast Cancer Res Treat. 2018;169(3): 537-548. PMC6092930.

421. Walker CJ, Oakes CC, Genutis LK, Giacopelli B, Liyanarachchi S, Nicolet D, Carroll AJ, Scholz M, Powell BL (CGM), Kohlschmidt J, Mrozek K, et al. Genome-wide association study identifies an acute myeloid leukemia susceptibility locus near BICRA. Leukemia. 2018.

422. Walter RB, Michaelis LC, Othus M, Uy GL, Radich JP, Little RF, Hita S, Saini L, Foran JM, Klepin HD (CGM), Erba HP, et al. Intergroup LEAP trial (S1612): A randomized phase 2/3 platform trial to test novel therapeutics in medically less fit older adults with acute myeloid leukemia. Am J Hematol. 2018;93(2): E49-e52. PMC5760282.

423. Wang A, Duncan SE, Lesser GJ (NRO), Ray WK, Dietrich AM. Effect of lactoferrin on taste and smell abnormalities induced by chemotherapy: a proteome analysis. Food Funct. 2018;9(9): 4948-4958.

424. Wang M, Chen H, Ailati A, Chen W, Chilton FH (CPC), Todd Lowther W (SBT), Chen YQ (SBT). Substrate specificity and membrane topologies of the iron-containing omega3 and omega6 desaturases from Mortierella alpina. Appl Microbiol Biotechnol. 2018;102(1): 211-223. PMC5797698.

425. Wang X, Buechler NL, Long DL, Furdui CM (CGM), Yoza BK, McCall CE, Vachharajani V. Cysteine thiol oxidation on SIRT2 regulates inflammation in obese mice with sepsis. Inflammation. 2018.

426. Wang Z, Lee SJ, Cheng HJ, Yoo JJ, Atala A (SBT). 3D Bioprinted Functional and Contractile Cardiac Tissue Constructs. Acta Biomater. 2018;70: 48-56. PMC6022829.

427. Warri A, Cook KL (SBT), Hu R, Jin L, Zwart A, Soto-Pantoja DR (SBT), Liu J, Finkel T, Clarke R. Autophagy and unfolded protein response (UPR) regulate mammary gland involution by restraining apoptosis-driven irreversible changes. Cell Death Discov. 2018;5: 40. PMC6186758.

428. Weaver SR, Kim H, Glasser AM, Sutfin EL (CPC), Barrington-Trimis J, Payne TJ, Saddleson M, Loukas A. Establishing consensus on survey measures for electronic nicotine and non-nicotine delivery system use: Current challenges and considerations for researchers. Addict Behav. 2018;79: 203-212. PMC5807235.

429. Welker ME (CGM). Ferrocenes as Building Blocks in Molecular Rectifiers and Diodes. Molecules. 2018;23(7).

430. Westcott MM, Clemens EA, Holbrook BC, King SB (CGM), Alexander-Miller MA (SBT). The choice of linker for conjugating R848 to inactivated influenza virus determines the stimulatory capacity for innate immune cells. Vaccine. 2018;36(9): 1174-1182. PMC5815857.

431. Westcott MM, Smedberg J, Jorgensen MJ, Puckett S, Lyles DS (SBT). Immunogenicity in African Green Monkeys of M Protein Mutant Vesicular Stomatitis Virus Vectors and Contribution of Vector-Encoded Flagellin. Vaccines (Basel). 2018;6(1). PMC5874657.

432. Widner DB, Park SH, Eber MR, Shiozawa Y (SBT). Interactions Between Disseminated Tumor Cells and Bone Marrow Stromal Cells Regulate Tumor Dormancy. Curr Osteoporos Rep. 2018;16(5): 596-602. PMC6156930.

433. Wildes TM, Maggiore RJ, Tew WP, Smith D, Sun CL, Cohen H, Mohile SG, Gajra A, Klepin HD (CGM), Owusu C, Gross CP, et al. Factors associated with falls in older adults with cancer: a validated model from the Cancer and Aging Research Group. Support Care Cancer. 2018;26(10): 3563-3570. PMC6117216.

434. Winkfield KM (CPC), Phillips JK, Joffe S, Halpern MT, Wollins DS, Moy B. Addressing Financial Barriers to Patient Participation in Clinical Trials: ASCO Policy Statement. J Clin Oncol. 2018;: Jco1801132.

435. Wintermark M, Colen R, Whitlow CT (CGM), Zaharchuk G. The vast potential and bright future of neuroimaging. Br J Radiol. 2018;91(1087): 20170505.

