

# UT SOUTHWESTERN THE TARGET

News from the Department of Radiation Oncology

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## Texas radiation trial network opens with lung study



Sixteen doctors representing institutions across the state of Texas gathered at UT Southwestern recently—the first meeting of a new radiation trial network created for the purpose of improving lung cancer treatment in Texas.

The physicians received training in image-guided radiation therapy (IGRT) in preparation for the group's first study, a phase III study of accelerated hypofractionated IGRT in patients with stage II-III non-small cell lung cancer and poor performance status.

*Robert Timmerman, M.D., and Hak Choy, M.D., are driving the initiative to spread the use of sophisticated cancer treatment technology statewide.*

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Lung cancer is the second-most common type of cancer and the number one cause of cancer death nationally. Radiation therapy continues to be the primary treatment for 60 percent of lung cancer patients.

“New technological developments—including IGRT—have allowed improvement in the accuracy and precision of radiation delivery, allowing higher doses to be delivered in fewer treatments with fewer side effects,” says Robert Timmerman, M.D., Professor of Radiation Oncology and principal investigator of what has been named the State of Texas Advanced Radiation Therapy (START) trial.

“Our goal is to expand the use of these sophisticated technologies across the state of Texas through integrated

training programs that will establish Texas cancer centers as the leaders in innovative radiation therapy for lung cancer.”

The program is funded by an \$8.8 million grant from the Cancer Prevention and Research Institute of Texas (CPRIT), first awarded in 2011. Led by Department Chairman Hak Choy, M.D., the grant also includes development of new imaging and tracking technologies to improve lung cancer radiation treatments.

### First training, first patients

The recent half-day training session for participating institutions was directed by UT Southwestern Assistant Professor Jeffrey Meyer, M.D.

“There are different solutions for the motion problem, so we want to make sure we do it consistently,” Dr. Meyer says. “We want to have as level a playing field as possible.”

The training session also provided a good opportunity for individual investigators to meet face to face.

“We are excited about this study, and also excited about establishing a novel, Texas-based collaborative group,” Dr. Meyer says. “We are very optimistic about the future of this group and our potential to collaborate on an ongoing basis.”

Two patients at UT Southwestern were the first to be enrolled to the IGRT study in December. The phase III study requires a total of 226 patients (113 for each arm). ☺

“We are optimistic about our potential to collaborate on an ongoing basis.”

—Jeffrey Meyer, M.D.

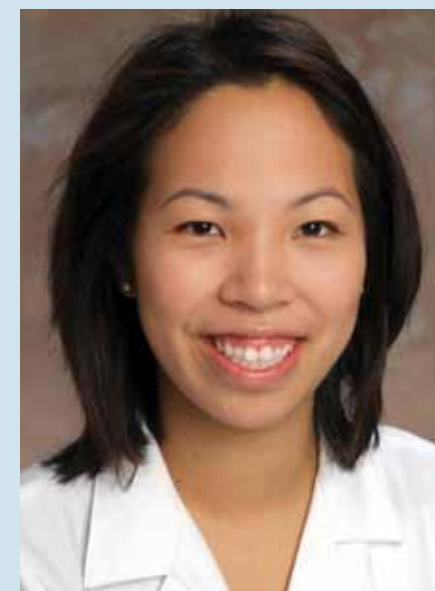


Physicians from across Texas attended the first IGRT training at UT Southwestern.

# News

## Chen joins Radiation Oncology treatment team

Susie Chen, M.D., has become part of the physician staff of the Department of Radiation Oncology as Assistant Professor.



Susie Chen, M.D.

Born in Memphis, Tenn., Dr. Chen earned her medical degree at the University of Miami and completed a residency in radiation oncology at Emory University.

Dr. Chen’s cancer research has been published in notable medical journals, including *Cancer* and the *International Journal of Radiation Oncology · Biology · Physics*. She has also made national

presentations of her work at the annual meeting of the American Society of Therapeutic Radiology and Oncology (ASTRO).

