



Sloan Career Cornerstone Center

Profiles of Mechanical Engineers



Lori Laird

**Biomedical Engineer
Guidant Corporation
Santa Clara, CA**

Education:

BS, Mechanical Engineering, California Polytechnic University, San Luis Obispo

Job Description:

Biomedical Engineer, designing non-invasive instruments and tools for use by vascular surgeons in the treatment of blocked arteries; works with manufacturing personnel on issues of design for manufacturing and quality control.

Advice to Students:

"To the women engineers, I just want to say, Stick with it. It's going to be challenging, it's going to be hard, but there are other people out there that have done it. I meet women that are 62 and were engineers way back when. And gosh, I think if I had to do it back then, it would be much harder. I think the world is really opening up to women in engineering. And it can be done. And I just encourage them to stick with it."

Comments:

Lori found her job in a specialized field by expanding her job search, first by networking through members of the local ASME chapter, and second, by direct contacts with companies in her target industry.

Video Transcript 1:

"I started going to school at Long Beach State. And at the time, I still didn't know I wanted to be a mechanical engineer. I tried zoology, because I liked animals. I tried architecture. I decided to do mechanical engineering because I've always enjoyed taking things apart, solving puzzles, solving problems. I enjoy picturing things spatially and in 3D and things like that. And that really drove me down the path of mechanical engineering."

Video Transcript 2:

"I used the career center at school a lot. And I really encourage people to use the career center. But I also went outside the school and sent letters to company. Actually, I drove up to the Bay area and just drove around and actually walked in the lobbies of some companies and said can I get a brochure? How can I find out about your company? You really have to be

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proactive. And the job's not going to come to you, you have to go find it. And that's how I found my current job, actually. By going outside of school and pursuing that."

Video Transcript 3:

"And doctors will come in and they'll tell you, you know, we're having difficulty with this type of surgery and, you know, we'd like to develop a better way to do this surgery. So immediately we hit the drawing board and say, okay, how can we develop a product to do this? Engineers do a lot of designing, a lot of testing, especially in biomedical. You have to prove the safety of your device, that it's not going to hurt anybody, that it'll do what you say it's going to do."

Video Transcript 4:

"My first week on the job, there was a lot of learning, a lot of training. I had a lot of manuals to read through, and just a lot of getting up to speed on the devices. Just learning about company culture, because that's something they don't teach you in school."

Video Transcript 5:

"I think I'm still adjusting to the real world. Since I've only been out for two and a half years, it's like, you know, let's keep the ball rolling here. I think just recently, I've started to realize I need to start thinking about my next goals. It could be grad school, because I want to further my education. Part of me says I'm happy what I'm doing and this will last me for a while. But the other half of me says you got to think about the future. You're not going to be able to just sit where you're at right now forever."

Video Transcript 6:

"There is life outside engineering. It's as much as you make of it. I think it's very important to have hobbies and to have an outside world. We go mountain-bike riding, we do sailing. Skiing in the wintertime. I enjoy gardening, I've discovered gardening therapy. It's a great way to just get your mind off things."

Interview:

Laird: My name is Lori Laird. I'm a biomedical engineer for Guidant Corporation. I work in the vascular-intervention division of Guidant. And we work on medical devices. We develop tools that assist surgeons in performing their surgery. Non-invasive tools, so they don't have to make such large incisions. They can do things through the skin or making smaller holes. And that usually cuts down surgery time, mostly in half if not more. We work in all areas of vascular intervention and cardiology. I've been out of school for about two and a half years and I'm still trying to decide if I want to go technical or managerial. How do you get from mechanical engineering to biomedical? Well, in school I studied general mechanical engineering. And did an emphasis on biomedical. I took more design classes. I took extra biology classes, physiology. And I did senior projects in that area. I did design projects involving biomedical or prosthetics and things like that.

Q: What is vascular intervention?

Laird: Vascular intervention. It is obstruction in the arteries or of the vascular system of your body. So a lot of our focus is removing plaque or opening up arteries that have become

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clogged with plaque. You've heard of the term "clogged arteries?" We develop tools to remove that plaque and open up the passageway.

Q: And you're a mechanical engineer?

Laird: Mm-hm. Mechanical engineer.

