Knox Bell

Interview conducted by

David Caruso, PhD

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Knox Bell concentrates his legal practice in the areas of business and corporate, biotechnology and life sciences, licensing, strategic alliances, healthcare and nonprofit research institution.

THE SAN DIEGO TECHNOLOGY ARCHIVE

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CARUSO: Today is the 12th of June, 2014. I'm David Caruso. I'm with Knox Bell. We're sitting here as part of the San Diego Technology Archive Project in San Diego. Thank you again for agreeing to meet with me to talk about your knowledge of development of the San Diego area. What I'd like to start with first is hearing a little bit about either how you came to be in the San Diego area or if you grew up here, reasons that you are interested in staying in the area, or your family background and things like that.

BELL: Okay, yes. My name is Knox Bell. I'm a partner in the San Diego law firm of DLA Piper. I came here in 1968. The name of our law firm then was Gray, Cary, Ames, and Frye. It later changed in about 1994 to the name of Gray, Cary, Ware, and Freidenrich. In about 2005, the firm changed its name to DLA Piper, Rudnick, Gray, Cary, and now we're just known by the shorter name of DLA Piper. I grew up in Central California, city by the name of Visalia.

I went to law school at UCLA, graduated 1968 and didn't have any ties to San Diego whatsoever. As part of the law school experience, I did interviewing and interviewed both in San Diego, the L. A. Basin, and even as far north as Santa Barbara and as far east as Riverside and San Bernardino. I was fortunate to get some good job offers from San Diego firms. The two major San Diego firms at that time were Gray Cary and another one by the name of Luce Forward. Both, I thought, were excellent firms. I was a young law school student married with a kid by that time. I did choose Gray Cary and have been very, very happy with that association for the last 46 years now.

CARUSO: So when you were interviewing at different firms, was there a specific area of law that interested you that you wanted to keep pursuing, or are you more open-minded about what areas you might sort of settle on for your career?

BELL: Back in the mid- to late '60s, there was not nearly the specialization there is today. Today lawyers and other professionals have to be extremely focused, extremely specialized. In those days there were two specialties: business and litigation. I selected the business side rather than the litigation side although back in the late '60s, even if you're going into business, you had to spend up to a couple of years doing multiple other things including litigation. I did some litigation, as a junior associate, helping out the other senior litigators, but my practice was focused right initially on the business transaction side.

CARUSO: When you started here in the San Diego area, what sort of businesses were you involved with as part of the law firm? Was it just any business in the area? Was the law firm focused on specific types of industries, or was it just very broad-based?

BELL: We were, I think, the largest law firm at that time with 30 attorneys, where now we have over 4,000 attorneys. As a large law firm, yes, we did anything that was needed, maybe excluding criminal law and some of the smaller kind of matters. Certainly from the business community standpoint, we do everything. Real estate was by far the biggest industry in San Diego at that time, savings and loans and banking aspects of it. Aerospace was a big part. General Dynamics was one of our biggest clients. They employed 50,000 people down here in San Diego. So that was a big operation.

We did all the work for – Pacific Bell, the phone company at that time. My practice, as a real young junior attorney, would get some of the smaller matters for some of the biggest clients, but then for some of the smaller clients, we get larger matters. One of the clients I did a lot of work for early on was the Hospital Council of San Diego and Imperial Counties. I started getting exposed to what was a very new specialty, especially then, called hospital law or healthcare law. In fact, when National University first opened here in the early '70s, I taught the first class in hospital law.

Most of my career since then has been more in the technology and life science area. Working for hospitals is what initially got me into some of the life sciences, particularly the Scripps Clinic and Research Foundation, and some of those kind of organizations that had both physicians and hospitals and researchers. So short answer is a broad kind of client base.

CARUSO: You said that there were small matters for big companies and big matters for small companies. What sort of issues were you dealing with?

BELL: A lot of it is financing, getting money for new businesses to start and a lot of it is just pure contractual relationships, supplier relationships, marketing relationships, but a lot of it is just forming new businesses. I probably have signed the Articles of Incorporation for 400 new corporations just forming new entities, and most of them, of course, failed. Many of them did succeed and end up being bought out by big companies.

CARUSO: What was some of the work you were undertaking for Scripps in the early years? I know you were there from 1971 to 2001 or you worked with them actively from 1971 to 2001?

BELL: Well, first there is a little preface on the name Scripps because it's multiple institutions. There is a Scripps Institution of Oceanography, which is part of University of California, which is totally different. In about 1924 Ellen Browning Scripps formed the Scripps Metabolic Clinic and our firm was involved with some of that formation way back then. Later it migrated into what was called Scripps Memorial Hospital, which is still very active and one of the two largest health care providers here in San Diego County. About 1954 that split off into two other entities. One – Scripps Clinic and Research Foundation, which was both research and physicians; and two – Scripps Memorial Hospital, which is just the hospital that had independent physicians.

So from 1954 until about 1992, they were two totally separate independent entities, no crossover in the boards or anything like that. I did work for both of them. The one that migrated into life science biotech practice for me was the Scripps Clinic and Research Foundation. The things I did for them were a lot of their corporate matters, a spin-off of what is now known as the Scripps Clinic Medical Group, just the physician group. We formed an entity called Green Hospital of Scripps Clinic. It was funded by Cecil Green out of Texas Instruments. So I handled corporate matters as well as hospital-based physician matters. Scripps Clinic and Research Foundation had a lot of research going on funded primarily by the government.

Patents were coming out of that research, and some of what we now called big pharmas, or just pharmaceutical companies, started getting interested to license

some of that. I was the one on hand to do the contracts. I started doing licensing contracts. One of the real early ones was a company called Revlon and we think more as cosmetics, but they were in the biopharmaceuticals at that time and they later became Rhone-Poulenc Rorer and now Aventis. That was one of the real early licensing deals for Scripps Clinic and Research Foundation.

