FACTOR
OSTEOSARCOMA
CONFERENCE
Atlanta June 22-24 2023

MIB AGENTS
OSTEOSARCOMA ALLIANCE

OUTTHINK
OSTEOSARCOMA
Dear Agents,

The wind and the sun were quarreling over who was more powerful. The sun suggested a challenge, “Let us agree,” said the Sun, “that he is the stronger who can strip that Traveler of his cloak.” The wind accepted the challenge and “set a cold howling blast against the traveler.” The harder he blew, the tighter the traveler clung to his coat against the bluster. Exhausted, the wind turned to the laughing sun and dared him to try. The sun began to shine, warming the traveler’s skin. The traveler, grateful for the warmth, removed his coat.

This is one of Aesop’s Fables and a favorite of mine. The morals of the story are many, including, as anyone who has ever gotten sunburned or lost a staring battle can attest, never accept a challenge from the sun. For me, the moral that matters most is that it is far more effective and fulfilling to be the sun. Cooperating with the traveler was satisfying, effective, and mutually beneficial.

I am often asked how it is that our osteosarcoma community is so highly collaborative, unified, and purpose-driven toward bettering outcomes. Having been a patient of this disease “desperation” comes to mind. However, desperation is not sustainable as a purpose. My answer then, is we have more than a disease community; we have an ecosystem fueled not by wind power but by the warmth of the sun.

An ecosystem is a community that lives in and interacts with each other in a specific environment. FACTOR is an essential part of that environment, sustaining this living community with good soil (a lovely hotel), food, water (and wine), and yes- SUN! The interaction part is you. By dedicating your time, your talent, and your resources to it, for choosing to be the sun in service to the traveler who is desperate for warmth, You Make It Better.

The outcome of this approach is both fulfilling and effective. Simultaneously ensuring that no one walks alone through this, our shared journey.

Welcome to FACTOR23. Thank you for being here, and for Making It Better. Your presence matters greatly.

With Hope,

Ann Graham
MIB (Make it Better) Agents
EXECUTIVE DIRECTOR, FOUNDER, AND OSTEOWARRIOR
About MIB Agents

Mission

MIB Agents is a leading pediatric osteosarcoma nonprofit dedicated to Making It Better for our community of patients, caregivers, doctors, and researchers through Programs, Education, and Research.

Vision

A world with less toxic, more effective treatments and a cure for osteosarcoma.

Values

We are devoted to creating and instilling hope with and for our inclusive and collaborative osteosarcoma community. We do this through mutual trust, transparency, and compassion.

Programs

- Ambassador Agents
- Gamer Agents
- Healing Hearts for Parents
- Healing Hearts for Siblings
- MIB Agents Family Funds™
- OsteoWarrior & OsteoAngel Lists
- Prayer Agents
- Secret Agent Missions
- Warrior Mail

Research

- Clinical Trial Search through ONTEX (Osteosarcoma Now Trial Explorer)
- FACTOR Osteosarcoma Conference
- OsteoBites Webinar & Podcast
- OutSmarting Osteosarcoma Research Grants

Education

- Book for Newly Diagnosed Families
- Connective Issue Monthly Newsletter
- FACTOR Osteosarcoma Conference
- OsTEAo AYA Podcast
- OsteoBites Webinar & Podcast
- Testing & Research Directory
- TURBO Virtual Tumor Board

While MIB never charges for our programs or services, the costs are significant. To learn more about how you can help to Make it Better, by becoming a Supporting Agent, learning more about MIB, or joining our mission, please visit MIBAgents.org or email hello@MIBAgents.org.
How do I ask a question?

Submit a Question online via Slido
1. Scan the QR code
2. Select the “room” for the relevant panel
3. Type in your question

Event URL: https://app.sli.do/event/bnrbEjrw7g2g57WSR2Vd8z  Slido Event: #3517012

Ask a Question in Person
If you’d like to ask your questions directly, please raise your hand for Rob Marsh to bring the microphone to you. During the session please be specific and brief.

Timeline
Our timeline is extremely tight. Kindly arrive a few minutes before the session start time to ensure the meeting can begin and end promptly.

Etiquette
Kindly refrain from requesting medical advice or to review a specific case in this venue.

Name Badges
Please visibly display your badge throughout the conference.

Electronics
Turn off or silence cell phones, PDAs, and electronic devices before each session begins.

Photography and Video Recording
The conference will be photographed and video recorded. Images may be used in MIB Agents promotional materials.

Check Out
If you plan on checking out on Saturday, please do so in the morning and store your luggage with the Bell Captain. This will avert any delay in your departure plans and avoid any late-check out fees.

Covid or Other Illness
It is of the utmost importance that we keep each other safe at the MIB FACTOR Conference. If you are having symptoms including those associated with a cold or flu, we ask that you not attend - even if your test is negative.
Day 01 Agenda

Thursday, June 22

9:00 AM - 4:00 PM
Ambassador Agents Training

12:00 PM - 1:00 PM
Ambassador Agents Lunch

2:00 PM - 6:00 PM
Registration

5:00 PM - 6:00 PM
Welcome Reception

5:15 PM - 5:30 PM
Docs vs OsteoWarrior Challenge

6:00 PM - 9:45 PM
Attendee Dinner at Iron Hill Brewery (Not Hosted)
- Meet by deer in Lobby
- Depart for Dinner
- 7 min walk to Iron Hill Brewery
- If transport needed, please see Anita.
- 6:30 PM - 8:30 PM
- Dinner at Iron Hill Brewery
- 8:30 PM - 9:00 PM
- Depart Restaurant

6:15 PM - 8:45 PM
Speaker Dinner
- Meet by side door by the Bar to Walk to venue
- Depart for Dinner
- 9 min walk
- 6:30 PM - 8:30 PM
- Dinner
- 8:45 PM - 9:00 PM
- Depart Restaurant

9:00 PM
Arrive at The Whitley
Day 02 Agenda

Friday, June 23

6:45 - 7:45 AM
Breakfast & Registration Opens

8:00 - 8:10 AM
Welcome & Opening Remarks
Ann Graham, MIB Agents
Matteo Trucco, MD, Cleveland Clinic

8:10 - 8:20 AM
Keynote
Walker Smallwood, MIB Agents Junior Advisory Board

Panel: MIB Agents Programs

8:20 - 8:30 AM
Events & Fundraisers
Anita Caldera, MIB Agents

8:30 - 8:40 AM
Patient Programs
Isabel Wolf, MIB Agents

8:40 - 8:50 AM
Family Funds
Mary Bisaga, MIB Agents Family Fund Advisory Council

8:50 - 9:00 AM
Scientific Programs
Christina Ip-Toma, MIB Agents

9:00 - 9:10 AM
Panel Discussion

9:10 - 9:25 AM
Break

Panel: Biomarkers for Risk Stratification

9:25 - 9:35 AM
Introduction
Kara Skubris, MIB Agents Junior Advisory Board
Troy McEachron, PhD, National Cancer Institute

9:35 - 9:45 AM
Developing a transcriptional atlas of sarcoma
Joshua Nash, Hospital for Sick Children

9:45 - 9:55 AM
A systems biology approach to defining tumor heterogeneity and prognostic and targetable master regulator signatures from bulk and single-cell RNAseq in osteosarcoma
Jovana Pavisic, MD, Columbia University Irving Medical Center

9:55 - 10:05 AM
Identification of serum exosomal gene signatures associated with prognosis in pediatric osteosarcoma
Kelly Makielski, DVM, University of Minnesota

10:05 - 10:15 AM
ICONIC study
Kenny Rankin, MD, North of England Bone and Soft Tissue Tumour Service

10:15 - 10:25 AM
Circulating tumor DNA as a prognostic biomarker for risk stratification in localized osteosarcoma: The LEOPARD Study
David Shulman, MD, Dana-Farber Cancer Institute

10:25 - 10:35 AM
The Osteosarcoma and Leiomyosarcoma Count Me In Projects of the Cancer Moonshot funded PE-CGS Network directly engage patient participants in genomics research
Diane Diehl, PhD, Broad Institute / Count Me In

10:35 - 10:45 AM
Panel Discussion

10:45 - 11:00 AM
Break

Panel: Preclinical Models

11:00 - 11:10 AM
Daniel Saptari, MIB Agents Junior Advisory Board
Jason T. Yustein, MD, PhD, Emory University

11:10 - 11:20 AM
De-centralized, multi-institutional clinical trials in mice: the PROXC consortium
Ryan D. Roberts, MD, PhD, Nationwide Children’s Hospital

11:20 - 11:30 AM
Mapping and modeling heterogeneity within pediatric osteosarcoma
Anand Patel, MD, PhD, St. Jude Children’s Research Hospital

11:30 - 11:40 AM
Tissue engineering strategies for elucidating osteosarcoma biology and drug discovery
Fan Yang, PhD, Stanford University

11:40 - 11:50 AM
Cross-species osteosarcoma models pinpoint pervasive intratumoral heterogeneity as a mechanism of evolutionary escape from chemotherapy
Laurie Graves, MD, Duke University

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Laurie Graves, MD, Duke University
11:50 AM - 12:00 PM
Panel Discussion

12:00 - 1:00 PM
Lunch

1:00 - 1:30 PM
Group Photo

Panel: Comparative Oncology

1:30 - 1:40 PM
Gillian Okimoto, MIB Agents Junior Advisory Board
Heather Gardner, DVM, PhD, DACVIM, Tufts University

1:40 - 1:50 PM
Scientific Translation as Part of Comparative Oncology
Chand Khanna, DVM, PhD, DACVIM, Osteosarcoma
Institute/Ethos Discovery

1:50 - 2:00 PM
The NCI DOG2 project: progress in comparative
osteosarcoma research
Amy Leblanc, DVM, DACVIM, NIH/NCI Comparative
Oncology Program

2:00 - 2:10 PM
PRECINCT - a comparative network for innovation,
collaboration and acceleration
Nicola Mason, BVetMed, PhD, DACVIM, University of
Pennsylvania

2:10 - 2:20 PM
Dual targeting of lung fibroblasts and macrophages for
treating metastatic osteosarcoma
* Dan Regan, DVM, PhD, DACVP, Colorado State
University

2:20 - 2:30 PM
Spontaneous canine osteosarcoma as a preclinical
model to develop novel therapies for osteosarcoma in
pets and humans
* Michael S. Leibowitz, MD, PhD, University of Colorado /
Children’s Hospital Colorado

2:30 - 2:40 PM
Outsmarting Osteosarcoma 2022 Funded Research
Update: Using RNA-nanoparticle vaccines to overcome
the immunosuppressive tumor microenvironment of
canine osteosarcoma
* John A. Ligon, MD, University of Florida

2:40 PM - 2:50 PM
Panel Discussion

2:50 - 3:00 PM
Break

3:00 - 5:00 PM
Breakout Groups

Please choose one of the three breakout groups to attend.

