A Comparative Understanding of Oncogenic MYC Signaling in the Metastatic Tumor Immune Microenvironment

CCTSI

Post-doctoral T32

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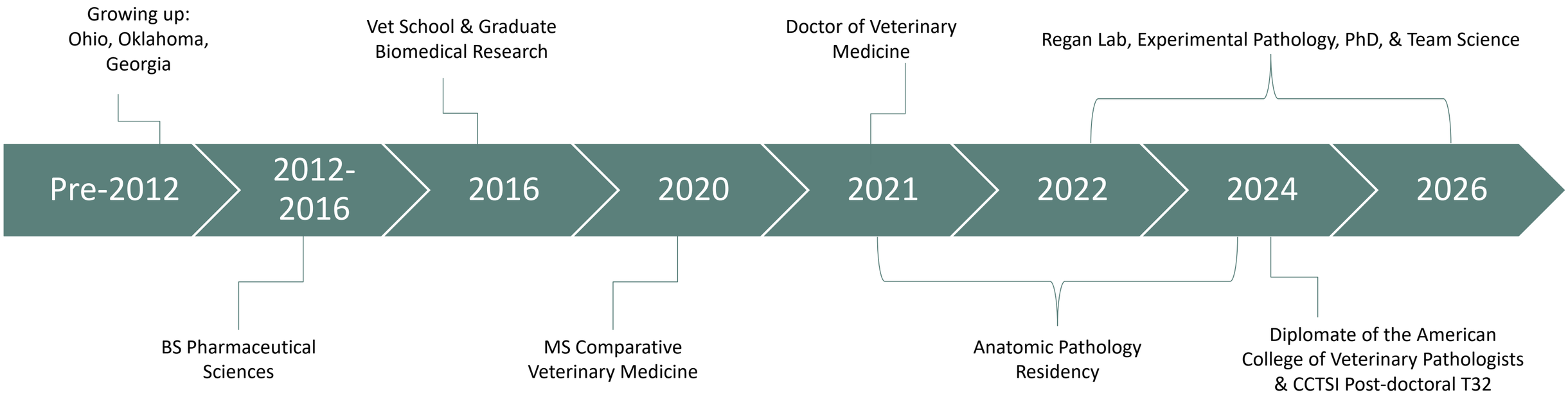
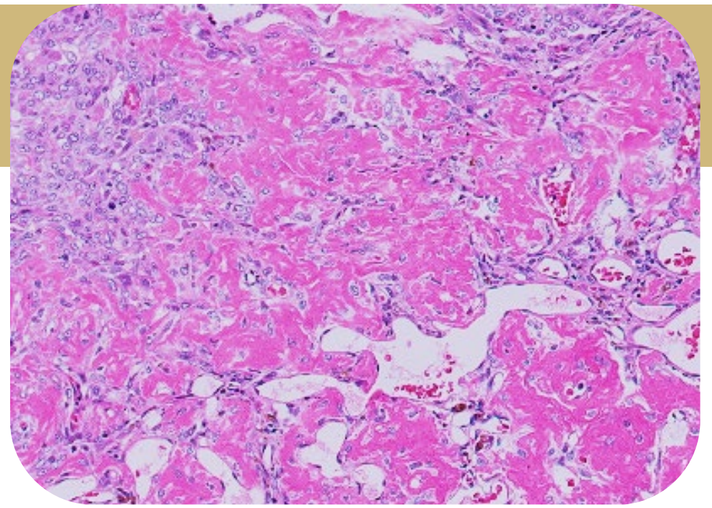
My Career Trajectory



