

ExpressCells: Genetically-Engineered Cell Lines to Support Better Science



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CEOCFO: *Mr. Handel, what was the vision when you started ExpressCells? Where are you today?*

Mr. Handel: When we started ExpressCells it was two of us; myself and Oscar Perez-Leal, MD, who is the inventor of the technology. He is a professor at Temple University. We had actually worked together previously on a different company, one that was trying to develop therapeutics. When he came to me and proposed that we should start this company, the vision was not to create the next therapeutic, but to help the people who were doing so, to provide the tools. The phrase that we use is, “Instead of mining for gold, we will sell the picks and shovels.”

Our vision was to create a company that could be small, that could take a technology that looks very promising, and quickly convert it into something that allowed us to sell to customers and to help them prove their own experiments. We formed the company in September of 2018, just two people with a plan. It took about a year to get fully funded and here we are five months later, after funding. We have a fully operational company. We have an operating lab. We have a staff. We are commercializing our product and it is just amazing to see everything that the team has been able to accomplish, really in a very short period of time!

CEOCFO: *Would you tell us about your product line?*

Mr. Handel: We are a genetic engineering company, but like I said, we are not focused on therapeutics. We are creating knock-in cell lines for researchers to use as tools. What do we mean by that? There are many ways of genetically editing cells. You can remove genes; that is a knock-out. You can do a mutation within a gene itself, that is a point mutation.

A knock-in is exactly what it sounds like: you are inserting a gene into a cell line.

Our first products are focused around visualization; we knock-in genes that code for fluorescent or bioluminescent proteins. Why do that? So scientists can visualize what they are doing, rather than having to repeat experiments or spend quite a bit of money on expensive assays. By inserting genes that code for these proteins, they can do live cell imaging and see what their experiment is doing in real time. That allows scientists to save money—and time. It lets them get better results, which I think is really what we hope that they achieve with the products we are selling.

CEOFCO: *Is this being done by other people? Is this a brand new way of approaching the problems?*

Mr. Handel: That is an excellent question. People have been knocking in genes for years. There are other companies that do that, but there are some problems. Some of the older technologies are fairly inefficient, so it requires an extensive amount of time to be able to transfect, which is the scientific term for inserting a gene into the cell line. Then you need to make sure you have a pure cell line. It is not just about inserting a gene, but then eliminating all of the cells where the gene did not get inserted.

There is also the issue of complexity. Most technologies, because they take so long and because they are disruptive to the cells, permit maybe one or, at most, two genetic insertions. Our technology allows us to do multiple insertions fairly easily and we have a number of cell lines where we have knocked-in three genes that code for different fluorescent proteins. If you look at our website you can see different parts of cells glowing in red, green and blue; this allows a very complicated experiment.

CEOFCO: *You have a patent pending with FAST-HDR Plasmid Vector System. Would you explain the technology that allows you to do this?*

Mr. Handel: The best way to describe it, in laymen's terms, is that we trick the cell into inserting the gene for us. That is because every cell in a living creature has the ability to repair cuts in its DNA. If we did not have the capability, we would not be able to survive. We leverage that with our technology. We use CRISPR, a commonly used molecule, to cut into the genome. We find a specific place where we want to cut and CRISPR is the scissor that makes that cut. The cell reacts to the injury to the genome by trying to put the two ends back together. That is where our technology really stands out. We take the DNA that we want to insert, we put it in a small free-floating bit of DNA called a plasmid, and we design the edges of the plasmid to match where the cut took place. In a sense, it is like a jigsaw puzzle. The plasmid matches the piece that fits in the cut. It required novel thinking and an extensive amount of scientific work to develop.

CEOFCO: *What has been the response from the scientific community?*

Mr. Handel: We have only been out on the market a couple of months, but we are getting a lot of very positive feedback. One example: the paper for this technology is now in pre-print, which means it is online for review. We have been getting very positive comments. When we meet with potential customers we are also receiving positive comments. That makes us very hopeful that we will build a customer base who can be references.

CEOCFO: *Would there be a specific product for whatever a customer is looking for or is it more generalized?*

Mr. Handel: It is actually both. Let us start with the generalized approach, which is creating cell lines for our catalog. They are on our website now and you can go and buy one now. We are taking these fluorescent proteins and are attaching them to commonly-studied parts of a cell. Your readers are probably familiar with the cell nucleus. We have a cell line available where we have knocked-in a gene that causes a protein in the nucleus to glow red, so you can see the nucleus very clearly. We have other cell lines where we have tagged other parts of the cell. Those are general products that are currently available to anyone who has a lab to which we can deliver the cells.

Our other product offering are customized projects. Imagine you are a pharmaceutical company doing research on a new target for cancer. You have developed a specific molecule that targets a specific protein in the cell. Your hope is this might treat that type of cancer. Before you can start trials in animals, you need to confirm the activity of this new molecule. We can knock-in a gene that will tag that target protein and make it glow green, red or blue. When the scientists are running their experiments, they can watch their drug in real time and say, "Wow! Did that turn off the protein, did it turn on the protein, did it make the protein multiply?" Before, it may have taken several months of experimentation using a fair amount of chemical assays to figure out what was going on. Now, scientists can see the results of their experiments as they are happening!

