THE WIP PROGRAM

By

BRITTANY LEE HULTSTROM

A Thesis Submitted to The Honors College
In Partial Fulfillment of the Bachelors degree
With Honors in
Entrepreneurship
THE UNIVERSITY OF ARIZONA
MAY 2011

Approved by:

[Signature]
Dr. Matt Mars
McGuire Center for Entrepreneurship
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<thead>
<tr>
<th>Name (Last, First, Middle)</th>
<th>Hultstrom, Brittany, Lee</th>
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</tr>
<tr>
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Last updated: Nov 15, 2009
Thesis Abstract

The honors thesis includes both the honors research project and the business plan for the McGuire Entrepreneurship Program. Each project was handled as a group effort, but these were completely separate assignments.

For the honors portion of the thesis, we were asked to develop an innovative small business development model. We conducted primary and secondary research to design this model to help entrepreneurs in Tucson develop their own ventures, write their business plan, and learn how to pitch to investors. The report outlines how our new WIP Program accomplishes these objectives. The report and presentation were completed in collaboration with McGuire students Lindsey Erlick and Kara Beaudet.

The business plan was a yearlong project completed by the management team at S.A.B. Manufacturing. The team consisted of Ariane Masschelein, Sylvia Wade, and Brittany Hultstrom. The fourth member, Elise Vo, was a member of the team in the Fall 2010 semester. However, she did not continue with the McGuire Program in the Spring 2011 semester to assist in the business plan development. The business plan contains our detailed research and analysis on the bioplastic industry and presents our proposal to launch our algae-based bioplastic venture.
Team Contributions

For both the honors report and the business plan, all team members contributed equally to the final product. Members helped one another to research, analyze and write components of the documents, but the areas of concentration are explained below:

For the honors research project, the team roles were as follows:

Kara Beaudet: Kara concentrated on formulating a timeline for the WIP Program and laying out the admissions process for incoming WIP members.

Lindsey Erlick: Lindsey focused on how to connect entrepreneurs and community members in our model as well as how the entrepreneurs will interact with the mentors and experts.

Brittany Hultstrom: My focus was on the primary research to determine what entrepreneurs would be looking for in a small business development program. The other key contribution was researching the competition and conducting a thorough analysis of the services offered by existing organizations.

For the business plan, the contribution of the team members was as follows:

Sylvia Wade (General Manager): Sylvia concentrated on the research of the bioplastic industry and worked on how to convey the benefits of our product to investors.

Ariane Masschelein (Finance Director): Ariane concentrated much of her efforts on the financial analysis to create the financial pro forma statements.

Brittany Hultstrom (Marketing Director): My concentration was on the competitive analysis and customer research. I also led the facilitation with outside parties throughout the year to learn about the industry and progress our business plan.
WIP Program
Honors Open Innovation Challenge

Kara Beaudet
Lindsey Erlick
Brittany Hultstrom
Introduction to Model

Every year, thousands of businesses form and attempt to seek angel investment. Out of these businesses, only nine percent are invited to present to investors. From this small group, three percent of business startups actually receive investment. Only 0.6 percent receive the standard five times return on their investment. Through the WIP Program (Work In Progress Program), startups will be better positioned to present to investors and receive the investment that they require.

Ideal Participants

The primary goal of our business development model is to link together different groups involved in the entrepreneurial process. The following outlines the different players that will be involved in the WIP Program. There are three different groups of people who could potentially be involved: innovators, idea providers, and mentors.

Entrepreneurs

The entrepreneurs are participants in the program who would like to run their own business. They could bring a venture idea they would like to pursue or choose an idea from the Idea Bank. Most people are more willing to start their own business when they have the energy and opportunity; therefore, recent college graduates would be the ideal candidates for entrepreneurs. These people would be in the 25-34 age range, which falls in the older millennial category.

By targeting a younger demographic, our business model would provide these young entrepreneurs with skill development through optional workshops and experienced mentors. In addition, allowing them to participate without an explicit idea will draw more participants to our program.
The WIP Program allows for the opportunity for a partnership with the McGuire Entrepreneurship Program. While most students in McGuire may not want to continue with their venture idea, many would like to continue their involvement in entrepreneurship. Our center will provide McGuire students with a simpler transition into creating a new idea and forming a new team, which will increase their chances for success. Although we are opening the WIP Program to McGuire students, anyone from the community may apply.

**Innovators**

In addition to the entrepreneurs, there will be another group of participants: the innovators. This group will consist of members of the Tucson community who have an idea for a business, but do not have the time or the means to launch a new venture. The innovators will submit their idea to the WIP Idea Bank for consideration by the entrepreneurs and the WIP Board. If an entrepreneur chooses their idea, the innovator will receive royalties in the future business, which will be negotiated based on the idea development stage.

**Mentors**

The final group of participants in the WIP Program is mentors. This group will provide experience and knowledge to the entrepreneurs. Because the majority of the entrepreneurs will be relatively young and new to the business world, they will inevitably have gaps in their knowledge. Mentors are experts in their field who are willing to donate their time and knowledge in exchange for equity in an early-stage venture. The mentors will have expertise in the following areas: marketing, accounting, graphic design, research and development, technology, finance, intellectual property, communication, and funding.
Business Model

Opportunity for Startups
The WIP Program creates vast opportunities for local startups in the Tucson community. With a membership fee of only $200, budding entrepreneurs can learn how to effectively launch a business with either their idea or an idea from our WIP Idea Bank. Recent graduates and community members who are enthusiastic and motivated to launch a business are coached on how to successfully gain investment and launch their venture.

Initially, we will only allow 15 groups to participate in the program per 10-week term. The potential entrepreneurs will first pitch to the mentors and program coordinators for one of the 15 spots. Once a startup group is accepted, they are matched with mentors. The matching process is based on the needs of the venture and the expertise of the mentor. Startups will also be allotted meetings with other mentors based on necessity. For example, if a startup group has a few questions regarding the financial plan of their venture, they could schedule a meeting with one of the financial mentors, even though they are not one of their designated mentors. This will allow all ventures to gain needed direction to effectively start their venture while maximizing mentors’ time and expertise. The interaction between the different parties involved in the WIP Program can be seen Figure 1 below:

Figure 1: WIP Business Model
**Admission Process**

The startups will be run by groups of 1-5 dedicated Tucsonans who want to start and run a business. To apply for the program, entrepreneurs will complete an application form (See Appendix A) and then be called back for the pitch presentation. At the pitch presentation each group will pitch themselves to the mentors and will be judged based on coach ability, dedication, and teamwork. The top 15 teams will be accepted into the program. Teams are allowed to bring their own ideas to the table, but are encouraged to work on ideas from the WIP Idea Bank.

**Idea Bank**

The WIP Idea Bank allows innovators to see their idea come to life. The WIP Idea Bank hopes to attract local professionals and academics to submit their business ideas; however, we will accept all ideas. Professionals that submit ideas will maintain IP rights on their idea and will be given royalties between 3-5% of revenues. Ideas with a prototype will be given royalties of 5%, whereas ideas in the beginning stage of development will receive royalties around 3%.

**Opportunity for Mentors**

Mentors are key to the WIP Program because they allow the inexperienced startup groups access to entrepreneurial and specific business expertise. Each mentor is allowed to work with up to two ventures per term. They are also allowed to meet with other venture teams to answer specific questions given the meetings do not exceed four hours per month. Each of the teams will have a different level of need for each business area; therefore, mentors will be categorized in one of eight specialties. The varied areas of expertise will allow each of the ventures to gain well-rounded business knowledge that will help them successfully launch their venture.
Contracts with the program and with startups will vary based on the mentors’ expertise, dedication, and involvement; however, each mentor’s ownership of the venture is restricted to a minimum of 5% and a maximum of 15% equity. Startup groups are allowed to seek help from as many mentors as they would like as long as the total equity does not exceed 25%. Mentors are also allowed to invest money into the venture after the program. However, the capital investment shares are separate from time investment shares.

Mentors will have incentive to participate in the WIP Program knowing that they have the opportunity to help build businesses in the local community. Mentors can choose the teams they will work with and will receive equity in the venture for their time. Mentors are a key part of the selection process and will judge and select the 15 startup ventures based on enthusiasm, coachability, and drive.

**Trade Show/Competition**

At the end of the 10 weeks, there will be a competition between the 15 startups to win complimentary services from local Tucson business partners. All ventures will be integrated with IdeaFunding and allowed to set up a tradeshow table at the conference. By integrating the IdeaFunding Conference with the program, local entrepreneurs will be connected with local investors and businesses.

In addition to the opportunity to connect with local investors and businesses through the IdeaFunding Conference, each of the venture groups will compete in a closed competition and present their venture concept to judges. Each team will present individually and it will not be open to the public in order to protect the privacy of each of
the ventures. Mentors and selected local business professionals will judge each venture based on their business plan, presentation skills, financials, and feasibility to launch. (See Appendix for detailed judging sheet).

**Opt Out Option**

Following the admissions process, the entrepreneurs are allowed to decline the opportunity and are given two days to decide whether they want to proceed with the program. After the entrepreneurs have accepted the program, they are locked in. If they would like to opt out, the startup group is required to pay a fee of $500 to cover lost costs. Mentors are allowed to opt out of the program, but are required to give three weeks notice to allow enough time to find a replacement.

**Research Interviews**

In an interview with Xtreme Business International, a social media consulting firm, CEO Michael Tucker discussed the model he uses in his business. When he first started his business, he began with inexpensive group classes for the small startups. The group classes helped to spread the word about his services and gain market share for the company. Mr. Tucker went on to describe the importance of qualifying companies. From past experience he has learned to ask more questions upfront before signing a client up for his services. He wants to ensure that the client is passionate about their business, will dedicate the needed resources to develop the concept, and can pay for his services. Xtreme Business International takes equity in the startup firm as collateral if the company cannot pay for the services.
We spoke with members of the Entrepreneurship Student Association (ESA) and the McGuire Entrepreneurship Program at the University of Arizona to better determine the services that startup teams demand in a small business development model. One McGuire student explained that if he were to sign up for this program he would be looking for guidance on how to apply the academic learning to the business world. Thus, we will incorporate application and implementation segments into the WIP Program.

One ESA member described needs including having a mentor with solid experience in their related business field, making informal coaching meetings readily available, and having a guarantee that the mentors would dedicate a given amount of hours to the venture development. Another ESA member expressed needs for a patent expert and coaching on how much equity to retain in the business when seeking investment. We used this primary research to incorporate the demands of those potentially using our services.

**Competitor Analysis**

Some of the business development models in Arizona include HD Consulting, the Small Business Development Center (SBDC) and the Arizona Inventor’s Network Source. One national business development organization is known as SCORE. Shown in Figure 2 below are the major services offered by these organizations as well as those offered by the WIP Program.
HD Consulting is located in Tucson, AZ and focuses mainly on business financials and investment projects. The core competency at this company is its knowledge of the business environments of both the United States and Mexico. Raul Hidalgo at HD Consulting described that he prefers that his clients have an international presence because he can offer services in both nations. The SBDC largely focuses on group workshops and classes. However, businesses can also sign up for private mentoring from experienced entrepreneurs and apply for microloans. The classes cost anywhere from $20 to $85, and workshops are either free or cost up to $175. They also offer free private mentoring through volunteer mentors. The Inventor’s Association of Arizona is a non-profit organization that offers free public business classes and membership benefits. The membership benefits include attendance of public and private workshops, one-on-one consulting, access to a member forum, etc. This membership comes at a price of $125 per year with $75 renewals, $175 per year for joint membership, $50 for senior membership, $25 for full-time students and $50 for part-time students.
SCORE offers free mentoring services from volunteer experts nationwide in addition to free online workshops. There are mentors in all areas of business development from patent specialists to financial experts. Entrepreneurs can make as many two-hour mentoring sessions as needed for their venture.

