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INTERVIEW: The Legacy and Future of R&D at Novus International

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23 March 2016 - Industry veteran and Chief Innovation Officer for Novus International, Dr. Christopher Knight, retired in 2015. Dr. Knight dedicated more than 24 years to Novus and has helped push the R&D activities of the company to the leading position it is in today. His contribution to both Novus and the agricultural industry is viewed as immense.

The future of Novus's research and development unit remains in good hands though as W. Scott Hine – who has been with Novus since 2007 – was appointed Dr. Knight's successor.

Feedinfo News Service touched base with W. Scott Hine to discuss his new role, the future of Novus R&D and what the industry can expect from the firm moving forward.

[Feedinfo News Service] Mr. Hine, how will you ensure that the transition is seamless? What have been your main challenges in this new role so far?

[W. Scott Hine] As Novus approaches its 25th Anniversary, it is important to note that our business strategy and approach to R&D are still founded in our Mission, Vision and Core Values, which seem to be more relevant than ever in today's dynamic, global business environment. I'm proud to say that I had the opportunity to work with Dr. Chris Knight for eight years prior to his retirement and I still work with him regularly, seeking his advice and counsel on many different matters. Regarding the transition, this was a very organized affair. We knew I would be stepping into the shoes of an industry icon, so there was a lot of care taken in order to ensure continuity of plans, projects and people. We also knew I would not be a 1-1 replacement for Chris. Therefore, we proactively planned for this and made changes in the organization to manage appropriately. Dr. Knight, our CEO, Francois Fraudeau, and the entire executive leadership team were and remain very supportive of my move into the role. Frankly, I looked forward to this new opportunity – my first role in my career was in R&D and I have a strong passion for it.

The main challenge has been prioritizing among the myriad of opportunities and technologies we want to develop. Novus's pipeline is rich, and we continue to keep filling it with new developments – which is a great thing. However, we can't do it all at once, so prioritizing them and aligning them with the long-term business plans has been a key focus. At Novus, we have a very strong R&D team with more than 20 years of experience conducting relevant research and bringing solutions to the industry.

[Feedinfo News Service] What are your priorities as CIO at Novus?

[W. Scott Hine] To make sure our customers' businesses are sustainable – this is our number one priority. Internally at Novus, in order to maintain a focus on our customers' future prosperity, we use four critical success factors to align everyone's long- and short-term goals: Growth, Profitability, People and Reputation. Each of these factors is focused on one priority – ensuring the future success of our



W. Scott Hine
Vice President, Products & Solutions
and
Chief Innovation Officer
Novus International

customers. "Growth" means assessing and developing our portfolio of products, customers and suppliers; and implementing performance-enabling programs and technologies to achieve a long-term competitive position that will help our customers meet their challenges and future needs. "Profitability" is about implementing improved business processes, measures and supporting systems which move Novus closer to its customers and help achieve our Mission and Vision. "People" is about attracting, retaining and developing our employees in an environment that enables them to bring their full capabilities to bear as well as motivate them to achieve ever-higher goals. "Reputation" is absolutely critical in that it is a foundational element of trust - specifically, Novus wants to maintain and expand its positive image by initiating and supporting activities that demonstrate our integrity and rigorous quality standards.

[Feedinfo News Service] In a nutshell, what can you say about Novus's latest research and findings on enzymes, methionine, eubiotics and minerals?

[W. Scott Hine] Novus continues to focus on product innovations and solutions to support our customers in the achievement of their business goals. Reducing costs and improving meat quality and gut health are key areas of focus and investment. Methionine application in ruminants also continues to be an area of interest when considering its dual-effect in the rumen and in the animal.

At IPPE, we continued to demonstrate the value of CIBENZA® DP100 feed additive, Novus's protease, as a tool to reduce cost and maximize feed conversion. By improving protein digestibility, CIBENZA® DP100 allows customers to further reduce the cost of the diet and bolster performance in combination with other enzymes such as phytases. We were also excited to present the results of CIBENZA® XYLAVERSE® feed additive— Novus's non-coated, highly heat-stable xylanase. CIBENZA® XYLAVERSE® is extremely effective at unlocking the energy in wheat and corn soy diets, as well as bolstering gut health.

Novus is actively working on a holistic approach to gut health due to a shift in the consumer's wants and needs. The importance of gut health is exemplified in the reduction of the use of antibiotics. There is no "silver bullet" in replacing them, but Novus has decades of experience in bolstering gut health, which is a key aspect to achieving the target of antibiotic free production. SPORULIN®, our blend of probiotics, bolsters the broiler's natural ability to fight off Salmonella Heidelberg Brazilian strain. MINTREX® Cu chelated trace minerals are effective at bolstering gut morphology and barrier function, and CIBENZA® DP100 increases protein digestion, which in turn bolsters gut morphology.

Currently, we have two prevalent emerging meat quality problems in broilers, white striping and woody breast. Novus is studying the biology behind the development of these muscle myopathies, which are major quality issues across the globe. Using both internal and external experts and partners, we have determined the role and the value that MINTREX® chelated trace minerals play in resolving these issues. Specifically, MINTREX® Cu and MINTREX® Zn are supporting animal performance, and bolstering meat quality and immunity. We have

demonstrable evidence that feeding MINTREX® to breeders bolsters the young chick's gut and muscle development.

[Feedinfo News Service] In a May 2014 interview with Feedinfo News Service, Novus CEO, François Fraudeau said that the company has several ongoing projects that include the implementation of new production technologies that will support your existing product portfolio as well as the development of our pipeline. Can you build on Mr. Fraudeau's comments?

