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Bruker and Royal Philips have developed a novel technique for preclinical imaging. According to Bruker, the magnetic particle imaging (MPI) system may yield new insight into disease processes at the organ, cellular, and molecular levels. The MPI tomographic imaging technique relies on the detection of the magnetic properties of iron oxide nanoparticles injected into the bloodstream to produce 3D images. Its potential for translational research, drug discovery, and, ultimately, patient care has been demonstrated in several studies. For example, MPI scanning has been used to produce real-time images that accurately capture the activity in a mouse's cardiovascular system. The ability to acquire high-resolution, time-resolved images in a matter of milliseconds will allow for novel applications in which temporal resolution can resolve questions that many existing imaging techniques cannot..

Fellow NECHPS Members; next time you run into Steven Snay, please congratulate him on his recent promotion; being named Director of Radiation Safety at UMass Lowell.



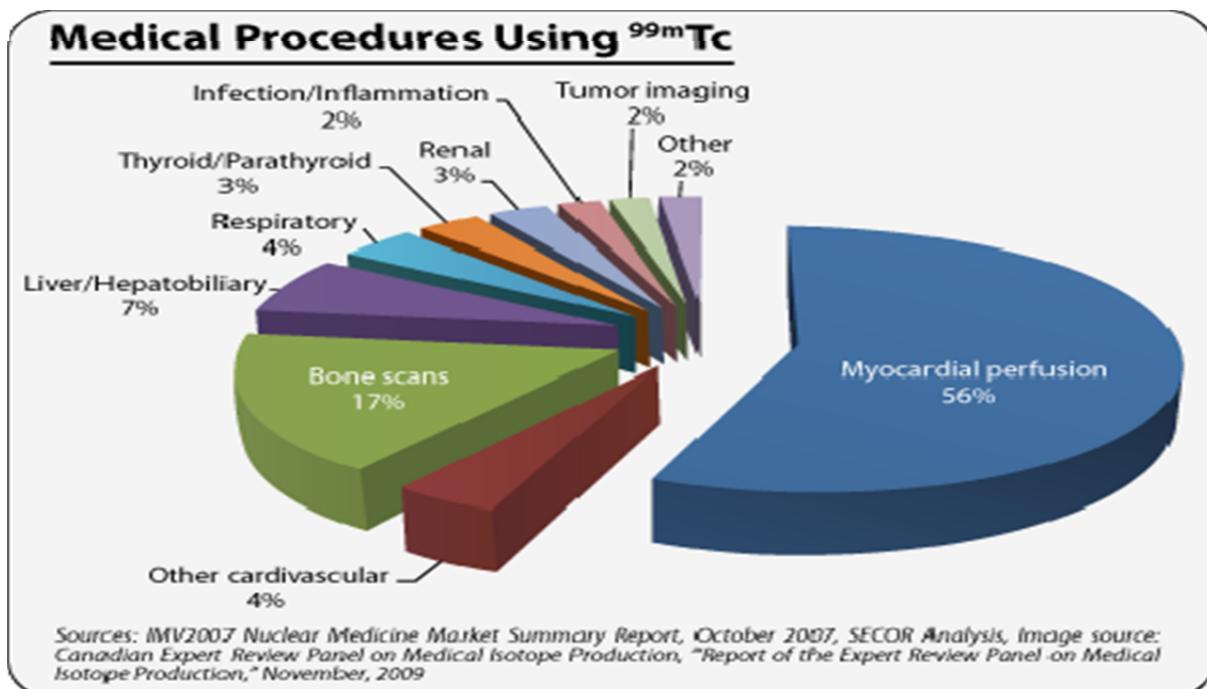
## President Signs Omnibus Bill Includes \$5 Million For Nuclear Medicine Research.

On January 17, President Obama signed H.R.3547, the Consolidated Appropriations Act, also known as the \$1 trillion [omnibus spending bill](#), into law. The bill was approved by the Senate (72-26) and House of Representatives (359-67) earlier in the week. This legislation includes \$5 million for nuclear medicine research with human applications. Passing the omnibus spending bill prevents another government shutdown.

## Update on Mo-99 Availability

DOE this past November awarded US Company NorthStar Medical Isotopes based in Wisconsin \$10.9 Million to produce  $^{99}\text{Mo}$  (Molybdenum) precursor to  $^{99\text{m}}\text{Tc}$  used in roughly 16 million nuclear medicine procedures annually in the US.