436. Wright EW, Nelson RA, Jr., Karpova Y, Kulik G (SBT), Welker ME (CGM). Synthesis and PI3 Kinase Inhibition Activity of Some Novel Trisubstituted Morpholinopyrimidines. Molecules. 2018;23(7).

437. Wu C, Li J, Tian C, Shi W, Jiang H, Zhang Z, Wang H, Zhang Q, Sun W, Sun P (SBT), Xiang R, et al. Epigenetic dysregulation of ZEB1 is involved in LMO2-promoted T-cell acute lymphoblastic leukaemia leukaemogenesis. Biochim Biophys Acta. 2018;1864(8): 2511-2525.

438. Xiao J, Melvin RL, Salsbury FR, Jr. (CGM). Probing light chain mutation effects on thrombin via molecular dynamics simulations and machine learning. J Biomol Struct Dyn. 2018;: 1-18. PMC6207482.

439. Xiao TG, Weis JA (SBT), Gayzik FS, Thomas A (SBT), Chiba A, Gurcan MN (CGM), Topaloglu U, Samykutty A, McNally LR (SBT). Applying dynamic contrast enhanced MSOT imaging to intratumoral pharmacokinetic modeling. Photoacoustics. 2018;11: 28-35. PMC6086408.

440. Xing F (NRO), Liu Y, Pasche BC (SBT), Lo HW (NRO), Ruiz J (NRO), Metheny-Barlow LJ (NRO), D'Agostino RB (NRO), Vidi PA (CGM), Debinski W (NRO), Singh R (SBT), Watabe K (NRO), et al. Loss of XIST in Breast Cancer Activates MSN-c-Met and Reprograms Microglia via Exosomal miRNA to Promote Brain Metastasis. Cancer Res. 2018;78(15): 4316-4330. PMC6072593.

441. Xu ZG, Li SQ, Meng JP, Tang DY, He LJ, Lei J, Lin HK (SBT), Li HY, Chen ZZ. Functionalized Spiroindolines with Anticancer Activity through a Metal-Free Post-Ugi Diastereoselective One-Pot Cascade Reaction. Chemistry. 2018;24(26): 6732-6736. PMC6042644.

442. Yamamoto S, Takeuchi K, Hamamoto Y, Liu RY, Shiozawa Y (SBT), Koitaya T, Someya T, Tashima K, Fukidome H, Mukai K, Yoshimoto S, et al. Enhancement of CO2 adsorption on oxygen-functionalized epitaxial graphene surface under near-ambient conditions. Phys Chem Chem Phys. 2018;20(29): 19532-1953.

443. Yan H, Wu Y, Oniffrey T, Brinkley J, Zhang R, Zhang X, Wang Y, Chen G, Li R, Moore JB (CPC). Body Weight Misperception and Its Association with Unhealthy Eating Behaviors among Adolescents in China. Int J Environ Res Public Health. 2018;15(5). PMC5981975.

444. Yan LZ, Dressler EV (CGM), Adams VR. Association of hypertension and treatment outcomes in advanced stage non-small cell lung cancer patients treated with bevacizumab or non-bevacizumab containing regimens. J Oncol Pharm Pract. 2018;24(3): 209-217.

445. Yang M, Chen K, Bitting RL (SBT), Petty WJ (CGM), Pasche B (SBT), Topaloglu U, Miller LD (CGM), Hawkins GA (CGM), Grant SC (CGM), DeYoung BR (CGM), Zhang W (CGM), et al. Incorporating Blood-based Liquid Biopsy Information into Cancer Staging: Time for a TNMB System? Ann Oncol. 2018;29(2): 311-323. PMC5834142.

446. Yang M, Wu H, Chu J, Gabriel LA, Kim Y, Anderson KS, Furdui CM (CGM), Bierbach U (CGM). Platination of cysteine by an epidermal growth factor receptor kinase-targeted hybrid agent. Chem Commun (Camb). 2018;54(54): 7479-7482.

447. Yang X, Garcia KM, Jung Y, Whitlow CT (CGM), McRae K, Waugh CE. vmPFC activation during a stressor predicts positive emotions during stress recovery. Soc Cogn Affect Neurosci. 2018;13(3): 256-268. PMC5836276.

448. Yeruva SLH, Zhao F, Miller KD, Tevaarwerk AJ, Wagner LI (CPC), Gray RJ, Sparano JA, Connolly RM. E2112: randomized phase iii trial of endocrine therapy plus entinostat/placebo in patients with hormone receptor-positive advanced breast cancer. NPJ Breast Cancer. 2018;4: 1. PMC5765007.

