



Radiofrequency Ablation and Percutaneous Cryotherapy for Lung Cancer

by William H. Moore, M.D.
Chief of Thoracic Imaging

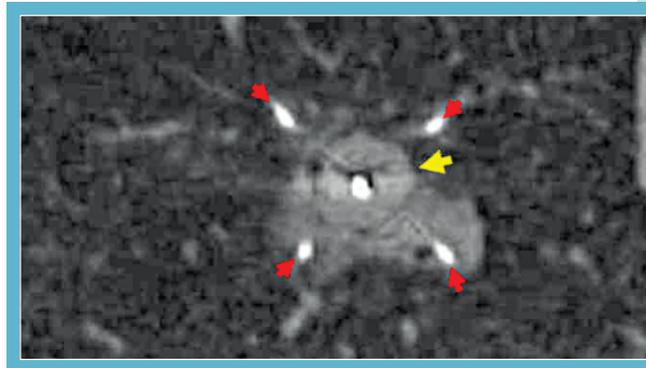
Lung cancer is the third most common cancer in the United States and the leading cause of cancer related death for both men and women. In 2005, there were an estimated 172,500 cases of lung cancer diagnosed in the United States and 1.2 million cases worldwide.¹ A total of 163,510 deaths from lung cancer were estimated in the United States in 2005¹, which is greater than the combined total of the 2nd, 3rd, and 4th leaders of cancer related deaths. This extremely high mortality might be related to the fact that up to 30% of patients present with Stage III, or locally advanced disease². Perhaps these statistics correlate with the fact that many patients (57-72%) with early stage lung cancers are unable to have definitive surgical resection because of underlying medical conditions³. The median survival of patients who do not receive treatment is low at 14.2 months compared with 46.2 months after complete surgical resection.³ Standard non-surgical treatment using external beam radiation therapy has resulted in minimal survival improvement seen with complete surgical resection of the tumor.

New and emerging treatments of lung cancer such as radiofrequency ablation (RFA) and percutaneous cryotherapy (PCT) have emerged as plausible treatment options for

patients with early stage lung cancers. These treatments use a percutaneous (through the skin) route to gain access to the lung cancer and then use either heat or cold to kill the tumor cells. The primary indication for this type of treatment is an early stage non-small cell lung cancer which is deemed unresectable (not amenable to surgery) by a thoracic surgeon. The decision on which treatment option to use is based on the tumor's location and its position in relation to vital structures in the chest.

These two modalities use very different techniques with the same end results, tumor ablation (kill). Radiofrequency ablation (RFA) is very high frequency radio waves to cause tissue disruption. This results in

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Radiofrequency ablation (RFA) of a lung cancer in the right lung: The main needle is in the center of the cancer (yellow arrow) with four prongs (small red arrows) completely surrounding the cancer.

The Departments of Radiology and Neurological Surgery are Pleased to Announce the Cerebrovascular Center at Stony Brook



Siemens Artis Zee biplane system

The Cerebrovascular Center at Stony Brook is the first in the northeast to install a new Siemens Artis Zee biplane system. This state-of-the-art machine delivers significant advantages to improve the clarity of both live fluoroscopy and roadmap imaging in two planes simultaneously. It also allows for enhanced 3D image quality with flat panel detector technology to obtain volume rendered three-dimensional images of the vascular system. In addition, with its new Dyna CT capabilities it can produce cross-sectional CT like images right on the angiographic table. In the near future, it will also be able to provide three dimensional roadmapping capabilities from MRI or CT source images without the additional administration of contrast. The system will be primarily used to treat complex cerebrovascular disorders such as intracranial aneurysms, arteriovenous malformations, intracranial atherosclerosis, acute stroke and carotid stenosis.

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Chairman's Corner

by John A. Ferretti, M.D.



This last year our Department has experienced many expected and unexpected changes that have affected me personally. I have accepted the position of Acting Chairman of the Department of Radiology with honor and enthusiasm. I promise to apply the same work ethic, loyalty and pride to the position that I have always used in my interactions with the

hospital, the Radiology Department and as Director of Interventional Radiology for the past 20 years.

My future goals for the Department will parallel the hospital's mission, vision, and values. We will continue to provide excellence in patient care, with patient satisfaction and patient safety as our leading priorities. We will continue the high level of teaching and education of our residents, medical students, and technologists, striving to achieve world class status. Developing and expanding research in our field will also be one of our main objectives and ambitions. Our department is built upon a system of competence, team work, innovation and service. We will continue to refine these qualities as we move forward.