Researcher’s Best Friend: Can dogs expedite bench to
bedside for pediatric patients?
Nicola Mason, BVetMed, PhD, DACVIM, University of
Pennsylvania
Michael Isakoff, MD, Connecticut Children’s

Leveraging Computational Biology to Accelerate OS
Discovery
Jovana Pavisic, MD, Columbia University Irving Medical
Center

Turning Pain into POWER (Patients with Osteosarcoma
Who Enable Research): Engaging patients to power
research with their data and samples.
Diane Diehl, PhD, Broad Institute / Count Me In
Nino Rainusso, MD, Texas Children’s Hospital/Baylor
College of Medicine

5:00 - 5:10 PM
Comparative Oncology Discussion Summary
Nicola Mason, BVetMed, PhD, DACVIM, University of
Pennsylvania
Michael Isakoff, MD, Connecticut Children’s

5:10 - 5:20 PM
Computational Biology Discussion Summary
Jovana Pavisic, MD, Columbia University Irving Medical
Center

5:20 - 5:30 PM
Patient Powered Research Discussion Summary
Diane Diehl, PhD, Broad Institute / Count Me In
Nino Rainusso, MD, Texas Children’s Hospital/Baylor
College of Medicine

5:30 - 5:35 PM
Announcements
Anita Caldera, MIB Agents

6:30 - 8:30 PM
Dinner

* OutSmarting Osteosarcoma 2022 recipient

All General Session Panels will be in the Whitley Ballroom.
Day 03 Agenda

Saturday, June 24

6:45 - 7:45 AM
Breakfast & Registration

Panel: Local Control
8:00 - 8:10 AM
Elise Robinson, MIB Agents Junior Advisory Board
Shervin Oskouei, MD, Emory Healthcare

8:10 - 8:20 AM
Virtual surgical planning and 3D printing in pediatric osteosarcoma for surgical planning and patient education
Jayanthi Parthasarathy, BDS, MS, PhD, Nationwide Children’s Hospital

8:20 - 8:30 AM
SarcoSIGHT
Kenny Rankin, MD, North of England Bone and Soft Tissue Tumour Service

8:30 - 8:40 AM
Catheter directed intra-arterial therapy to improve limb salvage
Matt Hawkins, MD, Emory University School of Medicine/Children’s Healthcare of Atlanta

8:40 - 8:50 AM
Investigating Histotripsy as the First Non-Invasive, Non-Thermal, Non-Ionizing Ablation for Osteosarcoma: Radiological and Histological Findings
Joanne Tuohy, DVM, PhD, DACVS, Virginia Tech Animal Cancer Care and Research Center

8:50 - 9:00 AM
Ablation techniques for bone tumors - local control and pain palliation
Annie Gill, MD, Children’s Healthcare of Atlanta

9:00 - 9:10 AM
Stereotactic Body Radiation Therapy for Osteosarcoma Metastases
Jenna Kocsis, MD, Cleveland Clinic Foundation

9:10 -9:20 AM
Panel Discussion

9:20 - 9:35 AM
Break
Panel: Patient Perspectives: An Honest Q&A with OsteoWarriors

11:00 AM - 12:00 PM
Ann Graham, MIB Agents
Damon Reed, MD, Moffitt Cancer Center

Gillian Okimoto, MIB Agents Junior Advisory Board
Walker Smallwood, MIB Agents Junior Advisory Board
Andrew Bisaga, MIB Agents Junior Advisory Board
Sloane Dyer, MIB Agents Junior Advisory Board
Daniel Saptari, MIB Agents Junior Advisory Board

12:00 PM - 1:00 PM
Lunch

Panel: Immunotherapies

1:00 - 1:10 PM
Matt Murdoff, MIB Agents Junior Advisory Board
Alex Huang, MD, PhD, UH Rainbow Babies & Children’s Hospital/Case Western Reserve University

Immune effector cells are excluded from canine metastatic osteosarcoma lesion with a strong M2 macrophage signal
Rowan Milner, DVM, PhD, University of Florida

1:10 - 1:20 PM
Development of a novel peptide that simultaneously inhibits the myeloid and immune exhaustion checkpoints as immunotherapy for osteosarcoma
Julia Medland, MD, University of Minnesota Veterinary Medical Center

1:20 - 1:30 PM
Intratumoral injection with stimulator of interferon genes (STING) agonist increases T- and B-cell infiltrates in canine osteosarcoma
Brian Ladle, MD, PhD, Johns Hopkins University

Panel Discussion

2:00 - 2:10 PM
Development of universal CAR-invariant NKT cells for safe and effective immunotherapy of pediatric and canine osteosarcoma
Antonella Rotolo, MD, PhD, University of Pennsylvania

2:10 - 2:20 PM
Radioimmunotherapy of osteosarcoma with a novel human antibody to IGF2R using comparative oncology approach
Ekaterina Dadachova, PhD, University of Saskatchewan

2:20 - 2:30 PM
GD2-SADA177Lu-DOTA drug complex in patients with recurrent or refractory osteosarcoma and other GD2-expressing solid tumors
Janet Yoon, MD, City of Hope

Panel Discussion

2:40 - 2:55 PM
Break

Panel: Molecularly Targeted Therapies

2:55 - 3:05 PM
Sloane Dyer, MIB Agents Junior Advisory Board
Lara Davis, MD, Oregon Health & Science University

Epigenetic heterogeneity of osteosarcoma reveals distinct cellular states
* Eunice Lopez Fuentes, PhD, University of California, San Francisco

3:05 - 3:15 PM
Metabolic flexibility in osteosarcoma: Insight into cancer metabolism from a comparative oncology perspective
Anthony Mutsaers, DVM, PhD, DACVIM, Ontario Veterinary College, University of Guelph

3:15 - 3:25 PM
Investigating the role of EGR1 in Riluzole-induced apoptosis in osteosarcoma
Syeda Maryam Azeem, City University of New York

3:25 - 3:35 PM
Targeting Androgen Receptor in Osteosarcoma Cells with Varying Metastatic Potential
Tanya Heim, MS, University of Pittsburgh

Panel Discussion

CONTINUE ON NEXT PAGE

*OutSmarting Osteosarcoma 2022 recipient

All General Session Panels will be in the Whitley Ballroom.
Day 03 Agenda

Saturday, June 24

CONTINUE FROM PAGE 11

Panel: Molecularly Targeted Therapies (cont.)

3:55 - 4:05 PM
Modulating TGF-β Signaling in the Tumor Microenvironment as an Effective Therapy for Osteosarcoma
* Kristen VanHeyst, DO, University Hospitals/ Rainbow Babies and Children's Hospital

4:05 - 4:15 PM
Combinatorial therapies to improve immune-mediated approaches for osteosarcoma
* Jason T. Yustein, MD, PhD, Emory University

4:15 - 4:25 PM
Artificial intelligence analysis shows enhanced CCNG1 expression in sarcoma / osteosarcoma tumors, a novel biomarker in development for Deltarex-G CCNG1 inhibitor therapy
* Erlinda M. Gordon, MD, Sarcoma Oncology Research Center

4:25 - 4:35 PM
Panel Discussion

4:35 - 4:50 PM
Closing Remarks
Andrew Bisaga, MIB Agents Junior Advisory Board
Ann Graham, MIB Agents
Christina Ip-Toma, MIB Agents
Matteo Trucco, MD, Cleveland Clinic

4:50 - 5:00 PM
Goodbye
Ann Graham, MIB Agents
Christina Ip-Toma, MIB Agents
Matteo Trucco, MD, Cleveland Clinic

Healing Hearts
Grief Retreat
Sunday, June 25

A place to heal, strengthen your heart in community, feel cared for, inspired and connected

9:00 - 12:00 PM

An opportunity to understand your grief journey, enhance your coping skills, to reflect, renew and connect with others through the shared experience of living with the loss of a child from osteosarcoma.

Please bring a printed photo of your child and a small object that reminds you of them.

To be of service to others during the most vulnerable times of their lives is my life’s purpose. I am a life coach with a focus on grief as well as end of life. I have a deep passion for relationship building; open and honest communicating; healing; loving; and care giving. I believe every person has the desire to feel like they matter, feel supported, and heard. My own experiences of living with someone with chronic illness; the death of my husband at a young age; the sudden loss of my father; my grandmother’s suicide; the death of several friends; the inability to have children; a move across the country; the loss of a business; and the loss of my fur baby have taught me much about life, love, loss, grief. Each of these experiences transformed me and is what makes me passionate about walking the healing journey of loss with my clients. I believe every person should feel safe, supported, and guided through their grief and at the end of life. My approach is to “hold hands” and walk alongside my clients as they process life’s deep emotions, loss, and challenges. I create a compassionate, supportive space; provide education on what is normal/healthy in grief and mourning; help discover coping tools; help find new perspectives; and create hope for the future. I am a hospice-trained grief facilitator for both adults and children. I am an INELDA-trained End of Life Doula.
Sassy Pickard is owner of F5RS RABBIT RESCUE & SANCTUARY and director of F5RS BUNNIES IN BASKETS THERAPY BUNNIES. Bunnies that come into the rescue and meet all the requirements to become therapy bunnies, are trained by Sassy to provide comfort and joy via visits to nursing homes and to differently abled adults and children.

Sassy and her bunnies do many events with the Autism Society of Mahoning Valley, Ohio and provide educational programs in schools, as well as with her Read to SomeBunny, Hop into Literacy program in multiple libraries.

In 2020 the bunnies decided to become MIB Writer Agents and raise awareness as Superbuns in their gold capes for osteosarcoma. Each bunny has their own card and “write” to OsteoWarriors in their own voices.

Follow our adventures at:

https://www.facebook.com/F5RS1
F5RS.Petfinder.com
Adoptapet.com
Bunnies in Baskets Visiting Rabbit Team
https://www.facebook.com/F5RSBIB
Make Mine Chocolate Partners
Thursday, June 22

2:00 PM - 4:00 PM
HQ Open for stopping by

4:00 PM
HQ Open

5:15 PM - 5:30 PM
Docs vs OsteoWarriors Challenge
The Legacy Ballroom

6:30 PM - 8:30 PM
Dinner and Craft Root Beer
Iron Hill Brewery

10:00 PM
HQ Closes

Friday, June 23

8:00 AM - 10:00 AM
HQ Open and Continental Breakfast

8:30 AM - 9:30 AM
HQ Hangout

10:00 AM - 10:15 AM
Depart to LegoLand/Phipps Plaza 6 min Walk

10:30 AM - 11:30 AM
HQ at LegoLand

12:00 PM - 1:00 PM
Lunch at Johnny Rocket's

1:00 PM - 3:00 PM
Hair & Make Up at Phipps Plaza

3:30 PM - 3:45 PM
Return to Whitley

4:00 PM - 5:00 PM
HQ Warrior and Family Photos

5:00 PM - 6:00 PM
Ice Cream Social with The Power of Will

6:30 PM - 8:30 PM
Dinner at Legacy Ballroom

8:30 PM - 10:00 PM
HQ Hangout

Saturday, June 24

8:00 AM
HQ Opens and Continental Breakfast

10:00 AM - 12:00 PM
HQ Hang Out

12:20 PM - 1:00 PM
Lunch

1:30 PM - 3:00 PM
Pool Time

3:00 PM - 5:00 PM
HQ Hangout

5:30 PM
HQ Closes

OsteoWarriors and Siblings ages 18 and under can attend
HQ located at the
Envoy Room on Level 2.
Wellness Track Day 1

Friday, June 23

TRACK 1
in Founder’s Room

6:30 - 7:15 AM
Morning Yoga
with Debi Grilo

9:35 - 10:35 AM
Yoga
with Debi Grilo

11:15 AM - 12:15 PM
Flower Arranging
with Tedd Kapinos

1:30 PM - 2:30 PM
Art Class
with Sarah Hanna

2:55 PM - 3:55 PM
Sound Bath
with Hannah Onians

TRACK 2
in Delegate Room

9:35 - 10:20 AM
Healing Code Class
with Tracy Russo

11:00 AM - 12:15 PM
Art Class
with Sarah Hanna

1:30 PM - 2:15 PM
Bach Partita
with Jill Arbetter

Debi Grilo
Practice Yoga
OWNER
LICENSED CLINICAL SOCIAL WORKER
Naples, Florida

Tedd Kapinos
Jasper & Prudence Floral and Events
FOUNDER & OWNER
jasperandprudence.com

Sarah Hanna
Fine Art & Painting Atelier
FOUNDER & OWNER
SarahHanna.com

Hannah Onians
Evolation Yoga Atlanta
YOGI & SOUND BATH INSTRUCTOR
evolutionyogaatlanta.com/portfolio/hannah-onians/
Wellness Track Day 2

Saturday, June 24

**TRACK 1**

in Founder’s Room

6:30 - 7:15 AM  
Morning Yoga  
with Debi Grilo

9:35 - 10:35 AM  
TBD  
with First Lastname

11:15 AM - 12:15 PM  
Yoga  
with Debi Grilo

1:00 PM - 2:00 PM  
Warrior Mail Postcard Class  
with Isabel Wolf

2:30 PM - 3:30 PM  
Sound Bath  
with Hannah Onians

**TRACK 2**

in Delegate Room

9:00 - 10:00 AM  
F5RS - Bunny Rescue & Service  
with Sassy Pickard

11:15 AM - 12:00 PM  
Healing Code Class  
with Tracy Russo

1:00 PM - 2:30 PM  
Golden Retriever Service Dogs  
with LLC K-9 Comfort Dogs
FACTOR Travel Awards

MIB Agents Family Fund™ FACTOR Travel Awards are supported by MIB Agents Family Funds, osteosarcoma patients and families who raise funds in honor of an OsteoWarrior or OsteoAngel. Their dedication to Making It Better and fostering collaboration and education in the scientific community makes every MIB Agents award incredibly meaningful.

