

Interview

Christy Chuang-Stein, Pfizer, China

Interviewed by: Julia Rotondo and Molly Jones, NORC at the University of Chicago



Dr. Christy Chuang-Stein

Dr. Chuang-Stein, currently Vice President, Head of Statistical Research and Consulting Center at Pfizer, was interviewed in April, 2013, by Julia Rotondo and Molly Jones as a part of a series of interviews of leaders in the field of statistics in the spirit of Profiles in Courage. With over thirty years of experience in applied statistical research in the pharmaceutical and biostatistics fields, Dr. Christy Chuang-Stein has been recognized on multiple levels as a leader in the field of statistics.

We asked Dr. Chuang-Stein to discuss her experience with leadership and illuminate inflection points in her career. Dr. Chuang-Stein spoke about her thoughts on her career path to date and the lessons she learned as a result. While not a survey practitioner we thought her experiences a valuable counterpoint to the survey practitioners/leaders interviewed in this, special, *Profiles in Courage* issue.

Dr. Christy Chuang-Stein has been driven by a need to see research translated into results: from her early switch from mathematics to statistics, from the move away to academia and into an innovation-driven research career, Dr. Chuang-Stein demonstrates the importance of being passionate about your work and the importance of curiosity to drive continued innovation in the wake of multiple failures. Working in the high risk field of pharmaceutical research, she stresses the importance of the courage and tenacity in the face of obstacles, but also the need to be adaptable when life throws you a curve ball. She cites these five traits – passion, curiosity, courage, tenacity, and adaptability – as crucial for her success.

Interviewers: Could you tell us a little bit about what influenced your decision to go into the field of statistics, and specifically why you wanted to study statistics in the US?

Sure, I always enjoyed math, and my undergraduate training was in mathematics. I knew that I wanted to go beyond undergraduate, and I would go to graduate school. When I was an undergraduate, I realized that even though math laid a good foundation for scientific pursuits, I was really more interested in the applied aspect of math, rather than pure math. At that time many of my classmates felt the same way. We considered whether we should go into statistics or computer science. It turned out, a lot of us decided to go into statistics.

In the 70's, there were really no PhD statistics programs in Taiwan. A very natural choice for those of us who wanted to continue on in statistics would be to come to the US. So we sort of applied for admission to graduate schools together. I was fortunate to receive a teaching assistant scholarship from the University of Minnesota. That's how I came to the United States.

Interviewers: Did you any your classmates stay in touch through these PhD programs?

Yes, we have tried to keep in touch with each other. Some of my classmates are very prominent statisticians in the US and I am very proud of them. Some of us actually got together a few times. There are many professional statistical meetings. Very often we would run into each other at these meetings. It is not unusual that when a classmate organizes a conference, he/she would invite other classmates to speak at the conference.

Interviewers: After you got your PhD you went into the field of pharmaceutical studies and control testing. Can you tell us about how you made that decision?

I grew up thinking I would be a college professor. Both of my parents were teachers. In graduate school I knew that besides teaching I wanted to apply statistics to solve real world problems. That's why I left math and moved into the field of statistics.

The two combined desires led me to my first job at the University of Rochester. At the university I had a joint appointment between the statistics department and the University of Rochester Cancer Center. It didn't take me long to realize that I like the Cancer Center part of my job better than the teaching part of my job. So I started looking for job opportunities in biomedical research. That research led me to the pharmaceutical company Upjohn in Kalamazoo, Michigan in 1985. That's how I moved from a University setting to an industrial setting.

Interviewers: When you made the move to industry, did you consult any mentors, and have you consulted any in the years since then?

I didn't have any mentors while I was at the University of Rochester. It was mostly my own decision. Thinking back, it was a gutsy decision to make the move.

Since joining the Upjohn Company, I was very fortunate to have three mentors. Well, they were more like role models than mentors. All three were wonderful and caring statesmen in statistics. And they were all in management. One was my direct supervisor, one was my supervisor's supervisor, and the third one was my supervisor's supervisor's supervisor. Basically, three lines of management. They taught me a lot about drug development and they gave me time for subjects that interested me. They read my papers and gave me very constructive comments. Most of all they showed me by setting examples the importance of professional iden-

tity and the need to be part of something bigger than ourselves. They exerted influence not through the authority of their positions but through their very own deeds and convictions. I respected them a great deal. To me they are like my professional parents. I remember as a junior observer, I wanted to be like them one day.