Q: How do you get from there to here?

Laird: How do you get from mechanical engineering to biomedical? Well, in school I studied general mechanical engineering. And did an emphasis on biomedical. I took more design classes. I took extra biology classes, physiology. A lot of schools now have programs that you can get a degree in biomedical engineering. Where I went to school, they didn't have that. So I kind of had to create my own degree. And I did senior projects in that area. Did design projects involving biomedical or prosthetics and things like that.

Q: Have you met other mechanical engineers in the biomedical field?

Laird: Yeah, it's a growing area, I think. Most of the people that work in my company are just mechanical engineers. But it's a growing field. There's a lot of people in this area. And it's kind of a "neat" community. You start to see the same people again and they all rotate around.

Q: Tell us where you were born, where you grew up, how did you come to decide to go to college, how did you get into mechanical?

Laird: OK. I grew up in Los Angeles, Southern California. Started going to school at Long Beach State. And at the time, I still didn't know I wanted to be a mechanical engineer. I tried zoology, because I liked animals. I tried architecture. And then I still wasn't satisfied. And so I took an aptitude test from the career center at Long Beach State, and they said, "By golly, you should be an engineer." And I always kind of thought in the back of my head that that's what I wanted to do. But I just needed somebody to tell me. [LAUGHS] And I decided to do mechanical engineering because I've always enjoyed taking things apart. Solving puzzles, solving problems. I enjoy picturing things spatially and in 3D and things like that. And that really drove me down the path of mechanical engineering.

Q: Any engineers in your family?

Laird: Actually, my dad's an electrical engineer. I think that's why I kind of avoided it for a while. It's like, "No, that's not what I'm going to do." But I'm glad I chose it and I think it's where I belong.

Q: And what did you think -- what was your comprehension while you were a student what engineering was and what engineering did and how was that different from what you found?

Laird: I wasn't quite sure what an engineer did when I was in school. I thought they solved problems, which is pretty much what they do, but I think I was mostly focused on how do I

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obtain as much knowledge as I can. And you know, "When I get to the real world, I'll figure that one out."

Q: So what do engineers do?

Laird: What do engineers do? They solve problems, I think. And in my field, we make people's lives better. And that's what I like about biomedical is, you know, you're saving somebody's life. And it really makes your job worthwhile, especially when you have a doctor come in and they'll tell you, "We're having difficulty with this type of surgery and, you know, we'd like to develop a better way to do this surgery." So immediately we hit the drawing board and say, "OK, how can we develop a product to do this?" Engineers do a lot of designing, a lot of testing, especially in biomedical. You have to prove the safety of your device, that it's not going to hurt anybody, that it'll do what you say it's going to do. So there's a lot of testing involved. That's what a lot of my job is, doing all the testing.

Q: Have you been in surgery?

Laird: Yes, I have. It's really fascinating. We do get the opportunity to go watch the procedures. And it kind of wraps everything up and it tells you, "This is what my job's about," and it really makes it rewarding. We get the opportunity to stand in the "cath" lab behind the doctor. What's really neat about our devices is they're non-invasive. So I could walk in there in my street clothes and stand over the doctor's shoulder and watch him do the surgery. And you get a real feel for what your job's about.

Q: Now, do you have a Master's degree?

Laird: I have an undergraduate degree in mechanical engineering. I'm still thinking about pursuing a Master's degree, either in biomedical or possibly in engineering management.

Q: Interesting choice, whether you go technical or non-technical. Talk about that.

Laird: Yeah, I've been out of school for about two and a half years and I'm still trying to decide if I want to go technical or managerial. I enjoy working with people; I enjoy the "people-aspect" of engineering. So I think I'm leaning more towards that way. But there are so many interesting things in the biomedical field and there's so much more to learn that, you know, I'm kind of on the fence about it.

Q: If somebody's interested, perhaps, in biomedical and mechanical engineering student, where should they go to find their information?

Laird: I found out a lot of information by talking to my professors. There was one professor at my school, his focus was biomedical, and I talked to him a lot about "How do I get into this field? What do biomedical engineers do?" I researched a lot of companies, especially when I was looking for my job, my first job. I researched the companies that focused on biotechnology and things like that. There's actually, I think, like an encyclopedia of medical-device companies. And it's just, you know, one main source for all that information.