The next few years will be crucial for our Department. We will see a total revamping of the physical structure with incorporation of the Neurointerventional Center into our immediate area coupled with our own expansion. This includes a two story structure at the current location of the patio on level four. Making these changes while remaining fully operational will be difficult and will take precision planning and exceptional flexibility by our staff. I know we are up to this challenge.

I would like to thank Dr. Donald Harrington for his efforts and support over the years to the hospital, our Department and to me personally. I am glad he is staying on and lending his expertise as we take our next steps.

I would like to welcome Dr. Carl Tack to our Interventional Radiology team. Dr. Tack brings over 20 years of experience with him and is very interested in developing our Interventional Oncology service. Dr. Americo Fiore is another welcome addition to our General Radiology staff. Dr. Fiore is well known and respected by the Long Island community.

We are looking forward to having former alumni Drs. Jayne Bernier and Steven West join the faculty staff. You can read more about them in the next issue of the *Radiology Letter*.

Finally, in closing, I want to emphasize that our radiologists are sought after for consultation and for their expert opinions by our hospital as well as the Suffolk medical community which include referring physicians and radiologists. We are proud of our reputation and will develop and champion this status.

Thank you for your support.

THE RADIOLOGY LETTER

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John Ferretti, M.D.
Michael J. Cortegiano
Christine R. Hubbard

Chairman
Administrator
Editor and Staff Writer

Farewell from the Former Chairman

by Donald P. Harrington, M.D., M.A., F.A.C.R.

This past year has brought many changes in my life. In December 2007, I accepted the position of Assistant Dean for Research with a focus on imaging as the Director of Radiology Imaging Research for the School of Medicine and stepped down as Chairman of the Department of Radiology. As I reflect back on the past sixteen years, many changes have transpired. In 1992, the Medical Image Processing and the Communication Research Program was established. The Laboratories for Image Science (LIS) is now home to a highly successful and active research program. In 1997, the Magnetic Resonance Imaging (MRI) Research Center opened. The MRI Center is a resource to support many approved Institutional Review Board (IRB) clinical research programs. One of the major research projects was development of the Virtual Colonoscopy Procedure. This procedure is now being performed at Stony Brook and used as a diagnostic tool for the screening of colon cancer.

In 1995, the first teleconference connection between SUNY at Stony Brook School of Medicine and the Northport Veterans Affairs Medical Center became operational. This real time interactive communications network allowed the expansion of educational and medical opportunities, such as daily Radiology conferences and Grand Rounds between the two institutions. One of the most constructive endeavors was the full implementation of the Picture Archive and Communication System (PACS) in 2003. This system eliminates the storage of films, provides studies to be sent electronically to the referring physicians in a timely manner and offers patient studies on a CD ROM. Powerscribe, a speech recognition solution, was also installed, allowing the radiologist the convenience and the advantage to sign off on a completed report while viewing the original images. The system eliminates the need for transcription services and yields significant cost savings to the Department.

In early 2004, the Department was the first in the world to install a unique imaging system that combines an ARTIS FA angiographic suite with a 16-slice CT scanner. This combined technology plays a significant role in cardiac and coronary artery imaging. Early on last year, the Outpatient Imaging Center opened, providing patients with easy coordination of care for appointments and exams. During my time as Chairman, the Carol M. Baldwin Breast Care Center also evolved. A digital mammography unit was installed in 2001, a first on Long Island and one of only 100 in the world. This unit takes high-resolution mammographic images and defines more clearly small calcifications, masses and other features to detect small treatable breast cancers. In 1995, the radiologists from Stony Brook began providing radiological services at the Hampton Bays Life Care Center, and as mentioned in the fall 2007 Newsletter, the radiologists at Stony Brook took over the radiological services at the Peconic Bay Medical Center. Radiological services at Hampton Bays and Peconic Bay provide subspecialty consultations and care to the populace, specialists and practitioners on the east end of Suffolk County.

One of my most rewarding aspects over the years has been observing the residents and fellows in the expansion of their knowledge, skills and teaching abilities in the various fields of radiology. Over the years, many of the residents and fellows have continued on as faculty members.

Although my office will now be situated in the Dean's Suite, I will remain a member of the Radiology faculty. I will be working full-time as the Director of Radiology Research and continue with the clinical aspects of Radiology on a part-time basis. I am pleased that John A. Ferretti, M.D. has accepted the position of Acting Chair for the Department of Radiology. John has been with the Department for over nineteen years and has the expertise and experience to provide this leadership. With that in mind, I turn the Chairman's Corner over to Dr. Ferretti with my best regards and wishes.

