CEO CFO

ARADIGM

Issue:
February 17, 2012

CEOCFO Magazine - The Most Powerful Name In Corporate News and Information

Developing an Inhaled Nicotine Product for the Very Large Smoking Cessation Market to Go Along With their Targeted Approach to Treating Bronchiectasis Patients with their Inhaled Lipid Encapsulated Antibiotics Now Moving into Phase III Clinical Trials, Aradigm Corporation is Well Positioned for Future Growth

Healthcare
Respiratory diseases
(ARDM-OTCBB)

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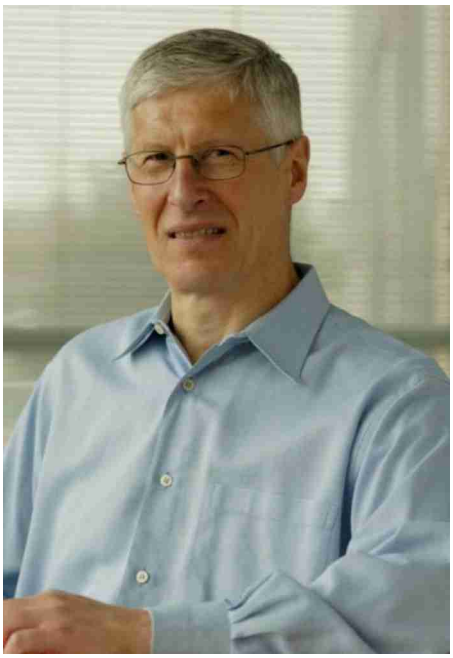

Dr. Igor Gonda, Ph.D.
President and CEO

BIO:
Igor Gonda has been the President and Chief Executive Officer of Aradigm Corporation since August 2006, and as a director since September 2001. From December 2001 to August 2006, Dr. Gonda was the Chief Executive Officer and Managing Director of Acrux Limited, a publicly traded specialty pharmaceutical company located in Melbourne, Australia. From October 1995 to December 2001, Dr. Gonda led Research and Development at Aradigm. From February 1992 to September 1995, Dr. Gonda was a Senior Scientist and Group Leader at Genentech, Inc. leading inhalation development of products for severe respiratory disease. Prior to that, Dr. Gonda held academic positions at the University of Aston in Birmingham, United Kingdom, and the University of Sydney, Australia. Dr. Gonda has a B.Sc. in Chemistry and a Ph.D. in Physical Chemistry from Leeds University, United Kingdom.

Company Profile:
Aradigm is actively engaged in fulfilling the promise of developing inhalation drug products that could revolutionize the quality of life of patients with severe pulmonary disease.

Since 1991, the company has attracted an outstanding team of scientists, engineers and clinical experts who have been at the forefront of development of advanced inhalation delivery products. With the depth of experience and expertise in inhalation delivery, Aradigm is uniquely positioned to develop a portfolio of products to prevent and treat severe respiratory diseases. The current pipeline includes treatment of respiratory infections in cystic fibrosis, bronchiectasis, as well as for prophylaxis and treatment of inhaled bioterrorism infections. The company is using its technology for a tobacco smoking cessation product.

Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine

CEOCFO: Dr. Gonda, you are fulfilling unmet needs in pulmonary medicine; what is Aradigm all about?
Dr. Gonda: Aradigm is all about looking after that part of the body that is closest to everyone's heart, and if you know your anatomy, it is your lungs. We try to prevent severe respiratory diseases and if people have them, then we try to find ways to treat those diseases and help patients to manage them.

CEOCFO: Why is Aradigm interested in that particular area of pulmonary medicine and why are you personally interested?
Dr. Gonda: For me personally, it must have rubbed off from my father. He was a pulmonary specialist and I remember as a little kid most of his patients had tuberculosis. Then when the modern tuberculosis medication became available, many of them were successfully treated for tuberculosis. However, they continued to suffer from a disease that was caused by the wounds from tuberculosis and the disease is called bronchiectasis. Paradoxically, bronchiectasis remained an unmet medical need, and there are now many more recognized other causes of bronchiectasis than tuberculosis. Therefore, one of the focuses of our company - in fact the leading indication - is the management of bronchiectasis. It goes all the way back to my father's interest in pulmonary diseases.
CEOCFO: What is Aradigm is doing that is different?

