

For almost 30 Years, DNASTAR has been Providing Effective Solutions on Desktop Computers for Molecular Biologists and Related Life Scientists - with New Products Enabling the Assembling of Whole Human Genomes in Less Than 24 Hours

**Software
Global
(Private)**



Tom Schwei
Vice President, GM and CFO

BIO:

Tom is currently the Vice President, General Manager and CFO of DNASTAR, Inc., where he has been employed since 2004. DNASTAR is a developer of desktop software solutions for molecular biologists, specializing in sequence assembly and analysis applications. The company has been in business for more than 25 years. Tom has overall day to day responsibility for the business operations, sales and marketing.

Tom has more than 30 years of business experience, including 17 years

working in senior management positions with biotech companies. Tom is a Certified Public Accountant and a graduate of the University of Wisconsin - Milwaukee.

Company Profile:

DNASTAR has been providing software solutions to life scientists and molecular biology researchers for more than 25 years. Using innovative algorithms combined with an easy to use interface, we provide sequence assembly and analysis software solutions to life scientists on their desktop computers to help them address the most complex problems they face. Recent product releases have enabled scientists to assemble whole human genomes on a desktop computer in less than 24 hours. We have assisted researchers in more than 65 countries and we are the most widely used and published sequence analysis software today.

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

CEOCFO: Mr. Schwei, what is DNASTAR?

Mr. Schwei: The company was founded in 1984. I am the CFO, VP, and General Manager. Our mission has stayed pretty much the same in the almost thirty years that we have been in business as it was in the beginning, which is to provide effective solutions on desktop computers for molecular biologists and related life scientists to accomplish their scientific objectives. Our primary focus has been in DNA, RNA, and protein sequence analysis. We have had to evolve as the technologies and tech-

niques have evolved over time in this domain and we have continued to do so and have been successful during that time.

CEOCFO: Would you provide examples of both the simple and more complex services?

Mr. Schwei: Simple things would be things we have been doing for many years. They seem simple today, but actually when they started out being put on the computer they actually weren't so simple. Things like designing primers for experiments. Primers would be segments of DNA that targets specific areas to allow isolation of those areas for further work. Things like virtual automated cloning on a computer, so that scientists can determine "In Silico" how things might look if they do the biological experiment. They can save quite a lot of money on reagents or actually performing the experiment. Prior to doing it, they can see what a cloning experiment might be using a variety of techniques and technologies. We do things like helping them draw plasmid maps, edit sequence, annotate their sequences so that they can put areas of interest to themselves or they can identify areas of interest to other people. That would allow scientists to access databases and grab annotations from those databases and append them to their sequences of interest. Things like that would be the simple traditional molecular biology techniques. As you may or may not be aware, in the last six years or so there has been what has been referred to as a next generation of DNA and RNA sequencing technologies. Companies like Illumina, Life Technologies with its Ion Torrent Instrument, Roche with

its 454 technology; these are all platforms for doing next generation sequencing. What it has done is a lot of the techniques that were used ten and more years ago, it would take millions or even billions of dollars to sequence a whole organism's genome, assemble it, analyze it, and so forth. Today similar work can be done for thousands of dollars and in some cases tens of thousands of dollars and because of the massive volume of data that is generated by these new next generation technologies. From an innovation perspective one of the challenges we have had is can a scientist handle large volumes of data still on a desktop computer. We have been fortunate because computer technology has evolved. Moore's law for example has helped processors evolve and the capacity and capability of desktop computers has grown greatly in this period. However, the volumes of DNA sequence to be handled have grown even faster than that in recent years. Therefore, we have done some things to allow assembly of these genomic and genetic sequences on a desktop computer even at today's massive levels. For example, a whole human genome could be assembled on a desktop computer, using a reference, in about twenty hours. For those who are in this industry that is actually a pretty amazing statistic that they would recognize. A bacterial genome, first we came out of a lab with Dr. Fred Blattner, in 1997 he was the first to sequence the e coli bacterium and it is about one one-thousandth the size of human genome. At that time it was many millions of dollars and many years of work. Today, similar work takes just a few minutes to assemble on a desktop computer. That is really how the domain or the area has evolved. Therefore, our technologies while it seems simple today to do "an assembly" of a bacterial genome, it is actually quite complicated. It has taken a lot of innovation and engineering to get to that point. Other things from an advanced technology perspective would be an area called metagenomics, where someone might scoop up soil or water and say "I wonder what types of organisms I have

floating around in here". They will try to sequence these and then do de novo assembly of as many different organisms that they can in an attempt to recognize what different organisms are in there and then of course what the impact each organism might have. There are pathways down to human cancer genomics that we are headed down that are much more complicated and we are indentifying. We are finding out now it is not just one gene equals one disease it may be some combinations of genes, maybe some intergenic regions of sequence. Therefore, trying to figure out causes of disease and how to treat them and possibly even cure them, that whole domain is obviously very interesting and complicated.