Q: What was that first job search like?

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Laird: The first job search was very frustrating. I used the career center at school a lot. And I really encourage people to use the career center. But I also went outside the school and sent letters to companies. Actually, I drove up to the Bay Area and just drove around and actually walked in the lobbies of some companies and said, "Can I get a brochure? How can I find out about your company?" You really have to be proactive. And the job's not going to come to you; you have to go find it. And that's how I found my current job, actually. By going outside of school and pursuing that.

Q: You've got an ASME connection. Would you talk about that, the connection?

Laird: My connection with ASME is through Joanne Hebbler. She is a co-worker of mine. I think she's actually an officer, I'm not quite sure, in the local section. So she actually tuned me in to what was going on here. And I did have some involvement in school. I was part of the student section at my school. And that's pretty much the extent of it.

Q: Was there anything of value about it?

Laird: I found a lot of value in joining societies when I was in school. You create a peer network of people that are going through the same thing you're going through. You can share stories, you can tell each other, "Don't do this," and do this and it's just nice to have that peer network. I'm also involved in the Society of Women Engineers. And just having the people around you that know what's going on, it really helps a lot.

Q: What's your day like?

Laird: What's my day like? Let's see. Yesterday was a good day. I did a lot of different things yesterday. I started out with a meeting. Actually, I started out checking out e-mail and voice mail and writing myself my "to do" list for today; these are the things I'm going to accomplish. I went to a meeting in the morning. After that, I went to a class where they teach about the safety of blood-borne pathogens. In medical devices, there are a lot of safety and medical issues. We handle devices as they come back from the field to check them out for defects and things like that. And I took a class on how to handle the devices and not get contaminated by the blood. After that, I checked out one of the tools. We're having a problem with one of our tools on the manufacturing line. So I sat down, I called the vendor and talked to them about different ways to make this tool. Did a little bit of designing. Not a lot of design work. I'm at the level in my project where it's mostly, "Let's learn how to make it and let's get it out the door." We've done most of the designing already. So a lot of our stuff is just the manufacturing part of it.

Q: What are some of the manufacturing tools that you do encounter?

Laird: Some of the manufacturing tools that we encounter to make medical devices -- actually, a lot of the medical devices are made by hand. A lot of the processes are done by individual operators. So we have to design fixtures that are ergonomic, easy for the operator to use -- that might save them time in their job, do things faster, do things easier. At my company, we have a department that makes the machines and equipment themselves. So, there's a lot of

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interaction there. You can go down and say, "Hey, this isn't quite what I thought of. Or I really wanted this. Can you change this knob here?" And things like that.

Q: How much opportunity do you have to get out in the field and assess how well the products perform?

Laird: Not often enough. I don't think I get to go out in the field enough. The phase that my project is in right now, we're actually getting ready to do some human studies and I will have the opportunity to be in contact with one of the hospitals that is performing the surgery. It's in North Carolina, and I'm kind of their contact -- their technical contact -- and so if they have any technical issues they can call me. I'll get to visit the site when they do the first human clinicals and watch the procedures happening. So I'm really excited about that. I'd say about three times a year, we get the opportunity to go watch a surgery, just in general.

Q: How about international business?

Laird: Guidant is a global company. Our product was first used last month in Europe on a human. But that's about the extent of it for the level that I'm at. Most of the international interaction happens at a senior level, where they're doing business exchanges and business development type things.

Q: From the inside of the company, are you beginning to see some jobs that you think you'd like to have? Or are there different ways you might want to go with the company, without saying "I want Ralph's job."

Laird: [LAUGHS] There are a lot of opportunities within the company. The company is fairly new and we're growing pretty rapidly. There are a lot of different products that are being developed that I'll have the opportunity to go work on. A lot of engineers like to stay with the product until it's finished. And then once it's gone to manufacturing, then it's time to look for a new job. No, I think I'll stick with Guidant for a while.

Q: What was school like for you?