There were other license agreements with Miles Laboratory, which was associated with Bayer; and Lilly, and later with Johnson and Johnson; and PPG Industries; and Sandoz, and multiple different companies, big and small deals. Some were just pure patent license and others were strategic funding relationships that would have some type of rights of first refusal to have the first look at some of the new technologies coming out.

CARUSO: So coming into these relationships, I'm assuming you were working with individuals on both ends, the one who wants the license and the people with the patents, right? I have two questions, especially coming from the Scripps side of things. Was the institution itself going out there and trying to find companies interested in the technologies that were being developed, or were individual researchers the ones trying to initiate some sort of contact because they realized that they had something that could be useful more broadly. Or were you not privy to those sorts of discussions?

BELL: Yes, I was privy to them. Well, it certainly started out, with the researchers, and the institution was, what I'll call an innocent bystander, and yes, it was also some of the physicians. Most of the researchers were pure researchers. Some were both researchers and MDs with patients. But the early ones were all motivated by the researcher being involved with colleagues at pharma and they would be talking about some of their research, and relationships would get established at that research-researcher level. I wouldn't be involved at that real early stage of research and researcher.

But once the researcher said, "Hey, I think I've got something here," then, in this case, it would go essentially to the Scripps Clinic and Research Foundation management. Then they brought me in at that time. There would be decisions made whether to spend money for patenting it and whether to make some proposals for out-licensing it. From that time on, once there was an interest shown by a researcher

at a pharma, then it would be elevated – I shouldn't say elevated – it would be moved to management of both institutions to work out the deal points.

CARUSO: Over time, did that start to change? I know in some ways, we're talking about a very expansive time period. Did larger institutions start having a more centralized system where they were not just waiting for researchers to come to them and say "Hey, I have this thing," but they were actively developing? Maybe an office focused on pursuing patents and things like that, having a more formalized system than just researcher bringing things to management?

BELL: Yes, from both the researchers' side and the big pharma side, both then institutionalized. At Scripps Clinic and Research Foundation, a man by the name of Ray Kahn, Ph.D., researcher, scientist himself, who went in more than the business side later, was the first Tech Transfer Officer for Scripps Clinic and he would actively go out and try to promote. He mined the halls of the researchers and asked them what they were doing and tried to figure out what might have commercial applicability and he became one of San Diego's first professional Tech Transfer Officers. He passed away probably 20 years ago now. Similarly the big pharmas started doing that as well and they've got very established organizations, I mean, people, departments within their organization to go out and look for things. Now research institutes and universities all have their websites that they promote it on. So both parties know that they should have a symbiotic relationship and both are reaching out. Still a lot of it takes place at the scientist to scientist level, but there is a parallel going on of institution to institution relationships.

CARUSO: I could imagine that some institutions, certainly development institutions, would go through the process of looking for a company that would be interested in a certain technology. I don't know if shopping around is the best way to express it, but were they looking at different companies to – did they focus products or trying to sell certain products to certain institutions? Did they just have a sort of an open door "we're trying to get this out here" and they just advertised it to multiple companies? How is it – how were things being advertised or brought to various institutions? Was it specialized? Was it just putting things out there?

BELL: Well, both from a university standpoint as well as a research institute standpoint, they would sort of like to feel there is a bidding war, they'd like to feel there are multiple parties going after their same technology, but that would happen

only 5 percent of the time is all. 95 percent of the time, it would be because the researchers need to publish and they get the publications out promptly and they go to conferences and they like to have their colleagues and other institutions around the country and world know what they're doing. So they're promoting what they're doing. And it has become known that that – in this case, at Scripps or later at Salk or later at what is now Sanford-Burnham, a place like – that there is a researcher here that is really making progress in a particular area and that becomes known, and a company that has a real interest in it will be the one to come in and start asking "Can we have some licensing rights for it?"

One of the real early ones was Revlon. It was for Factor VIII, a blood clotting technology, and that was, I think – I forget the real financial terms, but like ten years later, the successor to Revlon paid like a hundred million dollars to buy out the license rights. It was a big success. At that time Revlon was interested in blood clotting. So that was a good match. But I'd say 95 percent of the time, companies sort of know what is going on at the research institutes and universities; and universities know which companies are really trying to get into that medication field.

CARUSO: It sounds like a lot of this is either based on companies being aware of publications coming out or possibly direct relationships with or knowledge of collaborators or scientists – scientists who work conferences and picking up information. I was wondering if there was anything going on in the San Diego area more generally to foster interactions among these research institutes and the companies that were investing in the technologies coming out of the San Diego area?

BELL: We have to clarify that we're talking over a 40-year period and what I've been saying so far has been primarily in the early, let's say, the '70s. And just as all the organizations started getting tech transfer officers or development offices in the 80s and '90s, certainly things migrated and it's a little bit of what I'll call data overload. In the earlier years, there wasn't as much going on and so it was easier to know by word of mouth what was happening. Yet nowadays and certainly in the '90s and the 2000s, there is so much going on that you do have to have more organized structures. As far as San Diego itself, certainly the organization CONNECT came into being in about 1985 and was doing a lot in that arena, organizing conferences and having meet-and-greet programs.

I don't remember if either Scripps or Salk or Sanford-Burnham actually had symposiums with the pharma companies invited. They certainly had a lot of symposiums going on with other scientists in a particular scientific field, coming for a year or so. I don't know for sure, but my guess is some scientists from pharma were invited, both because they knew it was a good symbiotic relationship and they wanted to tap what they were doing. They wanted their colleagues to know what they were doing. I think there was an element of everybody trying to help everybody else, not a matter of "we're this little silo and we want to protect everything for our sake." Just the nature of scientists, they want people to know what they're doing.