Current Research



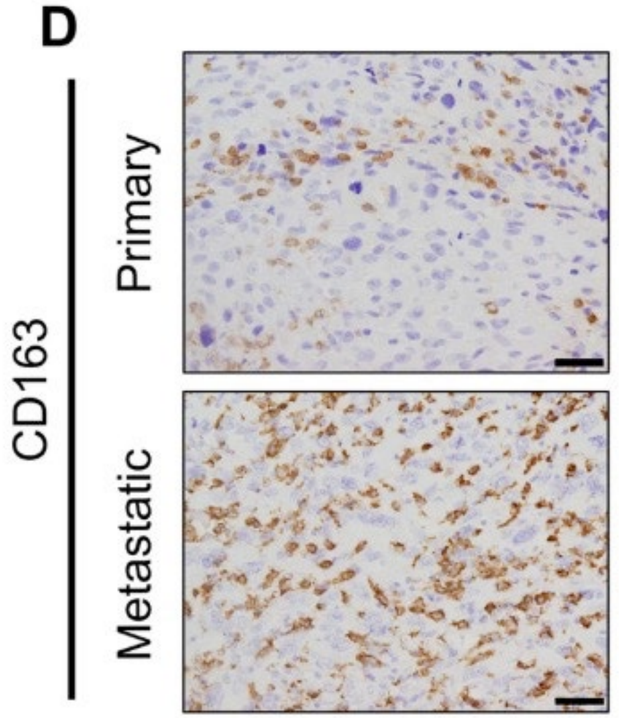
Osteosarcoma (OS) is similar in dogs and people

- **Most common malignant bone cancer**
- **Similar clinical outcomes between species**
- **No changes to patient outcomes in >40 years**

Prospects of MYC as a biomarker

- **Master transcription factor that plays a role in cancer immune regulation**
- **Genomic amplification confers poor prognosis in human OS and amplifications are described in primary canine cell lines**