All of these organizations offer similar services; however, what makes the WIP Program unique is the opportunity to participate in a trade show and business plan competition. Although the group workshops and mentoring sessions are not free, WIP offers a discounted price to encourage startups or entrepreneurs at any level in their business development to apply.

**Implementation**

**Timeline**

The WIP Program is a highly selective, bi-annual program. Applicants will submit their application and venture ideas online, which will then be reviewed by the WIP Board and mentors. They will decide which applicants show the most promise and would be the best fit for the program. These applicants will then give a seven-minute pitch to the mentors and the WIP Board explaining why they want to join the program, what skills they would need and the amount of time the mentors would need to dedicate to their business formation.

After the pitches, mentors will have two weeks to select which applicants will be admitted into the program. Once the applicants are notified and the program has started, they will have to attend a two-week series of workshops that will ensure that all participants have the same basic knowledge about business and entrepreneurship. Participants will then have two months to work on developing their business plan with
their mentors as needed. At the end of this two-week timeframe, the WIP Center will host a competition between the participating teams. This entrepreneurs in this competition will be judged on the feasibility and the likelihood of their venture receiving investment. It will also be an opportunity for participants to make connections with investors so they can continue with their entrepreneurial efforts. While at this point the program has ended, the participants are welcome and encouraged to continue working with their mentors to further develop their business. Finally, the participants in the WIP Program are expected to attend either the IdeaFunding Conference or the Innovation Day Showcase to pitch their venture ideas and reveal to the public their final business concept.

**Capital and Giving Back**

The WIP Program would require startup capital of $115,000. This capital would largely go towards paying salaries for the workshop teachers and administrative workers, operating expenses such as renting the meeting spaces, and marketing expenses to run promotions.

Whereas investor funding is one way to receive the necessary startup capital, there are also alternate revenue streams the WIP Program will explore. Many other local business development centers receive sponsorships from national corporations or large local businesses. This could work well with our model, as high-level employees at these corporations could also mentor teams, if they so choose. Another revenue stream WIP will have is the membership dues of $200 per term. Although this is more expensive than other business development centers, WIP provides more guidance and structure to the entrepreneurship process. In addition, the WIP Program will seek sponsorship from The University of Arizona in order to alleviate the meeting room rental costs. The final possible
revenue stream available is the possibility of implementing a “Give Back” fee for successful businesses launched through the WIP Program. Once WIP startups become successful, they would make a one-time donation to the program.

**Conclusion**

The goal of the WIP Program is to generate business locally and in the Tucson area. The workshops, mentoring sessions, and competition the Program provides will help to foster relationships between entrepreneurs and members of the Tucson community. Our unique business model provides the support budding entrepreneurs need to successfully launch and grow their businesses.
Appendix A: WIP Program Application

1. 250 venture description and/or what you would bring to the Program (please attach)

2. List any existing IP (existing patents, patents in the process of being applied for, etc.)

3. Do you have any portion of your business plan written?
   - Yes
   - No

4. How many members are currently on your venture team? (list name and role)

5. Do you have a prototype, pilot facility, or any other proof of concept in place?
   - Yes
   - No

   If so, please describe.

6. What do you hope to gain from the WIP Program?

7. Attach resumes of all team members.
Executive Summary

Business Summary
When you think of algae you might think of the ocean or the pool in your backyard, but who would imagine cultivating algae to produce plastic? S.A.B. Manufacturing specializes in growing algae in a low cost, high yield patent pending system. The algae are then used to produce a biodegradable plastic raw material, poly-lactic acid (PLA) pellets, for consumer product manufacturers.

Customer Problem
Unlike corn, algae do not compete with the global food supply. Bioplastic product manufacturers have a limited supply of corn PLA pellets offered by only a few vendors. They are also unable to respond to emerging consumer demand for bioplastic products that are not corn-based.

Solution
S.A.B. Manufacturing produces algae-based bioplastic pellets, CreoGreen™, which provide an ample supply of biodegradable raw materials. Whereas corn can only be harvested on a seasonal basis, algae double in mass daily and can be grown year-round. This makes CreoGreen an ideal source for plastic products including packaging, food containers, textiles, and biomedical supplies.

Market Overview
There are 280 U.S. plastic manufacturers producing consumables from biodegradable plastic, mostly from PLA. The bioplastic manufacturing industry is expected to grow 20% annually from 2010 to 2015. We will sell our PLA pellets to domestic companies who have the ability to incorporate CreoGreen into their manufacturing process.

Sales and Marketing Strategy
Promotion of our technology at conferences and trade shows will be critical in reaching potential customers. Currently, seven national trade shows focus on the bioplastic industry. Our budget includes provisions for supplying potential customers with an ample supply of samples of our product for evaluation purposes.

Competitors
The top competitor in the bioplastic industry is NatureWorks: a subsidiary of Cargill, a $116 billion company. NatureWorks produces PLA and has over 500 customers worldwide. However, NatureWorks uses corn rather than algae as the main input for their PLA pellets.

Research Team
S.A.B Manufacturing is partnering with Randy Ryan, M.S., Dr. Peter Waller, and Dr. John Kyndt, inventors of the algae production system and developers of CreoGreen. All three are researchers at the University of Arizona, which is a member of the National Alliance for Advanced Biofuels and Bioproducts (NAABB). NAABB received a $44 million federal grant for algae research in 2009.

Financial & Funding Summary
S.A.B. Manufacturing seeks $450,000 in a single round of outside investment. This investment will be used for R&D, salaries, purchase of assets and to build a full-scale algae production system. Our pre-money valuation is estimated at $1M and our exit value at year 5 is approximately $20M.

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</tbody>
</table>
## Contents

Executive Summary ................................................................. 2

Management Team .................................................................. 6
Research and Development Team ............................................ 6
Customer Problem/Opportunity ............................................... 7
Product/Service ........................................................................ 7
Converting to PLA ................................................................... 8
Price and Positioning ............................................................... 8
Selling to PLA Product Manufacturers ....................................... 9
Target Market .......................................................................... 9
Converting to Algal PLA .......................................................... 10
Focusing on the Niche ............................................................. 10
Validating the Market .............................................................. 10
Entering the Bioplastic Market .................................................. 10
Producing Algal Bioplastic ....................................................... 11
The Booming Bioplastic Industry .............................................. 11
PLA Industry ........................................................................... 11
Other Competitors in the Market ............................................... 12
NatureWorks LLC .................................................................... 12
BASF ...................................................................................... 13
Metabolix ............................................................................... 13
Cereplast ............................................................................... 13
Leveraging Competitive Advantage ......................................... 13
Patents & Trade Secrets .......................................................... 13
Location ................................................................................. 14
Expertise ................................................................................. 14
Strategies to Sell CreoGreen™ ................................................ 15
Personal Selling ....................................................................... 15
Trade Shows ........................................................................... 15
Industry Publications & Organizations ..................................... 15
Positioning S.A.B. Manufacturing ............................................ 16

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Business Summary

S.A.B. Manufacturing specializes in growing algae in a high-yield, low-cost patent-pending production system. We use the algae biomass to make a biodegradable plastic (bioplastic) called poly-lactic acid (PLA). The Algae Raceway Integrated Design (ARID) System is a shallow, open pond that utilizes sunlight to maximize the algae growth potential. This system reduces electricity costs compared to other methods for growing algae, which are enclosed and use artificial light. The ARID system is designed to maintain optimum algal temperature, which is a critical factor to increase growth rates. The regulated temperature allows the algae to double its own mass daily, which provides a constant supply of high volume algal biomass to make bioplastic. We make our bioplastic from a fermentation process that produces lactic acid. We then use a polymerization step to make our raw plastic called PLA to sell to bioplastic product manufacturers. Currently, the bioplastic market has an annual growth rate of 20 percent. Manufacturers are gradually switching to renewable solutions such as PLA because of the interest in sustainable products and the increase in the price of oil used in petroleum-based (PET) plastics.

Management Team

Our entrepreneurial team consists of Sylvia Wade, the General Manager; Brittany Hultstrom, the Marketing Director; and Ariane Masschelein, the Financial Director. All three are undergraduate senior students from the Eller College of Management with dual degrees in business and entrepreneurship. The resumes of the management team members can be found in Appendix A.

Research and Development Team

Our research and development team consists of three research professors from the University of Arizona: Randy Ryan, Dr. Peter Waller and Dr. John Kyndt. Mr. Ryan and Dr. Waller are agricultural engineers who created the ARID System. They supervise a pilot facility system that has successfully been in operation for one year. Using this pilot system, we have been able to determine costs, production levels, and financial projections for our company. The head of our PLA production is Dr. John Kyndt, a biochemist and research professor at the University of Arizona. Dr. Kyndt is currently developing a patent for our PLA production process. Obtaining a PLA patent will add value to our company and create barriers to entry in the industry. The resumes of the R&D team members are in Appendix B.

The University is a founding member of the National Alliance for the Advancement of Bio-fuels and Bio-products Consortium (NAABB). Through the NAABB Consortium, universities including the University of Arizona have received a total of $44 million in government funding to develop biofuel from algal oil. Our relationship with the University allows us to lease the ARID System for our specific use of algae for bioplastic. Leasing the system for bioplastic production rather than leasing the entire patent, reduces upfront expenses. Once S.A.B. Manufacturing is established, we will negotiate with the University of Arizona to license the ARID System for other commercial uses.
Customer Problem/Opportunity

The bioplastic market is in a rapid growth stage. Plastic product manufacturers have a limited supply of raw bioplastic material offered by two major vendors in the U.S., NatureWorks and BASF. If a manufacturer wants to switch from petroleum-based plastic to PLA, then their only option is a product derived from food-based crops (mainly corn). This is a problem because it takes away from the global food supply. Corn is also in high demand for alternative fuels such as ethanol, which currently accounts for over a quarter of the U.S. corn supply\(^x\). This combined with the fact that the price of corn has almost doubled since last spring (appendix C), creates a need for a substitute input for the bioplastic market\(^{vii}\).

The U.S. corn market is not large enough to support three industries; food, fuel and materials, two of which (biofuels and bioplastic) are still in the rapid growth stage. Plastics and other materials are lower priority than fuel and food. This is an opportunity for us to positions ourselves as the optimal alternative when the industry shifts away from corn. Algae have high potential as a substitute because they are high in starch and can be grown efficiently year-round using recaptured water on land not suitable for agricultural crops. Our solution is to use algae to make a raw form of PLA to sell to plastic product manufacturers. Our algae-based bioplastic pellet operation provides an ample supply of biodegradable raw materials for a variety of products currently on the market including packaging, containers and other plastic based applications.

Product/Service

S.A.B. Manufacturing sells CreoGreen, our own brand of raw PLA pellets. CreoGreen is a direct substitute for other PLA pellets used by plastic product manufacturers. PLA pellets are a translucent, starch-based plastic used in a variety of products. Some industries already incorporating bioplastic into their products include the packaging and bio-medical fields. Below shows the most common PLA applications.