Distinguished Honoree

Congratulations to Dr. Paul R. Fisher who received the Dr. Michael Maffetone Award at the Carol M. Baldwin Breast Cancer Research Fund Think Pink Ball at the Chateau Briand in Carl Place, New York on Saturday, November 17, 2007. Dr. Fisher is an international consultant, helping to establish state-of-the-art breast centers in Rio de Janeiro, Brazil and Montevideo, Uruguay and a proposed center near Moscow, Russia. He is a former member of the Board of Directors of Physicians for Social Responsibility (PSR), which won the Nobel Peace Prize in 1985, and has represented PSR in numerous international forums. Dr. Fisher is a noted teacher of residents and medical students. He won the "Teacher of the Year" for five years, at both Stony Brook University and MCP Hanemann Medical Schools. He was also

the recipient of Stony Brook's Aesculapius Award for outstanding teachers and is the first radiologist to hold that honor. Dr.

Fisher has numerous publications, has conducted many training sessions in stereotactic breast biopsy and is a sought after speaker on breast imaging.

On a sad note, Dr. Fisher has accepted a position at the Yale-New Haven Hospital in New Haven, Connecticut and is no longer working at Stony Brook. The faculty, residents, fellows and staff thank Dr. Fisher for his many accomplishments as Chief of Breast Imaging, Director of

the Clerkship Program and his dedication as a clinician and educator. We all wish Dr. Fisher the best!



Neil Greenberg, Esq. (President, Carol M. Baldwin Cancer Research Fund), Xiao Chun Fisher, Ph.D., Carol M. Baldwin, Alec Baldwin (from left to right) and Paul R. Fisher, M.D. (rear)

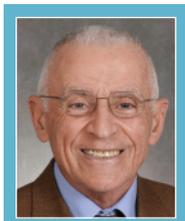
New Faculty



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Carl Tack, M.D. joined the faculty staff as an Assistant Professor of Clinical Radiology in the Division of Angiography and Interventional Radiology. Dr. Tack received his medical degree from the Universidad Central Del Caribe in Bayamon, Puerto Rico. He completed an internship in General Surgery at the Metropolitan Hospital Center in New York, New York and an internship and residency in General Surgery at the Lincoln/Misericordia Hospitals in New York, New York. Dr. Tack completed a Radiology residency at the Bronx-Lebanon Hospital Center in the Bronx, New York, where he served as Chief Resident and completed a fellowship in Cardiovascular and Interventional Radiology at the New York Hospital Center-Cornell Medical Center in New York, New York. Dr. Tack is

Board Certified in Radiology and gained the Certificate of Added Qualification in Angiography and Interventional Radiology presented by the American Board of Radiology. He specializes in vascular and cancer procedures. Before coming to Stony Brook, Dr. Tack worked at the New York Methodist Hospital and the Maimonides Medical Center in Brooklyn, New York. He is a member of the American Medical Association, American College of Radiology, Society of Cardiovascular and Interventional Radiology, New York Roentgen Society and the New York State Medical Society.



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Americo S. Fiore, M.D. joined the faculty staff as an Assistant Professor of Clinical Radiology in the Division of Diagnostic Radiology. Dr. Fiore received his medical degree from the University of Rome in Rome, Italy. He completed an internship at the Cabrini Medical Center (now Columbus Hospital) in New York, New York, a residency at the New York Medical College and Metropolitan Hospitals Inc. and a Radiotherapy and Radiology fellowship at the Delafield Hospital Presbyterian Hospitals in New York, New York. Previous appointments include Mather Hospital in Port Jefferson, New York, Eastern Long Island Hospital in Greenport, New York, and Central Suffolk Hospital/Peconic Bay Medical Center in Riverhead New York. He also worked as a consultant at Long Island

Diagnostic Imaging in Riverhead, New York and as a staff radiologist at BAB Radiology in Brentwood, New York. Dr. Fiore is Board Certified and is a member of the American Medical Association, Medical Society State of New York, Radiological Society of North America, and a Fellow in the Suffolk Academy of Medicine and the American Society of Abdominal Surgeons.

Lectures

Qun Chen, Ph.D., Associate Professor of Radiology and Physiology and Neuroscience, New York University School of Medicine, Department of Radiology and Center for Biomedical Imaging, New York, New York presented a Grand Rounds on "Pulmonary MRI: From Structure to Function" on Thursday, December 6, 2007.

Vincent Vigorita, M.D., Professor of Pathology and Orthopaedic Surgery, State University of New York Health Science Center at Brooklyn, Brooklyn, New York presented a Grand Rounds on "Chordoma and Its Variants: Lessons learned from 12 years of cases at the International Skeletal Society" on Wednesday, December 12, 2007.

Jeffrey S. Klein, M.D., F.C.C.P., Chief of Thoracic Radiology, Fletcher Allen Health Care, Professor of Radiology, Associate Dean for Continuing Medical Education, University of Vermont College of Medicine, Burlington, Vermont presented a Grand Rounds on "Evaluation of the Solitary Pulmonary Nodule" on Wednesday, February 13, 2008.