Metastatic OS is immunosuppressive, rendering poor response to immunotherapy



Tatsuno et al. Cell Death & Disease 2024

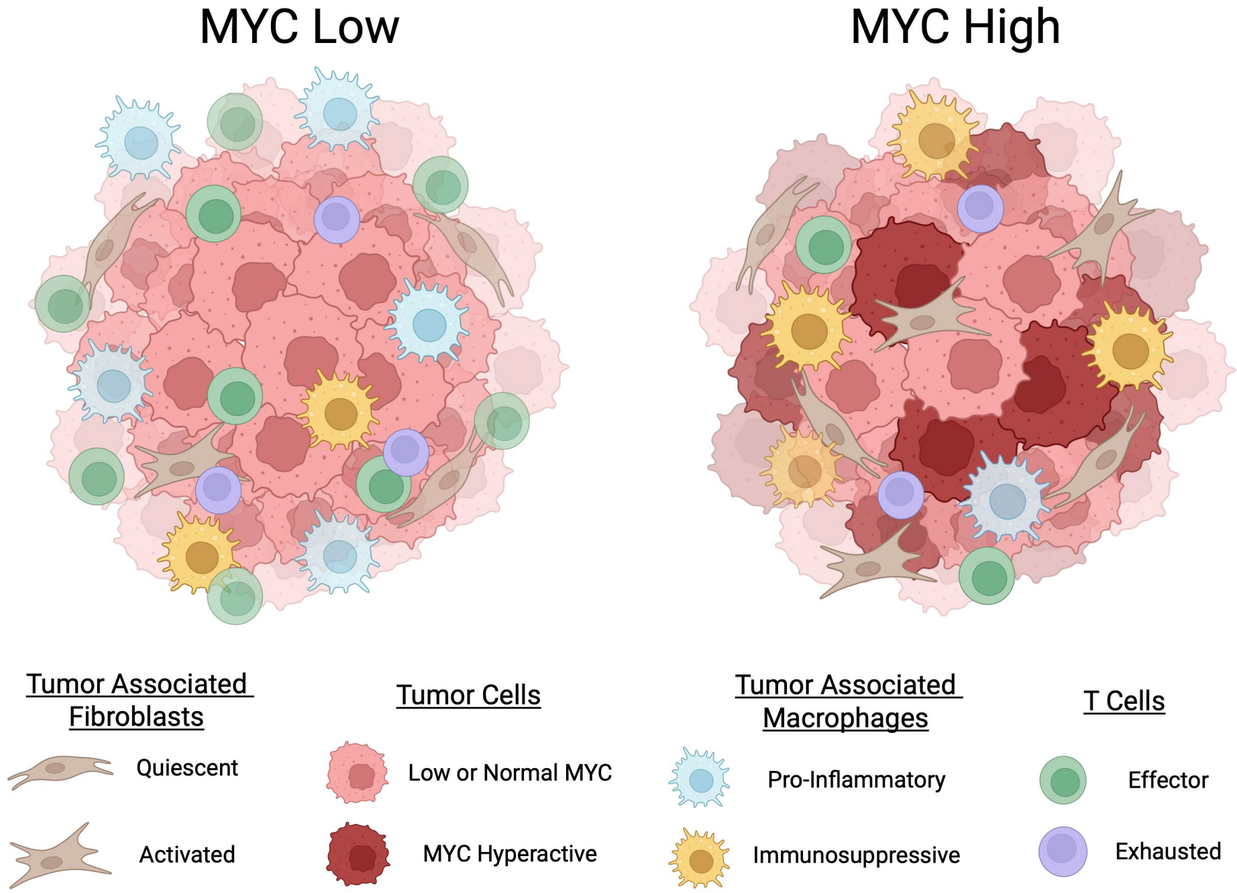
Current Research

Hypothesis:

MYC amplification in metastatic osteosarcoma leads to disease progression through the promotion of an immunosuppressive tumor microenvironment

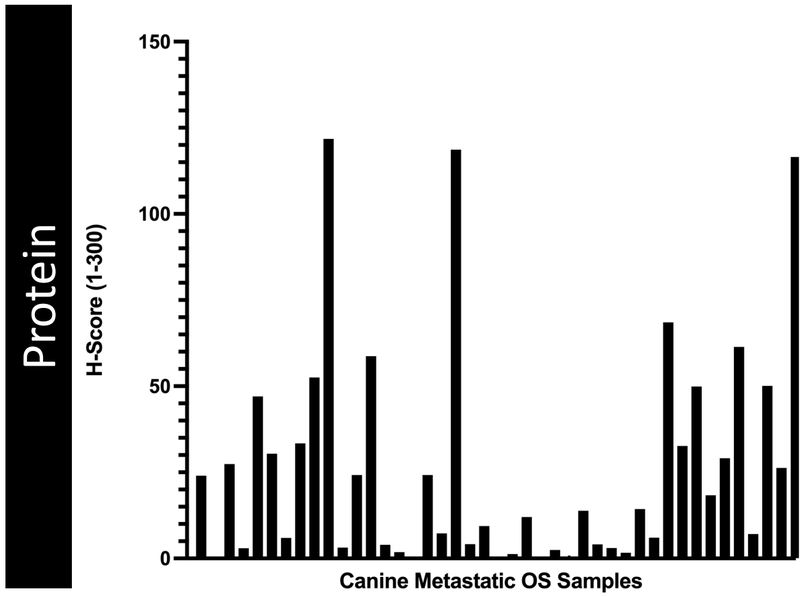
Goals:

Determine how MYC activation drives immune transcript modulation in the metastatic environment using the canine model and archived canine patient specimens

