Jeanne Dunham

Interview conducted by

Mark Jones, PhD

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Jeanne Dunham

Ms. Jeanne Dunham served as Chief Executive Officer and President of Bioserv Corporation. Ms. Dunham served as Vice President of Operations at Cytotech and Director of Materials Management at Hybritech Inc. She served as Member of Advisory Board at Verne Mendel Medical Corporation. She held operations positions at Behring Diagnostics and American Hoechst Corporation. Ms. Dunham obtained her Bachelors in Science in Chemistry and Masters in Science in Operations Management from the University of North Carolina. She passed away.

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THE SAN DIEGO TECHNOLOGY ARCHIVE

INTERVIEWEE: **Jeanne Dunham**

INTERVIEWER: **Mark Jones, PhD**

INTERVIEW: **Part 1 of 2**

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LOCATION: **San Diego, California**

JONES: How did you make your way to Hybritech?

DUNHAM: Actually, I did have my degree in chemistry at that time, and actually I had left Calbiochem, which was right across the street at the time. And I had been there for five years at Calbiochem, well, Calbiochem -- Behring, between New Jersey and here, five years, and there was a promotion of one of the people in the organization that was my equal, and I wanted that promotion. I didn't get it, so I got angry. I had spoke to Bob Wang, who was also working at Calbiochem at the time. I said to Bob, 'I'm not happy. I'm leaving.' And he said to me, 'Don't leave. I'll get you an application for Hybritech.' I said, 'Hybritech? Never heard of them.' And he said, 'Oh, no, no, no. That's a good company.' So he got me over an application, I filled it out, and interviewed with Howard and got hired right away. So I started there in January of '80. I left one and walked across the street to the other. And that was fun. So, I started out in the trailers, my office was in the trailers, and I was the first production person. And I did all of the manufacturing, all of the QC, all the materials for the first test kits that they put out, working with the research people hand in hand. They were making it and they were helping me, teaching me how to make it, and then we were boxing it up and shipping it out.

JONES: And you were doing this over there, Torrey Pines?

DUNHAM: We were doing it at La Jolla Cancer.

JONES: And did you also work on the research antibodies?

DUNHAM: Yes, the ones that were freeze dried or in liquid nitrogen in these little V-bottomed vials. In the very beginning, that's the first thing that we did. I filled those and capped them and labeled them, and helped ship those, and eventually we went ahead and worked on the IgE kit. That was the first test kit that got approved, well not approved, but marketed by Hybritech, to hopefully bring in some cash while we were working on other things. And so we put together the whole test kit. We made everything that went into it. On weekends, we would have labeling parties, or filling parties, all of us would get together and fill everything, and get it ready to be shipped.

JONES: So really, at that point, everybody in the company was working on this?

DUNHAM: Yes, everybody. Even Howard would come breezing by once in a while and do something to help out. It was a small group at the time. There weren't a lot of people. I was #43, so at the time, when all this was going on, there were sixty or fewer people. There had to be less than sixty, because people did leave at times. And it was good. Everybody was friends, there weren't any problems within the company at all, even with that large a group, and you know, we would have weight watchers things, where we all were on a diet and we would all weigh in, and Howard would be the instigator of it, and made sure he weighed everybody in, and made sure they didn't lie about their weight. So, we had a lot of good times, a lot of going out and socializing and going to Ted's house for parties, that type of thing.

JONES: Now, Calbiochem and Behring, these were your first jobs right out of college?

DUNHAM: Yes and no. I did things a little differently in that after high school, I got married and had children, and then didn't go back to school until I was about twenty-eight. Then I went back to school and got my degree and was working at the same time. I actually graduated with an associate's degree, and started working in Behring Diagnostics in New Jersey, and while I was still working, I was going to Rutgers to get my degree in chemistry, so it was work all day, go to classes at night, and I actually was transferred to San Diego before I completed the degree. I still had six credits to take, and I had to take them here at UCSD, and then transfer them back to Rutgers, so I ended up with my degree in 1980, and immediately started going to San Diego State for my master's degree in operations management, and received that in '84.

JONES: When you decided that you wanted to leave Calbiochem and go somewhere else, you interviewed with Howard, and were really the first person they hired for

production, what was your impression of the company then? They were in the trailers, a small place?

DUNHAM: Well, I like challenges. It was definitely a challenge. I thought, 'How can they operate like this?' Everyone was research oriented, I mean everyone, and the reason they hired me was that I had just come from New Jersey and set up four new laboratories at Calbiochem from scratch, hired all of the people, set up all of the procedures, got all of the equipment operating, and made product while that was going on. So, they knew that I could do things, make things happen quickly, and to get that all done. So, I think that's the main reason that Howard hired me.

JONES: When you were doing this at Calbiochem, was this learning on the job?

DUNHAM: Oh, it was learning on the job. There's no way to train on how to do that. Since then, I've done four other build-outs, which is lots of fun. I enjoy doing that. We're actually going to start another one next month. I definitely had to learn as I went. It doesn't matter where you work, Calbiochem, Hybritech, or here. What happens is, they're always different. The culture's a little different, the people are different, the way they do things is a little different, so even with that experience at Calbiochem, the Hybritech thing was a whole new area to get into, dealing with the research people, with Gary David, predominantly Gary and Bob Wang.

JONES: And how would you characterize the culture there, at this brand new start-up? I don't know, I assume Calbiochem is a little bit farther along?

DUNHAM: Oh, much further along. Calbiochem had been started at least fifteen years before that, and they were the old entrenched group, and they were just seeing a lot of change now because Behring had just bought them, so they were in turmoil. They had the old group and the new group, and they were trying to mesh, and it just wasn't working, and they had their own set way of doing things. Hybritech was a lot different. Everybody was younger. Everybody was innovative and very few people had any industry experience, so we could go ahead and put things together the way we wanted to from the very beginning. It was a lot nicer.

JONES: When you came in, did you get a piece of the company like everybody else?

DUNHAM: Yes.

JONES: Did that mean anything to you at the time?

DUNHAM: That was part of it, but it was the first time I had ever gotten, obviously, working for an old German company, you don't get stock in the company, but at Hybritech, that was a new concept for me. At first it didn't mean all that much. To me, the salary was more important at that point in time, because I had two young children, but a year or two later, as time went on, it became important, because that was what you were working for because you were constantly working to have more stock awarded to you. And it definitely does motivate you more than just a salary.

JONES: Do you think that that contributed to more of a team-oriented atmosphere?