Interviewers: Going back to your gutsy decision to take the job, can you elaborate about your thought process when you ultimately decided to go to Upjohn in Kalamazoo?

I mentioned I wanted to do full-time consulting, which was a little hard to do on my first job. Nowadays, there are many research track faculty positions within medical schools or schools of public health where individuals devote all their time to consulting. While on my first job, I wanted to contribute to efforts that could produce tangible outcomes. I thought about pharmaceutical companies because societies always need more safe and effective medical products. That was the primary reason for my move to the pharmaceutical industry.

In terms of my decision being risky, as I mentioned previously, I grew up thinking that I would be a teacher, a college professor. So a decision going into the pharma industry would mean I would be giving up being a college professor. Next, I would be moving into an industry I knew nothing about and I had no experience with. I didn't know how it operated other than my own imagination of it. In addition, my elder sister and my elder brother lived in upstate New York – in Rochester and in Albany. For me, coming to Kalamazoo all by myself would mean being in a new and unfamiliar place all by myself, away from my family. It was a decision that it took me some time to make. I'm glad that I made it and I've enjoyed my career in the pharmaceutical industry for the past 28 years.

Interviewers: You have talked about how you enjoyed your career. Can you tell us more about that? Were there any moments where you had to make a stand?

There were also challenging moments, for sure. Despite so, I didn't really have to take a stand. In a pharmaceutical company, there is a lot of team work. For us, filing for a new product application is a very important milestone. It is also a very stressful time. There are many groups involved. We need to get the data in and we need to check the data for quality and completeness. Programmers produce the tables and statisticians review them for correctness. Medical writers prepare

draft reports for the entire study team to review. Clinicians interpret the findings from the clinical perspective. Documents management specialists organize the dossiers. It is not unusual to be in a situation where one party didn't quite deliver on time or there were simply glitches in the system. All of the downstream activities are impacted. As a result, the timeline slips. When this happens, it's very easy for people to point fingers, implicating others for the delay. I remember being in this type of situation several times. At one time, the project leader and I came in and reminded all team members that we were in this together. We initiated a short touch-base meeting every day to review where we were and to facilitate communication among team members. By having short and frequent briefing meetings, all parties were informed of the status and nobody would get blindsided. I wouldn't say that I took a stand in this sort of situation, but rather worked to stop the finger-pointing and focus on working together as a team to move forward.

Student: It sounds like you are talking about different management techniques. Is that something you had to come up with on your own, or were these techniques you learned observing anyone?

I think it's a combination of both. Some of them I observed from my supervisors. Some of them I read about or took a course on. When I first joined management, there were courses that first-time managers were encouraged to take. For example, there were courses on how to manage a team, how to run an effective meeting, and how to communicate to help things move smoothly. I took several of these courses. So, I would say that I learned different management techniques in a variety of ways. It is also important to realize that many of the techniques are just common sense.

Interviewers: Can you think of a time where you took a major risk in a professional organization or some other type of professional risk that you think really paid off?

This is probably related to the question about my proudest moment. Sometimes we took a major risk, the risk paid off, and we are very proud of what we were willing to do. For me, accepting the invitation to run for the ASA President is such an example. I have never, never thought that one day I would be invited to run for the ASA president. When I was invited to do this, I thought about it for a long time because it was not something I was very comfortable with initially. There is always the uncertainty around whether I would com-

pare well to the previous ASA presidents should I be elected. While I felt that my training has prepared me for the role, it would still be a major risk to say with confidence that "Yes, I think I'm good enough to lead this organization". I also thought that by accepting the invitation to run, I could be a role model for female statisticians as well as for Chinese statisticians. Either way, it's something I've thought about a great deal, and I've decided to take a risk on.

Interviewers: You mentioned whether not you are elected to be ASA President, you feel like you are emerging as a role model for women and for Chinese statisticians. Would you be able to expand on what that means to you in that leadership role?

