BNL Radioisotope Production

In an April 4 press release, Brookhaven National Laboratory (BNL; Upton, NY) announced recent upgrades to its radioisotope production and research facility intended to increase the yield of key medical isotopes. Working under the Department of Energy (DOE) Office of Science Nuclear Physics Isotope Development & Production for Research and Applications program, scientists at BNL recently completed installation of a beam raster system designed to increase production at the Brookhaven Linac Isotope Producer (BLIP). The new system went live in January and is contributing to increased production of ^{82}Sr and to research and development with ^{225}Ac. In the press release, BNL staff described the unique characteristics of the BLIP, which has capabilities not available in the private sector. "A minimum of 70 million electron volts is required to make ^{82}Sr," said Leonard Mausner, PhD, head of research and development and facility upgrades within BNL's Medical Isotope Research and Production Program "To date, there are no commercial accelerators in the United States with the power required to produce this critical isotope used to image 300,000 patients per year."

In 2015, the beam intensity of the BNL Linac was increased from 115 to 147 microamps. With the launch of the new raster system, the beam has been further optimized to 165 microamps. "If the beam current can be maintained at 165 microamps, production levels could potentially increase by 40%," said Mausner. These and other innovations should allow BNL scientists to produce and investigate other promising radioisotopes, including ^{225}Ac, for which current demand is 50–100 times greater than supply. Working with DOE scientists at Los Alamos National Laboratory (NM) and Oak Ridge National Laboratory (TN), BNL has been developing an accelerator-based capability to scale up the production of ^{225}Ac. Initial experiments have demonstrated that an irradiation with the new technology lasting less than a week could produce as much ^{225}Ac as is currently available in an entire year. "The raster system will ultimately aid us in the research and development of ^{225}Ac, which could eventually be manufactured into an active pharmaceutical ingredient used in cancer therapy," said Mausner.

The press release, which describes in detail the technologies and challenges associated with the new beam raster system, is available at: https://www.bnl.gov/newsroom/news.php?a=26124.

Brookhaven National Laboratory

Virtual Cancer Health Advisor

IBM and the American Cancer Society (ACS) announced on April 12 a partnership to create the first virtual advisor for individuals with cancer, to be powered by IBM's Watson cognitive computing technology. The initiative, announced at the 13th Annual World Health Care Congress in Washington, DC, is intended "to provide cancer patients, survivors, and caregivers with trusted ACS resources and guidance personalized to an individual's unique journey against cancer."

ACS and IBM will create this resource by using large amounts of data from both organizations to train Watson to understand and anticipate individual needs. The virtual advisor will use ACS's >14,000 web pages of detailed information on >70 cancer topics, healthy lifestyles, risk reduction, and early detection. Watson will also "ingest" the ACS National Cancer Information Center's deidentified and aggregated data on self-management, support groups, health/wellness activities, and cancer education. Once in use, the technology is also expected to mine additional insights (and create new ones) through IBM's Watson Health Cloud.

In announcing the partnership, IBM and ACS representatives noted that the virtual advisor will be a personalized tool, designed to anticipate the needs of individuals with different types of cancers, at different stages of disease, and at various points in treatment. The knowledge base for the technology will be iterative and become increasingly personalized as individuals engage with it, effectively becoming "smarter" each time it is used. ACS and IBM also envision incorporating Watson's voice recognition and natural language processing technology, enabling users to ask questions and receive audible responses. An example given by IBM at the announcement focused on a hypothetical woman with breast cancer experiencing unusual levels of pain. She could ask the advisor what might be causing the pain. The advisor would begin by responding with information on symptoms and self-management options associated with the patient's current and future phases of treatment, based on the experiences of individuals with similar characteristics.

"We help patients every day who seek information and insights to understand the disease and navigate their cancer journey," said Gary M. Reedy, ACS CEO. "This partnership can take these efforts to the next level by combining the depth and breadth of cancer information from the world's most trusted cancer source with the power of cognitive technology from IBM Watson. It's about providing the right information to the right people at the right time."

ACS and IBM hope in the future to integrate the virtual advisor with IBM's existing Watson for Oncology offering for physicians, a clinical decision support tool. By integrating information from the virtual advisor, clinicians could be prompted to share personalized guidance on resources, including educational materials and social services.

The Watson technology is in use addressing oncologic data challenges through partnerships with the Memorial Sloan–Kettering Cancer Center (New York, NY) and MD Anderson

Cancer Center (Houston, TX). At the Mayo Clinic (Rochester, MN), Watson helps physicians to match patients with relevant clinical trials, and 16 cancer institutes are performing research designed to enlist the Watson technology in translating genomic data into personalized treatment options.