DUNHAM: Oh, I think so. I think everybody saw the future and what they wanted, and Hybritech was the first monoclonal antibody company, and they wanted that distinction. You know, Ted and Howard both had great plans for the company, so everybody bought into it, and they all worked harder, I think.

JONES: So how long were you working over there at the trailers?

DUNHAM: Oh, Mark, I don't know how many years that was. After that, we went over to Mira Mesa, to Carroll Canyon Road, so I moved over there. It was '82, late '81, '82. I don't remember the years that it happened. You probably know better than I do. Yeah, I wasn't in the trailers all that long, maybe it was '81.

JONES: And then they leased that facility for putting the kits together?

DUNHAM: Yes, putting the kits together. 7120 Carroll Canyon Road. Yeah, then I had a corner office there, and then, by that point in time, they had hired Jerry Martin as the QC manager, and I became the production manager. So, I had gone from supervisor to manager.

JONES: Can you describe the process then for monoclonal production over there? What did you have to do to the facility? You had to put these kits together, what did you have to do?

DUNHAM: The first thing we did, obviously, was build it out, so we had the laboratories. But we didn't do the monoclonal antibodies over there. Monoclonal antibodies were still done up on the hill, the actual antibodies, because that's where the vivarium was. What we had on Carroll Canyon was just the laboratory where we actually coded the beads with the monoclonal, and then we also produced all of the reagents that went into the test kits, the substrates, the conjugates, and the buffers,

the controls. So, we had production, wet lab formulations area, we had a QC lab, we had a large open packaging area, we had the shipping and the receiving, and the warehouse area, so it was truly just a manufacturing facility. There wasn't anything else going on there.

JONES: And basically you were in charge of putting that together. Who did you report to directly?

DUNHAM: At that point in time, Howard wasn't, I think I only reported to Howard for about a year and a half, and then Ron Taylor came on board, and I reported to Ron Taylor, until I left.

JONES: And what was it like working for him?

DUNHAM: It was interesting to work with somebody who had worked at a large company and definitely had a different set of goals and a different orientation than what Hybritech had at that point in time, so it was the beginning of the new regime, the new marketing group, etc., that had been working at large companies that they could lure in now. So, the culture changed slightly. It became more business-like, you know, we had MBAs from Harvard running around in training during the summer, and Ted was obviously building the company with an upper level that could present well, that stood up well for investment bankers, etc., and get more money, that was the reason.

JONES: And in terms of going into work every day, did that change?

DUNHAM: Nothing really changed there, I mean it was still a challenge of more kits, more products coming up the pipeline, how we were going to do the interface between product development and manufacturing to make sure that it went smoothly and we didn't lose anything, running to meetings about new test kits coming up, and then of course, there was that whole Abbott thing that went on, with Abbott being angry because we were hiring Abbott people. So that was another little side story that was going on. So, it changed, but the people that had been there for a long period of time were still their own little group, and weren't affected too much by that overall change in the company.

JONES: At this time, this is all very new, new for Hybritech, but also making monoclonal kits is new for the FDA. Nobody had ever done it before, so working with the FDA, how did that go?

DUNHAM: Actually, it went really well. At that point in time, submissions dealt with the monoclonal antibody issue and the FDA, the regulatory people. When it came down to the FDA actually coming into the area that I was responsible for and doing the inspections, it didn't hinge a whole bunch on the monoclonal antibody. It hinged more on the GMP regulations that you have to follow, 'Let's see how you're following them.' And the inspections went really well, actually. We didn't have any 483s at all until probably about two and a half, three years into the operation. So, it worked out really nicely.

JONES: Did you recall if they were having any problems at the other place, at the vivarium?

DUNHAM: Oh, we always had problems with the vivarium. There are always…the ways to scale up the monoclonal antibodies, I mean, you're making a small amount, and all of a sudden you're successful, what happens then? I mean, we were actually utilizing about a thousand mice a week at one point in time. There were a lot of mice going in and out of there. There were problems with the supply of the mice. At one time, we had four different vendors for mice, and tried to keep the mice segregated, to make sure that none of them got ill and passed diseases back and forth, auditing those vendors. Actually, I had the opportunity to audit Charles Rivers, in the Boston area, and I don't know what year, probably '84, '83, and that was a real mouse factory. I mean, that's what they were in business to do, make mice, and it's really a different environment, it's a real factory. And they were scaling up to make sure that we had enough mice, and eventually they became the only company that would commit the dollars to their own facility so that we could have a lot of mice. I don't know what they're doing these days, but I assume that there still using quite a few mice, although they've gone to the hollow fiber and other ways. Yeah, the mice were interesting. But I was a big believer that you really shouldn't ask people to do something unless you've done it yourself, so you know what it's really like, so you know what's going on the floor, and in the vivarium, so I actually went down and had one of the guys teach me how to execute the mouse, and that was really interesting, I didn't particularly care to do that, but other people sat down there day after day, mouse after mouse after mouse, injecting and harvesting the mice wasn't so bad, it was just the actual killing

of the mice that I didn't particularly care for. Have you talked to or heard about Jeff Janus?

JONES: No.

DUNHAM: You should talk to Jeff Janus.

JONES: Is he in San Diego?

DUNHAM: I don't think he's in San Diego any longer.

JONES: How do you spell his last name?

DUNHAM: J-A-N-U-S. The most recent place he's worked that I've known of is Clonetics, and they were bought by BioWhitaker, and BioWhitaker is in Maryland, and that's where he is, I think. He just moved there like a year ago. But Jeff was there, there were a lot of funny stories in the vivarium. He could give you a lot of stories about the vivarium. I hired him directly out of UCSD, and he had to work in the vivarium, and he got really good at it, but he didn't like the idea of -- there's a way to hold the mouse and take the ascites out, so what he did was, and then sometimes after that, you have to kill them, so what he made was an actual mouse guillotine, where he had this Plexiglas piece that was on an angle like this, and the little mouse was just spread-eagled on there, and you held down the little legs with little clamps, and then….So, it got…I mean, don't tell your animal activists friends about this thing, but it was humane. I mean, he was trying to come up with a humane way of sacrificing these mice, and not having them suffer. So, he could tell you some good stories. And he's also the person, I don't know if anyone else told you, who injected himself by mistake. You're holding the mice, and you know, they're so small, their little forearms are above these two fingers, and then you holding their feet down with these two fingers, so that their bellies are exposed, and then you're injecting them with monoclonals, and at one point in time, one moved, and he injected himself, and he was reporting to me at the time. At that time, the vivarium was reporting to me, and I heard through the grapevine that Jeff had injected himself, and I thought, 'Oh, God. Why did he do that?' So, I was really upset, I mean I was really concerned because these are obviously cancer cells that he's injecting into himself, but nothing ever happened. He got thin, we were worried about that, but he had started running, and so that's why he was thin, and we didn't think anything more about it until about a year later when we were all donating, we were always donating body fluids for all

