

SNM and NCCN Collaboration

The National Comprehensive Cancer Network (NCCN) and SNM announced in March a collaboration to advance research for cancer imaging and therapies. In this collaboration, NCCN will work with SNM to qualify imaging sites for upcoming research projects using molecular imaging in clinical trials. NCCN, through its Oncology Research Program (ORP), obtains funding to support scientifically meritorious clinical trials at the 21 NCCN member institutions. These studies evaluate innovative combinations and sequencing regimens of drugs, mechanisms of action of specific agents, or drug resistance or are directed toward exploring extended uses for specific agents.

As a new initiative of the ORP, the NCCN Specialized Imaging Research Consortium (SIRC) aims to advance the treatment of patients with cancer through the clinical application of specialized imaging technologies. This is achieved by performing high-quality clinical trials of emerging therapeutics integrated with evidence-based research to guide the use of advanced imaging in clinical cancer care. To help facilitate the SIRC clinical trials, the SNM Clinical Trials Network will qualify NCCN member institutions to ensure standardization across sites. The qualification process includes scanner validation as well as a review of site personnel, research experience, and infrastructure information. Education and training on specific clinical research, clinical trials methodology, and imaging topics will also be provided.

“We know that historically it has been difficult to use molecular imaging agents in multicenter clinical trials due to a number of factors, including lack of qualified imaging sites and a lack of standardization, among others,” said Dominique Delbeke, MD, PhD, SNM president.

“SNM’s Clinical Trials Network helps to make this process easier, ensuring high-quality imaging and promoting fast, more cost-effective drug development.” More information is available at www.snm.org/CTN.

SNM

Cancer Research Programs Merge

The American College of Radiology’s Imaging Network (ACRIN) and the Eastern Cooperative Oncology Group (ECOG), both members of the National Cancer Institute Clinical Trials Cooperative Group, announced on March 21 their intent to merge their clinical cancer research programs. The groups plan to form an alliance that combines their complementary strengths. The new organization will include 3 areas of research emphasis: early detection and diagnosis of cancer; biomarker-driven phase II and phase III therapeutic studies for multiple cancer types and stages; and genetic, molecular, and imaging marker research to predict and monitor treatment response.

The new alliance will bring together the organizations’ individual capabilities to build a program with expanded scientific scope and depth of expertise. ECOG has strengths in performing large-scale trials with molecular endpoints in major diseases. The results of these studies have changed the treatment of cancer patients and helped to individualize therapy. ACRIN’s clinical trials encompass the full range of medical imaging research, from landmark cancer screening trials to early-phase trials evaluating imaging biomarkers and novel imaging technologies. While maintaining these areas of separate expertise, the alliance will emphasize individualization of therapy and accelerate the integration of biological advances into clinical practice.

“We are excited by the ECOG partnership opportunity to develop a

unique multidisciplinary organization positioned to study the entire cancer care path from early detection through management of advanced disease,” said Mitchell D. Schnall, MD, PhD, ACRIN chair. “The integration of ECOG and ACRIN patient advocacy and clinical research associate committees will bring together an impressive knowledge base representing the patient perspective and participant recruitment best practices—a significant support for getting the research done.” Transition planning is underway, and group leaders are developing the business, administrative, and scientific structures. The new organization will sustain its research portfolio with public and private support.

American College of Radiology

Hybrid Scanner Market Thrives

In market survey results released on March 22, Frost & Sullivan (Mountain View, CA) reported that the success of PET/CT is driving acceptance of other imaging hybrids and new technologies. Market research results outlined in *Emerging Technology Developments in Hybrid Imaging* indicate that PET/CT has gained widespread recognition in the medical oncology community and that major original equipment manufacturers no longer offer standalone PET units. The nuclear medicine community has begun wide adoption of SPECT/CT, a trend that is now affecting sales of standalone SPECT systems. The advent of PET/MR for preclinical imaging, with working prototypes for clinical imaging, and the expectation for availability of SPECT/MR units in the near future add to an armamentarium of hybrid systems that “expedite the delivery of complementary anatomical, functional, and molecular information to enable high levels of accuracy in diagnosis that individual modalities cannot offer.” Other new technologies, such as time-of-flight

and high-density PET systems, as well as new scintillators, photodetectors, high-speed electronics, multislice CT, and novel radiotracers were cited in the report as major drivers for the hybrid scanner market. "A new era is opening up for disease imaging, where hybrid imaging will be the primary diagnostic tool, merging with molecular imaging," said Frost & Sullivan Technical Insights industry analyst Sangeetha Prabakar. The report also discussed issues relating to the high cost of hybrid scanners, the need for increased throughput, expansion of clinical indications, and adoption of innovative strategies. More information about the report is available at www.frost.com.