CARUSO: So more collaborative and less competitive?

BELL: Correct, definitely.

CARUSO: So one of the things I am curious about – and I'll try to keep to the general time progression on things – but in the '70s, I know you were working with Scripps, a relatively large institution. Were there other companies coming up in the life sciences area that either you worked with directly or you at least had some sort of knowledge of? One of the big things in the late '70s was the boom in biotechnology in the San Diego area. With hindsight, we can see everyone that was there. Were people aware of those companies at the time? Were they making a name for themselves, or is it something that we just recognize now?

BELL: Well, the first biotech company I did work for was Hybritech and I represented the founders: Ivor Royston and Howard Birndorf. It was funded by Kleiner Perkins and that would have been, I'd say, in the late '70s. That was ultimately a huge success and it became well-known in the community. That – yes, that spun off a lot of other little companies. I think biotech was considered a good hub for San Diego when an organization, now known as Biocom, was first formed. It was formed primarily to lobby to city and county governments to protect water rights because the biotech industry was using a lot of water, and we were having a drought then as we are now.

There was a great need to cut back in water and ration and restrict. The biotech companies – actually David Hale at Hybritech, at that time, was sort of the leader in organizing Biocom to go to county governments and say "We want special attention. We want preferential rights. We want to keep our water." The two county

governments gave – I shouldn't say gave in – they recognized the wisdom of doing that for protecting jobs. Back at that time, I think there were 10,000 people supposedly employed in the life science biotech community and that's fudging numbers a little bit. That was kind of the PR and we thought we can grow to 50,000.

I can remember David Hale talking to the city council saying "protect this industry. It's projected to go to 50,000." Now my guess is we're still not quite there, but yes, I would say the community embraced life science industry here as it was starting to grow and became better known as it just started to exist. I would say the same with telecommunications industry and the software industry.

Each of those has been well-embraced and now we have sports equipment industry and the clean tech industry. So yes, I think San Diego community and governmental organizations have been very responsive and favorable for these new technology industries.

CARUSO: Can you tell me a little bit more about your involvement with Hybritech in the early years, maybe a bit about what your sense – you are in the interesting position of helping a company in its early years. You were helping them find financing.

BELL: Well, let me clarify a little bit. I never formally represented the company, Hybritech. I represented the founders and this was, as I say, this was one of the real early ones in California. So there wasn't a kind of standard way to do things the way it is now or the customary way to do things. But Brook Byers of Kleiner Perkins was willing to put up a few hundred thousand dollars to fund this company and Brook was – or Kleiner Perkins was represented by Tom Sparks of the Pillsbury Madison firm up in San Francisco. Tom Sparks was their attorney and he actually called our firm because our firms had a lot of relationships over the years. He said, "Conflict of interest, we're going to be putting some money into this company and these founders and the owners ought to have their own attorneys." That is how we started representing Ivor and Howard on the formation of Hybritech.

But money talks and Kleiner Perkins was able to dictate what they wanted. Neither Howard nor Ivor had ever done anything like this before. They were happy with what was given and that is how that organization went forward. A few years later, I represented Howard in another company by the name of Gen-Probe and we got

some of the initial funding out of Hybritech. In fact, just the day before yesterday I think it was, I was with Tim Wollaeger, who was CFO of Hybritech at that time. He and I were reminiscing on meeting in the Hybritech boardroom to negotiate the formation of Gen-Probe and there was a scientist at Hybritech by the name of Tom Adams that was one of the three co-founders of Gen-Probe that I was representing at that time.

So we were talking about, at least at that meeting in the Hybritech boardroom, how much money will Hybritech put up, what kind of risks they were taking, and allowing Tom Adams to leave Hybritech to go work in this brand new company, Gen-Probe.

CARUSO: So two questions, and again, I realize that there is confidential information that you can't talk about, but I am curious to know a bit about what sort of relationships Ivor and Howard were looking to have with companies that were interested in investing with them? Were they willing to just be bought out completely? Did they just want investors because they knew that they had a good product and they needed financial support? What were the expectations generally from someone like Kleiner Perkins with regard to their investment? What were both sides interested in gaining from the relationship?

BELL: Well, at the early stage of formation, everybody knew it was just a big gamble crapshoot. Ivor thought he had a very good technology and Brook Byers was wise enough to see it had some potential, but it was totally unproven. It was all hope and a prayer. So from Kleiner Perkins' standpoint, Brook Byers' standpoint, they thought it was a reasonable risk, but they would have – if you had asked them then, they would just said it's probably a 20 percent, 10 percent chance of success and 80 percent chance of failure.

I think from Ivor's standpoint, he is an eternal optimist and most entrepreneurs are. Scientific entrepreneurs are eternal optimists. He thought, "Hey, I think this is great. I think it's going to go." He was not looking to "I want to become a millionaire" or "I want to be with this for five years and sell out" or anything like that. It was very much "I'm proud of this technology and I think it can really help mankind." He was totally scientifically focused and medical application focused, not at all financially focused. Howard is a little bit more financial. Although he had scientific training, he was much more of a manager. He did a lot of the science work, too, but Ivor just

delegated to Howard to handle any of the business kind of matters. So Howard jumped into this role, jumped into it very well, and has been successful in several other companies since then.

CARUSO: Another interesting thing about Hybritech, and please correct me if I'm wrong, Ivor was still – although the business was starting, he was also still a member of UCSD at the time.

BELL: The VA Hospital, yes, which was run by UCSD.