Laird: School was very challenging, as you can probably imagine. [LAUGHS] At Cal Poly we had about 10 to 15 percent women. There were some classes where I was one of two women in the class. After a while I got used to it, but you do have to stay on your toes. I did feel like I had to prove myself a little bit more. But I think nowadays people are accepting the fact that women are engineers and towards the end, you know, I had developed a good study group and the people knew my capabilities and things like that. I think engineering's very challenging -- but that's what I like about it. It keeps me going.

Q: What kinds of things did you find that you had to get used to.

Laird: I think maintaining respect from both the professors and the other students. Just proving that you're as capable as they are.

Q: Tell us some more about your job search. Did you have very many interviews?

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Laird: I'd say I had about a dozen or more interviews on campus. And I didn't just limit myself to biomedical, because there weren't a lot of companies that were biomedical that came. But I didn't want to just limit myself to biomedical. And I wanted to find out what else was out there, just in case I found something that I liked better. I remember in the career-center library, they had a book about companies in the Bay Area or something like that. And they had it broken down into different disciplines. And so I opened that up to the biotechnology section and just started reading about companies. I sent letters to them and said, "Please send me your company information. I'm very interested." Half of them didn't respond. [LAUGHS] The other half sent information and said, "We're not hiring." So there were just a couple left. And I think I only got two interviews from that. But it was worth it. It was the job that I have now. And I think they actually liked the fact that I went out and pursued them because it showed that I was proactive and had the energy.

Q: What was it like your first weeks on the job?

Laird: My first week on the job, there was a lot of learning, a lot of training. I had a lot of manuals to read through, and just a lot of getting up to speed on the devices. Just learning about company culture, because that's something they don't teach you in school. Just getting to know people, getting to know where the resources were, finding out who is the expert in what, so I know where to go when I have a question. The hard thing I had adjusting to was the nine-to-five thing. In school, I always thought it was so nice, you have your own schedule. You know, one day you wake up at seven, next day you wake up at 10, and you do your own thing. But in the real world, you kind of have to go with the flow and, you know, do the eight-to-five thing, actually. But you get used to it.

Q: What is "company culture?"

Laird: Something I like to stay away from. [LAUGHS] Politics. Actually, I think of it more as the atmosphere of your company. My company has a terrific atmosphere. Everybody is so friendly. Very open. Open communication. You can go talk to anybody. There are no closed doors. In fact, if I have a problem, I go straight to my director. I don't need to go to my supervisor or manager. I just go way up to the top and say, "Hey, I'm having a problem here, I need your help." And he'll tell me what he can do. Answer questions. Usually, I'll get things done that way. In my company, it's very easy to interact with the vice presidents and things like that. It's good. That's actually one of the things I've had to learn, is to be able to admit that I need help. To be able to go to your supervisor and say, "This isn't working, I'm just not making progress. Can you give me some guidance?" And in school, I also had a hard time going to my professors and saying, "I need help with this." And I think they really appreciate it. And I encourage people who are in school now to really use your professors. They're there for you and they're not going to look at you funny if you say, "I can't do this." That's what they're there for.

Q: Talk about the different people who you come in contact with in the course of your day.

Laird: I work with all levels. I have two technicians that report to me. I work with them almost on a daily basis, giving them jobs to do; keeping them updated on things that are going on. I work with managers, I work with directors. Every once in a while, I'll be able to speak to a

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doctor and get to have his input on things. I think having good communication skills allows you to work with such a broad range of people. It's good learning experience.

Q: Have you ever come home absolutely frustrated?

Laird: Every once in a while. I think some of the frustration comes from being technically challenged and, you know, trying to solve a problem that's just not coming through. You know, beating your head against the wall, just trying to find a solution and it's not coming. And I think that's when you have to just kind of step back and go, "OK, let's reevaluate everything. Take a deep breath. We'll try it again tomorrow." And that's kind of the attitude you have to take.

Q: Is there life outside engineering?

Laird: There is life outside engineering. It's as much as you make of it. I think it's very important to have hobbies and to have an outside world. My husband's an engineer, so sometimes we go home and still talk engineering. But I try to focus on other things and try to have an outlet.

Q: What do you do?

Laird: What do I do for hobbies? We go mountain-bike riding, we do sailing. Skiing in the wintertime. I enjoy gardening, I've discovered "gardening therapy." [LAUGHS] It's a great way to just get your mind off things. That's about it.