Mark Schweitzer, M.D., Professor of Radiology and Orthopaedic Surgery and Director of Musculoskeletal Radiology presented a Grand Rounds on "MSK Infections" on Tuesday, March 25, 2008.

News in the Department

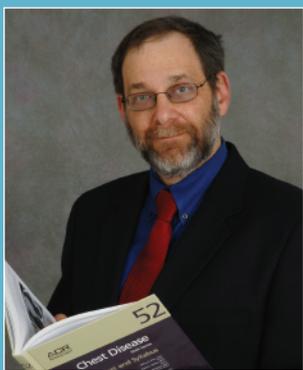
Many of the leadership roles have changed over the last several months. It is an exciting time for **Donald P. Harrington, M.D.** as he assumes the position of Assistant Dean for Research and Director of Imaging Research for the School of Medicine. Dr. Harrington is utilizing his expertise to enhance research efforts, facilitate research projects and obtain resources and support for these projects. He also serves as a Senior Science Advisor at the National Institute of Biomedical Imaging and Bioengineering. Dr. Harrington served as Chairman of the Department of Radiology for the past sixteen years.

John A. Ferretti, M.D. has assumed the position of Acting Chair for the Department of Radiology. Dr. Ferretti joined the Department over 19 years ago and brings a wealth of experience and leadership skills to the position. Dr. Ferretti is a Professor of Clinical Radiology in the Division of Angiography and Interventional Radiology. He has served as Section Chief of Angiography and Interventional Radiology for over 17 years. Dr. Ferretti also has a joint appointment with the Department of Surgery. He is a member of the Radiology Residency Committee and is currently the Director of the Residency Program. Before taking on his new position, he supervised the 4th year medical students' elective in Radiology and served as Chairman of the Radiology Quality Assurance Committee.

The 4th textbook under **Dr. Harris L. Cohen's** editorship of the American College of Radiology's Professional Self Evaluation Syllabus series, Chest Disease VI was published December 2007. The editors of the book are Chief Editor, Jeffrey Klein M.D., Professor of Radiology at University of Vermont; Associate Editor, H. Page McAdams, Professor of Radiology at Duke University and Harris L. Cohen M.D., Professor of Radiology at Stony Brook and Visiting Professor of Radiology at the Johns Hopkins Hospital and Health System.

The 11th edition of the classic Caffey's Pediatric Diagnosis has been published

Harris L. Cohen, M.D. seen displaying his work as co-editor of the American College of Radiology's Professional Self Evaluation Syllabus series. ©Jeanne Neville, Media Services



Donald P. Harrington, M.D. (left) and John A. Ferretti, M.D. congratulate each other on their new positions. ©Christine Hubbard, Radiology

by Elsevier in December 2007. The edition includes four chapters that make up the section on Reproductive Organs written by **Harris L. Cohen, M.D.** including Chapter 153 on Anomalies of Sex Differentiation; Chapter 154 on Abnormalities of the Male Genital Tract; Chapter 155 on Abnormalities of the Female Genital Tract and 156: Abnormalities of Puberty and Amenorrhea.

Anthony Gilet, M.D. and **Jared Dunkin, M.D.** contributed with Harris L. Cohen M.D. a case for the Society of Radiologists in Ultrasound 2007 Cases of the Day. Topic is Ultrasound of Pylorospasm and Gastroesophageal Reflux.

Anna Nidecker, M.D. and **Harris L. Cohen, M.D.** had a 2nd edition chapter just published in Thieme's Ultrasound: A Practical Approach to Clinical Problems on Amenorrhea in the Adolescent and Young Adult.

The RSNA has made available the Ultrasound Cases of the Day for 2006 as a Category 1 credited internet course, which was edited by former **Chief Resident Mohit Naik, M.D.** and **Harris L. Cohen, M.D.** This project had contributions from many department residents and staff including **Drs. Vaibhav Mangrulakar, Erica Posniak, Ekta Gupta, Marlene Zawin, Nandita Wadhwa, Nancy Budorick, Amer Naiem, Hsiu Su, Iakovos Koutras** and **Jared Dunkin.**



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Paul L. Vitulli, D.O. has accepted the position of Acting Director for the Division of Angiography and Interventional Radiology.



William H. Moore, M.D. has accepted the position of Medical Director, Department of Clinical Service.

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Elaine S. Gould, M.D. has taken over the position of Chair of Radiology Quality Assurance. Dr. Gould has past experience with the Quality Assurance process at North Shore University Medical Center.



