Welcome to the Spring 2013 issue of the Stanford Cancer Institute Clinical Research Newsletter. This quarterly publication is designed to inform our colleagues in the medical community, and especially physicians who are considering treatment options for their patients with cancer, about current clinical trials available at the NCI-designated Stanford Cancer Institute. Many of these trials provide access to novel therapies including new “targeted” agents, often not available in the community.

This edition of the newsletter focuses on the Department of Radiology and the Department of Radiation Oncology. Each department is renowned for its leadership in its field, cutting edge treatments, research studies, and landmark scientific breakthroughs.

• The Stanford Radiology Department is a national leader in translational research that advances early disease detection and personalized medicine using anatomical, functional, and molecular imaging. Stanford Radiology has one of the highest 5 National Institutes of Health (NIH) funding rankings in the country, the highest per faculty ranking, and is the only Radiology department in the US with five major NCI funded Centers of Excellence.

  – Stanford Interventional Radiology conducts clinical trials and basic laboratory research to discover new ways of treating cancer. Described as the ‘surgery’ of the new millennium, interventional techniques are developed and used to treat cancer with minimally invasive techniques, eliminating the need for open surgery, decreasing risk, reducing pain, and promoting a speedier recovery time.

  – The Stanford Division of Nuclear Medicine is a world leader in molecular imaging. Through development of novel tracers for positron emission tomography (PET) imaging, cancer patient management is being fundamentally changed. Improved staging, prediction and monitoring of treatment, and monitoring for recurrence are available. Newer technologies for the earlier detection of cancer are also under active investigation.

• The Stanford Department of Radiation Oncology is an international leader in its field with a long history of research breakthroughs from employing the first medical linear accelerator in 1955, through its recent advances in stereotactic body radiotherapy. The department receives more per capita NIH funding than any other radiation oncology department in the United States. Stanford Radiation Oncologists offer some of the most advanced treatments and research studies available, many of which aim to enhance tumor control while reducing the amount of radiation received by healthy tissues.

We hope that you will consider a Stanford Cancer Institute clinical trial when you deem it appropriate to refer a patient to an academic medical facility. We, in turn, will make every effort to deliver great care to your patient, keep you informed of the patient’s treatment and response, and if clinical trial treatment is not appropriate for your patient, return them to your care.

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Virginia and D. K. Ludwig Professor of Cancer Research
Chair, Department of Radiology
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Director, Molecular Imaging Program at Stanford (MIPS)
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Quynh-Thu Le, MD, FACP
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Professor & Chair, Department of Radiation Oncology
The Stanford Radiology Department is a national leader in cutting edge translational research that advances early disease detection and personalized medicine using anatomical, functional, and molecular imaging.

With one of the highest National Institutes of Health (NIH) funding rankings in the country, Stanford Radiology is the only Radiology department in the US with multiple major NIH funded Research Centers and is also among the world’s leaders in creating imaging platforms for combined applications of CT, MR, PET, molecular imaging, nanotechnology, and bioinformatic technologies.

Led by Departmental Chair Sanjiv Sam Gambhir, MD, PhD, an international leader in the field of multimodality molecular imaging, Stanford Radiology focuses its research on a range of different disease groups that span bone, breast, brain, head & neck, liver, kidney, lung, non-Hodgkin’s lymphoma, and other disease sites.

GOALS AND OBJECTIVES

Radiology research:
• Advances medical imaging through sophisticated physics and engineering approaches
• Develops molecular imaging techniques and probes
• Combines image processing techniques with biocomputational tools
• Develops strategies to marry in vitro diagnostics with in vivo imaging
• Investigates molecular mechanisms underlying cancer progression

A primary goal of Stanford Radiology’s clinical and research activities is to detect and treat disease, especially cancer, at its earliest and most treatable stage.

RADIOLOGY RESEARCH HIGHLIGHTS: OVER 100 YEARS OF ACHIEVEMENT

For more than 100 years, Stanford’s Department of Radiology has been making contributions to medical and surgical advances through pioneering research, innovations in image-based patient care, and education.