Frost & Sullivan

Joint Statement on Radiation Risk and KI

On March 18 the SNM, the American Association of Clinical Endocrinologists, the American Thyroid Association, and the Endocrine Society released a joint statement on health and radiation risks after the events at the Fukushima Nuclear Plant resulting from the March 11 earthquake and tsunami in Japan. The statement was designed to address fears of radiation exposure to populations in North America from potential plumes of radioactivity crossing the Pacific Ocean and to emphasize that potassium iodide (KI) pills or solution should not be taken in the absence of a clear risk of exposure. The statement included the following language: "With radiation accidents, the greatest risk is to populations close to the radiation source. While some radiation may be detected in the United States and its territories in the Pacific as a result of this accident, current estimates indicate that radiation amounts will be little above baseline atmospheric levels and will not be harmful to the thyroid gland or general health... We discourage individuals needlessly purchasing or hoarding of KI in the United States. Moreover, since there is not a radiation emergency in the United States or its territories, we do not

support the ingestion of KI prophylaxis at this time."

SNM

Chernobyl Cancer Risks Persist

Nearly 25 y after the accident at the Chernobyl nuclear power plant in Ukraine, exposure to ^{131}I from fallout may be responsible for thyroid cancers that are still occurring among people who lived in the Chernobyl area and were children or adolescents at the time of the accident. An international team of researchers led by the National Cancer Institute (NCI) found a clear dose-response relationship, in which higher absorption of radiation from ^{131}I led to an increased risk for thyroid cancer that has not seemed to diminish over time. The study, which represents the first prospective examination of thyroid cancer risk in relation to ^{131}I doses received by Chernobyl-area children and adolescents, appeared on March 17 in the journal *Environmental Health Perspectives*.

"This study is different from previous Chernobyl efforts in a number of important ways. First, we based radiation doses from ^{131}I on measurements of radioactivity in each individual's thyroid within 2 mo of the accident," said study author Alina Brenner, MD, PhD, from NCI's Radiation Epidemiology Branch. "Second, we identified thyroid cancers using standardized examination methods. Everyone in the cohort was screened, irrespective of dose." The study included more than 12,500 participants who were under 18 y old at the time of the Chernobyl accident on April 26, 1986, and lived in 1 of 3 Ukraine provinces near the accident site. Thyroid radioactivity levels were measured for each participant within 2 mo of the accident, and were used to estimate each individual's ^{131}I dose. Participants were screened for thyroid cancer up to 4 times over 10 y, with the first screening occurring 12–14 y after the accident. Screening included palpation, ultrasound, and independent clinical and thyroid examination by an endocrinologist. Participants also com-

pleted questionnaires that included data on residential history, milk consumption, and whether they were given preventive doses of nonradioactive iodine in the 2 mo after the accident. Participants with suspected thyroid cancer were referred for biopsy and, as needed, to surgery. Sixty-five of the participants were diagnosed with thyroid cancer. Results indicated that each additional gray of dose received was associated with a 2-fold increase in radiation-related thyroid cancer risk. The researchers found no evidence over the years spanned by the study to indicate that the increased cancer risk to those who lived in the area at the time of the accident is decreasing over time. More information about NCI's research related to the Chernobyl accident is available at <http://chernobyl.cancer.gov>.

National Cancer Institute

IAEA to Review Nuclear Emergency Response

On March 28, at a special briefing on the Fukushima nuclear accident held for International Atomic Energy Agency (IAEA) member states, IAEA Director General Yukiya Amano announced that a high-level IAEA conference on nuclear safety would take place in Vienna, Austria, within months. Noting that the Fukushima crisis had confronted the agency and the international community with a major challenge, Amano said that it was "vitally important that we learn the right lessons from what happened on March 11 and afterwards, in order to strengthen nuclear safety throughout the world." He recalled that following the IAEA Board of Governors meeting the previous week, "many countries joined my call for robust follow-up action." Amano proposed that the IAEA conference on nuclear safety should cover the following points: (1) an initial assessment of the Fukushima accident, its impact and consequences; (2) lessons that should be learned; (3) initiating a process to strengthen nuclear safety; and (4) strengthening the response to nuclear accidents and emergencies. Because the IAEA offers the

“necessary expertise, extensive membership, and can ensure transparency,” Amano called the IAEA the best venue for follow-up on the Fukushima accident.

