

Now & Next with Jubilant Biosys: We talk with Bob Volkmann, PhD, Founder and Chief Scientific Officer of BioPharmaWorks



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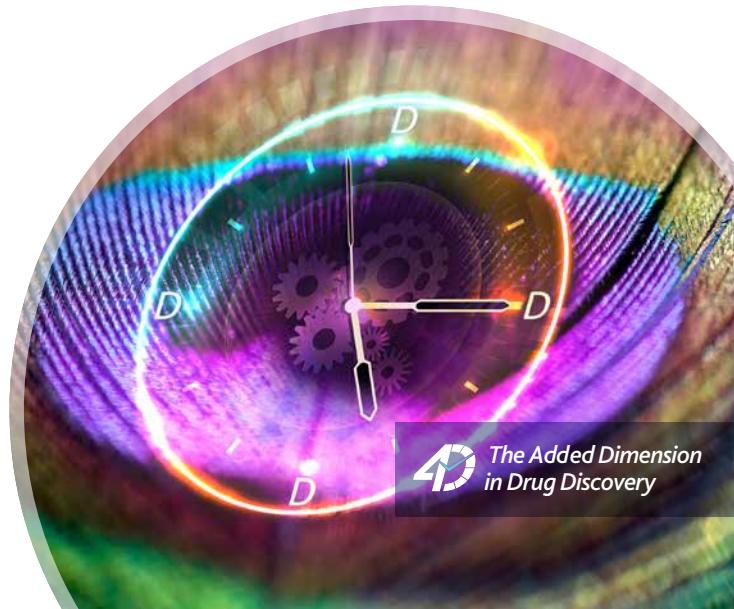


Bob Volkmann
BioPharmaWorks

Saurabh Kapure, Vice President, Business Development, USA for Jubilant Biosys, recently sat down with **Bob Volkmann**, PhD, Founder and Chief Scientific Officer, at BioPharmaWorks. BioPharmaWorks is a virtual drug discovery, drug combination platform, and advisory company that utilizes its extensive multi-disciplinary and R&D experience to guide start-up biotech companies through the process of drug discovery and early development.

In an hour-long conversation, they discussed BioPharmaWorks' collaboration with Jubilant Biosys to deliver new medicines to the marketplace that will improve the health and welfare of human beings. Bob also shared his thoughts on the latest developments in the biotech industry, the shifting landscape of the pharmaceutical space, and its impact on drug discovery, development, and the road ahead.

The following Q&A, which has been lightly edited for clarity and length. This is the latest installment in Jubilant Biosys's series, "Now and Next," which highlights innovators and developments in the biotech industry, profiling some of the most consequential figures and conversations in biotech and drug development today. To access all available "Now and Next" issues, please visit our website www.jubilantbiosys.com/about-us/publications/now-and-next/.



Jubilant (Q): BioPharmaWorks has a unique business model from other companies operating in the pharmaceutical space. Can you give us some insight into how your company operates and the services and solutions you provide?

Bob Volkmann, CSO (A): We formed BioPharmaWorks four years ago with the goal of vetting biological systems and providing the world with new medicines to improve the health and welfare of those for which there are currently no treatments. We are a team of 12 scientists, and we've all spent the majority of our time professionally in big pharma, honing our respective areas of expertise.

In terms of what we do, it's important to first understand that in the biotech world, one needs to come up with solutions quickly. Those who fund biotechs - be they investors or venture capital groups - want significant and timely return on their investment. Biotech start-ups have great ideas. However, they have to deliver exciting results quickly. We are the engine of discovery for these companies. We feel very confident about our abilities to design molecules and provide ways to make them. We don't make the actual molecules at our headquarters, we just come up with solutions and ideas. So, we work with contract research organizations (CROs) that can provide us with the compounds that we need.

We've had a lot of success and growth over the past four years - business has been very good. We no longer can work with all companies that wish to work with us. We are too busy. Biotechs come to us because there's a void in the discovery process. They might have a biologist, they might have people in sales, and in a variety of other disciplines, but they need experts in other areas. They might need a chemist, biologist, ADME expert, statistician or even a lawyer. We can provide not only that person but a very good person. And that's our role. We are currently working with more than 30 biotechs to explore a number of scientific approaches. And we're collaborating with outstanding scientists throughout the world at these companies to provide medical breakthroughs.

Q: Is there a lot of competition in the marketplace for this type of work you are doing?

A: I don't think there are many other companies that are doing exactly what we are doing. The model that we've developed just worked for us. The reason that it works so well is that we are all partners. We have no hierarchy. People like working with us because we are friendly, ethical, scientifically very strong, provide many expertise with our team, and we deliver. If a company needs a biologist, we have an expert in biology. If they need information on predicting drug efficacy, we have an expert in drug metabolism. Or if they need a lawyer to understand patentability, we have an expert lawyer. Many services can be carried out through our company.

We didn't model our company after anyone's company, we just kind of evolved. More than anything else, it's very important that everyone who works here gets along and is grounded in science, values and ethics. I think that's why our clients like working with us; we are very honest and open, and we understand the urgency of delivering results. So, we are in a unique position. Our clients have been successful. We, in turn, are having a lot of fun.

