



## RESEARCH TOPIC MECM17

### Unveiling the Impact of Intratumoral Microbiota on Soft Tissue Sarcoma Treatment: Challenges and Strategies to Enhance Chemotherapy Efficacy MECM standard

#### Research Area

Immunology

#### Laboratory name

Mucosal immunology and microbiota Lab

#### Research Supervisor

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#### Abstract

The intratumoral microbiome plays a role in cancer biology, influencing tumor progression, immunity, and therapy response. In soft tissue sarcomas (STSs), its impact is underexplored. This project investigates STS microbiota, focusing on doxorubicin (DOX) inactivation. We found histotype-specific microbiomes and isolated 46 strains from 20 tumors. Some of these inactivate DOX and induce chemoresistance in models. Aims: (1) characterize STS microbiota via 16S sequencing and isolate strains; (2) screen bacteria for DOX-inactivating activity and test drug efficacy in co-culture and ex-vivo PDTFs; (3) identify enzymes involved in DOX degradation; (4) link microbiome profiles to response in a retrospective STS cohort; (5) validate chemoresistance in vivo and test antibiotic co-treatment to restore DOX response.

#### Main technical approaches

While theoretical knowledge in tumor immunology and microbiology is preferred, it is not a mandatory requirement for this position.

#### Scientific references

1. Hanahan, D. Hallmarks of Cancer: New Dimensions. *Cancer Discov* 12, 31-46 (2022). doi. 10.1158/2159-8290.CD-21-1059
2. Nejman, D. et al. *Science* 368, 973-980(2020). doi.10.1126/science.aay9189

#### Type of contract

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