Joseph D. Panetta

Interview conducted by

Mark Jones, PhD

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San Diego Technology Archive

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Joseph D. Panetta

Joseph Panetta is President and CEO and a member of the Board of Directors of Biocom, California's largest and most-experienced leader and advocate for the life science industry. Biocom works on behalf of more than 1,000 members to drive public policy, build an enviable network of industry leaders, create access to capital development, introduce cutting-edge STEM education programs, and create robust value-driven purchasing programs. As President and CEO, he works with an experienced professional staff of 50, with offices located in San Diego, Los Angeles, Tokyo, and Washington, D.C. Together with a 60-member Board of Directors, he leads initiatives that help members produce novel solutions that improve the human condition.

Mr. Panetta oversees several subsidiaries of Biocom, including a Purchasing Group that provides more than $150 million in products and services savings to members. He is co-founder of the Biocom Political Action Committee, the Biocom Institute for education and workforce development, and chairman of the California Biotechnology Foundation, a joint initiative to inform legislators and the media about the state's life science sector. In 2014, Mr. Panetta was appointed by California Governor Jerry Brown to the Independent Citizens Oversight Committee, which serves as the governing and oversight board for the California Institute for Regenerative Medicine (CIRM) and is responsible for providing grant funding under the $3 billion California Stem Cell Initiative. He is past chairman of the Council of State Bioscience Associations (CSBA) and founding chairman of the State Medical Technology Alliance (SMTA)

Mr. Panetta holds a Bachelor of Science degree in biology from LeMoyne College, and a Master of Public Health degree in industrial and environmental health from the University of Pittsburgh. He is a graduate of the Brookings Institution Program for Executives and the Harvard Program on Negotiation. Mr. Panetta brings a depth

of experience to his role, having worked in policy in Washington, D.C. and in regulatory affairs in the life science industry before joining Biocom in 1999.

Mr. Panetta serves on the boards of directors of the San Diego Regional Economic Development Corporation, the San Diego Regional Chamber of Commerce, and CONNECT. He is a past chairman of the board of the San Diego Workforce Partnership. Mr. Panetta is a member of advisory boards of the Pharmacy School at UC San Diego, the Engineering school at San Diego State University, the College of Science and Mathematics at Cal State University San Marcos, and the National University School of Business and Management. He has received the following awards: the American Academy of Pharmaceutical Physicians Special Recognition Award; the CONNECT Distinguished Contribution Award for Life Science Innovation; and the Association of Pan Asian Communities Annual Leadership award, among others. In June 2017, he was honored by LEAD San Diego with The Ronald Kendrick Memorial Award for Regional Collaboration.

Source: Joseph Panetta

THE SAN DIEGO TECHNOLOGY ARCHIVE

INTERVIEWEE: **Joseph D. Panetta**

INTERVIEWER: **Mark Jones, Ph.D.**

DATE: **September 1, 2015**

LOCATION: **La Jolla, California**

PANETTA: I didn't get here until 1988. So my history with that company was with Alaris at the time. So I don't know any of those guys from the '70s. We went to the UCSD library archives and read about IVAC and IMED. Unfortunately, the guy who founded it, Richard Craven—I think—passed away about four years ago. So, you can't get him. But there were a lot of names mentioned in there. So it is good. We could track down some of those guys and get them to show up hopefully. It is a good resource.

JONES: This will be an oral history that will go in their archive and be available to the history of biomedical sciences and the biomedical industry. It's actually important stuff. So we're recording it. We want to get your story. Maybe we can start at the beginning.

PANETTA: Where do you want me to start?

JONES: Tell me about your family, your background, education, start early years.

PANETTA: I grew up in Syracuse, New York and went to high school and college there. When I graduated from high school, I planned on going to medical school. So I went to school at a very good, small Jesuit college in Syracuse called Le Moyne College that had a great reputation for students entering medical school. By the time I had gotten to my senior year I had lost interest in medical school and didn't really know what I wanted to do.

I graduated and thought I'll work for a couple of years and decide what I want to do from there. I got a job with a very large dairy products company based in Syracuse. Believe it or not, this company had been around for 50 years and they were starting

their first quality control laboratory. They had never had a quality control laboratory before.

JONES: This is back in the late '70s, yes? I don't think we had that company on the–

PANETTA: It's not on there. I didn't even put it on there anymore but it was a company called Byrne Dairy, B-Y-R-N-E, Byrne Dairy Products. It started way back in the early '20s by the Byrne family in Syracuse. I don't know what they were thinking but they hired me fresh out of Le Moyne College with my biology degree to start their quality control laboratory.

JONES: That was a great opportunity.

PANETTA: Yes. I didn't know the first thing about quality control or dairy products. About the only thing that I did know was that Le Moyne had given me was a very good, practical grounding in working in the laboratory. We spent a good balanced amount of time in class and in the lab. Something that today has given me a real appreciation here in San Diego for a good practical training in the biosciences in our schools here.

JONES: You're thinking in terms of cultivating a work force for this industry.

PANETTA: Yeah, cultivating a work force that can come out of school, especially the students with a four-year science degree who are able to hit the ground running and function in a laboratory. It's not all book learning or science. They actually know how to use laboratory equipment. A lot of our companies really appreciate that. I won't name schools but some are good at it and some are not so good at it and are improving all the time.

JONES: That's your start.

PANETTA: Yeah. I went to work in this laboratory and had a great time purchasing such primitive equipment as test tubes and just really basic stuff back then. I did that for about a year and a half. All that time I was thinking, I don't want to work in a dairy lab for the rest of my life in Syracuse, New York.

JONES: Were you working with regulators?

PANETTA: I was working with the New York State regulators. I actually had a milk tester's license that I had to study for and take a test for. So, I was a certified New York State milk tester at the time. I don't know where that would have led me in

terms of a future career. I actually had an offer before I left to go back to school. I had an offer from someone who did some of our overload testing for us on the side.

He said "why don't you stay here and come into a partnership with me on the lab. You can help me to build the business." I'm not sure if that would have been a good idea because when I look at the dairy business today and the efficiencies that we've created through biotech in a lot of ways, things like BST—that's another part of my story—that kind of work probably isn't as lucrative as it was back when we would collect milk farm by farm and test it farm by farm. We had 75 dairy farms at Byrne Dairy. I got on their website. Today they have about 12. So that's what efficiency has done—they produce much more milk than they did back then.

It became a matter of trying to figure out what I wanted to do. I had this dual interest, scientific research and eventually the environment. Back in the late '70s the environment was becoming a matter of very grave concern because of damage from things like acid rain and pesticides and the environment. Every day you would see a story in the paper.

JONES: I guess especially upstate New York. That's acid rain country.

PANETTA: That's acid rain country up there, also, manufacturing country, steel mills and chemical manufacturing plants.

I applied to graduate school. I applied to a couple of schools to go on and get a PhD in research and a couple of schools to study environmental science.

JONES: Where did you get the PhD idea? Where did that come from?

PANETTA: The reason I didn't go to medical school was that I had worked in a hospital. I loved the patient interaction. But what I was seeing more in the hospital was that doctors were becoming so reliant on tests. I worked in the lab in the hospital part time as well. I thought medicine was going too much in the direction of technology and not so much in the direction of patient interaction. That wasn't for me. I decided I didn't want to do that.

I was still interested in more of the human aspect of it. So I applied to a couple of schools and got into a couple of schools to get a PhD in human anatomy. I applied to a couple of schools in the environmental health arena. I got in and I weighed the two. My then fiancé and now wife, who is also a biology major and actually became a laboratory researcher herself, said to me she did not know what kind of a future there is in studying human anatomy. I bet there's more of a future in environmental health and environmental science.