Q: Can you give us your thoughts on some of the trends that might be fueling the growth of this business model?

A: The pharmaceutical industry, unfortunately, is dominated by profitability assessments. Scientists are somewhat mired in goals, new initiatives, and managerial morass. Sometimes priorities change from month to month, and companies are saddled with a number of inefficiencies. Big companies are hampered by paradigms and continual analysis and paralysis. They don't typically tackle diseases or indications that don't have a high likelihood of successful outcomes. They typically don't explore approaches that are highly speculative - the ones that have a likelihood of failure but also have a tremendous chance of providing medical breakthroughs.

Changes in pharma has led a lot of good researchers and senior scientists - those who have been the key drivers in the pharmaceutical industry's successes in previous years - to leave the large companies, either because they lose their jobs or due to early retirement. To fill the gaps, the large companies have acquired young, inexperienced scientists because they are cheaper. Biotechs, on the other hand, are doing the opposite – they tend to hire older people because they're experienced in drug discovery and don't need any training. In order to increase their market share and remain competitive, big companies are now looking for small companies to make the breakthroughs. If they see something interesting, they will either buy the company and/or the technology. That's the trend and I don't think that will change.

Don't get me wrong, the large companies have a lot of horsepower, and they have a lot of money, and I have a lot of respect for the people in them. But this shift has created a sweet spot of discovery for companies like ours because we aren't bound to the same type of traditional rules. We fit in the discovery ecosystem because we know all of these people and they know us. We are constantly getting called to get involved with very good companies because we are nimble and have no rules or boundaries – we do what's right scientifically, and don't think twice about it, which gives us a number of advantages.

In the end, I believe we designed a company that focuses on what really matters - making a difference in the discovery of medicines and helping companies get to where they have to get. This model works for us and has allowed us to grow rapidly since our formation four years ago, so I would say it has been a success overall.

Q: What exactly does success look like to you?

A: Success to us is being able to move compounds to the point where they're able to help people. We don't focus on how much money we can make working with a particular company. While it's nice to be rewarded financially, success is not just about that – in the end, we're more interested in delivering a medicine than we are in personal financial gain.

We are passionate about science and discovering novel medicines that will make a difference to mankind. We actually reinvest some of the profits we make back into our business so we can fund the ideas that we come up with ourselves.

We might go to Jubilant to ask them to pursue our proposal, make compounds and do some experiments for us. We have patented our ideas and recently sold one of our patents. When we were in big companies, we had great ideas but we were never able to prosecute them. Typically, we would present them to someone and that person would go to somebody else and the proposal would end up going nowhere. Here, if we have an idea, we can prosecute it immediately. Not only that, we can work with scientists outside our company on these ideas. Enjoyment and success is shared.

Q: *Let's dig into your partnership with Jubilant a little further. What specifically is Jubilant's role in helping you serve your clients need and achieve success?*

A: Taking a step back, I think it's important to understand broadly how we operate and then I can explain how Jubilant fits into what we do.

I already mentioned that we work with biotechs, who have a lot of ideas and theories about what is going to be a drug or a treatment for a disease. In the end, we end up designing compounds to test out these hypotheses and come up with ways to make these molecules. In most cases, these compounds aren't easily made. At BioPharmaWorks, we work with CROs who are capable of generating the compounds that we need.

Where does Jubilant fit in? We need chemists to make the molecules for us. We have to be careful of how much we spend for chemists. And the world of molecule makers is big. When we first started working with Jubilant's chemists and scientists four years ago, we designed, and Jubilant made, a compound that that was eventually sold to Novartis and is in phase 2 for treatment resistant depression. It was an outstanding collaboration. What I love the most about working with the Jubilant scientists is that we were all a part of a team - we're all equal, we share ideas, we share thoughts. For us, it's not just paying a company or chemists to carry out work, it's really about creating a cohesive team. Four years later, I continue to work with Jubilant because their scientists feel the same urgency that we feel in terms of delivery - they do excellent/quality work, they are transparent about what they do, and they communicate updates and progress on experiments effectively. The bottom line is that I now have 5 projects from different companies with Jubilant, and in each of the projects I have confidence that the science will be run well.

Q: *You mentioned teamwork and how important that has been in this collaboration with Jubilant. How does the team at Jubilant differ from the work you are doing with other CROs in the biotech space?*

A: When we work with someone, we make sure it's an enjoyable experience. We are immersed in the science; we feel like we are part of their team and they feel like they're a part of ours. Since we are a nimble operation, we don't have to participate in all of the mundane stuff that has nothing to do with research; we just do what we think we should do and Jubilant is part of this picture. But we do have to come up with ideas and make sure we are able to prosecute them, and that's where Jubilant fits in. They make compounds for us but also do experiments and animal studies, which is very important, and more recently we are having them design assays for us, so we aren't just using one part of Jubilant's scientific platform, we're using all aspects of it. From our standpoint, it's very nice to be able to make a compound, and then find out the properties of it, and then find out if the compound gets into the brain or does not get

into the brain, and to get all of that information upfront is of enormous value. Jubilant has an integrated service offering that touches almost every part of our business – it's a multifunctional, all-in-one solution, which has been so important to us and the work that we do.