What is a Family Fund?
Family Funds honor a child who has experienced or is in treatment for osteosarcoma, or the memory of a child who passed from osteosarcoma. Their efforts fund desperately needed osteosarcoma research, educational resources, and programs that support kids and families in treatment.

How Does MIB Agents Help Me Honor My Loved One?
Family Fund honorees are on our website always with a personal page for each honoree’s story. In addition, we share their stories on our website, social media (at least 2x/year), at our FACTOR conference and other MIB events throughout the year.

Family Funds have an opportunity to co-brand Outsmarting Osteosarcoma research grants and provide valuable patient perspective during our grant review process. Thanks to MIB Family Funds we are able to award $600,000 in 2023!

How Do I Set Up My Family Fund?
It is easy to get your Family Fund set up. Visit https://www.mibagents.org/about-family-funds to learn more about how to get a Family Fund started.

You may also email Isabel Wolf, Director of Programs at Isabel@mibagents.org or talk to one of our Family Fund Holders listed on the next page to learn more.

Family Funds are an essential part of the mission of MIB Agents to Making It Better for those facing osteosarcoma. Please consider being part of this important program.

Bisaga Family
#BecauseOfAndrew

Cheung Family
#BecauseOfIsaac

Grilo Family
#BecauseOfAnnaleigh

Holmes Family
#BecauseOfMegan

Kaplan Family
#BecauseOfSydney

Lehrman Family
#BecauseOfMatthew

Marsh Family
#BecauseOfVictoria

Murdoff Family
#BecauseOfCharlotte

Toma Family
#BecauseOfDylan

Tobin Family
#BecauseOfRyan

Yamagish Family
#BecauseOfTyler
The Family Fund Advisory Council is made up of Family Fund Members who are available to share and discuss Family Funds with OsteoWarrior and OsteoAngel Families.

**Bronwen Greene**

I am mom to OsteoAngel, Ian, who passed away from osteosarcoma in May of 2020 after being diagnosed only 6 months prior. We started our family fund to honor Ian’s memory by fighting on behalf of every other OS patient and their families. While our primary goal is to fund research into new and better treatments for OS (and a cure!), we have seen how MIB Agents’ programs also provide support and encouragement for OsteoWarriors during treatment and into survivorship, as well as support for other bereaved families like us. I live in Greenville, SC, with my husband, two teenage daughters, and our sweet golden retriever, Tucker.

**Linda Chelsky**

I am an OsteoMom to OsteoAngel Leah, and our family is from Portland Oregon. Leah’s 3 ½ year osteosarcoma journey started when she was 21 years old and a recent grad from University of Oregon. Family Funds at MIB Agents has allowed us to continue Leah’s fighting spirit through osteosarcoma research and other family support programs.

**Mary Bisaga**

I am a wife and mom to 3 boys, one of which is OsteoWarrior Andrew. Our family fund strives to provide support, resources and hope to those affected by osteosarcoma so that every child can live the life they deserve. It is our mission to always remember and honor the warriors and angels through every fundraising effort.

**Nicole Klok**

My name is Nicole and I am the mama of OsteoAngel, Gavin. Our family began our Family Fund with MIB agents because Gavin was so passionate about helping to find a better treatment, a CURE, for osteosarcoma. Our Family Fund has been such a blessing to be able to honor Gavin and his passion.
MIB Agents Family Funds

OsteoWarrior
Aiden

OsteoAngel
Allen

OsteoWarrior
Allisen

OsteoWarrior
Andrew

OsteoAngel
Annaleigh

OsteoAngel
Brandon

OsteoAngel
Brenton

OsteoAngel
Briana

OsteoAngel
Brooke

OsteoAngel
Cameron

OsteoAngel
Carson

OsteoAngel
Charlotte

OsteoAngel
Cheyenne

OsteoAngel
Chris

OsteoAngel
Christien

OsteoAngel
Clayton

OsteoAngel
Dylan

OsteoAngel
Eli

OsteoAngel
Elijah

OsteoAngel
Ella

OsteoAngel
Emily

OsteoAngel
Gavin

OsteoAngel
Ian

OsteoAngel
Isaac

OsteoWarrior
Jack
In honor and memory of their children, Family Funds raise money to Make It Better for kids and young adults with osteosarcoma. Their efforts fund desperately needed osteosarcoma research, educational resources, and programs that support kids and families in treatment and bereaved families. Family Funds have an opportunity to co-brand research grants and provide valuable patient perspective during our grant review process.
OsteoAngels

Alec Hillegass
Alec Ingram
Alex Aldomà
Alex Bertran
Alex Meeker
Alex Solis
Alexandra Zorzoli
Alexis Briski
Aliyah Dees
Allen DeDon
Allie Herman
Ally Tamayo
Alyssa Divers
Andrew Woodruff
Andria Ellen Sauers
Angel Jauregui
Angel Wilson
Angie Sayers
Anna Kitada
Anna Snopek
Annaleigh Grilo
Arnav Krishna
Ashleigh Hunt
Austin Cohen
Austin Degnan
Austin Guidry
Ava Gasper
Avery Juarez
Baby Faith Mwangi
Balian Tosio
Becky Boucher
Bela Đajka
Ben Stowell
Benjamin Atkins
Benjamin Hawkes
Bernardo Eggesbo Coll
Brandon Brotoamodjo
Brandon DuPont
Brandon Gordon
Brandon Grier
Brandon Hendrick
Brandon Hicks
Braylie Kellogg
Brendan Jaramillo
Brennan Houghton
Brennan Riley
Brent Ramer
Brenton Gaudreault
Brian George
Brian Loeding
Brooke Gabster
Cailin Capri Cannella
Cali Sky Weishaupl
Carisma Cortedano
Carlo Minasi
Carmen Orellana
Caroline Richards
Carson Hartwig
Carson Michael Lewis
Carson Sumpter
Carter Mock
Catherine Kelly
Cecilia Nguyen
Chace Rodgers
Charlie Clamp
Charlotte Murdoff
Chase Bailey
Chase Lucas
Chelsea Ebert
Cheyenne Develasco
Chris Haley
Chris Taylor
Christie Hanovnikian
Christien Mikhail Quiles
Christopher Archer
Cline Moody
Clayton Laupus
Colleen Moore
Collin Rives
Colton Kuepfer
Connor Crossan
Connor Boyle
Cullen Kleftras
Dalton Fox
Damon Billeck
Dan Kenneway
Daniel Garcia Beech
Daniel Stanley
Darci Lynn McCoy
Darian King
Darren Vink
David Gulko
David Jacobsohn
David M. Robbins
David Padilla
David “Seth” Wright
Desiree Erclila
Devon Currie
Devin Dinkens
Dominic Wittmann
Doug Brown
Drew Hilliard
Drew Thomas Martin
Dustin Smith
Dylan McCabe
Dylan McCormack
Dylan Toma
Earl Cook
Eli Wall
Elijah Aleman
Ella Mae Baumer
Emiliana Rose O’Brien
Emily Del Vecchio
Emma Cosgrove
Emma Koertzen
Emmanuel Kwame Agyemang
Ethan Fox
Ethan Perry
Eve Eriksen Richards
Faith Fulmer
Frodi Tuerlinckx
Gabriel Taylor
Gabriella Castillo
Garland Chase Bailey
Garrett Harper
Gavin McClain
George Bertioli
Gianna McKeon
Gina Lynne Schell
Gordon Shields
Grant McGarry
Greg Von Rueden
Hadley Lane Nelson
Hallie Anne Brown
Harrison Hazlett
Hayden Perry
Heath Sammon
Heidi Holmes
Heidi Tolo Merkel
Hunter Spradlin
Hunter Spurgeon
Ian Greene
Ian Vallejo
Isaac Smith
Izzy Martin
Jaagatjot Kaur
Jack Hytner
Jackson Roark
Jackson Schmitt
Jacob Maloy
Jake Cavanaugh
James Hayden
James McCullum
James Ragan
James Schwerin
Jana Wang
Janina Vargas
Jared Cooper
Jared Hollingsworth
Jaydan Thompson
Jayden Isaiah Ojeda
Jaylen Winzer
Jayme Ax
Jeremy Telling
Joe Friend
Joern Wistesen Andersen
John Baker
John Gibbons
Johnny Kinney
Jonah Chrisman
Jonathan Faure
Jordan Baysinger
Jordan Jacques
Jordan Sky Pearson Colosimo
Jordan Wright
Jorge Ibanez Ruiz
Jori Zemel
Jose Manny Lopez
Josh Deaton
Josh Harvey
Joshua Williamson
JR Burnette
Judith Hanenburg
Justin Cowen
The Osteosarcoma Institute (OSI) is impacting the osteosarcoma research landscape. We're all about collaboration – between the finest osteosarcoma minds from across the nation on our Strategic Advisory Board and by working with like-minded organizations and individuals.

The OSI also offers a free patient service called OSI Connect. The service connects patients and their family with a medical expert who has decades of experience treating osteosarcoma. They answer questions about the patient’s clinical options and offer resources for whatever the patient needs.

We'd like to thank MIB Agents Osteosarcoma Alliance for hosting FACTOR 2023 and for inviting our Strategic Advisory Board Chair, Chand Khanna, DVM, PhD, to participate in a comparative oncology panel and to provide an overview of the OSI’s research portfolio.

Please stop by our table at registration to learn more about our work!

WWW.OSINST.ORG
OutSmarting Osteosarcoma

Congratulations to our 2023 OutSmarting Osteosarcoma Grant Recipients!

MIB Agents is thrilled to support seven researchers and their exciting osteosarcoma studies this year with $600,000 in research grants, all made possible by our MIB Agents Family Funds and foundation partner Fishin’ for the Cure who tirelessly fundraise to support research. Since the first OutSmarting award in 2017, MIB Agents has funded $1,550,000 in support of 18 scientists working to OutSmart Osteosarcoma.

$100,000 OutSmarting Osteosarcoma Awards

Shahab Asgharzadeh, MD
CHILDREN’S HOSPITAL LOS ANGELES
Identification of circulating immune signature as a biomarker of disease response and resistance in patients with relapsed osteosarcoma treated with nivolumab and regorafenib

Robert J. Canter, MD
UNIVERSITY OF CALIFORNIA, DAVIS
Inhaled canine IL-15 to maximize immunotherapy responses in dogs with metastatic osteosarcoma

Heather Gardner, DVM, PhD
TUFTS UNIVERSITY
Advancing liquid biopsy platforms to support early detection of metastasis and inform future interventions in osteosarcoma

Ryan D. Roberts, MD, PhD
ABIGAIL WEXNER RESEARCH INSTITUTE AT NATIONWIDE CHILDREN’S HOSPITAL
Combination therapies targeting heterogeneity and lung environment in metastatic osteosarcoma

Sam Volchenboum, MD, PhD
THE UNIVERSITY OF CHICAGO
Data commons to support new treatments for osteosarcoma

$50,000 OutSmarting Osteosarcoma Awards

Amanda Marinoff, MD
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
Toward Precision Oncology: Developing Novel Molecular Biomarkers For Risk Stratification in Pediatric Osteosarcoma

Marta Roman Moreno, PhD
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
CRISPRi screening to identify vulnerabilities in metastatic osteosarcoma

BECAUSE OF CHARLOTTE

BECAUSE OF SYDNEY
Developing Metastatic Endurance-Disabling Drugs to Treat Osteosarcoma

Preventing Metastatic Cancer Recurrence
No More Déjà Vu for Cancer Patients™

https://vujade-life.com/
**ALLOGENEIC** Having different DNA. For example, if you get a bone marrow transplant from someone else, it is an “allogenic” transplant.

