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Interview with Diana Chow

Diana Shu-Lian Chow Ph.D.

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TEXAS MEDICAL CENTER

WOMEN'S HISTORY PROJECT

Diana Shu-Lian Chow, Ph.D.

Professor of Pharmaceutics and Director of the Institute for Drug Education and Research (IDER)

University of Houston College of Pharmacy

Diana Shu-Lian Chow, Ph.D., is an outstanding researcher at the University of Houston College of Pharmacy, where she began her career in 1981. She has authored or co-authored more than 50 peer-reviewed journal articles, three book chapters and more than 200 abstracts presented at national and international scientific conference or meetings. She is the editor of the British Journal of Pharmacology, editorial board member for the Journal of Drug Development and Industrial Pharmacy and a reviewer for more than a dozen journals.

She holds more than 10 U.S. and international patents, and in 2009, the Houston Intellectual Property Law Association bestowed its "Inventor of the Year" Award to Dr. Chow. She has worked with collaborators across the Texas Medical Center and the world on drugs that fight cancer and strive to help those with spinal cord injuries.

She has received the Outstanding Alumni Achievement Award from the National Taiwan University School of Pharmacy in Taipei, Taiwan, awards as a Faculty Scholar-Minority Serving Institution Awards from the American Association for Cancer Research, and the UHCOP Faculty Service Excellence Award. In 2016, she was inducted as a Fellow of the National Academy of Inventors at the U.S. Patent & Trademark Office headquarters in Washington, D.C.

She is a demure woman who is hesitant to boast of her awards, but pursuing research that has an impact on patients' lives has been her professional passion.

RS: This is Ruth SoRelle. It is November 22nd 2016. I am interviewing Dr. Diana Chow in the conference room at the University of Houston Pharmacy building on the TMC

(Texas Medical Center) Campus. So let's talk a little bit about your early life. Where were you born?

DC: I was born in Hong Kong after the Communists took over the country. My parents fled from China to Hong Kong. Then my father became a school president in North Malaysia, Kursus Sabah. We spent five years there. Then my family moved to Taiwan. I finished my college education at National Taiwan University. I spent about 17 years in Taiwan and then my family moved to Vancouver, Canada. I studied abroad. At first at Ohio State University and then for family reasons I moved back to Vancouver. I finally got my... I got my Master's degree from Ohio State and my PhD from University of British Columbia in Vancouver, Canada. That was in 1981. I remember I had my dissertation defense on February 25th and the next day I cleaned out my lab and then the next day I cleaned out my living quarters and on February 28th, 1981, I came here. This was my first job and my only job since I graduated. I really appreciated this opportunity because at that time I had another offer from Pittsburgh. I interviewed there first, but I interviewed here second. I got this offer first. I really liked the Texas Medical Center environment and for that reason, I picked this school.

RS: Wow

DC: I have been here 36 years. I remember when I first joined I told my parents, especially my mom, "Mom I'll return in three years to Vancouver." Then I suddenly realized last year, it has been 35 years.

RS: So your father was an academic?

DC: My father yes. Actually he's originally he was a general in China before the Communists. He was also the one who was really an academic. When we moved to Taiwan, he was a professor in the language of German.

RS: So what did your mother do?

DC: My mom was a typical housewife. When people say... I am pretty career minded. People would say there are several options. One is your mom is a career woman, so you follow that step or people say your mom is traditional housewife and you hate that role, so you go the other way. But I love my mom so that's not it. The third option is my parents treated me nice and had time to raise me up. We were Christians, I have to say that. So, each one of us fully developed a gift from the Lord.

RS: So what were their names? Are they alive?

DC: No, my mother passed away last December at age 102 in Vancouver. A few weeks before that she was walking up and down the stairs. So that's a blessing to us. My father passed away at the age of 90. They set a great example for us. We are siblings of 8. I am the youngest.

RS: You had 8 siblings?

DC: Yes, one of my sisters passed away in China. Then, I have two elder brothers in Vancouver and four elder sisters in California. I am the one farthest from the family. Their name? I established a scholarship in our College after their names. My father is Cheng-Yok Chow and my mother is Kai-King Chow.

RS: Oh, that's wonderful.

DC: They really emphasized education for every kid.

RS: So, you came here in 1981 and...

DC: I witnessed all of the changes in the TMC (Texas Medical Center)

RS: I once said if the Texas Medical Center had a shield, it should be two cranes crossed in a pile of rubble, because they always seem to be building.

DC: Yeah, that's true. At one time, I worried about the foundation because of all of the buildings. But this is definitely a prime location for biomedical research. I am not that proactive person; however, the opportunities try to reach me. For example, our most successful product busulfan (came because) that's a hematologist from M.D. Anderson who walked over and asked "what can we do about this? (ED. Note: Busulfan is an alkylating agent that works to suppress white blood cells called granulocytes, red blood cells and platelets. It is part of the conditioning treatment used to prepare the body for bone marrow or stem cell transplant.)

