

In Conversation: Clinical Fellow Jung-min Lee

CCR connections recently met up with Jung-min Lee, M.D., winner of the Jane C. Wright, M.D., Young Investigator Award, from the American Society of Clinical Oncology, honoring outstanding early-career researchers in the final two years of their subspecialty training. We took the opportunity to discover more about Jung-min's current research, and her future goals.

CCR: Welcome, and thanks for taking the time to speak with us today. Congratulations on your recent award—can you please tell us a little about your ongoing research interests?

Jung-min: I work with Elise Kohn, M.D., Head of the Molecular Signaling Section and the Women's Cancers Clinic in CCR's Medical Oncology Branch, and I'm a clinical fellow in medical oncology and hematology. The award was for my work on translational research related to poly (ADP-ribose) polymerase (PARP) inhibitors in women's cancers. PARP inhibitors are promising therapies in women with *BRCA1/2* mutations, and my work investigates this in two ways: I'm examining the differential effects of sequential administration of the PARP inhibitor olaparib in combination with carboplatin chemotherapy in preclinical and clinical models and I'm looking at mechanisms of DNA damage that occur as a result of different schedules of these drugs in preclinical models.

CCR: Olaparib is supposed to make chemotherapy more effective, so some research has suggested that it should be given first. Can you share with us what your research suggests?

Jung-min: Yes, our preclinical work actually gave a very different result—we observed that when carboplatin is given first, followed by olaparib, you get more DNA damage in *BRCA1-*

mutated breast and ovarian cancer cell lines. We hypothesized that administering carboplatin followed by olaparib will cause greater DNA damage than olaparib presensitization of carboplatin in patients as well. So we've now launched a clinical trial to test this hypothesis generated by our preclinical work. We will look at differential drug exposure and clinical benefit based on correlative end points and scheduling differences.

CCR: Are you working on other research questions related to *BRCA1/2* in your laboratory?

Jung-min: Yes, recent data suggest that certain women with cancer can benefit from PARP inhibitors even though they don't carry the *BRCA1* and *BRCA2* mutations—this may represent homologous recombination dysfunction in the DNA damage repair pathway—and we're currently investigating this in the lab.

CCR: How do you go about selecting which patients might benefit the most from PARP inhibition therapy?

Jung-min: We know that *BRCA1* and *BRCA2* mutation carriers are sensitive to PARP inhibitor, but we don't know which patients with high-grade, serous ovarian cancer might respond to it. So, part of my research is to investigate possible predictive biomarkers for PARP inhibitor therapy—so far, they include RAD51 and gamma H2AX.



(Photo: E. Branson)

Jung-min Lee, M.D.

CCR: How does your research help you as a clinician?

Jung-min: It helps me tremendously. Even though I'm at the early stage of my career, understanding molecular mechanisms and working on hypothesis-driven clinical trials has made me mature as a physician. The majority of patients who come here are knowledgeable, and fully understand their disease, so I take the time to share the rationale of our clinical trials and advances in cancer research with them. I think it's critical to communicate our knowledge and experience with patients because it really makes a difference in how we care for them. Dr. Kohn sets a good example of how important it is for physicians to share the understanding and advances of research with patients. I'm also part of a great clinical and laboratory team.

CCR: In terms of your future, both as a clinician and researcher, what do you see as some of your next steps?

Jung-min: I'm looking for a faculty position as a physician-scientist in women's cancer and I'm particularly interested in rare, under-studied subgroups in ovarian and breast cancer. I want to take what I've learned here to the next phase of my career, carrying out hypothesis-driven clinical and translational research.