these tests that had to happen, you know, and we had these jars in the restroom, so that we could donate urine, and the HCG is used of course in pregnancy testing, but also used in male prostate cancer testing, and we were trying to develop that test, so they were collecting a lot of urine, and they were doing it for females and males. And the males, of course, should be negative, and the females could be positive, but the male jug turned out positive, and they couldn't figure out why, so they did individual taking of samples and Jeff was positive. So they were panicked that Jeff had some kind of cancer from this injection. But what it turned out to be was, what had happened was that he had injected mouse cells into his body, so the mouse cells interact with your immune system and you produce anti-mouse antibodies, and he was reacting to the test, and nothing else. It was just the way the test was run that he was reacting to, because it was a mouse-based test. So, it was hilarious, it was really funny. He took the brunt of a lot of jokes. If you can't find him, I can probably get his number for you.

JONES: OK, did you have enough money to do what you needed to do, to scale up production?

DUNHAM: Yes. Money wasn't really an issue, I mean, obviously, we couldn't go out and buy the most expensive things, although eventually, we did get to that point. We bought really expensive equipment. When we were getting into the drug arena, they bought a lot of expensive equipment, but initially setting up, no. Getting the facility built out and working with the architect and buying any of that manufacturing equipment, we didn't have a lot of issues with the money part of it. I mean, the biggest issues after Ron Taylor came on board was to increase productivity, getting, you know, more work out of everybody, having them more focused, buying equipment to speed up production because by then, the HCG kits, the IgE kits, all those were selling really well. I don't remember the issue with the money, I was in charge of the inventory, because after I was production manager, and actually it's just like here, after a while, you get so large that you just can't handle all of it, so you have to split out into two different areas of responsibility, so I had a choice then of production or materials, and at that point, I was going for my MBA, and I wanted to do my thesis on MRP systems, so I went ahead and became director of materials management. So, I was in charge of this multi-million dollar inventory and the only grief I got about inventory levels, because I always tried to keep them down low, was in the antibodies themselves. The auditors couldn't understand why we had so many thousands and maybe even hundreds of thousands of dollars in inventory in

antibodies, not understanding that the antibody is so specific, and you make it once and you may never be able to make it quite the same way again, so we always tried to keep large inventories of that on hand, and they always gave me grief about that.

JONES: So, when the therapeutics projects were buying equipment, it wasn't for production, but for materials stuff, right?

DUNHAM: When therapeutics were buying equipment, it was more for the pilot plant. It was a pilot plant operation.

JONES: Well, what kind of stuff did that involve? They never actually had any products.

DUNHAM: Yes, that's true. Actually, we have some of the equipment here, that we bought in the fire sale that they had recently. They bought ovens, because even to do your clinical trials, your [?] has to be put into vials, it had been washed a certain way, and then de- pyrogenated, and sterilized a certain way, so you need all the equipment to do that. They needed hoods, they needed clean rooms. They bought a very, very large freeze drier from France. Phil Levenson was director of engineering, and he negotiated that. That one was what I considered a fiasco. I mean it's a huge lyophilizer built in France, and you know how easy it is to get parts from France, and it never really worked properly. The whole time I was there, it never really worked properly. So, yeah, there were some fiascoes. So, the pilot plant was production type equipment, but on a smaller scale. But specialized equipment.

JONES: So, you had to produce stuff for the clinical trials, but that was still a pretty big operation?

DUNHAM: It's a big commitment. Keep in mind, we built out the room just when I left, so I really didn't see the room in operation. Gary Christianson was operating that area. So, I don't know exactly what they were doing in there all the time, but the plans were that they were just going to do the clinical trials, but it's still a big commitment.

JONES: Did you put this in the same place, over on Carroll Canyon Road.

DUNHAM: Yeah, it was part of the manufacturing area there, and in fact, by that time, then, they were getting these other buildings, too, the other buildings on Carroll Canyon, the big black…

JONES: The one they're in now?

DUNHAM: Yeah. In that area there.

JONES: And what was going in there?

DUNHAM: Manufacturing. They were scaling up, because 7120 was only, not very much, maybe 10,000 square feet? That's all it was. It wasn't a lot. This is twenty, and already we've grown out of this.

JONES: But for the first four or five years, that was adequate?

DUNHAM: Oh yeah. Well, it wasn't four or five, more like two or three.

JONES: When you were scaling up for this, did you talk to other companies, did you get on the phone?

DUNHAM: I personally didn't, no. We utilized vendors a lot. But no, I didn't. Keep in my mind -- I was in the trenches. I really didn't get out of the trenches, ever, there, even though I was director of materials, I still reported to Ron Taylor, and Ron was the one that went to all these meetings, and did all that interaction, so, I didn't do it.

JONES: Working with R&D, did it usually go smoothly?

DUNHAM: Never, no, Production and R&D people are so different. They have different mind-sets, they act, they work differently. Actually, the biggest conflict we had was when we were still together in the same building -- we had to get out of the building. That's one of the main reasons we moved from the hill. Production people have to come in at 7:30, they have to leave at 4:00, and they have to take lunch together, because you have a line running, you know, you can't do it any other way. The R&D people would mosey in at 9:00, 10:00, 11:00 in the morning, and maybe not go home until midnight, but the production people didn't see that, so there was always that conflict between, you know, R&D, or the pampered people of the world, they can come and go when they feel like it, and I'm tied to the clock. So, we had to separate the two groups. They don't get along. It's like oil and water. In any company, it's always like that. It's fun though.

JONES: Until 1984, your happy doing this work, satisfied with the way your career is progressing?

DUNHAM: Oh yeah, I mean it was always a challenge. It was always lots of fun, and you're meeting so many different people, etc., yeah, always new projects. I mean, I was still working from about, sometimes I would get in at 6:30, but I was always there by 7:00, and I'd usually leave about 6:00 or 7:00 at night, five days a week, and then coming in on Saturdays. Actually, it was the period of time in '83, when I started backpacking, just to get away on the weekends, because if I was in town, I would work, and that's still the case today -- if I'm in town, I work. So I try to get away as much as I can. I think we were all workaholics.