RS: Wow

DC: Before we developed the injectable formulation, patients had to take 35 tablets every six hours around the clock for four days. Envision that. It's very difficult for patients to comply and take. Even worse, that drug triggered vomiting. If there is vomiting, you can't control the precise dose reaching circulation. On the other hand, the grafting success has been well established correlating with the systemic exposure (that means the drug is present in the circulation). They asked what we could do. We used a formulation. We are in pharmaceuticals. With a pharmaceutical approach, we developed a formulation that could be injectable. Before our injectable, 20 percent of patients would develop hepatic (liver) toxicity, which can be fatal. After the development of the injectable, only about 3 percent, which is a significant drop. Also, the fatality rate three months after transplant..... This is a regimen to prepare the patient to receive a

transplant. Previously, in three months, over 40 percent of the patients would die due to either insufficient protection, rejection, or because of the dose toxicity. Now after one year,, it dropped to the single digits, six to eight percent. We developed the drug in the early 1990s. We got FDA approval in 1999. Ever since, now probably 65 percent of North American transplant centers are using this regimen.

RS: Wow

DC: Right and also 10 years after that, in 2009, they recognized the clinical impact as I mentioned to you. Houston intellectual property attorneys granted us the inventor of the year in 2009, ten years after FDA approval. Last year, I was inducted as a fellow for National Academy of Inventors mainly for that. When I attended the induction, I was quite humble, because people had hundreds of thousands of patents and I only have 10. That's one project where we had an impact.

RS: Is this for allogeneic or autologous transplants?

DC: Both.

RS: Well, then I took it. I had a transplant three years ago.

DC: Ahh, well they did a good job.

RS: They did.

DC: That's what we feel is inspiring. Pharmacy schools on any campus is usually a small unit, but because we are located here we have ample opportunity to have those translational... two-way translational research opportunities. We can really benefit the patients. We feel that's a worthwhile mission.

RS: What was this school like when you came here in '81?

DC: The school has definitely changed a lot. At that time, we were starting some research but it wasn't research intensive yet. Those administrators had a mission, so we were gradually building up. I think now... last year I served as the chair of the faculty recruitment search committee, and they are happy because we are very presentable. Those good candidates are willing to join us. So we are definitely transforming. I really appreciate all of the deans, the administrators and chairs, I really appreciated. When I first came, I was so green. I had just graduated from my PhD.

RS: I was thinking you must have been very young.

DC: I was one of the few without post-doc training. At that time, I didn't know how useful it was to have post-doc training. I am also very thankful because of the opportunities that were presented to me. I was the last graduate from my advisor. He passed away a few years afterwards. He said, at that time, he told me... I had long hair at the time, "You are too small. Cut your hair. Show a little authority." I just followed his instructions. Then he said, "Stay away from all of the politics. Keep your head down. Quality work prevails." I appreciate the advice.

RS: It's hard to stay away from politics though.

DC: Later I have been drafted to different administrative positions. Now I don't mind but I think that is a different training.

RS: Because you were from another country, was the atmosphere welcoming? The culture?

DC: I think Texas is probably more liberal or open minded compared with the Northeastern. At that time I was very naïve and I didn't sense anything. Overall I don't feel discrimination that much.

RS: And there's a large Chinese population here.

DC: At that time, there was not that much yet. At that time, there were not any big grocery stores. But now there is a huge population... The composition has changed.

Originally there were Cantonese, then from Hong Kong and now a lot from China.

RS: It is an interesting mix. So did you go into cancer.... So you were just recruited to make this new finding?

DC: You mean for the Busulfan?

RS: The Busulfan

DC: Yes, actually we had quite a number of collaborations at TMC (Texas Medical Center). For example, Methodist with spinal cord injury patients. We have finished phase one study, and we are in phase two. We are the only pharmacy school recruited in that team. There are several medical centers, including one in Toronto and several in the U.S.A. I personally feel whenever the project eventually can benefit patients, I always feel excited. So people will sometime ask, "Are you prepared to retire?" I say, "Up to the Lord" (pointing upwards). But I do like my job, especially when I can see the impact.

RS: Are you married?

DC: Yes

RS: Do you have children?

DC: I only have one. I gave birth really late, when I was almost 40.

RS: My daughter had her first when she was 38.

DC: My son is 26. He graduated from Cornell as a material science engineer. He has been working for three years for Dover Energy in Pearland area. That is another

blessing. Originally, he loved California. When he graduated, he said any city in California he was going to move to. Next is New York and the next is Chicago. Houston is the fourth. Houston at that time, the job opportunities were better.

RS: And your husband, is he a scientist?

DC: Yes, he is a mechanical engineer on faculty. He graduated from MIT and was faculty in Illinois for a long time. We got married and he moved down to Houston. He is University of Houston endowed faculty.

RS: So you have always been at the University of Houston. That has also grown tremendously.

DC: Yes, yes... the University overall environment also changed. I think they value research a lot more. I think it is good. They are on the right track. So I have no complaint.

RS: We've seen a lot more healthcare and medical opportunities come out the University of Houston. Have you been part of that?

