

Focused on Improving the Product Profile of Existing Drugs and Drug Candidates, Deuteria Pharmaceuticals, Inc. is Pioneering 'Deuterium-Enabled Chiral Switching', which will Change the way Drugs are Discovered and Developed in the Future

**Healthcare
Pharmaceuticals
(Private)**

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**Sheila DeWitt, PhD
President**

BIO:

Dr. DeWitt is a driven leader whose vision is guided by science with progress grounded in results. During her 25 year career in the pharmaceutical and biotechnology industry, Sheila has been compelled to advance medicine and change how the whole industry operates. In her most recent role as VP, Business Development, Discovery, and Manufacturing at EPIX Pharmaceuticals she led the \$125M merger to transition the company from imaging to therapeutics (EPIX-Predix), led the \$28M sale of the 1st

FDA approved MRA imaging drug (EPIX-Lantheus), and managed >50% of all global R&D functions through Phase 2 trials, including computational chemistry in Israel. Sheila has been the cofounder of three biotech companies (Diversomer Technologies, Orchid Biosciences, Deuteria Pharmaceuticals) and led the turn-around of three Business Units at both public and private companies (Orchid, ArQule). She has been actively involved in the advancement of several discovery-based platform technologies, including combinatorial chemistry, predictive ADMET, nanotechnology and in silico modeling (Diversomer, Orchid, ArQule, EPIX). In addition to numerous publications, patents, and presentations, Sheila is internationally recognized as a scientific pioneer in combinatorial chemistry from the scientific contributions she made while working as a Director of Chemistry at Parke-Davis and CSO at Diversomer Technologies. Sheila received her B.A. in Chemistry from Cornell University and Ph.D. in Synthetic Organic Chemistry from Duke University.

Company Profile:

Deuteria Pharmaceuticals focuses on improving the product profile of existing drugs and drug candidates through a uniquely differentiated approach and dominating IP position. Most notably, Deuteria is revolutionizing Sepracor's highly successful business model of 'chiral switching'. Following the development of chiral separation methods in the 1990's, several drugs were 'switched' from a mixture of two mirror-image compounds to the single, preferred enantiomer which had superior properties

that resulted in an improved drug profile. Some successful and profitable 'chiral switches' include Prilosec® to Nexium®, Celexa® to Lexapro®, and Zopiclone® to Lunesta®.

**Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine**

CEOCFO: Dr. DeWitt, what is the vision for Deuteria Pharmaceuticals?

Dr. DeWitt: The vision is to improve the profile of existing drugs and drug candidates for patients in a number of indications. Initially, we focused in oncology, more specifically multiple myeloma.

CEOCFO: Why is the decision to start with multiple myeloma?

Dr. DeWitt: Our focus is on drugs that are currently a mixture of two mirror-image compounds, much like your left and your right hands are non-superimposable mirror images of each other. In the 1990's, a large proportion of drugs sold as a mixture of two mirror-image compounds were separated and the single, preferred compound was introduced as a new drug. This approach, known as 'chiral switching' led to switches of Prilosec® to Nexium®, Celexa® to Lexapro®, and Zopiclone® to Lunesta®. Today, however, numerous drugs are still sold as mixtures because the two mirror-image compounds interconvert both in solution and in your body. Some well-known drugs that undergo this interconversion include Revlimid®, Actos®, and Aricept®.

We use deuterium, also known as heavy water, to stabilize single compounds prone to interconversion.

Deuterium is a naturally occurring isotope of hydrogen that increases chemical bond strengths up to 50x. This increased bond strength slows down the interconversion of the left and right handed mirror-image compounds. This is a revolutionary approach to 'chiral switching' which we refer to as 'Deuterium-Enabled Chiral Switching' or DECS.

Revlimid® is a \$3.2 Bil drug sold by Celgene for multiple myeloma. It belongs to the class of thalidomide analogues, all of which are mixtures of two mirror-image compounds that interconvert in vivo. Thalidomide is known as one of the greatest medical tragedies because it resulted in tens of thousands of birth defects (teratogenicity) in the 1960s. In spite of the teratogenicity, thalidomide analogues have been approved for use in multiple myeloma patients and have helped change multiple myeloma from an acute to a chronic disease by extending the lives of patients. The thalidomide analogues could benefit from reduced toxicity and/or improved efficacy by dosing a single compound.

Deuteria's US patent application for deuterated Revlimid was recently allowed by the US patent office and will ensure market exclusivity through at least 2028. This dominating intellectual property position along with the well-defined R&D path made deuterated Revlimid® and multiple myeloma a compelling commercial opportunity.

CEOCFO: Are there many other com-

panies that are taking your approach, and how did you decide on this path?

Dr. DeWitt: There are currently two other companies focused on deuterated drugs. Several pharmaceutical companies are also beginning to study deuterated drugs. All of these companies are using deuterium to affect metabolic processing, also known as 'metabolic switching'. Deuteria is the only company pursuing 'Deuterium-Enabled Chiral Switching'.

CEOCFO: Has the medical community been paying attention?

Dr. DeWitt: It has been growing. The medical community has paid attention and watched closely to see what would transpire with deuterated drugs.

We are pioneering 'Deuterium-Enabled Chiral Switching', which will change the way drugs are discovered and developed in the future. - Sheila DeWitt, PhD

I think that our recent data demonstrating the benefit of 'Deuterium-Enabled Chiral Switching' is raising awareness. This market environment is very challenging for companies like Deuteria because of the need to provide much later data to secure funding or strategic alliances. The venture and investor community is much more risk averse. We have received recognition and visibility by being awarded the Buzz of BIO award among 50 other companies, and we made a presentation yesterday at the BIO International Convention in Boston.

CEOCFO: How well are you funded to get to the next level?

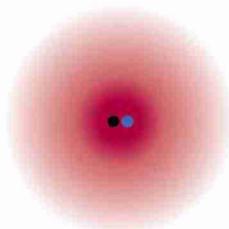
Dr. DeWitt: That is the struggle right now. I have met with several CEOs and industry executives who have confirmed how challenging the environment is, much more so than prior to 2008. My cofounder originally filed patent applications for 235 deuterated drugs, which he later assigned to Deuteria. These efforts were funded by crowd funding in Minnesota and Wisconsin. Deuteria was founded in 2010, and at that time, we were awarded three qualifying therapeutic discovery grants. These grants, combined with some loans, have been all non-dilutive financing. Deuteria has no venture funding at this point. We are currently looking to raise additional funding to advance deuterated compounds through Phase I trials at a cost of <\$5 million each.

CEOCFO: Why should investors pay attention to Deuteria Pharmaceuticals today?

Dr. DeWitt: We are pursuing a commercially compelling approach. We also have a sustainable pipeline of drugs and drug candidates with a dominating IP position. Finally, we operate as a capital efficient virtual company.

CEOCFO: What should people remember most about Deuteria?

Dr. DeWitt: Our approach is uniquely differentiated. We are pioneering 'Deuterium-Enabled Chiral Switching', which will change the way drugs are discovered and developed in the future. We also have a portfolio of at least six drugs amenable to this approach that have captured >\$14 billion in peak sales.



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