Since 1904, Stanford Radiology has made scientific breakthroughs by:
• Advancing imaging to cure Hodgkin’s disease
• Developing CT angiography for the examination of blood vessels throughout the body
• Pioneering technical advances to enhance MRI and CT scanners
• Establishing one of the world’s leading molecular imaging programs
• Cultivating innovative 3D imaging techniques to support more accurate diagnoses and improve communication of exam results to referring physicians and patients
• Pushing the technology and engineering envelope to develop increasingly sensitive and affordable imaging devices
• Developing computational and data integration solutions for the study of disease progression
• Developing strategies for the early detection of cancer including novel nanotechnologies

Stanford Radiology continues to make imaging discoveries. Department researchers have initiated 115 patents over the past five years.

NIH-FUNDED STANFORD RADIOLOGY RESEARCH CENTERS AND PROGRAMS

Major multidisciplinary NIH-funded Radiology Research Centers and Programs at the Stanford Department of Radiology include:

• Center for Advanced Magnetic Resonance Technology at Stanford (CAMRT, G Glover PI) The CAMRT, funded by NIH/NIBIB, is located in the Richard M. Lucas Center for Imaging, brings together the expertise and talent of individuals from the Radiology Department’s Radiological Sciences Laboratory (RSL) and the Electrical Engineering Department’s Magnetic
Resonance Systems Research Laboratory (MRSRL). This multidisciplinary group shares the common goals of developing innovative Magnetic Resonance Imaging and Spectroscopy (MRI/ MRS) techniques for fundamental anatomic, physiologic, and pathophysiologic studies.

- **In Vivo Cellular and Molecular Imaging Program at Stanford (ICMIC, SS Gambhir PI)** The ICMIC, one of 8 NCI funded Specialized Programs of Research Excellence (SPOREs), emphasizes the application and extension of molecular imaging to translational research and clinical applications. The ICMIC at Stanford integrates successful pre-clinical work into clinical applications that:
  - exploit molecular imaging by extracting information from animal models and pre-clinical studies
  - provide new information on tumor diagnosis, initiation, progression, and responses to therapy
  - develop new imaging technologies

- **Center for Cancer Nanotechnology Excellence and Translation (CCNE-T, SS Gambhir PI)** The CCNE-T, one of 8 NCI funded Centers of Cancer Nanotechnology Excellence (CCNEs), brings together scientists and physicians from Stanford University, University of California Berkeley/Lawrence Berkeley National Lab, University of California Los Angeles, University of Southern California, and the Massachusetts Institute of Technology. Work of the CCNE-T expands on the concept that in vitro diagnostics, used in conjunction with in vivo diagnostics, can markedly impact cancer patient management. Utilizing nanotechnology, researchers aim to advance in vitro diagnostics through proteomic sensors, and in vivo diagnostics through nanotechnology for molecular imaging. The CCNE-T also brings together investigators in the Schools of Medicine and Engineering.

- **Center for Cancer Systems Biology (CCSB, S Plevritis PI)** The CCSB, one of 12 new NCI funded Centers for Cancer Systems Biology, is a collaborative effort of faculty from the Schools of Medicine, Engineering, and Humanities & Sciences, with expertise ranging from molecular biology and oncology to mathematics, statistics, and computer science. CCSB focuses its research on the analysis of cancer as a complex system by merging experimental and computational methods. The group aims to discover molecular mechanisms underlying cancer progression by studying cancer as a complex biological system that is driven, in part, by impaired differentiation. CCSB’s overarching goal is to provide a better understanding of the differentiation and self-renewal properties of cancer to help identify molecular therapeutic targets and strategies to eradicate this disease, or at least, maintain it in a nonlethal state.