I took that as a signal. If we're going to get married, maybe you ought to think about something that you can support us on. So, I got into a couple of schools, a bunch of schools actually. I was thinking about going to the University of Michigan. They had a great program at the University of Michigan. I drove out there to see it. It was a two year MSPH program in water quality. I thought this was okay.

We looked through Pittsburgh on the way back because I had also gotten into the Graduate School of Public Health in Pittsburgh. I went through there and talked to the people in the School of Public Health. They gave me this real sense of being connected to some of the real practical problems in environmental health in Pittsburgh, which, of course, is a steel city; Alcoa, U.S. Steel, Gulf Oil. I saw that a lot of the lecturers at the school were folks who were professionals in those areas, corporations as well.

I thought Michigan is great. It has got a great reputation. But I think I'll get a more practical education in Pitt. So, I went to school at the University of Pittsburgh and in two years got my degree in public health, my Masters in public health with a concentration on environmental and industrial health science.

I had another decision to make. My program in industrial and occupational health was a dual degree in the sense that I had training in occupational health and I had training in environmental health. I could have gone in two directions. I could have gone into a manufacturing environment on the industrial environmental side, human exposure in manufacturing and that kind of thing or I could go to more of the environmental side, water quality, air quality and those kinds of things. I actually was made an offer to go to work at the Allegheny County Health Department on the environmental side. I thought this is great. But something in me said I want to do something more on the large policy level.

I got in the car one day out of the blue in August of my final year. I drove down to Washington D.C., drove down to the EPA. This was 1979. So you could literally walk into any government building in D.C. without having to show any ID, without having to go through a scanner, nothing. I walked into the EPA and actually just started knocking on some doors and said I'm looking for a job—actually knocking on doors in the water quality program because my concentration in environmental health had been in water quality. EPA was hiring like gangbusters back in 1979.

JONES: Three Mile Island.

PANETTA: Three Mile Island and I don't know if we had Hooker Chemical and the incident up in Buffalo, New York. I forget what that was now with all the buried

chemicals. All the big environmental laws were being passed, the Clean Air Act, the Clean Water Act and the Toxic Substances Control Act. They were hiring up like gangbusters. I was given an offer in the water program. But it was a one year temporary job. They said don't worry. It will convert over to a permanent job.

As I was walking out, just out of complete serendipity, I ran into a woman who ran a part of the program in pesticides and toxic substances. She said we've got full time jobs because we're not as glamorous as water. They are a pay grade higher than the water jobs. I said sign me up. I don't know anything about pesticides, but I'll learn.

So, I went to work at the EPA in the pesticides and toxic substances group. I was part of an incredible group that, for the first time, was reviewing all of these different kinds of chemical pesticides that had been approved over 50 years by the Department of Agriculture with almost no data at all. That was the way it used to be done. I ended up running teams of scientists and environmental toxicologists, environmental scientists, economists, industrial hygienists to review the health risks of all these various pesticides and to make decisions on what was needed from the manufacturers in the way of data, whether they were enough of a threat to workers of the environment that certain uses ought to be pulling off the label and making recommendations to our assistant administrator on all that stuff.

I then ended up working on one that was incredibly controversial called ethylene dibromide or EDB. It was being used to fumigate citrus that was being shipped to places like Japan to disinfest it of the eggs laid by the Mediterranean fruit fly. It was an issue out here in California. That became such a big issue that I ended up in meetings with the White House with policy makers over there because citrus fruit was such a huge market for the U.S. I got more exposed to that kind of policy and ended up then looking for a job in the policy office at EPA. I spend two years as a senior policy analyst in that office working on pesticides and toxic substances policy overall for the agency. Five years of that –

JONES: Tell me just a little bit about the substance of that work. How was the policy formulated? What was the process?

PANETTA: The agency at that time was about 12 years old. Policymaking was a foreign thing to the agency at the time. They were so busy trying to implement laws that they weren't really focused on what their policy should be from an implementation standpoint. In other words, what was their policy going to be on the number of permits that they wanted to issue for new drinking water plants? What was their policy going to be on turning over responsibility to the states for managing these various laws?

So, the substance of that work was literally, for the first time, to set up a system under which we would measure and report out and work with our Reno offices on implementation of all of these different laws and regulations in a way that we could actually measure our progress and report back to the President on our progress.

It was very controversial in the program offices because no one had ever made them do any of this before. So, it was a free for all in the program offices. It was just do whatever you want to do. Come to work every day. Nobody ever asked you what you did. Nobody asked you how much of it you did. Nobody asked you what your plan was to turn it over to anybody else.

When I went to work for Anne Gorsuch, the administrator at the time, we began to implement these programs. The folks who had been there for a while got pretty ticked off. Then my boss ran into some issues around some of her assistants who were less than above board about some of the meetings they were having with industry. She didn't hire any of those folks. They were all given to her by political appointees. She was finally forced to leave the agency. After she left, that was the end of what we were doing on policy. And after she left, I decided it was time for me to leave too.

My wife was a researcher at the Red Cross blood research lab in Washington. She was working on a test for a new type of hepatitis that had been detected that they were calling non-A, non-B hepatitis at the time. Of course, now we know it as hepatitis C. She said to me, if we want to have kids I feel really uncomfortable coming to work in a hepatitis research lab every day.

I said I want to leave EPA. Maybe it's time for me to go get some experience on the corporate side. I looked around. I had all this experience interfacing with my program office folks at the EPA. The ideal opportunity that came up was to go to work for a chemical company and be on the other side of the fence. So, I took a job as a manager of regulatory affairs for a company called Pennwalt Corporation in Philadelphia.

Pennwalt, at that time, was probably more than 100 years old. It had originally been called the Pennsylvania Salt Company. That's how far back their history went. By then, they were just a very diverse group of companies that made everything from centrifuges, to Piezo electric film, to agricultural chemicals, to dental equipment, incredibly diverse.

JONES: A conglomerate.

PANETTA: Yeah. It was a great opportunity to go to work at a 10,000 people Fortune 100 company. I decided to take the job and go there. My wife, at the same time, got a job with what was then called ICI Americas, their pharmaceuticals division, now called AstraZeneca. She became a clinical data analyst with AstraZeneca.

We lived in Wilmington and I commuted up to Philadelphia every day to go to work at Pennwalt which was great. It was a great opportunity to work for a global company. It gave me great management experience. It gave me a great opportunity to understand working with regulators from the industry side and great management in the company.

One day I got a call from the research folks at Pennwalt. They said we'd like some help from you on the regulatory side in Washington. We're doing some experiments with bacteria and trying to grow up bacteria in a fermenter to see if we could potentially use these bacteria to produce proteins. That's the next big thing. But we don't know much about the containment rules. We don't know much about –

JONES: Recombinant proteins.

PANETTA: They weren't recombinant yet but they were thinking about how they could get into recombinant proteins. I started to work with them a little bit. We got to the point where we needed to get senior management approval to begin to work with recombinant organisms. As they said, we understand fermentation and we want to move to the next step.

So, we went to make a presentation to the CEO and the president and chief operating officer. I went with them because I had to explain the safety issues. We made this presentation about how we thought biology could really benefit the Pennwalt Corporation of the future and that this was the next big thing. These two folks were chemical engineers. I'm guessing they were 60 years old at the time. They looked at us and they said gentlemen, Pennwalt Corporation is a chemical company. We don't do biology here. I thought that's not very forward looking. It's not very futuristic. But okay. I've got a good job. I'll go back and do my job.

