



*Future Pharmaceuticals* recently sat down with STEVE WEST, President of leading global life sciences company, MDS Nordion. In this discussion, he offers an in-depth look at the company and shares his vision for the future.

# PHARMACEUTICALS OF THE FUTURE: FROM ISOTOPES TO MOLECULAR IMAGING MDS NORDION LEADS THE WAY

**Can you please tell us a bit about MDS Nordion and where it fits in biopharmaceutical space?**

**M**DS Nordion is a world leader in molecular medicine, radiotherapy and sterilization technologies; our expertise encompasses a wide variety of products and disciplines including medical isotopes, molecular imaging, radiotherapeutics, and sterilization. Our global workforce of more than 700 dedicated, caring professionals touches the lives of millions of people daily, helping them to live better, healthier lives. MDS Nordion has a strong foundation in medical isotope production and distribution, and we are leveraging that foundation as we continue to evolve from a pharmaceutical supplier into a molecular imaging leader. Overall, our markets are divided into three distinct sectors: molecular imaging, advanced radiotherapies, and sterilization technologies. We are also a world leader in sterilization technologies. MDS Nordion is among a select few organizations offering cutting-edge gamma sterilization technologies for medical devices and food production and processing.

There are a number of key market drivers for MDS Nordion and each one has played a role in increasing the company's global footprint. For instance, coronary artery disease is on the rise around the world; it is currently the number one killer in the U.S. and Canada. We've responded by increasing our research efforts to develop cardiology imaging platforms based on our molecular medicine expertise. Other market drivers include providing improved imaging technologies for neurodegenerative disease, and the introduction of positron emission tomography (PET), and computed tomography (CT) cameras for single-photon emission computed tomography (SPECT)/CT and multi-slice PET/CT.

We are also expanding in other areas, such as establishing new molecular imaging partnerships with customers and institutions, and seeking growth for some of our key product lines. These product lines include TheraSphere®, an Yttrium-90-based micro-brachytherapy for liver treatment and GlucoTrace®, used throughout Europe for the detection and risk stratification of cancer patients.

Finally, MDS Nordion recognizes the importance of innovation, collaboration and internal R&D. We are dedicated to maintaining and expanding our role as a market leader, and have committed ourselves to leveraging our existing partnerships, as well as our improving innovation processes. To that end, we recently named Peter Covitz, Ph.D., as our Senior VP of Innovation, a new position that will allow us to augment an already established culture of innovation at MDS Nordion. We are also building upon our already strong internal infrastructure by enhancing our marketing and sales teams with new personnel who have close ties to the physician communities that we serve.

**What do you feel is the current state of molecular imaging? What role do you feel it plays in achieving the promise of personalized medicine?**

The editorial board members of the Society of Nuclear Medicine Molecular Imaging Center of Excellence recently called 2007 a "year of significance" for molecular imaging, and I would tend to agree. Researchers and practitioners alike are recognizing that factors such as sensitivity levels, specificity, and physiological considerations are driving the progress we're now seeing in molecular imaging. I believe that molecular imaging is ready to move to the next level as the modality overall continues expanding and improving.

Molecular imaging of patients with cardiovascular disease makes up most of the 32 million scans currently done worldwide, however, one of the biggest factors pushing the explosive growth in activity, funding, and R&D is the need for physicians to know quickly and precisely what is taking place within the body. For example, with conventional and non-molecular imaging technologies such as CT, magnetic resonance imaging (MRI), or ultrasound, patient response is measured by tumor size and growth. While some tumors grow more quickly than others, it generally takes several weeks to evaluate whether any growth has occurred at all. Molecular imaging on the other hand, measures tumor activity rather than anatomical size; using sophisticated calculations for glucose measurement,

molecular imaging provides an accurate, real-time picture of tumor growth – image results are often available in as little as 24 hours.

There is strong connection between molecular imaging and personalized medicine. We've learned that when a patient is diagnosed with cancer, there is usually more than one cancer type present in the body. By using the latest molecular imaging techniques, physicians can craft a treatment regime that is far more selective than in years past. Molecular imaging can provide two pieces of information critical to treatment planning: does the patient exhibit biomarkers or a predisposition to a specific cancer, and how well the patient is likely to respond to a given treatment.

Molecular imaging not only plays a crucial role for companies seeking to reduce discovery and testing costs and shorten time-to-market for new drugs, it can also minimize healthcare costs for health maintenance organizations and patients alike. By using molecular imaging for biomarker identification, determining predisposition for specific disease, and monitoring disease progression, physicians can quickly establish what type of product should be used, the correct dosage, and the exact location it should be administered to. The end result is highly personalized, patient-focused care with fewer resources wasted on ineffective treatments.

One other area of increasing relevance for molecular imaging is human micro-dose research. It is estimated that it costs more than one billion dollars to take a new drug from discovery to market, and only one in 5,000 compounds will reach Phase IV in preclinical studies. The stark reality is that drugs are expensive because the expense of failed drugs must somehow be recouped. Therefore, anything speeding the identification and quantification of ineffective drugs within the development chain becomes extremely important.

The combination of molecular imaging and human micro-dose studies are being given serious consideration as one method of improving this process. Newly discovered compounds are often so strong that they prove to be toxic; micro-dose studies can provide more accurate absorption, distribution, metabolism, and excretion (ADME) toxicity profiles of drugs administered to healthy volunteers. Molecular imaging provides a clearer picture of biodistribution – where that particular drug is within the body – which in turn, enables pharmaceutical manufacturers to make better, more well-informed decisions about whether to go further in the drug development sequence.