[W. Scott Hine] There are a number of products we have announced and some new products on the way. In June 2011, Novus announced that it was embarking on the development of new feed enzymes and in July 2013 we launched CIBENZA® PHYTAVERSE® phytase enzyme feed additive. Sales of CIBENZA® PHYTAVERSE® have been mainly in South East Asia and steadily increasing. As mentioned earlier, we also have a new xylanase and will be launching CIBENZA® XYLAVERSE® in the near future.

Another example of new production technology that Francois would have been referring to is our highly stable and efficacious natural pigmentation technology, COLORTEK®. COLORTEK® is a highly concentrated natural pigment (100gm xanthophylls/kg) derived from marigold oleoresin which is much more stable and delivers significantly more yellow color per gram than other naturally derived products made from marigold oleoresin. In fact, we have found it to be a good alternative to apo-ester given its strong pigmenting and stability characteristics. It is non-coated and made using a patented manufacturing process at our manufacturing plant in Spain. The product is quite sustainable and aligns well to our Mission, Vision and Core Values.

We have also added new products to the development pipeline but I can't mention specifics for obvious reasons. What I can tell you is that we are working on development of new technologies that cover the range of Novus's platforms: Methionine, Enzymes, Minerals, Eubiotics and Feed Quality. We have a very rich pipeline.

[Feedinfo News Service] In which ways has the role of the CIO/CTO become critical to business and innovation in today's environment?

[W. Scott Hine] In general, the role of CIO/CTO has become much more integrated into the business, highly cross-functional and communicative. Today's CIOs/CTOs need to intimately understand customer needs, the competitive landscape, costs, governmental regulations and supplier capabilities in order to help lead the long-term business planning of product portfolios and technologies. To be successful, everyone needs to understand the challenges our customers face, but more than that, R&D and product management need to be aligned so innovation can be best directed to deliver demonstrable value. In 2008, Novus moved its global Headquarters to St. Charles, MO, establishing a facility where all business functions could interact readily and rapidly. It was a "game-changer" as it got all of the functions talking and focused on customers and significantly improved communication. Intimately integrating the business functions resulted in increased collaboration, as well as a more systematic approach to innovation for a global company such as Novus. It also helped us start unlocking the potential of all of our people and their capabilities – it was a great move.

[Feedinfo News Service] In your opinion, does collaboration speed up the R&D-to-market launch journey? And is Novus on the lookout for new R&D partnerships to further strengthen its outreach?

[W. Scott Hine] In general, collaboration and/or partnership can speed up the R&D-to-launch journey. I emphasize "can" here as there are a few absolutely critical things to consider: First, does the potential partner have a vested interest in the success of the project or do they have enough "skin in the game" to motivate them? This is a big factor as it will dictate their performance and define their approach to the collaboration. Second, if you go to a partner you are likely looking for some expertise, skills or capabilities that will give you, the buyer, a competitive advantage in the marketplace for the scope that you ask to be delivered— e.g., IP ownership, freedom to operate of some kind, speed to market, exclusivity, or other advantages. Determining this requires some due diligence by people with the appropriate skills acting on your behalf. Third, does the partner have a proven track record in collaborations? If they do not—are you prepared to be disappointed? Finally, will the outcome of the collaboration require you to invest in new skills or capabilities to launch, manage and support the new product or technology? Plan ahead and look at the long-term cost to support the entire business model. If it is part of your core business, then it is probably not a big concern. However, new technology often requires new skills and increased costs.

Novus is always on the lookout for unique solutions to customer-relevant problems. We regularly assess partnership opportunities to strengthen our position in core platforms.

[Feedinfo News Service] How does Novus keep abreast of regulatory changes in global markets and subsequently remain one step ahead for its customers?

[W. Scott Hine] Novus has a global regulatory affairs team with people working in all key markets around the globe. The global team lead is located in the United States but meets regularly with the local staff and general managers to exchange information and stay on top of global concerns and priorities. We stay abreast of local

regulations and changes by participating in consortia in many locations, as well as by listening to our customers to determine their areas of greatest concern. This allows us to proactively manage the product development process, assist customers and managing our product portfolios, shaping the strategy and plans to ensure future success. Quite often, regulatory changes are the mother of invention, resulting in the development of new technologies to resolve ongoing issues or customer challenges.

[Feedinfo News Service] What can the market next expect from Novus from a R&D standpoint?

[W. Scott Hine] Novus's expansion of ALIMET® production capacity in the U.S. Gulf Coast region solidifies its future leadership position as a methionine supplier to the feed industry. Further details of new developments are confidential at this point, but rest assured there are many on the way and we are excited about the opportunity to help our customers succeed with them. Having said that, from a R&D standpoint we are already working closely with our customers to ensure they are prepared to meet the needs of a growing global population, while maximizing their ability to achieve profitability and sustainability goals. Novus will continue to develop new technologies in order to grow our portfolio of differentiated products but more importantly, we already see benefits of Novus product combinations.

Novus has a strong portfolio of individual products that are already highly efficacious on their own, but by working closely with our customers we are combining products into programs and solutions that result in outcomes that can't be achieved through the simple application of an individual feed ingredient. The value really comes in the conversation where we learn about customer's problems – new solutions to difficult problems are often the result. The industry has made a lot of progress in animal agriculture over the past 50 years, so we should expect that the next successes will have higher hurdles. Opportunities to address questions on animal welfare, environmental impact, and food safety are challenging the world's food producers to find new solutions. We are happy to be a part of this journey with them. Our view is that there is still plenty of opportunity out there for further improvement, and it is absolutely required to meet the challenges of the future population, but it will require new thinking, collaboration between Novus and its customers as well as new innovation.



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