American Cancer Society/IBM

OnPAR: Second-Chance Funding Opportunities

On March 24, Leidos (Reston, VA), a health, national security, and engineering consulting company, announced with the National Institutes of Health (NIH) the launch of the Online Partnership to Accelerate Research (OnPAR), which will offer a "second opportunity" for researchers whose submissions to NIH are not funded. This private business venture, described as "a new funding paradigm," has received initial support from and partnership with NIH. Through the OnPAR public–private program, exceptional research applications that were not originally funded by NIH will be matched for potential funding with a participating organization's specialized area of interest. "OnPAR presents another avenue to fund important biomedical research," said Jim Pannucci, PhD, Leidos Director of Life Sciences. "The program will revolutionize the scientific funding environment and foster more discoveries at a faster pace to benefit and improve global health."

Research projects will be considered and funded by OnPAR organization members based on their specific research priority areas and requirements. For the pilot project time period, funding organization members include the Adenoid Cystic Carcinoma Research Foundation, the Breast Cancer Research Foundation, the Children's Tumor Foundation, the Juvenile Diabetes Research Foundation, the Melanoma Research Alliance, the National Alopecia Areata Foundation, and the Parent Project Muscular Dystrophy. These foundations were selected to represent a range of diseases and varied foundation sizes. As the program grows, OnPAR plans to increase its membership to include additional foundations, pharmaceutical companies, and other life sciences funding organizations. Leidos also indicated that in the future the program could grow globally "to present an alternative option to the traditional government grant mechanisms."

On the new website, Leidos expressed its intention to match "high-scoring, unfunded NIH proposals" with private biomedical foundations and/or industries seeking to fund promising research. A list of answers to frequently asked questions notes that NIH will not directly fund investigators; instead, OnPAR's member organizations/foundations (and eventually, industry) will be responsible for funding decisions. Only investigators who have proposed "meritorious unfunded research" to NIH (scoring within the 30th percentile or nonpercentiled applications falling just below the payline) are eligible to submit their materials to OnPAR. Applicants do not need to rewrite their proposals; instead, the original NIH application and the summary NIH review statement are required. Information, including registration, is available at: http://onpar.leidosweb.com/onpar/index.php.

Leidos/National Institutes of Health

AHRQ and CAD Testing Effectiveness

On March 29, the Agency for Healthcare Research and Quality (AHRQ) released the results of a comparative effectiveness study conducted under its Effective Health Care Program and focusing on noninvasive testing for coronary artery disease (CAD). For the systemic analysis of 46 studies that met inclusion criteria (out of >17,000 reviewed), the authors looked at anatomic imaging (coronary CT angiography [CCTA], coronary calcium scoring via electron beam or multidetector CT) and functional assessments (stress electrocardiography, stress echocardiography, stress nuclear imaging with SPECT or PET, and stress MR imaging). Key questions focused on the comparative effectiveness of these approaches in stable symptomatic patients with suspected CAD without previously diagnosed disease at low, intermediate, and high risk for CAD. The results of the analysis, detailed in an executive summary and in the full report, found no clear differences between testing strategies across diagnostic approaches "with regard to clinical or management outcomes that would allow recommendation of 1 strategy over another for any given pretest risk group that included patients with intermediate pretest risk." Nor were conclusions possible regarding low-risk patients or those without acute coronary syndrome at high risk. No clear differences were found between CCTA versus other strategies in clinical outcomes across risk groups, "although anatomic testing may result in a higher frequency of referral for invasive coronary angiography and revascularization." Incidents of all-cause mortality and myocardial infarction were low across studies in all settings. The authors noted that a paucity of published data on posttest risk stratification and subsequent decision making prevented any conclusions about the impact of testing on patient management or outcomes. Moreover, evidence was insufficient to draw conclusions about comparative radiation burdens with the various approaches and/or referral to additional downstream testing. The authors concluded that "Future research using more refined evidence-based definitions of pretest risk, coupled with information on posttest risk stratification, its impact on clinical management (treatment and referral for additional testing), and longer term follow-up to assess clinical outcomes, is needed to determine optimal testing strategies and roles of tests in different pretest risk groups." The entire report, including detailed data, is available for download at http://www.effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-and-reports/?pageaction=displayproduct&productid=2205.

Agency for Healthcare Research and Quality