449. Yoo K, Li N, Makani V, Singh R (SBT), Atala A (SBT), Lu B. Large-scale preparation of extracellular vesicles enriched with specific microRNA. Tissue Eng Part C Methods. 2018.

450. Yu J, Francisco AMC, Patel BG, Cline JM (CGM), Zou E, Berga SL, Taylor RN. Interleukin-1beta Stimulates BDNF Production in Eutopic Endometriosis Stromal Cell Cultures A Model for Cytokine Regulation of Neuroangiogenesis. Am J Pathol. 2018;188(10): 2281-2292. PMC6169127.

451. Zambon JP, Ko IK, Abolbashari M, Huling J, Clouse C, Kim TH, Smith C, Atala A (SBT), Yoo JJ. Comparative analysis of two porcine kidney decellularization methods for maintenance of functional vascular architectures. Acta Biomater. 2018;75: 226-234.

452. Zarandi NP, Galdon G, Kogan S, Atala A (SBT), Sadri-Ardekani H. Cryostorage of immature and mature human testis tissue to preserve spermatogonial stem cells (SSCs): a systematic review of current experiences toward clinical applications. Stem Cells Cloning. 2018;11: 23-38. PMC6039063.

453. Zeidan F (CPC), Salomons T, Farris SR, Emerson NM, Neal AA, Jung Y, Coghill RC. Neural Mechanisms Supporting the Relationship between Dispositional Mindfulness and Pain. Pain. 2018.

454. Zhang KW, Finkelman BS, Gulati G, Narayan HK, Upshaw J, Narayan V, Plappert T, Englefield V, Smith AM, Hundley WG (CPC), HKy B, et al. Abnormalities in 3-Dimensional Left Ventricular Mechanics With Anthracycline Chemotherapy Are Associated With Systolic and Diastolic Dysfunction. JACC Cardiovasc Imaging. 2018;11(8): 1059-1068.

455. Zhang XF, Beal EW, Chakedis J, Chen Q, Lv Y, Ethun CG, Salem A, Weber SM, Shen P (SBT), Poultsides G, Son AY, et al. Defining Early Recurrence of Hilar Cholangiocarcinoma After Curative-intent Surgery: A Multi-institutional Study from the US Extrahepatic Biliary Malignancy Consortium. World J Surg. 2018;42(9): 2919-2929.

456. Zhang XF, Beal EW, Merath K, Ethun CG, Salem A, Weber SM, Tran T, Poultsides G, Shen P (SBT), Hatzaras I, Jin L, et al. Oncologic effects of preoperative biliary drainage in resectable hilar cholangiocarcinoma: Percutaneous biliary drainage has no adverse effects on survival. J Surg Oncol. 2018;117(6): 1267-1277.

457. Zhang XF, Squires MH, 3rd, Bagante F, Ethun CG, Salem A, Weber SM, Tran T, Poultsides G, Son AY, Shen P (SBT), Jin L, et al. The Impact of Intraoperative Re-Resection of a Positive Bile Duct Margin on Clinical Outcomes for Hilar Cholangiocarcinoma. Ann Surg Oncol. 2018;25(5): 1140-1149.

458. Zhao Y, Bhonsle S, Dong S, Lv Y, Liu H, Safaai-Jazi A, Davalos RV (NRO), Yao C. Characterization of Conductivity Changes During High-Frequency Irreversible Electroporation for Treatment Planning. IEEE Trans Biomed Eng. 2018;65(8): 1810-1819.

459. Zhao Y, Liu H, Bhonsle SP, Wang Y, Davalos RV (NRO), Yao C. Ablation outcome of irreversible electroporation on potato monitored by impedance spectrum under multi-electrode system. Biomed Eng Online. 2018;17(1): 126. PMC6148960.

460. Zhu D, Chung HF, Pandeya N, Dobson AJ, Kuh D, Crawford SL, Gold EB, Avis NE (CPC), Giles GG, Bruinsma F, Adami HO, et al. Body mass index and age at natural menopause: an international pooled analysis of 11 prospective studies. Eur J Epidemiol. 2018;33(8): 699-710.

461. Zhu S, Jiang X, Jiang S, Lin G, Gong J, Chen W, He Z, Chen YQ (SBT). GPR120 is not required for omega-3 PUFAs-induced cell growth inhibition and apoptosis in breast cancer cells. Cell Biol Int. 2018;42(2): 180-186.

COMPREHENSIVE CANCER CENTER

Wake Forest®
Baptist Health

Cancer Registry
Medical Center Boulevard
Winston-Salem, NC 27157
WakeHealth.edu/Comprehensive-Cancer-Center