Dr. Gonda: One of the interesting things that we have learned about pulmonary diseases is from the lessons we learned from a rare respiratory disease - cystic fibrosis: that many people deteriorate rapidly because they have a nasty kind of lung infection, which is recurrent. They often end up in hospitals needing intravenous antibiotics. They have a microorganism, which seems to be the bad guy in the lungs of these people: it is called Pseudomonas aeruginosa. When this infection begins to dominate the ecology of the lung, that usually spells bad news for the person who has these microorganisms in their lungs. These infections are very persistent, they cause inflammation, permanent damage to the lung that leads to more infection, more inflammation, more damage. Even if you temporarily fix the infection problem, the patients seem to re-infect. Probably the bacteria are hiding in other parts of the body and then they re-colonize the lung. In the case of cystic fibrosis, which is a genetic disease, this was recognized over twenty years ago and people had developed a relatively simple idea: to put the antibiotic drug directly into the lung to have much higher concentrations there than the concentrations that you would be able to get if you give the antibiotic with a pill or an injection, because it gets diluted in the bloodstream before it gets into the lung. People tried it and it worked. It makes a big change to patients with cystic fibrosis who get colonized in their airways with this microorganism called Pseudomonas aeruginosa. They manage to control the microorganism with the inhaled antibiotic in a way that prevents or reduces the number of pulmonary exacerbations that would require intravenous antibiotics and hospitalization. But this has not been successfully used yet in any other diseases. One of the reasons for that is probably that the patients with cystic fibrosis have very thick sputum lining their airways, so paradoxically, despite the fact that they are quite sick, they seem to be tolerating these inhaled antibiotics reasonably well. However, many other patients do not have that thick layer. They produce typically a lot of thin sputum, kind of watery stuff, so their airways are red and inflamed, and those patients, for example the patients with bronchiectasis that I mentioned before, who are a focus of our development, they did not tolerate these inhaled antibiotics very well in the past. So, we have studied a different approach. We encapsulate these antibiotics inside little liquid lipid vesicles; the kind of lipids that normally occur in our bodies and in our lungs. Then these lipids vesicles slowly release the antibiotics in the lungs, much slower than if they had been inhaled unencapsulated. Therefore, we keep the antibiotic over a prolonged period of time in the lung and it is released slowly, so it does not appear to cause the airway irritation as the antibiotics did when unencapsulated. It also provides the benefit to the patient that the treatment only has to be taken once a day, whereas some of the other inhaled antibiotics used in cystic fibrosis have to be taken twice or three times a day. We have done a lot of work, initially in animals and then in humans and we are now getting ready to go into the final stages of Phase III clinical testing in bronchiectasis.

The most common cause of preventable respiratory disease is tobacco smoking. The numbers are quite astonishing. There are well over a billion people around the world who smoke, and by the end of this century there could be as many as a billion deaths as a result of smoking related diseases, so smoking is a very big problem… Therefore, we have this very simple idea that if you take nicotine and dissolve it in water and you inhale it deep into the lungs in a fine mist the same way you would inhale smoke from a cigarette, then you might be able to get the same pleasurable effects that people are craving to get from a cigarette… We think this could be much better than the existing methods to help people quit.

- Dr. Igor Gonda, Ph.D.

CEOCFO: Is there much research into the areas you are looking into or is it fairly specialized?

Dr. Gonda: There is a lot of interest in this area. The respiratory tract is one of the organs in the body that is very difficult, if not impossible, to protect. You can put clothes on your skin to protect against extremes of temperature and sunburn, you can select carefully the food that you eat, you can choose the TV programs that you watch and the books you read, but you generally have no choice but to breathe the air that is around you. The respiratory tract tends to get bombarded with a lot of nasty things and as a result, respiratory diseases are on the rise. We have the aging population, air pollution and more crowding, so there are all kinds of reasons for the rise in respiratory diseases. Therefore, there is a lot of interest in the prevention and treatment of these diseases. Our uniqueness is with this discovery that wrapping these antibiotics in these lipid vesicles can provide a much more tolerable way of introducing the antibiotics into the airways of people who are already sick and infected with the nasty type of bacteria. We are one of the leaders in the inhaled antibiotics area. In general, research on lung disease is very popular; there is quite a lot of it.

That brings me to the topic that the most common cause of preventable disease and the most common cause of preventable respiratory disease is tobacco smoking. The numbers are quite astonishing. There are well over a billion people around the world who smoke, and by the end of this century there could be as many as a billion deaths as a result of smoking related diseases, so smoking is a very big problem. And there really have not been particularly successful strategies to make people quit tobacco smoking. The socioeconomic benefit of quitting is still enormous. - I'm not trying to say that the current methods should not be supported: they should be supported despite the fact that they are not very successful; even with low quitting rates, they do achieve an enormous impact on the overall

health of people. If you quit smoking, you can reasonably quickly get back to a risk factor that often is no worse than a non-smoker, so you can redeem yourself over a few years if you stop smoking.