JONES: And what about the people under you? Did you demand a lot of everybody who was there, did you try to infuse that kind of attitude or commitment?

DUNHAM: Well, you try as much as you can. Actually, we hired a lot of people directly out of UCSD, a lot of grads, and those grads are now spread out through San Diego, but when we were there and we were doing the manufacturing, they were really good at it. They learned a lot, they definitely came up through the ranks. I don't know if you've talked to Randy Lane, do you know where he is?

JONES: No.

DUNHAM: I can tell you where he is. Also have you talked to Jill at Hybritech?

JONES: No, actually the only person I've talked to in production, manufacturing is Ron Taylor.

DUNHAM: Jill works in R&D, and she worked in cell biology, and she keeps in touch with everybody. She knows where everybody is, and we just had a ladies reunion about six months ago. There were a lot of new people there that I didn't know, but the old group was there. She would have a lot of contacts. But Randy Lane is at Accumetrics, which is here in town, and he's a director at Accumetrics, and Jim Neal is another person that we hired directly out of UCSD in production, and he's now at, I don't know what the name of the company is now. It was called Alexon. Dave McCarty was the President, and they were just bought by Erie Scientific in the Minneapolis area, and he's still in charge of manufacturing at Alexon. So, everyone that we hired stayed in manufacturing or the QC area, and now they're going up, and they're at these companies at a higher level, at high levels.

JONES: So, being here in San Diego, you didn't have any trouble finding qualified people?

DUNHAM: Oh, taking someone directly out of UCSD is not a qualified person. They had a basic understanding of chemistry, but they weren't teaching that in a way that you could then go out into the world and use it. I mean, everybody who came into the facility, you had to train, every single one of them. They maybe knew the basics -- this a ph meter, yes, yes --none of them had GMP experience, not one of them. So, we had a lot of training classes.

JONES: Was it true that you were hiring a lot of people away from Abbott?

DUNHAM: It was true. I didn't personally, but the company did. Hybritech kept hiring people, directly recruiting them out of Abbott, and after I guess, I've forgotten his name, but the person that was the straw that broke the camel's back was a real dud. He was a real dud. I can't remember his name. Ron might remember his name, I don't know, but he was a guy, and it was a shame, because then Abbott sued us and here we had, the straw that broke the camel's back was this guy that no one wanted anyway. He was so...he was bad news, and they got rid of him fairly quickly. So then, they went into court, and that was about when I left, so I don't know what other things were going on there.

JONES: What were the circumstances surrounding your leaving Hybritech? Why did you decide to go?

DUNHAM: I didn't decide to go. Ron Taylor decided that I was going. Yeah. You know, now, how many years is this, thirteen years? In retrospect, he was right, because I got myself in the same situation here with somebody else I had to let go because you get to a certain point and you don't have any other experience to draw upon, you don't have any big company experience, or you haven't grown to a certain point, or you've only grown to a certain point, and the company is growing up here, so Ron, of course, recognized that, so he pulled in his buddy from Allergan, I don't remember his name, but anyway, brought him in as materials person and basically told me I should look for another job. And it wasn't hard to do because with that kind of experience then any kind of start-up company...and actually, at that point in time, I decided that I had worked for a very, very large company, Behring, I had worked for a small company, Hybritech, which was growing into a large company, which one did I really like. Well, I liked the small company. That's what I liked. Paul Rosinack, who

was the marketing VP at Hybritech and Cynthia Stewart who was the CFO, the vice-president of finance, had left Hybritech like two months before I did, and went to, they didn't start, but went to this company called Cytotech, which I don't think is on the list, either. But it's not like they founded the company, they went there to work. It had just been founded by a researcher from UCSD, no, both of them were from Scripps, and it was going to be based on HIV technology in...complement technology. So, they were there and we went back and forth, and I thought, 'I don't know if I want to do this,' and they said, 'Yes, yes. It's going to be another Hybritech and we're going to get lots of stock in the beginning, and it will grow and it will be worth a lot.' So, I said, 'OK, fine.' So, I went there, and I was there for five years, and then they were purchased by Quidel. But I did exactly the same thing all over again. We had research people who were transferring the test kits over to me, we were scaling them up, building out the manufacturing facility. We did all that all over again. So, it was lots of fun doing that.

JONES: So, even though it was different in a lot of ways, do you think your Hybritech experience was really important? Did you do it better the second time?

DUNHAM: Oh, you learn a lot, that's for sure. You learn a heck of a lot. Yeah, I probably did it smarter the second time. You know, I knew exactly where to go to get things, and I knew what things should cost, and I knew what I had to do, but the Hybritech experience was interesting. The experience itself wasn't as important as the people. The people were much more important and the contacts that you had, because to tell you the truth, Bioserv wouldn't be as successful as it is, in fact, there probably wouldn't be a Bioserv if I didn't have all those contacts. A lot of our customers are ex-Hybritech people who have gone on to other companies and who need services. So, that worked out really nicely. And even the teaching position at UCSD, you know, it just helps a lot to have that network, where you know people who know people, so that's the important part of it. And the same thing with Behring, even though Behring had a small exposure here in San Diego. Across the United States, there are Behring people I know everywhere, so that helps a lot. So, the experience itself wasn't that great, it was the people that made it great. Actually do you want a list of people? Did Gary David tell you about Joanne Martinis?

JONES: Yes. Do you stay in touch with her?

DUNHAM: Yeah, she's teaching.

JONES: Teaching school?

DUNHAM: Yes, after she left Hybritech, she retired, and she went to Mira Costa and got her teaching certificate in the sciences, and this particular school system needed somebody who could become the entire science department. Well, Joanne is really great in presenting herself. She has great knowledge and memory retention, and they just don't know how they lucked out. I'm sure they do now, but they just lucked out by getting her as head of the department. She's really good. She's been using a lot of her contacts down here to get used equipment and things donated to the school.