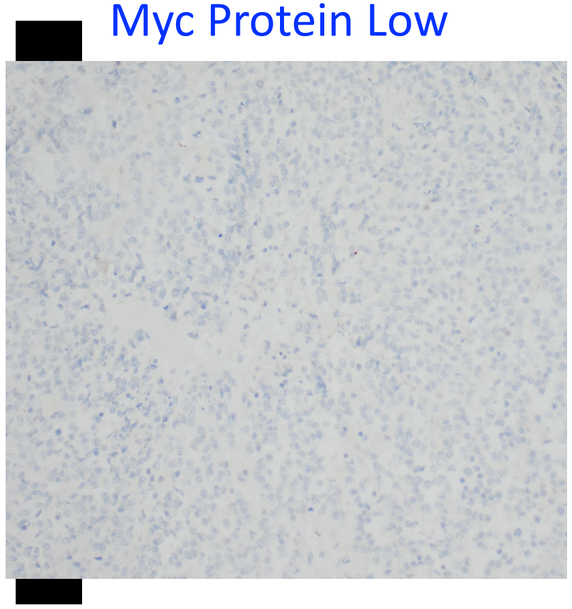


Data Summary

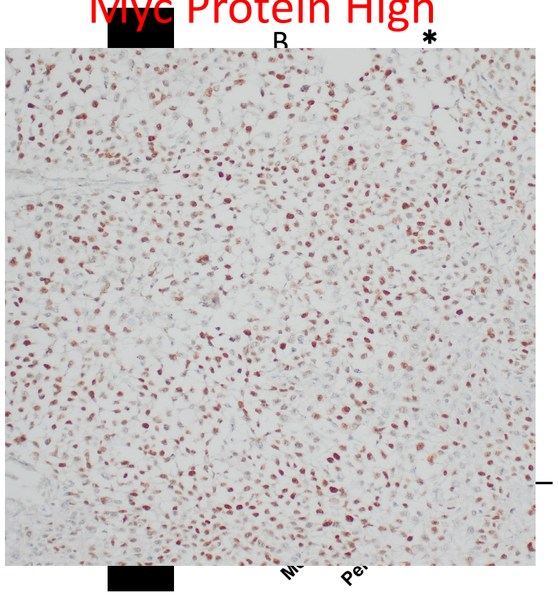
MYC is overexpressed in metastatic canine OS, but this is not driven by genomic amplification