**APOPTOSIS** Programed cell death. The process through which a cell dies in an orchestrated way.

**AUTOLOGOUS** Having the same DNA. For example, if your bone marrow is collected and stored, you get high-dose chemo, and then you get your own bone marrow back, this is called an “autologous” bone marrow transplant.

**AUTOPHAGY** Literally self-eating. A way cells consume themselves in order to survive or eventually die.

**CAR T-CELL** Chimeric Antigen Receptor T-cell, a subtype of white blood cells that are engineered to recognize and attach specific targets, ideally targets unique to a cancer.

**CHECKPOINT** (a.k.a. Immune checkpoint) One of several protein cells have on their surface that tell the body’s defenses (immune system) not to attack them. Several cancers hijack these proteins as a way to avoid getting attacked by the immune system.

**CHECKPOINT INHIBITOR** An antibody (i.e. a sort of ‘heat seeking missile’ that the body makes that attach to specific proteins on infectious organisms or cells designed to specifically attach to immune checkpoint proteins so they don’t block the body’s defenses (immune system) from attacking cancer cells.

**CYTOTOXIC** Toxic to cells.

**IN VIVO** within a living being or organism (e.g. a drug tested in a patient is tested en vivo).

**EX VIVO** Outside of a living being or organism (e.g. taking a biopsy of a tumor and testing it against a drug in a petri dish or test tube is ex vivo testing of the drug).

**EXOMES** The part of DNA that is actively used by the cell. Large parts of the Genome, which is all of the DNA, are coiled up for storage and not active. The Exome is the part that is actively doing things driving the cells.

**HETEROGENEOUS** Mixed, varied, not uniform.

**HISTOLOGICAL** Related to how something looks under a microscope.

**IMMUNOTHERAPY** Treatments that use the body’s defenses (immune system) to fight cancer.

**LYMOCYTE** Subtype of white blood cells. Part of the “adaptive immune system” that is able to learn and adapt to infections etc.

**MACROPHAGES** Subtype of white blood cells that help stimulate or suppress other white blood cells within the body.

**MESENCHYMAL** Related to the connective tissues in the body (bone, muscle, fat etc.).

**MICROENVIRONMENT** The microscopic environment around cells and tumors that includes the oxygen level, blood supply, acidity, and what other cells are located there.

**NK CELL** Natural Killer cell, a subtype of white blood cells that help fight infections and are believed to be important in removing abnormal cells such as cancer cells.

**OSTEOID** The matrix cells lay down that is calcified to create bone.

**OSTEOBLASTIC** Of or related to creating new bone.

**PDX MODELS** Patient Derived Xenograft models. A living model used to testing tumors and drugs created by taking a piece of the patient’s tumor and implanting it in an animal, typically a mouse, who has been engineered to allow the tumor to grow within that animal.

**PRECISION MEDICINE** Techniques used to tailor therapy to a specific tumor based on mutations or sensitivities found within that specific tumor.

**REFRACTORY** Another word for resistant or not responding to treatment.

**THORACOTOMY** Surgery performed on the chest (a.k.a. thorax).

**VATS** Video Assisted Thoracoscopic Surgery, surgery performed on the chest, using a small camera inserted through small openings made in the chest wall.
MIB Agents FACTOR 2022
Shahab Asgharzadeh is Associate Professor of Pediatrics at University of Southern California (USC) and the Cancer and Blood Disease Institute at Children’s Hospital Los Angeles (CHLA). He is the director of the Neuroblastoma Basic and Translational Program and member of the USC’s Cancer Center Tumor Microenvironment Program. He obtained his BS in Biomedical Engineering from Northwestern University in 1992 and MD from University of Illinois in 1996. He completed pediatric residency and a fellowship in clinical medical ethics at University of Chicago prior to his fellowship in pediatric hematology-oncology at CHLA. He has been named Top Doctor by Pasadena Magazine, and is recipient of Walter Laug Distinguished Teaching Award, and the Determination Award from the American Cancer Society.

His research laboratory is focused on understanding the role of the tumor microenvironment and developing novel immunotherapies for children with solid tumors. His group’s first report of identification of inflammation in solid tumors in children has helped to improve our understanding of the role of the immune system in biology of childhood cancers.

SATURDAY, JUNE 24 • 9:35 - 10:35 AM
Panel: OutSmarting 2023
Identification of Circulating Immune Signature as a Biomarker of Disease Response and Resistance in Patients with Relapsed Osteosarcoma Treated with Nivolumab and Regorafenib

Syeda Maryam Azeem is a Ph.D. candidate at the City University of New York with research focus on Riluzole as a treatment drug for osteosarcoma. She pursued her Bachelors in Pharmacy from Osmania University, India. In 2015, she moved to the US to pursue her Masters degree at Long Island University where she worked on HIV reverse transcriptase enzyme in understanding its mutational resistance towards HIV treatment drugs. Under the supervision of Kathleen Frey, her project was focused on designing a cost-effective structure-based computational method that would help researchers predict mutational resistance caused by treatment drugs. Later, she moved to Keedy Lab at Structural Biology Initiative in CUNY Advanced Science Research Center as a Research Assistant. She worked with a versatile team of researchers to understand how conformational change of protein structures influence drug targeting and regulation of protein functions. She worked on examining a set of different proteins called Protein Tyrosine Phosphatases which are involved in different diseases including diabetes, cancer, and Alzheimers.

SATURDAY, JUNE 24 • 3:25 - 3:35 PM
Panel: Molecularly Targeted Therapies
Investigating the role of EGR1 in Riluzole-induced apoptosis in osteosarcoma

Andrew Bisaga was diagnosed with osteosarcoma when he was twelve in his proximal femur. He had to abandon playing football, basketball, and soccer, undergoing an 8 month cycle of MAP. He had to get a resection of his proximal femur and a compression implant. He was declared NED July of 2018 and has remained cancer free since. He has just graduated high school and will be attending Creighton University, studying biology in their pre professional medical scholars program.

SATURDAY, JUNE 24 • 11:00 AM - 12:00 PM
Panel: Patient Perspectives: An Honest Q&A with OsteoWarriors
Patient Panelist

SATURDAY, JUNE 24 • 4:35 - 4:50 PM
Closing Remarks
Mary is a wife and mom to three boys, one of which is OsteoWarrior, Andrew. Her family fund strives to provide support, resources and hope to those affected by osteosarcoma so that every child can live the life they deserve. It is her family’s mission to always remember and honor the warriors and angels through every fundraising effort.

FRIDAY, JUNE 23 • 8:40 - 8:50 AM
Panel: MIB Agents Programs
Family Funds

Anita Caldera joined MIB Agents as Fundraising and Events Manager in May of 2022. She has worked in the non-profit space for over 10 years, leading with compassion and advocating for families navigating Early Intervention Program and executing small to mid-scale events with the National Hemophilia Foundation. She is passionate about wellness and building relationships and continues to Make It Better alongside her teammates, our community of patients, caregivers, doctors and researchers.

FRIDAY, JUNE 23 • 8:20 - 8:30 AM
Panel: MIB Agents Programs
Events / Fundraisers

Dr. Canter is a graduate of Princeton University and the University of Pennsylvania School of Medicine. He completed general surgery residency at the Hospital of the University of Pennsylvania and surgical oncology fellowship at Memorial Sloan Kettering Cancer Center. He joined the faculty at the University of California Davis in 2007 where he is currently a Professor of Surgery in the Division of Surgical Oncology. He has dedicated his career to studying tumor immunology and immunotherapy in bone and soft tissue sarcoma. As a surgical oncologist, because of his training, his clinical focus has been soft tissue sarcoma, but he has developed highly productive collaborations with the UC Davis School of Veterinary Medicine where osteosarcoma (OSA) is a high unmet need problem in dogs, as for humans. Together, they have pioneered first-in-dog clinical trials for OSA centered around approaches to capitalize on the anti-tumor mechanisms of both endogenous and exogenous natural killer (NK) cells. They have been able to take some of the novel observations they have made treating dog OSA patients back to the bench to study the phenotype and function of NK cells in the lungs as a specialized immune subset that appears to be capable of heightened anti-tumor responses, and they are hoping to build on these results for clinical translation in dog and human OSA.

SATURDAY, JUNE 24 • 9:35 - 10:35 AM
Panel: OutSmarting 2023
Inhaled Canine IL-15 to Maximize Immunotherapy Responses in Dogs with Metastatic Osteosarcoma
Ekaterina Dadachova received her Bachelor in Chemistry and PhD in Physical Chemistry degrees from Moscow State University in Moscow, Russia. She did her postdoctoral studies in radiopharmaceutical chemistry at the Australian Nuclear Science and Technology Organization (ANSTO) in Australia, and at the National Institutes of Health (NIH) in the USA. From 2000 till 2016 Dr. Dadachova held a Professorship in Radiology, Microbiology and Immunology at the Albert Einstein College of Medicine in New York, USA. At the end of 2016 she joined University of Saskatchewan as a Chair in Radiopharmacy at the Fedoruk Center for Nuclear Innovation, and a Professor at the College of Pharmacy and Nutrition. Her laboratory has pioneered radioimmunotherapy (RIT) of infections. Her other research interests are radioimmunotherapy of osteosarcoma and other cancers as well as melanin-based radioprotectors. She has published >190 peer-reviewed articles, 12 book chapters, and has 7 US patents. She received several awards such as Philips Young Investigator Award by RSNA, Young Professionals Award from the SNM, Mary Kay Ash Research Award, Top 10 researchers at the Albert Einstein College of Medicine in 2013, 2017 Burroughs Welcome Travel Award, and 2020 University of Saskatchewan Distinguished Researcher Award. She is in the top 2% of cited scientists worldwide according to Stanford University 2021 data.

Dr. Davis is the Sarcoma Program Director at the Knight Cancer Institute in Portland, Oregon, where she treats patients with sarcoma and conducts osteosarcoma clinical and translational research. She received her undergraduate degree at Wellesley College and her M.D. from Oregon Health & Science University (OHSU). She returned to the East Coast for residency training before completing her oncology training at OHSU. Dr. Davis is board-certified in both Medical Oncology and Pediatric Hematology/Oncology.

After completing her Ph.D. in analytical chemistry, Dr. Diehl joined Dow AgroSciences as a study director and led several environmental fate projects for pesticide registrations. She joined Waters Corporation as a Senior Applications Chemist in 2001 and spent the next 10 years in various scientific manager and marketing roles within the Chemistry Group, including Director of Applications. Her group developed LC, LC/MS, and GC/MS applications for new and existing LC columns and SPE products, covering all markets. In 2011, she was named the Director of New Product Portfolio Management, to manage the ideation through Launch process for new consumables, with a focus on business case development. In 2013, she moved into the Pharmaceutical Marketing team as Director of Small Molecule Pharmaceutical Business Development. In 2016, she became Senior Director of Pharmaceutical Market Development. In 2020, Diane became Senior Director, Scientific Operations – leading a group of 70+ scientists responsible for developing customer focused workflows on new and existing products. In 2022, Diane joined the Broad Institute to lead the operations of Count Me In, a patient-partnered research team focused on rare cancer genomics. She is currently the Interim Director of Count Me In and one of the PI’s involved in the PE-CGS project team studying osteosarcoma and leiomyosarcoma.
Sloane is an 18-year-old OsteoWarrior. They were diagnosed at 12 and went through MAP protocol, had an initial Limb Salvage Surgery and later electively amputated their right leg. They have now been NED for over five years! They have been involved with MIB since early on in their treatment. They are an Ambassador Agent and this is their second year on the Junior Advisory Board.

**SATURDAY, JUNE 24 • 11:00 AM - 12:00 PM**
Panel: Patient Perspectives: An Honest Q&A with OsteoWarriors
Patient Panelist

Heather Gardner, DVM, PhD, DACVIM (Oncology) is an assistant research professor at Cummings School of Veterinary Medicine at Tufts University. Dr. Gardner earned her DVM at Washington State University and completed her Residency in Veterinary Medical Oncology at Ohio State University before completing her PhD in Genetics at Tufts University. Her research efforts center on comparative and translational cancer genomics, using the tumor genome to inform novel biomarker driven therapeutic approaches.

