In Conversation: Research Fellow Ngoc-Han Ha, Ph.D.

CCR: What sparked your interest in research?

Ngoc-Han: As an undergraduate at George Washington University (GWU) studying pharmacogenomics, I started volunteering in a lab. One of my projects was looking at polymorphisms in an enzyme involved in drug metabolism. It was a small project, but that is when I found out that I loved bench work.

CCR: How did you move from pharmacogenomics to metastatic cancer?

Ngoc-Han: I have always been fascinated by cancer and when I did my Ph.D. at GWU, my interest in oncology drew me to work on a protein called lactoferrin, which turns triple-positive breast cancer cells (expressing estrogen, progesterone, and HER2 receptors) into a more aggressive triple-negative form. On completing my degree, I saw a job advertised by Kent Hunter, Ph.D. (Deputy Chief, CCR's Laboratory of Cancer Biology and Genetics [LCBG]). His interest in germline polymorphisms and breast cancer metastasis seemed to be a perfect match, given my undergraduate and graduate degrees and my interest in personalized therapy.

CCR: What is the focus of your current research?

Ngoc-Han: The basic question of our lab is whether we can identify breast cancer patients who are at risk for metastasis by looking at germline mutations. We use a genetically modified mouse model and identify genes with differential expression that play a role in metastatic susceptibility.

CCR: Have you discovered new genes related to metastasis?

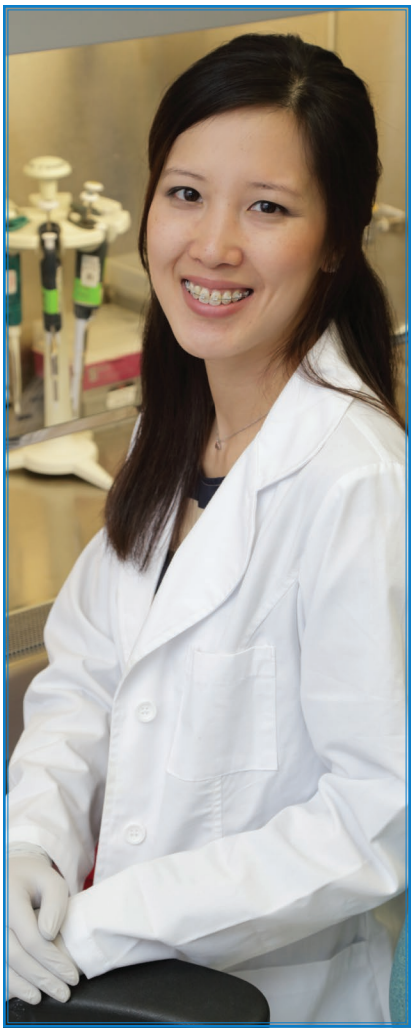
Ngoc-Han: The gene I found—ARNTL2—is actually a circadian rhythm gene. Studies have shown that women who work the night shift (i.e., alter their circadian rhythm) have an increased risk for breast cancer and/or metastasis. Specifically, our work shows that mutations in a putative promoter region change the transcriptional expression level of Arntl2, which in turn affects metastatic outcome. This demonstrates that not only protein-coding polymorphisms, but also those in regulatory regions, can affect metastasis.

CCR: To build on your research, how do you find the people and resources you need?

Ngoc-Han: Our Lab, LCBG, is very supportive when I have a technical question, need to borrow reagents, or need to discuss project ideas. Additionally, the NIH LISTSERVs are always helpful for resources such as reagents or protocols. The Foundation for Advanced Education in the Sciences (FAES) at NIH is also a good resource to advance your knowledge on various subjects. For example, to understand next-generation sequencing, I took an RNA-seq class last semester. Overall, NIH is a great place to learn and everyone seems eager to help and to start collaborations.

CCR: What is next in your career?

Ngoc-Han: When I first started my postdoc, I thought I'd become a Principal Investigator because I love academic science and bench work. Having been at the NIH for about four years, I could see myself as a Staff Scientist or equivalent, where I can spend more time at the bench, while still getting to mentor students.



(Photo: B. Branson)

Ngoc-Han Ha, Ph.D.

CCR: Have you done much mentoring?

Ngoc-Han: We have summer students every year and we also have a postbaccalaureate student whom I've mentored. I love mentoring students because I want them to understand and to be excited about science.