

OCTOBER 2022  
Issue 6



# Partners in Discovery News

UVA CANCER CENTER An NCI-Designated Comprehensive Cancer Center

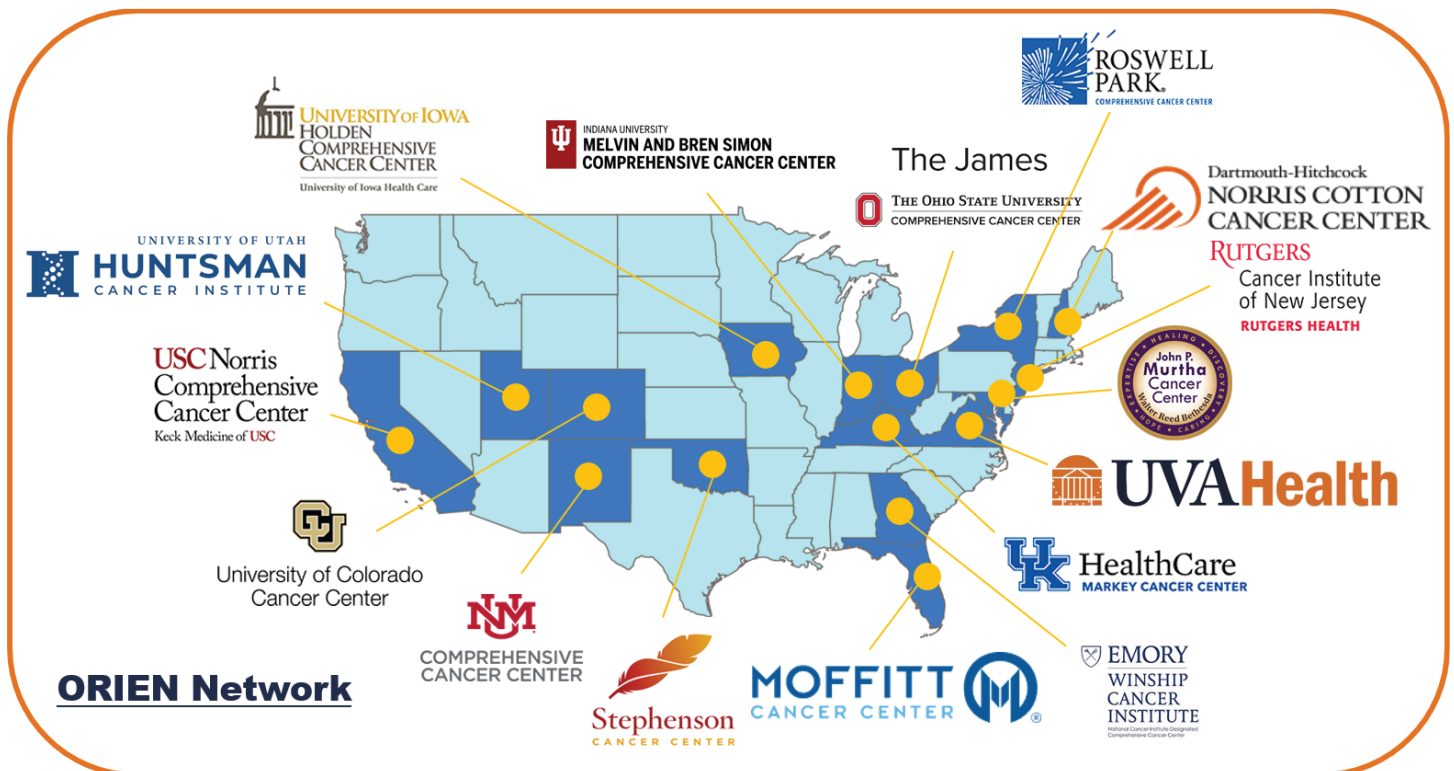
**Dear Partner,** We hope your fall is off to a good start!