About a month or two later, just out of the blue, I got a call from a recruiter who I knew. In passing one time, I had mentioned to him that we were working on this. He called and said I'm working with a company called Mycogen Corporation out in San Diego. They need a regulatory person. They're working with growing up microbes in a fermenter to produce proteins. Didn't you say you were interested in that stuff? I said I'm absolutely interested in it.

JONES: I've got Elf Aquitaine here.

PANETTA: Pennwalt became Elf Aquitaine. They were acquired by ELF in France and that's what they became. That's what they are still today.

JONES: So, Mycogen was looking for –

PANETTA: Little old fledgling Mycogen –

JONES: Two years old at that time.

PANETTA: Five years old, was not even five years old probably. They knew they were doing something really tricky. They had a bacterial organism, pseudomonas fluorescens, that they were creating a recombinant organism by taking the protein that comes out of bacillus thuringiensis that was traditionally from the '40s used as a topical spray insecticide but not very effective when you're up against the hard core organelle chlorine types of insecticides. But it was becoming more popular because of the environmental issues around pesticide use. Of course, I had that experience in working at EPA.

He said they really want to talk to you. I said okay. Where are they? San Diego. I said where is that? Somewhere in Southern California. I go to Sacramento a lot. Where is San Diego? South of Los Angeles somewhere? Yeah. Down in the Mexican border? Yeah. I said all right. I have to be in Sacramento in a couple of weeks. I'll fly down and talk to them, which is exactly what I did.

I'll never forget the conversation I had with these folks. I had never talked to anyone in a biotech company before. Here I was coming out of a Fortune 100, back then maybe three billion dollars in sales chemical company, 10,000 people, well established in Philadelphia and around the world. I said to the CEO, Jerry Caulder, tell me, what's your business model? He said we're going to produce the first genetically engineered pesticides. They are going to replace a whole class of chemical pesticides. The plan is to have these commercial within three years. At the time, he said the plan is for the company to be profitable by 1995. Of course, all biotech companies were going to be profitable within five or six years, right?

JONES: Sure.

PANETTA: I said what are your revenues right now? He said our revenues are really the revenues we receive from – the company had gone public the year before I got there – our stock sales and our investors. We've got $18 million in the bank and that should last us at least a year. He said that like we're in fine shape. We've got a

year of capital in the bank. I said what happens after that? He said we issue more stock. We raise more money. I said that's an interesting model.

I was intrigued with the technology. I was intrigued, as I had been at Pennwalt Corporation, with the idea that there was the potential to create this new class of environmentally friendly pesticides. We went back and forth for about a month. I decided to take the job.

JONES: You had to assess the risk, had to balance the risk. Did you have to sell it to your wife? What were your deliberations like?

PANETTA: I went back and told my wife about this. She said wow. That doesn't make a lot of sense to me. But they invited us both back out here for a weekend. We came back out and spent the weekend on the beach enjoying the 72-degree weather in San Diego while it was 95 degrees with 95 percent humidity back in Wilmington. We went back and my wife actually said to me maybe we should think about this.

She said something funny. She said what a lot of people who come out here say to me now. She said do it for a couple of years and we'll come back. We'll just go out and enjoy the beach out in California for a couple of years. She and I both had grown up in Syracuse. I went to Le Moyne and she went to Syracuse University. We met working in the hospital lab together. We were East Coasters. So, we thought this would just be a fun little diversion for a couple of years.

JONES: It worked all right.

PANETTA: Oh yeah. We didn't know where it was going to go. But we thought we can always come back. At the same time I thought, this technology is incredibly promising. If we can make this work, this could be a huge thing. So, we came out here in 1988. At Mycogen we had a challenge on our hands. The microbes that we were growing in the fermenter that produced the recombinant protein were then going to be released into the environment as a formulated pesticide product but as a live organism.

Things were happening in places like Monterey where ordinances were being passed where you couldn't release genetically modified organisms into the environment. So we had a problem. We didn't know what we were going to do about it. Until one of our scientists Frank Gartner and one of our founders Andy Barnes came up with an ingenious idea. They said, “what if we kill these organisms and keep the protein intact?” We can still use them for the same intended purpose.

They came up with the idea of using iodine fixative that would kill the cells. The iodine fixative also acted to harden the cell wall. So, we got a double benefit out of it in the sense that it took care of the environmental question of releasing live organisms. It also created a product that would last longer on a leaf surface because of the hardened cell wall.

JONES: So, the bugs are going to consume it and then break down the cell.

PANETTA: Yes. The problem with BT as a natural product is it typically only lasts on a leaf surface for a couple of days. So if you don't catch the bugs in the right stage of their life cycle, it doesn't work. But this product could last for 14 days. It would last through the various cycles of growth of the insects.

We got approval. It was not easy because we had to do a lot of the same kinds of tests that you would do for chemical pesticides. But we didn't have to do any of the long-term toxicity tests that take years.

JONES: When Mycogen first talked to you, they came to you because they saw this problem looming and you were brought in to solve this problem?

PANETTA: Yes. The problem that they saw was they didn't know the first thing about taking products like this to EPA to ask for approval.

JONES: Nobody did, right?

PANETTA: Nobody did. But they knew that I had been there. And they knew that I knew the whole agricultural chemicals regulatory world from my time at Pennwalt. So, they took a chance on me and I took a chance on them, was what it came down to. I was brought in to figure out how to get these things approved and to get them approved.

We began to do the testing around 1989. It took us a little over a year. We made the submission of all the data to the pesticides group at EPA. They had to be satisfied that we, in fact, had a process that would kill all these organisms and that there would not be any that would escape into the environment. We had to prove that. Of course, because they were proteins and they broke down, there was not any concern about chronic toxicity, cancer or any of those things. We did not have to do any of the typical tests that you have to do on a pesticide. So, it only took us about a year to get the data package together.

By 1991 we had approval. We began to sell the product. The sales went pretty well. There was only one problem. By 1991, a company call Monsanto was already

beginning to take the genetic sequence that we were putting into the bacterium to express the protein to spray out onto the corn crops and cotton. They were already inserting it into the seeds themselves and getting the plant to express it on its own. We realized we better shift gears pretty quickly.

JONES: At that time, it must have been still a long way off before it was approved. You could get into the market and still get five to ten years, right?

PANETTA: We thought. Jerry Caulder, our CEO, and Al Kern, who was my boss at the time, who ran commercial development said, Joe, you better go learn more about what it's going to take to get these genetically engineered seeds approved. We might find ourselves going in that direction. I went to meetings in Washington and wherever there were meetings being held on the planning process for doing the various tests that would be required to get those kinds of products approved.

In the meantime, we bought a couple of seed companies that had some great technologies in Texas and in Wisconsin, particularly, the one in Madison, Wisconsin, called Jake's Seeds that had a laboratory that was working with the same kinds of things that Monsanto was working with. In fact, they had also acquired a company that had this technology themselves that Monsanto had been working with as well. We ended up in court over the whole thing with Monsanto. In the end, we won a $375 million judgment over who actually owned the technology.

JONES: Was it patents?

PANETTA: It was over patents and who owned the patents. We went on then from that point around 1991 to begin working on genetically engineered seeds using some of the same sequences that we already had.

JONES: Where did that technology come from? Was it Jake's? Is that what you said?

PANETTA: It was Jake's and it was a couple of small companies also that Jake's had acquired. They were small seed companies in the Midwest.

JONES: Did they get the technology out of some university? Did they get a molecular biologist?

PANETTA: I am not really sure.

JONES: I can look at the patents.