Robert G. Peyster, M.D. has accepted the position of Section Chief of the Division of Neuroradiology.

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Electra Kaloudis, M.D., third year resident, and newborn son, Konstantinos Michael Kaloudis.



Jared Dunkin, M.D. named Chief Resident, is shown here with newborn son Liam.



Welcome to our new Physician Assistant, **Kenneth Ramirez, P.A.**, who joined the Angiography and Interventional Radiology team. Before coming to Radiology, Ken served in Iraq.

Peconic Bay Medical Center News

The Medical Center applied and was granted accreditation from the American College of Radiology in mammography, abdominal OB/GYN ultrasound, MR and CT. Previously, the Center was only accredited in mammography.

Bone Density Exam Used to Diagnose Osteoporosis

Osteoporosis is a disease that results in a gradual loss of calcium, causing bones to become thinner and more fragile. There are no specific symptoms, and the disease can progress painlessly until a fracture occurs. Fractures typically occur in the hip, spine and wrist. Spinal or vertebral fractures also have serious consequences, including loss of height, severe back pain and deformity.¹

Women are four times more likely than men to develop the disease. The most important risk factors for osteoporosis are advanced age. While the disease occurs in people from all ethnic groups, European or Asian ancestry predisposes for osteoporosis. Also, those with a family history of fractures or osteoporosis are at an increased risk. Osteoporosis is most common in women after menopause, but may also develop in elderly men, anyone having particular hormonal disorders and other chronic disease as a result of medications, specifically glucocorticoids, when the disease is called steroid or glucocorticoid-induced osteoporosis (SIOP or GIOP).²

Osteoporosis can be prevented with lifestyle advice and sometimes medications. Some medications slow the rate of bone loss or increase bone thickness. Even small amounts of new bone growth can reduce your risk of broken bones. If you take medicine for osteoporosis, you will also need to take calcium and vitamin D supplements, eat a healthy diet, and do weight bearing exercises regularly.

The diagnosis of osteoporosis is determined by measuring the bone mineral density (BMD). The most popular method is dual energy x-ray absorptiometry (DXA or DEXA). DEXA is also effective in tracking the effects of treatment for osteoporosis and other conditions that cause bone loss, and can also assess an individual's risk for developing fractures. The DEXA machine sends a thin, invisible beam of low-dose x-rays with two distinct energy peaks through the bones being examined. One peak is absorbed mainly by soft tissue and the other by bone. The soft tissue amount can be subtracted from the total and what remains is a patient's bone mineral density. DEXA machines feature special software that compute and display the bone density measurements on a computer monitor.



Vincent Foley, R.T. assists patient after her scan.
©Christine Hubbard, Radiology



Karen O'Toole, technologist, explains the bone density exam.
©Christine Hubbard, Radiology

Bone density testing is strongly recommended if you:

- are a post-menopausal woman and not taking estrogen
- have a personal or maternal history of hip fracture or smoking
- are a post-menopausal woman who is tall (over 5 feet 7 inches) or thin (less than 125 pounds)
- are a man with clinical conditions associated with bone loss
- use medications that are known to cause bone loss, including corticosteroids such as Prednisone, various anti-seizure medications such as Dilantin and certain barbiturates, or high-dose thyroid replacement drugs
- have type 1 (formerly called juvenile or insulin-dependent) diabetes, liver disease, kidney disease or a family history of osteoporosis
- have high bone turnover, which shows up in the form of excessive collagen in urine samples
- have a thyroid condition, such as hyperthyroidism
- have a parathyroid condition, such as hyperparathyroidism
- have experienced a fracture after only mild trauma
- have had x-ray evidence of vertebral fracture or other signs of osteoporosis³



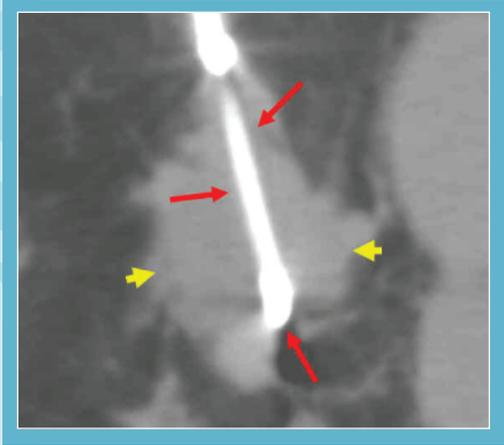
Richard Pagliara, M.D. (right) and Matthew A. Barish, M.D. view studies.
©Christine Hubbard, Radiology

Patient appointments for a bone density test can be made by calling 631 638-2121.

