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Traumatic Brain Injury Reduction Technology



James R Ferguson
Founder & CEO
Alba-Technic, LLC

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CEOCFO: Mr. Ferguson, what is the concept behind Alba-Technic?

Mr. Ferguson: The concept is to help protect people who fall by reducing traumatic brain injuries, while maintaining a dignified appearance; without being looked at as something special when wearing our advanced protection device called **Smarty®**.

CEOCFO: What is the application and area that you are working in?

Mr. Ferguson: There are many areas of opportunity because we have a patented technology that is very adaptable and effective. We have developed a novel shock-absorbing composite that can be used in sports and military applications, but our immediate focus is the elderly and those who may be susceptible to falls. These are people that you would see every day walking through the streets, going to church, restaurants, or assisted living facilities. They may need that extra protection so that if they fall, the **Smarty®** headgear may help protect them from a devastating traumatic brain injury.

CEOCFO: Would you explain your technology?

Mr. Ferguson: Our technology is quite simple. You cannot stop someone from falling. You can try to be very careful; however, the probability is that an elderly person at some point is going to have a fall. This could be related to many existing conditions as well as multiple medications. Alba-Technic LLC has created a product to mitigate the

effects of that fall. We take a great deal of the force that would normally go into the brain resulting in injury, and shunt it over a range of dynamic polymers. The impact resisting system used in SMARTY® relies on the patented combination of a honeycomb and dilatant material (US Patent 8,087,101 and Canadian and European patents). In the case of a fall, the impact causes the soft dilatant material to immediately change to form a hard shell that spreads and shunts the forces over the honeycomb matrix. It then returns to its normal condition for additional protection.

CEOCFO: *Why the honeycomb cells?*

Mr. Ferguson: Honeycomb cells are a natural shock absorbing structure. They contain over 90% air, so it is ideal for something that would be put on the head. The cells can be manipulated very easily, so that they can be made thicker, thinner, longer, smaller, harder, softer or with more sides to them. Therefore, we can predict in advance how they are going to behave and we can fine-tune the honeycomb cells and dilatant using finite element analyses, and other methods. This allows them to absorb the impact during a fall in a highly predictable manner.

CEOCFO: *Is it the combination of the honeycomb cells with the polymer that you have developed that allow you to do this? What is it that you have developed that is different from anything tried in the past?*

Mr. Ferguson: I initially discovered the benefit of the honeycomb structure, and while it was good, it was not enough to attenuate the forces from a same level fall. Then we tried some advanced armored concepts, trying to see what we could use in combination with the honeycomb cells. I finally came across a combination that I tested at the VA, in the Advanced Biomechanical Lab in Tampa, Florida, along with the University of Maine. We discovered that we could fine tune some very advanced polymers with the existing honeycomb combination and come up with unexpected synergistic properties. Therefore, I ended up being granted United States, Canadian and European patents on it.

CEOCFO: *Where are you in the development process?*

Mr. Ferguson: We are less than a year away from early commercialization. We have completed the first phase of a National Science Foundation, Small Business Technology Transfer (STTR) Phase I small batch manufacturing grant, which was really needed because the material is complex, and there is not an existing manufacturing process for making it in volume. Research is also being conducted on integrating novel photogrammetry for custom fit of non-standard head sizes. Prior to this we received a Small Business Innovation Research (SBIR) grant Phase I and II from the National Institute on Aging to conduct much of the early testing and clinical trials to ensure that we had something that was viable. The Maine Technology Institute provided our high risk seed funds. We have advanced prototypes available, are gearing up right now to produce it in volume, and are looking for a qualified commercialization partner to bring it to the marketplace within a year or two years at most.