Definitely. If I get elected, I will be the first Chinese president for the ASA. Many of my fellow Chinese statisticians may feel that "if she can do it, we can do it too." I am also from the pharmaceutical industry. For a long time, ASA has been considered more an academic type of organization with a heavy emphasis on research. If elected, I will be the first ASA president from the pharmaceutical industry. That will be pretty unique too. We have an increasing number of Chinese statisticians in our profession. There are also many statisticians in the pharma industry. I could be a reminder to diverse groups of statisticians that if one works hard and works smart, one could one day run for the ASA president. I hope that I can inspire that feeling in the younger generation of statisticians from these less represented groups.

Interviewers: You talked about how you took a risk and you think this is a really interesting risk with the ASA and it is a moment you are proud of. Looking back, are there any decisions where you think if you had made a different decision or taken a different action, you wouldn't have ended up where you are now?

There is always the hypothetical question of what might have happened if we hadn't made certain decisions. We would never really know the answer, would we? When I look back, there was one moment in my career when I might have gone back to academia. This occurred in 2007. I was working in Ann Arbor and my employer (Pfizer) decided to close down its entire operations at its Ann Arbor site. At that time I was seriously considering the option of joining the University of Michigan. I have kept an active research record over the years, so my list of publications would likely lend me a position with the biostatistics department at the University of Michigan.

I was deciding between university and some other potential options. Even though I love my job in the pharma industry, I did not want to leave Michigan for family reasons. It turned out I was fortunate at that time because my supervisor was willing to let me work remotely from home (Kalamazoo, Michigan) so I didn't have to relocate. Sometimes I do wonder what would have happened if I had decided to work for the University of Michigan in 2007. The year 2007 was a major fork in my career. I could have gone in several different directions back then.

Interviewers: From looking at your publications alone, it looks like you are a very frequent collaborator. Could you share any of the lessons you've learned about what makes a good team and how to best lead a team?

I think a team functions the best when it has a clear vision and when it has the needed skills and resources, and a very well laid-out action plan to carry out the vision. It is also important that the team leader is very inclusive, respects diversity, acknowledges member contributions, and also leads by example. It's helpful that the team leader is organized and prepared too. I think probably the most important thing is that the team leader is in a position and is also willing to make a decision when all is said and done. A team needs to have the ability to take action and see the actions through. The latter could energize the team in realizing that they can indeed make a difference. When I lead a team, these are the principles I try to observe. When I am a team member, I try to complete my assigned tasks in a timely manner. The latter is important in collaborative, scholarly work. More and more we form working groups to collaborate. This is especially the case in industry where we confront similar problems. By combining expertise we have a greater chance to come up with a better solution than working alone individually. I also think this sort of collaboration is a good way to learn. At times, I have part of a solution to a problem and I would look for others who may have other parts of the solution. If we combine our partial solutions together, we can get the entire solution. All parties learn in the process. So, the collaboration is beneficial to all. This has been the working model for me for the past several years. Occasionally I would write a paper by myself, but the latter is the exception rather than the norm.

Interviewers: Looking at your collaborations, are there any that really stand out to you as success stories?

I think one of the working groups, the Adaptive Design working group, fits this description. This working group was initiated in 2005. A key objective was to find better, more efficient designs for clinic trials. For the past few years, our Phase III failure rate was running at a 50% rate – that's a very high attrition rate for our late stage development programs. If we have a better way to design our trials, maybe we can reduce that failure rate. We started the group in 2005 with multiple sub-teams. We continued to form new sub-teams as the old sub-teams completed their charge. The group has been going for the past 8 years. It's a very active group. We have progressed the subject matter to the point that both the US Food and Drug Administration and the European regulators have issued guidance documents on adaptive designs. In addition, the group promotes best adaptive design practice and shares experience with some innovative adaptive designs. So there has been a lot of progress made in this class of design. Thanks to, and I would say in large part, to this industry collaborative group. When I say industry, that's only partially right; we do have academic members on the working group. We also have a couple of regulators who listen in on our monthly key opinion leader lecture series. Still, the majority of the folks who are playing a leadership role in this working group come from the industry.

Interviewers: Can you tell me a little bit about how you got involved with the working group?

The working group was started when I was heavily involved with the Biostatistics and Data Management (BDM) section of the trade organization Pharmaceutical Research and Manufacturers of America (PhRMA). I was the chair of the BDM section of PhRMA for a couple of years. Each BDM section chair looked for interesting or important topics to focus on. I started several working groups when I was the chair.