Figure 1.1: PLA Applications

<table>
<thead>
<tr>
<th>Bio Medical</th>
<th>Food Industry</th>
<th>Other Applications</th>
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<tbody>
<tr>
<td>• Sutures</td>
<td>• Disposable packaging</td>
<td>• Woven Textile</td>
</tr>
<tr>
<td>• Stents</td>
<td>• Containers</td>
<td>• Plastic Liners &amp; bags</td>
</tr>
<tr>
<td>• Dialysis media</td>
<td>• Cultery</td>
<td>• Loose fill packaging</td>
</tr>
<tr>
<td>• Disposable garments &amp; gloves</td>
<td>• Bottles</td>
<td>• Golf tees</td>
</tr>
<tr>
<td></td>
<td>• Plates</td>
<td>• Pens</td>
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Depending on the product application, companies may want to utilize additives to create a thermally resistant, higher grade PLA.\(^{viii}\)

One concern we found through primary research is the perceived notion that bioplastic products will degrade rapidly before or during use. However, if produced properly, PLA will only degrade
given the right conditions including temperature, humidity, and the presence of certain microbes. This allows the PLA product to be durable during use and easy to process during disposal.

In recent years, many plastic companies have falsely claimed to make compostable products. To fix this problem, guidelines have been set for what characteristics a product must have in order to be considered compostable. The Federal Trade Commission (FTC) is the regulating authority that defines the standards for biodegradable plastic in the U.S. The FTC works with the American Society for Testing and Materials (ASTM) that officially tests and approves biodegradable and compostable materials. The ASTM’s system is comprised of a pass or fail test regarding the time frame for the material to degrade and the chemical composition of the remaining material following degradation. Upon approval, the U.S. Composting Council can certify the material as compostable. Their certification logo shown above is recognizable across North America. Certification is a guarantee to our customers that our product is 100% compostable according to national standards. Another benefit of certification is that we can become an official member by the Biodegradable Products Institute, which serves as a directory for certified bioplastic companies. Refer to Appendix D for further information on the industry regulations.

Converting to PLA
Regardless of the source, plastic product manufacturers who purchase our PLA must have the compatible machinery. Manufacturers who use PLA melt the plastic and use injection molding to create containers and other products. The type of machinery is dependent on whether the manufacturer uses PLA or petroleum based plastic depending on whether the material the manufacturer uses is PLA or PET. However, if the manufacturer is already using corn-based PLA, then CreoGreen can serve as a direct substitute using the same machinery.

Price and Positioning
Our product is a premium sustainable plastic in the market with petroleum-based PET plastic and other types of PLA plastic. PET plastic ranges from $0.25 to $3.67 per pound, whereas PLA plastic ranges from $0.85 to $4.00 per pound. There is such a wide price range because some PLA companies are just coming out of research and development and have not achieved economies of scale. With the price of our CreoGreen at $2.00 per pound, we are a premium plastic, but we fall within the range of PLA prices. In year one, the price of CreoGreen is set at $2.50 per pound and through efficiencies and economies of scale, we lower the price to $2.00 per pound by year five. In year five S.A.B. Manufacturing will still be considered a smaller size manufacturer. Through acquisition, we will be able to significantly scale up our production to be competitive with the lowest price on the market. Between lowering the price of our algae-based plastic and with prices of corn increasing rapidly in recent years, we expect CreoGreen to be extremely competitive with other common forms of PLA in terms of price.
<table>
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<th>Competitor</th>
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<td>5. Arkema</td>
<td>$1.50-$4.00</td>
</tr>
<tr>
<td>6. PolyOne</td>
<td>Not Disclosed</td>
</tr>
<tr>
<td>7. DURECT Corp.</td>
<td>Not Disclosed</td>
</tr>
<tr>
<td>8. Cereplast</td>
<td>$0.85-$1.30</td>
</tr>
<tr>
<td>9. Metabolix</td>
<td>$2.25-$2.75</td>
</tr>
</tbody>
</table>

Algae-based CreoGreen is a premium plastic because of the key advantages of using algae as a plastic feedstock. Algae use fewer resources than crops such as corn, do not put pressure on the food supply, and have several other advantages listed in Appendix E. These benefits add tremendous value to the environment and society. Additionally, PET and corn PLA are made from limited resources. The price for corn-based PLA will become more volatile as more of the U.S. corn supply goes towards ethanol production. Likewise, as oil prices continue to rise, the price for PET plastic will increase. CreoGreen will only see price decreases over time and will not take away valuable food and oil reserves for plastic production.

**Selling to PLA Product Manufacturers**

**Target Market**

Our target market consists of companies that manufacture bioplastic products using poly-lactic acid (PLA). This market consists of 205 companies in the United States that produce PLA products such as plastic cups, plates, and silverware. There are 280 U.S. companies producing products from bioplastic; however, 205 of these companies are specifically using PLA. These companies focus on the production of biodegradable packaging and include companies such as World Centric, Ex-Tech, and Plastic Ingenuity.

Unlike PET product manufacturers, these companies will be more likely to purchase algal bioplastic because they already have the manufacturing infrastructure at their facilities to process PLA into end consumer products. The companies are simply converting from corn-based plastic to algae-based plastic, which will not change the quality of their products. Companies using PET plastic are outside of our target market because they may or may not have the equipment needed to be compatible with processing PLA pellets.
Converting to Algal PLA

As the demand for bioplastic increases about 20 percent each year until 2015, we expect the number of PLA product manufacturers to increase.\textsuperscript{xxv} Companies using corn PLA will only put pressure on the food supply by supporting the use of corn to make bioplastic. The bioplastic market cannot rely on corn PLA indefinitely. Algae-based plastic will not face this same problem and will provide a forward thinking solution for these companies.

Focusing on the Niche

With over 18,000 plastic product manufacturers in the United States, the PLA market is a niche market within the entire plastic industry.\textsuperscript{xxvi} We will target companies throughout the United States rather than targeting a specific region because PLA has standard qualities. This makes it easier to convey the quality and benefits to companies currently using corn PLA all across the nation. The companies in this niche market are those who are receptive to the added value of algal PLA and are willing to pay the premium for those benefits. These are companies that want to position themselves as a sustainable company and demand a more sustainable PLA material to meet their bioplastic needs.

Validating the Market

Today, customers are willing to purchase corn PLA for up to $4.00 per pound. Therefore, we expect customers to pay a similar premium price for algae-based PLA. With CreoGreen priced at $2.00 by year five, our pricing falls on the lower end of this market. We know there are customers willing to pay this price because we have spoken to potential customers at the West Pack trade show in Anaheim, California. One of our potential customers, Plastic Ingenuity, has helped to further validate the market by signing a letter of intent. The letter, as shown in Appendix F, expresses the intent to purchase our first full year of production of 48,000 pounds of bioplastic. We plan to obtain additional letters of intent in the next couple of months to continue to lay out the demand for our product.

Entering the Bioplastic Market

In the United States, PLA production is projected at roughly 570 million pounds in 2012. The bioplastic market is growing at 20 percent per year and PLA represents 60 percent of that total market.\textsuperscript{xxvii} Using this information, we found the PLA market will be over one million pounds in 2016. However, we are targeting companies who are the innovators in the product adoption cycle (See Appendix G). Thus, our target market is 2.5 percent of this entire market because not every company is expected to switch to algal PLA. Those who switch are the innovators because they want the most sustainable plastic option available and are willing to purchase an entirely new brand. Accounting for the adoption cycle, our target market in year five is 30 million pounds, which yields a market share of 16 percent.
### Producing Algal Bioplastic

The first year we have one acre and the ability to produce over 281,000 pounds of algae. This translates to 48,000 pounds of PLA plastic in year one. As explained in Appendix H, this takes into account that 40 percent of the algae are starch and 60 percent of that starch can be turned into poly-lactic acid. We polymerize the lactic acid to create the final poly-lactic acid product. On average, 50 percent of the algae are harvested each day. Algae multiply rapidly, which allows us to harvest frequently and in large quantities. On a per month basis, we sell 4,000 pounds of PLA in the first year of operations. Year two through five is based on the same assumptions regarding the percent of starch and lactic acid. In year two we produce 40,000 pounds of PLA monthly, year three over 100,000 pounds, year four over 200,000 and year five we produce 400,000 pounds per month. This translates to a total of 4.8 million pounds of PLA in year five. Thus, we increase our acreage and production 100 fold by the fifth year. The land is part of a 2,400 acre parcel in Yuma, Arizona, which will allow us to easily acquire more land to scale up. The chart in Appendix I summarizes the production schedule.

### The Booming Bioplastic Industry

The bioplastic industry is a new, but rapidly growing industry and has moved out of the R&D phase. Because it is possible to create algal bioplastic, but no company has yet to bring it to market, it is the perfect time to develop and start selling our own bioplastic brand CreoGreen. Top competitors in the bioplastic industry include NatureWorks, and BASF. These companies produce PLA, but from crop-based sources. Cereplast has emerged as the leader in algal bioplastic, but it is still only selling its crop-based bioplastic made of soybeans, corn, etc. Refer to Appendix J for further detail on the leading companies in the algal bioplastic industry.

### PLA Industry

Although PLA is only a segment of the total bioplastic market, the variety of applications and rapid growth make this market a beneficial segment to target. We are selling our CreoGreen brand in the United States in the first five years of operations; however, PLA is popular worldwide as well. Europe
holds the greatest demand for bioplastic by weight with half of the world’s demand in 2010. International markets remain promising for future sales as S.A.B. Manufacturing develops its product and looks into new markets. Other types of bioplastic include starch-based plastics. Starch-based plastics comprise 39 percent of the bioplastic market and are not fermented as with PLA. This bioplastic is formed by processing the starch with water and adding polymers to the processed starch. These polymers are typically non-renewable, but still biodegradable. Even though the plastic degrades, the product is not as sustainable because of the non-renewable materials incorporated into the plastic. For this reason, PLA usage is likely to increase as more companies look for more eco-friendly alternatives.

### Other Competitors in the Market

Large plastic and chemical companies dominate the bioplastic industry. The major competitors in the United States are listed below in Figure 1.3. As this table shows, some of these competitors such as BASF, have an EBITDA in the billion dollar range.

**Figure 1.3: Top Competitors**

<table>
<thead>
<tr>
<th>Company</th>
<th>Material</th>
<th>Source</th>
<th>Headquarters</th>
<th>Firm EBITDA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>NatureWorks*</td>
<td>Ingeo</td>
<td>PLA (Corn)</td>
<td>Minnetonka, MN</td>
<td>N/A</td>
</tr>
<tr>
<td>Teknor Apex*</td>
<td>Terraloy™</td>
<td>PLA (Corn/wheat/potato)</td>
<td>Pawtucket, RI</td>
<td>N/A</td>
</tr>
<tr>
<td>BASF*</td>
<td>Ecoflex® Ecovio®</td>
<td>Petroleum PLA (Corn)</td>
<td>Wyandotte, MI</td>
<td>16.92B</td>
</tr>
<tr>
<td>DuPont*</td>
<td>Sorona® EP Pro-Cote® Soy Polymers Selar® VP Breathable Resins</td>
<td>37% corn 95% soybeans 30% soybeans/palm oil</td>
<td>Wilmington, DE</td>
<td>5.28B</td>
</tr>
<tr>
<td>Arkema</td>
<td>Pebax® Rnew Castor Oil (castor beans)</td>
<td>Philadelphia, PA</td>
<td></td>
<td>1.05B</td>
</tr>
<tr>
<td>PolyOne</td>
<td>OnFlex BIO Series TPU + 20% renewable</td>
<td>Avon Lake, OH</td>
<td></td>
<td>198.7M</td>
</tr>
<tr>
<td>DURECT Corp.*</td>
<td>LACTEL®</td>
<td>Not Disclosed</td>
<td>Pelham, AL</td>
<td>(23.5)M**</td>
</tr>
<tr>
<td>Cereplast®</td>
<td>Cereplast Compostables®</td>
<td>PLA (Soy, wheat, potatoes, corn, algae)</td>
<td>El Segundo, CA</td>
<td>(5.64)M**</td>
</tr>
<tr>
<td>Metabolix®</td>
<td>Mirel™</td>
<td>Plant Derived Sugar</td>
<td>Cambridge, MA</td>
<td>(4.64)M**</td>
</tr>
</tbody>
</table>

*The EBITDA represents all of the divisions within the firm (not just the bioplastic division).

