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**IMPACT REPORT AUGUST 2022**  
**GASTROINTESTINAL STROMAL TUMOR RESEARCH**

**Prepared for the GIST Cancer Research Fund**



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## SARCOMA PROGRAM

During the past 10 years, Sylvester Comprehensive Cancer Center's Sarcoma Program has developed into the largest sarcoma center in the southeastern United States. With more than 20 dedicated, multidisciplinary, board-certified sarcoma doctors on staff, Sylvester serves approximately 900 new patients per year. Accomplishments include leadership in international organizations, presentations at international meetings, Sylvester-developed sarcoma clinical trials, high-impact research, and journal publications. The team has successfully implemented precision oncology and immunotherapy trials and research for sarcoma patients, and currently offers 15 clinical trials, providing new hope to countless patients and their families in our community, including not only South Florida but the Caribbean, South America, and beyond.

## TRENT LAB REPORT

Dr. Trent's interests are in the clinical and translational research of sarcomas, direct care of sarcoma patients, and education about sarcoma and patient-oriented research. His clinical, educational, and research efforts are with gastrointestinal stromal tumor (GIST), dermatofibrosarcoma protuberans, liposarcoma, chondrosarcoma, synovial sarcoma, and rhabdomyosarcoma.

Specifically, Dr. Trent's research focuses on the underlying biology of sarcomas to better understand the mechanisms of action and resistance to chemotherapy, targeted

therapy, and immunotherapy, while striving to offer novel therapeutic options for patients. His research involves prospectively acquired tumor tissue, human cell lines, and archival tissue, as well as collaborations with disciplines including genomics, surgical oncology, pathology, radiology, and interventional radiology at Sylvester, as well as with external sarcoma specialists.

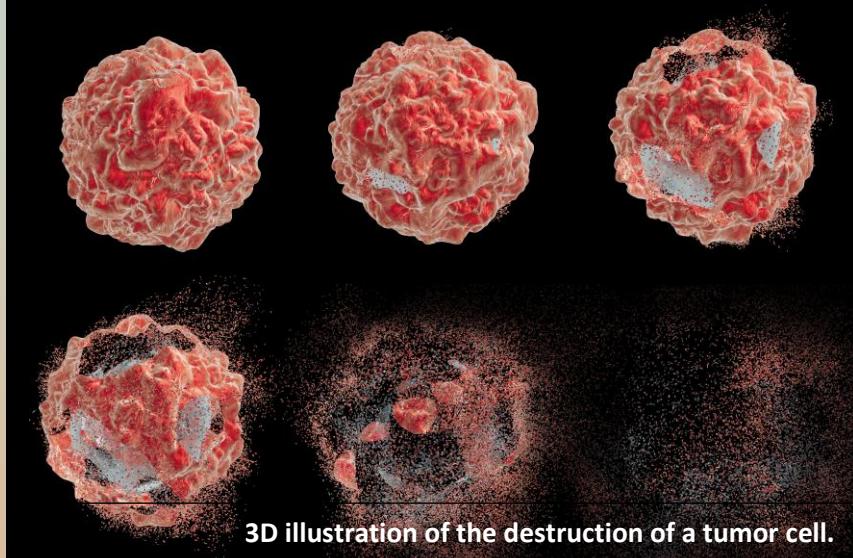
Dr. Trent and his team have realized significant advancements in their research efforts, including:

An ongoing clinical trial using circulating tumor DNA (liquid biopsy from a blood draw) to guide therapeutic decision-making for patients with advanced GIST treated with targeted therapy.

A Sylvester-developed, genetically engineered mouse model of synovial sarcoma led to identification of the fibroblast growth factor receptor as a key component in tumor formation and growth. As a result, the team is now working with the national clinical trial network to develop a new therapy for patients with synovial sarcoma.

Angiosarcoma research at Sylvester has already identified a highly effective immunotherapeutic approach with tumor shrinkage in 70% of patients. Additional research has further refined the molecular signature of immunotherapy response in those patients with angiosarcoma in the head and neck.