CEOCFO: *You have attended a couple of conferences recently. How do you stand out when you are among so many companies and so many new ideas?*

Mr. Handel: It is always hard to stand out. These conferences tend to be very crowded. Some of them have hundreds, if not a thousand exhibitors. We have learned a couple of things that really help us. The first is visuals work. Our first products are ones that you can see and we leverage that quite heavily. You do not want to have a wall of words up for customers to look at. We are showing videos of our cell lines and of actual experiments that people have conducted using cell lines. That catches customer's eyes, which is so, so important.

The second lesson is that we cannot be passive. If we are going to a conference, we want to reach out to people in advance to let them know that we will be there. It is really no different than any other business. Yes, You can wait for the customers to come to you, but successful businesses go to the customers as well. We want them to know that we will be there; we want them to know that they can come see us.

The third thing we leverages my partner and cofounder, Oscar Perez-Leal. Whenever possible, we ask him to present the technology at conferences. It is not just that you can hear his passion for what he has developed and learn more about the technology, but the real value is when he has a conversation—a scientist to scientist conversation. Our customers are scientists and they want to hear from the person who developed it and he can explain, quite eloquently, how our technology can benefit his peers.

CEOCFO: *What did you learn along the way that may have surprised you?*

Mr. Handel: This should not have been a surprise, but it always is: everything takes longer than you hoped. Things do not always go right the first time or there is just a lot of effort required to move things along. Therefore, the biggest lesson is you need to be patient. We are very excited about the technology, but it takes time to build a lab, it takes time to raise money, it takes time to put together a website, etc. That is, for me, always the biggest lesson.

CEOCFO: *What is your funding situation today?*

Mr. Handel: We completed our Series A last year. We raised \$1.2 million. Our Series A was oversubscribed by twenty percent. Now that the company is up and running, we are kicking off the Series B, where we plan to raise \$3 million.

CEOCFO: *Is there an entrenched marketplace you are going up against or is it pretty fragmented so you have a better chance of people jumping on board?*

Mr. Handel: We believe it is fragmented. There are a number of companies that can do different types of genetic engineering. Some focus on one area, others are more broad in approach. However, what we find, especially when it comes to custom projects, is that there rarely a situation where customers who are working with only one company or are completely tied to one company. We feel that there is a good amount of opportunity. The analogy I use is buying an automobile. There are some people who will buy from the same car dealer time after time again. However, for most people, when they need a new car there is a specific situation that has changed. The person who wanted to buy a two-seat convertible in their twenties is looking for an SUV in their thirties. That means that they will probably, each time, take a deliberate approach and identify who the best provider is. We believe that we can leverage that.

CEOCFO: *What has been the response in different parts of the world? Do you find the same response wherever you go or are there other variations?*

Mr. Handel: We have primarily been focused in the United States, so most of our work, right now, has been done in the United States, especially commercially. That being said, the internet is global. You can go to our website from anywhere in the world and we have gotten requests from a number of countries. What holds us back is not the science, but an issues such as intellectual property. That is why we have filed patents in each major marketplace.

CEOCFO: *Do you need to maintain an inventory of the generalized products or are you able to produce on demand?*

Mr. Handel: That is a good question. For generalized products, we do maintain an inventory, but it is not that complicated. When we ship a product out, we are shipping a test tube in a shipper that maintains a deep freeze. The good news is that they do not take up a lot of space, so we do try to maintain a small inventory.

CEOCFO: *Is there a shelf life?*

Mr. Handel: When cells are frozen, they should be able to last indefinitely. We will continue to check our cell lines periodically to make sure that they are maintaining the viability.

CEOCFO: *What is your strategy for the next year or so?*

Mr. Handel: Our strategy is straightforward. We want to start gain initial customers, build our reputation with them, and use the Series B to allow us to grow. We are in a very good position right now. People can find us on the internet. We are doing significant promotion. The next step in our strategy is to bring on sales resources. Right now, we are looking at manufacturer's reps, but we also want to find other resources and grow our capacity to produce more.

CEOCFO: *What, if anything, might someone miss when they first look at ExpressCells?*

Mr. Handel: I think what they might miss is the full range of our capabilities. While our initial focus has been on knock-in genes that help scientists visualize their experiments, we can insert other types of genes as well. The breadth of potential applications is wide and that is why we are always willing to have a conversation with customers. This is a custom business, which means we don't want to be limited to one solution that we sell to everyone. Our goal is to have a solution that can work for you. That is why we consult with our customers. We are always looking for ways we can put together a proposal that can help them succeed.

CEOCFO: *Why is ExpressCells an important company?*

Mr. Handel: We are helping the scientists who want to help people. Most of our customers are scientists in the pharma and biotech world who are trying to solve major health issues across the world. What we want to do is to help them do so faster, more efficiently, and hopefully, less expensively.

