



Orthopaedic Oncology Division Update

Kristy Weber, MD



Orthopaedic Oncology Faculty



Kristy Weber, MD, FACS



Cara Cipriano, MD

Musculoskeletal Oncology at Penn: Continuous Evolution toward Excellence

The Orthopaedic Oncology clinical service at Penn is currently comprised of Dr. Kristy Weber as well as Sasha Mendez, Administrative Coordinator; Kate Barrie, PA-C; and Chrissy Vanella, RN. We are a key part of a larger multidisciplinary team who care for patients of all ages with bone and soft tissue tumors in all anatomic areas of the body. This includes the care of patients with benign and malignant primary tumors as well as patients with metastatic bone disease.

The multidisciplinary clinical team that treats patients with bone or soft tissue sarcomas now meets weekly in a virtual setting for a clinical care videoconference to discuss the presentation and differential diagnoses of new patients as well as the ongoing multimodal therapy for existing patients. Given the COVID gathering restrictions this year, we've actually increased participation in the virtual conference with ~25 different team members from Penn and its affiliated hospitals who are interested in bone and soft tissue tumors. A Sarcoma leadership group meets monthly to work on quality initiatives and clinical pathways to improve the overall delivery of care to our patients. Our primary quality metric this year is 'collection of pre-treatment biopsy samples for research' as we build a tissue bank of valuable 'untreated' specimens to study sarcoma. This can be compared to surgical resection specimens of sarcoma which have often been treated with preoperative radiation or chemotherapy. We also track other metrics such as 'time to biopsy' and 'time to new patient appointment'. Many of our patients can now get a 'same day' biopsy facilitated by our musculoskeletal radiology team which is a big patient satisfier.

Our Penn Sarcoma team profile has changed this year. Dr. Robert Wilson left Penn Ortho in December, 2020 to take a new position in Jacksonville, Florida that is affiliated with

MD Anderson Cancer Center. We are sorry to lose a great surgeon-educator and wish Dr. Wilson and his family success in his next chapter. Dr. Ronnie Sebro, our radiology expert in musculoskeletal tumors has also left Penn. To balance these changes in our program, we will welcome Dr. Cara Cipriano from Washington University in St. Louis to be the new Chief of Orthopaedic Oncology on September 1, 2021. She is a nationally recognized expert in the treatment of patients with musculoskeletal tumors and is also fellowship trained in hip and knee replacement. She also has a passion for medical student education and will have a formal role in the Perelman School of Medicine. We welcomed Dr. Saeed Dianat as the new Director of Musculoskeletal Tumor Imaging in the Fall of 2020. Dr. Dianat completed his musculoskeletal radiology fellowship at Brigham and Women's Hospital in Boston and has a passion for quality improvement. In addition, the CHOP team of sarcoma scientists is growing with the addition of Dr. Ted Laetsch in September, 2020. He moved from UT-Southwestern and is the new leader of the CHOP Developmental Therapeutics Program. He previously trained at CHOP and will also be establishing a new Very Rare Malignant Tumors program.

The core sarcoma research team continues their work and has been productive with new publications, grants and awards. Drs. Karin Eisinger and Malay Haldar continue their ROI-funded projects in sarcoma and are constantly looking for additional grant funding. We have a monthly sarcoma research seminar with scientists working on the Penn Med, CHOP, and Penn Vet campuses. There are ongoing clinical trials for patients with soft tissue sarcoma with the SARC trial combining pembrolizumab and IMRT for undifferentiated pleomorphic sarcoma as well as a clinical trial for patients with desmoid tumors using nirogacestat. Additional human trials are in the pipeline for osteosarcoma, soft tissue sarcoma, and chondrosarcoma. The canine trial for dogs

with soft tissue sarcoma using an NFkB inhibitor is slowly accruing patients during the pandemic.

Finally, philanthropic support from grateful patients is critical for our research efforts and we are thankful for their generosity. In 2020, our patient and family Sarcoma Advocacy group raised over \$110,000 to support sarcoma research at Penn Med/Penn Vet/CHOP despite changing at the last minute to a virtual event. This year the 6th annual event is May 23, 2021 and will likely be a hybrid live/virtual celebration at Wilson Farm Park in Wayne, PA and online for those who can't attend. www.stepstocuresarcoma.com/

Orthopaedic Oncology sites and upcoming lecture:

Patients are seen in person or via telemedicine 5 days per week with clinic locations at PCAM and Radnor. Surgeries are performed at HUP and CHOP (along with Dr. Alex Arkader). A collaboration with the Philadelphia Shriners Hospital to evaluate and treat patients with bone or soft tissue tumors has continued this year. The Penn Orthopaedic Oncology Visiting Professor for 2020, Dr. Carol Morris, Chief of Orthopaedic Oncology at Johns Hopkins, was postponed until we can have her visit in person.

Recent Publications:

1. **Stadtmauer EA, Fraietta JA, Davis MM, Cohen AD, Weber KL, Lancaster E, Mangan PA, Kulikovskaya I, Gupta M, Chen F, Tian L, Gonzalez VE, Xu J, Jung IY, Melenhorst JJ, Plesa G, Shea J, Matlawski T,**

Cervini A, Gaymon AL, Desjardins S, Lamontagne A, Salas-Mckee J, Fesnak A, Siegel DL, Levine BL, Jadowsky JK, Young RM, Chew A, Hwang WT, Hexner EO, Carreno BM, Nobles CL, Bushman FD, Parker KR, Qi Y, Satpathy AT, Chang HY, Zhao Y, Lacey SF, June CH CRISPR-engineered T cells in patients with refractory cancer. *Science*. Feb, 2020

2. **Ye S, Liu Y, Fuller A, Katti R, Ciotti G, Chor S, Alam Z, Lorent K, Devalaraja S, Weber K, Pack M, Haldar M, Eisinger-Mathason TSK:** TGFB and Hippo pathways cooperate to enhance sarcomagenesis and metastasis through the hyaluronan mediated motility receptor (HMMR). *Molecular Cancer Research*, 2020, Jan 27 (in press).
3. **Devalaraja S, To TKJ, Folkert IW, Natesan R, Alam MZ, Li M, Tada Y, Budagyan K, Dang MP, Zhai L, Lobel GP, Ciotti GE Eisinger-Mathason TSK, Asangani IA, Weber K, Simon MC, Haldar M:** Tumor-derived retinoic acid regulates intratumoral monocyte differentiation to promote immune suppression. *Cell*, 180:1098-1114, 2020.
4. **Othman S, Bricker JT, Elfanagely O, Azoury SC, Weber K, Kovach S:** Allograft alone vs. allograft with intramedullary vascularized fibular graft for lower extremity bone cancer: A systematic review and meta-analysis. *J Plast, Reconstr & Aesthet Surg*. 73:1221-1231, 2020.