- **Early Detection Research Network (EDRN, SS Gambhir and J Brooks Co-PI’s)** The EDRN aims to improve current screening methods for prostate cancer by increasing the accuracy of detection and prognosis, and reducing the numbers of unnecessary surgeries. Prostate-specific antigen (PSA) testing currently serves as the test of choice to screen and manage prostate cancer. However, translating PSA scores is imperfect, frequently resulting in under or over-diagnosis. Better methods are needed for early and accurate detection and monitoring of prostate cancer. The EDRN, which leverages the CCNE and ICMIC, currently leads efforts to:
  - Adapt magneto-nanosensors for multiplex analysis of blood-based biomarkers for prostate cancer detection and prognosis. This platform is far more sensitive and specific than current techniques.
  - Adapt ultrasound technology using tumor angiogenesis-targeted microbubbles to image prostate cancer, an approach that will increase the accuracy of detection during the screening process.
  - The long-term goal is to combine these two approaches (blood-based biomarker and imaging) for accurate early detection and prognosis of prostate cancer.

- **Magnetic Resonance Imaging-Guided Cancer Interventions (MRI-gCI, KB Pauly, PI)** Through the MRI-gCI Program Project Grant (PPG), Stanford researchers are developing and testing controlled minimally invasive thermal ablation techniques for the treatment of cancer. Utilizing precise imaging, feedback, and controlling the shape and size of thermal lesions, the aim is to improve treatment options for patients. The following five areas of pre-clinical and clinical research are conducted within the MRI-gCI program:
Stanford Radiology Department continued

- MR-guided High Intensity Focused Ultrasound (HIFU) of soft tissue tumors
- Minimally Invasive MRI-Guided Management of Prostate Disease
- MR-Guided Precision Thermal Therapy of Retroperitoneal Tumors
- MRI Methods for Guiding Focused Ultrasound in the Brain
- MR-guided RF Ablation

The outcomes of this PPG will be:
- Improved minimally-invasive treatment options
- An increase in the basic science understanding of tissue response to thermal treatments
- Advances in engineering, both hardware and software for the treatment of cancer

CURRENT STUDIES INCLUDE

Multiple Sites
- Combined F18 and F18 FDG PET/CT for Evaluation of Malignancy (VAR0024)
- Sodium Fluoride PET/CT for the Evaluation of Skeletal Cancer (VAR0074)
- Phase I/II 18F FPPRGD2 PET/CT Imaging of αβ3 integrin Expression as a Biomarker of Angiogenesis

Lymphoma: Non-Hodgkin’s, Diffuse Large B-Cell
- FLT-PET/CT vs. FDG-PET/CT for Therapy Monitoring of Diffuse Large B-cell Lymphoma (LYMIMG0001)
- Assessing Response to Treatment in non-Hodgkin’s Lymphoma Patients Using 64Cu-DOTA-Rituximab PET/CT (LYMIMG0002)

Bone
- A Feasibility Study to Evaluate the Safety and Initial Effectiveness of ExAblate MR Guided Focused Ultrasound Surgery in the Treatment of Pain Resulting from Metastatic Bone Tumors with the ExAblate 2100 Conformal Bone System (BONE0007)
- 18 F-fluoride PET/CT versus 99Tc-MDP Scanning for Detecting Bone Metastases (BONE0002)
- Comparison of Combined 18F NaF/18F FDG PET/CT and MRI for Detection of Skeletal Metastases (BONE0001)
- Pilot differentiation of bone sarcomas and osteomyelitis with dD ferumoxytol-enhanced MRI (PEDSBONE0006)
- Phase I ExAblate MR Guided Ultrasound Surgery for Palliation of Painful Metastatic Bone Tumors (BONE0007)
- 18F Sodium Fluoride PET/CT scanning for the evaluation of musculoskeletal pain and skeletal abnormalities

Breast
- Magnetic Resonance Imaging of Breast Cancer (BRSNSTU0004)
- Photoacoustic Imaging (PAI) of Suspicious Breast Cancers - A Clinical Feasibility Study
- A pilot study of correlative imaging, leukocyte telomere length, and circulating telomerase levels of patients with benign and malignant breast lesions

Hepatobiliary
- Prognostic Value of Early Perfusion CT changes in colorectal liver metastases treated with bevacizumab determined study

Lung & Respiratory Tract
- Submassive and Massive Pulmonary Embolism Treatment with Ultrasound Accelerated Thrombolysis Therapy