As it turns out our idea is really quite simple. It is that nicotine itself is actually an FDA approved drug, so pure nicotine does not have the thousands of chemicals in contrast to tobacco smoke. Several hundreds of the constituents of tobacco smoke are known to be toxins, and about fifty of them are known to be carcinogenic.

Nicotine does obviously have all kinds of effects in the brain that make people want to smoke. However, the delivery system -which is the smoke, the tar, the carbon monoxide - is the cause of the health damage; not the nicotine itself. Therefore, we have this very simple idea that if you take nicotine and dissolve it in water and you inhale it deep into the lungs in a fine mist the same way you would inhale smoke from a cigarette, then you might be able to get the same pleasurable effects that people are craving to get from a cigarette. We did an experiment with smokers: They inhaled the nicotine in a single puff, just one puff from an inhaler that we had specifically developed to deliver drugs into the lungs. It was quite amazing, the craving for cigarettes practically instantaneously disappeared and the effect lasted for several hours. We are very keen on this - we are looking at ways to help many people around the world to quit smoking using this approach. We think this could be much better than the existing methods to help people quit.

CEOCFO: Great market opportunity I would imagine!

Dr. Gonda: We certainly think that there is a tremendous opportunity. It is interesting that we have had our data in smokers for a little while and it has been very difficult to overcome the prejudice against nicotine when discussing our approach with others outside our company. Many people think that nicotine is the bad drug that has all these toxic and carcinogenic affects. People forget that nicotine actually is an approved FDA drug and there are nicotine patches, nicotine lozenges and nicotine mouth and nasal sprays. There has been quite a learning curve for us to find out how many people could not differentiate between nicotine and tobacco smoke! Then the new administration presented the Family Smoking Prevention and Tobacco Control Act to provide more effective ways to quit smoking and prevent people from taking up smoking in the first place. The other important event that happened last year was that the FDA has decided not to regulate electronic cigarettes in the same way as pharmaceutical products, but to regulate them as tobacco products. As of last year electronic cigarettes in the United States have become so to speak "legal" and are viewed as being a tobacco product, but not a "drug". However, with electronic cigarettes, at least to the best of our knowledge, there is no data published about proper manufacturing controls. There has been data published on the composition of electronic cigarettes and it is not just pure nicotine. They contain other things of questionable safety. There is no data out there to support their efficacy, but, nevertheless, there has been quite a big uptake of these electronic cigarettes, which indicate to us that if smokers see something that they would perceive as a safer supply of nicotine or something that can help them to quit smoking, they will try it. There was a study by the Center for Diseases Prevention (the "CDC") that indicated that there has been a large and rapid rise in the use of electronic cigarettes in the United States. Therefore, if we could provide a truly clean form of nicotine, just nicotine dissolved in water, then that might be a better way to help smokers to quit. We are enthusiastic about this approach. With the bronchiectasis program, we could help a relatively small population of people with very severe diseases. It is a very important program for us. But, of course, the inhaled nicotine program is on the other side of the spectrum - it would impact a much bigger population to prevent development of severe diseases.

CEOCFO: What about the Aradigm delivery devices?

Dr. Gonda: We are using different delivery devices depending on what the patients need. For the nicotine delivery we have a device that is a little smaller than a pack of cigarettes, about the size of a smart phone. It comes with nicotine refills. Every refill is a single dose that contains a tiny amount of nicotine. When you inhale from the device, it forms very fine droplets, you take one puff of that mist and that's it. We think that probably somewhere between four to ten puffs a day should keep the smoking away. There is no second-hand smoke. We think that the shape factor of the inhaler and the way it is used should get away from the stigma of smoking cigarettes as well, so that psychologically it would be a more appealing way for people to use rather than emulate the cigarette smoking as some previous products attempted to do.

When it gets to bronchiectasis, unfortunately many of the bronchiectasis patients are so sick, in particularly their lungs are so poor, that they would not be able to take deep breaths to take their medication. It would be impossible or too risky for a single puff device once a day to work for them. Typically, these patients already have a device called a nebulizer, which is a plastic device that is connected to an air pump and they can just use it with ordinary breathing. It takes a few minutes of just normal breathing and while they are breathing, they get their medication deposited in their airways. It is quite a different approach from the nicotine inhaler, because these patients need a different approach from the relatively healthy smokers.

CEOCFO: Development is always expensive; what is the financial picture like for Aradigm today?

