LS23-067 - Multiscale discovery of cellular and microanatomical determinants of metastasis

Zusammenfassung

Cancer spreading to other body parts is a major cause of cancer-related death. In this proposal, we will investigate why some breast cancer patients develop these dangerous spread-outs, called metastases. While some contributing factors inside the tumor are known, the role of the surrounding tissue environment is largely unknown. We are using patient samples and special mice that mimic human breast cancer to gather extensive data on individual tumor cells and their surroundings during metastasis formation. Our innovative imaging technology reveals even the tiniest local features and cellular interactions within metastatic tissues. Advanced artificial intelligence techniques then put together this multifaceted information, creating a detailed map of metastases. Using these maps, our project aims to improve our understanding of how cancer spreads, to identify patients at high risk of life-threatening metastasis and discover novel personalized treatments for breast cancer patients.

Wissenschaftliche Disziplinen:

Machine learning (50%) | Cancer research (35%) | Histology (15%)

Keywords:

metastasis, spatial profiling, tumor heterogeneity, metastatic niche, single-cell omics, breast cancer, microenvironment, representation learning, contrastive learning, computational biology, AI/ML

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Status: Vertrag in Vorbereitung

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Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter

https://www.wwtf.at/funding/programmes/ls/LS23-067/