**These companies have a negative EBITDA because they are coming out of the R&D phase.

### NatureWorks LLC

Because NatureWorks is a private company, the EBITDA value is not disclosed. However, the company is a huge competitor serving 140 customers in the United States and a total of 500 customers worldwide with its popular Ingeo brand. NatureWorks has even secured large customers such as the Solo Cup Company. NatureWorks is owned by the $116 billion company Cargill; a food, agricultural, financial and
industrial product and service provider. Cargill is also a privately held company that operates worldwide.\textsuperscript{\textregistered}

**BASF**

BASF has tremendous financial strength with an EBITDA of $16.9 billion. The company has two bioplastic products: Ecoflex\textsuperscript{®} and Ecovio\textsuperscript{®}. Ecoflex is a 100% biodegradable, compostable plastic. Ideal applications for Ecoflex include disposable packaging and trash bags because the material can degrade in just a few weeks when composted. The second bioplastic product offered, Ecovio, is made of both corn and the petroleum-based Ecoflex. Even though it contains petroleum, this plastic blend is biodegradable. BASF also offers nylon plastic, foams, and other plastic materials for use in kitchen appliances, office furniture, computers, among other markets.

**Metabolix**

Metabolix is a public company that focuses on bioplastic, bioenergy, and biochemicals. Metabolix sells its own Mirel brand of bioplastic made from plant sources. Mirel is certified compostable and has similar properties to petroleum-based plastic. The Mirel brand is sold by Telles, which is a joint venture between Metabolix and agricultural processing company Archer Daniels Midland.\textsuperscript{\textregistered}

**Cereplast**

Whereas the aforementioned companies are selling crop-based bioplastic, Cereplast is one of the few companies looking into algal bioplastic. Although Cereplast may seem like an underdog with a negative $5.6 million EBITDA, the company remains a strong competitor in the algal bioplastic market specifically. The only other companies researching algal bioplastic are Dow Chemicals, Petro Sun, and Soley Biotechnology Institute. However, Cereplast is the only company of these four actually selling PLA plastic, which gives it an advantage over the other companies that have a larger focus on algal fuels.\textsuperscript{\textregistered}

**Leveraging Competitive Advantage**

Our competitive advantage consists of utilizing two patents, locating the ARID System in Arizona, and having experts from the University of Arizona. These experts have developed a new proprietary technology to grow algae using sunlight as a critical input.

**Patents and Trade Secrets**

The ARID algae production system is another major advantage. The ARID System was created at the University of Arizona by Randy Ryan and Peter Waller and has a unique design that regulates the algae temperature. Regulating temperature is critical for algae growth and is hard to achieve in other open pond systems. It can be achieved using bioreactors, which are enclosed systems. However, bioreactors are more expensive to build and operate. Because of this, the ARID System is low cost (compared to bioreactors) and high yield (compared to other open pond systems). We will license the technology
from the University of Arizona, so that we have the sole right to use the ARID System for bioplastic production. Refer to Appendix K for further details on the licensing process.\textsuperscript{xlv}

Harvesting the algae is another operational step that is critical to achieving efficiencies when using algae commercially. There are many methods currently used, most of which are time intensive and use machinery. Professors Ryan and Waller have also created a trade secret formula to harvest the algae at a very low cost and at a relatively fast rate. This process does not require machinery and uses non-toxic materials. The proprietary algae harvesting technique gives us a competitive advantage because it lowers harvesting utility and capital equipment costs.

Moreover, this production system has a much faster growth rate and a shorter harvesting time than any other method of biomass production. Corn, sugarcane and potatoes are seasonal and are only harvested once or twice per year. In the ARID System, algae can grow continuously, with a never-ending harvesting season. The company’s production processes are intended to be sustainable and resource-efficient. When these development processes are optimized, significantly less land will be required for production than most other feedstock. Because arable land is not required, farmland and rain forests will not be negatively impacted.

Our second patent is still in the developmental stage. Dr. Kyndt is creating a multistep process for transforming the algae into PLA bioplastic. We anticipate that the prototype process will be complete by the end of May, 2011. Upon completion, we will file for a patent on this process.

\textbf{Location}

With its climate and abundance of available land, Arizona has been hailed as an ideal region for algae biomass production. Arizona receives more sunshine than any other U.S. state and has mild winters allowing the algae to achieve optimum growth year-round\textsuperscript{xlvii}. Our warm spring and fall and hot summer stimulate the algae to grow rapidly, which gives us an ample supply to make our plastic. Our competitors are located in California and the Midwest near the crops that they use in their plastic. Both of these locations have downsides to growing algae. The Midwest is too cold for part of the year and California has limited inexpensive land. For these companies to switch to using algae, they would have to relocate their operations or outsource to a company that is already growing algae. Both of these options would take time and resources to accomplish.

\textbf{Expertise}

All three research professors are involved in a project at the University of Arizona, which establishes them as experts in the field of algae technologies. The Department of Agriculture and Biosystems Engineering, is part of a $44 million nationwide consortium granted to the National Alliance for Advanced Biofuels and Bioproducts (NAABB). The NAABB received funding from the U.S. Department of Energy to develop efficient ways to grow and harvest algae for biofuel use. By having these three
research professors on our research and development team, we will remain current on industry technology advancements and continue to develop our own R&D to stay competitive and innovative.

We anticipate that some of our competitors will switch to making algae-based PLA. Location and our expertise in growing algae will help our company to outperform these new entrants to the market. Our competitors are located largely in the Northeast and Midwest where algae cannot grow year-round. For these competing companies to switch from corn to algae, it would require substantial time and resources to make that transition. These companies would also have to perfect their own algae production systems to be competitive in the market. Our Arid System significantly decreases costs and improves efficiencies, which is critical for us to obtain a first mover advantage.

**Strategies to Sell CreoGreen™**

S.A.B. Manufacturing uses a business-to-business model. Thus, the following three methods are used to most effectively reach our customers:
- Personal Selling
- Trade Shows
- Industry Publications

**Personal Selling**

S.A.B. Manufacturing will meet with prospective customers to introduce our CreoGreen™ product, describe its properties, and give an overview of our technology. Personal selling is key to the success of our business because we are selling to other manufacturers and not the end consumer. We must develop strong relationships with our customers to gain acceptance for both algal bioplastic and the long-term purchase of our product. In years one through three, the S.A.B. Manufacturing management team will conduct the personal selling. By year four, we will hire additional sales representatives to handle the increasing number of orders.

**Trade Shows**

There are nine major bioplastic trade shows worldwide, such as the Green Plastics Manufacturing tradeshow in Lowell, MA. International bioplastic tradeshows such as the 6th European Bioplastic Conference will be crucial for promoting the company to large numbers of potential customers. See the full list of tradeshows in Appendix L.

**Industry Publications & Organizations**

Industry publications in the plastic, bioplastic, and algae industries will help S.A.B. Manufacturing to reach its target market. *Flow Control, Rubber and Plastics News Magazine, Green Solutions Magazine, and the Algae Industry Magazine* are some of the publications we will target for articles promoting our product and technology. Becoming a part of industry organizations is critical in a technology-based
business. It helps to establish credibility and awareness in the community. See the full list of publications and organizations in Appendix M.

**Positioning S.A.B. Manufacturing**

To position our company as a high quality, sustainable company we must market CreoGreen as a premium brand and explain the key advantages that support the premium price. CreoGreen is derived from a renewable source. Unlike companies such as NatureWorks, we are not using corn and other crops to manufacture plastic that take away from the food supply. We will also emphasize our strong focus on research and development. We are committed to continuously working to improve our product and remain competitive in the plastic market through this research.

**Operations**

Our facility will be located in Yuma, Arizona. Yuma is ideal because there is inexpensive land and water available. It is on Highway 8, which is a convenient location to ship to our customers in the western region. We will replicate our pilot algae production system on a one acre site in year one and scale up to one hundred acres by year five. The plot of land we are leasing has 2,400 acres available so that we can scale up our operations each year through the investment and profits received. Unlike traditional raceways, which are generally one large pond, our system is a series of small raceways designed to minimize contamination and increase quality control. Each acre holds ten raceways allowing us to grow nearly 130 tons of algae per acre annually. Because our algae can double their own mass daily we will harvest 50 percent of the algae each day. After the algae are harvested, they are transported to the fermentation tanks where they are fermented for three days. The last step is the polymerization process, which takes one additional day. The total process from harvesting to the final product of PLA takes four days. Refer to the more detailed explanation in the process appendix N. The PLA will then be packaged and shipped to our customers. The ARID System and the fermentation processes are mostly automated, but they do require maintenance and supervision on a regular basis. Figure 1.4 shows the entire operations process from beginning to end.
**Research & Development**

Algae are composed of starch, oil and protein. To make our bioplastic, we only use the starch, which allows for further research into other markets using the remaining components. We plan to continue our research and development on the algae to continually improve our operations, increase profits, and explore new markets. Through this research, we will boost the starch content of the algae and produce more PLA per pound of algal biomass. Although 40 percent starch for the algae is a strong number, increasing the starch content will yield to even higher bioplastic yields. Our R&D includes the development of our own patentable intellectual property for the bioplastic, which would give us a competitive advantage over our potential future competitors in algae-based bioplastic. The patent on our bioplastic process will be pending in year one, but we will file the patent before beginning operations in 2012.

Once we have filed our patent application, we can work on the characteristics of the bioplastic, such as heat resistance, surface feeling, and humidity resistance. However, these improvements will not be necessary for meeting our financial projections. This will be part of our research and development to continually improve our plastic to add value for our customers.
Timeline

See Figure 1.5 below for a detailed timeline from the start of our venture development.

Figure 1.5: Timeline

<table>
<thead>
<tr>
<th>Pre-Launch</th>
<th>Year 1</th>
<th>Years 2-3</th>
<th>Years 4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Business Plan</td>
<td>• Launch Company</td>
<td>• Continue R&amp;D</td>
<td>• Continue R&amp;D</td>
</tr>
<tr>
<td>• Trade Show</td>
<td>• R&amp;D of Other Bioproducts</td>
<td></td>
<td>• Potential Acquisition</td>
</tr>
<tr>
<td>• PLA Prototype</td>
<td>• First Sale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Grants/SBA Loans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Present to Investors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Build ARID Raceways</td>
<td>1 Acre in Year 1</td>
<td>10 Acres Year 2 25 Acres Year 3</td>
<td>50 Acres Year 4 100 Acres Year 5</td>
</tr>
</tbody>
</table>

In 2010, we largely focused on research, concept development, and our financial projections. Once we determined the feasibility of our concept, we began writing our business plan in 2011. In 2011, we plan to continue to increase our knowledge of the competitive landscape and further develop CreoGreen from lab scale to commercial scale. We began the bulk of the research and development in March 2011 and will have the PLA pellets fully developed by May 2011. The R&D will continue once our CreoGreen has been produced in order to find ways to improve the product and research new products we can create using the oil and/or protein components of the algae. We begin the construction of the ARID System in May 2011 and complete the construction in March 2012. Beginning in June 2012, we will start to prospect and educate potential customers on the benefits of using CreoGreen over competing PLA brands. Although we are currently seeking letters of intent, the first sale will occur in April 2012.

