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# With the Potential to be in The Bio-Separation Market by The End of 2012, *In Vitro*-Diagnostics in The Next Two to Five Years and Medical Imaging and Therapeutic Application in Three to Eight Years, Using their Novel "Magnetic Proteins", Integrated Magnetic Systems Ltd. is Well Positioned for Future Growth

**Healthcare**
**Biotechnology**
**(Privately Held)**

**Dr. Eddie Blair**
**Chief Executive Officer**

**BIO:**
Dr Eddie Blair is currently Chief Executive at Integrated Magnetic Systems Ltd (IMSL), an organisation supported by a £1M investment to develop magnetic proteins for life science applications. His other lead roles at present are Managing Director of Integrated Medicines Ltd (IML), an organisation enabling personalised medicines by combining diagnostic-type testing with proprietary medicines, Head of Pharma CDx at Enterprise Analysis Corporation, and Non-Executive Director of IDS Holdings plc. Until September 2008, he was interim Chief Scientific Officer at Phynova Group plc, actively assisting with the public listing of the company on AIM in February 2006. Eddie is also a visiting scholar to the Cambridge University-MIT (CMI) Masters Programme on Bioscience Enterprise at the Institute of Biotechnology, occasionally lectures elsewhere on personalised medicines, and offers bespoke courses based on one of his books, "Pharmacodiagnostics: Technologies, Competition, and Market Models", co-authored with Dr Steve Little. He gained a Masters in Business Administration, covering strategy and finance management, in July 2006 and has used the financial skills gained therein to demonstrate plausible economic value of Companion Diagnostic Strategies to technologists, executives and investors.

**Company Profile:**
Located in the Dundee Technology Park (Dundee, Scotland) and funded by industrial partners, the Scottish government and private investors, Integrated Magnetic Systems Ltd. (IMSL) develops novel "magnetic proteins" based upon the intellectual property licensed exclusively from ITI Scotland and New Century Pharmaceuticals. IMSL's products are fusion proteins comprising a binding portion and a magnetic portion. The external binding portion defines the specificity of the protein - its binding to specific ligands. The magnetic portion defines the utility of the protein - its ability to be manipulated using a magnetic field or otherwise make use of its metallic properties.

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

**CEOCFO**: Dr. Blair, what is the technology behind Integrated Magnetic Systems Limited?
**Dr. Blair:** The technology grew out of us following a trend in diagnostics, which is the move towards "near-to-patient testing" and miniaturization. For a number of years, people have recognized that clinical samples are valuable, so to use this material more effectively, there's been a move towards using smaller amounts of it through miniaturization. That miniaturization means that the fluidic systems are smaller. They are now called "microfluidic", in some cases "nanofluidic", and that reflects exactly what it means. The fluid channels are a lot smaller than what we are traditionally used to. Users discovered that the magnetic beads used in microfluidics, were trapped in their microfluidic systems. They were using magnetic beads, which you buy off the shelf and are the same large size often about a micron in diameter. But before you can use them you must first deravitize the surface of these beads so that it will bind antibodies and other proteins. That is both expensive and time consuming. Our technology offers a solution to the problems of size and the attachment of the binding protein. We take a biotechnology approach by fusing the DNA coding for the binding protein with the DNA of a

gene that produces the protein known as ferritin. Ferritin naturally binds iron, IMSL developed a method to express these ferritin fusion proteins in bacteria and replace ferritin's non-magnetic iron with magnetic iron. Our products are fusion proteins composed of a target entity, genetically fused to ferritin, which we have rendered magnetic by our proprietary process.

**CEOCFO:** Does the medical community get the concept?

**Dr. Blair:** Absolutely! It is one of the simplest concepts I have ever had to explain. The medical community understands. We have had a number of meetings with potential investors and the investors all get it as well. It surprises some people that it has not been tried before. But, of course, worked pretty hard to make it a reality. There is very little information in literature about making fusions of ferritin and no prior art that suggests that this is anything but novel.

**CEOCFO:** Would this be a disruptive technology for the industry?

**Dr. Blair:** We believe that, in terms of replacing magnetic beads in nanofluidic systems, it is fairly disruptive. I am careful of using hyperboles when we are talking about technologies, but yes, we would like to think it is disruptive, but of course its proof is really in the uptake.

**CEOCFO:** Where is Integrated Magnetic Systems in the process of development and commercialization?

**Dr. Blair:** We set the company up in 2009. We negotiated a license to this intellectual property, because it was held by a Scottish government agency called Scottish Enterprise. That took us a year. In the middle of 2010 we secured the license to the intellectual property. From then until last March we were out trying to raise "angel investment". We found it quite tough in the UK, but found our angel in California. He's showed a great interest in what we do and, through a UK fund, he invested in us to the tune of about 1 million pounds. We actually got that money from the "angel" in July. That allowed us to do two things; one is to validate the proof of concept work that was done by the Scottish government a couple of years ago. We are able to reproduce the initial data. What we have also started to do is build a number of additional magnetic proteins over and above the proof of concept. Where we are with those two strands of activity is that we have started to send material out to a number of collaborators in the US and in continental Europe, for them to do an initial analysis of the performance. Once that is done, we will start to supply additional materials to those people in the hopes of either obtaining fees for contract and research funding or developing a closer relationship. That is where we are.