Prostate
- Radium-223 Chloride (Alpharidin) in Castration-Resistant (Hormone-Refractory) Prostate Cancer Patients with Bone Metastasis
Developmental Therapeutics
Phase I and II Studies for Multiple Cancers

Stanford Cancer Center’s Developmental Therapeutics Program, led by Branimir I. Sikic, MD, offers Phase 1 and 2 clinical trials using novel therapeutics. Dr. Sikic’s clinical interests are mainly in ovarian cancers and cancers of unknown primary. Other faculty participating in this effort include Drs. Heather Wakelee and Joel Neal (lung cancers), Dimitri Colevas (head and neck cancers), George Fisher and Pamela Kunz (GI cancers), Mark Pegram and Melinda Telli (breast cancers), Sunil Reddy (melanoma), and Ranjana Advani and Holbrook Kohrt (lymphomas).

As a translational clinical studies program, Developmental Therapeutics brings together outstanding physicians with internationally regarded scientists to develop novel therapies and diagnostic modalities that utilize cutting-edge science and technologies. This research focuses on early clinical studies, investigator-initiated trials, the development of analytic approaches to enhancing the discovery of drugs and targets, and the analysis of clinical trials.

Below is a sampling of currently available Phase 1 and 2 studies.

**PHASE 1 STUDIES**

Multiple Solid Tumor Sites
- A Phase I, Open-Label, Dose-Escalation Study of the Safety and Pharmacokinetics of MPDL3280A Administered Intravenously as a Single Agent to Patients with Locally Advanced or Metastatic Solid Tumors (VAR0082)
- A Phase I Study of the Safety, Tolerability, Pharmacokinetics and Immunoregulatory Activity of BMS-663513 (Anti-CD137) in Subjects with Advanced and/or Metastatic Solid Tumors (VAR0071)
- A Phase I Study of PF-05082566 as a Single Agent in Patients with Advanced Cancer, and in Combination with Rituximab in Patients with Non-Hodgkin Lymphoma (LYMNHL0092)

Lymphomas
- A Phase II Study of Amrubicin in Relapsed or Refractory Thymic Malignancies (THOR0003)
- A Phase II Study of Capecitabine, Carboplatin, and Bevacizumab for Metastatic or Unresectable Gastroesophageal Junction and Gastric Adenocarcinoma (GI0002)

**PHASE 2 STUDIES**

Thymic Cancers
- A Phase 2 Study of Amrubicin in Relapsed or Refractory Thymic Malignancies (THOR0003)

Gastric Cancers
- A Phase 2 Study of Capecitabine, Carboplatin, and Bevacizumab for Metastatic or Unresectable Gastroesophageal Junction and Gastric Adenocarcinoma (GI0002)

- highlighted studies are Stanford investigator initiated
Stanford Interventional Radiology (IR) is renowned for its translational research in developing methods for the delivery of safe, effective, and compassionate cancer care. Stanford is a world leader in IR, with research and clinical work recognized by peers and professional societies such as the Society of Interventional Radiology (SIR) and the Radiologic Society of North America (RSNA). Stanford IR has also been honored for its work with SIR-Spheres and TheraSphere, the only two radioembolization treatments currently available for the treatment of liver cancer.

IR RESEARCH — “CANCER TREATMENT OF THE NEW MILLENIUM”

Led by Division Chief Lawrence “Rusty” Hofmann, MD, Stanford interventional radiologists conduct clinical trials and basic laboratory research to discover new ways of treating cancer. Described as the ‘surgery’ of the new millennium, interventional procedures are developed and used to treat cancer with minimally invasive techniques, eliminating the need for open surgery, decreasing risk, reducing pain, and promoting a speedier recovery time. Similarly, through interventional techniques, Stanford radiologists are able to deliver a localized therapeutic cytotoxic dose directly to the tumor site, reducing side effects including toxic dose to surrounding normal tissues.