CEOCFO: *It is not in a helmet format, so what does the design look like?*

Mr. Ferguson: We have designed a product that you can essentially customize. We have one wearer in California who customizes it almost every day with different scarves and colors. If she goes to church, she wears one color, while at restaurants or family gatherings she will customize it in her own style. Essentially, it looks like a sweatband in its

basic form. It also looks like something you would wear if you were to go jogging, or walk up a hill. If you were to go to the restaurant or shopping, it would not look out of place. It is about the same dimensions as a regular sweatband, but it covers better than 85% of the portion of the head that is likely to come in contact during a fall. It does not cover all of the head, for good reason. We found during clinical trials that none of the patients that we tried this on at a major assisted living community in California wanted to wear a competitive unit that covered all of the head. Eighty eight percent of the same group agreed to wear our **Smarty®** headgear, because it was lightweight and did not cover all of the head. Therefore, appearance is critical for greater acceptance.

CEOCFO: *Why are you convinced that people, particularly seniors, will acknowledge that there is a danger and will actually use your product?*

Mr. Ferguson: It is called compliance. You can have the best technology that is really going to help everyone, but if they do not wear it, then it is not going to work for them. Therefore, we had to understand what it would take them to wear the headgear. We needed to come up with a really interesting program for education of potential wearers, so we developed a social marketing questionnaire during clinical trials. Questions included things like what the people thought about wearing protective headgear, and originally there were generally negative views. They would say things like they would never be caught dead in it, or if they were so badly injured they would never leave their homes. Eventually, we gave them information that showed them what happens during a fall, and how easy it may be to reduce some of the devastating injury by wearing something that is comfortable and quite attractive looking. When we did that, their attitudes changed and this change of attitudes gave us the necessary information on some design improvements that we had to make. For example, fit and comfort are extremely critical. It cannot be too hard, loose or tight. Then because we do not want to use a chinstrap, which would take away some of the attractiveness for some patients, it had to fit well and look good. That was critical to the acceptance of our control group.

CEOCFO: *Do you foresee a time when insurance companies would mandate wearing your product?*

Mr. Ferguson: We believe that CMS, which is the Centers for Medicare and Medicaid Services, would give us an existing classification to cover at least 50% of the cost of the headgear. That would help in some areas, but for many of the potential applications that we have, CMS may be only one of several sources. We believe that our headgear will be used for preventive purposes in order to stay active and age at home without injury. Risk management is a huge thing, and this is where medical insurance companies can pay out a little bit to prevent an injury, which in the end saves them a tremendous amount of money in treatment costs.

CEOCFO: *With so much opportunity as to how and where to approach the market, how do you decide where to focus? What are you looking at as you get closer to commercialization?*

Mr. Ferguson: We are a small company, so focus is critical. Every day I meet potential investors and partners, and the first thing that they say in almost all circumstances is that we should have this on soccer and football player's heads. That is because all of the publicity is around sports injuries and traumatic brain injury. When you look at a smaller subset of the marketplace, which are the people that can get devastating

injuries simply from falling, it requires a great deal of focus to stay on track. We believe that we can initially penetrate that market because we have built up a world-class team of experts, including a professor of gerontology and brain injury experts. We know we can have a positive impact by serving that market. Socially, it's very important, therefore, we are keeping our focus on it. If we were to focus on five or six different opportunities because they were big and aggressive, right now we would have a great deal of difficulty servicing even one of them. However, by putting our focus on the most obvious market that needs our help, we believe that we can build this out. That is not to say that we are not aware of that larger market, we are and they will be another focus of our efforts, once we get our headgear launched.

CEOCFO: *Why pay attention to Alba-Technic today?*

Mr. Ferguson: It has been a tremendous journey so far. We have had to create much of the science that was not available when we first started. We had to come up with the types of impact forces that incapacitate people that most of the medical community did not even know existed. We have come a long way in solving the problem and know that we can go a long way in protecting a great number of people. Every single person knows of someone who has had a head injury that changed that person's life or in some cases caused sudden death, whether it is a parent, other relative, friend or associate. They "get" what we are trying to do. We cannot prevent falls but by collaborating with the right parties to commercialize this important impact resisting Smarty® technology we can make it available and protect as many people as possible.

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



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"Tomorrow's Protection...Today"