

ALEX'S LEMONADE STAND FOUNDATION

OSTEOSARCOMA

Impact Report



Childhood cancer hero, Kaela

Thanks to your support, Alex's Lemonade Stand Foundation (ALSF) continues to champion lifesaving childhood osteosarcoma research and care for childhood cancer patients and their families.

With Gratitude

Dear Friend,

The strides that childhood cancer research has made in the past few years are remarkable. New breakthrough treatments have been discovered and approved by the FDA. There are more clinical trials than ever before. Survival rates for certain types of childhood cancers have improved. ALSF remains dedicated to improving treatments for kids with osteosarcoma. We appreciate your support, which is making research like this possible. Thanks to supporters like you believing in research, we are painting a world free of childhood cancer.

Our daughter, Alex, believed that if we all worked together, we could cure childhood cancer. That idea of collaboration is what inspired others to help her reach her \$1 million fundraising goal. It's what planted the seed of Alex's Lemonade Stand Foundation. We are always amazed at what can be accomplished when you bring people together. Alex's, scientists, and you – we're all coming together for one common goal: to cure childhood cancer. Thank you for all you continue to do.

Until there are cures for all kids,



Liz & Jay Scott
Alex's Parents
*Co-Executive Directors of
Alex's Lemonade Stand Foundation*



Pushing Forward Pediatric Osteosarcoma Research

Our mission has always been to champion lifesaving childhood cancer research and find cures for all children with cancers like osteosarcoma.

Research Spotlight

Dr. Natalie Collins of Dana-Farber Cancer Institute requested a no-cost extension in July on her Single-cell Pediatric Cancer Atlas Grant to continue building an atlas that describes the molecular states of single cells in the tumor and the relationship to circulating tumor cells and associated clinical information. Her study is the first to look at circulating tumor cells on a cell by cell basis and evaluate the relationship of individual metastatic cells, each with the potential to become metastatic disease, to the primary tumor. Ultimately, this will help predict the biologic underpinnings of metastasis and design treatments to target these cells. By layering clinical, genetic, and biologic characteristics onto single cells from the tumor, Dr. Collins is learning how the complex tumor microenvironment impacts the patient's disease with the goal of translating that to cures for more children with osteosarcoma.



Dr. Collins participated in the ALSF's Childhood Cancer Data Lab's Single Cell RNASeq training workshop in order to become a better and more versatile collaborator in the field of childhood cancer.



CD36-Sphingosine 1-Phosphate Axis in Osteosarcoma Progression

Dr. Meenal Mehrotra of the Medical University of South Carolina recently requested a no-cost extension on her Innovation Grant to continue conducting in vitro and in vivo experiments to further establish the CD36-S1P axis between osteoblasts and osteosarcoma cells.

At the start of her research, Dr. Mehrotra had proposed to examine the role of the lipid sensor, CD36 and sphingolipid pathway, especially S1P, in osteosarcoma progression by the non-malignant osteoblasts in tumor stroma. Results obtained from this grant will help researchers to identify the specific target molecules which can play an important role in arresting osteosarcoma progression. Their data obtained this past year confirms that CD36 and S1P are indeed involved in the progression of osteosarcoma both in mice as well as human cells, thus making these studies translatable. Dr. Mehrotra and her team are currently working on examining the inhibition of which molecule or their combination can bring about the maximum arrest in the progression of osteosarcoma, in pre-clinical mice studies using mice and human cells. Studies show that the five-year survival rate for the localized tumor is 77% but this drops drastically to only 27% if the tumor spreads to the lungs. The major treatments for this cancer are radiation therapy, chemotherapy and surgery including amputation. Thus, osteosarcoma can lead to a life-long debilitating state for the patients. Hence, it is very important to study this cancer and develop novel treatment modalities in order to keep it localized and prevent its spread. This will increase the five-year survival rate and improve the quality of life. If their pre-clinical studies in mice show that inhibitors of CD36 and S1P can arrest the spread of osteosarcoma to the lung and increase the survival rate, this would be a major advance in the field of osteosarcoma research and can be pursued further for clinical studies in the future.

ALSF Funded Projects in Osteosarcoma

Thanks to you, we have been able to fund outstanding research, leading toward breakthroughs and cures. Read through some of our recently funded projects in osteosarcoma below.