A Sylvester pathologist identified high-frequency and selective mutation in the IDH gene in tumors from patients with chondrosarcoma. Subsequent research discovered the mutant IDH gene was required for tumor cell migration and invasion. The team then led a Phase I clinical trial of a mutant IDH inhibitor for patients with mutant IDH chondrosarcoma, identifying that when treated with ivosidenib, blood vessels are blocked from forming and feeding the tumors. The National Comprehensive Cancer Network (NCCN) now recognizes this protocol as a recommended treatment under their guidelines. Sylvester is working to develop a registration study for the drug to become FDA approved.



A recent clinical trial at Sylvester identified that the combination of immunotherapy plus targeted therapy resulted in substantial tumor shrinkage in over 50% of patients with alveolar soft-part sarcoma, which is resistant to all prior known therapies. The NCCN has officially recognized this treatment as well.



## GASTROINTESTINAL STROMAL TUMOR (GIST) RESEARCH

Sylvester is one of the four top GIST centers in the country, alongside Dana Farber, MD Andersen, and Memorial Sloan Kettering. GISTS are rare tumors that represent less than 1% of all gastrointestinal tumors. Each year, as many as 6,000 adults in the United States will be diagnosed with GIST.

Thanks to generous supporters, such as yourself, the Trent Lab has gathered years of evidence from novel discoveries. Today, Dr. Trent and his team are successfully applying their findings in the clinic and setting new standards of care in the treatment of GIST. Their goal is to develop new treatments for patients with GIST who have no other options and develop therapies that are better tolerated with fewer side effects. Dr. Trent and his team collaborate with several pharmaceutical companies as well as other renowned institutions in the country to accomplish this.

In a recent Phase I clinical study led by Dr. Trent, a medicine called Bezuclastinib by Cogent Biosciences, given in combination with sunitinib, both inhibitors of the protein in GIST called KIT, worked better than either medication given alone. The results were so promising that it led to a Phase III registration study that Sylvester is leading. Dr. Trent is working on opening two more clinical trials with new medicines for GIST patients.

In the lab, Dr. Trent has been exploring the use of a new medicine for GIST called Procaspass Activating Compound (PAC)-1. PAC-1 is designed to make other drugs more effective.

For instance, when a patient with GIST is given imatinib, some of the tumor cells are killed, but not all. The team administered imatinib with PAC-1 in the lab and found that combining the two killed more tumor cells than each drug individually.

As single agents, imatinib killed 30% of the tumor cells and PAC-1 killed 40%. When combined, the drugs killed over 70% of the cells.



This research has been presented at a national sarcoma meeting but has not yet been published. The synergistic combination has proven to be very effective in the lab, and Dr. Trent and his team are enthusiastic about finalizing the research with the hope of bringing it to patients soon.

## LOOKING AHEAD

Your continued support would be critical to accelerate Dr. Trent's research toward a cure. The Trent Lab would like to hire a full-time research manager so that Dr. Trent can dedicate more time to writing grants and publications, treating patients, and designing the research. The cost of this new position within the department is approximately \$80,000 per year.

The Trent Lab also works heavily with RNA and needs equipment to do quantitative polymerase chain reaction (QTPCR) testing. This equipment would allow them to quickly quantitate changes in proteins after treatment with new medications, substantially accelerating their research. The cost of just one machine ranges from \$40,000 to \$50,000.

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## THANK YOU

We would like to express our sincere gratitude to the Stutman family for supporting Dr. Trent's GIST research at Sylvester Comprehensive Cancer Center. Seed money for GIST research from individual philanthropists is critical to gather the objective data needed to lead to larger clinical trials, as there is limited funding available for this rare cancer.

Dr. Trent is confident the findings from his lab research and forthcoming clinical trials will provide many patients a chance at life beyond a difficult diagnosis. None of the strides we have taken thus far would have been possible without the confidence and steadfast support of donors like you. Again, we cannot thank you enough for your continued partnership as Dr. Trent and his team work hard to uncover novel approaches to successfully treat and hopefully one day cure GIST.