

LMS Workgroup: LMS PDX Models & Cell Lines

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The goal of this Workgroup is to describe the landscape of available leiomyosarcoma cell lines and patient derived xenograft (PDX) models. This will be accomplished by:

- I. Performing detailed sequencing of LMS cell lines and PDXs.**
- II. Identifying which models are most relevant to the humans disease.**
- II. Collaboratively utilizing these models to further leiomyosarcoma preclinical research.**

Our initial aim is to perform transcriptional profiling of diverse leiomyosarcoma cell lines and draw comparisons between cell lines and primary tumors. To do this, we are encouraging individual laboratories to prepare RNA in a standard fashion and submit samples for commercial sequencing at the same company. Data will then be uploaded to a public repository, and analyzed collaboratively to identify cell lines with features that most consistently model leiomyosarcoma.

Standardized Protocol:

1. Grow LMS cells to 90-95% confluence under their optimal growth conditions.
2. Trypsinize and count cells. Pellet 2×10^6 cells, snap freeze and store at -80°C until further processing.
3. Prepare RNA from cells using the Qiagen RNeasy Plus Mini Kit (Cat. No. 74134) utilizing a Qiashreder homogenizer (Cat. No. 79654).
4. Perform Quality Control on purified RNA to quantify (e.g. nanodrop) and assess for intact RNA (e.g. TapeStation). Ensure that the RIN score is >8 for submitted samples.
5. Prepare $3.5 \mu\text{g}$ RNA in $35 \mu\text{L}$ volume. Submit samples to Novogene for paired-end 150 bp mRNA sequencing.
6. Once sequencing results are obtained, upload fastq files to the NCBI Gene Expression Omnibus (<https://www.ncbi.nlm.nih.gov/geo/info/seq.html>).

Raw data can be shared between Workgroup collaborators by providing a GEO accession number (for an exemplary dataset: GSE143968). All data will be collaboratively analyzed and results made available to all Workgroup members for evaluation, comparison to primary tumors and determination of models best suited to further study. All laboratories interested in LMS research are encouraged to submit their commercial or personal cell lines for this collaborative research project.