Adaptive Design working group was started shortly after I rotated off the chair to become the past-chair. I was still very involved with the group. I fully supported the formation of this working group. The working group was under the auspices of PhRMA until 2010 when this group moved to be under the sponsorship of the Drug Information Association. I continue to be involved today.

Interviewers: If you can even quantify it, what has been the most rewarding part of your career to date?

It's very hard to say which part is the most rewarding part. Each time we got a product approved by regula-

tors and offered it to patients after years of work – designing the trials, conducting and analyzing the trials – the sense of accomplishment and pride is unparalleled. It's like raising a child by going through the birth, the teenager years, and then moving into the adulthood. You see the progression of the product through the various stages of development. When the product finally gets to the market place, we often hear moving testimonials from patients on how they have benefited from the product. The testimonials bring back the sense of accomplishment over and over again. They motivate us working in the pharma industry.

It's not like we're successful every day. The majority of our products fail during testing. Pharma industry is a very high-risk industry and most of our products fail during testing. When we do get one through to the market place with substantial benefit to the patients, we are all happy, excited, and feeling rewarded for having done something good.

Interviewers: Given the high-rate of failure, can you tell me a bit about the mindset you need to be successful in the field?

A heavy dose of optimism is essential. Even though we get knocked down time after time, we continue on, hoping that maybe our next compound will be successful. Tenacity, not giving up, is absolutely necessary. If this year is not a good year, we hope that next year will be a better one. We'll learn more, the biology will be more clear, and we'll be able to find the next cure. The optimism fuels us on.

Interviewers: Would you describe yourself as a natural optimist?

I have learned to be more so as I grew older. Nowadays, my tendency is to look for the silver lining in everything. When I didn't get what I wanted or when I failed, I looked for lessons that could be learned from the experience. So there is always something good coming out of the efforts I put in. This sort of positive attitude about life is probably something I learned over the years. I have found it quite useful. We can learn from our successes as well as our failures. This way, our failures are no longer a complete failure.

Interviewers: Do you have any advice you like to give to young people entering the workforce?

I learned three powerful words from the CEOs of one of the legacy companies I worked for. Over the years I've added two of my own words to make a set of five. For me, we need to have passion for whatever we

do. We need to have courage to face our fears for we need to overcome many obstacles in our lives. There are always fears – whether I can do this, whether I'm good enough, what if people don't like me, what if people don't like what I am going to propose. So we need courage to overcome our fear. We talked about tenacity earlier, i.e. never giving up. For those of us in the innovative business, we've got to have curiosity. Curiosity stimulates our continued learning. And finally there is adaptability. There are changes everywhere around us. We need to adapt and embrace change. These five words could apply to people who are starting their careers and to people who are established in their careers.

For young people starting their career, I think it's very important to realize the [importance of] soft-skills, the interpersonal skills and to develop effective communication skills. Acknowledging other people's contributions and observing social etiquette are equally important. We should be generous with expressions like "thank you" and "I am sorry". I have met some young people who could benefit from some lessons on social etiquette. It is useful for young people to learn the power of networking and having a positive attitude early on. Well, the list can be long, but I think this is a good list to start with.

Student: I'm really struck by these five words. I hadn't expected adaptability to be in there. Could you expound on that?

Take my own personal story as an example. Since joining Upjohn in Kalamazoo in 1985, Upjohn went through a couple of mergers and the twice-merged company was acquired by Pfizer in 2003. Pfizer closed down the discovery and development activities in Kalamazoo shortly after the acquisition. At that time, I was the head of Statistics and Programming at the Kalamazoo site. My site was gone after the acquisition. For four years, I worked at the company's Ann Arbor site. My husband and I bought a house for me to stay in Ann Arbor when I worked there during the week. I traveled back to our residence in Kalamazoo for weekends. I wasn't in the managerial position when I first started in Ann Arbor. I worked as a technical consultant, working with teams at different sites. When the Site Head of Statistics in Ann Arbor left the company, I took over the Site Head role. After serving as the Site Head for Statistics for a couple years, I was asked to head up the Statistical Research Consulting Center. So I was the head of two groups for a while. In 2007, the Ann Arbor site was closed and I lost one of my two roles. Right now I head up only the Statistical Research Consulting Center.