At this time the US has no domestic source for this and is dependent on their supply from a few research reactors located in Canada and Europe for this very valuable short lived isotope. One South Africa reactor has been recently partially converted to use of low-enriched uranium (LEU) targets. In addition the National Nuclear Security Administration (NNSA) has also been paying NorthStar and four other US companies to develop production methods for  $^{99}\text{Mo}$  which do not require HEU (Highly Enriched Uranium). Northstar is in collaboration with University of Missouri which utilized neutrons for non-fusion based isotope production and the other will utilize a process using gamma rays provided by an accelerator to transmute  $^{100}\text{Mo}$  through emission of a neutron. NorthStar intends to commence production in mid 2014 at an initial rate of 100 six-day curies per week pending FDA approval and hope to be at capacity of 3000 six-day curie per week by mid 2015 depending on demand. It is projected that this output should satisfy half of projected US demand for the isotope.



## Breast Cancer Compound Moving Towards Human Trials

Milwaukee Journal Sentinel reports that a new compound that suppresses the activity of the Bcl3 gene in metastatic breast cancer has been identified by researchers from Cardiff University. Tested in animal models, the drug stopped cancer metastasis, and researchers hope to begin human trials within two years. "I envisage, if all goes to plan, a breast cancer patient arrives at clinic with lump, and the first thing the GP will do is put them on a drug like this to prevent any further progression of the disease," said researcher Dr. Richard Clarkson.

### Upcoming Meetings

#### **NCRP Meeting**

**NCRP: Achievements of the Past 50 Years  
and Addressing the Needs of the Future**  
10-11 March 2014  
Bethesda, MD

#### **NECHPS Student Technical Symposium**

**Date: Thursday, April 17, 2014**

**Time: 5pm to 9pm**

**Menu: Italian Buffet**

**Venue:**

**Radisson Hotel and Suites  
10 Independence Drive  
Chelmsford, MA 01826**

#### **NECHPS ANNUAL MEETING**

**Date: May 29, 2014**

**Time: 8am — 5pm**

**Venue:**

**Westford Regency Inn / Conference  
219 Littleton Rd  
Westford, MA 01886**

**Program: Look for details on the NECHPS  
Website in the near future**

### ELECTIONS

Chapter Elections will be held on Thursday, May 29, 2014 at the Annual Meeting. Rick D'Alarcao has informed the Executive Council that he is resigning as President-Elect. Steve Snay will be leaving his position as Admissions Chair on the Board to run for President. Vince Chase is leaving his position as Secretary to run for Treasurer. Rusty Lorenzen, Dave Meissner and Haneef Sahabdeen are ending their terms as Directors. Therefore, the open positions on the Executive Council for the 2014 – 2015 Chapter year are:

- President
- President-Elect
- Secretary
- Treasurer
- Four (4) Directors

If you wish to run for any of the vacancies on the Executive Council, please contact John Salladay, Nominating Committee Chair.

Vince Chase  
Secretary  
NECHPS

#### **From the NECHPS Meeting Archives**

Feb 18, 1965- NECHPS Meeting  
LG Hanscom Field Bedford, MA  
"Peaceful Uses of Nuclear Explosives  
- the Plowshare Program",  
Dr. Gerald H. Johnson,  
Lawrence Livermore Laboratory

### Molecular Imaging Tracer Improves Accuracy of Treatment Plans for Brain Metastases

Imaging with the molecular imaging tracer 3,4-dihydroxy-6-<sup>18</sup>F-fluoro-L-phenylalanine (<sup>18</sup>F-FDOPA) can help distinguish radiation-induced lesions from new tumor growth in patients who have been treated with radiation for brain metastases, according to new research. Using this amino acid tracer, researchers found that physicians could accurately differentiate between the two types of lesions 83% of the time. Progression-free survival (PFS) could also be predicted by evaluating the <sup>18</sup>F-FDOPA imaging results.