**CEOCFO:** Does Integrated Magnetic Systems have many partners and are you continuing to look for partners?

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**Dr. Blair:** January has been a very busy month for Integrated Magnetic Systems. We attended the Biotech Showcase and JP Morgan events in San Francisco early in January and that was for two reasons. The JP Morgan was more about seeking the next round of investment, because as a start-up company we are always looking for the next round of funding. We are starting to look for investors both stateside and internationally with JP Morgan. At the Biotech Showcase we are trying to get in front of potential collaborators and we are looking for people who can do what we call "Beta Testing" of our miniature products. We are also looking for longer-term collaborators and corporate funding to develop specific magnetic proteins. Therefore, we have been trying to develop those relationships. Last week I went to Japan on a trade mission. I was trying to talk to Japanese investors, because at JP Morgan there was a clear indication that the strong yen is leading Japanese investors to look abroad for good investments. We are also looking to develop relationships with Japanese diagnostic and biotech companies, because we recognize that our technology has a true global reach The European market we have immediately been able to tap into. The US market is looking very positive, with lots of very substantial interest in what we do. The last market that we think we really need to push hard at in the initial phase is Japan. That proved to be a very healthy sales meeting last week. Even in a heavy Scottish accent, I was able to explain to a number of Japanese companies what we do, and they all get it. So, I am hopeful that we will start to develop relationships there. That leaves the BRIC countries. We eventually would like to start looking at Russia, India and China. I do not know about Latin America so much, but that would simply be the last geographical pocket we would like to target in the next few years in any case.

**CEOCFO:** How long will your funding last?

**Dr. Blair:** We have a burn rate that is about 25,000 pounds a month. Our funding of 1 million pounds takes us out for another eighteen months at that burn rate. When we raise more money, we can expand our business. The burn then rate goes up, but what we can do is much greater. We are looking to accelerate organic growth, but at the same time we know that some of the things we want to do can best be done through acquisitions. Therefore, we are looking at potential acquisitions with the next round of funding too. We are looking for about 1.7 million to fund our initial market, which is "bio-separation" - a market that includes lab reagents, lab tools, and research tools. This will allow scientists to separate specific molecules and cells from complex mixtures. And then we are also looking to raise in the region of 6.75 million pounds to help us accelerate the growth of the medical arm of our company. By

medical, we mean *in vitro* diagnostic applications, *in vivo* diagnostic applications, particularly imaging, using MRI. Also, we have begun to see some interest in using our magnetic proteins therapeutically. They lend themselves very nicely to a process called thermal ablation, which basically destroys tissue in a very selective way. So that has a huge potential in oncology. So, our money will last about eighteen months at the current burn rate but if we want to grow faster and acquire complementary organizations, then we need additional funding within that eighteen-month period and we are looking to move into the longer timeframe of the medical aspects.

**CEOCFO:** As CEO what do you bring to the table to allow you to move Integrated Magetic Systems forward?

**Dr. Blair:** As an individual, I have come through the ranks in pharmaceuticals and I have a "very big" corporate experience. I became a Clinical Director at an international level for GlaxoSmithKline, so my big company perspective is truly international. In terms of running smaller companies, I raised money for a company called Phynova, to allow an AIM listing. That company performed reasonably well, but in the end elected to delist, because some of the things about our business plan did not hold up. In that sense, I would not call my contribution a raging success. Then there is another company that I have worked with, which is Immunodiagnostic Systems, where I have been a non-executive director for five years. When they listed on AIM, the share price was about 65 pence. Early this year it was trading at over 13 pounds. With that company, I have seen substantial success and a return of shareholder value. Therefore, I have the experience of managing new companies, I have the big company experience and I have smelled success and failure. In addition, also I come with great vision and see lots of potential in what we are doing. I can see where we want to be at the end of the road, but to actually build that road, I need help. That is where people like Jamie Love and our Chairman, David Evans, come in. They really helped me to sit back and take stock. They say "How does that vision of yours translate into a good strategy and how do we undertake that strategy operationally? I am very keen on building teams. I do not think it is for individuals *per se*, but as an individual, I do have some skills to make that happen.

**CEOCFO:** Final thoughts, why should investors pay attention to Integrated Magnetic Systems?

**Dr. Blair:** Investors have a chance to buy into Integrated Magnetic Systems early, and we have a huge potential. It is relatively "de-risked" in my opinion, in the sense that we are a proven concept and what we are really doing here is validating some of that concept that technology and turning it into a business. We have talked a bit about bio-separation because that is a market that we could be selling into by the end of this year and that is within the one to two-year time frame we set the business plan. The *in vitro*-diagnostic aspects of the medical applications are something we think that we can really tackle within the next two to five years and then the medical imaging and the therapeutic applications are something that we can develop over the next three to eight years – as we explain in the business plan. Anyone investing in us now has a chance to realize some early returns by investing in the low-hanging fruit, but at the same time if you stick with us for the longer term, and once we move into the *in vivo* applications imaging and therapeutics, well, this is when we think the company can become huge. We are targeting within five years to have a turnover of 5 million pounds. Our valuations are between 30 and 50 million in five years' time depending on the multiple that you use. IMSL is a company that is going to grow. With the right investors, it could grow faster. And anyone that puts money in now gets a chance to be part of that high growth strategy that we have put together.

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