Business Model

We will produce high volume algal biomass to use as an input to make high quality PLA for plastic manufacturers. One major advantage is our patent pending system that allows our costs to be lower than other algae producers. The low costs allow for a competitive selling price. In year one the selling price is $2.50 a pound and by year five it drops to $2.00 per pound. We are able to drop our price by perfecting our algae growing process and through economies of scale. We can increase the starch content of the algae, eliminate waste in the fermentation process, and boost the growth rate with research and development. These improvements allow for increased efficiency by producing more
pounds of bioplastic with the same amount of algae. Increased efficiency leads to lower costs and hence a lower selling price and/or higher margins. Because we are in a growing new market, we have the opportunity to expand our product line in the future. These new products will include other components in the algae such as protein and oil, which will be determined by our research and development team.

Analysis of Risks

After launching, we may face a variety of risks that are substantial and inherent to our business. The following are some of the more important factors that could affect our business and should be considered carefully.

Market Risk
The market may not accept the products produced by our microalgae production system. Most people know little about algae. They see algae growing in their pool or in the ocean and they associate algae with pollution. Therefore, many think that it is toxic. Educating the public and our business customers will be necessary if our product is not accepted. This may impact our company, slow down the quantity sold, and slow down our growth.

Technology Risk
We may be unable to solve technical and engineering challenges that would make the production of algae systems non-scalable at economically attractive metrics. Although, two engineers at the University of Arizona have successfully built a pilot scale demonstration facility, the fully automated commercial design and engineering of a larger production system is still under design. Moreover, the production of bioplastic is currently in the research and development stage. Thus, the completion of both the algae growing facility and the bioplastic production design and engineering may face unpredicted factors. These include not being able to successfully design a scalable, cost-effective system for the growth and harvesting of algae and for the bioplastic manufacturing process.

Execution Risk
We may face significant challenges in successfully and rapidly scaling-up the actual pilot facility. This would make the production of algae non-scalable at economically attractive metrics. We will need to successfully scale-up the pilot facility to produce larger quantities and measure production yields. The risk of failing to successfully scale-up the current demonstration facility exists and will result in new technical hurdles or delayed commercialization efforts.
Regulatory Risk

In order to meet the industry regulations, we will need to go through the necessary testing. Many government agencies have regulations and test products before they are made publicly available. If we do not meet those standards, we may be refused the certification, which may delay the production.

Capitalization Risk

In the case of unforeseen circumstances, we are raising enough money so that the smallest amount of year-ending cash ($135,000) represents six months of operating expenses. Based on our financial analysis, we believe that this is enough of a safeguard to face unexpected events.

Team

Management Team

_Sylvia Wade, General Manager_

Sylvia acquired experience as an intern in sales and customer service where she has managed the daily operations of two businesses. She has held leadership roles in two environmental groups at her school where she learned to organize and coordinate groups. She is a volunteer teacher for Junior Achievement where she has learned strong communication skills and how to inspire others. She has a passion for sustainability and green technologies. Finally, Sylvia is a senior majoring in business management and entrepreneurship at the University of Arizona.

_Brittany Hultstrom, Marketing Director_

Brittany's experience lies in ad design, customer service and the planning of programs, classes and events. She has served as the Marketing Intern for three companies and has held several leadership positions on campus. Furthermore, she has a background in sustainability as both the Marketing Officer for an environmental club on the University of Arizona campus and as the Marketing Intern for environmental non-profit Global Sports Alliance USA. Brittany is a senior majoring in marketing and entrepreneurship at the University of Arizona.

_Ariane Masschelein, Finance Director_

Ariane has experience as a sales manager and personal assistant where she developed strong customer service skills and used multitasking and time management skills effectively. She is a senior majoring in accounting and entrepreneurship at the University of Arizona. Ariane also held leadership positions within the athletic department as the team captain of the women's tennis team and the Vice-President of the Student-Athlete Association. Ariane has a strong interest in sustainability and biodegradability. She speaks English, French, and Dutch.
Research & Operations Team

Dr. John Kyndt, Head of Product Development

Dr. Kyndt has a doctorate in science from the biochemistry department at the University of Gent in Belgium. He is currently an Assistant Research Professor at the University of Arizona, Department of Chemistry and Biochemistry. He has a strong foundation in chemistry, microbiology (algae and bacterial cultivation), biochemistry and molecular biology (genetic manipulation of algae and bacteria for commercial purposes). He is a graduate of the McGuire Entrepreneurship Center and experienced in business plan development. He also has experience in patent application writing, specifically in the field of algae for fuel, pharmaceutical applications, and bulk water management.

Randy Ryan, Head of Research and Development and co-inventor of the ARID Raceway System

Randy Ryan has a Master of Science from Department of Botany and Microbiology at Arizona State University. He is the Assistant Director at the Agricultural Experiment Stations at the University of Arizona. He has led multiple green technology projects including the development of the Algae Raceway Integrated Design (ARID), managing the Agricultural Center at Red Rock and forming a partnership with the National Alliance for Advanced Biofuels and Bioproducts. He is a published professor and is experienced in obtaining patents.

Dr. Peter Waller, Head of Research and Development and co-inventor of the ARID Raceway System

Dr. Waller has a doctorate in Agricultural Engineering from the University of California in Davis. He is an Assistant Professor in the Department of Agricultural and Biosystems Engineering at the University. His areas of focus are irrigation, drainage, and water quality. He has worked with Randy Ryan to develop the ARID System.
Pro Forma Financials

For our projections, we assume that we can sell everything that we produce because our production is quite small compared to the large, growing market of bioplastic. Also, the demand for PLA, one of the major types of bioplastic, is growing rapidly and is in short supply as evidenced by the letter of intent from Plastic Ingenuity (Appendix F).

We decided to start our production with a small facility of only one acre. Because we are just coming out of research and development, the first year of operation will mostly serve as a proof of concept. We will produce bioplastics on a larger scale than in our lab, but not too large that we do not have any control on our production. After year one, we increase our facility and our production each year. We will have a facility of 10 acres in year 2, 25 acres in year 3, 50 acres in year 4, and 100 acres in year 5. Our sales follow this increase in our acreage and production.

Figure 1.6: Simplified Income Statement

<table>
<thead>
<tr>
<th>(in thousands of dollars)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>120</td>
<td>1,152</td>
<td>2,760</td>
<td>5,400</td>
<td>9,600</td>
</tr>
<tr>
<td>COGS</td>
<td>32</td>
<td>306</td>
<td>720</td>
<td>1,311</td>
<td>2,202</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>86</td>
<td>823</td>
<td>1,985</td>
<td>3,981</td>
<td>7,206</td>
</tr>
<tr>
<td>Operating Exp</td>
<td>273</td>
<td>607</td>
<td>1,206</td>
<td>2,290</td>
<td>4,277</td>
</tr>
<tr>
<td>EBITDA</td>
<td>(174)</td>
<td>231</td>
<td>794</td>
<td>1,724</td>
<td>2,963</td>
</tr>
<tr>
<td>Net Profit (Loss)</td>
<td>(187)</td>
<td>204</td>
<td>452</td>
<td>981</td>
<td>1,700</td>
</tr>
</tbody>
</table>

The table above is a simplified income statement. A full income statement, balance sheet and statement of cash flows can be found in Appendix O.

The cost of goods sold (COGS) includes the chemical and other nutrients that are needed to grow the algae. Also included is the cost of packaging and a 7% royalty fee that we have accounted for licensing the patent from the University of Arizona. Our operating expenses mainly include equipment lease, research and development expenses, rent, insurance, and marketing expenses.

As illustrated by the income statement, S.A.B. Manufacturing has a net loss in its first year of operation. However, starting year two and for any subsequent years, we operate at a net profit. In year 5, our net profit reaches $1.7 million, with an EBITDA of almost $3 million.

With the licensed patent of the ARID Raceway System, the bioplastic patent, and the trade secret, we estimated our pre-money valuation to be $1 million.
Funding and Exit Strategy

As founders, we will invest $100,000 total. With the founders’ investment, we will license the University of Arizona patent on the raceway system, create our own patent for the production of bioplastic, and apply for government grants (see Appendix P for a list of potential grants)\textsuperscript{xlvi}. This will bring the company to $1 million in pre-money valuation. For the success of our venture, we are seeking a total of $450,000 in outside investment. The following chart shows how the founders’ investment will be used.

Founders' Investment

<table>
<thead>
<tr>
<th>Use</th>
<th>Dollar Amount</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>U of A patent licensing</td>
<td>$60,000</td>
<td>December 2011</td>
</tr>
<tr>
<td>Production of bioplastic patent</td>
<td>$25,000</td>
<td>December 2011</td>
</tr>
<tr>
<td>Grant application</td>
<td>$10,000</td>
<td>August 2011</td>
</tr>
<tr>
<td>LLC set up expense</td>
<td>$5,000</td>
<td>July 2011</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$100,000</strong></td>
<td></td>
</tr>
</tbody>
</table>

![Pie chart showing Use of Founders' Funds]
Outside Investment

**Figure 1.7: Use of Outside Funds**

<table>
<thead>
<tr>
<th>Use of Funds in Year 1</th>
<th>Dollar Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D Salaries</td>
<td>$90,000</td>
</tr>
<tr>
<td>Management Salaries</td>
<td>$60,000</td>
</tr>
<tr>
<td>Equipment Lease</td>
<td>$35,000</td>
</tr>
<tr>
<td>Patent Fees</td>
<td>$20,000</td>
</tr>
<tr>
<td>Marketing Expense</td>
<td>$15,000</td>
</tr>
<tr>
<td>Research and Development</td>
<td>$10,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>$10,000</td>
</tr>
<tr>
<td>Rent Expense</td>
<td>$10,000</td>
</tr>
<tr>
<td>Other operating expenses</td>
<td>$100,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$350,000</strong></td>
</tr>
</tbody>
</table>
Exit Strategy

S.A.B. Manufacturing is committed to achieving superior returns for its investors. S.A.B. Manufacturing’s management team will vigilantly seek an exit strategy that maximizes its return to investors in a timely and responsible manner.

The most probable exit for S.A.B. Manufacturing is an acquisition by one of the major players in the biotechnology industry. NatureWorks and Cereplast are two potential acquirers who have demonstrated strong propensity to expand by acquiring competing and complementary firms. NatureWorks, for example, was acquired by Cargill six years ago when it had created an innovative type of corn-based bioplastic and established a strong brand recognition. There will be interest in acquiring our company because of the unique method used to grow the algae and our new process to make bioplastic. NatureWorks, a company with headquarters in Minnetonka, MN, currently offers corn-based bioplastics. Cereplast is a company from El Segundo, CA that offers resins made from corn, wheat, tapioca and potatoes.

S.A.B. Manufacturing’s potential exit valuation, using Archer Daniels Midland as our benchmark (P/E of 11), is $20 million. The outside investors will therefore receive a 13 times return on investment (refer to Appendix Q for further details).
Summary

S.A.B. Manufacturing founders are committed to making their green and innovative vision a reality. We will launch the company in April 2012 with personal investment totaling over $100,000. These initial funds will enable S.A.B. Manufacturing to license the patent from the University of Arizona, apply for government grants, and file a patent application for our unique way to make bioplastic.

S.A.B. Manufacturing seeks $450,000 from outside investors to start leasing the material to build our algae production system, continue the research and development process on our bioplastic, and begin developing robust, secure customers. S.A.B. Manufacturing will begin operations in April 2012.