1. <http://www.nof.org/osteoporosis>
2. <http://en.wikipedia.org/wiki/Osteoporosis>
3. <http://www.radiologyinfo.org/en/info.cfm?pg=dexa&bhcf=1>

Radiofrequency Ablation (continued from cover)

rapid movement of ion/particles in the tumor which causes friction and results in heating. The heat that is generated can be very well controlled. We will typically heat the tumor to 90° centigrade (about 180° F). The specific protocol will vary depending on the device used, but all require a preset time that ranges from 12-28 minutes of heating the tumor. This modality has been carefully



Percutaneous Cryotherapy (PCT) of a central lung cancer: The cryoablation probe (red arrows) is placed centrally in the lung cancer (yellow arrows).

evaluated for its safety and efficacy and is Food and Drug Administration (FDA) approved for use in the soft tissues of the body. There are multiple articles which have evaluated the overall survival of patients with this technique; most of these articles show a 70-80% in a 2-year survival of the patient.⁴ Five-year survival data is forthcoming.

Percutaneous Cryotherapy (PCT) uses the exact opposite method to cause tumor death by using cooling (freezing) instead of heat to kill the targeted tumor cells. After the probe is placed into the tumor, the probe is cooled using high pressure Argon to negative 180° centigrade. This cooling causes all of the water in the area of the tumor to turn into ice, resulting in a large ice ball. The size of the ice ball is determined by the probe and the amount of cooling time. Like RFA, there is a preset time for which the tumor is cooled, approximately 28 minutes. Cellular death is caused by two different mechanisms; one is intracellular ice formation (IIF) and the other is extracellular ice formation (EIF). IIF results in direct cellular damage and death much like RFA. EIF dehydrates the cells; then during the thawing process the cells are rapidly rehydrated resulting in cell lysis (bursting). The final common pathway in PCT and RFA is coagulative necrosis. This method has also been carefully evaluated for safety and is FDA approved for use in

the lung. Survival data for PCT in the lung is forthcoming.

These new procedures carry many risks, most of which can be easily controlled at the time of the procedure. Some of these risks include pneumothorax (collapse of the lung), bleeding (both at the skin surface and inside the lung), infection, and pleural effusion. Stroke has been reported in patients who have lung cancer RFA.

All procedures performed at Stony Brook University Medical Center are performed while the patient is intubated and sedated (completely asleep). This is for the patient's safety and to control all variables associated with the procedure and the patient's health. All procedures are performed by a thoracic radiologist and a thoracic surgeon. Pre-procedure workups include cardiac stress testing, pulmonary function testing and blood tests. A CT scan and a PET scan are required before any procedure will be considered. At the time of the ablation or before the ablation (usually before) a biopsy will be required to establish the diagnosis of lung cancer.

After the procedure, we follow all of our patients carefully with CT scans every 3 months for one year, then every 6 months for the second year and yearly thereafter. PET imaging is performed on a regular basis. The patient will also have regular visits to our out-patient center for their follow-up care.

For more information regarding these procedures call 631-444-5400. To schedule an appointment, please call 631-638-2121, or call the Lung Cancer Evaluation Center directly at 631-444-2981.

References:

1. American Cancer Society. *Cancer Facts and Figures, 2007.*
2. Penland SK, Sociniski MA. *Management of Unresectable Stage III Non-small Cell Lung Cancer: The Role of Combined Chemoradiation. Semin Radiat Oncol. 2004.14:326-334.*
3. McGarry RC, Song G, des Rosiers P, et al. *Observation-only management of early stage, medically inoperable lung cancer: poor outcome. Chest 2002; 121:1155-1158.*
4. Simon CJ, Dupuy DF, DiPetrillo et al. *Pulmonary radiofrequency ablation: long-term safety and efficacy in 153 patients. Radiology. 2007;243(1):268-75.*

Clinical Trial

A phase III clinical trial sponsored by Bayer HealthCare Pharmaceuticals Inc. has begun recruitment. This project is lead by principal investigator Dr. William Moore in the Department of Radiology. The study objective is to document safety and efficacy of Ultravist 370 mg I/ml when administered intravenously for clinically indicated contrast enhanced computed tomography of head and/or body. The efficacy analysis will be based on the investigators' evaluation of the quality of the contrast enhancement of the images and on the ability to make a diagnosis using these contrast enhanced images. Any patient who is having a clinically indicated CT of the head and/or body may be eligible to participate. For additional information or to refer a patient, please contact Veronica Geronimo at (631) 444-2409 or Aimee Minton at (631) 444-2471.