**FRIDAY, JUNE 23 • 1:30 - 1:40 PM**
Panel: Comparative Oncology
Moderator

Dr. Annie Gill is a board-certified radiology and associate professor at the Emory University School of Medicine within the Department of Radiology and Imaging Sciences. Dr. Gill has also earned her certificate of added qualification in the subspecialty of interventional radiology from the American Board of Radiology. She specializes in the treatment of pediatric soft tissue tumors, hepatobiliary disease, venous thromboembolic disease, and vascular malformations. Dr. Gill is a reviewer for the Pediatric Radiology Journal and CVIR. She has authored more than 30 peer-reviewed publications and given several national and international presentations regarding her work in pediatric interventional radiology.

**SATURDAY, JUNE 24 • 9:35 - 10:35 AM**
Panel: OutSmarting 2023
Advancing liquid biopsy platforms to support early detection of metastasis and inform future interventions in osteosarcoma

Ann is the founder and Executive Director of MIB Agents. At age 43 she was diagnosed with osteosarcoma. She was treated in the pediatric cancer center at Memorial Sloan Kettering in NYC where she was awed and inspired by the courage and cheerfulness of the kids she was treated with. Today as a survivor, and together with MIB Agents everywhere, the mission to Make It Better (MIB) for kids with osteosarcoma is wholeheartedly undertaken. Ann serves on the SARC Board of Directors and on the Advocate Alliance Leadership Council with the A2A Alliance and with The Mighty.

**FRIDAY, JUNE 23 • 8:00 - 8:10 AM**
Welcome & Opening Remarks
Dr. Laurie Graves received her medical degree and completed residency training in Internal Medicine and Pediatrics at the Medical University of South Carolina. She completed her Pediatric Hematology and Oncology fellowship at Duke University, where she is currently an Advanced Sarcoma Research Fellow. Her research utilizes cross-species pre-clinical models to explore ecological hallmarks and target genomic signatures associated with chemotherapy resistance in osteosarcoma and is supported by Hyundai Hope on Wheels and the Triangle Center for Evolutionary Medicine.

**FRIDAY, JUNE 23 • 11:40 - 11:50 AM**

Panel: Preclinical Models
Cross-species osteosarcoma models pinpoint pervasive intratumoral heterogeneity as a mechanism of evolutionary escape from chemotherapy

Matt Hawkins is a board-certified interventional radiologist and associate professor at the Emory University School of Medicine within the Department of Radiology and Imaging Sciences. Dr. Hawkins is the Medical Director of pediatric interventional radiology, and specializes in the treatment of vascular malformations, pediatric oncologic conditions amenable to minimally invasive therapies, and venous thromboembolic disease. He also serves as Medical Director of the Vascular Anomalies Clinic at Children’s Healthcare of Atlanta. Dr. Hawkins’ non-clinical interests include health policy, economics, and performance improvement – and specifically healthcare challenges where these disciplines intersect. Throughout his early career, he has actively volunteered for organized radiology and currently serves as the Health Policy and Economics Councilor on the Executive Council for the Society of Interventional Radiology and as an assistant editor for the JACR. He has authored over 100 peer-reviewed publications, over 20 columns in radiology journals, and given over 175 national invited lectures.

**SATURDAY, JUNE 24 • 8:30 - 8:40 AM**

Panel: Local Control
Catheter directed intra-arterial therapy to improve limb salvage

Tanya Heim has a BS in Animal Sciences from Penn State and a Master’s in Biology from Youngstown State. Tanya worked as a veterinary technician assisting in orthopedic stem cell surgeries of dogs which led her to her pursuance of a future in biomedical research. While obtaining her Master’s, she studied the ability of stem cells to repair hernias in rat models. After graduation, she procured a job at the University of Pittsburgh (PITT) as a Research Coordinator for a liver transplantation research group where she used porcine model to investigated various types of regenerative therapies to improve current liver transplantation methods. After several years, she moved onto a breast cancer research lab at PITT and developed a novel estrogen receptor positive (ER+), invasive lobular carcinoma (ILC) cell line. She also worked on phylogenetic research projects on invasive annelids and polychaetes from the coral reefs of Hawaii at both Colgate University and Hamilton College in New York. Tanya is currently the lab manager of the Musculoskeletal Oncology Laboratory at PITT and looks forward to the discoveries ahead in her osteosarcoma research.

**SATURDAY, JUNE 24 • 3:35 - 3:45 PM**

Panel: Molecularly Targeted Therapies
Targeting Androgen Receptor in Osteosarcoma Cells with Varying Metastatic Potential
Dr. Alex Huang is a physician scientist and Professor of Pediatrics at Case Western Reserve University School of Medicine and Director of the Center for Pediatric Immunotherapy at UH Rainbow Babies & Children’s Hospital, Angie Fowler AYA Cancer Institute in Cleveland, Ohio. He also serves as Director of Pediatric Hematology-Oncology Fellowship Program at UH Rainbow, co-Director of the Medical Scientist Training Program at the School of Medicine, and co-leader of the Immune Oncology Program within the Case Comprehensive Cancer Center. His lab investigates immune responses to cancer and explores translational opportunities to enhance immune-mediated therapeutic approaches to osteosarcoma.

SATURDAY, JUNE 24  •  1:00 - 1:10 PM
Panel: Immunotherapies
Moderator

Christina’s son Dylan was diagnosed with osteosarcoma in 2016. They attended the first MIB Agents FACTOR conference in 2017 and found a tremendous community of support and helpful resources. Dylan bonded with fellow OsteoWarriors at Warrior HQ at FACTOR every year while Christina and Dylan’s dad Burt soaked up all the information they could from FACTOR scientific sessions and other MIB Agents resources like OsteoBites. When Dylan passed away in 2021 after bravely battling osteosarcoma for five years, Christina joined the MIB Agents team in January 2022 as the Director of Scientific Programs. In this role, Christina creates programs to engage and support the scientific community who are striving to improve treatment options and outcomes. Prior to focusing on patient advocacy, Christina had a career in advertising with experience at a traditional advertising agency and building advertising programs at start-ups like Excite and Google. In addition to being a proud owner of a MIB Agents Family Fund honoring Dylan, she is also a founding member of the Battle Osteosarcoma team that has partnered with St. Baldrick’s Foundation to fund over $2 million in osteosarcoma research grants since 2019. She is honored to serve as a consumer reviewer for the CDMRP Peer Review Cancer Research and Rare Cancer Research Programs, and as a Research Advocate on the NCI Human Tumor Atlas Network (HTAN) Steering Committee as a member of the NCI Office of Advocacy Relations advocate network. She is grateful to MIB Agents and these programs for giving her the opportunity to make it better for OsteoWarriors and pediatric cancer patients everywhere, which is helping her transform senseless loss into a sense of purpose - #BecauseOfDylan.

FRIDAY, JUNE 23  •  8:50 - 9:00 AM
Panel: MIB Agents Programs
Scientific Programs

Michael Isakoff, MD is the Division Head of the Division of Hematology/Oncology at Connecticut Children’s Medical Center and is a Professor of pediatrics at the University of Connecticut School Of Medicine.

FRIDAY, JUNE 23  •  3:00 - 5:00 PM
Breakout Discussion Group
Researcher’s Best Friend: Can dogs expedite bench to bedside for pediatric patients?

FRIDAY, JUNE 23  •  5:00 - 5:10 PM
Comparative Oncology Discussion Summary
Chand Khanna, DVM, PhD, DACVIM
OSI STRATEGIC ADVISORY BOARD CHAIR
CHAIRMAN, ETHOS DISCOVERY
Osteosarcoma Institute
Ethos Discovery

Chand Khanna, DVM, PhD is a graduate of the Western College of Veterinary Medicine. He then received specialty training in the fields of Veterinary Internal Medicine and Oncology, first at the Ontario Veterinary College, University of Guelph and then the University of Minnesota. Dr. Khanna is a Diplomate of the American College of Veterinary Internal Medicine (Oncology). Following this clinical specialization Dr. Khanna received a PhD in Pathobiology from the University of Minnesota and then completed a post-doctoral fellowship with Dr. Lee Helman in the Pediatric Oncology Branch of the National Cancer Institute in Bethesda Maryland. Dr. Khanna was granted full tenure and promoted to the position of Senior Investigator as the Head of Pediatric Oncology Branch’s Tumor and Metastasis Biology Section, and Founding Director of the Center for Cancer Research, Comparative Oncology Program. In 2011, His research interests and responsibilities focused on the problem of cancer metastasis and the development of new options to treat patients with metastasis. Dr. Khanna has over 100 publications in cancer biology and therapy. Dr. Khanna is the editor of a new textbook entitled Therapeutic Strategies in Veterinary Oncology, published by CABi in 2023.

Jenna Kocsis, MD
RADIATION ONCOLOGY RESIDENT
Cleveland Clinic Foundation

Jenna Kocsis is a Radiation Oncology Resident at Cleveland Clinic. She is from Bethlehem, PA and attended medical school at Drexel University College of Medicine in Philadelphia. She is mentored by Dr. Erin Murphy from the Cleveland Clinic who specializes in pediatric radiation oncology. They are passionate about using SBRT for younger patients and have several projects evaluating the role of SBRT for patients with metastatic sarcoma.

Brian Ladle, MD, PhD
ASSISTANT PROFESSOR
Johns Hopkins University

Dr. Brian Ladle is a practicing pediatric oncologist, pediatric sarcoma specialist, and translational immunology researcher at Johns Hopkins University with the goal of developing novel immunotherapies for the treatment of pediatric malignancies. His fifth grade science fair project was titled “Cancer.” His sixth grade research paper was titled “The Immune System.” Then, in 1997, as a sophomore in college, he watched Dr. Steven Rosenberg from the NIH on the science show “Nova” describe a new cancer therapy called adoptive T cell therapy – bringing together two of his long-standing interests. His goal since then was to be an oncologist and cancer researcher devoted to developing immunotherapies for cancer. Over the years, that goal has come into clearer focus – specifically now as a pediatric oncologist and sarcoma specialist – he wants to develop novel immune-based therapies for pediatric sarcomas. More than two decades of schooling, training, working, experience, and mentoring have brought him to this point. He has expressed his ambitions in the Ladle Lab Mission Statement: “Children with cancer require better and more effective therapies than chemotherapy and radiation therapy and all the short-term and long-term side effects they bring. Because of the robust immune system children possess, they develop cancers that evade immune detection. We seek to understand how the immune system interacts with their cancer, how we can manipulate both the cancer and immune system to eradicate their cancer, and how to protect them from the cancer ever returning.” The work he will be presenting on their canine osteosarcoma clinical trial is done in collaboration with Dr. Dara Kraitchman VMD, PhD and the Center for Image-Guided Animal Therapy at Johns Hopkins. They thank the dogs and their owners for generously participating in this clinical trial to develop novel osteosarcoma therapies for pets and OsteoWarriors.
Dr. Amy LeBlanc is a Senior Scientist and the Director of the Comparative Oncology Program. Dr. LeBlanc received her DVM from Michigan State University, followed by a rotating internship at Texas A&M University, and residency training in veterinary medical oncology at Louisiana State University. She subsequently joined the faculty of the University of Tennessee’s College of Veterinary Medicine, and was awarded tenure in 2010. Dr. LeBlanc held a joint appointment with the University of Tennessee’s Graduate School of Medicine and was head of the UT’s Molecular Imaging and Translational Research Program from 2010 – 2014. She then joined the NCI in 2014 as the head of the Comparative Oncology Program. In this position she conducts preclinical mouse and translational canine studies that are designed to inform the drug and imaging agent development path for human cancer patients, specifically those with osteosarcoma. She also advises leading pharmaceutical companies as well as NCI’s Division of Cancer Treatment and Diagnosis on the inclusion of pet dogs with cancer into the development path of novel approaches for a variety of malignancies, including immunotherapeutics, targeted small molecules, oncolytic viruses, and cancer imaging agents. She directly oversees the NCI Comparative Oncology Trials Consortium (COTC), which provides infrastructure necessary to connect participating veterinary academic institutions with stakeholders in drug development to execute fit-for-purpose comparative clinical trials in novel therapeutics and imaging agents.