CARUSO: UCSD. Was that something that had to be factored into the negotiation since, I believe, some of the scientific work came out of what he was doing. He informed the business and then start investigating a new technology, but some of this came out of research that had happened previously. Was that a concern for the other institutions involved, the sort of the parent institution that was originally sponsoring or supportive of Ivor's research?

BELL: I don't know all the details and I probably don't want to get into it too much. There has been some publications on this. There's – I forgot the name. I believe it's something like the Life Science History Program or something like that. There were some biological materials from England and Ivor had been to England and had some materials. But no, those issues didn't really come up at all in the early formation. Science at that time, academic science at that time, was a little more cowboyish; and scientists did what they thought was right for mankind. There wasn't nearly as much emphasis as there is now on what I call “material transfer agreements” and “restricted use rights” for what is being done and even things about how – somebody would put up the funding such as NIH or VA trying to retain rights. There was very little of that in the ‘70s.

Just maybe a little side step here, just to give an impression. In about 1980 is when the Bayh–Dole Act came into play that allowed universities to own their inventions. Prior to that, the NIH owned them and they seldom did anything with them. Once universities started to be able to own their inventions, that's when people started saying "Okay, let's see if we can out-license; let's see if there is commercial benefits." About the same time in the early 1980s, is when the Federal Circuit Court came into existence. It was the appeals court for all patent cases. Prior to that, patents weren't nearly as valuable because there would be different decisions all across the different

states and most of the patents were not upheld. Once the Federal Circuit Court came into play, they really started saying "We're going to enforce patents and we think most patents are going to be enforceable." And I don't know the statistics, but I would say like 80 percent of all patents were found enforceable and so patents became very valuable.

So it was a big deal for both of those, Bayh–Dole Act with the universities taking control of the commercial rights, and patents being upheld and very valuable. These caused a lot more money to start flowing in; and the formalization of commercial rights for science. Prior to that, it was more science for science, and it was felt that it was bad to have a scientist go into business. That's going to the dark side. So from the mid--'80s it was total reverse. Scientists thought it was a better to form a company or to get a patent than it was just to have a publication. It's kind of a sea change there.

CARUSO: On a similar issue, I can imagine that as much as you may want to advertise the work that you have done to get interest from a larger company, when you go out to found a company or start a company, you may not want to be publishing results from what you're working on, right? If you want to have a patent, but you've published in the scientific journals and advertised in scientific conferences what you're working on, that might complicate the issue of being able to have a patent on things or not be scooped in some ways by someone else. Was that ever a discussion that you were involved in with the founding of companies? What the scientists could actually publish on? Especially with other companies coming in, being interested in specific technologies, they may not want your scientists, the smaller company scientists, publishing material that would in some ways threaten a patent or something like that.

BELL: Well, it's always a topic and yes, I've been involved in a lot of those discussions. The ground rules are that if it's been funded by the government at a university, at a research institute, it has to be published. If a journal is willing to publish it, you have to try to publish it. But even there, if it looks like it’s got the commercial value, a patent application or at least a provisional will be filed in advance of that publication or in advance of the report or the conference, so as to preserve the commercial rights; so you get the benefit of both. You get the publicity of publication plus you get your patent filed so you get to protect it. If it's research

results or an invention that's coming out of the company, and not out of either the university or research institute, then yes, there is a choice whether to publish or not.

I've seen arguments going both ways. Some companies will say "we want to have a publication, and of course, get our patent application in first, but have a publication to help us raise more money later. That will help us get interest from the big pharma, because they'll see it and they'll know about it." This approach is used by a lot of the small biotech companies. Some of their business plans are "let's get one publication by this date, let's get another publication by that date." Even the small public biotech companies, they will try to have some PR with a new publication out. That's just part of their business plan, their PR plan, to keep showing and making progress, because the small biotech company is always in the mode to raise money or attract good people and those publications help with that.

Other companies will make the decision that "we want to keep this secret, we want to keep it under the radar screen, we don't want our competitors to know what potential products we're coming up with or what focus our science is going in, and we want to delay the patent publication as long as we can." It is more of a keep it secret or keep it low on the radar screen. So those two alternatives are strategic decisions that do get made very much so in the smaller companies.

CARUSO: Can you tell me a little bit about how the spin-off, Gen-Probe, worked? Because again, that's another situation that I think is quite interesting where you have a company coming out of, a company already in existence and clearly there's going to be, I would assume, intellectual property rights and those sorts of discussions. How did the formation of Gen-Probe actually come about? What were some of the – again, within what you can say – what were some of the concerns or the discussions about the formation of a company from an already existing company?

BELL: It's not quite true to call it a spin-out, but they're related and I'll try to give you facts and background.

The Gen-Probe technology was invented by a scientist by the name of David Kohne with a "K," David Kohne, who is still around, still a good scientist, but he is a little bit more of, what I call, a lone wolf. He likes to do things on his own. He had been at Scripps. He had been at what is now known as Sanford-Burnham, which at that time,

was called La Jolla Cancer Research Foundation. But he was totally on his own later on, and he came up with the technology that Gen-Probe was founded on. I think it was Howard Birndorf that became aware of David Kohne and said, "Hey, I think this could be commercialized." Again, David was very much science-oriented and didn't want to have his hands dirtied with business matters. He's just a true scientist from that standpoint, and not trying to meld business and science together.