Dr. Gonda: Aradigm is a public company. We actually have been public since 1996, so our finances typically come from multiple sources. One of them is by partnering our programs: we get cash from other companies and we could get some expertise that we may not have in-house. We have been funding much of our development through a mixture of partnerships. We were also fortunate to be

able to receive some government grants. For example, some of the initial money for the smoking cessation program came from the National Institutes of Health (NIH). The majority of funding in recent years came from public company investors. We have had some very loyal investors. We are grateful for the financial support that we have been receiving. We act as a fairly typical public company in our sector. We look for sources of non-dilutive financing through partnerships with industry, government institutions and not-for – profit organizations to support our product development. We also bring product development plans to our investors to raise the money for these activities through the sale of our company stock.

CEOCFO: What do you see in the next year or so?

Dr. Gonda: The focus of the company right now is to get the bronchiectasis program into Phase III as fast as possible. We are working with the regulatory agencies on the one hand to get an agreement on what the final steps to get the product approved are. We are working with key opinion leaders and with the patients, of course, to finalize the plans for the Phase III and beyond. It is kind of a four-way conversation: the regulatory authorities, patient advocacy groups, key opinion leaders and Aradigm. That keeps us very busy. We are also talking with potential partners about licensing this product, so the milestones would be finalizing the agreements with the regulatory authorities and getting this program partnered to start the final Phase III studies this year. On the inhaled nicotine front, we believe that this is the time to partner the program, so the focus is entirely to find partnerships for this program, to scale up the manufacturing and hopefully put this tool into the hands of many smokers quickly.

CEOCFO: Has the medical community been paying attention?

Dr. Gonda: The medical community has been paying attention in several different ways. As I mentioned, we do work with key opinion leaders (KOLs), people who are the most knowledgeable about the disease and they are all over the world. We have worked very closely, particularly with US, British, Canadian and Australian "KOLs" on bronchiectasis so far. They have been very interested in our inhaled antibiotic. Then we go and present at conferences and we have been acknowledged as being one of the leaders in the area of bronchiectasis management. We generally end up with podium presentations, which we interpret that the people who organize the conferences think that we present a very interesting story that the world should know about! In fact, the whole area of bronchiectasis has become quite a center of attention at conferences now that the respiratory physicians can see that there is a light at the end of the tunnel and for the first time we might actually have a treatment that works for those bronchiectasis patients who are unfortunate to have their lungs colonized with Pseudomonas aeruginosa. There is a lot more attention paid to the potential treatments for this disease. What we have seen over the last four or five years was that when we first went to see people and told them what we were doing in bronchiectasis, people looked at us and said: "What is bronchiectasis?" So the conversation was about explaining what the disease was. Now we go to conferences and there are several hundred people who are working on the treatment of bronchiectasis, so it is very interesting and very gratifying to see that we have contributed to the massive increase in interest in the disease, as a result of showing that we have a treatment with a real potential to manage the disease successfully.

CEOCFO: In closing, why should potential investors pay attention to Aradigm today?

Dr. Gonda: It has taken us a long time to go from a company that was very much focused on the delivery of drugs via the lung into the systemic circulation, which we did in the 1990's and early 2000's, and although we still believe that approach to drug delivery is a very valuable approach, we realize that was pioneering a very difficult path. Then, because of commercial failures along the way, particularly with inhaled insulin, the investment community lost confidence that it would ever work. We believe it will, and we hope that at least one of those companies that are still developing this route of administration to deliver drugs into the rest of the body via the lung will succeed. Then we will be able to say, "we did it a lot earlier on, and now that the approach has been proven successful, we can certainly come back". We have quite a lot of unfinished stories in this area. For example, we were pioneering the management of severe pain by inhaling drugs to very quickly suppress pain. It is a similar situation to the approach to stop craving for cigarettes. You really have to nip the problem in the bud, and if you do that, your chances of success are much greater than trying to treat the problem later. So, it took us quite a while to recover from completely repositioning the company, which we started doing in 2006, when I became the CEO of the company. It is now almost six years later and we are ready to go into Phase III with a drug for the treatment of lung diseases. The history for this type of therapy is much better, with lots of great products that deliver drugs by inhalation to the lungs for the treatment of lung diseases. So certainly, the investment community did notice us. The value of respiratory products and particularly if you can chart a way to unmet medical needs, which bronchiectasis is appreciated. There is not yet a lot of competition in bronchiectasis treatments, it is so new. We are in a fairly strong position in the management of respiratory infections in bronchiectasis with successful six-month data from a human trial. For the nicotine story, it has taken us a long time to get to the point where we generated the data to support the hypothesis that the rapid delivery of pure nicotine would suppress cravings for cigarettes very quickly and that it is an effect that lasts long. On top of it - the world has changed, and that is helping us a lot: It is now widely recognized that there is an enormous global healthcare problem caused by tobacco smoking and that we all have to pull together and find ways of reducing this harm by introduction of better and faster ways to fight the problem.