PANETTA: I am not sure where they got it from but they owned it. They had some great scientists in the lab in Madison, Wisconsin who were working with it. So, we got into this race. We teamed up with what is now Syngenta and what was then Novartis Seeds. We also teamed up with a very well established corn seed company in Iowa, Pioneer Seeds, to commercialize the technology. We just went into an all-out race to do the regulatory work, the field trials, everything we needed to put together a business around genetically engineered crops. By 1994, we were ready to go to the federal government to ask for approval about the same time Monsanto was.

JONES: How did you feel about this race? Because you were seriously under resourced in comparison to Monsanto, I would assume.

PANETTA: Yes, it was David and Goliath but we enjoyed it. It was fun. It was fun from the standpoint that it was all for one and one for all. Great comradery within the company, our CEO created a great environment.

JONES: Was it Jerry?

PANETTA: It was Jerry. It was hard work. At the same time, we did a lot of things to come together and have some fun. We all enjoyed each other's company for the most part. There were always little social issues within any biotech company. For the most part we had a great time. We were there from 7:00 in the morning until 10:00 at night sometimes. We were working hard and we knew who the opposition was as well. We were all in it to win the race or at least to come in at the same time. So, we did. We ended up doing what we had to do, working with Novartis and Pioneer who were great partners for us. By 1995, we had obtained approval for our genetically modified seeds.

JONES: Ahead of Monsanto?

PANETTA: Same time. They came out literally within a week of each other. Then it was off to compete with each other. After we got that approval, our new CEO Jerry decided to back off and do some investing in some other things. Carl Eibl became our CEO. Carl had been our general counsel. Carl and a few other folks, Jeff Guise over at Wilson Sonsini and a few other patent lawyers looked at the patents and said we think we own this technology, not Monsanto. They had the guts to say we are going to sue them and we did. We took them to court. It was a battle here in San Diego in the U.S. District Court and we won. We won the patent battle and a $375 million judgment.

JONES: Again, this is a very risky thing to do because Monsanto could string this thing out. What was your strategy?

PANETTA: The strategy was to hire the best, hardest working outside patent lawyers we could find. That's what we did. We set up a war room where we spent day and night putting together our case. Monsanto, of course, sent in their lawyers in their $2000 suits who thought they'd make us look like fools and, basically, the opposite happened. We ended up with the rights. Here we were the cat that ate the canary.

By 1997 or so, we were drawing the attention of some folks at one of Monsanto's rivals, Dow AgroSciences, and the Dow Chemical Company for two reasons. The Dow Chemical Company was interested in our fermentation technology which we had literally put on the shelf because we were working with the seeds. The Dow AgroSciences folks were interested in the seed business because they too saw that as a wave of the future. So, we began working with them more.

By 1998, they made the board and our shareholders an offer to acquire the company. I was on the senior management team by then. I was a corporate VP. We decided that the offer that they made was one that we wanted to take and we went along with it. It was good. It was good for the shareholders. By that point, Mycogen was 15 years old, still not profitable. A lot of investment had been made in growing the company. By that point, we had about 600 employees, about $250 million in business. It was a good time to sell for the benefit of the shareholders who had waited so long and invested so much in the company. So, we sold the company to Dow AgroSciences.

Part of the business went to Midland, Michigan, the fermentation business and the other part of the business went to Indianapolis where their AgroSciences group was based. Within a year they asked me to move there. After they acquired us, they had given me a great position as global leader of government affairs in their biotech group. It was a great opportunity for the future.

JONES: That was because they were just getting started in biotech and they really didn't have it all put together.

PANETTA: Yeah. I took the job. What I found within a year was that going to Dow AgroSciences was almost like going back to Pennwalt in the sense that it was a large corporation. I found myself constantly in meetings. I felt boxed in, in terms of the decisions that I could make on my own, that I had been able to make on my own at Mycogen before. At the end of a year, they said we want you to move to Indianapolis. I said I don't think that's what I want to do.

Within about two or three months, Jerry Caulder and some of the folks on the Biocom boards came to me and said Biocom is a great organization. I knew Biocom because at the time we housed Biocom at Mycogen. Biocom's offices were at Mycogen.

JONES: So Jerry was involved in organizing it.

PANETTA: Yes. Jerry, David Hale, Bill Rastetter, Duane Roth, David Robinson, it was some of the early folks in Biotech here. They asked me if I'd come and take over. Biocom at that time was about four or five years old. It was essentially a great networking group for local companies and CEOs. It had been very successful in beginning to develop relationships with city government, the permitting department downtown, the fire warden, anybody locally who had anything to do with helping to streamline the process of constructing biotech facilities.

They realized they needed to have more advocacy interface in places like Sacramento and Washington. I had that experience both by being in Washington and by working at places like Mycogen and Pennwalt. I didn't want to leave. I looked at my wife, Karen, and I said I don't know the first thing about running a trade association. I had been active in trade associations like BIO. At the time it wasn't even called BIO. It was called the Industrial Biotechnology Association. At the same time, we said if we want to stay in San Diego we better jump on the opportunity because there doesn't seem to be much else for a guy who understands Ag biotech in a town that's developing drugs. So, I said all right. I'll take the job.

JONES: It was important to stay in San Diego. You settled there. You liked it.

PANETTA: We loved it here. Our kids were just starting high school. Our daughter was just starting high school. Our son was just starting middle school.

JONES: That's a tough time to move kids.

PANETTA: Yeah, and we loved being here. We had pretty much become immersed in San Diego. We really didn't want to leave.

JONES: You had been here since the mid '80s or late '80s?

PANETTA: 1988.

JONES: There had been a lot of growth in the local industry. Could you just talk about your observations of what your sense of what was going on here and how it was taking place?

PANETTA: There were one or two other guys who did regulatory work here when I came here. One of the things we always used to talk about was where are we going to go if our companies fold? At that time, there were not a lot of biotech companies here. There were not a lot of jobs in regulatory affairs because so many companies were early stage research biotech companies. They were not even thinking about clinical trials or anything that would involve regulatory work at the time.

My other hat at Mycogen was that I ran facilities, environmental health and safety, and all of our quality assurance as well, which was not a small job. I could have stayed on that side probably and looked for a job in that area. But back in the late '80s, early '90s, it was hard to recruit people here because the industry was still very much in its infancy. The concern was it was incredibly expensive to come here and buy a house. We had a house in Wilmington, Delaware. It was a 2200 square foot house that we had paid $85,000 for a couple of years before. To buy anything close to work, even back in 1988, that size was about $350,000. People aren't going to make four times what they're making back there. So, it was tough.

At the time we were still celebrating the success of Hybritech, which had been sold to Lilly by then. It was one of the first companies to actually produce a biotech product, the PSA test for prostate cancer that they commercialized back in the late '70s-1980. There were some companies that were well along in clinical trials but back then it was still tough to raise money.

I've heard the story a bunch of times from Bill Rastetter about how I literally was out of cash until he made a phone call to someone at Genentech to fuel the company through getting their approval of their Rituxan product. So, it was a touch and go, wild time for the industry here and also a time when we didn't yet have the experienced senior management folks and CEOs that we now refer to as the group of cereal CEOs and cereal entrepreneurs. But there wasn't any cereal yet to be had back then.

So, not a lot of experience and yet San Diego was becoming one of the big biotech centers in the country. Yet, Boston and San Francisco were better known as biotech centers than San Diego was. I think it would be fair to say that back in the late '90s, for the most part, we were here working in a very insular way to develop the biotech industry, not a lot of connections outside of San Diego.

JONES: There was not a lot of capital here.

PANETTA: No. The capital was all up in San Francisco. There were only one or two venture firms here, primarily Forward Ventures that Ivor Royston started after

Hybritech and Enterprise Ventures that Drew Senyei had started that was more focused on investment and medical devices. In some ways, back then the medical device industry was probably as large as the biotech industry here as well.