So Howard was the impetus to say "let's make a company out of this" and Howard then attracted Tom Adams, who was one of the top scientific executives at Hybritech, and the three of them formed a little partnership and I did the legal work – it was a true partnership; it wasn't even a corporation – to do a little internal seed funding to scale up David Kohne's technology for more of a lab test or for diagnostic test, I mean. Once that seemed to be more successful, that's when it was decided "yes, let's really make a company out of this, make it into a corporation, try to raise money." That was all about a year's time period that such stuff took place. For the first funding, we went to Hybritech to try to get them to put up what amounts to seed money. I think they put up maybe 15 or 20 percent of the money needed. Because Kleiner Perkins, Brook Byers, had a good success with Hybritech, just knowing that Hybritech was going to invest in Gen-Probe, Brook Byers and Kleiner Perkins invested in Gen-Probe. So that is what got the real money in. They became a real company and owned facilities and hired people and went on from there.

CARUSO: So I guess using the term "spin-off" was inappropriate because the developments didn't occur within Hybritech itself.

BELL: Correct.

CARUSO: It was external. It was Kohne's technology. It's just that there were individuals from Hybritech and I assume they were staying at Hybritech during those initial. So they separated their relationship from Hybritech. Howard and Tom Adams were not at Hybritech when they developed the partnership with Kohne?

BELL: That I'm not sure of. Tom Adams was still a full-time employee at Hybritech when the partnership was going on and he may have even stayed in some relationship at Hybritech even after Gen-Probe was formed. I think Howard had already left Hybritech by then, but I can't remember for sure.

CARUSO: What I'm curious about in this instance is if there are – Tom Adams was at Hybritech. Then could there be the potential for conflict of interests if the route that Kohne's technology was going, in some way, overlaps with things that were happening at Hybritech? Adams' commitment to two different companies at the same time could be a conflict of interest.

BELL: Well, definitely, today that is a very highly sensitive issue and a lot of precautions are taken. Even back in the '80s or whenever it was that Gen-Probe was formed, it was a conscious issue. Tom is a very honest, ethical kind of person. I'm sure he would have at least told Ted Green or David Hale or some of the people, "Hey this is what I'm doing on the side." There would have been a consensus that hey it's not a direct conflict; it's not a problem since both are in totally different fields. And yes, spend some of your weekends, evening times on it. If there was any potential issue of a scientific or business overlap or conflict back then as well as now, people definitely shy away from it and not try to do something through the back door.

CARUSO: Now you mentioned a little bit about Biocom water rights. I am also interested in knowing if there were other things happening in the San Diego area that fostered the development of the technology community here. I know you mentioned life sciences, use of water rights, and things like that. And you mentioned the formation of CONNECT in '85, which I know that has been influential, but was the city itself doing anything in terms of laws or policies that contributed to the development of San Diego in this early time period as a place for people to come to start a company and to pursue that avenue of the scientific life?

BELL: Kind of yes and no. Before I came here in '68, I would say in the early '60s, the city council was very progressive in dedicating some land up in the Torrey Pines area, which used to be a military base. The city acquired ownership of the land and dedicated it for scientific research. That's why Salk centered there. That's why UCSD centered there. That's why Scripps moved. Scripps Clinic used to be down on Prospect Street in the Village of La Jolla. That's why Scripps moved up to Torrey Pines. That's why Sanford-Burnham established their facilities there. And General Atomics got their facilities up there. The land was zoned for science uses. There wasn't any money from the city, I don't think, that went into any of this.

But the city, starting in early to mid-60s, made it very user friendly for technology and science organizations to establish up there in the Torrey Pines Mesa area. Other than that, I'm not aware of any favoritism in laws or things of that nature, or financing or extra support on building permits, or anything else like that the city did at that time. Certainly the university moving here in the early '60s was a huge boom. It attracted the kind of people that are going to form companies and have the technology to be able to be the foundation or core for technology business.

CARUSO: Part of this overall project is trying to understand why San Diego? Why are there so many companies that came here and started up, especially in the late '70s, the early '80s? People have mentioned a lot of different factors, but not many people have known about these things from a legal perspective, whether or not there were laws or zoning or things like that that fostered such an environment as well. So that's where my question was coming from in trying to understand what it was about San Diego that made it so attractive to many individuals and so many companies in those early years. I don't know if you have any other thoughts on that generally.

BELL: I don't think I do from a standpoint of laws, as opposed to just the right people were here. Certainly General Atomics was a huge – some spin-offs came from there: Linkabit people ultimately migrated and formed Qualcomm. There is another company named ComStream that came out of that. It's more that the people were here, I think, as opposed to any governmental support.

CARUSO: Now we've focused quite a bit on those early years. I'm also interested in changes that you might have seen over time. Let's start with what companies are looking for in terms of starting up. I know that Ivor had conducted or he participated in oral history years ago, talking about his experiences. You mentioned this as well that a lot of scientists in those early years were looking to get what they were doing out there for use. Since there is no way for the basic science that was being produced, necessarily to make it to the public good, one way to do it was through founding companies. The purpose was to make those companies grow, develop them, and have them play an important role in the life sciences and other industries. I'm wondering if that sort of general attitude is still what is happening in the area. Or are people founding companies for different reasons now? You hear a lot in the computer industry, for example, in Silicon Valley that people, they don't necessarily want to start something big. They want to start something, that thing

immediately gets bought out by a larger company. Is it a similar attitude here? Has that changed over time?

BELL: I think there has been a migration, and again, in the early years of the mid-70s and early '80, there were many fewer start-ups and I would say 90 percent of them would say: "hey, we've got a good technology. We think it would be good for mankind and the money is kind of secondary." I would say now there is such a bigger universe; people starting companies, both businessmen and technology scientists. So you're going to get a broader range of motivations, but this is pure guessing. I would say in the life science field – and again maybe divide that between medical devices and drugs and biologics – I would say that the biologics and drugs, it's more 50/50 -- that maybe 50 percent of them would like to have a good business and financial end result, irrespective of whether the technology ultimately is big success. But it takes ten years to know one way or the other. So with that kind of timeframe, they hope to see financial success in the ten years even if the product fails in the 15th year or something like that.