INTERVIEWEE: **Jeanne Dunham**

INTERVIEWER: **Mark Jones, PhD**

INTERVIEW: **Part 2 of 2**

DATE: **September 10, 1997**

LOCATION: **San Diego, California**

DUNHAM: Cytotech was actually being run already by the ex-vice-president of marketing, Paul Rosinack, and by Cynthia Stewart, who was the ex-controller of Hybritech. They talked to me and tried to convince me that I needed to come down. They were about ready to go into production, and that I should come down and set up the production like I did at Hybritech and help them build out a building. So, we went back and forth for about two weeks, and finally I decided, 'Sure, I can do that.' And, you know, with the hope in the back of your mind that it's going to be like Hybritech, that it's going to do really well, because they had two different technologies that were going forward. They had a complement technology and they had an HIV assay that they wanted to market. A diagnostic. So, I went down there and set up the facility again, built out the facility, hired the people, hired QC managers and production managers, and a materials manager, and brought on the people, and manufactured the product for a long time. Actually, I was there for over four years before they were purchased by Quidel. After they were purchased by Quidel, everyone was laid off the day that happened, everyone. Then, they called back myself and one other person that works here now, and the two of us basically made product for six months as consultants to the company. And during that six month period, then, I incorporated Bioserv and started to plan on how I was going to go ahead and get this off the ground. And that's where the Hybritech stock came in handy because I had quite a bit of stock, and I was able to sell about half of it and have enough capital to start the company. And I haven't put any money back into the company since then. We've been running off of profits for the last nine years. So, while I was consulting, I was doing all the phone calls, calling people and seeing if you a facility and a place set up, and ready to go. And I did, and started out with, oh, probably about twelve linear feet of bench space and a place on Santa Fe down by PB. So, I did that, and that lasted for about six months, and then grew out of that, and then moved into a place in Sorrento Valley that was also, the tenants prior to me being there, that's where Corvas started, David Kabakoff's company started, and then Isis was in there, and there was another one that's up in the Carlsbad are that

was in there also after I was. So, that's like a little incubator area, about 1000 sq. ft. of lab space. And then moved into a larger site, and just, over the last nine years, we've just been moving into larger spaces. And keeping in touch with the Hybritech people, which has really been...Hybritech not only funded this company indirectly, but it also helped sustain the company because, I would say, of our local customers, about 50% are ex-Hybritech people that I have known in the past, so it still continues to sustain the company, which is nice.

JONES: Who are some of these people?

DUNHAM: Well, we have actually worked for Randy Lane at two different companies. We worked for him when he was at Cytronix and we're working for him now that he's at Accumetrics. We worked for Jerry Martin at Gensia, worked with Mark Shannon at Quantometrix, he started his own company. Don Coffey, Don Coffey was taking LMD, working there while Electon purchased them. We were working with them. I'm trying to think of other people in the area. More will come to me, but there's just so many. We worked with Amylin, so we worked with Ted Greene's company, and Molly Stone was there, that's who we worked with there. So there's a variety.

JONES: So, you sort of fill a niche -- at a certain stage of a company's development, they need manufacturing, they don't have their own? What is the role of Bioserv?

DUNHAM: Well, definitely, it has a niche area. There's no doubt about that. The company is small, relatively small, even though we now have twenty thousand square feet now, that's really small. Most large manufacturing companies have anywhere, you know, sixty to two hundred thousand square feet. But one of the things that we have to advertise is that we're flexible. We can do a variety of jobs. What we started doing was exactly what we had done at Hybritech and Cytotech, which was basically diagnostic test kits, and we can do diagnostic kits from beginning to end. Customers just come here and they say, 'We have this idea. This is what we want to do. This is as far as we've developed it.' Then, we'll go ahead and do the pilot run and then from then on, we manufacture the kit for them and just give them back the finished product, which is among the types of things that we do for the [?] company. So we are filling that little niche. Some of our customers are virtual. They just have themselves. They have no company, no facility, just a phone. We do work for them, all the way up to the large companies that have small products that

they want to introduce and they don't know if they're going to be successful or not, so we go ahead and manufacture the beginning batches for them, until they see whether they are going to be successful in the marketplace.

JONES: So you specialize in diagnostics, but do other kinds of stuff as well?

DUNHAM: We're doing very little in diagnostics compared to everything else right now. We're doing hard devices, so we have dental implants, ocular implants that we're working with, and both -- the dental implant is basically a screw, is what it looks like, and they come in from a machine shop, so it's all dirty and greasy. It has to be cleaned. There's an extensive ultrasonic cleaning process that it goes through, then it has to be packaged and assembled. There are a lot of nuts and bolts in a dental implant. They get assembled and then they get packaged and sent out for gamma radiation, so they're sterile. Then they come back, and they get put into the final packaging, and ready to be sent to the distributor. Ocular implants come from a manufacturer up in Orange County, and all we'll be doing there is sterile packaging, and having that sent to the distributor also. And then we do some tumor devices. These are hard devices that are going to be implanted in or affixed to a tumor in some way, and either medicine will be secreted or current will passed through it, something will happen to reduce the tumor, hopefully. So, we have those that we process. We have food products, we manufacture some nutritional type food products.

JONES: For medical markets?

DUNHAM: No, for the general consumer. We have ocular type, ophthalmic solutions, not contact lens solutions, but other solutions that we make. Then we have a pharmaceutical side of the house where we have injectable drugs that we're making. Anything that's liquid or needs to be filled sterilely, that's what we're doing. So, we have quite a few pharmaceutical customers that we're working for.

JONES: This is a wide array. When you have a new product, do bring in people with certain kinds of expertise?

DUNHAM: In most cases, the company knows a little about it and they help train us in certain areas, but we do have a mechanical engineer, we have an electrical engineer, we have biologists and chemists. So, just with those four types of people, with their background and training, we're usually able to do any of the jobs that

come up. There haven't been any jobs yet that we haven't been able to tackle. We try to break it down to basics, so that, so they become simple steps and they can follow them. So, it hasn't been a problem yet. The more sophisticated products, and I can't even think of one right now that we haven't been able to do, but there are, we're some endoscopic cable assembly right now. This is one of the more complex things that we're doing. It's a ten foot cable that has like twenty five different small parts that have to be put onto it, it has a light fiber that goes through it that has to be polished and cleaned, and it's very precise, very small, and very complex, and we're handling that without any problems. We don't do anything electronic. We don't do any welding, things like that. We stay out of that area. We try to stay more in the wet chemistry area.

JONES: Do you expect your relationships to be of a certain duration? You know, if the product is successful, they will have to scale up larger, and outgrow the services you can provide?