JONES: There were a lot of docs at UCSD inventing things.

PANETTA: Yeah. Alaris was big but a whole slew of other types of products in ophthalmology and diagnostic testing. Gen-Probe had gotten off the ground by then, which Ivor Royston was involved in as well. So, by 1999, we were on the brink of really becoming well known as a biotech cluster here.

JONES: Did you have ideas about what needed to be done in order to promote this the right way?

PANETTA: Yes. Since I had been at Pennwalt and Mycogen, one of the things that had almost become a part of my everyday life was working internationally. At Mycogen, we had offices in Europe and South America. We worked a lot in Australia and Japan and had Japanese partners. At Pennwalt, we had the same thing, offices all over the place. Even at Mycogen, I spent a lot of my time flying around the world to our various sites working with folks, getting the regulatory approvals we needed through the European union, working with the Argentinians and the Chileans where we would grow seed in the opposite seasons that we have here, they had down there. So we could grow twice as much seed by taking advantage of places like Chile and Argentina.

JONES: Was Monsanto doing that too?

PANETTA: Monsanto was doing the same. Everybody was doing that. When I came to Biocom I thought one of the things I would really like to do is to give this industry some global exposure. I came here with the idea that we needed to build this organization so that it would act as a real marketer for San Diego biotech.

Fortunately, I had a great partner in Julie Meier Wright who ran the San Diego Economic Development Corporation at the time. She had been Pete Wilson's secretary at Trade and Commerce when he was governor. Pete had started a group called the Governor's Biotechnology Advisory Council back around 1993 or so.

My boss, Jerry Caulder, served on it but Jerry sent me to the meetings because he felt that I had the experience dealing with government folks. So, I would go up and sit in these meetings that Julie would run for Pete. We would talk about things like how could the state help to grow the biotechnology industry? What was the industry shaping up to look like?

When Pete served his two terms and retired, Julie came down here to run the EDC. Julie and I began to work together from the start to create a presentation that we began to give to folks here and outside of San Diego that we titled the San Diego life science ecosystem of innovation. Our first big opportunity came when in 2000 the biotechnology industry organization decided that it would have its annual conference in 2001 in San Diego. BIO itself started the conference back in 1994. Its predecessor had had a couple of small get togethers in San Diego but this conference had grown to become a big international conference by that point. BIO decided to have it here in 2001.

One of my first tasks right out of the gate was to work with the Biocom board and with the industry in San Diego to make sure that we took advantage of this convention as an opportunity to really showcase what was happening here in biotech. That was a big part of the goal. Julie and the EDC were great partners. Another goal was to begin to establish more of a presence in Sacramento where we had built relationships through the governor's biotechnology council and in Washington because the concern that I had and our board leadership had was that while BIO was a great organization in Washington representing the industry, we felt that we needed our own representation as a San Diego biotech industry in Washington.

JONES: Was there any way that interests were not completely aligned there or you felt it was important to get some face time for San Diego specifically?

PANETTA: We felt that our local legislators, our members of Congress, should have the interaction with our local biotech industry in Washington and that they could help to drive a lot. We had also had some experience in that regard. When Lynn Schenk was a member of Congress from San Diego, she only served one term from 1992 to 1994, but she was largely responsible for the passage of the first Prescription Drug User Fee Act. That was largely through relationships that companies here in San Diego had with Lynn.

We thought that it was important to continue having that kind of relationship and having a presence in D.C., which with an organization at that time, we only had six people on the staff and our only public policy person was a person who dealt with city hall for the most part.

One of things that I began to do was to travel to Washington more. We had an assistant that was here when I got here, April Bailey, who got her degree in PoliSci at San Diego State and spent a year as an intern on Capitol Hill. I said, “You are going to be the foundation of our Washington D.C. program, April.” Let's figure it out.

JONES: She had the talent to do that.

PANETTA: She had the talent. She had the drive. She was here. She was at Biocom. We began to build that program. We began to do more, largely beginning with the BIO conference to promote San Diego. I began to travel more to places around the country. I became engaged in a group called the Council of State Bioscience Associations that was sponsored by BIO. I moved into more of a leadership role there and began to travel around to the different state organizations and talk about what we were doing here in San Diego.

It began to pay off in the sense that we got more attention for what was happening here in San Diego. When I came here there was one pharmaceutical company, Johnson & Johnson, that had a presence here. We began to see more pharmaceutical companies taking an interest in having a presence in San Diego. We would talk to these folks at conferences. We would invite them here.

JONES: Put them in touch to say you need to go to Scripps and UCSD.

PANETTA: Yes, come and see what we have got going on here. Can we set up meetings for you? Can we bring folks into Biocom who you can talk to? It really began to work to get some exposure. It began to pay off.

The other thing we began to realize at that time was that capital was still pretty scarce. So, we thought we should build some programs to help companies to raise investment capital. We began to focus more on the venture world. We created a whole suite of visiting offices for venture capitalists from out of town who might want to come to San Diego and spend a week. We would give them office space so they could work out of it at Biocom. That paid off as well because, in the end, we got two or three venture firms that moved down to San Diego, Domain Ventures, Thomas McNerney, up in the Bay Area. Sophie Nova came down here as well.

JONES: These are people that would come into your offices.

PANETTA: Yes. Domain, of course, still has its headquarters here. They moved down from Orange County. The other thing we realized was that we needed to continue to grow the talent base here as companies were evolving and maturing. It had, at that point, evolved into a pretty solid research and development cluster. It was still not yet a development in commercialization cluster.

One of the things that we began to focus on was what we still called creating the home grown work force, training people in manufacturing, training people in basic management, putting together programs that would help young CEOs and young

executives to be mentored by more experienced CEOs and executives. Those programs continued. We have got programs for scientists in management. We have got programs that we helped to create in San Diego State, degree programs in regulatory affairs, one that started out as a two year program at one of the community colleges and is now a four year program because that community college is one of the first in the state to have been given approval to go to a four year degree program in fermentation engineering. We have continued to try to keep pace with what the professional development needs that are in the industry.

By 2008 or so, when the economy began to turn and we saw a whole change in the focus of investing in biotech companies –

JONES: Venture capital just evaporated.

PANETTA: Yes, venture capital evaporated and venture capital that was invested was being focused more on acquiring technologies and trying to get those technologies developed by experienced outside experts, not building companies with 300 or 400 people in them and building facilities that were monuments to the company.

JONES: And San Diego hadn't really had an anchor.

PANETTA: No, San Diego had not had an anchor. What was great about that was a lot of people who had come out of biotech companies had a chance to work as experts, became contract researchers. A lot of the folks in these biotech companies were now in companies with no more than 25 or 50 people in them because the investors didn't want to invest in creating these huge companies that would potentially be acquired. What would you do with all the physical facility and all the people that you had hired? Better to contract out and have experts do all of this work.

We began to focus more on, at that point, building the framework around the contract research community here in San Diego and connecting companies with the best talent that existed which is good for small companies because at that time and even today we've got 700 members at Biocom. The majority of them are companies with 25 or 50 people. If you try to spread across that number of companies the ability to hire experts in every field at each company, they're just not out there. If you can find an experienced contract researcher who can go to work for five, ten, twelve of these companies at one time, they can all benefit by that experience. That's a much more successful way to do things. So, we've been working a lot in that arena as well.

The other thing we realized was that these small companies especially with the need to conserve capital could benefit by a program that would allow them to purchase everything that they needed to run their companies successfully and supply their companies, if we could provide it on a discount through a large group purchasing program. We created a separate for profit entity within Biocom called the Biocom purchasing group that provides 35 different types of supplies and services under contract to our members.

