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Memorial Sloan Kettering Cancer Center

ABOUT US

Our mission, vision & core values

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History

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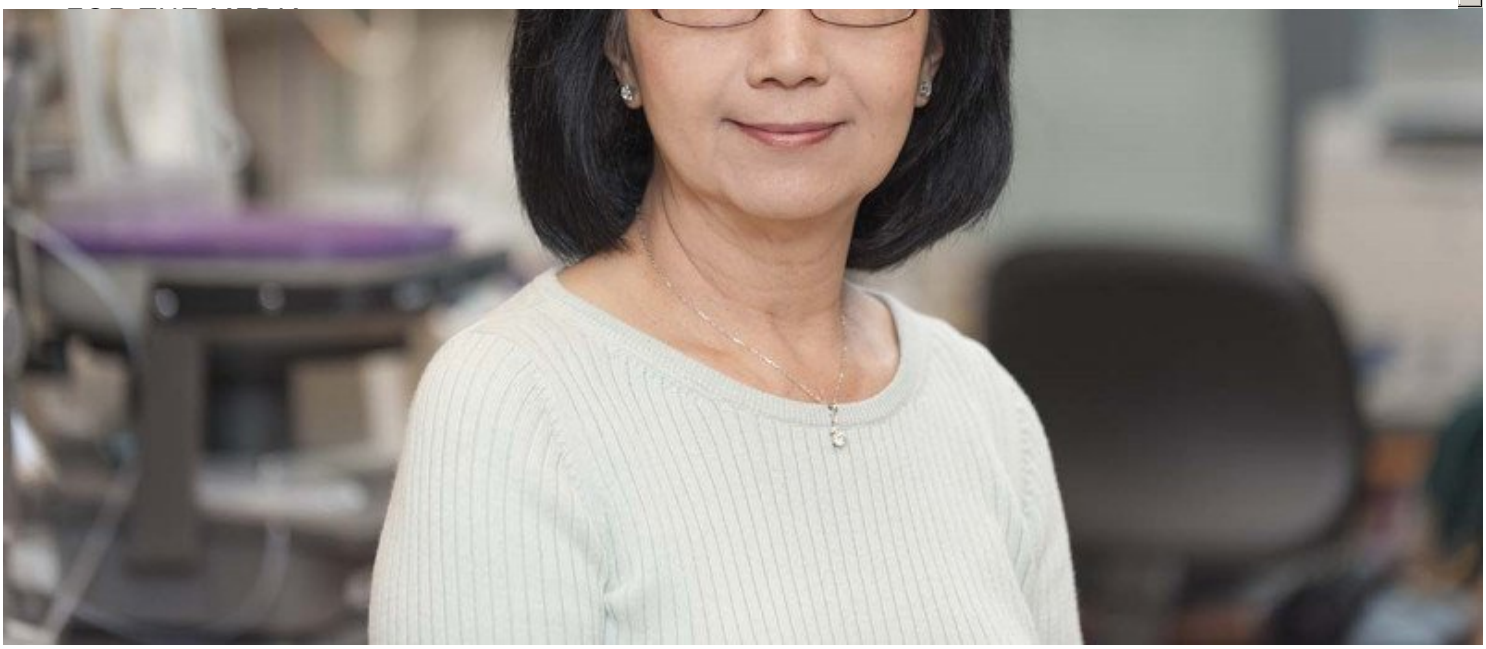
Annual report

Give to MSK



Minimal Residual Disease

Many patients with high-risk neuroblastoma, despite being in clinical remission after completing induction chemotherapy, are often left with minimal residual disease (MRD), i.e., the presence of microscopic levels of tumor cells not detectable by conventional clinicopathological methods. Unfortunately, the presence of MRD is likely to contribute to an eventual relapse and death. Immunotherapy, including anti-GD2 monoclonal antibodies and anti-GD2 vaccine directed against MRD, has been demonstrated to markedly improve outcomes. It stands to reason that the ability to measure MRD is critical. It helps gauge the success of these targeting strategies, especially in the key metastatic compartments of bone marrow and peripheral blood, as well as in the emerging relapse sites, including the brain, leptomeninges, and soft tissues, such as the lymph nodes, liver, and lung. Using transcriptome analysis, we have developed and validated a panel of four molecular markers. This marker panel was found to be highly predictive of eventual relapse and survival in about 400 people with metastatic neuroblastoma in a series of retrospective marrow analysis. This tool is extremely important because MRD status helps determine treatment efficacy, and for some people, it means avoiding the devastating late effects from prolonged therapy.

Pharmacokinetics of Monoclonal Antibodies

Pharmacokinetics (PK) of novel biologics provide rationale for appropriate dosing. In the phase I trial of hu3F8 used in combination with GM-CSF, we analyzed a comprehensive collection of serial blood samples to study the PK and immunogenicity of hu3F8. There were several key observations from the PK analyses of hu3F8. First, drug exposure, as measured by the area under the curve, decreased with body weight, suggesting that smaller children might have been underdosed despite using a mg/kg prescription. Some people were found to mount their own anti-GD2 antibody response after hu3F8 treatment (the vaccination effect), and this response correlated with survival outcomes. These observations have profound implications for the dosing of antibodies and antibody conjugates, as well as the future directions of the immunotherapy program at MSK.

Publications

Cheung IY, Cheung NV, Modak S, Mauguen A, Feng Y, Basu E, Roberts SS, Ragupathi G, Kushner BH. Survival Impact of Anti-GD2 Antibody Response in a Phase II Ganglioside Vaccine Trial Among Patients With High-Risk Neuroblastoma With Prior Disease Progression. J Clin Oncol. 2021 Jan 20;39(3):215-226. doi: 10.1200/JCO.20.01892. Epub 2020 Dec 16. PMCID: PMC8253584.

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Cheung NK, Ostrovnaya I, Kuk D, Cheung IY. Bone Marrow Minimal Residual Disease Was an Early Response Marker and a Consistent Independent Predictor of Survival After Anti-GD2 Immunotherapy. J. Clinical Oncology, 33(7):755-63, 2015.

Disclosures

Doctors and faculty members often work with pharmaceutical, device, biotechnology, and life sciences companies, and other organizations outside of MSK, to find safe and effective cancer treatments, to improve patient care, and to educate the health care community.

MSK requires doctors and faculty members to report ("disclose") the relationships and financial interests they have with external entities. As a commitment to transparency with our community, we make that information available to the public.

Irene Cheung discloses the following relationships and financial interests:

No disclosures meeting criteria for time period

The information published here is for a specific annual disclosure period. There may be differences between information on this and other public sites as a result of different reporting periods and/or the various ways relationships and financial interests are categorized by organizations that publish such data.

This page and data include information for a specific MSK annual disclosure period (January 1, 2022 through disclosure submission in spring 2023). This data reflects interests that may or may not still exist. This data is updated annually.

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