### FRIDAY, JUNE 23 • 1:40 - 1:50 PM
**Panel: Comparative Oncology**
OSi Strategic Advisory Board Chair/Chairman, Ethos Discovery

Michael graduated from Bowdoin College with honors in Biology. He obtained a PhD in Immunology and MD at the University of Pittsburgh School of Medicine MSTP. He completed a pediatric residency at Children’s Hospital Colorado and pediatric hematology/oncology/BMT fellowship training at Children’s Hospital of Philadelphia. He returned to Children’s Hospital of Colorado as an Assistant Professor of pediatric hematology/oncology/BMT. His laboratory focus is to develop safer and more effective cell-based therapies for osteosarcoma.

### FRIDAY, JUNE 23 • 2:20 - 2:30 PM
**Panel: Comparative Oncology**
Spontaneous canine osteosarcoma as a preclinical model to develop novel therapies for osteosarcoma in pets and humans

Dr. Ligon earned his medical degree from the Baylor College of Medicine in Houston. After he completed his residency in pediatrics at the University of Texas Southwestern Medical Center in Dallas, he pursued a fellowship in pediatric hematology and oncology at Johns Hopkins University and the National Cancer Institute in Maryland. In the following years, he completed a senior fellowship in pediatric immunotherapy at the National Cancer Institute and another in pediatric sarcoma at Johns Hopkins University.
Kelly Makielski is an Assistant Professor of Small Animal Internal Medicine at the University of Minnesota College of Veterinary Medicine. Following board certification in Small Animal Internal Medicine, Dr. Makielski completed a research post-doctoral fellowship in the Comparative Oncology Lab at the University of Minnesota, supported by an NIH T32. Dr. Makielski’s research program is devoted to using animal models to further our understanding of pediatric osteosarcoma. Dr. Makielski recently received an NIH K01 award to investigate exosomal gene signatures associated with metastatic propensity in pediatric osteosarcoma.

SATURDAY, JUNE 24 • 3:05 - 3:15 PM
Panel: Molecularly Targeted Therapies
Epigenetic heterogeneity of osteosarcoma reveals distinct cellular states

Dr. Gordon is a practicing medical oncologist and serves as Director of Gene and Cell Therapy/Immunotherapy and Chairman of the Institutional Biosafety Committee at the Cancer Center of Southern California/Sarcoma Oncology Research Center, an academic medical institution that conducts ~15 active pharma-sponsored and investigator initiated/sponsored clinical trials for cancer. Dr. Gordon is internationally known in the field of gene therapy, specifically, for the invention and clinical development of DeltaRex-G, the first and, so far, only, tumor/disease-targeted genetic medicine that has induced long term survival (10-15 years) of patients with Stage 4 cancer, 3 of whom had advanced osteosarcoma. DeltaRex-G gained Accelerated Approval for chemotherapy resistant solid malignancies in the Philippines in 2007, orphan drug designation for pancreatic cancer, soft tissue sarcoma and osteosarcoma in 2008, and Fast Track Designation for pancreatic cancer in the United States in 2009.

SATURDAY, JUNE 24 • 4:15 - 4:25 PM
Panel: Molecularly Targeted Therapies
Artificial intelligence analysis shows enhanced CCNG1 expression in sarcoma / osteosarcoma tumors, a novel biomarker in development for Deltarex-G CCNG1 inhibitor therapy

Kelly Makielski completed her master’s degree in biochemistry and molecular biology at the National University in Mexico. Then, she completed her PhD in molecular biology at a research center in Mexico, called IPICYT. Currently, she is a postdoc in the Sweet-Cordero Lab at UCSF and she is interested in defining the mechanisms of epigenetic gene regulation in osteosarcoma.

SATURDAY, JUNE 24 • 3:05 - 3:15 PM
Panel: Molecularly Targeted Therapies
Epigenetic heterogeneity of osteosarcoma reveals distinct cellular states

Eunice Lopez Fuentes completed her master’s degree in biochemistry and molecular biology at the National University in Mexico. Then, she completed her PhD in molecular biology at a research center in Mexico, called IPICYT. Currently, she is a postdoc in the Sweet-Cordero Lab at UCSF and she is interested in defining the mechanisms of epigenetic gene regulation in osteosarcoma.

SATURDAY, JUNE 24 • 4:15 - 4:25 PM
Panel: Molecularly Targeted Therapies
Artificial intelligence analysis shows enhanced CCNG1 expression in sarcoma / osteosarcoma tumors, a novel biomarker in development for Deltarex-G CCNG1 inhibitor therapy

Eunice Lopez Fuentes, PhD
POSTDOC SCHOLAR
University of California, San Francisco

Erlinda M. Gordon, MD
DIRECTOR, GENE AND CELL THERAPY/IMMUNOTHERAPY
Sarcoma Oncology Research Center

Kelly Makielski, DVM
ASSISTANT PROFESSOR (SMALL ANIMAL INTERNAL MEDICINE)
University of Minnesota

FRIDAY, JUNE 23 • 9:55 - 10:05 AM
Panel: Biomarkers for Risk Stratification
Identification of serum exosomal gene signatures associated with prognosis in pediatric osteosarcoma
Dr. Marinoff is a third-year pediatric hematology/oncology fellow and has focused her training and research efforts on building a career at the interface of translational genomics and developmental therapeutics. Her overarching career goals are aimed at improving outcomes and decreasing toxicities for pediatric, adolescent and young adults (AYA) with advanced cancers by 1) identifying prognostic biomarkers and therapeutic targets in high-risk pediatric cancers through the linkage of clinical and -omics data 2) designing and leading precision clinical trials that incorporate novel biomarkers, tools, and targeted therapies 3) to provide outstanding clinical care to pediatric, adolescent and young adult (AYA) patients, with a focus on pediatric and AYA patients with sarcomas. Her research has revealed MYC amplification as the first genomic biomarker in osteosarcoma (OS) that can be detected using clinical next-generation sequencing, and if validated, can be used for risk stratification in future clinical trials and clinical care. Her current research efforts are focused on linking real-world clinical and -omic data as a path toward precision oncology in osteosarcoma by leveraging the international clinico-genomic cancer registry project GENIE (Genomics Evidence Neoplasia Information Exchange) and on translating preclinical data from the Sweet-Cordero laboratory for 1) classifying OS into two clusters with differential epigenetic states, gene expression, and clinical outcomes into a novel clinical test for risks stratification in OS and 2) novel therapeutic combinations for OS into early phase clinical trials. She is currently a Chan Zuckerberg physician-scientist fellow, a graduate student in the Advanced Training in Clinic Research certificate program, a T32 T2 scholar, the leader of a joint Pediatric Oncology Genomics Tumor board (a collaborative initiative between the Universities of California San Francisco and Santa Cruz focusing on research-grade sequencing findings among pediatric/AYA patients receiving anti-cancer therapy at UCSF), and an active member of the UCSF early phase trials program. Upon graduating fellowship in June, she will be an attending oncologist and clinical instructor focusing her clinical and translational work on making it better for kids with cancer and their families, and particularly those impacted by osteosarcoma.

Nicola Mason is a Professor in the Department of Clinical Sciences and Advanced Medicine and Pathobiology and holds the James & Gilmore Endowed Chair Professorship at the University of Pennsylvania’s School of Veterinary Medicine. She received her veterinary degree from the Royal Veterinary College, London and her Immunology PhD from the University of Pennsylvania. She performed her post-doctoral fellowship in cancer immunotherapy with Carl June at the Abramson Cancer Center at the School of Medicine at Penn. Dr. Mason’s translational research group focuses on a comparative approach to accelerate the clinical implementation of effective immunotherapies – including engineered T and iNKT cells – for both human and canine patients with cancer. Innovative clinical trials in pet dogs with spontaneous tumors including osteosarcoma, high grade glioma and B cell lymphoma, provide important safety and early efficacy data for human clinical trial design. Dr. Mason leads the NIH/NCI supported pre-medical cancer immunotherapy network for canine trials (PRECINCT). The network is comprised of veterinary and medical clinician scientists, including oncologists, internists, surgeons and pathologists who share a passion for comparative translational research.

Amanda Marinoff, MD
CLINICAL FELLOW, PEDIATRIC HEMATOLOGY AND ONCOLOGY
University of California, San Francisco

Nicola Mason, BVetMed, PhD, DACVIM
PROFESSOR OF MEDICINE
University of Pennsylvania
Dr. Milner received his veterinary degree from the University of Pretoria in 1980. In 1998 he received ECVM diplomate status in Internal Medicine. He completed a PhD at the UP Medical College. He joined the University of Florida in 2001 and was boarded in the American College of Veterinary Internal Medicine (Oncology) in 2009. He is the Hill's Endowed Professor of Oncology and Director of Clinical and Translational Research. He holds affiliate appointments in the UF College Medicine and is part of the Pediatric Cancer Immunotherapy Initiative (PCI2). Dr Milner has developed cancer immunotherapies as an adjuvant to cancer standard-of-care.

SATURDAY, JUNE 24  •  1:20 - 1:30 PM
Panel: Immunotherapies

Immune effector cells are excluded from canine metastatic osteosarcoma lesion with a strong M2 macrophage signal

Dr. McEachron earned his doctorate in Molecular and Cellular Pathology from the University of North Carolina at Chapel Hill in 2011. He completed postdoctoral fellowships at St. Jude Children's Research Hospital and at the Translational Genomics Research Institute. In 2016, Dr. McEachron joined the faculty of the Keck School of Medicine at the University of Southern California as an Assistant Professor in the Department of Translational Genomics (primary appointment) and the Department of Pediatrics (secondary appointment). Dr. McEachron joined the Pediatric Oncology Branch of the National Cancer Institute in 2021 where he leads the Integrated Solid Tumor Biology Section. The major focus of his laboratory is to molecularly dissect the microenvironment of pediatric metastatic osteosarcoma to better understand the biology of metastatic disease and identify therapeutically actionable targets.

FRIDAY, JUNE 24  •  9:25 - 9:35 AM
Panel: Biomarkers for Risk Stratification

Development of a novel peptide that simultaneously inhibits the myeloid and immune exhaustion checkpoints as immunotherapy for osteosarcoma

Dr. Julia Medland is a medical oncology resident at the University of Minnesota Veterinary Medical Center. Following the completion of her residency in July, she will stay on as a Clinical Assistant Professor of Medical Oncology. Her research interests center on the immune landscape of osteosarcoma, and the development of novel immunotherapies. She is also interested in the dog as a translational model of naturally occurring osteosarcoma. She is grateful for the opportunity to speak at FACTOR.

SATURDAY, JUNE 24  •  12:00 - 1:30 PM
Panel: Immunotherapies

Moderator
Dr. Anthony Mutsaers graduated with a DVM from the Ontario Veterinary College, University of Guelph, followed by a rotating internship at OVC in small animal medicine and surgery, a residency in Comparative Oncology at Purdue University, and a clinical instructor appointment in veterinary medical oncology at the University of Queensland in Brisbane, Australia. He is a DACVIM in Oncology. He then returned to Canada to study cancer signaling, angiogenesis, and biomarkers for targeted oncology drugs in the laboratory of Dr. Robert Kerbel at the Sunnybrook Research Institute, where he received a PhD from the Department of Medical Biophysics, University of Toronto. During his graduate studies, he practiced part-time as a medical oncologist at OVC, and was an Adjunct Professor with the Department of Clinical Studies. He then completed a postdoctoral fellowship with Dr. Carl Walkley in the Stem Cell Regulation Unit at the St. Vincent’s Institute of Medical Research in Melbourne, Australia, where he studied transgenic mouse models of OSA and high throughput screening for chemotherapy sensitization targets. In 2011, Dr. Mutsaers returned to the University of Guelph and is currently an Associate Professor with a joint appointment in the OVC Departments of Clinical Studies and Biomedical Sciences. He maintains clinical oncology practice within the OVC Health Sciences Centre and his research program uses comparative oncology to translate discoveries from preclinical research to clinical application in humans through the investigation of naturally occurring cancers in pet dogs, with a focus primarily on novel treatments for osteosarcoma, angiosarcoma, mucosal melanoma, and bladder cancers.