PROJECT TITLE	INSTITUTION / PRINCIPAL INVESTIGATOR(S)	GRANT TYPE
Tracking Ewing Sarcoma Origin by Developmental and Trans-species Genomics	St. Anna Children´s Cancer Research Institute / Heinrich Kovar, PhD	Crazy 8 Awards
Single-cell Profiling of Pediatric Bone Sarcomas	University of California, Los Angeles / Alice Soragni, PhD	Single-cell Pediatric Cancer Atlas Grant
Single-cell Atlas of Pediatric Osteosarcoma	Dana-Farber Cancer Institute / Natalie Collins, MD/PhD	Single-cell Pediatric Cancer Atlas Grant
Synergistic Activity of Anti-GD2 Antibody and CD47-Blockade for Immunotherapy of Neuroblastoma and Osteosarcoma	The Board of Trustees of the Leland Stanford Junior University / Robbie Majzner, MD	'A' Award Grants
Pediatric Osteosarcoma: Identifying the elusive molecular signature and its relationship to this disease	St. Jude Children's Research Hospital / Linda Hendershot, PhD	Innovation Grants
CD36-Sphingosine 1-Phosphate Axis in Osteosarcoma Progression	Medical University of South Carolina / Meenal Mehrotra, MD/PhD	Innovation Grants
Improving CAR T-Cell Therapy for Pediatric Osteosarcoma by Manipulating Arginine Metabolism	St. Jude Children's Research Hospital / Shannon Lange, PhD	Young Investigator Grants
A comprehensive public resource for fusion-negative sarcoma sequencing data	University of California San Francisco / Alejandro Sweet-Cordero, MD & Richard Gorlick, MD	Crazy 8 Pilots
Targeting the ALT Pathway to Induce Synthetic Lethality and Treat Poor Outcome Pediatric Tumors	University of California, Davis / Wolf-Dietrich Heyer, PhD	Innovation Grants
Circulating Repetitive Element RNAs as an Osteosarcoma Marker	Children's Hospital Los Angeles / David Cobrinik, MD/PhD	Innovation Grants

In 2022, we want to fund more high impact, game changing projects like the ones listed above that will target the most deadly childhood cancers and fight for kids affected by childhood cancer around the world. You are the catalyst that makes these cutting-edge research projects possible. Thanks to you, we are one step closer to a world where cures are a reality.

[Click here to see a complete list of ALSF funded projects in Osteosarcoma](#)

Meet an Osteosarcoma Hero

Part of our mission is to support families in the ways they need it most and empower everyone to help cure childhood cancer.

Meet Kaela



Today Kaela is a college freshman, student council representative, swimmer, inspirational speaker and cancer survivor. The challenges she faced early on in life taught her how to be brave and chase her dreams. As Kaela says, “Through these experiences, I’ve realized that I’d rather use what I have now, what represents who I am, than try to change anything.”

Just before her fifth birthday, Kaela was diagnosed with osteosarcoma and began treatment, including chemotherapy and an above the knee amputation on her left leg. Her family waited for over a year – fortunately, her cancer never returned. Kaela has been cancer free ever since, but her journey wasn’t easy.

Kaela entered first grade in a wheelchair and felt like it was her against the world. In addition to countless doctor’s appointments, physical therapy and hiding her disability from her peers, Kaela longed for a normal life. After she received her first running leg, she finally felt like a survivor. She began running, swimming, biking and even scuba diving. She is an inspiration to everyone she meets.

Five years after her diagnosis, Kaela’s parents were introduced to Alex’s Lemonade Stand Foundation (ALSF) at a symposium that provided childhood cancer families with resources to help them make informed decisions. Her parents, Donna and Matt shared, “We saw first-hand the impact of the contributions that the Foundation has on families still battling childhood cancer.” They’ve been involved with ALSF from then on. Kaela even spoke at an Alex’s Lemonade Stand Foundation fundraiser to share the need for more funding for pediatric cancer research.

In the words of Kaela’s parents: “Thank you for supporting Alex’s Lemonade Stand Foundation and we hope that you find the courage and strength that we found in Kaela; our hero and cancer survivor. We must find a cure!”

Thank you for donating to osteosarcoma research. You are helping fund impactful projects aimed at finding better treatments and cures for kids like Kaela!