In the UT Southwestern Department of Radiation Oncology, Dr. Chen will be part of the treatment team that focuses on the care of head and neck cancer patients.

“I love the bond that I have with my patients,” Dr. Chen says. “In other specialties, a doctor may see his or her patient only once or twice for a medical problem, but I see my patients many times over the course of their treatment, which may last for several weeks. We really get to know each other, and I find that there is something different in each case that I see, even if the type of cancer being treated is the same. Everyone’s journey is unique.” ☺

## Department pursues international partnership in Poland

UT Southwestern’s Department of Radiation Oncology is establishing a partnership with Poland’s largest radiation therapy center, with plans to include post-doctorate training, a visiting professionals program, and joint research.

The Center of Oncology - Maria Sklodowska-Curie Memorial Institute, Gliwice Branch (COG) is a major medical research center and the second largest overall oncology hospital in Poland, with more than 1,300 employees and about 18,000 new patients yearly. The center is also a European-designated comprehensive cancer center in radiation oncology.

Radiation oncologists and researchers at both UT Southwestern and COG first met at the 2010 meeting of the American Society for Radiation Oncology (ASTRO), where the Activity for Innovation and Economic Growth was facilitating face-to-face presentations to encourage international collaborations. UT Southwestern Radiation Oncology Chairman Hak Choy, M.D., and Division of Molecular Radiation Biology Associate Professor Michael Story, Ph.D., attended the COG presentation.

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## First human study combining radiation with bavituximab

Improved tumor downstaging may allow for more sphincter-preserving surgeries in patients with low-lying rectal tumors.



Jeffrey Meyer, M.D.

A new UT Southwestern study of rectal cancer patients is the first to combine radiation treatment with an experimental drug—bavituximab—that selectively cuts off abnormal tumor vasculature, depriving cancer of the blood supply it needs to flourish.

Although conventional chemoradiation/surgery treatment is quite successful in controlling rectal adenocarcinoma, a new tumor sensitization approach could make further improvements, particularly in treating advanced-stage cancer and in increasing the complete response rate to chemoradiation alone.

The study may also help pave the way for determining the usefulness of combining the drug with radiation in other, more difficult to treat cancers.

### An in-house discovery

Bavituximab was initially developed by UT Southwestern Professor of Pharmacology Philip Thorpe, Ph.D., and has already been tested in clinical trials for breast and lung cancer.

“Rectal cancer is a good site to study in combination with radiation because every patient will go to surgery, and therefore we can study their tissue pre- and post-treatment,” says Assistant Professor of Radiation Oncology Jeffrey Meyer, M.D., the study’s principal investigator.

The phase I study will establish the safety of adding bavituximab to the current standard therapy of capecitabine and radiation therapy for stage II and III rectal adenocarcinoma.

Bavituximab will be given once a week combined with a standard course of external beam radiation therapy (50.4-54 Gy) plus chemotherapy for five-and-a-half to six weeks, followed by two weeks of bavituximab alone. Surgery will follow this regimen after four to eight weeks.

### Improving outcomes

Currently, a minority of rectal cancer patients already have a complete response to chemotherapy and radiation alone but still undergo surgery.

Says Dr. Meyer, “At minimum, improved tumor downstaging may allow for more sphincter-preserving surgeries in patients with low-lying rectal tumors. There is also room for improvement in pelvic tumor control rates for the most advanced of rectal cancers (T4 tumors and tumors with multiple involved lymph nodes).”

“Ultimately, if the pathologic complete response rate improves dramatically through the development of better combination therapies, select patients may undergo chemoradiotherapy alone as their treatment, eliminating the need for surgery,”

Dr. Meyer adds. ☺

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“We were very impressed,” recalls Dr. Story. “All of their team members trained in the U.S. at some point, and they are trying to use the most sophisticated technology and protocols in clinical practice. They are very forward-thinking in terms of developing regional facilities and trying to build standards, including a central data storage system for patients and bioinformatics.”

