



Orthopaedic Oncology Division Update

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Orthopaedic Oncology Faculty



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Musculoskeletal Oncology at Penn: Building a Comprehensive Team

The Orthopaedic Oncology clinical service at Penn is comprised of Dr. Kristy Weber and Dr. Robert Wilson as well as Sarah Borgia, MHA, Administrative Coordinator; Kate Barrie, PA; and April Chambers, RN. We are part of a larger multidisciplinary team who care for patients of all ages with bone and soft tissue tumors. 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 continues to meet weekly on PCAM South 12 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. 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 'time to biopsy' as we focus on providing expedient care for our patients. Most of our patients can now get a 'same day' biopsy which facilitates their overall care.

There have been critical additions to the Penn Sarcoma team this year. Robert Maki, MD, PhD joined the team in January, 2020 as the Director of the Medical Oncology Sarcoma program. He is an international leader in the clinical management and research of sarcomas. He has extensive experience in drug development and has been instrumental in the evaluation of various treatments for sarcoma and gastrointestinal stromal tumors. Dr. Maki serves nationally as the Director of Translational Research with the Sarcoma Alliance for Research through Collaboration (SARC). Patrick Grohar, MD, PhD as joined the CHOP team in July, 2019 as Director of Translational Research for the Center for Childhood Cancer Research. He is a basic and translational scientist focused on developing innovative therapies for children and adolescents with Ewing

sarcoma. He most recently worked at the Van Andel Institute and Helen De Vos Children's Hospital in Grand Rapids, MI. The addition of these two oncologists will allow us to more effectively move ideas from the laboratory to the clinic and engage in innovative clinical trials.

The core sarcoma research team continues their work and has been productive with new publications, grants and awards. Drs. Karin Eisinger and Malay Haldar are progressing with their RO1-funded projects in sarcoma. Dr. Haldar recently had a publication accepted to *Cell* on his work with the immune microenvironment. There are ongoing clinical trials for patients with soft tissue sarcoma with the SARC trial combining pembrolizumab and IMRT as well as a clinical trial for patients with desmoid tumors using nirogacestat. Dr. Sebro's hypoxia imaging trial for sarcoma is still accruing patients. The canine trial for dogs with soft tissue sarcoma using an NFκB inhibitor is also up and running.

Finally, philanthropic support from grateful patients is critical for our research efforts and we are thankful for their generosity. Our patient and family Sarcoma Advocacy group is in their 6th year of organization and planning to support sarcoma research at Penn Med/Penn Vet/CHOP. In 2019, over \$140,000 was raised and over 1000 people attended the annual Walk/Run. This year the event is May 31, 2020 at Wilson Farm Park in Wayne, PA. www.stepstocuresarcoma.com/

Orthopaedic Oncology sites and upcoming lecture:

Patients are seen 4 days per week with clinic locations at PCAM and Radnor. Surgeries are performed at HUP, the Philadelphia VA Hospital, and CHOP (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 is Dr. Carol Morris, Chief of Orthopaedic Oncology at Johns Hopkins.

Recent Publications:

Lewis DM, Pruitt H, Jain N, Ciccaglione M, McCaffery JM, Xia Z, Weber K, Eisinger-Mathason TS, Gerecht S: Feedback loop between hypoxia and matrix stress relaxation increases oxygen-axis migration and metastasis in sarcoma. *Cancer Res* 79:1981-1995, 2019.

Gomez-Roca CA, Italiano A, Le Tourneau C, Cassier PA, Toulmonde M, D'Angelo SP, Campone M, Weber KL, Loirat D, Cannarile MA, Jegg AM, Ries C, Christen R, Meneses-Lorente G, Jacob W, I, Ooi CH, Watson C, Wonde K, Reis B, Michielin F, Rüttinger D, Delord JP, Blay JY: Phase 1 study of Emactuzumab

single agent or in combination with Paclitaxel in patients with advanced/metastatic solid tumors reveals depletion of immunosuppressive M2-like macrophages. *Ann Oncol.* 2019 May 22 (epub ahead of print).

Jain V, Venigalla S, Sebro RA, Karakousis GC, Wilson RJ 2nd, Weber KL, Shabason JE: Association of health insurance status with presentation, treatment and outcomes in soft tissue sarcoma. *Cancer Med.*, 8:6295-6304, 2019.

Folkert IW, Devalaraja S, Linette GP, Weber K, Haldar M: Primary bone tumors: Challenges and opportunities for CART therapies. *J. Bone Min Res.*, 34:1780-1788, 2019.