Myc Protein Low

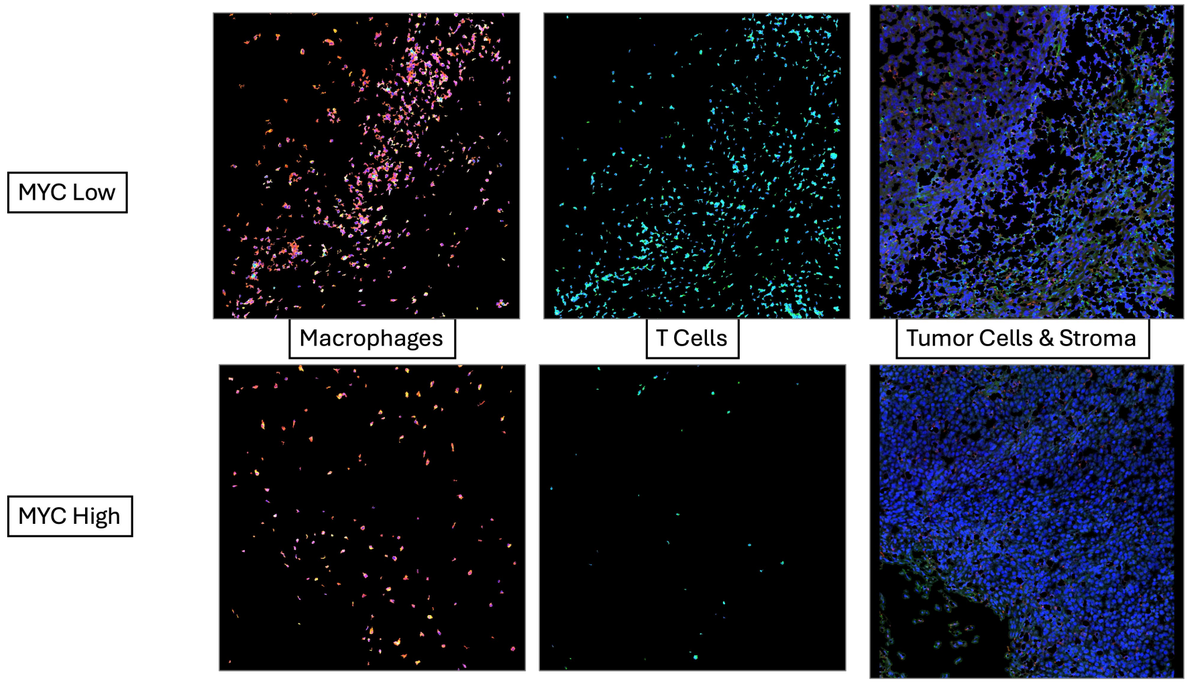


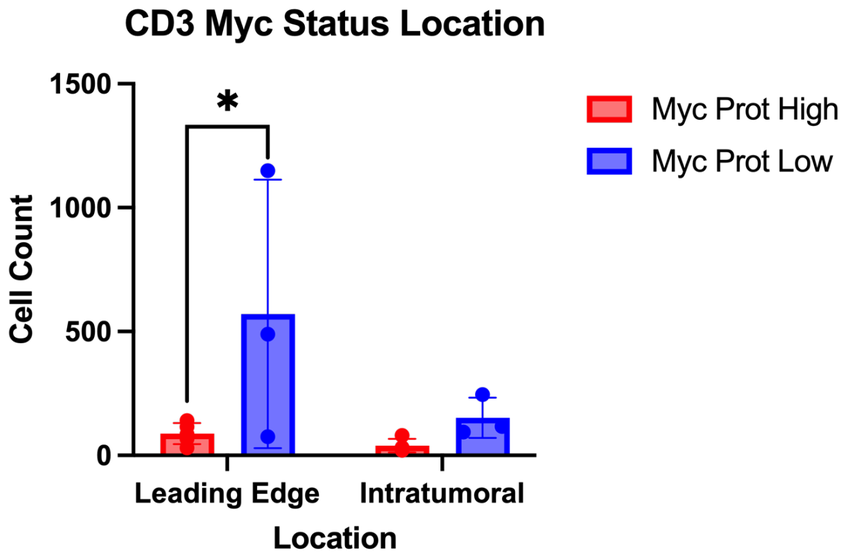
Myc Protein High



Data Summary

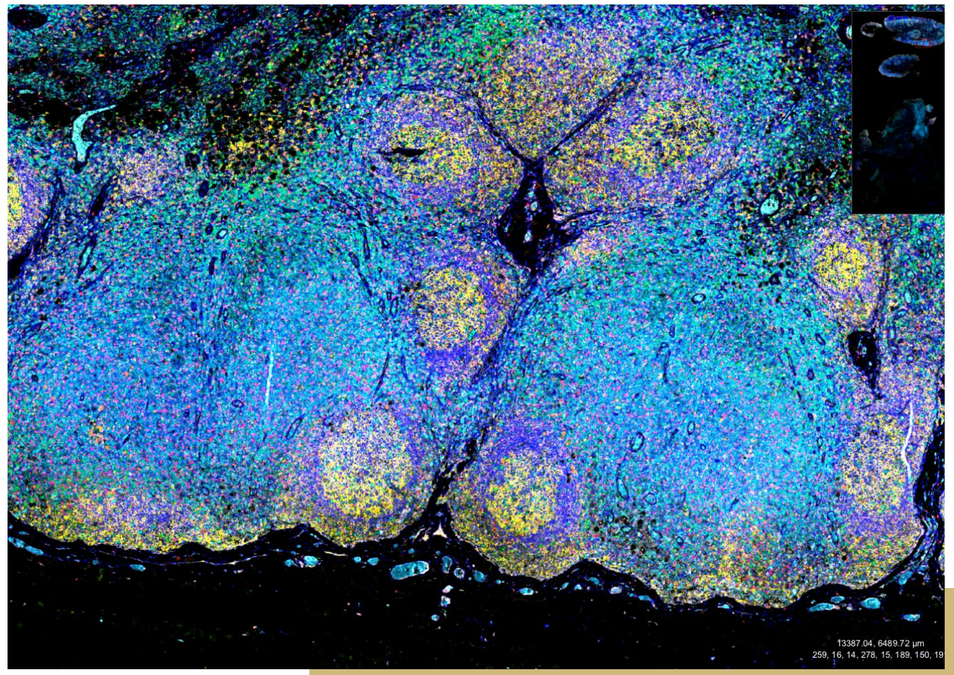
MYC high tumors have significantly lower CD3+ T cells at the tumor-lung interface





How K12/T32 Helped Me Reach My Scientific Goals

- Robust workshops
  - Team science, mentorship, scientific communication, etc.
- Cross-institutional collaborations
  - 7-plex immunofluorescence development with Human Immune Monitoring Shared Resource
  - Bone & Soft Tissue pathology externship with Michael Clay, MD
  - Data integration and partnership with Troy McEachron, PhD at the National Cancer Institute
- Bridging molecular and experimental pathology between species



How K12/T32 Helped Me Reach My Career Goals

- Incredible interdisciplinary collaborations
  - Contract research work for Ethos Discovery
  - Multi-institutional white paper on current *in vitro* OS cell models
- Competitive applicant in a challenging job market
  - Excellent response from both industry and academic faculty applications
- Overall career goals:
  - Establish and/or lead a comparative experimental and molecular pathology resource to support researchers
  - Leverage preclinical and spontaneous naturally occurring disease models

SARC
collaborating to cure sarcoma