Q: Any advice to students?

Laird: My advice is to "hang in there." It's going to be challenging, but let me tell you, in the long run, it really pays off. And like I said before, utilize your professors. That's what they're there for. Make friends with them. It'll make your life much easier. It'll make asking those questions much easier. And another piece of advice, ask questions. Just ask questions. And no question is ever wrong.

Q: You mentioned Long Beach and Cal Poly. Tell me the story there.

Laird: I was going to Long Beach State and I was living at home. And it just wasn't happening. I wasn't getting into it. I had a hard time meeting people and really getting into school. Because it's a commuter school and people just come and go and they really don't cross paths. So I said, "I really need to go away." Go away to school, be on my own, depend on myself. So that's what I did. I took off to Cal Poly in San Luis Obispo, and I think it was the best growing experience I ever had. I highly recommend that students go away to school and get away from the family. Learn to depend on your own. Learn how to do your own laundry. How to cook your own meals. I think it's the best experience you can have.

Q: What are your aspirations?

Laird: I think I'm still adjusting to the real world. Since I've only been out for two and a half years, it's like, you know, "Let's keep the ball rolling here." I think just recently I've started to realize I need to start thinking about my next goals. Could be grad school. Actually, I think for

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me, that probably the only option as a next step is grad school. Because I want to further my education. Part of me says, "I'm happy what I'm doing and this will last me for a while." But the other half of me says, "You got to think about the future. You're not going to be able to just sit where you're at right now forever." Oh, I want to further my knowledge, learn more about technology and maybe get into plastics, chemistry and things like that.

Q: Tell me some more about the contribution that you're making, the contribution that the company is making.

Laird: Being in the medical-device field, the company is on a daily basis making a contribution to society. We're making people's lives better. We're enabling people to live longer. Guidant in general has a large connection with the community. We participate in the United Way. We support community activities. My company recognizes my affiliation with professional societies, which I think is great. Let's see, what else? Just supporting their employees in their personal lives. I think that's also important. I think they give back to society in a pretty good way.

Q: Your husband's an engineer?

Laird: Yes, he is. He's a mechanical engineer. We met in class. Actually, a lot of couples develop at Cal Poly. It's the only university within 200 miles, so you know, a lot of college students hook up that way.

Q: And what kind of company does he work for?

Laird: He works for General Electric. He works in their power division.

Q: So, this is the two-career couple deal?

Laird: A lot of people think, "Wow, two engineers, you must have a large income." But, you know, in today's society, it's just, you know, keeping us through. Maybe in other cities if you had two engineers working, you'd be able to afford a lot more. But in the Bay Area it doesn't always lead to that.

Q: Have you had to make difficult two-career couple choices?

Laird: No, we haven't gotten to that point yet. I recently got married, so we're just trying to get used to the married thing. Eventually, we'll start thinking about how to do that part. How to have a dual career and have a family.

Q: What do you think makes the successful engineer?

Laird: A successful engineer is somebody that communicates well, that can work with a lot of different levels of people. Somebody that can communicate with the technician as well as the director of the project. Somebody who's a good people person but also good technically, that can solve problems, answer questions, use their intuition to solve problems whether they're major redesigns or just a quick, you know, manufacturing problem. A good engineer is somebody that can use their intuition and knowledge base to get those things solved.

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Q: Inasmuch as you're beginning to formulate it, what sort of lifestyle do you envision for yourself?

Laird: I think I'll be an engineer for a little while longer. I enjoy what I'm doing. But I don't want to be consumed by my job. I like to have a good balance of family and career. So I think I'll pursue engineering, I'll keep doing that path. But, you know, when five o'clock comes I have to remind myself it's time to go home. It's, you know, time to relax and take a break.

Q: You mentioned earlier about women engineers. Any particular advice for students?

Laird: To the women engineers, I just want to say, "Stick with it. It's going to be challenging, it's going to be hard, but there are other people out there that have done it." I meet women that are 62 and were engineers way back when. And gosh, I think if I had to do it back then, it would be much harder. I think the world is really opening up to women in engineering. And it can be done. And I just encourage them to stick with it.

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