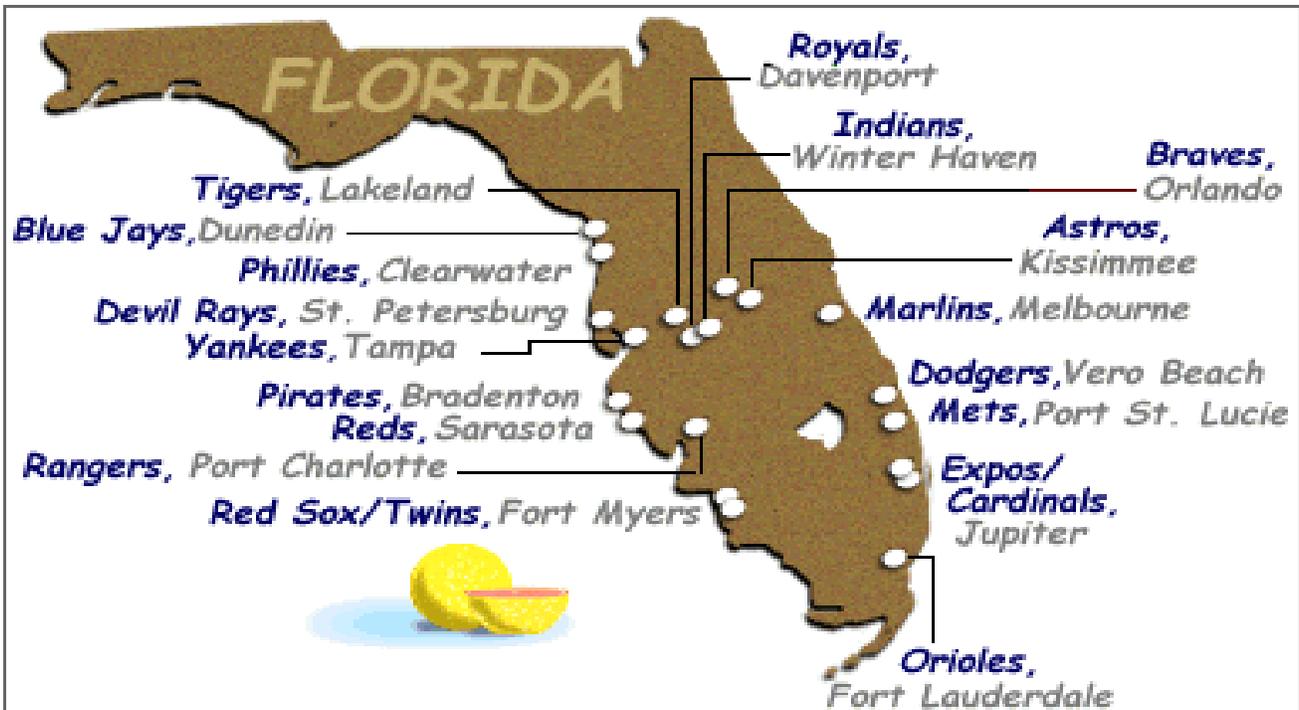
Brain metastases occur in 20% to 40% of all cancer patients, particularly in those with non-small cell lung cancer, breast cancer, and melanoma. They account for 170,000 new cases per year in the United States, and prognosis is poor. Treatment for brain metastases typically includes a combination of surgery, radiation treatment, and chemotherapy.

## First Day of Spring – March 20



### Baseball Fans Are Hoping For An Early Spring

You may be thinking about taking a break from our extended New England winter and catch a spring training baseball game. So here are the training camps of several major league baseball teams and their proximity to some favorite Florida destinations.



## Researchers Present Possible Link to Adolescent Concussion and Depression

In an analysis of data from the 2007-2008 National Survey of Children's Health that included more than 36,000 12- to 17-year-olds, researchers found that the risk of depression was 3.3 times greater among those who suffered a concussion than those without a history of such injury. Older teens aged 15 to 17 were more prone to depression than younger ones, according to the study in the *Journal of Adolescent Health*.

## Teletherapy Source Stolen in Mexico

Federal police blocked access to a central Mexico hospital where six people were reported to have been admitted with radiation exposure. An official familiar with the case confirmed Mexican media reports that the six have been admitted to the general hospital in the city of Pachuca and may have been exposed to a stolen source of cobalt-60.

The official, who spoke on condition of anonymity because she was not authorized to be quoted by the media, said only one person was dizzy and vomiting, which are symptoms of severe radiation poisoning. She said two people were admitted and four more a day later. She did not provide any other details. The International Atomic Energy Agency said the cobalt has an activity of 3,000 curries, which is listed as a Category 1 source by the USNRC. This means it would probably be fatal to be close to the unshielded radioactive material for a period in the range of a few minutes to an hour.

The shipment of radioactive cobalt-60 went missing when thieves stole the cargo truck in which it was being hauled. The theft triggered alerts in six Mexican state and Mexico City, as well as international notifications to the U.S. and the International Atomic Energy Agency in Vienna. It raised concerns that the material could have been stolen to make a dirty bomb, a conventional explosive that disseminates radioactive material. But Mexican officials said that the thieves seemed to have targeted the cargo truck that held a moveable platform and crane and likely didn't know about the dangerous cargo.

The truck was found abandoned about 40 kilometers (24 miles) from where it was stolen, and the container for the radioactive material was found opened. The cobalt-60 pellets were left about a kilometer (half mile) from the truck in an empty rural field, where authorities said they were a risk only to anyone who had handled them and not the surrounding population. The material was from obsolete radiation therapy equipment at a hospital in the northern city of Tijuana and was being transported to nuclear waste facility in the state of Mexico, which borders Mexico City. Authorities continue to work at the site in Mexico state where the material was found to extract it safely.



60-Co Radiation Therapy Sealed Source Assembly Housing—Mexico Incident; December 2013

**Return Address:**

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To:



New England Chapter  
of the  
Health Physics Society

NEWSLETTER  
MARCH 2014