**Given the role that molecular imaging plays in personalized medicine, what do you see for the future? What role will molecular imaging play in improving patient diagnosis and healthcare?**

The combined future of molecular imaging and personalized medicine will bring us breakthroughs in the development of new tracers. Today, positron emission tomography (PET) uses fluorodeoxyglucose (FDG) as its primary tracer. With additional specific tracers, molecular imaging can be used to seek out a variety of new metabolic and physiological indicators, biomarkers, and better understanding of the impact of specific therapies on individual patients.

The biggest factor in improving any patient diagnosis is speed; nobody likes having to wait for vital, time-sensitive health information. Molecular imaging shortens turnaround times and therefore, provides results faster. As cameras become increasingly sensitive and sophisticated, there can be faster, more exacting and

economically efficient diagnosis of a wider range of conditions. The only remaining question becomes one of whether to use an existing infrastructure to deliver these tracers – a challenge MDS Nordion is working rigorously to answer.

**What then, does MDS Nordion bring to the table in the molecular imaging and personalized medicine arena?**

Our value lies in those tangible benefits of Quality, Reliability and Collaborative Innovation, that we bring to the table as a molecular imaging market leader. MDS Nordion offers a host of unique qualities that makes us one of the strongest service providers in the market today. We have a successful history of having developed innovative solutions for our partners. Our extensive infrastructure is both unmatched in the industry and difficult to duplicate. Finally, we have more than six decades of collective knowledge and expertise in a diverse array of technologies and disciplines, including radiochemistry. We have outstanding knowledge of radiochemistry and unprecedented access to protein linkers through our existing partnerships and our own internal knowledge of how to tag a product to make it imageable. It is these combined qualities that enables MDS Nordion to help companies take products out of the laboratory setting and turn them into products that can be manufactured efficiently in clean CGMP environments, packaged, and distributed worldwide.

**Can you tell us the importance of partnership, collaboration, and what you consider the best balance of resources to ensure success? And what about outsourcing?**

Much like IT, the pharmaceutical industry is innovation-driven. However, the IT industry recognized the value of outsourcing more quickly than the pharmaceutical industry. The pharmaceutical industry can outsource in two areas: the heavy lifting and needed expertise. Our industry will have neither the infrastructure nor the expertise required in-house to support either of these endeavors, and building one or both demands substantial amounts of time and resources. Therefore, it is my opinion that our industry must be more assertive in evaluating outsourcing options for its development work because they are better, faster, and more cost-effective.

I am a staunch believer in strategic outsourcing partnerships. Our partnership with the renowned University of Ottawa Heart Institute (UOHI) Molecular Imaging Centre of Excellence is a strong example of a successful working partnership. MDS Nordion is a world-class organization and UOHI is a world-class institution, and the Centre provides the opportunity for us to work together on groundbreaking cardiology research, using the latest and most innovative molecular imaging technologies. This cooperative alliance between the two groups will provide a more robust research infrastructure and enable the team to share knowledge, equipment, and training. It also represents a completely integrated capability beginning with pure research and extending through to patient delivery. Eventually, the combined team will open its partnership to the pharmaceutical industry to help bring promising new drugs to market faster and with less cost.

Pharmaceutical companies developing new products should recognize what their individual value propositions are, stick to them, and appreciate the need to partner with organizations like MDS Nordion who can enable them to move their products through the

development pipeline with the fastest trajectory. Because we understand and excel at the innovation process, we understand how to significantly accelerate projects in the development channel. We can provide the bandwidth and resources necessary, and draw upon a considerable reservoir of knowledge, expertise and infrastructure. Because they are not commercial entities, oftentimes, academic institutions may not be familiar with reimbursement dynamics or the numerous and sometimes less-than-obvious challenges faced when bringing products to market.

The pharmaceutical industry as a whole needs to become more successful at bringing products out of academia and into commercial manufacturing environments so that patients worldwide receive access to those products. Strategic partnerships and collaborations are the best way of achieving this goal. Celebrated industrialist, Andrew Carnegie, best summed up the value of collaboration in his comment that says, "Strength is derived from unity. The range of our

collective vision is far greater when individual insights become one."

**What partnerships and collaborations currently underway have been the most successful? And what should organizations consider when selecting a strategic partner?**

The most important consideration is what companies hope to derive from any partnership. Just lowering costs is not enough, as the single most valuable thing for biotech and pharmaceutical companies is time. Organizations must be mindful of the fact that when they enter a partnership, they are securing inherent knowledge and expertise, not just products or outcomes. For MDS Nordion, it is important that our partners are successful; we do not look for a return at the beginning, because we realize and understand that returns materialize at the end. Companies contemplating collaboration or partnerships must be first willing to fully contribute needed resources in order to ensure that the partnership works efficiently and effectively. **FP**



STEVE WEST has been President of MDS Nordion since April 2003. He is also a member of MDS Inc.'s Executive Management Team. Prior to joining MDS Nordion, Steve was a senior partner with MDS Capital Corp. where he was involved in providing support to over 70 portfolio companies in which MDS Capital Corp. has made investments. Steve was also President of DiverseyLever Canada and a Board Director of Unilever. His background includes various CEO assignments in Asia Pacific as well as leading global portfolio management, technology transfer programs and international business development responsibilities in the field of speciality chemicals. Steve has also had several years experience in production management as a Brewmaster in the UK.

MDS Nordion  
Innovation at the Molecular Level

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