S.A.B. Manufacturing’s investors will share the founders’ commitment to using creative and environmentally friendly solutions, optimizing the plastic industry, and earning superior returns on investment as a result. We welcome your questions and look forward to earning your support for the future development of S.A.B. Manufacturing.
Appendices

Appendix A: Management Team Resumes

Sylvia Wade
408 E Radburn Street
Tucson, Arizona 85704
520-808-3494
swade@email.arizona.edu

Qualifications Summary:
Sylvia is determined student with passion for making difference in the green technology field. She is an excellent communicator experienced in sales, organizing projects, and working on teams.

Experience:
03/07-01/08  BC Mortgage, Jr. Loan Officer /Jr. Loan Processor  Tucson, AZ
  • Worked with applicants on Credit building
  • Researched Government Guidelines
  • Assisted Branch Manager with marketing and outreach
  • Assisted Loan Processor with Universal Loan Applications and data input

01/07-12/07  Magnotti Design, Store Manager  Seattle, WA
  • Managed front desk and online store including direct sales
  • Recorded all book keeping and finances
  • Researched antique history and value
  • Implemented in store recycling program
  • Promoted and attended trade shows and events such as Seattle Fashion Week and the 2007 Emmy Award Show

09/04-01/07  School of One Holistic Healing Center, Seattle, WA
Front Desk Associate/Assistant manager
  • Coordinated and scheduled 25 employees
  • Assisted and sold customers on healing modalities and products
  • Helped promote wellness classes

Education:
Eller College of Management:  Tucson, AZ
Business Management and Entrepreneurship
GPA 3.8, expected date of graduation May, 2011

Shoreline Community College  Seattle, WA
Pre Business 08/05-05/07
GPA 3.8

Activities:
  • Volunteer for Junior Achievement  2009- current
  • Member Entrepreneurship Student Association 2009-current
  • President Environmental club at SCC 2006-2007
  • Student Member of the Sustainability Committee SCC 2006-2007

Skills:
  • Skilled in developing business plans and promotional material
  • Proficient in Windows, Office and Excel
  • Competent in Quick Books, Photo Shop and Point software
Brittany Hultstrom

Current Address:  hultstro@email.arizona.edu
1226 East Lee Street
Tucson, Arizona 85719

Permanent Address:  508 728 3320
6919 South Valley Stream Drive
Tucson, Arizona 85757

Education:
The University of Arizona, Tucson, AZ Expected Graduation: May 2011
Eller College of Management, Honors College Major: Marketing, Entrepreneurship
Bachelor of Science in Business Administration GPA: 4.0

Work Experience:
Tucson Rental Homes Marketing Intern Tucson, AZ May 2010-August 2010
- Designed 6 online advertisements to successfully rent long-standing vacant homes
- Provided customer service to over 1,000 customers
- Developed and managed social media pages to utilize innovative marketing techniques

Global Sports Alliance USA (GSA USA) Marketing Intern Tucson, AZ May 2009-August 2010
- Managed advertising for 7 websites recruiting over 150 new members
- Rewrote 15-page educational handbook for local schools
- Arranged event and online fundraising opportunities

GoldenWest Management Marketing Intern Tucson, AZ May 2009-August 2009
- Created online advertisements and 19 promotional fliers for rental properties
- Regularly updated company accounting records

Leadership and Campus Involvement:
Arizona Blue Chip Program Phase IV Member, Team Leader, Marketing Team August 2007-Present
- Taught an hour-long weekly leadership course to 15 elementary school students
- Taught weekly lessons and served as mentor to 17 first-year students creating smooth transition into college
- Wrote 5 promotional articles for Blue Chip Newsletter

Entrepreneurship Student Association, Co-President December 2009-December 2010
- Secured guest speakers, oversaw officers, and planned agenda for meetings with over 100 active members
- Implemented Eller Mentors Program providing educational guidance for pre-business students

Iskash*taa Volunteer, Henna and Threading Team September 2009-December 2009
- Assisted Nepalese refugees in start-up of henna and threading business through marketing and research

Residence Life Eco-Reps Marketing Officer February 2008-May 2009
- Taught 40 Eco-Reps sustainability tips and procedures to bring back and educate all hall council members
- Designed 45 flyers to market club’s events and sustainability information in 22 residence halls
- Conducted sustainability presentations at 2 leadership camps

Ghana Library Project Sponsorship Committee October 2007-May 2008
- Collaborated with local businesses managers to raise $3000 to rebuild library in Africa
- Collected over 1000 books to promote education in village of Anfoega

Skills:
- Microsoft Word, PowerPoint, Excel, Access, Outlook, Project, Publisher
- SPSS Statistics 17.0
ARIANE MASSCHELEIN
arianem1@email.arizona.edu

Current Address: 1307 E. 9th Street #A
Tucson, Arizona 85719
(520) 437-5522

Permanent Address: 19, Rue du Cherbois
6001 Marcinelle, Belgium
(0032) 494-915152

EDUCATION
The University of Arizona, Tucson, Arizona, USA
Bachelor of Science in Business Administration, Accounting and Entrepreneurship Majors, May 2011
Honors Student, GPA: Cumulative 3.8

EXPERIENCE
Tennis player, Belgium Tennis Federation 2003-2007; Univ. of Arizona Women’s Tennis 2007-2010
• Increased cultural awareness, conflict resolution and leadership skills in a team environment
• Developed self-confidence, discipline and work ethic through travel and competition
• Participated in community events and volunteered time to local causes
• Competed in European Championship and represented Belgium in 20+ international competition

Personal Assistant, Doctor Marlene Top, Mont-sur-Marchienne, Belgium, July 2010
• Used Hospinet software to maintain the appointment calendar and office schedule for Dr. Top
• Compiled, organized and maintained accurate, up-to-date confidential patient files
• Managed effectively daily operations and activities of the office
• Performed administrative and secretarial support functions for Dr. Top

Sales Associate, Le Centre Electronique, Charleroi, Belgium, Seasonal 2007
• Developed strong customer service skills through direct customer interactions and relationships
• Used multitasking and time management skills effectively as assigned by the supervisor
• Improved customer satisfaction by creating a friendly environment and providing great services

LEADERSHIP ACTIVITIES
• Women’s tennis team captain; Sept. 2009-May 2010, and participating member; Aug.2007-2010
• Student Athlete Advisory Committee Vice President; Aug. 2009-May 2010, and participating member since Aug. 2008
• C.A.T.S. community service volunteer; Aug. 2007-present
• Step Up! participant, Bystander intervention program; Jan. 2009

AWARDS
• Athletic scholarship, University of Arizona; Aug. 2007 - present
• Pac-10 Leadership Award female winner; Nov. 2010
• Pac-10 All-Academic First Team; 2008, 2009, and Pac-10 All-Academic Honorable Mention; 2010
• CATS Life skills Initiative award; 2009 and 2010
• Dean’s list; Fall 2007, Fall 2009
• Honorable Mention; Spring/Fall 2008, Spring 2009
• Student-Athlete of the month; Jan. 2008

SKILLS
• Fluent in English, French and proficient in Dutch
• Highly proficient in Windows and Office XP (Word, Excel, Power Point, Access)
• Proficient in developing complete business plan towards commercialization of novel technologies
Appendix B: R&D Team Resumes

CURRICULUM VITAE

Name: Kyndt
First name(s): John Jozef Armand
Date of birth: November 20th, 1975
Nationality: Belgian, Permanent Resident in US
Languages: Fluent in English, Dutch and French.
Basic knowledge of German.
Work address: University of Arizona
1041 E. Lowell St. BioSciences West 434
Tucson, AZ, 85721
Contact: Phone: (520) 901 0794
Email: jkyndt@email.arizona.edu
LinkedIn: www.linkedin.com/pub/john-kyndt/23/897/995

1. Academic degrees
University Degree Year
University of Gent (Belgium) Candidate (Bachelor) in Chemistry 1995
with Honors (cum laude)
University of Gent (Belgium) Licentiate (Master) in Biochemistry 1997
with Honors (magna cum laude)
University of Gent (Belgium) Doctor in Sciences: Biochemistry 2003
with Honors (summa cum laude)
University of Arizona (US) Associates Certificate in Entrepreneurship 2010
McGuire Entrepreneurship Center

2. Experience & Skills
As a Principal Investigator I have been responsible for writing funding applications and overseeing
operations of small lab groups. I have effectively obtained funding from independent agencies and
successfully trained students at the undergraduate and graduate level. Currently, I am working on Algae
for Enhanced Bio-fuel production which gives me a strong background in the alternative energy field.
During my academic years I have developed critical scientific thinking and obtained a strong foundation
in chemistry, microbiology (algae and bacterial cultivation), biochemistry and molecular biology (genetic
manipulation of algae and bacteria for commercial purposes). I have always geared my research towards
solving current problems and providing economically viable, sustainable solutions. My entrepreneurial
management skills are strengthened by a recent degree from the McGuire Entrepreneurship Center
(University of Arizona). My role in that program as CV John Kyndt 2011 2 co-founder and Product
Development and Operations Manager for Reko Global Water has provided me an insight into the
business world. I am experienced in business plan development and basic patent application writing. I
wrote two BP’s for potential start-up companies (in the field of algae for fuel and pharmaceutical
applications, and one in bulk water management) and developed a patent in photobiochemistry.
3. Work Experience

From 03/05/2007 until present:

**Research Assistant Professor** at the University of Arizona, Dept. of Chemistry and Biochemistry, working on a project from the National Institute of Health (GM021222-30) and on a TRIF grant on ‘Algae for enhanced bio-fuel production’. Recently employed on a DOE grant awarded to the National Alliance on Advanced Bio-fuels and Bio-products (NAABB) to perform algae-derived fuel research. As part of continuing education obtained a degree in Entrepreneurship at the McGuire Entrepreneurship Program at the Eller College of Management (University of Arizona). During this program functioned as Product Development and Operations Manager for Reko Global Water.

From 02/01/2006 until 02/28/2007:

**Post doctoral fellow** at the University of Gent in the lab of Prof. S. Savvides (Dept. of Protein Biochemistry and Protein Engineering). Working on purification and crystallization of proteins from thermophilic bacteria, supported by grant IWT50191 from the IWT Flanders.

From 04/01/2003 until 01/20/2006:

**Post-doctoral Research Associate** in the laboratory of Prof. Michael A. Cusanovich (University of Arizona, Dept. of Biochemistry and Molecular Biophysics) on a project from the National Institute of Health (NIH, grant GM66146 to M.A.C.).

From 02/01/1998 until 03/31/2003:

**PhD student** at the University of Gent in the laboratory of Prof. J. Van Beeumen (Dept. of Protein Biochemistry and Protein Engineering). This work was funded by the Concerted Research Action grant no. 120C0198 of the University of Gent.

4. Awards

- 'Outstanding Student in Biochemistry Award’ (1997), donated by the biotech company Innogenetics.
- ‘Stevie Eller Enterprise Creation Scholarship’ (2009-2010) awarded by the McGuire Center for Entrepreneurship, Eller College of Management at the University of Arizona.
- '2010 Hearst Foundation Experiential Learning Advancement Fund Award' through the McGuire Center for Entrepreneurship, Eller College of Management at the University of Arizona.
- Faculty Seed Grant (2010) awarded by the University of Arizona Foundation.  *CV John Kyndt 2011 3*

5. Patents


6. List of Publications


Randy Ryan

Agricultural Experiment Stations
College of Agriculture and Life Sciences
University of Arizona
Tucson, Arizona 85721

EDUCATION: Master of Science, Department of Botany and Microbiology, Arizona State University, 1984.
Bachelor of Science, Microbiology, Arizona State University, 1981.

