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WVAHealth

Partners in Discovery News

UVA CANCER CENTER An NCI-Designated Comprehensive Cancer Center

Dear Partner,

You are receiving this letter because you are a member of Partners in Discovery for Total Cancer Care at The University of Virginia (UVA), working together with our doctors and scientists to find new ways to detect, treat and cure cancer. You've provided researchers immensely useful data by consenting to participate in the Partners in Discovery for Total Cancer Care (TCC) protocol. In addition to supporting research here at UVA, you are also partnered through us with three national research organizations that support cancer research across the country: the Oncology Research Information Exchange Network (ORIEN),

a consortium of 19 cancer centers United States: the across the Cooperative Human Tissue Network (CHTN), sponsored by the National Cancer Institute; and the Applied Proteogenomics Learning and (APOLLO) Outcomes program, supported by the federal Cancer Moonshot initiative.

In this letter, we'll share what you've contributed to our work this past year, highlight a recent research discovery, and describe a new initiative that would use artificial intelligence (AI) to match patients with clinical trials that have the potential to successfully treat their cancer.

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Since UVA first started this program in 2015, we've amassed an enormous amount of clinical data, biospecimens and genetic data from our patient partners. **Clinical data** is collected when you come to UVA for your appointments, diagnosis, treatments and surgeries. It allows our researchers to study risks for cancer considering factors such as age, gender and pre-existing conditions, to name a few. Clinical data is also important for understanding which cancers do and do not respond to various medications and treatments, as well as for tracking survival. **Biospecimens** may be collected when your blood is drawn, when your cheeks are swabbed, and when tissue is left over from surgery. **Genetic data** is collected when paired biospecimens, which consist of both a patient's normal and cancerous cells, are processed and their DNA sequenced. Paired biospecimens are especially valuable because they allow researchers to perform controlled experiments using both normal and cancerous cells, which is the gold standard in scientific research. Our goal is to ultimately collect paired biospecimens for all of our patient partners.

Thanks to you, the Partners in Discovery program has surpassed two major milestones: the **10,000th** UVA patient partner joined the Partners in Discovery for Total Cancer Care protocol, and the **1,000th** patient has contributed genetic data. Having such a large dataset for so many patients with different cancer types gives our researchers the opportunity to observe and understand cancer at every level, from specific gene mutations to population-wide statistics.

This dataset is helping researchers at UVA and across the country study cancer to figure out better treatments for current and future patients.



WHAT WE DO:

Collect and distribute cancer patient specimens and data to help advance translational oncology research.



WHERE DOES IT GO?

Specimens and data are distributed nation-wide and are being used in over 100 different research projects.

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Comparing Immunotherapy Toxicity Across Males and Females¹

Immunotherapy has revolutionized cancer treatment by making patients' immune systems identify and destroy cancer cells. Compared to traditional treatments like radiation and chemotherapy, immunotherapy can lead to longer, more sustained recovery with less severe side effects. It is not, however, without the risk of side effects, which can include fatigue, inflammation and heart issues. In severe cases, these sides effects require treatment changes. Because that can impact patient outcomes,



researchers set out to determine if pre-existing factors increase the risk of immunotherapy side effects. They analyzed data provided by nearly 500 TCC participants who received immunotherapy, then had to change treatment due to side effects. The researchers looked at factors including gender, body mass index, smoking, heart disease, endocrine issues, chronic obstructive pulmonary disease (COPD), kidney failure, blood clotting, gut issues, and chronic pain syndrome. They found that only one of the factors contributed significantly to side effects requiring treatment changes: COPD. This makes sense, because COPD patients often have severely weakened immune systems. The researchers also found that, in general, the immunotherapy course was shorter for women than men, but it's not yet clear why. Studies like this are important because they help doctors figure out the best treatment for each patient.

IMPACT: Intelligent Matching of PAtients to Clinical Trials

Having such a large dataset of real-world patient data also gives us the opportunity to use AI to potentially solve the hard problem of clinical trial matching.

In cancer clinical trials, patients – many of whom have exhausted established treatment options – volunteer to try new therapies being tested for effectiveness and government approval. Matching patients with the appropriate clinical trials is a hard problem because of the different ways each individual patient's cancer may be diagnosed, treated and respond to therapy. In addition, clinical trials' eligibility criteria can be complex and selective. Currently, UVA's team



of clinical research coordinators spends a significant amount of time reviewing patients' medical records, clinical notes recorded by doctors, and scanned documents from referring clinics to determine if a patient is eligible for a trial. Time is an enemy, and given the possibility that we are not matching all of the patients we should, we're eager to see if Al can make this work more efficient.

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We are building a tool called IMPACT (which stands for Intelligent Matching of PAtients to Clinical Irials) using what AI experts call advanced large language models. In a preliminary test, we used IMPACT to screen approximately 200 patients seen at UVA clinics over the course of a week to determine their eligibility for the Partners in Discovery for Total Cancer Care protocol. The results were compared to the screening of the same data performed by a human over the same time period. IMPACT not only detected all the patients identified by the human; it found a few additional patients. While this screening was done for only a subset of patients for one trial at UVA, our hope is that we can train and expand IMPACT to screen all patients for all trials at UVA.

These are just a couple examples of the progress made possible by your participation in Partners in Discovery for Total Cancer Care. We're deeply grateful for the generous contributions you have made to help us reduce the burden of cancer for patients of tomorrow through research collaborations and quality improvement projects. Thank you!

¹Chua KJ, Kronstedt S, Kaldany A, Srivastava A, Doppalapudi SK, Liu H, Tarhini AA, Gatti-Mays M, Gaughan E, Hu-Lieskovan S, Aljumaily R, Nepple K, Schneider B, Sterling J, Singer EA. Comparing the rate of immunotherapy treatment change due to toxicity by sex. Cancer Rep (Hoboken). 2024 Feb

Thank you so much for your participation and donations of time, specimens, and data. We could not have accomplished any of this without your generous involvement.

Any questions, concerns about the program, or to opt-out of the newsletter email:

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