DC: Healthcare... I think our college has been part of that. Also, now we are going to have a new building back on the main campus. We are consolidating the pharmacy school in that new building next to optometry. That is a health science building. I personally have mixed feelings. For our preclinical projects, it is helpful because we have a state-of-the-art center for animal care back on main campus. However, for our clinical projects, being here is such a convenience. You can just walk to any place. Currently we are writing a P20 proposal with Baylor College of Medicine that also tries to cultivate underrepresented scientists to get into cancer research.

RS: Oh cool

DC: Right. So I think being in that kind of vicinity-definitely is an advantage.

RS: I used to know...I still do know Burt O'Malley really well. He came here in 1970.

He said the reason he stayed is that there were really no boundaries. If the talent was at another institution, you went there.

DC: I definitely love the environment. Also I think before 2000, I did a sabbatical over at M.D. Anderson. Later, I became an adjunct faculty. I did not have to quit my job here. I continue to carry my duties here, but I can have that exposure. That's unique.

RS: Most of your work.. I mean your biggest finding I guess was in cancer but have you concentrated on cancer?

DC: Cancer is one area but now it is not limited to that. I also have collaboration with Texas Children's. For example, one of my student's projects is for an immunosuppressant agent involves mycophenolic acid and learning the PK/PD (pharmacokinetics/pharmacodynamics) in lupus patients with childhood onset. Again, for this disease, patient population is so unique and TMC (Texas Medical Center) probably has the most concentrated population. That enables us to do the study.

RS: So, what kind of students do you look for to work with you?

DC: I choose students who have the right attitude. They are really eager to learn and curious about knowledge. There are some parts you can train. Some parts have to be from inside. So far I've had a lot of good students. I have graduated 33 PhDs, seven master's students, and 19 post-docs from my lab. I am just very thankful.

RS: I always say scientists have two families. They have their biological families and then they have their laboratory families.

DC: All my students, we've become like a family. We have very good alumni organization for pharmaceuticals. Every year at our annual meeting, we have a tradition. We have an annual dinner just like family. In the early years, they said I looked like their sister. One time my student was sick in the hospital and I visited her. She said you really looked like my mom. Now I am prepared for any time, they will say you look like my grandma.

DC: Time really flies. I didn't realize that until recently.

RS: I was laughing. My son was born in 1981. He's 35 now. I understand how you feel. What do you see for the future?

DC: For myself, for the college?

RS: All of them

DC: All of them? For myself, every day I am thankful I still have the opportunity of working here. Definitely, I treasure the opportunity of working in this environment. For the current P20 application, we are partnered with CDD (Center for Drug Discovery). From discovery to identifying the promising drug candidate to the product is a long journey and we feel that we have the experiences for the development phase. In that proposal, we tried to set.... That's a four-year funding. Hopefully, we can establish that kind of platform. Any promising candidate will be carried on further. Later, not only from Baylor College of Medicine.... Baylor College of Medicine is very active in the discovery phase and very productive, very successful, but for UH campus too. That's probably my last dream before I really retire. If that could be established, that would be excellent.

RS: It would be. It really would be.

DC: Industry is more profit-oriented. They screen the drug very rapidly and make a quick decision. Often, they make a good decision. However, a lot candidates are on the shelves actually just because a delivery issue is not resolved. They intrinsically potent or active. So I would like to have a field of repositioning these drug candidates (so they can be studied: ed. note). That's a missing link and I think academics have that luxury to do research to carry out more promising drugs down the pipeline. I think that's my mission for the pharmacy school. So to answer your question, hopefully that will be recognized and mend that problem.

RS: You've worked in a special area of the pharmacy school, the research area. People tend to think pharmacy schools turn out pharmacists. It's a wholly different point of view but you do have certain abilities as in developing ways to get drugs into the proper area of the body.

DC: I think in the early ... mid -80s, I am also an external reviewer for the FDA (Food and Drug Administration) for NDA (New Drug Application) review. At that time, they had not established a user fee. So there's backlog for years. That's why I had been recruited as an external reviewer. So I know those different phases. Then I know previously how naïve I thought I had to find something promising that then the next day it will be used in patients. So that's not the case. I remember one of my patents. When the media described it, one patient called with the condition and said if she couldn't use it. At that time, I was in tears. Still, we were so premature in development. It would still take a long time to develop. It doesn't mean...

RS: I had that experience from the other side in trying to write news stories about findings that did not overpromise. If a person is desperate, they will read anything into it. It is a very difficult thing.

DC: Right, right. Especially for cancer patients that reach the stage. They are so desperate that any unproven therapy, they will be willing to try. That hurts my feelings because one of my graduates passed away at the age of 57 recently. She got to a stage where she would seek any.... This was a highly educated PhD.

RS: It's really hard.

DC: So that's how I feel about this mission. When I attend AACR (American Association for Cancer Research) meetings, I feel there are a lot of scientists who do have this mission. The senior ones will be willing to host a sunrise session for younger generations. I really admire them.

RS: I think it's really important. I agree with you.