PROFESSIONAL EXPERIENCES:
1999- Present Assistant Director, Agricultural Experiment Stations, College of Agriculture and Life Sciences, University of Arizona, Tucson Arizona
1999-Present Lecturer College of Sciences University of Arizona, Tucson, Arizona
1990-1999 Facilities Analyst, College of Agriculture, University of Arizona, Tucson, Arizona
1992-1998 Lecturer Agriculture Education University of Arizona, Tucson, Arizona
1989- 1995 Research Specialist, Plant Science Department, University of Arizona
1985- 1989 Senior Research Technician, Department of Botany, Purdue University, West Lafayette, Indiana.

PUBLICATIONS:

GRANTS:


Production of Biochar by Pyrolysis of Sweet Sorghum. 2006-2009 Bureau of Reclamation and Arizona Public Service $120,000.

Development of Sweet Sorghum for ethanol production 2008. San Carlos Tribe $40,000.

Established Arid Lands Center for Bioenergy 2008.

Production of Biochar by Pyrolysis of Sweet Sorghum. 2006-2009 Bureau of Reclamation and Arizona Public Service $120,000.

National Alliance for Advanced Bio-fuels and Bio-products-2010 Co-PI with Pete Waller on Raceway management $100,000.

Sweet Sorghum development for the Arid Land Agriculture (coPI) DOE-2010 Biomass utilization $750,000.

Algae Raceway Integrated Design (ARID) system Development PetroSun 2010- $3,400,000.

**Patents**

ARID -Algae Raceway Integrated Design (2010 Submitted)

**Major Projects:** Marley Building Construction Phase I 1990-1992 $17 Million
Turfgrass Research Center Phase I 1990-1991 $2 million
Cairo Egypt Biocontainment complex 1989-2001 $1 million
Veterinary Diagnostic Lab 1990-1992 $8 million
Turfgrass Research Center Phase II 1994-1995 $1 million
Agriculture Research Complex Phase I 1993-1995 $4 million
V-V ranch facilities $500,000 1996-1998
Shrimp Pathology Facility 1993-1995 $500,000
Controlled Environment Ag 1993-1995 $2.5 million
Herring Hall Renovation 2002-2004 $2.5 million
Agriculture Research Complex Phase II 2000-2003 $5 million
6th St Biocontainment GH complex 2003-2005 $4 million
Keating Building 2003-2007 $67 million
USDA greenhouse complex 2002-2007 $2.5 million
Red Rock Ag Center 2005-2009 $4 million
McClellan Park 2005-2009 $27 million
Groseta Education Center (design only) 2005-2006 1.7 million
Yuma Ag Center 2006-2009 $8 million
Renovations Univ. of AZ campus 1989-present $20 million
ENRB building on hold 2007-presently $90 million
Peter Waller

Employment history

**CHRONOLOGY OF EDUCATION**

Ph.D. in Agricultural Engineering (6/89 - 8/92)
University of California at Davis, Davis, CA 95616
Dissertation: *Reducing Off-target Contamination by Improving Chemigation Uniformity*
Major Advisor: Dr. David J. Hills, Professor and Department Head

M.S. in Agricultural Engineering (1/87 - 6/89)
University of California at Davis, Davis, CA 95616
Thesis: *Salinized Swelling Clay Field Soils*
Major Advisor: Dr. Wesley W. Wallender, Professor

B.S. in Agricultural Engineering
University of California at Davis, Davis, CA 95616 (9/79 - 9/81)
American River Junior College, Sacramento, CA (9/76 - 6/79)

Major Fields: Irrigation, Drainage and Water Quality

**CHRONOLOGY OF EMPLOYMENT**

1/94-Present  Assistant Professor
Department of Agricultural and Biosystems Engineering
The University of Arizona, Tucson, Arizona

8/92-12/93  Postdoctoral Research Associate
USDA-ARS National Soil Tilth Laboratory
Ames, Iowa

1/87-6/92  Research and Teaching Assistant
Department of Agricultural Engineering
University of California at Davis, Davis, CA

8/83-6/85  Irrigation System Sales Engineer
Bleyhl Farm Service, Sunnyside, WA
Appendix C: Rising Corn Prices

![Graph showing food inflation with emphasis on agricultural corn and wheat. Source: CNN]

Appendix D: Regulations

- 16 CFR 260

The plastic industry is subject to regulations such as section 16 (part 260) of the U.S. Code of Federal Regulations. This regulation states that a company may not misrepresent a product and claim that it is biodegradable without proper scientific testing and evidence. The same regulation is applied to claims that a product is compostable. S.A.B. Manufacturing will perform the testing needed to meet this regulation.

- ASTM D6400

The American Society for Testing & Materials created the ASTM D6400 regulation titled “Standard Specification for Compostable Plastics”. This requires that 60% of the product must biodegrade within 180 days. Because this is not as strict as the European 90% requirement in 180 days it will make the United States a much easier market to enter.

- Compostable Criterion

ASTM considers a plastic “compostable” only if it can meet the following requirements:

1. Biodegrades in the same amount of time as cellulose (paper)
2. Disintegrates so that the plastic is no longer visible in the compost
3. The biodegraded compost is not toxic and can be utilized for plant growth

CreoGreen™ will undergo the needed tests to meet these standards.
Appendix E: Algae Advantages

<table>
<thead>
<tr>
<th></th>
<th>Algae</th>
<th>Crops (i.e. corn/soy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Land Required</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>No Arable Land Needed</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Less Water Required</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Grown with Salt or Fresh Water</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Faster Growth Rate</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Versatile Product Use</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Continuous Growing Season</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Does Not Deplete Food Supply</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Appendix F: Letter of Intent

Plastic Ingenuity
1017 Park Street
Cross Plains, Wisconsin 53528

March 7, 2011

S.A.B. Manufacturing
1130 East Helen Street
Tucson, Arizona 85721

Sub: CreoGreen™ Algal Plastic

Dear Ms. Wade:

The following outlines the agreements made between Plastic Ingenuity and S.A.B. Manufacturing regarding the purchase of CreoGreen bioplastic. The terms below are negotiable and will be incorporated into a formal agreement to be negotiated at a later date.

1. Purchaser: Mr. Jeff Sweeney
2. Vendor: Sylvia Wade, S.A.B. Manufacturing
3. Product: CreoGreen™ bioplastic
4. Purchase Offer: 48,000 pounds of CreoGreen™ for $144,000
5. Payment Setup: Monthly payment of $12,000
6. Agreement Timeline: March 2012-March 2013
7. Additional Points: This letter of intent clearly states the major terms of the agreement that the Purchaser is prepared to move forward with. This letter of intent is in no way a legally binding agreement between the Purchaser and the Vendor, and is conditional depending upon the transaction.

Sincerely,

Jeff Sweeney
Sales, Plastic Ingenuity
Appendix G: Product Adoption Curve

![Product Adoption Curve]

Source: http://maloneyonmarketing.com/2010/05/10/the-secret-to-accelerating-diffusion-of-innovation-the-16-rule-explained/

Appendix H: Production Capacity

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>1</td>
<td>10</td>
<td>25</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td># of Raceways</td>
<td>10</td>
<td>100</td>
<td>250</td>
<td>500</td>
<td>1,000</td>
</tr>
<tr>
<td>Lbs Algae/Day</td>
<td>770</td>
<td>7,700</td>
<td>19,300</td>
<td>38,600</td>
<td>77,200</td>
</tr>
<tr>
<td>Tons Algae/Day</td>
<td>128</td>
<td>1,300</td>
<td>3,200</td>
<td>6,400</td>
<td>12,800</td>
</tr>
<tr>
<td>Lbs PLA/Year</td>
<td>48,200</td>
<td>481,600</td>
<td>1,204,000</td>
<td>2,408,000</td>
<td>4,816,000</td>
</tr>
<tr>
<td>Lbs PLA/Month</td>
<td>4,000</td>
<td>40,000</td>
<td>100,000</td>
<td>200,000</td>
<td>400,000</td>
</tr>
</tbody>
</table>
Appendix I: Production Schedule Years 1-5

<table>
<thead>
<tr>
<th>Year</th>
<th>Acres</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>1</td>
<td>4,000</td>
</tr>
<tr>
<td>Year 2</td>
<td>10</td>
<td>40,000</td>
</tr>
<tr>
<td>Year 3</td>
<td>25</td>
<td>100,000</td>
</tr>
<tr>
<td>Year 4</td>
<td>50</td>
<td>200,000</td>
</tr>
<tr>
<td>Year 5</td>
<td>100</td>
<td>400,000</td>
</tr>
</tbody>
</table>
Appendix J: Top Competitors in the Algal Bioplastic Industry

<table>
<thead>
<tr>
<th>Company</th>
<th>Material</th>
<th>Source</th>
<th>Headquarters</th>
<th>Total Firm EBITDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereplast</td>
<td>Cereplast Compostables®</td>
<td>PLA (soy, wheat, potatoes, corn, algae)</td>
<td>El Segundo, CA</td>
<td>(5.64)M</td>
</tr>
<tr>
<td>Petro Sun</td>
<td>TBD</td>
<td>Algae</td>
<td>Phoenix, AZ</td>
<td>(1.34)M</td>
</tr>
<tr>
<td>Dow Chemicals</td>
<td>TBD</td>
<td>Algae</td>
<td>Midland, MI</td>
<td>5.85 B</td>
</tr>
<tr>
<td>Soley Biotechnology Inst</td>
<td>TBD</td>
<td>Algae</td>
<td>El Sobrante, CA</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Appendix K: Licensing the Intellectual Property from the University of Arizona

The ARID Raceway System created by Randy Ryan, M.S., and Dr. Peter Waller, is the property of the University of Arizona. We discussed the licensing issues with Randy Ryan in one of our many meetings. We also contacted the Office of Technology Transfer (OTT) to talk about the possibilities of licensing the technology in the near future. Below is a copy of the email from the OTT department.

From: Christopher Snyder [mailto:csnyder@ott.arizona.edu]
Sent: Wednesday, April 06, 2011 11:05 AM
To: S.A.B. Manufacturing
Cc: rryan@ag.arizona.edu; Patrick L. Jones
Subject: RE: Algae Licensing

S.A.B. Manufacturing,

We would need to discuss your start-up plans in some detail to figure out if a license makes sense. There are possibilities for an option agreement while you raise funding to get off the ground (which would then be converted to a license once you had some financing in place). We would also need to have the inventors’ blessing for a deal like this. The reason being that even a limited field of use license makes the rights “imperfect”. Imperfect rights reduce the likelihood of obtaining another licensee (and thus research support). So any way you look at it the university, and especially the inventors, would essentially be placing a bet with your start-up that may make it more difficult for them from getting support from other private sources.

With regard to expenses...
We would have to figure out expenses and royalties after a more detailed discussion. Typically, we try not to weigh down start-ups with excessive up-front fees and, instead, rely on the royalties and warrants to result in payment on the back end. The two big things you would have to worry about on the front end are the sponsored research agreement and prior patent costs. It was always planned that a license...
of this technology would be accompanied by sponsored research to further development of the raceway within the university. Presumably the raceway would have to be developed further to suit your business purposes anyway. As I understand it, the raceway is optimized for biomass production right now. At minimum you would need to fund research to optimize it for lipid production. The other upfront expenses that could not be mitigated are prior patent expenses. The university is obligated by law to recoup expenses in any license agreement we do. To date, the university has spent $15,596.45 patenting this technology. That sum would have to be paid up front upon execution of the license.

I would suggest the following:
Show me your detailed business plan for how you plan to take this to market. I can point out the things I will be paying particular attention to if you would like to alter your existing business plan to address those concerns. In the meantime, I will talk to the inventors and some other people in the office and see if there is interest in licensing this to a student start-up.

