

Prof. R. Stephanie Huang: an expert in pharmacogenomics

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Expert's introduction

Dr. Huang (*Figure 1*) is a tenured Associate Professor in the Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota (cited from the web of University of Minnesota: <https://goo.gl/25g1rT>). Her expertise is in the field of pharmacogenomics. In addition to being a faculty in an academic institute and members of several professional organizations, she also serves on editorial board of several medical journals. Her research lab focuses on translational pharmacogenomics.

Editor's note

Dr. R. Stephanie Huang is one of the speakers of 4th Hong Kong International Oncology Symposium 2017. The topic of her presentation is "Leverage high throughput data for pharmacogenomic discovery and drug repurposing." AME Hong Kong Group were honored to have the opportunity of interviewing Dr. Huang. During the interview, she shared the reasons she chose to specialize in pharmacology, latest findings of her research team, challenges her research team has met, the role of pharmacogenomics in guiding anti-cancer drug treatment, and her tips to organize every duty she takes in her life.

Interview (*Figure 2*)

ATM: *You are a Professor of Experimental and Clinical Pharmacology, what makes you interested in pharmacology?*

Dr. Huang: That thought rooted in my mind during the initial training when I studied in pharmacy school. I observed that everybody responded differently to medications, especially for drugs like anti-cancer agents, in general, were more toxic. We could see people have very bad side effects or not respond to medication at all. These made me feel interested and wanted to figure out how an individual might respond to medication. Therefore, I can help guide prescription decision prior to patients take medication.



Figure 1 Prof. R. Stephanie Huang.



Figure 2 Prof. R. Stephanie Huang: an expert in pharmacogenomics (1).

Available online: <http://www.asvide.com/article/view/25922>

ATM: *Can you briefly talk about the latest findings of your research team?*

Dr. Huang: My lab is doing translational pharmacogenomics. We study how genetic components affect your response to a medication either as toxicity/side effects or as efficacy/responsiveness. One part of it is doing biomarker discovery.

So basically we look for markers that we could use to predict a person's response. The other part is about drug repurposing, which is to determine based on your particular genetic profile what drug will best treat your disease. Because it is drug repurposing, we don't actually develop compound from scratch. We use drugs that already exist to treat other medical problems to repurpose it and use it for a different therapeutic area.

ATM: *What kind of challenges have you met in your research studies? For example, when you conduct clinical trials or do the analysis?*

Dr. Huang: One challenge is in finding the right people. Because the nature of my work is multi-disciplinary, we need expertise from lots of different areas. I need computer scientists who has programming skills to shift through large data sets to generate hypothesis. At the same time, we also do experimental validation, which requires expertise in molecular and cell biology (<http://huang-lab.umn.edu/>). Furthermore, because of translational nature, we don't just stop at the laboratory. We also want to impact patient care. In general, to make the project develop in my lab, I will start with writing a clinical trial protocol that allows us to collect patient materials. But a clinical study would take a few years to mature. At the same time, we start computational work and do laboratory validation. By the time, when clinical samples/data are collected, we could test patients' samples. So the real challenge is to find a right person. It is clear that we need a team of people. In the past decade, there were more molecular biologists than there were computational scientists who know biology. The condition in recent years is getting better. But still, we need more hybrid people to be in my field.

ATM: *Can you talk more about the roles of pharmacogenomics and Anticancer Drugs?*

Dr. Huang: Pharmacogenomics is really one component in precision medicine. When you talk to clinicians in general, they will say medicine is always personalized. But the tools we developed in recent years to learn about human genetics really provide another layer of information that can be used in the medical field, on top of what we already do. For example, based on organ function, gender, body weight, that sort of things to prescribe medication. Now we can

add examination of human genes to guide therapy. This is highly vital in the field of anticancer agents because like I said earlier, most of anticancer agents are toxic and expensive. And when you treat a cancer, which is fast progressing, you do not want to waste time and you want to get it right immediately. Getting the right drug on the first try is critical.

ATM: *As we know that you have joined many editorial boards, you are also a professor and the director of a research team. How can you take a balance among all these duties?*

Dr. Huang: That's sort of my life. I have so many different things to do every day. I do have to prioritize things. Having a team of good people helps. They know what they are doing. Letting people take responsibility to do their jobs and utilizing their creativity are very important. I manage people. It definitely requires a lot of effort. My main job is to do research. That's the most important thing for me. Other thing I love to do is teaching. Disseminating knowledge, cultivating next generation of researchers, would allow us to move forward together. Designating tasks, trusting people, giving tools to let them prosper are very important.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Cheung M, Shih TL. Prof. R. Stephanie Huang: an expert in pharmacogenomics. *Asvide* 2018;5:627. Available online: <http://www.asvide.com/article/view/25922>

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