When I say 50/50, I'd say there is another 50 percent who believe they just invented the best thing since sliced bread. They're very hopeful and optimistic. This is going to improve mankind and improve medicine and reduce costs and be more efficient and effective. So I think there is 50/50 there, whereas before it was maybe 90 percent of them were more for the benefit mankind basis.

I would say in the software and the telecommunication technologies, it's probably 75 percent or more financially motivated; and seeing their baby grow up to be cute and pretty and well-received by the community is maybe only 25 percent. But those are just rough guesses.

CARUSO: Have you seen the funding for start-ups change over time? Are there different players now? Are there different investors? Obviously things are going to change over time generally in terms of who the players are, but are you seeing more or less of certain types of investors? You have large venture capital firms now and in the early years, more commitment from pharma. Who is really looking into funding these start-ups? And how has that changed over time?

BELL: It has changed tremendously and it keeps changing. It's a moving target. It's almost a little bit “what's the flavor of the month?” For a while, big pharma wouldn't

look at anything unless it was in phase three. Then for many years they would look at anything, even if it just had animal data on it. They have gone back and forth as far as pharma and pharma's own investment or venture capital investment arms. They had a lot of them for a while and they're not quite as many now or not at least as active as they had been. So there is continuous change. In the venture capital community, there have been some stalwarts, and certainly Kleiner Perkins is a good example of that, that have stayed and continued to be successful and continued to invest in both early stage and late stage companies.

During the latter '90s and the early 2000s there were – I don't have the number – but let's say there were ten times more venture capital firms than there were ten years earlier. There are probably not as many venture capital firms now as there were in 1999. The number of venture capital firms have gone down. I forget what the Kleiner Perkins investment in Hybritech was, but I'll say it was $300,000 and that was a good amount at that time. Now my guess is they wouldn't touch anything unless they put five million into it, because they spend a lot more time on due diligence and they have a lot more choices. If a venture capital firm is going to put in money, they'd want to put in enough to warrant their time for investigating it, managing it, and monitoring it. Angel funds and private individuals that have a couple of million dollars to invest will spread the money out among multiple different companies, maybe only $100,000 here, and $200,000 there.

Maybe just to give a little example for that, our firm, our law firm DLA Piper, has had a venture fund for probably 20 years or so; and I have served on that committee the whole time. We've probably invested in 200 companies or so, and most of them are our own clients. Twenty years ago when we started investing, we would have maybe three people on the committee look at the business plan, look at the projections, interview the entrepreneurs, and really understand the company; we would look at ten pages of info, and do four hours' worth of analysis. That's gradually migrated to where it's essentially, one person on the committee looks at a one-page summary and makes a recommendation. The other committee members will look at that one-page summary. There are six people on the committee and each committee person probably spends five minutes; and the person who does the extra review maybe spends ten minutes. Then we make a decision based on that. We understand that most of them are going to fail, but if we get a few that hit home runs – that's good.

CARUSO: So why do you think less time is spent now, given that there's so many more? Is it just because the volume is so high that there's so many more companies out there?

BELL: Well, everybody probably has got their own personal attitudes. I just gave mine and I can't really speak for other people. I make my decisions based first on who the entrepreneur is, and what their track record has been, and what they are committing to it, both time or money. Secondly, I look to see who else is investing; whereas before, we did a lot of our own due diligence. Now we primarily ride coattail on venture capital funds that are doing the due diligence. So we look to see who is investing and who has been doing the due diligence.

Third, we look at the technology. Fourth, we look at the market. Do we think this is a technology that can be well-protected; and what is the potential upside in the market? Is it kind of a me-too product, or is it one that if it does succeed, it's going to be the game changer and it will have a big market then.

So those are all guesses. All four of those factors are just judgmental guesses. So it's not as much as feeling that you can study the numbers and study patents and make a strong prediction based on that. It's pure guesses and that's my personal view. Others are going to have different approaches.

CARUSO: Part of my question, what I was trying to ask is when looking at all these different technology firms. For example, I interview scientists on a regular basis and they come from a lot of different fields and there is no way that I can be an expert in every single area of science that I interview people about. So I have a general understanding of the significance of the things that those individuals are doing, but I don't know if I could come up with or if I would have the expertise to make judgments about how something is going to fit in a certain field. Is that something that you have gained over time just working with these companies, a better understanding of the meaning of the technologies that they are developing, and what sort of technologies they might be competing against?

BELL: No, for me, and I feel that is a disadvantage. I have a partner named Lisa Haile who is a scientist and a patent attorney; and I really admire her because she not only knows the legalese that will get the good patents, but she also has a good sense for: is this something that can be commercialized, whether it's to be scaled up, whether

it's to be put into a product, or whether it's to be manufactured? That is a skill that I don't have, that I wish I had. But I have been able to still have a career in this area by saying "I don't know the science part, so I'm going to rely on someone else to evaluate the technology." I get back to Ray Kahn from Scripps, who was their first Tech Transfer Officer. He was very good about wandering the halls to talk to the scientists who might say: – "Hey, this is really new data. This is great stuff, isn't it?" But, the scientist had no idea that it could be commercialized. And Ray Kahn would say, "Hey, I can see how you can make a product out of this. This could be a diagnostic product or something like that." One person usually can't do it all; and that's the weakness I have. I readily make sure somebody else is doing the scientific evaluation part of it.