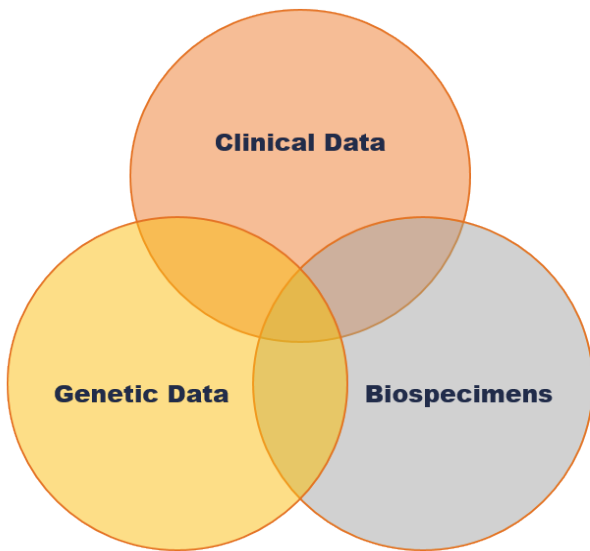
You are receiving this newsletter because you are a member of Partners in Discovery at The University of Virginia (UVA), working together with the doctors and scientists at UVA to find new ways to detect, treat and cure cancer. In addition to supporting research here, you are also partnered through UVA with several national research organizations that support cancer research across the country. They are: the Oncology Research Information Exchange Network (ORIEN), a consortium of 16 cancer centers across the United States; the Cooperative Human Tissue Network

(CHTN), that is sponsored by the National Cancer Institute; and the Applied Proteogenomics and Learning Outcomes (APOLLO) program, that is supported by the federal Cancer Moonshot initiative. Over the years, you have provided our researchers with immensely useful data by consenting to and signing the Partners in Discovery protocol. In this newsletter, we will share what you have contributed to our research efforts and highlight an important discovery our researchers have made using the biospecimens and data you provided. Thank you!

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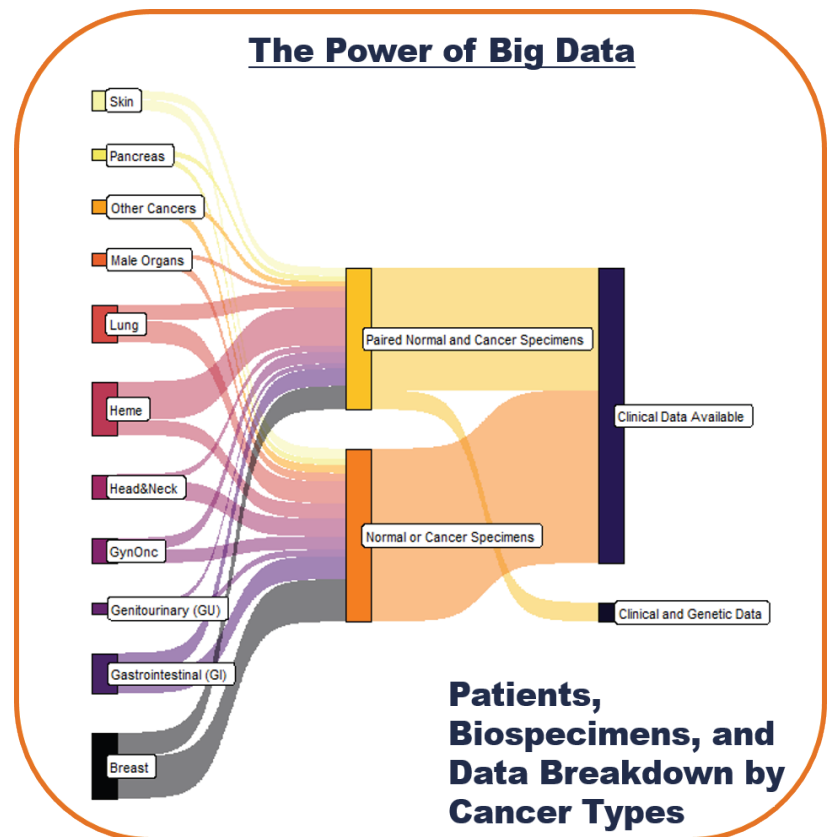
## You have given us so much over the years.