Stanford IR investigates and provides image-guided tumor treatments that use:

- **Radioembolization:** A palliative therapy to treat both primary and metastatic tumors by injecting radioactive microspheres directly into the arteries that feed tumors allowing for a very high dose of radiation to be concentrated in tumors while limiting exposure to the surrounding normal tissues.
• **Chemoembolization:** A palliative, minimally invasive treatment for cancer involving the liver and other solid organs that is used for tumors that are not amenable to surgical intervention or radiofrequency ablation (RFA). Similar to radioembolization, chemoembolization delivers and traps a high dose of a chemotherapy drug directly in the tumor while depriving the tumor of its blood supply by blocking, or “embolizing,” the arteries feeding the tumor.

• **Radiofrequency ablation (RFA):** A procedure that offers a nonsurgical, localized treatment to kill tumor cells with heat while sparing the surrounding healthy tissue. RFA ablation is performed on inoperable tumors. With an RFA probe inserted into the tumor, radiofrequency waves (similar to microwaves) are transmitted through the probe to the surrounding tumor producing enough heat to destroy the tumor.

• **Microwave ablation:** A newer technique that kills tumor cells with high temperatures using a microwave-emitting probe that is placed directly into the tumor. Because it is capable of higher temperature induction within the tumor, and yields faster ablation times, microwave ablation has the potential to treat larger tumors in the liver and may be the preferred approach for tumors situated near major blood vessels.

• **Cryoacllation:** An alternative method of killing tumor cells also using extreme temperature. A needle probe is inserted into the tumor and applies extreme cold to destroy tumor cells by freezing. The freezing process stops blood flow and induces tumor cell death. Cryoablation may be used for tumors of the kidneys, lungs, and other body sites.

**RESEARCH HIGHLIGHTS ENCOMPASS**

• Multicenter and Stanford-exclusive chemoembolization and radioembolization trials.

• Clinical trials:
  – studying the treatment of liver tumors using viruses engineered to kill cancer.
  – evaluating non-invasive pain palliation for cancer patients with metastases to bones.

– focusing on the development of predictive models of vascular invasion in hepatocellular carcinoma through the integration of systemically extracted imaging characteristics and gene expression profiles.

– exploring new methods of tumor ablation, such as microwave ablation and high-intensity focused ultrasound.

– Biomarker and imaging studies to detect pre-cursors to blood clot development in the cancer patient population.

• Basic research on gene therapy delivery. Projects focus on nonviral methods of delivery, including VIPER, a method invented and patented in the IR basic science laboratory that utilizes novel combinations of FDA-approved agents.

**CURRENT STUDIES INCLUDE**

**Bone**

• A Pivotal Study to Evaluate the Effectiveness and Safety of ExAblate Treatment of Metastatic Bone Tumors for the Palliation of Pain in Patients who are not Candidates for Radiation Therapy

**Gastrointestinal - Hepatobiliary**

• A Phase 2b Randomized, Open Label Trial of JX-594 (Vaccinia GM-CSF / TK-deactivated Virus) Plus Best Supportive Care Versus Best Supportive Care in Patients with Advanced Hepatocellular Carcinoma Who have Failed Sorafenib Treatment (GENE TRANSFER)

• Development of Predictive Models of Therapeutic Response in Hepatocellular Carcinoma Utilizing a Combination of Advanced Imaging and Genomic Profiling of Excised Tumor Tissue*

• Phase 2b Randomized Single-Blinded Trial of JX-594 + BSC vs BSC in Advanced HCC who have failed sorafenib treatment

• Phase 3 Prospective, Randomized, Blinded And Controlled Investigation Of Hepasphere/Quadrasphere Microspheres For Delivery Of Doxorubicin For The Treatment Of Hepatocellular Cancer

• **highlighted studies are Stanford investigator initiated**
An international leader in its field, the Stanford Department of Radiation Oncology is comprised of three divisions known as radiation oncology, radiation physics, and radiation and cancer biology research. Led by Chair, Quynh-Thu Le, MD, the Department receives more per capita NIH funding than any other radiation oncology department in the United States. Furthermore, the Department’s focus on translational research brings cutting edge technologies to enable full-service patient care in an interdisciplinary setting.