Cerebrovascular Center

(continued from cover)

It will also be able to treat spinal vascular disorders and tumor embolizations with greater flexibility. These minimally invasive procedures that deploy stents, coils and liquid embolics to sensitive areas of the central nervous system can improve patient outcomes and significantly shorten the length of stays associated with some of the more traditional methods of treatment. It is the first of three units scheduled to be installed and represents the dedication to provide world class care at Stony Brook University Medical Center.^{1,2,3}

1. <http://press.siemens.us/index.php?s=43&item=752>
2. www.biospace.com/news_story.aspx?NewsEntitID=78364
3. www.siemens.com/medical

Department of Radiology Current Research Projects

Terry Button, Ph.D. — Clinical Detection of Breast Malignancy with Dynamic Infrared Imaging (DIRI)

Michael Pearl, M.D. and **Nancy Budorick, M.D.** — Utility of Preoperative FDG-PET/CT and Ferumoxtran-10 MRI scanning prior to primary chemoradiation therapy to detect retroperitoneal lymph node metastasis in patients with locoregionally advanced (IB2, II ≥4 CM, IIB-IVA) carcinoma of the cervix **PET/CT and MRI**

Paul Fisher, M.D. and Alina Tudorica, Ph.D. — Clinically Practical Magnetic Resonance Protocol for Improved Specificity in Breast Cancer Diagnosis **MRI**

Paul Fisher, M.D. and Wei Zhao, Ph.D. — 3-D Localization of Breast Lesions Using Breast Tomosynthesis **Tomosynthesis Unit**

Elaine Gould, M.D. — Diffusion Tensor Imaging and Tractography of Radial, Ulnar and Sciatic Nerves **MRI**

Jerome Liang, Ph.D. — Virtual Cystoscopy for Bladder Tumors via Magnetic Resonance Imaging and Spectroscopy **MRI**

Jerome Liang, Ph.D. — Integrate CAD & Virtual Colonoscopy for Cancer Screening **CT**

William H. Moore, M.D. — Ultravist 370 mg/ml: Safety and Efficacy in Computed Tomography of Head and Body **CT**

William H. Moore, M.D. — Efficacy of a

Tumor Ablation in Patients with Stage I Non-Small Cell Lung Cancer and Metastatic Disease to the Lungs, not Suitable for Surgical Resection **CT**

William H. Moore, M.D. — Low Dose Dynamic Computed Tomography for Study of the Lung **CT**

Daniel Baram MD, **William H. Moore, M.D.** — CT Assessment of Hemodynamics During Critical Illness **CT**

William H. Moore, M.D. — Molecular Mammography of Her-2-neu Cancers Using Gold Nanoparticles (Animal study) **CT & Mammo**

Mark Wagshul, Ph.D. — Establishing Normal and Varian Flow Patterns in the Central Nervous System **MRI**

Mark Wagshul, Ph.D. — Understanding the Biomechanics of the Brain in Dementia and Hydrocephalus **MRI**

Mark Wagshul, Ph.D. — Development of a Combined Functional MRI/Event Related Potential Protocol for Assessment of Brain Activation during Language-Related Tasks **MRI**

Mark Wagshul, Ph.D. — MRI Studies of Intracranial Flow in a Small Animal Model of Hydrocephalus (Animal Study) **MRI**

Mark Wagshul, Ph.D. — MRI Pilot Data Collection **MRI**

Mark Wagshul, Ph.D. — Invasive Monitoring of Intracranial Pressure Waveforms in the Intensive Care Unit **MRI**

Marlene Zawin, M.D. — CT/CTA of the Coronary Arteries: A Comparison for Conventional Coronary Angiography **CT**

Exempt Studies:

Nancy Budorick, M.D. — Imaging Findings, Radiation Dose and Degree of Injury in Pregnant Patients Who Have Suffered Trauma

Harris Cohen, M.D. — Ultrasound Evaluation of Fetal Adrenals- What is Normal Ultrasound Measurements Obtained at SUNY Stony Brook from July 2002-November 2006

Harris Cohen, M.D. — Ultrasound Evaluation of Pediatric Gynecologic Structure- What is Normal Ultrasound Measurements in Precocious Puberty Obtained at SUNY Stony Brook from July 2002-November 2006

Harris Cohen, M.D. — Ultrasound Evaluation of Pediatric Ovaries and Uterus- What is Normal Ultrasound Measurements Obtained at SUNY Stony Brook from July 2002-November 2006

Harris Cohen, M.D. — Ultrasound Evaluation of Pediatric and Adult Adrenals-What is Normal Ultrasound Measurements Obtained at SUNY Stony Brook from July 2002-November 2006

John Ferretti, M.D. — A Retrospective Analysis of Pregnant Radiology Patient Capture Rate

Robert Matthews, M.D. — Co-Registration in Molecular Imaging: PET-PET Fusion

Robert Matthews, M.D. — Value of PET/CT High Resolution Delayed Acquisition for Cervical Lymph Node Identifications in Head and Neck Cancers

Robert Matthews, M.D. — Utility of PET/CT in the Assessment of Post Radiation/Chemotherapy Changes in the Head and Neck

William H. Moore, M.D. — Attitudes Towards Radiation Exposure Among Department Physicians

William H. Moore, M.D. — Computer Aided Detection of Lung Nodule on Chest x-ray

William H. Moore, M.D. — A Retrospective Analysis of Percutaneous Needle Lung Biopsies: "Does Larger Needle Size Correlate with Improved Cytologic Sample Yield?"