Over the years, I have also seen others' careers change and their roles take a different direction, sometimes in management, sometimes in technical roles or back and forth between the two. When there are changes that are beyond our control or when there are things we can't do because of other considerations in life, we need to optimize our decision within existing constraints. How do we adapt to a new situation? We need to be prepared to make the best of whatever situation we are in. This sort of resilience is very important for a person to stay balanced in life.

Interviewers: Going back to those five words, can you tell me more about the importance of curiosity?

I remember many years ago, I saw a picture and that picture stayed in my mind since then. That picture showed a very cute little boy, probably 8 years old. He had something precious in his hands. He was bursting with excitement to show his prized possession. He had a live frog in his cupped hands. He wanted to share his live frog with the rest of the world. For him, that was the most precious thing. As we grow older we sometimes lost some of that excitement. We lost the sense of something new, something unique. It's very easy to come to work and do the necessary, and go home, and not think about what else we can do. Is there a better way to do our job? Is there a more innovative way to design and analyze a trial? We need to be an entrepreneur, to maintain a healthy degree of curiosity and excitement, to look for the next best thing. The curiosity and excitement will propel us to find better solutions, to look for next innovations. Like Steve Jobs – pursuing something that others have not even begun to imagine.

Interviewers: I have to ask, what are you curious about currently?

I'm curious about how the health care reform might make our society healthier, make medications more accessible to many people who right now don't have access to them. It's something I'm watching very closely. There are many other things I'm also curious about, for example, new ways to analyze data, new ways to present data to communicate to users on how medication should be used at the basic level.

Interviewers: What do you mean by the "basic" level?

It's about the benefit and risks of medical products. It's amazing how many people who take medication don't really understand what the medications are sup-

posed to do for them or the associated risks with the medications. It is important that patients can read about the benefits and risks of the medications they are using. This will help them discuss what they have experienced with their caregiver and decide together whether the medications are the right ones for them or not. This will require an effective way for the pharma industry to communicate such information to the public.

I will give you an example. Nowadays we are conditioned in such a way that before buying a particular food item in a supermarket, we often read the contents on the food label first. We wonder how much calories we will get from the product. What is the fat content? Is the sodium level very high? If I have problems with salt, should I buy this or another product? People will read the food label to educate themselves as to whether they should buy or consume a particular food item, a snack, or cake. Like food label, I think there is a better way to communicate the benefit and risks of medication in a standardized way so people can process that information at a very basic level, just like we understand our food label. We need to help people understand what a medication is likely to do for them and do to them. Perhaps a particular medication is not good for us because we have a co-morbidity, just like some food might not be good for us if we have some health issue. For example, if our cholesterol level is high, we should reduce our intake of eggs and fatty food.

Interviewers: I really enjoyed this interview and hearing how your career has progressed, from making a big change entering the industry to being very successful in it. Do you have any closing thoughts?

I appreciate very much this opportunity to talk with you. When we share our stories with others, others may realize that they have similar experience. We all have to make changes and adapt to external changes from time to time. If we know the career paths of others, we may be more comfortable or even inspired to take a risk because other people have done so.

When a site is closed, like in the case of Kalamazoo and Ann Arbor, people's first reactions are often like "uh no, this is going to be the end of the world because I'm losing my job." Yet, once people got beyond the initial shock, they started thinking about their other career options and alternatives. Many of them made career moves that they would not have made otherwise if the change had not occurred. Many of them actually became quite happy with the changes they made. But making that change initially and on their own would be

scary for many people. Hopefully the younger generations of statisticians are much more adventurous and are willing to take a risk. In addition, I hope they are willing to make changes on their own to pursue their dreams.

About the interviewers



Julia Rotondo is currently a Research Analyst in the Security, Energy, and Environment Department at NORC at the University of Chicago. She received her M.A. in Global Environmental Policy from American University and her B.A. in Public Policy Studies from the University of Chicago.



Molly Jones is originally from Maine and now lives in Washington, DC. She is a Research Analyst in the Security, Energy, and Environment Department at NORC at the University of Chicago. She has a B.S. in Science, Technology, and International Affairs from Georgetown University's School of Foreign Service.