DUNHAM: In the beginning, this was our concept. This is contract manufacturing, it's a niche market, we're going to take these virtual companies or small companies and help them grow, and when they get to a certain point, they're going to take their product in house. It just makes economic sense for them to do that. Well, that hasn't been true. Over the last nine years, we've had one customer who grew to a point where they took the product and moved it in house, and they were in Massachusetts. So, we had complexities with shipping and everything, but they were customers of ours for four years before they grew to such a size that they needed to move it in house. They moved the production products in house, but continued to use our services for all of the R&D products that were coming up, so that worked out really nicely. And we no longer manufacture for them, but for a total of seven years, we did all of their manufacturing, which was great. The majority of our customers -- I just grossly break them up into two categories. The category of -- either it fails, the product fails in the marketplace, or it doesn't grow and we just continue to make small batches for them periodically, maybe one every two months or once every three months, and they're not going to grow. The product is not great. And then there is the customer that has the product that's great, and it grows, and we've been growing with them. That's how we've got from 1,000 square feet to 20,000 square feet. Right now, we've been in here sixteen months, seventeen months, and we're already looking for warehouse space. We have to move the warehouse off-site so that we can build out laboratories. We've gotten to that point.

JONES: The future looks rosy here in San Diego with all of the stuff that's going on?

DUNHAM: The majority of our customers are not San Diego customers. With transportation and everything today, that's not necessary. Let's see, our newest customers, one is from Minneapolis, one is from the Bay Area, one is from New Jersey, so those are our three newest customers.

JONES: That's kind of surprising to me.

DUNHAM: The very first customer that we ever had for Bioserv was from Minneapolis. So, it's hard to tell.

JONES: Are there a lot of people around the country doing this kind of thing?

DUNHAM: Not this size. You know, it seems as though every contract manufacturer has a little niche that they take. We have two other contract manufacturers in town. We just lost a job that we bid on to Pacific Device, and the reason was, it was a sterile packaging job. Well, they can do sterile packaging much more efficiently than we can because that's what they're built to do. They don't do any wet chemistry. So we actually transfer customers back and forth, recommend that they go back and forth. They sent us the customers that need to have wet chemistries done. The other contractor in town is smaller than we are, they specialize in parental filling, that's all they do, and ophthalmics. But across the country, very few of them are small like we are. It takes a lot of energy and work to deal with a small customer. It would be really nice to have a customer where you learn their process and then you just make it every single day, day after day after day. And that would be like a luxury for us. We have a few. We have three that we do that for. But the other ones, they move in and out, and if you lose what we call project coordinators, you lose the continuity of the job. It means basically learning it all over again. And we also bring on new customers a lot. So, those people, they can't go to large contractor across the country and have a large lot of 1,000 made. They can't do that. Like right now, a job that we're working on is a pharmaceutical job, and it's a capsule, a little capsule like a vitamin capsule. It's for a clinical trial study. They need to have, it boggles my mind to think about it, but they need 30,000 capsules. Nobody will make them 30,000 capsules. No one. It's not enough. Capsules typically come in boxes, a minimum of 100,000, so what we've done is bought 100,000 capsules, blank capsules, and now we are going to hand stuff 30,000 capsules, which is going to be not much fun. The people that are going to work on it aren't real happy about it, but the customer is, because it's a clinical trial,

so they're going to need five different lots with five different amounts of placebo in them. So, it's real important that it's controlled very well. And they come here because they know it will happen, and they can be here watching us, helping us, whatever. You couldn't do that anyplace else.

JONES: When you started putting this together, did you raise any other money?

DUNHAM: No, it was all mine, and we haven't added anyone else's money to the company. There have been times when we thought about it. In the beginning, we had offers from friends and relatives to add money to the company, and we chose not to because we didn't know if it was going to be successful or not. I just had this feeling that I don't want to borrow money and then for the rest of my life, work to pay people back. I didn't want to do that. So, I said, 'No, I'll start slow. I'll start real small and real slow and build it that way.'

JONES: At the beginning, everybody was laid off at Cytotech...

DUNHAM: I started back again as a consultant to do the manufacturing of the product. They wanted to continue making product because we had commitments, customers that were using the product and wanted to buy it every week or month, or whatever. So, for six months, I did that while Quidel was finalizing the deal and taking over the inventory and moving things over.

JONES: So, you were doing this at facilities that already existed?

DUNHAM: Yes.

JONES: So, it was during that period that you thought...

DUNHAM: Well, yeah. We were laid off, I had been thinking about it because, of course, we knew that was going to happen, but we were laid off on the 15th of December and Bioserv was incorporated on the 19th. I made good use of my layoff time. I went down and incorporated.

JONES: And what about the transition, from being a consultant to having your own facility?

DUNHAM: Well, actually, it wasn't as traumatic as it might sound because at Cytotech, one of the advantages, and the same thing at Hybritech, usually people

don't have to tell me what to do. You just see something and you know what's got to be done, and you do it. So, I've been a self-starter, self-motivated, all of that, from the beginning. So, it was no different to do it for your own company. You knew what had to be done and you just did it. I don't always like what I'm doing. I have to wear the marketing hat. I don't always like the marketing hat, but I tend to do it well, so I get to do it.

JONES: Well, having to go out and find customers...

DUNHAM: That didn't bother me. Actually, what bothered me the most was hiring the first employee.

JONES: Why did that bother you?

DUNHAM: Because now, all of a sudden, I'm responsible for somebody. You know, I'm responsible for their paycheck, I'm responsible for them depending on me for a paycheck. That was difficult. And actually, what we did was, I used temporaries for the first two years, just so I wouldn't have to be in that situation. But then it got to the point where the temporaries didn't stay around long because they wanted full-time jobs. So, we had one temp, Elizabeth, that I thought was really good, and I just hired her. And that was the first employee. Then after that, it was easier. I adjust to things very quickly, so I adjusted to that. Now we have thirty. We just made three new hires, just this month. So one more, is starting next Monday.

JONES: At what point did you decide that this could work? Did you do any kind of market research?

DUNHAM: I'm not a marketing person. I'm definitely an operations person. This really, this is going to sound weird, but this is not what I really wanted to do. What I really wanted to do was go hiking and backpacking all the time. But you can't do that. You can't make money doing that. And yes, I probably didn't have to do anything. I mean, I could have stayed home. It really didn't matter.

JONES: You made that much money from Hybritech?