Thanks for getting in touch!

Christopher Snyder
Licensing Associate
Green and Sustainable Technologies
Appendix L: Partial List of Tradeshows

<table>
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<tr>
<th>Event</th>
<th>Location</th>
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<tr>
<td>Bio-plastics: Reshaping an Industry</td>
<td>Las Vegas, NV, USA</td>
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<tr>
<td>Plastec West 2011: Pacific Design &amp; Manufacturing</td>
<td>California, CA, USA</td>
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<tr>
<td>Sustainability in Packaging</td>
<td>Orlando, FL, USA</td>
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<td>Plastics in Medical Devices 2011</td>
<td>Huron, OH, USA</td>
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<tr>
<td>Green Plastics Manufacturing</td>
<td>Lowell, MA, USA</td>
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<tr>
<td>The Plastics Industry Strategy Seminar 2011</td>
<td>Philadelphia, PA, USA</td>
</tr>
<tr>
<td>Pack Expo 2011</td>
<td>Las Vegas, NV, USA</td>
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<tr>
<td>Interpack Processes and Packaging 2011</td>
<td>Germany, EU</td>
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<tr>
<td>6th European Bio-plastics Conference 2010</td>
<td>Germany, EU</td>
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Appendix M: List of Publications and Organizations

Publications:
- Plasticnews.com
- Flow Control
- Rubber and Plastic News Magazine
- Green Solutions Magazine
- Algae Industry Magazine
- Biomass Magazine
- Renewable Energy World Magazine

Organizations:
- National Association for Advancing Bio-fuels and Bio-products NAABB
- SPI Bioplastics Counsel
- Biodegradable Products Institute
- Algae Biomass Organization
Appendix N: Production Process

To produce our algae-based plastic we first harvest the algae we grow in the algae production system known as the ARID System. We dewater the algae to obtain an algae paste and ferment that harvested paste material. The starch in the algae is converted to lactic acid and by using the catalyst hydrogen chloride we then convert the lactic acid into lactide. Using stannous octoate we polymerize the lactide to form poly-lactic acid. From beginning to end, roughly 60 percent of the algae starch is converted into poly-lactic acid.
Appendix O: Financial Statements

Assumptions:
- 2% return and allowance for doubtful accounts
- Payroll taxes of 7.65%
- Employee Benefits of 10%
- Income Tax Rates of 35% for Federal taxes and 6.97% for State taxes
- Receivable collection: 50% at time of sale and 50% in 30 days
- Inventory lead time: 50% just in time and 50% in 30 days

### Balance Sheet

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<tr>
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<tr>
<td>(less accumulated depreciation)</td>
<td>(13,745)</td>
<td>(28,739)</td>
<td>(44,192)</td>
<td>(77,103)</td>
<td>(111,597)</td>
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<td>566,737</td>
<td>1,018,609</td>
<td>1,999,872</td>
<td>3,699,191</td>
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</table>

| **LIABILITIES AND MEMBERS' CAPITAL** |     |     |     |     |     |
| **Liabilities** |     |     |     |     |     |
| **Current Liabilities** |     |     |     |     |     |
| Accounts Payable | - | - | - | - | - |
| Other Current Payables | - | - | - | - | - |
| Pre-Existing Debt | - | - | - | - | - |
| Current Portion of L-T Debt | - | - | - | - | - |
| **Total Current Liabilities** | - | - | - | - | - |
| **Long-Term Debt** | - | - | - | - | - |
| **TOTAL LIABILITIES** | - | - | - | - | - |
| **Members' Capital** |     |     |     |     |     |
| Members' Paid-In Capital | 550,000 | 550,000 | 550,000 | 550,000 | 550,000 |
| Undistributed Members' Earnings | (187,333) | 16,737 | 468,609 | 1,449,872 | 3,149,191 |
| Less: Members' Interest Repurchased | - | - | - | - | - |
| **Total Members' Capital** | 362,667 | 566,737 | 1,018,609 | 1,999,872 | 3,699,191 |
| **TOTAL LIABILITIES AND MEMBERS' CAPITAL** | 362,667 | 566,737 | 1,018,609 | 1,999,872 | 3,699,191 |
# Income Statement

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<tr>
<td>Before Interest and Taxes</td>
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<td>216,175</td>
<td>778,687</td>
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**Monthly Income Statement Until Profitable**

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<td>(15,862)</td>
<td>(16,861)</td>
<td>(16,361)</td>
<td>(16,361)</td>
<td>(16,361)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
</tr>
<tr>
<td><strong>INTEREST EXPENSE</strong></td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>PROFIT (LOSS) BEFORE TAXES</strong></td>
<td>(15,862)</td>
<td>(16,861)</td>
<td>(16,361)</td>
<td>(16,361)</td>
<td>(16,361)</td>
<td>(16,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
<td>(14,861)</td>
</tr>
<tr>
<td><strong>DISTRIBUTION FOR TAXES</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>EBITDA</strong></td>
<td>(15,862)</td>
<td>(15,612)</td>
<td>(15,112)</td>
<td>(15,112)</td>
<td>(15,112)</td>
<td>(13,612)</td>
<td>(13,612)</td>
<td>(13,612)</td>
<td>(13,612)</td>
<td>(13,612)</td>
<td>(13,612)</td>
<td>(13,612)</td>
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</table>
## Cash Flows Statement

<table>
<thead>
<tr>
<th>Year</th>
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<th>2</th>
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<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td><strong>CASH FLOWS FROM OPERATIONS</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Net income</td>
<td>(187,333)</td>
<td>204,070</td>
<td>451,872</td>
<td>981,264</td>
<td>1,699,319</td>
</tr>
<tr>
<td>Adjustments to reconcile net income to cash flows from operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Depreciation</td>
<td>13,745</td>
<td>14,994</td>
<td>15,453</td>
<td>32,911</td>
<td>34,494</td>
</tr>
<tr>
<td>Changes in certain assets and liabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>(5,000)</td>
<td>(43,000)</td>
<td>(67,000)</td>
<td>(110,000)</td>
<td>(175,000)</td>
</tr>
<tr>
<td>Inventory</td>
<td>(11,409)</td>
<td>(17,255)</td>
<td>(24,641)</td>
<td>(37,133)</td>
<td>91,765</td>
</tr>
<tr>
<td>Other current assets</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other current payables</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pre-existing debt</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL CASH FLOWS FROM OPERATIONS</strong></td>
<td>(189,997)</td>
<td>158,810</td>
<td>375,684</td>
<td>867,042</td>
<td>1,650,578</td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM INVESTING ACTIVITIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase of equipment</td>
<td>(84,500)</td>
<td>-</td>
<td>(3,500)</td>
<td>(100,000)</td>
<td>-</td>
</tr>
<tr>
<td>Other Assets</td>
<td>(41,500)</td>
<td>(13,500)</td>
<td>(22,500)</td>
<td>(37,500)</td>
<td>(75,000)</td>
</tr>
<tr>
<td><strong>TOTAL CASH FLOWS FROM INVESTING ACTIVITIES</strong></td>
<td>(126,000)</td>
<td>(13,500)</td>
<td>(26,000)</td>
<td>(137,500)</td>
<td>(75,000)</td>
</tr>
<tr>
<td><strong>CASH FLOW BEFORE FINANCING</strong></td>
<td>(315,997)</td>
<td>145,310</td>
<td>349,684</td>
<td>729,542</td>
<td>1,575,578</td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM FINANCING ACTIVITIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrowing of long-term debt</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Repayment of long-term debt</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>CASH FLOW BEFORE MEMBERS’ CONTRIBUTIONS</strong></td>
<td>(315,997)</td>
<td>145,310</td>
<td>349,684</td>
<td>729,542</td>
<td>1,575,578</td>
</tr>
<tr>
<td>Members’ Capital Contributions</td>
<td>550,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Members’ Interest Repurchased</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL CASH FLOWS FROM FINANCING ACTIVITIES</strong></td>
<td>550,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>NET CASH FLOWS</strong></td>
<td>234,003</td>
<td>145,310</td>
<td>349,684</td>
<td>729,542</td>
<td>1,575,578</td>
</tr>
<tr>
<td><strong>CASH, BEGINNING OF PERIOD</strong></td>
<td>-</td>
<td>234,003</td>
<td>379,312</td>
<td>728,996</td>
<td>1,458,538</td>
</tr>
<tr>
<td><strong>CASH, END OF PERIOD</strong></td>
<td>234,003</td>
<td>379,312</td>
<td>728,996</td>
<td>1,458,538</td>
<td>3,034,116</td>
</tr>
</tbody>
</table>
Appendix P: List of Government Grants

- Environmental Sustainability - National Science Foundation
- Energy for Sustainability - National Science Foundation
- Sustainable Leadership Management and Governance RFA - Agency for International Development
- Sustainable Skylines Initiative - Environmental Protection Agency
- Science of Science and Innovation Policy - National Science Foundation
- Economic Development Assistance Programs - Economic Development Administration
- Environmental Engineering - National Science Foundation
- Instrumentation for Materials Research - National Science Foundation
- Chemistry and Materials Research at the Interface between Science and Art - National Science Foundation
- Engineering Research Centers - National Science Foundation
- Chemical Synthesis - National Science Foundation
- Environmental Chemical Sciences - National Science Foundation
- CO2 Utilization - National Energy Technology Laboratory
- Request for Information Solar Demonstration Zone Project - Golden Field Office
- Photovoltaic Manufacturing Initiative - Golden Field Office
- Biomass Research and Development Initiative - Golden Field Office
- Annual Phase 1 Small Business Innovation Research Small Business Technology Transfer Funding Opportunity Announcement - Chicago Service Center
- Plant Feedstock Genomics for Genomics for Bioenergy: A Joint Research Funding Opportunity Announcement USDA, DOE - Chicago Service Center
- Renewal-Supplemental Applications for the Office of Science Grants and Cooperative Agreements - Chicago Service Center
## Appendix Q: Company Valuation

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<tr>
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<th>Series A</th>
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</thead>
<tbody>
<tr>
<td>Pre-money</td>
<td>$ -</td>
<td>$ 1,000,000</td>
</tr>
<tr>
<td>Founders' investment</td>
<td>$ 100,000</td>
<td>$ -</td>
</tr>
<tr>
<td>Outside investment</td>
<td>$ -</td>
<td>$ 450,000</td>
</tr>
<tr>
<td>Post-money</td>
<td>$ 100,000</td>
<td>$ 1,450,000</td>
</tr>
<tr>
<td>Share price</td>
<td>$ 1</td>
<td>$ 10</td>
</tr>
<tr>
<td>Founders' shares</td>
<td>100,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Investors' shares</td>
<td>0</td>
<td>45,000</td>
</tr>
<tr>
<td>Total shares</td>
<td>100,000</td>
<td>145,000</td>
</tr>
<tr>
<td>Founders' ownership %</td>
<td>100%</td>
<td>69%</td>
</tr>
<tr>
<td>Investors' ownership %</td>
<td>0%</td>
<td>31%</td>
</tr>
<tr>
<td>Total Ownership</td>
<td>100%</td>
<td>100%</td>
</tr>
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</table>

**Return On Investment**

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Total Outside Investment</td>
<td>$ 450,000</td>
</tr>
<tr>
<td>Exit Value (benchmark P/E = 11)</td>
<td>$ 18,692,509</td>
</tr>
<tr>
<td>Share price at exit</td>
<td>$ 129</td>
</tr>
<tr>
<td>IRR</td>
<td>66.75%</td>
</tr>
<tr>
<td>ROI</td>
<td>13</td>
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</tbody>
</table>
Thank you for your support.