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“Harrington’s team of experts, clinicians and drug developers have provided invaluable help in our dealings with the FDA.”



BREAKTHROUGHS

BEHIND THE COVID LINES

FOCUS: Fumarate-based therapeutics for COVID-19 patients to reduce ICU admissions, ventilator use and the overall burden on patient care.

The news cycle has been dominated by coronavirus disease 2019 (COVID-19) case numbers and fatality rates and topics around vaccine distribution and immunization. Meanwhile, far less focus was devoted to the crucial work being done to create drug therapies aimed at addressing the symptoms of the virus.

The inflammatory response to infection from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) often leads to Acute Respiratory Distress Syndrome (ARDS), a life-threatening injury of the lungs.

Dr. Fitzgerald and her team hypothesized that a drug already FDA-approved, dimethyl fumarate (DMF), can be repurposed to treat severe COVID-19 infections. Known to have anti-inflammatory properties, DMF is used to treat multiple sclerosis and has few side effects.

The body’s hyper-inflammatory response to COVID-19 can damage the airways, leading to significant tissue damage in the lungs. Dr. Fitzgerald proposes that DMF would block this phase, thus protecting the lungs from tissue damage.

“We aim to use DMF to target and inactivate Gasdermin D, an inflammatory protein that mediates cell death and the release of inflammatory cytokines (substances secreted by immune system cells) that are known to promote the onset of ARDS in COVID-19,” Dr. Fitzgerald says.

The data for DMF look promising—not just in the treatment of COVID-19 and Delta variant patients, but also as a mechanism to dampen the inflammatory response in diseases such as arthritis, cardiovascular disease, and diabetes.

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