CEO CFO: How much are they looking to technology to predict or give them an idea of possibilities and how much is it looking at previous results?

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Mr. Schwei: I would say that the technologies that are in existence today are allowing scientists to look at things they never could look at before. Therefore, this next generation of DNA sequencing technologies, the industry literally calls that in our domain - next generation sequencing, has really opened up new doors. The first human genome we sequenced a little more than ten years ago. The second one followed a few years after that. Now, there are numerous human genomes being sequenced every day and what happens is that the level of that analysis can now go to a new level. It is not just about what is in one genome, it is how do they compare. How might this population from this part of the world or with this particular disease, compare to this other population that is either healthy or in a different part of the world. Therefore, you get a different level of analysis, maybe a meta analysis that you can have versus just understanding one

organism. I would say most of what is being done is either finer level of detail than was possible before, because we are able to look at much more detailed information on a particular organism or we are able to do comparative genomics across numerous organisms of the same species.

CEO CFO: What is the competitive landscape for technology in this area?

Mr. Schwei: Very competitive, it is very competitive for the sequencing platforms. There was a conference held in February in Marco Island Florida, it is the best next generation sequencing conference in our domain. All the sequencing companies are there and they are giving their talks and trying to draw people to come to them. There are probably seven hundred and fifty maybe even up to a thousand people who attend this conference. On one day, in one of the twenty minute talks, was a speaker from one of what is called the third generation of technologies. There is a technology approach that will use nanopores and allow DNA to come through. This individual held up something that looked like a computer flash drive and said "we have in our lab technology

today that essentially would allow a human sample to be put into a sequencing instrument of this size flash drive, plugged into your computer, immediately begin sequencing, so you don't even have to do purification of the sample. It is just right from blood or skin or whatever; put it into your computer, and it starts sequencing and starts assembling the genomic data." He then went on to speak about how long his individual sequence reads would be and other advantages of his technology which is beyond theoretical it is more in the pilot phase within their company. He predicted that before the end of the year that his technology would be in the market. As a result of that talk that afternoon the three largest public companies in our area; Life Technologies, Illumina, and Pacific Biosciences, on average their stocks dropped four percent. Now that may not seem like a lot but Life Technologies, for example, is a very broad

ranging company but one of the bets of their future is a competing technology. Essentially, the market analysts are saying 'wow' if this new technology is that good it will alleviate the need for some of the current technologies that are there. Therefore, I would say that the sequencing area is very competitive. There is a lot of interest in what is coming next and how it might improve things. From our perspective, we are involved with the software end. It is very competitive as well. The company is not anywhere near the size of the sequencing companies, but there are several, there is a handful of strong competitors and players in our domain. Because it is a growth industry, it attracts new players all the time. Some folks stay and some do not.

CEOCFO: Why should companies use DNASTAR?

Mr. Schwei: We are easy to use software for end user life scientists. One model would be; I will outsource my DNA sequence analysis to some bioinformatics group that might use tools that they can grab off different websites and link them together with different scripting. Another model is; for less than \$5,000 you can get a perpetual license to all the software DNASTAR has. You can use it on your own computer and because it is easy to use and well supported, we have been here for more than twenty-five years, we are not going anywhere, you can trust that we will continue to be here and support this software long term. We believe that the end user scientist is in the best position to know or to recognize important factors when looking at his or her data. If we can provide tools to that scientist that are strong enough and easy enough to use then they are in the best position to glean from their scientific data the most important and pertinent facts and information. We just believe that our longevity speaks to the fact that we are able to find a way to be successful here. We will be here in the future. It is easy-to-use software and it is meant for all life scientists. We think it is at an affordable price range.

CEOCFO: What is the geographic reach for you?

