Repurposing a cancer drug to reduce COVID-19 lung inflammation

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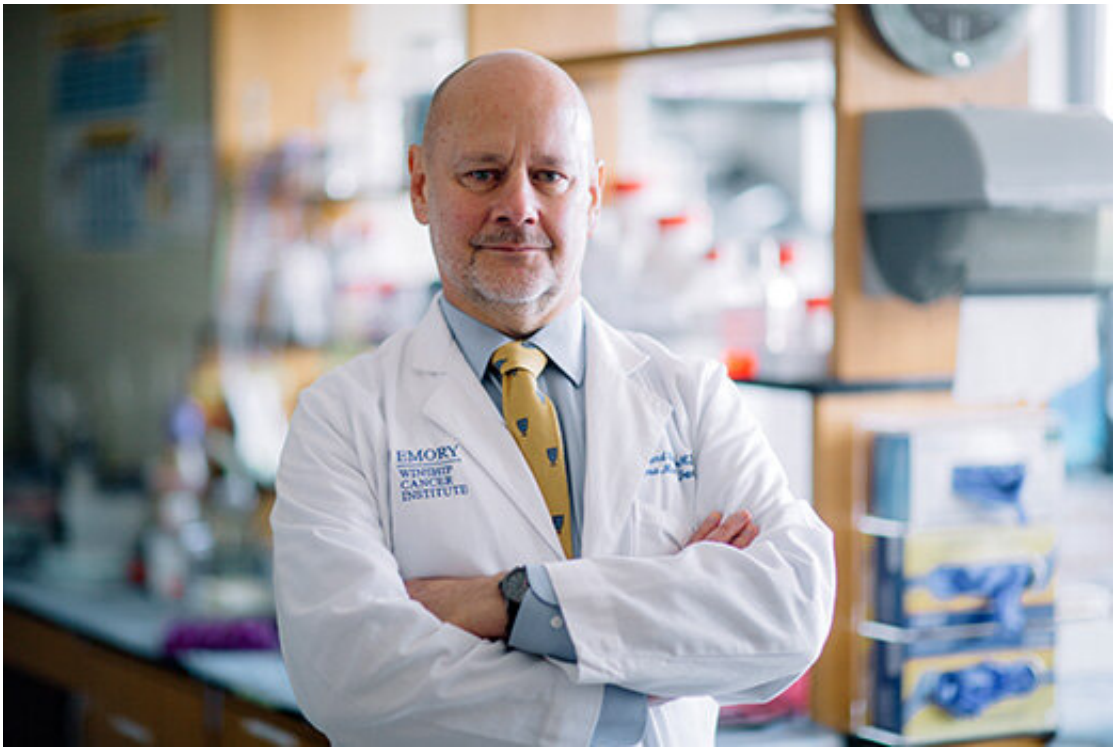

Principal investigator Edmund K. Waller, MD, PhD is leading the Phase II trial of the drug called duvelisib. Credit: Emory University

Winship Cancer Institute of Emory University (Winship) and Emory investigators are testing whether an anticancer drug can reduce lung inflammation in hospitalized COVID-19 patients, possibly preventing the need for intubation and lowering mortality.

The drug is called duvelisib, and it was FDA-approved in 2018 for the treatment of relapsed or refractory chronic lymphocytic leukemia or small lymphocytic lymphoma. This investigator-initiated Phase II study is supported by duvelisib's manufacturer, Verastem Oncology.

The principal investigator for the DAMPEN-CI (Duvelisib Antagonizes Manifestations of Pneumonia in Established Novel Coronavirus Infection) study is Winship hematologist Edmund K. Waller, MD, Ph.D., professor of hematology and medical oncology, medicine, and pathology at Emory University School of Medicine and holder of the Rein Saral, MD Professorship in Cancer Medicine. Waller is also medical director of the Center for Stem Cell Processing and Apheresis at Emory University Hospital.

"The rationale behind the use of duvelisib is that the drug may be able to calm the systemic inflammation that exacerbates COVID-19-associated pneumonia and acute respiratory distress syndrome," Waller says.

Data from leukemia and lymphoma patients treated with duvelisib indicate that the drug can reduce levels of some of the same immune messenger cytokines that are elevated during COVID-19 infection. Duvelisib inhibits gamma/delta PI 3-kinases, enzymes that are regulators of metabolism and signaling in immune cells.

At the same time, pre-clinical studies suggest duvelisib can mitigate T cell exhaustion. Separate research has shown that T cell exhaustion limits how effectively the immune system can fight viral infection. Before the COVID-19 pandemic, Waller's lab had been testing whether the drug can be used to enhance the activity of CAR-T cells in cancer immunotherapy.

"This study is an example of how research on cancer immunology can be repurposed and deployed against COVID-19, possibly improving patient

outcomes during this crisis," says Winship Executive Director Walter J. Curran, Jr., MD, the Lawrence W. Davis Chair in Radiation Oncology and the Georgia Research Alliance Eminent Scholar and Chair in Cancer Research. "We are happy to be able to cooperate with our infectious disease and critical care colleagues in this effort."

Provided by Emory University