Piotr Widlak, Ph.D., COG’s Deputy Director of Scientific Affairs and Chairman of the Center for Translational Research and Molecular Biology of Cancer, visited UT Southwestern the following year with a colleague, Dr. Rafal Suwinski, M.D., Ph.D. It was not his first time on campus: Dr. Widlak completed his post-doc training at UT Southwestern in 1997 before joining COG and has returned several times as a visiting professor in the Department of Molecular Biology.

In September 2012, Drs. Choy and Story went to Gliwice, where they toured COG’s enormous patient facilities and further ironed out the goals of collaboration. A formal partnership agreement is still being finalized.

“Our major goals for the partnership are, first, exchange of researchers,” Dr. Story says. “We would like their Ph.D. graduates to come here and train as post-docs. Second, we will support short-term exchanges of visiting faculty, residents, and nurses. And finally, we want to engage in joint research projects.”

Each institution brings a variety of complementary strengths to the table, Dr. Story adds. “The technical university closely cooperating with COG is churning out well-trained biologists with an emphasis in bioinformatics, and we can certainly use that here.

“We can also benefit from the sheer volume of patients they treat at their extremely large facility. COG has been very forward-thinking in the banking of thousands of clinical samples, which provides the opportunity for collaboration, particularly for the identification and screening for cancer biomarkers.”

UT Southwestern, meanwhile, can provide advanced training in physics, nursing, and radiation therapist skills. The city of Gliwice in southwestern Poland was once part of Germany. While it is now a major science hub for Poland, historically it is known as the site where World War II began—the place where German secret police, dressed as Poles, attacked a radio tower in 1939, providing Hitler with an excuse to invade.

But Gliwice is quickly making another international name for itself in cancer treatment and research.

“Translational cancer research will be



Poland map

among the priorities of the Polish-U.S. cooperation,” Dr. Widlak says. “We anticipate joint studies on lung cancer, head and neck cancer, prostate cancer, breast cancer, rectal cancer, and glioblastoma. COG can contribute to these planned projects by participating in validation of the clinical relevance of research concepts. Our strength is the ability to analyze large amounts of clinical material using the genomics and proteomics tools available here.

“Ultimately, the major goal of the partnership is to provide better standards of health care for cancer patients.” ☺



Professor Piotr Widlak, Ph.D., (left) and Professor Rafal Suwinski, M.D., Ph.D., of the Center of Oncology in Gliwice, Poland, are leading participation efforts on the Polish side.

## New breath-hold treatment for breast cancer patients uses video surveillance to spare heart



Jada Jung is the first patient treated with Vision RT at UT Southwestern.

UT Southwestern has added high-tech video surveillance to the treatment of breast cancer patients who receive radiation while using the deep inspiration breath-hold technique. The result is a treatment that requires no invasive fiducial implants or assisted breathing devices and that reduces the radiation dose to the heart.

Deep inspiration breath hold is a cardiac-sparing or minimizing technique to treat left-sided breast cancer. Prior studies indicate that patients with left-sided breast cancer are at greater risk for developing heart problems from radiation delivered to the left breast. By taking a deep breath during radiation treatments, the chest wall and breast tissue move away from the heart, reducing the radiation dose to the heart and lung.

Occasionally, the deep inspiration breath-hold technique may require an assisted breathing control (ABC) device to maintain inflation of the lungs for the breath hold. This system is not always well-tolerated by patients.

Now, as an alternative, UT Southwestern physicians are using a video surveillance system involving two, ceiling-mounted 3-D cameras to beam a patterned light grid on the patient. This video system (Vision RT) tracks the external contours of the breast area and matches it to the patient's initial CT scan. It is a completely noninvasive approach that allows the physician to verify the target location and delivery radiation safely, without assisted breathing devices, markers, or additional X-ray exposure.

UT Southwestern is the first medical center in Texas to use this optical scanning technology in combination with

breath hold for the purpose of treating left-sided breast cancer.