Mr. Schwei: It is global. We sell in more than seventy countries. We are based in Madison Wisconsin. We have about forty employees, but we sell globally, primarily from here. Therefore, we do a fair amount of traveling to reach out to our customers. In today's world with the internet and email it is actually quite easy to support customers effectively globally without having to be in their local market.

CEOCFO: Do your potential customers realize you are more than just DNA, or is that still a challenge for you?

Mr. Schwei: It is a question we face, especially with the company name, DNASTAR. About three years ago we began this initiative into the protein world and that will be one of things we need to do is to convince the world that we are more than just DNA. There are many scientists who think that protein is where the real answers are too many of the health and other biological issues affecting people and other species. Sure you can understand the genomic side, the DNA side, but until you understand what is going on with the proteins you are really not going to have the answers. We feel it is an important part of our future. I do not think we are going to change our company name to be Protein Star. However, I think the market will get there. It is actually not unlike the challenge we faced with next generation DNA sequencing. Because we have been around so long people said "oh yea, I know DNA Star. They do this type of software, this traditional molecular biology software." We had to teach the market that we are much more than that, that we are keeping up with market changes and supporting next generation DNA sequencing as well. I think the protein one will be a similar challenge.

CEOCFO: How do you ensure the user-friendliness of your software?

Mr. Schwei: We test it, test it, test it, and then re-test it. We use beta testers quite often. We solicit feedback from current customers. We truly listen to what they say. One of the most important ways is that we have primarily life scientists employed here at DNASTAR. While we are a small

company, the vast majority of our employees are life scientists. We feel that we can best serve life scientists in that way, by having mostly life scientists here. Our software testers all have at least a bachelor's degree. Several have advanced degrees, masters, PhD's. We really trust our own life scientists; is this "a type" of workflow, is this the way you would think about the experiment or the data flow? Then we also use customers or potential customers. We collaborate with outside parties on new projects and develop software that meets their needs and try to make it general enough that it can meet many people's needs but also specific to certain work flows. That is one of the continuing battles. It is also about "it is easy to use but is it easy to learn". We have decided that support is at least important as how you develop it. Therefore, every week we put out a newsletter that called the Lasergene Weekly. Lasergene is the brand name that we use for our software. In that newsletter is a three to four minute video that supports one of our key work flows. Maybe it is a traditional one like Primer Design or Virtual Cloning. Maybe it is a next generation sequence assembly and analysis one. We keep adding and now we have over one hundred videos that we made. We put them on our website on our library as a resource. They are also on YouTube. Helping people to see how easy it is to use and continuing to just evolve and learn it is part of the magic.

CEOCFO: How is business these days?

Mr. Schwei: It is going well. I think we are buoyed a bit by a very positive market. The genomics area has been very strong with the resurgence due to these next generation technologies, but I think also our strategies and the tactics that we have applied in trying to continue to serve according to our mission and ease-of-use and so forth, we are doing fine. We are continuing to grow nicely in our market and we are profitable.

CEOCFO: Why should investors pay attention to DNA Star today?

Mr. Schwei: We are a model that is a bit different than many other biotech

companies. We were “bootstrapped” by a professor and a computer science student twenty-eight years ago. We never had outside investing. It is not a model that is for everyone; maybe it was a model that at the time made sense. I would argue that it is a model that actually can apply today as well if someone wants to. One of the key components, from a funding perspective, has not only our own profits that we have turned back into investment in our company, but it has been federal grants. In fact I think DNASTAR was one of the first companies ever to get a small business innovation research grant. There are many ways to finance companies. This is just one model and it happened to work out and be successful.

We are not the largest in our industry. However, we have found a niche and a way to be successful without outside financing. It is not that outside financing may not have provided the additional opportunities over time, there have been some of our competitors who have gone public or have been part of public companies. In several cases they are no longer competitors of ours. The software side of it may not be a large enough market to warrant public company financing.

CEOCFO: What should people reading about DNA Star remember most?

Mr. Schwei: We pride ourselves on our innovation in product development and marketing. We try to be nimble, but above all we hold meeting

the customer’s needs as the most important thing, meeting the needs of life scientists. We are driven by our CEO who is a life scientist at heart. It isn’t all about the software, it is about meeting the need, and however you do that. That is a refreshing approach. It is not all about the bottom line or all about any one thing other than are we meeting the current needs in the market of life scientists to help them accomplish their objectives well. Are we helping to advance the state of the art. Those are things that we hold close to us and we try to continue to work on those things.

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