CARUSO: And so, a follow-up question is since you mentioned that often people rely on the – since other places are investing, you are getting a sort of validation from those companies. Thinking about something like Forward Ventures, which I've spoken with Stan Fleming about things, I know that he and Ivor started Forward Ventures. I'm not sure whether or not that is a unique discussion where you have someone like Ivor as a core component of this venture capital who can realize those scientific things. In terms of the venture capital firms that you know of, are there individuals in those firms that are really very scientifically-minded or come from science directly that can lend that sense of knowledge, sense of expertise about whether or not something is or has the potential to be playing a major role in the scientific arena as a possible product?

BELL: I would say definitely yes. I'll use this as an example for Enterprise Partners, a UC firm in San Diego. An M.D. by the name of Drew Senyei is very much the same ilk as Ivor, where both were MD's, but both became quite successful scientists and entrepreneurs. I've seen Drew on board meetings and discussions; and he really focuses in on how the technology can be commercialized, or what the weaknesses are going to be. Most all of the successful venture capital funds either have one or more of their partners with either very good science or technology street smarts, or they'll bring in consultants in a particular area.

Because most of this is breakthrough science, they're not going to have any partner that's going to be familiar with all the new technologies. So, yes, they will readily seek out consultation from others, such as for science, technology, or medical. You may have physician consultants to do analysis and investigation for the topic – are

physicians likely to adopt this kind of a new treatment regimen. Physicians are very slow in adopting new things. So it is important to learn if a new thing is going to be an uphill battle to convince physicians that this new thing is the best thing to do? It's hard to make physicians change their ways.

CARUSO: I was just looking at over the questions I have and there's only one thing that I specifically wanted to ask a little bit more about. After asking that though, I want to give you the chance to talk about anything that hasn't been covered that you would like to talk about. One thing I did want to go into a little bit was what your knowledge of CONNECT has been and whether or not you've had any involvement with that organization over time?

BELL: Yes, I had some knowledge of it and yes, I've had involvement with it. Number one, I think it's a very good organization and it's done an excellent job. I guess my first involvement was when Mary Walshok, who is a Dean of the Extension program as UCSD, came to our offices at Gray Cary to solicit money and solicited us to help get that thing started. She had the buy-in from Dick Atkinson, the then chancellor. Also involved was Bob Weaver, an account with the accounting firm by the name of Haskins and Sells or Deloitte Haskins and Sells, and Buzz Woolley. Those are the two I think that came to our office with Mary, to see if we would be one of the original sponsors. CONNECT means "connecting" the service providers, the academic, and the business people and organizations.

So we were one of the service providers and we joined in early on. I don't remember the exact dollars for sponsorship, but I think it was like $2,000 or something like that. Maybe six months later, CONNECT hired the first full-time executive employee, Bill Otterson. Barbara Bry might have been a part-time employee. Mary was saying $2,000 will get CONNECT going, and CONNECT will be self-supporting thereafter with either university money or participant's fees. As soon as Bill came aboard, Bill said: "Oh, it wasn't $2,000; it was $4,000; and it's an annual sponsorship amount." I remember it was at a pool party where he broke that news to me.

Now that Bill Otterson was on board, we needed to have all these sponsors put up the money regularly. So anyway, that's just a funny little back story. But yes, Bill was very successful in identifying new technologies. It was primarily life sciences, telecommunications, and software. CONNECT has expanded in a lot of other areas since then. I served on the CONNECT Steering Committee for three or four years in

the early years. CONNECT gradually grew; and I think CONNECT did a lot of great things.

For the last ten years, I've served on what's called the CONNECT Entrepreneur Hall of Fame Committee. There are about half a dozen of us that meet and try to select an annual candidate that deserves Hall of Fame recognition. We've had about a dozen people during these past ten years, and so that's been a very successful program. At the Hall of Fame luncheon, the honoree's history is presented, and the honoree is presented, and the honoree is interviewed about his background and experiences.

CARUSO: You mentioned especially in the early years you were on the steering committee, whatever it was called, and I know that from what other people have said that Bill's vision was important for where the organization went. I want to hear a bit more about what it is that CONNECT thought that it could do in those early years and how it wanted to go about doing that.

BELL: Well, I'm only one person, so I see it from my view and others might have different views – I would say when I first started out, CONNECT was trying to promote the University of California at San Diego. CONNECT was kind of headquartered there, staffed there, and initially got some funding from there. CONNECT was to try to help scientists get their technology commercialized. The university, I think, always wanted to be part of the community; and CONNECT was another way to get the university and the community together. So I think it was primarily trying to promote the university. CONNECT has since broken off from UCSD; and now CONNECT is very independent. CONNECT still wants to support the university, but even more so, I think CONNECT wants to support technology in San Diego. By technology, I mean life sciences, telecom, communications, and all the other sciences, to make them into businesses. But CONNECT also wanted to see all ships in the harbor rise together. So CONNECT was a "we're all in this together; let's not be little competitive silos here and there." The DLA Piper law firm has had offices in Palo Alto and San Francisco for the last 25 years or so, and that community was much different. Up north was much more competitive among the law firms, the accounting firms, other participants, and the companies up there.

But here in San Diego, the attitude was that one law firm would help out the other law firm, and one accounting firm would help out the other CPA firms. We all were willing to share. I remember one company Agouron, that later was acquired by

Pfizer. I did no legal work for Agouron, but its General Counsel called me up and asked me for sample legal documents, which I gave him. There was just a lot more of real community support, with everybody wanting to help everybody out. I think that attitude is still very prevalent, maybe not as quite much as it was in the early years, but there is that kind of DNA within the San Diego community to help everybody out.

CARUSO: How does one create such a sense of community? There are two things I think in there: What is it that CONNECT was actually doing? It's one thing to have a body exist, but mere existence isn't going to create that community. Were they holding events? If so, what were those events like? What were they doing to bring people together? And do you have a sense, again from your perspective, of how they were fostering, sort of tearing down of those traditional competitive barriers?