RESEARCH BREAKTHROUGHS
Stanford Radiation Oncology laboratory and clinical research efforts have led to numerous scientific breakthroughs. Over the years, scientists and clinicians:

• Employed the first medical linear accelerator routinely used for radiotherapy in the Western hemisphere. Developed by Stanford in 1955, it was first used in the successful treatment of a 7-month old boy suffering from retinoblastoma.
• Initiated the first randomized, prospective studies on the treatment of Hodgkin’s disease and other lymphomas, using high-energy radiation and statistical analysis to establish the validity of an aggressive approach to treating these diseases. In addition, conducted clinical trials that promoted the understanding and management of these diseases, resulting in dramatic improvement in cure rates and decreased long-term treatment-related toxicities.
• Developed total skin electron beam therapy of mycosis fungoides, and reported the first long-term disease-free survivals of this disease.
• Established the efficacy of external beam irradiation in the treatment of prostate cancer.
• Collaborated with the Stanford Department of Neurosurgery to develop stereotactic radiosurgery for the treatment of brain and spine tumors.
• Performed the first prospective single-fraction dose escalation studies investigating the use of stereotactic body radiotherapy (SBRT)/stereotactic ablative radiotherapy (SABR) for the treatment of lung, liver, and pancreatic tumors.
• Identified several classes of small molecules that specifically kill VHL deficient renal cancer cells through a synthetic lethal screening approach and applied this technology to screen for novel therapeutics against other cancer targets.
• Discovered that the depletion of a protein called Perp could be 1) an early indicator of skin cancer development and 2) useful for staging and establishing prognoses.
• Discovered the first small molecule that targets a specific pathway in multiple myeloma and other cancers.
• Identified a potent anti-cancer therapy that starves cancer cells of glucose, their energy source, with few side effects and translated this discovery into clinical studies targeting tumor metabolism.
• Initiated a clinical trial to target the Connective Tissue Growth Factor (CTGF) in pancreatic carcinoma. This is the first trial to target both pancreatic cancer cells and pancreatic tumor stromal cells.

CURRENT RESEARCH HIGHLIGHTS
• Studying the effect of targeting Galectin-1, a hypoxia induced protein and an immune modulator, in the management of lung cancer
• Investigating stem-cell based approaches to minimize radiation damage to normal tissues, specifically the gastrointestinal (GI) tract and the salivary glands

• Collaborating with SLAC to study the effects of ultra-high radiation dose rate on survival of tumor cells and normal tissues

ADVANCED RADIATION ONCOLOGY RESEARCH AND TREATMENT
The department offers the most advanced radiation oncology treatments in the world with the overall goal of delivering high dose radiotherapy to the tumor while maximally sparing the surrounding normal tissue. These therapies include:

• **Stereotactic body radiotherapy (or stereotactic ablative radiotherapy, SABR)**, which combines computerized imaging with radiation therapy for highly precise delivery of radiation to tumors and allows for the treatment to be completed in less than 1 week.

• **Low-dose rate brachytherapy**, which permanently deposits a radiation source inside the body within the tumor.

• **High-dose rate brachytherapy**, which places a very high-energy radiation source inside the body near the tumor for a brief period of time.

• **Intensity modulated radiotherapy (IMRT)**, which delivers radiotherapy via dynamically shaped beam fields from multiple angles.

• **Image guided radiotherapy**, which combines tumor imaging integrated with special linear accelerators to deliver radiation that corresponds to the exact tumor location in real-time.

• **Dynamic arc therapy**, which allows for the continuous treatment of tumors in a manner that maximally spares adjacent normal tissue.

• **Intraoperative radiotherapy (IORT)**, which focuses a high dose of radiation onto residual tumor cells during surgery.