William H. Moore, M.D. — Evaluation of Neonatal Thyroid Levels after In Utero Exposure to Maternal Intravenous Iodinated Contrast

Robert Peyster, M.D. — Comparison of a Fat Suppressed 3D T1 Weighted Sequence Used for Post Contrast Opposed to a Standard TSE-T1 Weight, Fat Suppressing Sequence in Lesion Detection

Medical Physics Graduate and Residency Programs

By Terry Button, Ph.D.

Many important landmarks in Radiological Sciences claim Stony Brook University (SBU) or Brookhaven National Laboratory (BNL) as their birthplace. Important breakthroughs have included the invention by Lauterbur of magnetic resonance imaging (MRI) in the Chemistry Department at SBU, the development of the technetium (Tc-99m) generator, Tl-201 and F-18 fluorodeoxyglucose (FDG) at BNL and virtual diagnostic visualization in Radiology at SBU to name a few. New innovations in medical imaging and the application of radiation for therapeutic benefit are currently under study at these institutions including dynamic infrared imaging at SBU and microbeam radiation therapy at BNL.

The Medical Physics Track at SBU was formed in the Biomedical Engineering Department (BME) in 2002 jointly by Terry Button, Ph.D. from the Radiology Department and Lawrence Reinstein, Ph.D. of Radiation Oncology. The Track was devised to integrate research, education and collaboration between BNL and SBU scientists. The overall goal of this Track is to nurture challenging research for graduate students from the Biomedical Engineering Department of SBU by providing a learning environment and expanding the research opportunities to include the advanced facilities and expertise of scientists at University Hospital and BNL.

The twelve faculty members of the Medical Physics Track are diverse and include the researchers from BNL, the School of Medicine at SBU, the College of Arts and Sciences at SBU and the clinical medical physicists at University Hospital. Didactic training includes core courses provided by the Medical Physics faculty that are offered through Biomedical Engineering (BME):

BME 517 Radiation Physics (3 CH)

BME 518 Radiobiology (3 CH)

BME 519 Medical Health Physics (3 CH)

BME 530 Medical Image Formation (3 CH)

BME 610 Magnetic Resonance (3 CH)

BME 540 Radiation Oncology Medical Physics (3 CH)

In 2002, the first six graduate students entered into the Medical Physics Track. From that initial group, all have completed a Masters of Science, one is about to defend his dissertation proposal, one has defended her dissertation proposal and three have defended their dissertation and completed their doctorate. Recent Medical Physics dissertations include (listed with their supervising Professor):

Sachin Jambawalikar – Application of Texture Analysis to Dynamic Contrast Enhanced Breast Magnetic Resonance Imaging (T. Button)

Erin Kelly – Quantitative Measurements of Intracranial Cerebrospinal Fluid Dynamics: Methods to Evaluate Changes in the Biomechanics of the Brain (M. Wagshul)

Bo Zhao – Breast Tomosynthesis with Amorphous Selenium Digital Flat Panel Detector (W. Zhao)

Arti Kriplani – Non-invasive Estimation of an Arterial Input function for Quantitative Positron Emission studies using a Wrist Scanner (D. Schlyer)

The graduate Medical Physics track continues to attract 3-6 graduate students each year and several dissertation proposals have recently been made and several more are planned.

For those students wishing to become a licensed clinical Medical Physicist, eligibility for the American Board of Radiology requires training in a Commission on Accreditation of Medical Physics Education Programs (Campep) approved Residency Program. A residency program has been established for this purpose at Stony Brook University Hospital which is again, a collaboration of the Departments of Radiology and Radiation Oncology.

The Medical Physics Residency Training Program at Stony Brook University is a two-year clinical training program for physicists committed to a career in Imaging Physics or Radiation Oncology Physics. These two-year clinical training programs will be designed to provide candidates with two clinical years in their selected areas are required for qualification for the American Board of Radiology (ABR) examination. Application for Campep Accreditation of this program is under preparation.

RADIOLOGY LETTER

A Radiologist's Approach to Imaging Vistas ■ State University of New York at Stony Brook

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