Kaname Uno: Redefining Platinum Resistance in Ovarian Cancer

Platinum-based chemotherapy has been the backbone of ovarian cancer treatment for more than four decades. At first, this treatment works in about 70% of patients, shrinking tumors and prolonging life. Yet, in many cases, the disease inevitably returns, more aggressive and harder to treat. This phenomenon, known as “platinum resistance,” is currently defined in the clinic by time, as cancer progression within six months of the last platinum treatment. But this definition does not always match clinical reality and fails to explain why some tumors stop responding earlier while others remain sensitive much longer.

Kaname Uno’s research seeks to change this by uncovering the true molecular mechanisms of resistance and by developing tools to predict which patients are unlikely to respond before treatment even begins. His vision is to help doctors classify patients more accurately already at diagnosis, when tumor tissue is first available after surgery, so they can select the most effective therapies and avoid unnecessary side effects. By moving beyond a simplistic time-based definition, this work aims to transform how treatment decisions are guided in ovarian cancer.

Kaname Uno is both a gynecologist and a cancer researcher, bridging clinical care and laboratory science. He earned his M.D. from Kyorin University, Japan, followed by double Ph.D. degrees in Medicine from Nagoya University, Japan, and Lund University, Sweden. Since 2024, he has been a postdoctoral fellow at Lund University, where his research focuses on ovarian cancer biology and drug resistance mechanisms. His background allows him to connect the pressing needs of patients with cutting-edge molecular research.

Kaname Uno’s personal motivation comes directly from his years working as a clinician and gynecologist:

> *“I have witnessed how cancer cells grow stronger and more resistant with each round of therapy. When tumors become resistant to chemotherapy, I often found myself powerless at my patients’ side. This drives me to search for better tools and new hope.”*
> — **Kaname Uno**

The project uses an innovative system to visualize platinum distribution inside tumor tissue at the microscopic level. By comparing tumors that respond with those that are resistant, Uno and his colleagues aim to reveal how platinum drugs are transported, trapped, or expelled from cancer cells. Early data suggest that resistant tumors actively pump platinum out through specific transport proteins. The team will identify these proteins through genetic profiling, measure their expression in tissue samples from over 120 patients, and test their links to prognosis. Targeting such proteins could provide a way to restore drug sensitivity in resistant tumors.

In parallel, the study will measure metal ion concentrations in abdominal fluid, a simple and non-invasive test, as a potential biomarker of platinum response. Since platinum shares

transport mechanisms with other metal ions, elevated ion levels may reflect increased activity of the transporters that drive resistance. If successful, this approach could give clinicians a powerful new tool for predicting response before treatment begins.

The expected impact of this research is significant. Patients who are unlikely to benefit from platinum therapy could be identified early, sparing them from toxic side effects and allowing access to more effective alternatives. At the same time, new therapeutic targets may be uncovered for patients with resistant disease. Ultimately, Uno's work aims to bring about a new, more precise definition of platinum resistance, one rooted in biology rather than time, and to translate this knowledge into tools that improve patient outcomes.

By combining clinical experience, molecular analysis, and innovative imaging, Kaname Uno seeks to transform the way ovarian cancer is managed. His goal is clear: to offer more accurate treatment guidance and to bring new hope to women facing one of the most challenging forms of cancer.