Other modalities include total skin electron therapy, total body irradiation (TBI) with peripheral stem cell or bone marrow reconstitution, and total lymphoid irradiation (TLI) for immunosuppression

CURRENT STUDIES INCLUDE

**Multiple/ Variety**

• Development of Novel Serum Markers for Monitoring Response to Anti-Cancer Therapy (VAR0006)

• Imaging and Biomarkers of Hypoxia in Solid Tumors (VAR0032)

• A Novel Therapy for Radiation-induced Xerostomia Using Human Salivary Stem Cells (VAR0050)

• Study of Biomarkers Indicative of Radiation Exposure (VAR0060)

**Brain**

• A Phase I/II Study of Fractionated Stereotactic Radiosurgery to Treat Large Brain Metastases (BRN0010)

• A Phase I/II Trial of Temozolomide and Hypofractionated Radiotherapy in Treatment of Supratentorial Glioblastoma Multiforme (BRN0012)

**Head & Neck**

• Identification and Characterization of Novel Proteins and Genes in Head and Neck Cancer (ENT0008)

• Identification of Secreted Markers for Tumor Hypoxia in Patients with Head and Neck or Lung Cancers (ENT0016)

• Phase I Trial of Metabolic Reprogramming Therapy for Treatment of Recurrent Head and Neck Cancers (ENT0031)

• **highlighted studies are Stanford investigator initiated**
A Feasibility Study of IMRT Modulation to Account for Scattered Radiation from Dental Fillings in Head and Neck Cancer Patients (ENT0032)

A Randomized Phase II Study of Adjuvant Concurrent Radiation and Chemotherapy versus Radiation Alone in Resected High-Risk Malignant Salivary Gland Tumors (RTOG1008)

**Esophagus**

A Phase III Trial Evaluating the Addition of Trastuzumab to Trimodality Treatment of Her2-Overexpressing Esophageal Adenocarcinoma (RTOG1010)

**Liver**

Phase II Study of Combination Stereotactic Body Radiotherapy (SBRT) with Transarterial Chemo-Embolization (TACE) for Unresectable Hepatocellular Carcinoma (HEP0024)

**Pancreas**

Phase II Multi-Institutional Study to Evaluate the Efficacy of Gemcitabine and Fractionated Stereotactic Radiotherapy for Unresectable Pancreatic Adenocarcinoma (PANC0007)

**Lung**

Investigating the Role of Audiovisual Biofeedback on Image Quality during 4D Anatomic and Functional Imaging (LUN0026)

4D-CT-based Ventilation Imaging for Adaptive Functional Guidance in Radiotherapy (LUN0034)

Phase II Trial of Individualized Lung Tumor Stereotactic Ablative Radiotherapy (SABR) (LUN0048)

Phase III Comparison of Thoracic Radiotherapy Regimens in Patients with Limited Small Cell Lung Cancer also Receiving Cisplatin and Etoposide (RTOG0538)

Randomized Phase II Study of Pre-Operative Chemoradiotherapy +/- Panitumumab (IND #110152) Followed by Consolidation Chemotherapy in Potentially Operable Locally Advanced (Stage IIIA, N2+) Non-Small Cell Lung Cancer (RTOG0839)

Randomized Phase II Study Comparing Prophylactic Cranial Irradiation Alone to Prophylactic Cranial Irradiation and Consolidative Extra-Cranial Irradiation for Extensive Disease Small Cell Lung Cancer (ED-SCLC) (RTOG0937)

Randomized Phase II Trial of Individualized Adaptive Radiotherapy Using During-Treatment FDG-PET/CT and Modern Technology in Locally Advanced Non-Small Cell Lung Cancer (NSCLC) (RTOG1106)

**Prostate**

Radium-223 Chloride (Alpharadin) in Castration-Resistant (Hormone-Refractory) Prostate Cancer Patients with Bone Metastasis (PROS0049)

**Skin**

A Pilot Study of Ipilimumab in Subjects with Stage IV Melanoma Receiving Palliative Radiation Therapy (MEL0005)

**Spine**

Phase II/III Study of Image-guided Radiosurgery/SBRT for Localized Spine Metastasis (RTOG0631)
SAVE THE DATE

STANFORD CANCER INSTITUTE PRESENTS THE FIFTEENTH

Multidisciplinary Management of Cancers: A Case-based Approach

March 7 & 8, 2014
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