Tests of Thousands of Non-Cancer Drugs Yields Leads for New Cancer Agents

A novel scanning method dramatically reduces the time and effort required to scan such drugs for potential as anticancer agents.

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A cutting-edge method of scanning existing non-cancer drugs as potential treatments for malignancies has allowed scientists to comb through more than 4,500 such drugs dramatically faster than in the past, Reuters Health reports. The method recently identified nearly 50 non-cancer drugs that have shown at least some promise as agents that can combat malignancies.

Steven Corsello, MD, of Dana-Farber Cancer Institute and the Broad Institute of MIT and Harvard University, led the research team, which looked to the Broad Institute's Drug Repurposing Hub for the non-cancer drug samples. This hub contains more than 6,000 drugs that are either approved by the Food and Drug Administration or have been shown to be safe for use in humans in early-stage clinical trials.

Publishing their findings in Nature Cancer, Corsello and his colleagues conducted laboratory experiments to assess about three quarters of the drugs in the database for their activity against cancer cell lines. To do so expeditiously, they pooled the cells' lines and, prior to doing so, used a virus to introduce to each line unique snippets of DNA to act as a marker. This marker allowed them to identify individual cell lines after testing each drug against the pooled cell lines.

This process allowed the scientists to avoid having to engage in the arduous and time-consuming task of growing out each cell line individually.

The authors found that 49 non-oncology drugs had the capacity to selectively kill cancer cell lines. This means that the drugs killed some cancer cell lines but not others, which is ideal for a cancer treatment because it indicates a lower likelihood of off-target effects.

To better understand how the drugs went after cancer cells, the researchers selected four drugs for further testing, including a diabetes treatment, an anti-inflammatory drug, an alcohol use disorder treatment and a drug approved for treating arthritis pain in dogs.

Next up will likely be animal testing to determine whether the drugs are active and safe enough for human clinical trials as well as the scanning of more non-cancer drugs.

While some of the drugs identified might make their way into the cancer drug clinical trial process, the researchers are more inclined to study their effects on cancer cells in the lab in an effort to identify new molecular targets for which investigators can then develop novel cancer therapies.

To read the Reuters Health article, click here.

To read the study, click here.

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