DUNHAM: Oh yeah, plus I was basically very frugal. I saved a lot of money, and I could have not done anything, or gone to an eight-to-five job and had a good time on the weekends or after work, you know. But I didn't do that. I'm too self-motivated, I'm a Type A, maybe Triple A, kind of person. I have to keep doing

something and being productive. And I did it. And I didn't do the market survey, and in retrospect, I go, 'Gosh, I really should have done a market survey.' But we have customers, and, in fact, I'm on the Board of Advisors for a local company that, he's spending a year just getting his advisory board together, and getting his Board of Directors together, and finding out where he's going to get his money, and if the product is going to make it in the marketplace. I'm not that kind of person. I'm a doer. I'm not a person who analyzes a lot and thinks about things a lot. You know, I have this gut reaction to something -- it's going to work. Well, the gut reaction to this was, there were people that were coming to Cytotech to have contract work done. Beckman came to Cytotech to have contract work done. So, I thought, you know, this might be something that could stand alone, and we could get customers. And in fact, I thought about Beckman, you know, being our first customer, which didn't happen. Just about a month before Cytotech actually closed its doors, they cancelled the project, Beckman took the project in-house. So, I thought maybe that will work. And it was the only thing I knew how to do, ever since I was working, since '75, that's the first thing I did, was operations. I didn't know anything else. I couldn't go out and develop or invent a product and take it to market. I don't have the ability to do that. I sort of went with my strong point, operations, organization.

JONES: Can you tell me much about the situation surrounding Paul Rosinak and Cynthia Stewart leaving Hybritech and going to Cytotech? Do you know where Paul Rosinak is?

DUNHAM: He's in town actually. Paul, when he left Cytotech, he went to work for an Italian company in the Midwest, someplace in the Midwest. And that was a company, whose name I don't remember, but that was a company that Cytotech had negotiations with, too. They were distributing for us in Italy, and they, at one point, thought that they were going to buy Cytotech. That didn't happen, it fell through, but obviously they were impressed with Paul, and they hired him to run their facility that they had bought in the Midwest someplace, St. Louis, Cincinnati, someplace around there. Paul went there, and then he left there. They closed that facility. It didn't work, closed it completely. They had this huge inventory sale. It was like the talk of the industry. But anyway, for there, he decided, like a lot of people have, I'm not going to be in this industry anymore. You know, this is a crazy industry, I'm going to get out of it. And then, the rumor was, I didn't talk to him about it, so I don't know for sure, but he bought car washes in that city and managed car washes with his money. And he didn't like that, either. He wasn't happy doing that, and at

the same time, his wife was ill, so he needed that freedom to be at home. His wife recovered, everything was fine, and he took a position in Pennsylvania with a company called International Canine Genetics, and they were working with improving the reproduction of animals, dogs and cats and horses and things. And he worked there for a long time. He worked there for maybe four years, five years, something like that, and then they were purchased. And they were purchased by Synbiotics up in Rancho Bernardo. So, they brought him back to San Diego, and now he's President of a certain division of Synbiotics. So, he's back in town, and in fact, one of my friends saw his wife down on jury duty last week. I don't know exactly where they're living. I haven't talked to him since he's been back in town, but I would talk to him periodically while he was at International Canine Genetics because that was another customer of ours, due to him. Because he went there, and then he said, 'Oh, I know somebody who can make those things for us,' and he called us up. So, that worked out nicely. You know, most people came after me. He was hired, Howard hired him probably about two years after I was there, and I didn't have a lot to do with. I worked mostly with Cole Owen, who worked for Paul. Have you talked with Cole?

JONES: Yes.

DUNHAM: So, Cole and I would work closely together, and Paul was sort of there. And I don't know the circumstances of his leaving at all. I'm assuming that he went because he had the opportunity at Cytotech, but I don't know that, and that's when Cam Garner came on board, when Paul left. And Cynthia was the controller, VP of finance, and I don't think she was there when I got there. No, she definitely wasn't. She came on later, and I'm not sure what year. But Cynthia got out of the industry.

JONES: Is she in San Diego?

DUNHAM: No, she's in Kentucky. She and her husband are both controllers, they always have been, they have the same background, and he was controller at Viagene for a long time, and she was controller at Cytotech. And then she went and was controller at Ligand for three or four years. And then, they don't have any children, so they amassed enough money that they have now retired in Kentucky where they raise Great Danes.

JONES: Was he at Hybritech very early? Was he there before you?

DUNHAM: It's more interesting than you think, because Cynthia is about five feet tall and weighs about ninety pounds. She has Great Danes that are bigger and weigh more than she does.

JONES: When you think of Kentucky, you think of raising thoroughbreds.

DUNHAM: I know, but she has Great Danes. So, she's having fun doing that, and one of the other women who was at Cytotech, Stella, who works now for Chromagen -- see how you get to know somebody at every company. Stella works at Chromagen and she actually goes back to visit with them for a week every two years, so I get filled in on all the things that are happening. I haven't talked with Cynthia probably for about five years.

JONES: Well, is there anything else I should know about Bioserv?

DUNHAM: No, other than that maybe you want to do some marketing for us? I think it would be nice if Bioserv was the contract manufacturer for most of the companies in town run by the ex-Hybritech people. I know that can't happen, I mean that's not something that's going to happen, but no, other than the fact that Bioserv wouldn't be here if it wasn't for Hybritech. And that Bioserv is sort of one of the poor relations, we don't get on any of the lists. But you see, I'm not like that. I mean, I'm not out there. Our parenteral products, we've been doing this for four years now, and we have yet to advertise it. If we were to advertise it, we would go crazy with business, and we can't do that. One of the things I try not to do, and it's probably an over-reaction on my part, is that I don't want to use my connections to do well. I don't know if that sounds weird or not, but I don't. I don't want to be affiliated with anything to do with Hybritech if that's going to make the company do better. I would rather that we did it on our own. The people who need to know, know that we're ex-Hybritech. It doesn't really matter.

JONES: You would rather establish new connections than utilize old ones?

DUNHAM: Yeah, and keep in mind, too, that the companies that are on the list from the Hybritech cascade there, basically, are companies that have products. That's the big difference. I mean, Bioserv doesn't have a product, it has a service. So, it's unique and different, and it doesn't get lumped in with the other ones. We don't have any venture capital money in here. We don't have any other investors in here.

It's not going to be a big hit if it's successful. It is always going to be a very quiet, very low-key kind of business. Contract manufacturing is not a big hit.

JONES: But you know, the people who put together those charts are interested in San Diego.

DUNHAM: Thanks, and you know what's really interesting is that I do all that teaching at UCSD, too, and they still haven't made the connection. But anyway, Hybritech was fun. I wouldn't have traded it for anything. I can't honestly say that I got my training there. I probably learned more from there what not to do than what to do. I really think that my training and the drive to do things correctly, to do them right, and to do them high-quality, came from Behring Diagnostics, rather than Hybritech. Not that Hybritech didn't do things right, but they were more driven by money concerns than they were, and market price and all of that, than Behring Diagnostics ever was. Behring was into high-quality, and that was never compromised. So, I had the two backgrounds, and then just merged them together.