Anthony Mutsaers, DVM, PhD, DACVIM
ASSOCIATE PROFESSOR, ONCOLOGY AND CANCER BIOLOGY
Ontario Veterinary College, University of Guelph

Joshua Nash
PHD STUDENT
Hospital for Sick Children

Gillian Okimoto
JUNIOR ADVISORY BOARD MEMBER
MIB Agents

Shervin Oskouei, MD
ORTHOPEDIC ONCOLOGIST
Emory Healthcare

Joshua is a PhD student at the University of Toronto under Dr. Adam Shlien at the Hospital for Sick Children in Toronto, Canada. He researches how tumor gene expression from wide range of sarcomas can be leveraged to understand the relationships between diseases and identify new disease subtypes which better reflect a tumour’s underlying biology.

Gillian Okimoto is a high school Junior at Frank Sinatra School of the Arts in Queens, New York. She is an OsteoWarrior, diagnosed in 2017. With MIB JAB, her goal is to support cancer research and patient education. She is interested in the arts and computer science and hopes to use them to aid and honor all OsteoFamilies.

Dr. Shervin Oskouei has been an orthopedic oncologist at Emory Healthcare Winship Cancer Institute for 20 years. He is division director of orthopedic oncology at Emory University School of Medicine and director of MSK oncology Fellowship. He received his orthopedic oncology training at the University of Chicago.
Jayanthi Parthasarathy, BDS, MS, PhD
MANAGER 3D PRINTING
Nationwide Children’s Hospital

Dr. Jayanthi Parthasarathy is a trained dental surgeon, having practiced dentistry in India for more than 3 decades. Transgressed to additive manufacturing for clinical needs after completing master’s in mechanical and Manufacturing engineering from CEG, Anna University and pursuing PhD at the University of Oklahoma, USA. Has been at the cutting edge of 3D biomodelling and 3D printing to arrive at patient specific solutions for complex surgical challenges in the adult and pediatric population for more than 2 decades specializing in development of patient-specific devices using advanced design and manufacturing technologies as 3D Printing with in-depth knowledge and experience in navigating FDA approvals for medical devices.

SATURDAY, JUNE 24 • 8:10 - 8:20 AM
Panel: Local Control
Virtual surgical planning and 3D printing in pediatric osteosarcoma for surgical planning and patient education

Anand Patel, MD, PhD
INSTRUCTOR
St. Jude Children’s Research Hospital

Dr. Patel is a pediatric oncologist and sarcoma researcher at St. Jude Children’s Research Hospital. He graduated from the MD-PhD program at Mayo Clinic, and then completed a pediatric residency at St. Louis Children’s Hospital. After completing a fellowship in Pediatric Hematology/Oncology fellowship at St. Jude Children’s Research Hospital, he joined the faculty in 2019. His research is motivated by the experience of children with high-risk sarcomas, who suffer from high rates of disease recurrence. Dr. Patel’s research centers on combining genomics, patient-derived experimental models of disease, and computational biology. Using these approaches, he has developed atlases of heterogeneity within pediatric rhabdomyosarcoma and neuroblastoma. Using patient-derived models of osteosarcoma and single-cell RNA-sequencing, he has generated an atlas of heterogeneity within osteosarcoma samples and is leveraging that information to develop 3D models of osteosarcoma that incorporate the extracellular architecture of that disease.

FRIDAY, JUNE 23 • 11:20 - 11:30 AM
Panel: Preclinical Models
Mapping and modeling heterogeneity within pediatric osteosarcoma

Jovana Pavisic, MD
ASSISTANT PROFESSOR
Columbia University Irving Medical Center

Dr. Pavisic is an Assistant Professor and pediatric oncologist in the Division of Pediatric Hematology, Oncology, and Stem Cell Transplantation at Columbia University Irving Medical Center (CUIMC). She completed a NLM-funded Post-Doctoral Fellowship and Masters Program in Biomedical Informatics at Columbia University, and has expertise in bioinformatics, machine learning, and computational genomics. Her lab applies novel computational approaches to high-throughput genomic data in pediatric oncology to better understand tumor biology, identify new therapeutic targets, and transform the role for precision oncology in pediatrics. Specifically, she has focused on network-based inference of tumor dependencies, biomarker development, and elucidation of drug mechanism of action to guide therapy selection across high-risk pediatric cancers (osteosarcoma, AML, glioma). She has experience in bulk and single-cell RNA sequencing technologies and computational analyses, as well as experimental methods to pharmacologically (i.e. high-throughput drug screens, PLATE-seq) or genetically (i.e. CRISPR) target predicted tumor regulators with the ultimate goal of defining tumor heterogeneity and cell-state specific therapies for high-risk pediatric tumors. Her clinical expertise is in treating children with sarcoma, with a focus on using tumor biology and molecular characterization to drive treatment.

FRIDAY, JUNE 23 • 9:45 - 9:55 AM
Panel: Biomarkers for Risk Stratification
A systems biology approach to defining tumor heterogeneity and prognostic and targetable master regulator signatures from bulk and single-cell RNAseq in osteosarcoma

FRIDAY, JUNE 23 • 3:00 - 5:00 PM
Breakout Discussion Group
Leveraging Computational Biology to Accelerate OS Discovery

FRIDAY, JUNE 23 • 5:10 - 5:20 PM
Computational Biology Discussion Summary
Dr. Nino Rainusso is a member of the Pediatric Solid Tumor Team and Co-Director of the Cardio-Oncology Program at Texas Children’s Hospital - Baylor College of Medicine. Their laboratory focuses on understanding the role of cancer stem cells (CSCs) in both tumor development and chemotherapy resistance in pediatric sarcomas. They have developed several patient-derived xenograft (PDX) models of osteosarcoma, Ewing sarcoma, rhabdomyosarcoma, and soft-tissue sarcomas. Their laboratory currently participates in a multi-institutional PDX project aimed to characterize and to evaluate the impact of novel therapeutic approaches in pediatric cancers using PDXs.

FRIDAY, JUNE 23 • 3:00 - 5:00 PM
Breakout Discussion Group
Turning Pain into POWER (Patients with Osteosarcoma Who Enable Research): Engaging patients to power research with their data and samples.

FRIDAY, JUNE 23 • 5:20 - 5:30 PM
Patient Powered Research Discussion Summary

Dr. Rankin graduated in 1999 from the University of Dundee. His basic surgical training was in Newcastle upon Tyne followed by an MD investigating the cellular biology of bone metastases. Dr. Rankin completed his higher specialist training in Perth and Dundee, Scotland followed by a return to the North East of England as NIHR Academic Clinical Lecturer.

FRIDAY, JUNE 23 • 3:00 - 5:00 PM
Breakout Discussion Group
Turning Pain into POWER (Patients with Osteosarcoma Who Enable Research): Engaging patients to power research with their data and samples.

SATURDAY, JUNE 24 • 8:20 - 8:30 AM
Panel: Local Control
SarcoSIGHT

Dr. Reed is the Chair of the Department of Individualized Cancer Management and Clinical Co-Leader of the Evolutionary Therapy Center of Excellence at Moffitt. He is a Senior Member at Moffitt Cancer Center, and a Professor of Oncologic Sciences at the University of South Florida. He takes care of young adult sarcoma patients. He enjoys collaborative, translational research and works with the Children’s Oncology Group Bone Tumor Committee and the National Pediatric Cancer Foundation’s Sunshine Project. He looks forward to joining Memorial Sloan Kettering this summer.

SATURDAY, JUNE 24 • 11:00 AM - 12:00 PM
Panel: Patient Perspectives: An Honest Q&A with OsteoWarriors
Moderator

#OutThinkOsteosarcoma | 43
Marta Roman Moreno is a postdoc fellow in the Sweet-Cordero Lab at UCSF. She has a BSc in Biochemistry from the University of Granada in Spain, and a MSc and PhD in Biomedical Research from the University of Navarra (Spain). The key focus of her work is to define key regulators of metastasis in osteosarcoma and determine the interplay between the immune system and non-immune tumor stroma, and how these compartments of the tumor microenvironment (TME) promote metastasis as well as mediate extrinsic mechanisms of resistance to anti-cancer therapy, with a specific focus on lung metastasis. These investigations are focused in two primary disease interests of breast cancer and osteosarcoma, due to the poor long-term outcomes for patients with metastatic forms of these cancers.

**SATURDAY, JUNE 24 • 9:35 - 10:35 AM**
Panel: OutSmarting 2023
CRISPRi screening to identify vulnerabilities in metastatic osteosarcoma

Dr. Regan received his DVM degree from the University of Georgia, and subsequently completed his residency training in veterinary anatomic pathology and PhD in the Department of Microbiology, Immunology, and Pathology (MIP) at Colorado State University. In 2018 he accepted his current faculty position in the Flint Animal Cancer Center within the College of Veterinary Medicine and Biomedical Sciences at Colorado State University. The focus of Dr. Regan’s laboratory is to increase our understanding of the interplay between the immune system and non-immune tumor stroma, and how these compartments of the tumor microenvironment (TME) promote metastasis as well as mediate extrinsic mechanisms of resistance to anti-cancer therapy, with a specific focus on lung metastasis. These investigations are focused in two primary disease interests of breast cancer and osteosarcoma, due to the poor long-term outcomes for patients with metastatic forms of these cancers.

**FRIDAY, JUNE 23 • 2:10 - 2:20 PM**
Panel: Comparative Oncology
Dual targeting of lung fibroblasts and macrophages for treating metastatic osteosarcoma

Ryan Roberts, MD, PhD, is a physician in the Division of Hematology, Oncology and Blood and Marrow Transplant at Nationwide Children’s Hospital and a principal investigator in the Center for Childhood Cancer and Blood Diseases at the Abigail Wexner Research Institute at Nationwide Children’s. Dr. Roberts is an assistant professor of pediatrics and a member of the Translational Therapeutics research program at The Ohio State University Comprehensive Cancer Center – Arthur C. James Cancer Hospital and Richard J. Solove Research Institute. He is a graduate of the Medical Scientist Training Program at The Ohio State University College of Medicine. He completed his residency in pediatrics and a Pediatric Hematology, Oncology and Bone Marrow Transplant fellowship at Nationwide Children’s. A physician-scientist, Dr. Roberts specializes in treating childhood sarcomas. He has led the Osteosarcoma Biology Committee of the Children’s Oncology Group since 2020.

**FRIDAY, JUNE 23 • 11:10 - 11:20 AM**
Panel: Preclinical Models
De-centralized, multi-institutional clinical trials in mice: the PROXC consortium

**SATURDAY, JUNE 24 • 9:35 - 10:35 AM**
Panel: OutSmarting 2023
Combination therapies targeting heterogeneity and lung environment in metastatic osteosarcoma

Marta Roman Moreno is a postdoc fellow in the Sweet-Cordero Lab at UCSF. She has a BSc in Biochemistry from the University of Granada in Spain, and a MSc and PhD in Biomedical Research from the University of Navarra (Spain). The key focus of her work is to define key regulators of metastasis in osteosarcoma and determine the vulnerabilities that can diminish the survival of metastatic cells. Using mouse models, cell lines derived from patient samples (PDXs) and pooled in vivo CRISPR screens, she has been able to identify several potential genetic vulnerabilities in the context of metastatic osteosarcoma.
Daniel Saptari is a rising Junior in high school. He was diagnosed with high-grade osteosarcoma of the left femur in July 2020, in the midst of a COVID-19 lockdown (remember those?) and prime summer months playing tennis, biking, and running. He underwent 9 months of MAP chemotherapy, MTP immunotherapy, and several bone-regenerative surgeries (over the span of 15 months), which did not end up succeeding. He is currently 2 years NED and awaiting a rotationplasty surgery, and as of late (and throughout the past years) stays busy with science - competing on the Science Olympiad team and doing random projects.