JONES: How many of them make purchases, what percentage would you say?

PANETTA: Ninety-five percent take advantage of it. The largest contract is for laboratory supplies. The next largest is for office supplies. One of the larger ones that we created about three years ago is for healthcare benefits. It essentially gives our small companies the ability to purchase at a discount level that only a large corporation would be able to negotiate. That's been really successful for our members here in San Diego.

JONES: The inflection point for focusing on this kind of collective stuff and contract research, did you say 2008 or even before that had you gone?

PANETTA: 2008.

JONES: This is a conscious strategy at some point. Was it your thinking that maybe we have got to give up the idea of building a Genentech here?

PANETTA: That has always been a controversial topic in biotech in San Diego. At one point, a lot of us were ringing our hands about how we didn't have a Genentech here and asking what is it going to take to have a Genentech here? Companies like Biogen Idec, what was IDEC back in 1999-2000, we thought would become the next Genentech or Genzyme but they did a reverse merger with Biogen and ended up shutting down here and moving to Boston. There have been a couple of those. There has never been a successful evolution here of a biotech company in becoming the next Genentech.

On the flip side, the reason that that's not happening is that companies are being acquired because they're creating some very attractive science and technology. They're getting to mid-stage where they're in phase two clinical trials. We've got every pharma company under the sun watching what's going on here now with a presence here.

JONES: It's just a recognition that the industry has gone in this direction. We have to go with it and we can.

PANETTA: We can and it is okay. What is great about it is that the folks who are selling these companies, the CEOs of these companies, I mean, the shareholders are selling the companies, but the CEOs of these companies are, for the most part, going on starting new companies and bringing along their talented senior management teams. I think that's okay. It is creating the potential for new drugs to be developed through the acquiring companies.

The landscape has changed a lot here. When I talked about the way it was back in the late '80s, early '90s, the biggest change today here is the presence of all these pharmaceutical companies, whether it's Pfizer, Lilly, Celgene with large research facilities here or AstraZeneca, which operates essentially through an acquisition that they made here of a biotech company.

JONES: What company was that?

PANETTA: It was not Acadia. I can't remember the name of the company now. But they have largely kept it intact. Then you have got Johnson & Johnson, which is doing remarkably well with its J-labs here with 47 companies incubating within their J-labs. Every model under the sun, a couple of companies like Merck have had scouts here and nobody else. I think the two examples are Sanofi-Aventis and Merck that have one or two people here. GlaxoSmithKline teamed up with Avalon Ventures and invested about $400 million in the creation of ten new biotech companies here recently. They've already created six with Avalon. So, it's a much different landscape from what it was. It's a different model probably than you see in places like Boston or San Francisco. The opportunity that these companies have to be a part of what's going on in biotech in San Diego is much different than what it was 10 or 15 years ago.

JONES: Does that make your activities more national, more global? You're talking about AstraZeneca or whoever. They can be anywhere, right?

PANETTA: Yeah. About five years ago, we created a brand new conference that's been growing every year that we call our global Pharma Biotech Partnering Conference. It takes place at the end of February each year. All of the major pharma companies send their licensing and business development people here. Even some of their very senior management people come to speak at this conference. It's set up as a partnering conference between primarily our biotech companies in San Diego and the licensing folks *[phone rings]*. That's been a huge change. I think it's going to continue to happen.

The folks from Japan – we've got an office in Tokyo that we opened about six months ago. We've got 20 companies from Japan that are members of Biocom now. We think there are huge opportunities in Japan for San Diego, not only in terms of our companies entering the Japanese market, but in terms of bringing Japanese companies here to take advantage of the venture communities that we have in California. Japan doesn't have much of a venture community but their biotech industry is evolving pretty quickly.

We do a lot in regenerative medicine here, of course. One of my other hats is that I sit on the Independent Citizens Oversight Committee for the California Institute for Regenerative Medicine. Recently the grants that we've been approving have been for products that are going into later stage clinical trials and potentially commercialization. That's a huge thing here for us in San Diego.

JONES: A lot of grants are coming down here?

PANETTA: I'd say about half the grants are coming down here so it's a good split. One of our most advanced companies, Biosite, down here has been working with developing pancreatic stem cells that secrete insulin. They have been able to insert them into a pouch that can be implanted under the skin and basically act as an artificial pancreas. So, we have got high hopes for Biosite becoming successful and getting that product approved. They are in late stage clinical trials now.

JONES: That could be huge. That could be Genentech. Diabetes is huge.

PANETTA: People have asked me, is this three billion dollars that the state voters decided to invest in stem cell research worth it? My answer is if for three billion dollars all that we get is an artificial pancreas, it has been successful. I think three billion dollars is a pretty good investment in curing diabetes. We'll keep our fingers crossed for Biosite being successful. All sorts of other areas, Alzheimer's disease, Parkinson's disease, osteoarthritis, that are coming into later stage trials now.

JONES: It is all fascinating stuff. Speaking of Alzheimer's, what is your take on the dispute between UCSD and USC and how does that impact people working in the field? What does it mean for you?

PANETTA: First of all, it is unfortunate that there wasn't a more collaborative approach to how that study might be jointly managed by USC and UCSD. But this happens all the time. Researchers are given better offers to go somewhere else and they go. The bigger question for us is what is USC's end game? About a year ago, they came very close to acquiring the Scripps Institution here. Fortunately, that was thwarted at the last minute.

I know because I have been up there. Los Angeles wants to create a biotech community—they are actively working to create a biotech community. They have created a plan for a biotech community up there. They also have a good number of biotech companies in the Los Angeles area already. Los Angeles is going to push hard and even harder to bring to L.A. the assets that they need to create a biotech community.

Our strategy is to sit down with them and to say we can do this in a way that we can both benefit. We have got a lot of folks down in San Diego whom you could tap into and who are more than willing to do business up in Los Angeles to help them to build a biotech cluster up there. We, at Biocom, for the last six or seven years have referred to ourselves as the Southern California Life Science Association, which means for us that we've got members all the way up beyond Los Angeles ourselves as an organization. We really think that there's a better opportunity if we work together to create one Southern California life science cluster that reaches from L.A. to San Diego than for these kinds of battles to go on. I think it could be done. If we do it successfully, L.A. will benefit and San Diego will benefit.

You've got great research universities up there, UCLA and USC. There are some excellent biomedical research institutions up there, private institutes. There is a great base of investment capital up there and an international airport that we don't have here in San Diego. People don't always believe that that's an important thing. But I can't tell you how many times I've been in places around the world talking biotech at San Diego where people have said to me, I can't fly directly to San Diego. There's no non-stop flight to San Diego. I can go to San Francisco. I can go to Los Angeles but I can't fly non-stop to San Diego.

JONES: Is that something you ever had in conversations with the city about?

PANETTA: I was on one of the airport planning committees. There have been conversations going back to 1950 about building a new airport in San Diego. None of those ideas have panned out for various reasons. The latest was to build an airport at what is now Miramar Marine Air Station. The Marines said they were not really interested in that idea. That didn't go anywhere. There were plans at one point to put a binational airport down along the border. That didn't get anywhere. So, right now there's no plan for an airport.

The airport we have is being renovated and upgraded but it's only being upgraded in terms of the number of gates and the facility. The runway isn't being changed. It's basically a short, one runway airport. You can't fly the jumbo jets in here. Fortunately, with some of the new planes, like the 787, they can land here. We can

have non-stop flights out of here, out of that airport. So there is an opportunity. We've got a non-stop flight every day between here and Tokyo now, which is helping us with some of the Japanese companies that we are trying to bring in.