### An easy process

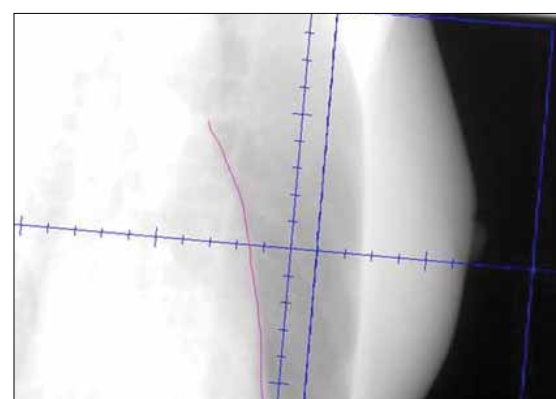
So far, it is working for Jada Jung, 46, the first patient treated with the new Vision RT modality at UT Southwestern.

"I'm amazed at how easy the whole process is," Mrs. Jung says. "My treatment takes a total of 60 seconds—that's two deep breath holds for 30 seconds each. It's a bigger headache driving here than the actual treatment."

The Dallas-based wife and mother of two young children spends less than 10 minutes in the clinic every morning before leaving for her job.

"Compared with free breathing, the breath-hold technique using the 3-D system resulted in a four-fold decrease in the total mean radiation dose to the heart for Mrs. Jung," says Asal Shoustari Rahimi, M.D., Assistant Professor of Radiation Oncology. "There was also a 50 percent decrease to the left anterior descending artery in the heart, a common site of atherosclerosis leading to coronary heart disease.

"As this case demonstrates, deep inspiration breath hold performed with high-tech surveillance can be a very important and useful technique for patients who need to have left-sided whole breast radiation."



Patient's left medial portal film showing radiation portal (blue solid line) and anterior heart (outlined in pink). In this deep breath-hold position, the heart is completely out of the primary radiation beam.

## Clinical Trials Listing

### BRAIN

**052012-050** A randomized, double-blind, phase II, dose-ranging study to evaluate the safety and efficacy of veliparib and whole brain radiation therapy versus placebo and whole brain radiation therapy in subjects with brain metastases from non-small cell lung cancer

**042011-075** Interstitial radioactive iodine implants for the treatment of pan-invasive pituitary macroadenomas

**042011-050** Phase II trial of hippocampal-avoiding whole brain irradiation with simultaneous integrated boost for treatment of brain metastases

**E3F05** Phase III study of radiation therapy with or without temozolomide for symptomatic or progressive low-grade gliomas

### BREAST

**072010-015** A phase I study of CyberKnife® partial breast irradiation (PBI) for early stage breast cancer

**RT0G 1014** A phase II study of repeat breast preserving surgery and 3D-conformal partial breast re-irradiation (PBRI) for local recurrence of breast carcinoma

**RT0G 1005** A phase III trial of accelerated whole breast irradiation with hypofractionation plus concurrent boost versus standard whole breast irradiation plus sequential boost for early-stage breast cancer

### GASTROINTESTINAL

**032012-025** Phosphatidylserine-targeting antibody baviximab in combination with capecitabine and radiation therapy for the treatment of stage II and III rectal adenocarcinoma

**072010-093** Dose escalating study of single fraction stereotactic body radiation therapy (SBRT) for patients with hepatic metastases

**RT0G 1010** A phase III trial evaluating the addition of trastuzumab to trimodality treatment of Her2-overexpressing esophageal adenocarcinoma

### GYNECOLOGIC

**G0G 0249** A phase III trial of pelvic radiation therapy versus vaginal cuff brachytherapy followed by paclitaxel/carboplatin in patients with high-risk, early stage endometrial cancer

**G0G 0258** A randomized phase III trial of cisplatin and tumor volume directed irradiation followed by carbo-

platin and paclitaxel vs. carboplatin and paclitaxel for optimally debulked, advanced endometrial carcinoma