Since 2015, when UVA first started this program, we have 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, diagnoses, treatments, or surgeries. This data allows our researchers to study risks for cancer based on factors such as demographics (population data), locations, and pre-existing conditions, to name a few. Clinical data is also important for tracking survival. **Biospecimens** may be collected when your blood is drawn, when your cheeks are swabbed, and when there is leftover tissue from your surgeries. **Genetic data** comes from the DNA and RNA that form the blueprints of cells. It is collected when both normal and cancer cells from the same patient are processed and sequenced. These paired biospecimens allow researchers to work with corresponding normal and cancerous cells in controlled experiments – the gold standard in scientific research. Our ultimate goal is to collect paired biospecimens for all of our patient partners.

## There is great power and potential in big data.

With today's technology, data can be analyzed on a scale not possible a generation ago. For cancer researchers, this provides an opportunity to study vast amounts of complex patient data, including what UVA Partners in Discovery have contributed. As of spring 2022, nearly 9,000 patients at UVA alone have consented and allowed their clinical data, biospecimens, and genetic data to be collected and made available to researchers. Paired biospecimens have been collected for nearly 4,000 patient partners, and genetic data have been obtained from more than 600 of you. Having such a large dataset from 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 statistics.

As you will see, this dataset has already provided UVA researchers a critical clue to a difficult question: what causes cancer to progress?





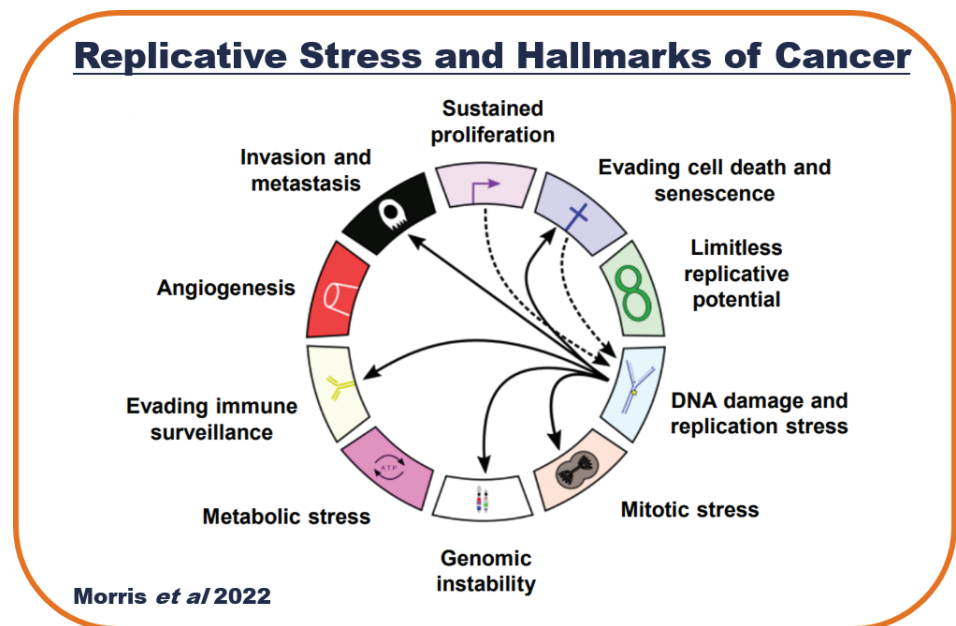
## You have helped our researchers discover a new cause of cancer progression.

Researchers at UVA, in collaboration with researchers from other ORIEN sites, have uncovered a new mechanism of how cancer progresses.