JONES: Who's flying that?

PANETTA: Japan Airlines. We've got about 20 or so new Biocom member companies from Japan. Part of the reason for that is, in addition to the great partnering opportunities there are here, they can get here now.

JONES: You're spending a lot of time up in L.A. talking to people?

PANETTA: A little bit of time.

JONES: Who are you talking to?

PANETTA: We're talking to the L.A. County board of supervisors. We're talking to the Economic Development Corporation. We're talking to their local biotech group. Essentially, the folks who are at the core of trying to plan this –

JONES: Their local biotech group would be?

PANETTA: It's interesting. It's a group called Southern California Biomedical Council, but it is in L.A. We're talking to some of our members up there too. Folks at places like L.A. Biomed Research Institute and some of the companies up there. There's an opportunity to expand up there and provide a lot of the services that we provide here to the companies that are up there.

JONES: Could you talk a bit about the North/South split? The Bay Bayou just turned into, what is it? California Life Science –

PANETTA: It's an interesting name. They call themselves now the California Life Science Association. We thought that was a very interesting choice of names for their organization. San Francisco needs a life science association. I don't think San Francisco needs a California Life Science Association as much as they need a Bay Area Life Science Association.

We had a very strong partnership with Bay BIO. We were sister organizations. We did a lot of the same things. We worked in partnership on a lot of programs and also mirrored each other on a lot of programs. I'm not sure that there's a reason to have a California Life Science Association when you've got a group, first of all, as strong as Biocom down here with offices in Washington D.C., with the California Biotechnology Foundation that we have up in Sacramento that works to educate the

public and legislators throughout the state about the value of the biopharmaceutical industry here.

To me, it is a curious endeavor that I and our board as well questions in terms of what the end game is there. It's not the California Life Science Association because you've got an entity here. Biocom is celebrating its 20th year as the advocacy organization for San Diego and Southern California. It's not the San Francisco Biotech Association so companies up there suffer by not having a Biocom that they can go to in San Francisco. So, it's not a North/South split.

It would be nice if it was a North/South split because the North/ South split that we've had with Bay BIO functioned very well. It wasn't a North/South split. It was a North/South partnership. I'd like to try to go back to that. That would be a lot more successful of a model than the California Life Science Association and Biocom. I don't see those two as being reciprocal in most ways.

JONES: Let me ask you to look back, this is from 1999 to the present, locally, San Diego, and maybe some of these other places. Carlsbad has had a lot of stuff going on. But working with people locally in government and maybe if you talk about some of those people and maybe has it changed a lot over time? What have the policies been? Have they been trouble, those sorts of issues? Also, Sacramento too, locally here and then working with – what kind of grades would you give?

PANETTA: Locally, the grade I would give would be somewhere between a B+ and an A-. Going back to my time here, our mayor, when I came to Biocom was Susan Golding. She was a great supporter of the biotech industry. Within city government back at that time, the city created a biotech economic assessment team that would help with basic things like expediting the approval of permits to build biotech labs here.

JONES: Did you have problems with that when you came to Mycogen?

PANETTA: Yeah. We had just a classic problem at Mycogen. As I said, Mycogen was an agricultural biotech company located in the heart of the biotech cluster here. The difference, of course, with Mycogen was we were working with seeds and plants and crops and things like that. We needed a research greenhouse back in the early '90s. We wanted to put the research greenhouse right out behind the laboratory at Mycogen.

I went to the city with a permit application to construct a greenhouse. The city permitting department responded. We could not build a greenhouse because you can only build greenhouses in areas that are zoned for agriculture. This was zoned

for laboratory research. We said but it's a laboratory research greenhouse. They didn't understand what that meant. They'd never seen anything like that before.

We eventually got it approved but it took a long time before the city came around and began to work more with us. We would go down and make presentations and sit around the table with Mayor
Golding with all our biotech executives to inform her more about what was happening in the industry here. Our county board of supervisors was also very engaged in wanting to understand what we would need to be able to grow here.

When I was running the facilities group at Mycogen, they came to me one day and said we can't get our laboratory approved by the fire warden because we've got too many chemicals. The city only allows a certain number of chemicals in a laboratory. I said what do you mean? They said they're more focused on 55 gallon drums than pint bottles. We've got 100 pint bottles instead of five 55 gallon drums. They don't know how to deal with that. So we had to change basic stuff like that.

The good thing is that all of our mayors, from Susan Golding to Dick Murphy to Jerry Sanders, even Bob Filner for the time that he was mayor, and now Kevin Faulconer has just been fantastic, have been our partners in ensuring that we've got the kind of environment we need.

One of the things that we could do better here, and I've talked to city government, county government more, is to create more in the way of tax incentives and even possibly some investment in the biotech industry here. The County Pension Fund, for example, is a very large and well sustained pension fund that could invest in biotech very easily. It doesn't have to be the most risky biotech either. I'd give them a good B+ or A-.

We spend more time in Sacramento killing legislation that could potentially be harmful to us.

JONES: For example and has this always been true?

PANETTA: It's been true for as long as I can remember. Initiatives to required labeling of genetically modified foods.

JONES: That doesn't really impact San Diego that much.

PANETTA: No, it doesn't but it impacts the industry from the standpoint that it casts a negative shadow on biotech in general. So, we're all in the same pond. Legislation that is more focused on some of the environmental challenges around

building biotech facilities, making it more difficult to get approval to build manufacturing facilities here.

At the same time, under this governor in particular, we've had at least one big success working with the legislature and with him that gives biotech companies an exemption from the state sales tax on the purchase of research and manufacturing equipment. For large companies that's a big help in the universe of small companies.

Our local legislators and some of the folks up in the Bay Area, the 120 legislators in the assembly and the Senate, a fraction of those folks work with us day in and day out and know us and understand the industry. A lot of them don't understand the value of the industry. We've made some headway with the governor's office relative to them gaining more of an appreciation of the value of the industry here and the importance of the state investing in the industry here.

Realize that you point to the stem cell initiative of three billion dollars. That wasn't an initiative of the legislature or the governor. That was a citizen's initiative that the voters passed to fund stem cell research. My guess is we could never have gotten the legislature to pass something like that. But we should.

When I started at Biocom in 1999, the U.S. was it, when it came to biotech. That's not true anymore. China is making huge investments in biotech. For three years Biocom had a program in China trying to look for opportunities to take advantage of the Chinese market. We decided that patent protection wasn't there and that their regulatory approval process wasn't mature enough yet. At the same time, their business practices weren't well evolved yet.

JONES: Corruption problems?

PANETTA: Yeah, all kinds of things like that.

JONES: Wild West.

PANETTA: Wild West, yeah. At the same time, they've thrown a lot of money at creating biotech industry in China. We're seeing other areas that are becoming competitive. Japan, under Prime Minister Abe, has made biotech a priority. Things are beginning to happen in some places in Europe. We spent a lot of time in Southern France looking at what's happening with their biotech industry there.

JONES: Southern France?

PANETTA: Southern France, Marseille, Nice.

JONES: Really? I hadn't heard that before. What's going on?

PANETTA: There's a lot of investment being, especially in the Marseille area, in companies in immunology and cancer diagnostics and cancer for the most part. Some of those are becoming pretty successful companies. It's not just a nice place to go on a visit. I say to people all the time I don't need to go to Southern France to experience nice weather and the ocean. We've got it here. There's a lot of competition that we're beginning to see that's cropping up now.

JONES: This is something when you started here that wasn't so much, but now yeah.