BELL: Well, I guess it's a lot of little needle pricks all around. It just all finally becomes something big. But just to give one little story: I think I was giving a program on university licensing and tech transfers from universities to companies and I remember Bill Otterson standing up in the audience. He wasn't on the podium at all, but standing up and saying, "Hey, the NIH has just come out with some proposed regulations to prohibit conflict of interest." Bill had known that for one of our clients at that time, La Jolla Cancer Research Foundation, which is now known as Sanford-Burnham, that I had written a letter for one of their scientists to send to a Congressman to say "don't prohibit conflict of interests, but rather manage conflict of interests." And Bill said, "I want all you guys to send the same letter to your Congressman – to urge that it is better to manage conflicts than to prohibit conflicts." I must have gotten 30 different requests from companies or institutions or scientists who were willing to send such a letter. We sent the letters, and NIH ultimately adopted rules to say NIH will manage conflicts of interest, rather than to prohibit conflicts. Such rules require that the conflict be identified, disclosed, not misused.

I would say that at least half of every meeting that Bill Otterson would attend, he would get up and say something to try to get the attendees to do something. That might just be to "hey, be sure you go to this conference" or "be sure you support this program," but often it would be "send in money because we're fighting this proposition that is going to be on a ballot" or something like that. He was very unabashed in saying what was going on in the community, state, or nation; and

urging people to take some action and rally the forces. Not to have it just be a one company or one person saying it, but to have the message stated by multiple people. So that – there was certainly that kind of outreach by Bill and CONNECT.

There were a lot of educational programs put on, such as scientific, business, finance, and seminars. There was a SpringBoard program for a young entrepreneur or a young company to present its business plan, to be screened by three people. For example, I would screen it from a legal and business standpoint; and somebody else would screen it from a scientific standpoint; and somebody else would screen it from a product development and marketing standpoint. We would have read the business plan, and then the person would come in and give a ten-minute oral spiel; and we'd give constructive criticism, both on the plan itself, as well as this oral presentation. A lot of people in the community volunteered to be on the panels for that SpringBoard program. Most of those companies never went anywhere, but a few of them succeeded and they said they got a lot of good feedback out of it.

CONNECT also put on programs by inviting the financial community, the investment bankers or venture capital firms, to come in and spend a half a day and have breakout sessions with companies, things like that. One thing that I really liked that CONNECT does not do anymore because of our internet age, was an annual directory booklet, with everybody's name in it and a page summary for each company; but it would become out of date pretty quickly. I still keep half a dozen of those annual directories around to look things up every now and then. Now it's all online. So anyway, those are some of the things that I can remember that CONNECT has done and been very well received.

CARUSO: Is there anything that you would like to talk about that we haven't? I know you shared a lot of information. I wasn't sure if, during the interview, you were thinking some things could be discussed more.

BELL: I guess one thing that I've thought of, as I was told I was going to be interviewed, was how client matters kind of migrated from one client to the next. Just to give a little summary of what I mean by that: I started doing work for the Scripps Clinic and Research Foundation in the early '70s. When Miles Laboratory offered to form a joint venture with Scripps, the executive for Miles Laboratory at that time was a man by the name of Theo Heinrichs. I met Theo then and we had some friendly battles. Theo grew up in Germany and he was even in Hitler's army

and stuff like that; but he and I would butt heads on things because I was on the Scripps' side and he was on the Miles' side. We had a joint venture, so we are supposed to be partners doing things. He became a very close friend later. Once he retired as president of Miles, he became the lead investor for Hambrecht & Quist Life Science Fund out of San Francisco. I sent Theo a three-page summary for a concept for a company that became known as Telios, which ultimately became a public company. Telios was a spin-off from La Jolla Cancer Research Foundation. Theo liked the Telios technology and he had H&Q fund it. Theo later funded a company in Ann Arbor by the name of Aastrom that I worked with for ten years or so. Theo had H&Q fund a San Diego company by the name of Canji that Schering-Plough ultimately purchased. So I merely mention those kinds of examples where I worked with one person in one role, and then got involved with some of these other companies.

As another example, the work I did for Scripps is the primary reason I started all the work for the La Jolla Cancer Research Foundation, now named Sanford-Burnham Medical Research Institute. Bill Fishman, who was at Tufts University, had come out to Coronado for a conference on cancer. He was facing retirement at age 65 at Tufts; and thought he'd like to keep doing research, so he called Scripps and said, "What do I do to form a new research foundation like yours?" And they said, "Call Knox." So from Boston, via telephone, we formed La Jolla Cancer Research Foundation; and that has been very successful. That was more than 35 years ago; and I still do work for them, now named Sanford-Burnham Medical Research Institute, and they've got 900 employees now. This is an example of how San Diego has been active in trying to see new things grow and new organizations form. When Bill Fishman formed this new entity, it was with the idea that Bill wanted to be close to UC San Diego, Salk, and Scripps, just to have a lot of interactions. In fact, I helped Bill Fishman get some rented facilities from Scripps down on Coast Boulevard when he first came out with a trailer with a frozen ice box with biological specimens in it; and we unloaded it on a weekend there.

When Ivor Royston formed the San Diego Cancer Research Center, later named the Sidney Kimmel Cancer Center, I did all the legal work. Ivor wanted a new organization that would combine basic research with clinical trials operations. He was trying to form it to have a close affiliation with Sharp Hospital, where a lot of the

clinical trials could be done at Sharp. So again, this is an example of "connect" multiple institutions that way.

Anyway, I just thought that was an interesting aspect, at least in my career, that I think is emblematic of San Diego: people trying to cooperate with each other, to see new organizations form, and try to make them succeed.

CARUSO: All right. Thank you very much.

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.