When cancer recurs or spreads after successful treatments, it is often deadly. We still have a lot to learn about why and when cancer takes a turn for the worse. From the clinical and genetic data you contributed over the years, a team of scientists, doctors, and statisticians led by UVA researchers Drs. Benjamin Morris and Marty Mayo, have figured out that part of the reason some cancer recurs involves a process called replicative stress. Like us, our cells experience stress. Under normal conditions, normal cells have safeguards to prevent harmful changes during stressful events, like being hit with UV radiation when spending time in the sun without sunblock. But cancer cells respond to stress differently.

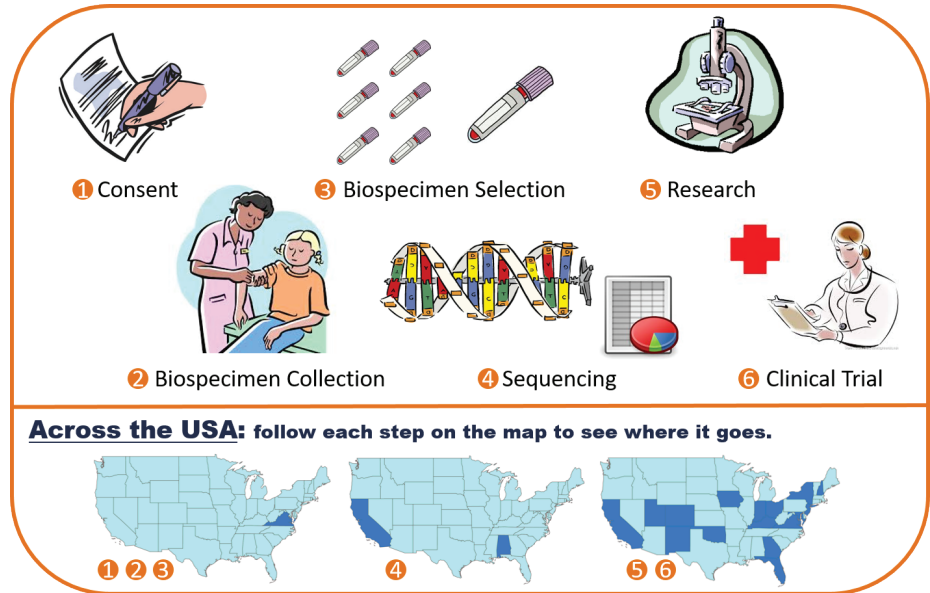
Dr. Morris and his collaborators discovered that some cancer cells deal with stress by increasing the supply of a protein called MYBL2. Instead of preventing harmful changes, MYBL2 actually causes mutations to occur. These mutations can provide ways for these cancer cells to develop newer, more aggressive behaviors and resist treatments that worked before. Eventually, these cancers may evade treatment and recur. The good news: is that because now that we understand the faulty protein's role, we can try to detect and address it early. Telltale substances in our blood, called markers, might reveal whether this protein is faulty. Dr. Morris and his team are planning a clinical trial, using what they've learned about replicative stress and MYBL2, to help guide the treatment and patient response.

This discovery would not have been possible without the clinical data, biospecimens, and genetic data you provided.



## Have you ever wondered what happens after you give consent?

After you give consent, a lot of things happen. Follow the steps in chronological order to witness the journey of your biospecimens and genetic data across the USA.



**Thank you so much** for your participation and donations. 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 [ORIEN@virginia.edu](mailto:ORIEN@virginia.edu).

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Biorepository and Tissue Research Facility  
Cancer Registry

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## Replicative Instability Drives Cancer Progression

Benjamin B. Morris, Jason P. Smith, Qi Zhang, Zhijie Jiang, Oliver A. Hampton, Michelle L. Churchman, Susanne M. Arnold, Dwight H. Owen, Jhanelle E. Gray, Patrick M. Dillon, Hatem H. Soliman, Daniel G. Stover, Howard

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bioRxiv 2022.05.06.490945; doi: <https://doi.org/10.1101/2022.05.06.490945>

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