

BIOMARKER TO PREDICT CANCER RESPONSE TO CHEMOTHERAPY

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Technology Description

Researchers at Washington University in St. Louis have developed a prognostic biomarker that can be used to predict response to genotoxic chemotherapy for patients with basal-like/triple-negative breast cancer. Basal-like/triple-negative breast cancer is considered to be more aggressive and has poorer prognosis than other types of breast cancers. Compared to luminal and Her2-positive breast cancer, few targeted therapies are available for basal-like/triple negative breast cancer. Currently, treatment options include a combination of surgery, radiation, and chemotherapies (most of which are genotoxic). In recent years, newer generation chemotherapeutic agents such as PARP inhibitors show clinical benefit for certain basal-like/triple-negative breast cancer patients. However, the effectiveness of both standard chemotherapies and PARP inhibitors varies greatly between patients. Thus, it would be useful to have a reliable prognostic biomarker to predict patient outcome. To help meet this need the inventors developed a monoclonal antibody, phospho-Ser784-VCP, that can be used to predict genotoxic chemotherapy response. High levels of phospho-Ser784-VCP render tumor cells high ability to survive chemotherapy-induced DNA damage, and correlate with poor survival for chemotherapytreated patients. With this biomarker patients with higher chance of responding to genotoxic chemotherapies can be selected for treatment. This technology may aid breast cancer treatment as it provides a predictive biomarker for genotoxic chemotherapy response.

Stage of Research

Validation studies conducted by the inventors show great promise.

Publications

Zhu, C., Rogers, A., Asleh, K., Won, J., Gao, D., Leung, S., Li, S., Vij, K. R., Zhu, J., Held, J. M., You, Z., Nielsen, T. O., & Shao, J. (2020). Phospho-Ser784-VCP Is Required for DNA Damage Response and Is Associated with Poor Prognosis of Chemotherapy-Treated Breast Cancer. Cell reports, 31(10), 107745.

Applications

Cancer biomarker- predictive biomarker for genotoxic chemotherapy response

Key Advantages



- New prognostic biomarker to aid treatment of basal-like/triple-negative breast cancer
- Stratify patients for chemotherapy treatment
- Help lower-risk patients avoid over-treatment
- Prognostic value is independent of clinicopathological variables

Patents

• Patent application has been filed.

Related Web Links

• Dr. Shao profile