PANETTA: Yes. We're seeing it a lot more. We also have to appreciate the fact that Massachusetts has made a huge effort in the last few years to attract companies and talent to Massachusetts. We can't take for granted the fact that we've got the largest biotech industry in the country and in the world in California because other people are beginning to grow their industries and attract companies and people from here. I'd give the state probably a B- in biotech. There's a lot of work to be done there.

JONES: You have been steering the ship here for 15-16 years. I don't know how long you plan to carry on with it but looking forward, where's this going? What are the opportunities? What are the challenges?

PANETTA: We are in the middle of working with our members to create a five year plan for life science in Southern California. It's our 2020 plan. In our 20th year, we're working on our 2020 plan. That plan is going to be a lot different from other strategic plans that we've done here. We've always, from the day that I got here, relied on our strategic planning process to help to direct us for where we want to be.

Five years from now San Diego can be the global capital for personalized medicine, big data analytics in biotech and digital and electronic health. Our strategic planning process is focused on how we continue to build the infrastructure here at San Diego, to get there in 2020, to be able to say in 2020 we are the capitol of personalized medicine.

JONES: What do you need to do that?

PANETTA: We need to continue to grow the resources that we have here, the companies like Illumina that we need to keep here. We need to grow the fledgling companies that are being created in all of those areas, the digital health companies, the big data companies. We need to continue to develop the different talent base that goes into growing those companies, then goes into the traditional biotech type

of company that we've had here in the past. We need computer scientists, computer engineers, folks who understand the crossroads of electronics and computing and medical devices and therapeutics. We need to bring that talent here more. We need to interface more with folks in Japan, the Panasonics and Toshibas and Hitachis that are moving into that arena. Just as we brought the large pharma companies here, we need to bring the Toshibas and Panasonics to San Diego.

JONES: When you talk about opportunities in Japan, is this principally what you have in mind, this future convergence of IT?

PANETTA: Yes. That's part of it. The other part of it is – we brought on our first board member from Japan this past year. He runs a company called NF Corporation. It's a high-level electronics company that focuses on developing equipment for laboratory testing. We just had a conversation with Takegawa Electric Company the other day that just recently created a life science division with some very high end imaging equipment, cellular imaging equipment that they've developed.

Part of it is the digital health side in Japan. Part of it is regenerative medicine in biotech. And a big part of it is the fact that a lot of the electronics companies in Japan are moving into biotech more.

JONES: What's San Diego's competitive position? You were talking about personalized medicine and electronics, IT and so on. You have to compete with Silicon Valley and –

PANETTA: In Silicon Valley, the Googles and Yahoos and Amazons are all creating life science businesses now. Some of our companies actually have partnerships with Google's life science crew. We have to also find ways to get them down here. The attractiveness here versus places like the Bay Area and Boston is that through no plan that we put together we've got a successful telecommunications sector down here. We've got a successful electronics sector. We've got these areas of high tech that are beginning to converge with the biotech industry, the medical device cluster that we have that other places don't have. So, there's attractiveness here in the fact that we've got all the basic elements that it takes to go forward to create the new era of personalized medicine and digital health that you don't have in other places.

JONES: The academic institutions, the research institutions, locally, are they assisting you with this? What's their role? Do they see a role for what they're doing fitting into this? I don't know if he's still there. Is he still at Scripps? He's the personalized medicine guy.

PANETTA: He's leading the charge on digital health as both a researcher and a spokesman.

The reason that we moved into this new Biocom office that we're sitting in is that we wanted to be close to the research institutes and the university. We see a growing partnership between the industry, the research institutes and the university. Perry Nisen, who has just come over in the last year to run the Sanford Burnham Prebys Institute led their efforts at Glaxo to develop drugs around the world. His reason for being here is to do more to interface what's being done in research and development at the Sanford Burnham Institute with the industry here and hopefully to create more products. Salk has a long time reputation for scientists having one foot within Salk and one foot within industry.

JONES: More so than Scripps or UCSD?

PANETTA: I'll talk about UCSD in a minute. Scripps was also partnered with some specific companies here like Pfizer. For the future, Scripps is going to have to figure out where it's going to go. UCSD is making a remarkable effort now under the current Chancellor Pradeep Khosla, the Vice Chancellor for Research Sandra Brown, some of the deans in the school from pharmaceutical sciences and engineering and bioengineering to connect more with the local community.

Part of UCSDs challenge has always been that they've had a very bureaucratic tech transfer office. People don't tend to typically want to try to work with them because it's frustrating to do deals with them. They just created a new position, an associate vice chancellor for industry relations. One of his jobs is going to be to fix the tech transfer office. We're going to do everything we can to help to make that happen. UCSD is just a powerhouse of biomedical research that we could take more advantage of here if we had a closer relationship with them. That hasn't been the case in the past.

The chancellor talks about how many biotech companies were created out of UCSD. To a large extent he's right. Scientists left UCSD and took their intellectual property and went and created biotech companies. We need to have that partnership between the university and the industry and get beyond scientists leaving and starting companies. I think we're going to begin to see that happen.

JONES: They did have CONNECT, right? CONNECT was trying to do some of that bridging, weren't they?

PANETTA: Yeah. CONNECT is getting back to its roots these days. CONNECT used to be a part of UCSD. Initially, CONNECTs responsibility was to work with

areas like tech transfer and scientists coming out of the university, helping them to get their companies off the ground, understanding how to get funding and manage companies and things like that. About ten years ago, CONNECT divested itself from the university, became an independent entity, began to grow in other areas and create other programs.

JONES: What sort of stuff was going on?

PANETTA: Focusing on areas like, trying to work more with the biotech industry where CONNECTs initial focus had been on the technology industries in San Diego.

JONES: That's because that's where Duane Roth was coming from?

PANETTA: Yeah. I don't fault Duane for it because that was Duane's background. Duane realized that to build the kind of organization that he wanted to build he would have to get it out of UCSD to get the kind of funding he needed from folks like Qualcomm and others. They created a Washington D.C. office. That's great if you're Qualcomm and a couple of other companies. Most three person companies don't really need the Washington D.C. office.

So, I think CONNECT is getting back to basics now under Greg McKee. Duane raised the image of San Diego and the image of CONNECT within the community which was great. CONNECT is retreating back in a positive way to working with the university, working with the tech transfer office and getting back to doing what it was originally created to do when Bill Otterson created it.

JONES: Is there anything else we should know, Joe, anything else we should cover?

PANETTA: I don't think so. I've been trying to think as we've been going along here what we've left out. But we've been pretty thorough. When you think about where we've come from as an association, as a biotech cluster here, where we are today and where we have the opportunity to be five years from now, we've come from relative obscurity to a high level of awareness of who we are to potentially five years from now being the global leader and not in the traditional way. If you look at all these surveys that come out year after year after year over where's the largest biotech cluster? Which cluster has the greatest number of companies? Which cluster has the greatest number of employees? Which cluster has the highest amount of financing? That's the way that clusters have been ranked up to now.

This cluster has the opportunity, five years from now, to be number one. Not so much because it has more companies or more employees or more financing but because it's moving in the direction of being at the forefront of biomedical research

and development commercialization with the powerhouse that we've got here of technologies. I'm thinking that five years from now, and I plan to be here five years from now because I want to see out this five year strategic plan, we're going to be very pleasantly surprised with where San Diego sits versus where it's been in the past.

JONES: Okay. We should come back in five years and just do your review of this strategic plan.

PANETTA: Absolutely, let's do it.

JONES: It's been a fun ride. It's a fascinating industry, right?

PANETTA: Thank you, yeah. I enjoyed it. It is a fascinating industry.

End of Interview

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The San Diego Technology Archive (SDTA), UC San Diego Library, La Jolla, CA.

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.