**G0G 0724** Phase III randomized study of concurrent chemotherapy and pelvic radiation therapy with or without adjuvant chemotherapy in high-risk patients with early-stage cervical carcinoma following radical hysterectomy

### HEAD AND NECK

**RT0G 3501** A phase II randomized, double blind, placebo-controlled study of lapatinib (Tykerb®) for non-HPV locally advanced head and neck cancer with concurrent chemoradiation

**062012-041** A phase I dose escalation study to investigate the safety and pharmacokinetics of intravenous CUDC-101 with concurrent cisplatin and radiation therapy in subjects with locally advanced head and neck cancer

**072010-48** A phase II multi-center study of concomitant cetuximab and cisplatin with re-irradiation using intensity-modulated radiotherapy (IMRT) in patients with recurrent squamous cell carcinoma of the head and neck

**072010-046** A phase I/II study of nab-paclitaxel, cisplatin and cetuximab with concurrent radiation therapy for local-regionally advanced head-and-neck squamous cell carcinoma

**RT0G 0920** A phase III study of postoperative radiation therapy (IMRT) +/- cetuximab for locally-advanced resected head and neck cancer

**RT0G 1008** A randomized phase II study of adjuvant concurrent radiation and chemotherapy versus radiation alone in resected high-risk malignant salivary gland tumors

### LUNG (THORACIC)

#### Small Cell Lung Cancer

**CALGB 30610/RT0G 0538** A phase III comparison of thoracic radiotherapy regimes with cisplatin and etoposide in limited small cell lung cancer

**RT0G 0937** Randomized phase II study comparing prophylactic cranial irradiation alone to prophylactic cranial irradiation and consolidative extracranial irradiation for extensive disease small cell lung cancer (ED-SCLC)

#### Non-Small Cell Lung Cancer

**062012-53** A randomized phase I/II study of

nab-paclitaxel, or paclitaxel, plus carboplatin with concurrent radiation therapy followed by consolidation in patients with favorable prognosis inoperable stage IIIA/B NSCLC.

**RT0G 1021** A randomized phase III study of sublobar resection (+/- brachytherapy) versus stereotactic body radiation therapy in high risk patients with stage I NSCLC

**RT0G 0813** Seamless phase I/II study of stereotactic body radiotherapy (SBRT) for early stage, centrally located non-small cell lung cancer (NSCLC) in medically inoperable patients

**052011-093** Phase III randomized study of standard versus accelerated hypofractionated image-guided radiation therapy (IGRT) in patients with stage II-III non-small cell lung cancer and poor performance status

**072010-061** A phase II trial of erlotinib (Tarceva®) in combination with stereotactic body radiation therapy (SBRT) for patients with locally advanced or metastatic non-small cell lung cancer (NSCLC)

### PROSTATE

**RT0G 0815** A phase III prospective randomized trial of dose-escalated radiotherapy with or without short-term androgen deprivation therapy for patients with intermediate-risk prostate cancer

**RT0G 0534** A phase III trial of short term androgen deprivation with pelvic lymph node or prostate bed only radiotherapy (SPPORT) in prostate cancer patients with a rising PSA after radical prostatectomy

**RT0G 1115** Phase III trial of dose escalated radiation therapy and standard androgen deprivation therapy (ADT) with a GnRH agonist vs. dose escalated radiation therapy and enhanced ADT with a GnRH agonist and TAK-700 for men with high risk prostate cancer

### SPINE

**072010-134** A phase II study of stereotactic body radiation therapy and vertebroplasty for localized spine metastasis

**RT0G 0631** A phase II/III study of image-guided radiosurgery/SBRT for localized spine metastasis

For more information, please contact Clinical Research Manager Jean Wu at 214-633-1753 or [jean.wu@utsouthwestern.edu](mailto:jean.wu@utsouthwestern.edu)

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Physicians who would like to make a referral may call the Department's main clinic number 214-645-8525 or UT Southwestern's physician referral line at 214-645-8300 (toll-free 866-645-5455) for adult patients, or 877-445-1234 for pediatric patients.

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