Q: Can you break down exactly what you mean by "multifunctional, all-in-one solution"?

A: Let's say I am working with a company in Cambridge MA. We have this idea and the company in Cambridge has this biological model, so we are going to do all of our testing in Cambridge. We would have Jubilant make the molecule and send it to Cambridge. But it turns out in what we do, it's more than just activity in a biological model that we need. The body has evolved to the point where it doesn't want to see strange things coming into it – even medicines – so we have to design molecules that, in a sense, "trick" the body so they will get to where they have to go and do what they are meant to do. If, for example, someone has Parkinson's disease or schizophrenia, the compound would need to get to the brain and operate as planned once there. We need to make sure we pick the right compounds for assessment in animal models. It not only must work in an assay but needs to get to where it needs to be in the body and Jubilant helps us with that. And the way they do that is by providing us with results from in vitro assays and assess the likelihood of compounds getting to where they need to go in vivo. Often our molecules have unexpected problems (for example, these molecules might be metabolized quickly and aren't around very long) so we have to modify molecules.

So let's say I have an idea and I work with the group at Jubilant to make the compound. They make the compounds, they register them, they put them in a database that has all the required information about them, then they get more info from assays that they run in their Bangalore facilities and put it into the database as well. So, I've drawn structure and a way to make it, and then the output from Jubilant is the compound is made. Then they make sure I get required data on it – like physical chemical data, solubility, in vivo data, metabolic stability – and they put it into the right database. That's a huge advantage.

If I am working with ten companies, I can't be shipping compounds from each of them all over the world for tests. I don't want to have to deal with calling someone up and saying, "send this amount of sample here and this amount there," and then write up a purchase order for getting something done somewhere else. This process I've just described with Jubilant is one-stop shopping, or perhaps better termed a single-source solution. It is not only important, it is essential.

If you're working with 30 companies, then you just can't do all of it. You need to rely on a sophisticated, trusted CRO, like Jubilant, to carry the ball forward. Are there other CROs that do this too? Sure. More and more CROs are trying to adopt at least some of these ways of functioning. But I haven't worked with any other CROs who do this kind of work as effectively and efficiently as Jubilant.

Q: *It sounds like there's a lot of moving parts to coordinate and keep track of in your day-to-day work with Jubilant and other CROs. Can you give us a little more color around the processes that you have in place to help streamline your workflow?*

A: There are a lot of moving parts but over the past four years of working with Jubilant, we have worked out and fine-tuned a system that works extremely well for us. I don't have the time to mess around with inefficiencies. If I am inefficient, my productivity suffers and my clients suffer. Furthermore, I don't want, or need, any hassles, so I just have to make sure that I have a system that works well.

We've structured regular check-in calls with the Jubilant team every two weeks. They give me a report every week on Friday so I'm fully up to speed with progress. On Sunday, I give them my comments on the report. By Monday, they are back in there giving me their comments and they are doing what I want them to do. The reports are all in a secure site and, with the reports, the biotechs we work with have a measurable way of looking at productivity.

Our clients always know what's going on across every step of the discovery and development process, and they can show investors what progress has been made, for example, which is a big deal. Other companies that do what we do are often not as successful because they don't work as a team; they outsource ideas completely. We work collaboratively. We approach everything as a team and figure out everyone's roles and responsibilities to help get the work done and then we talk about it and see how things are going. I think this approach is the way to go. We've evolved a highly effective system, which, particularly with Jubilant, just works. It's as efficient and hassle free as possible.

Q: *In your view, are there other industry trends that are shifting the way biotechs and pharmaceutical companies do business now and into the future?*

A: A big problem in business culture, and perhaps our greater society, today is when you get to a certain age, for example in the pharma industry, you're eliminated - not because you haven't been successful, but because you make too much money. You're at the height of your professional knowledge and capabilities and then that's it! It's an absurd situation. That's one of the reasons people are contacting us all the time - those that have lost their jobs and now those who have jobs but are looking for something more satisfying. Big pharma is cognizant of this, but they don't want to spend the money, so they continue getting rid of more experienced people, often haphazardly. As I already mentioned, BioPharmaWorks provides a win-win for our clients and our scientists. In a small way, we are having an impact on drug discovery and development and provide an attractive way for operating in the pharmaceutical space.

We've also been noticing that there's been a shift from the legacy U.S. centric discovery effort to one that is becoming more global in nature. We have clients from all over – we've actually worked with groups/companies in Korea, China, Cuba and Brazil. Before, discovery was primarily driven by companies in the United States, and to a degree it still is. However, it's now becoming decidedly more of a global effort as other countries, and China in particular, are looking to get heavily involved in discovery. It will be interesting to see how drug discovery continues to evolve and grow in the future.