JONES: Listen, do you know the name of the guy at Biostruct?

DUNHAM: Yeah, Bruce Birch. He was the guy who built the Hybritech labs.

JONES: Do you have his number?

DUNHAM: No, I don't, but I'm sure that Biostruct is in the phone book.

JONES: Actually, our brochure was done by Guy.

DUNHAM: There are all of these connections, yeah, it's a variety of things, like Lee, now Lee worked there for fourteen years, but she was just laid off last. And I talked to her and we went to lunch occasionally, maybe once a year and talked to each other, but she left there, and now she's here, so we try to take advantage of the bright people that left. That's Fred Carmody, he's ex-Gensia. And Bruce's wife is ex-Hybritech. She was a lab technician.

JONES: One other I wanted to ask. When you were scaling up at Hybritech, do you remember any specific problems getting hybridomas to behave properly when you scaled them up, you know, getting things that worked in small batches, but not at a larger scale.

DUNHAM: No, because, remember, when I was working there, we were using the mice. How do you scale up mice? You just get more mice, and that's when we built out that big, huge vivarium. So, it was just more mice. The only problems that we ever had was the nude mice, you know, having them manufacture antibodies. Well, you know what a nude mouse is, so I don't have to explain that, right? So, you know that they're more liable to pick up infections and die and things like that, so they had to be segregated and isolated in some way, and they just didn't grow the antibodies well. The biggest concern we had was not the hybridomas themselves because each little body was its own little incubator. Maybe when they went to the cartridges, you know, the hollow-fiber, they maybe had problems, I don't know, but the biggest problem was getting the mice. Because, you know, one of the key things in manufacturing is materials management, and you always should have two or three vendors. You know, how many vendors are there of mice? Then there was this guy, whose name I can't remember, who started his own mouse facility here in San Diego, and we were buying mice from him, we were buying mice from, I can't remember any of these names, was it Jackson? And also Charles River, and Charles River was able to grow to the size that they are now because they were able to offer us all of these mice, and that was our biggest problem, getting mice shipped in every single week, huge boxes of mice, making sure they're not dead, you know, they're cannibals, so if there is one in there, if they don't have enough water or they don't have enough food in transit, and then you'll open up the box and there will be only one or two mice left, and tails. They eat everything except the head and the tail. All gone. So, that was our biggest problem, but producing the antibodies, I don't remember it being a problem. There were other things that were problems, I mean, in addition to procuring the mice, there was a problem of coding the antibody onto the beads, that whole acid process became so complex and it was difficult and dangerous to do.

JONES: Why was it dangerous?

DUNHAM: It's an acid-type etching process, so you would have huge vats of acid. We actually went ahead and designed this room that would contain the acid that had a floor and then it had a big drop area, like a big canal, where these big tanks were stored that were full of acid, and a basket of beads would come down and automatically, via robot, and drop into the acid and come back out. It was dangerous.

JONES: Do you have any idea where I could read about these processes?

DUNHAM: Gosh, that was all proprietary. I don't think anyone ever wrote anything up about that. I mean, we devised it as we went forward. It's one thing to do it in a beaker, but then to try to do it in huge quantities, it was difficult. Do you stir the beads, do you not stir the beads? Do you just dump them? Actually, that was another area of concern -- procurement of the beads. They had to be of a certain type of material and a certain surface roughness so that you could bind something to them.

JONES: You tried a lot of different kinds?

DUNHAM: Oh yeah, there were a lot of different ones, and it was, I wasn't involved in the bead itself, in the procurement of the bead, but there was a guy in the Midwest, one of these shady character type guys, who they bought them from, who I don't think was very reliable. They were constantly searching for another source of beads. There was only that one source. I don't know what they finally ended up doing. They don't do it that way anymore, I'm sure. I'm positive they don't do it the old way. Actually the person to talk to would be Gary Jones. Have you heard that name?

JONES: I think I have.

DUNHAM: Gary was there before I was, I don't know what number he was. And when I got there, he was in R&D and taking care of the vivarium, which was in the basement of the cancer place up there, and it had only, you know, maybe fifty mice, that was it. He was doing that, and then when we started operations, they suggested that perhaps I bring somebody from R&D into operations because they knew their way around the facility and the people and they recommended Gary, who was not really your typical operations person, so I suffered through that for several years, but Gary graduated into doing all of the bead etching, so he is very familiar with the process and all of the problems that they encountered and what went on. From there, Gary went, I don't know where he is right now, but from there Gary went to, not PBI, but Quidel, he went to Quidel from there. He left Quidel. He wasn't working, the last I had heard, and then a couple of months of ago, I heard that he was working somewhere in town, but I don't remember which one. His last name was Jones and he lived in Mira Mesa. He might be in the phone book. Lee may know where he is. At the time he was married, and he got divorced and he married one of the women at Hybritech, Lisa. And I saw Lisa less than year ago and they're doing

well, and they still live in Mira Mesa, and I've forgotten where Lisa is working. She was working at Hybritech. I think she got laid off at the same time we did. Another person is Jim Neal. Yeah, he works at Alexon [?]. I happen to have his number, I talk to him regularly, I can give you that. I'll have to get my customer list, they're a customer, also. See, it just keeps getting bigger and bigger. They're in the Bay Area, but they're a customer. But he and Randy Lane, have you talked to Randy Lane yet?

JONES: No, I haven't.

DUNHAM: Jim Neal, and Gary Jones, and Randy Lane were the first three people that I had in the production are when we scaled up. So, they were the hands-on people doing the daily activities. They were fresh out of school. Randy is at Accumetrics right now. Prior to that he was at Cytronix, and prior to that he was at Pacific Device, which was part of the Hybritech family, that's how he got to be at Pacific Device.

JONES: Do you happen to know if Joanne Martinis is webbed up?

DUNHAM: Yes, I think she is.

END INTERVIEW

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The San Diego Technology Archive (SDTA), an initiative of the UC San Diego Library, documents the history, formation, and evolution of the companies that formed the San Diego region's high-tech cluster, beginning in 1965. The SDTA captures the vision, strategic thinking, and recollections of key technology and business founders, entrepreneurs, academics, venture capitalists, early employees, and service providers, many of whom figured prominently in the development of San Diego's dynamic technology cluster. As these individuals articulate and comment on their contributions, innovations, and entrepreneurial trajectories, a rich living history emerges about the extraordinarily synergistic academic and commercial collaborations that distinguish the San Diego technology community.