Antonella Rotolo, MD, PhD, is a Research Assistant Professor of Immuno-Biology at the University of Pennsylvania School of Veterinary Medicine. Dr. Rotolo holds an MD in Internal Medicine with clinical subspecialty in Hemato-Oncology. She earned a PhD in Immunology at Imperial College London, UK, where she worked on developing enhanced Chimeric Antigen receptor (CAR) immunotherapies using invariant Natural Killer T (iNKT) cells. She then joined the Center for Cellular Immunotherapies and the Mason lab at University of Pennsylvania for her postdoc. Building on her 10-year experience in iNKT-based adoptive cell therapies, Dr. Rotolo has established a canine iNKT model that will provide a valuable link between mouse preclinical studies and human clinical trials. Her goal is to accelerate clinical application of novel iNKT and CAR therapies for the treatment of canine and human patients with otherwise incurable cancers.

SATURDAY, JUNE 24 • 2:00 - 2:10 PM
Panel: Immunotherapies
Development of universal CAR-invariant NKT cells for safe and effective immunotherapy of pediatric and canine osteosarcoma

David Shulman, MD
PHYSICIAN
Dana-Farber Cancer Institute

Dr. Shulman is a pediatric oncologist with a focus on care of adolescents and young adults with sarcomas and translational research for this group of patients. He is a junior faculty member at the Dana-Farber/Boston Children’s Cancer and Blood Disorders Center. His clinical focus is on the care of patients under 40 years of age with sarcomas. Dr. Shulman’s research focuses on development of clinical trials of novel agents for AYAs with sarcomas and clinical development of novel biomarkers. In close partnership with the Crompton Lab at DFCI, Dr. Shulman has led the clinical validation of circulating tumor DNA as a prognostic biomarker in Ewing sarcoma and osteosarcoma. He now leads a national study known as the LEOPARD study for validation of ctDNA as a prognostic marker in bone sarcomas.

FRIDAY, JUNE 23 • 10:15 - 10:25 AM
Panel: Biomarkers for Risk Stratification
Circulating tumor DNA as a prognostic biomarker for risk stratification in localized osteosarcoma: The LEOPARD Study
Dr. Joanne Tuohy is a veterinary surgical oncologist and an immunologist. She believes in the strength of a One Health approach to comparative oncology research to benefit both veterinary and human patients with cancer. The overall goal of her research is to improve cancer outcomes for veterinary and human patients via tumor ablation and immunotherapy, especially for patients with osteosarcoma and lung tumors. Specifically, her research team investigates the use of two non-thermal tumor ablation techniques - histotripsy and high-frequency irreversible electroporation (H-FIRE). Her research focuses on developing histotripsy as a tumor ablation modality for the primary tumor in osteosarcoma, and on developing H-FIRE as a tumor ablation modality for metastatic tumors in osteosarcoma and primary lung tumors. Additionally, her research also evaluates the immune response after histotripsy and H-FIRE ablation of tumors. Her research team utilizes veterinary clinical trials, preclinical models and in-vitro systems to explore the ablative and immunomodulatory effects of histotripsy and H-FIRE.

SATURDAY, JUNE 24 • 8:40 - 8:50 AM
Panel: Local Control
Investigating Histotripsy as the First Non-Invasive, Non-Thermal, Non-Ionizing Ablation for Osteosarcoma: Radiological and Histological Findings
Dr. Kristen VanHeyst received her medical degree from New York College of Osteopathic Medicine. She followed this with a pediatric residency and chief resident position at Stony Brook Children’s Hospital in Stony Brook, NY. Dr. VanHeyst completed her Pediatric Hematology/Oncology fellowship in 2019 at University Hospitals/Rainbow Babies and Children’s Hospital in Cleveland, OH. As a fellow, she joined Dr. Alex Huang’s laboratory with a primary interest in metastatic osteosarcoma and a desire to become a translational therapeutics-oriented clinical physician-scientist. She was appointed as an Assistant Professor in Pediatrics at Case Western Reserve University School of Medicine in 2019. She is also a member of the Immune Oncology Program at Case Comprehensive Cancer Center. Dr. VanHeyst is a former NIH K12 recipient from 2019-2022. She continues her research efforts in understanding the role of the tumor microenvironment in osteosarcoma. She is also the PI of a Phase I/II investigator initiated clinical trial at her institution.

SATURDAY, JUNE 24  •  3:55 - 4:05 PM
Panel: Molecularly Targeted Therapies
Modulating TGF-β Signaling in the Tumor Microenvironment as an Effective Therapy for Osteosarcoma

Dr. Volchenboum is an associate professor of pediatrics and the associate chief research informatics officer for the Division of Biological Sciences at the University of Chicago. He is the Dean of Masters Programs, and he designed and launched the UChicago Master’s in Biomedical Informatics. His clinical specialty is pediatric hematology / oncology, caring for kids with cancer and blood diseases. His research group includes the University of Chicago’s Data for the Common Good (D4CG), dedicated to building communities, platforms, and ecosystems that maximize the potential of data to drive discovery and improve human health. D4CG’s flagship project, the Pediatric Cancer Data Commons is dedicated to liberating and democratizing international data for pediatric malignancies. He is the director of the Informatics Core for the Clinical and Translational Science Award (CTSA), and he is director of the UChicago Clinical Informatics fellowship program.

SATURDAY, JUNE 24  •  9:35 - 10:35 AM
Panel: OutSmarting 2023
Data commons to support new treatments for osteosarcoma

Isabel Wolf joined MIB Agents in April of 2021 where she serves the osteosarcoma community as MIB’s Director of Programs. She came to MIB via the Matthew Lehman Osteosarcoma Fund. OsteoAngel Matthew called her “My second Mom.” Isabel was an artist manager of opera singers and classical musicians for more than 30 years and has served on not-for-profit boards of directors in the US and Europe. She vowed to Matthew that she would help Make it Better for other children and their families, suffering with osteosarcoma.

FRIDAY, JUNE 23  •  8:30 - 8:40 AM
Panel: MIB Agents Programs
Patient Programs

Isabel Wolf
DIRECTOR OF PROGRAMS
MIB Agents

Sam Volchenboum, MD, PhD
DEAN OF MASTER’S EDUCATION
ASSOCIATE PROFESSOR OF PEDIATRICS
DIRECTOR, DATA FOR THE COMMON GOOD
ASSOCIATE DIRECTOR, INSTITUTE FOR TRANSLATIONAL MEDICINE
ASSOCIATE CHIEF RESEARCH INFORMATICS OFFICER
Data for the Common Good
The University of Chicago

Kristen VanHeyst, DO
ASSISTANT PROFESSOR
University Hospitals/Rainbow Babies and Children’s Hospital
Fan Yang is an Associate Professor with tenure at Stanford University with joint appointments in the Departments of Orthopaedic Surgery and Bioengineering. She is the founder and Director of Stanford Stem Cells and Biomaterials Engineering Laboratory, and also Co-director of Stanford NIH Biotechnology Training Program. Her research seeks to develop hydrogels with unique micro- and nano-scale properties to promote stem cell differentiation, tissue regeneration and immunomodulation, with a focus on musculoskeletal diseases. Her lab also harnesses biomaterials to create 3D cancer models with in vivo-mimicking phenotype and drug responses. Such 3D models could enable discovering novel druggable targets that would otherwise be missed using conventional 2D culture, and enable high-throughput drug screening with reduced cost and time than animal models. Prior to joining Stanford, Dr. Yang received her Ph.D. in Biomedical Engineering from Johns Hopkins University, and then completed a postdoctoral fellowship at MIT under Prof. Robert Langer. In recognition of her innovation, she has been recognized by numerous awards including Fellow of American Institute for Medical and Biological Engineering, MIT TR35 Global list honoree, National Science Foundation CAREER award, Young Investigator Award from Society for Biomaterials, Biomaterials Science Lectureship Award, Young Investigator award from Alliance for Cancer and Gene Therapy, Ellen Weaver Award by the Association for Women in Science, Baxter Faculty Scholar Award, the McCormick Faculty Award, Stanford Asian American Faculty Award, and the Basil O’Connor Starter Scholar Research Award etc.

FRIDAY, JUNE 23 • 11:30 - 11:40 AM
Panel: Preclinical Models
Tissue engineering strategies for elucidating osteosarcoma biology and drug discovery

Dr. Janet Yoon is a clinical professor and the medical director of the Pediatric Musculoskeletal Tumor Program at City of Hope. She is also the director of the pediatric clinical trials program at City of Hope.

SATURDAY, JUNE 24 • 2:20 - 2:30 PM
Panel: Immunotherapies
GD2-SADA:177Lu-DOTA drug complex in patients with recurrent or refractory osteosarcoma and other GD2-expressing solid tumors

In her role as a pediatric oncologist at UCSF Benioff Children’s Hospitals in San Francisco, Dr. Young has directly participated in the care of numerous patients with metastatic osteosarcoma and has witnessed immense suffering due to this disease. She strongly believes that patients and their families deserve better treatment options, and she is uniquely positioned to pursue a career centering on this goal. She is conducting translational research in the laboratory of Dr. Alejandro Sweet-Cordero at UCSF, where they have also developed a model of osteosarcoma metastasis as well as a comprehensive panel of patient-derived OS cell lines. These models serve as the foundation for her work elucidating the role of the STING pathway in OS immune evasion and designing novel immuno-oncology therapies to treat metastatic OS. In her career, she plans to start an independent research program studying tumor-immune interactions in OS because of the enormous translational potential she sees in this field.

SATURDAY, JUNE 24 • 1:40 - 1:50 PM
Panel: Immunotherapies
Tumor cGAS-STING Function Shapes Inflammatory Signaling Capacity in Osteosarcoma
The mission of The Power of Will is simple – to support and enhance the lives of sarcoma patients and their loved ones. Established in honor of Will Hudson, The Power of Will is on a steadfast pursuit to change the narrative for sarcoma patients.

Follow along with us!

www.thepowerofwill.org
MIB Agents Organization

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Beth Odeh-Frikert, PharmD
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PHARMA PARTNERING AT GENENTECH

Gigi Jeffries, PhD

Greg Kaplan
DAD TO SYDNEY who battled Osteosarcoma for over 2 years
FINANCE & INVESTMENT PROFESSIONAL

John H. Healey, MD, FACS
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We advance potentially transformative therapies to help improve the lives of people living with cancer. Our current focus centers around:

- Lung Cancer
- Multiple Myeloma and Other Blood Cancers
- Prostate Cancer

Scan and see how Sanofi never settles in our pursuit of scientific breakthroughs to seek solutions for people living with cancer.

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With Heartfelt Appreciation

These families have graciously and generously supported the attendance of other OsteoWarrior families who would not have been able to experience FACTOR without them. Thank you for sharing the gift of belonging, education, and resources!

Nathan’s Story

The Bisaga Family

The Holmes Family

The Johnson & Nulty Families & Ted Nulty Security
# FACTOR Volunteer Agents

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<td>CARETAKERS OF FACTOR SHIPMENTS</td>
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<td>Joe O’Hannigan</td>
<td>RUNNER/TRANSPORT</td>
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<td>Joey Cristo</td>
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<td>John Graham</td>
<td>OPERATIONS</td>
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<tr>
<td>Linda Kennington</td>
<td>PHOTOGRAPHY, LUMINARIA, RIBBONS DESIGN CONSULTANT</td>
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<tr>
<td>Tedd Kapinos</td>
<td>FLORAL &amp; EVENTS, WELLNESS CONTRIBUTOR</td>
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<td>Mark Atkins</td>
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<td>Mary O’Hannigan</td>
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<td>Matteo Trucco, MD</td>
<td>CO-CHAIR, SCIENCE</td>
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<td>Sarah Nickels</td>
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<td>Rebecca Rogers</td>
<td>ONSITE WELCOME &amp; REGISTRATION</td>
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<td>Sarah Hanna</td>
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<td>HQ LEAD GAMER AGENT</td>
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<tr>
<td>Vanessa Valenti</td>
<td>CHECK IN/VOLUNTEER COORDINATOR</td>
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<td>Donny Miller &amp; Team/730 Eddy</td>
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<td>Ethan &amp; Liberty/730 Eddy</td>
<td>HQ PHOTOGRAPHY &amp; OVERALL VIDEOGRAPHY</td>
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“Our deep gratitude to Jasper & Prudence for their ongoing support of MIB Agents and our missions all year long, and for making our FACTOR Conference beautiful every year!”
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