International Atomic Energy Agency

NIH mHealth Summer Program

The National Institutes of Health (NIH) announced on February 28 the creation of the first NIH mHealth (or mobile health) Summer Institute. Scheduled for the summer of 2011, this week-long workshop will bring

together leaders in mobile health technologies, behavioral science researchers, federal health officials, and members of the medical community to provide early career investigators with an opportunity to learn about mHealth research. The Office of Behavioral and Social Sciences Research, part of NIH, partnered with Qualcomm, a developer of wireless technologies, to cosponsor the course. The mHealth Summer Institute will provide an overview of the engineering, behavioral science, and clinical aspects of wireless research and will facilitate interaction between partici-

pants and experts from across the mHealth spectrum. The institute will cover the current state of the science in mobile technology and engineering, behavior change theory and clinical applications and will highlight the intersection of these areas for health-related research. Interdisciplinary teams of participants will develop potential mHealth research projects. Registration for the program filled within days of the announcement. More information is available at: http://obssr.od.nih.gov/training_and_education/mhealth/index.aspx.

National Institutes of Health

FROM THE LITERATURE

Each month the editor of Newsline selects articles on diagnostic, therapeutic, research, and practice issues from a range of international publications. Most selections come from outside the standard canon of nuclear medicine and radiology journals. These briefs are offered as a monthly window on the broad arena of medical and scientific endeavor in which nuclear medicine now plays an essential role. We have added a special section on molecular imaging, including both radionuclide-based and other molecular imaging efforts, in recognition of the extraordinary activity and promise of diagnostic and therapeutic progress in this area. The lines between diagnosis and therapy are sometimes blurred, as radiolabels are increasingly used as adjuncts to therapy and/or as active agents in therapeutic regimens, and these shifting lines are reflected in the briefs presented here. We have also added a small section on noteworthy reviews of the literature.

MOLECULAR IMAGING/ THERAPY

Imaging Cellular Events in Angiogenesis

In an article e-published on March 8 ahead of print in *Stem Cells and*

Development, Li and Stuhlmann from the Weill Medical College of Cornell University (New York, NY) reported on in vitro imaging of angiogenesis using embryonic stem (ES) cell-derived endothelial cells. The authors described the development of green fluorescence protein-expressing endothelial cells from a transgenic cell line. Aggregated ES cell-endothelial cells were embedded into a 3D collagen gel matrix, with subsequent migration and coalescence into a capillary network. Time-lapse microscope imaging showed migration of the cells, proliferation, and anastomosis to other capillary vessels, a process “reminiscent” of angiogenesis. These and additional studies led the authors to conclude that this ES model and imaging technique represent a high-resolution dynamic video-image system for visualizing the cellular events underlying angiogenic cascades.” They also noted that the model can serve as “an image screening tool for the identification of pro-angiogenic and anti-angiogenic molecules.”

Stem Cells and Development

Molecular Targeting in Hepatocellular Carcinoma

Li et al. from Nanjing University (China) reported in the March 3 issue of

the *Journal of Experimental and Clinical Cancer Research* (2011;30:25) on a study evaluating the targeting effects of antisperm protein 17 monoclonal antibody (anti-Sp17) on cancer in vivo and assessing its utility as a reagent for optical molecular imaging. Human sperm protein 17 is expressed in some malignant tumors. After verification of expression in a hepatocellular carcinoma cell line and corresponding tumor xenograft specimens, a near-infrared fluorescence dye was used to label anti-Sp17 for imaging. The labeled agent was injected into tumor-bearing mice through the caudal vein, and tumor targeting was evaluated by near-infrared imaging. Good targeting capability was demonstrated, as was tumor accumulation lasting for at least 7 d. The authors concluded that “anti-Sp17 antibody targeted and accumulated in Sp17 positive tumors in vivo, which demonstrated its capability of serving as a diagnostic reagent.”

Journal of Experimental and Clinical Cancer Research

Multimodal Imaging of Nanovaccine Carriers

In an article e-published on March 16 ahead of print in *Molecular Pharmaceutics*, Cruz et al. from the University Medical Centre (Nijmegen, The Netherlands) reported on a strategy to enhance immune response by targeting