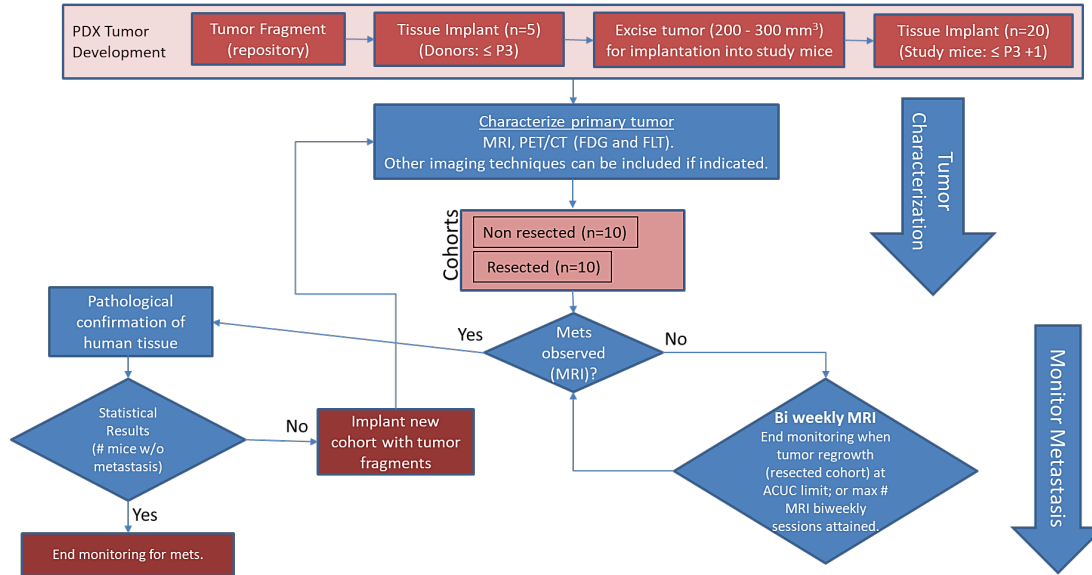


Imaging characterization of a metastatic patient derived model of melanoma: PDMR-425362-245-T

Summary

Pre-clinical animal models of spontaneous metastatic cancer are infrequent; the few that exist are resource intensive because determination of the presence of metastatic disease, metastatic burden, and response to therapy normally require multiple timed cohorts with animal sacrifice and extensive pathological examination. We identified and characterized a patient derived xenograft model with metastatic potential, melanoma xenograft 425362-245-T. In this study we performed a detailed imaging characterization (workflow below) of this model, which develops spontaneous lung metastases, details are provided in the attached standard operating procedures. Tumors in half of the mice were resected in the range 200-300 mm³ size; tumors in the other half were allowed to grow until it was necessary to euthanize them because of tumor size.

Workflow: Characterization of PDX primary tumor and metastasis



The imaging characteristics of this model (**PDMR-425362-245-T**) which is available from the National Cancer Institute Patient-Derived Models Repository (<https://pdmr.cancer.gov/>), is highly favorable for preclinical research studies of metastatic disease when used in conjunction with non-contrast T2 weighted MRI.

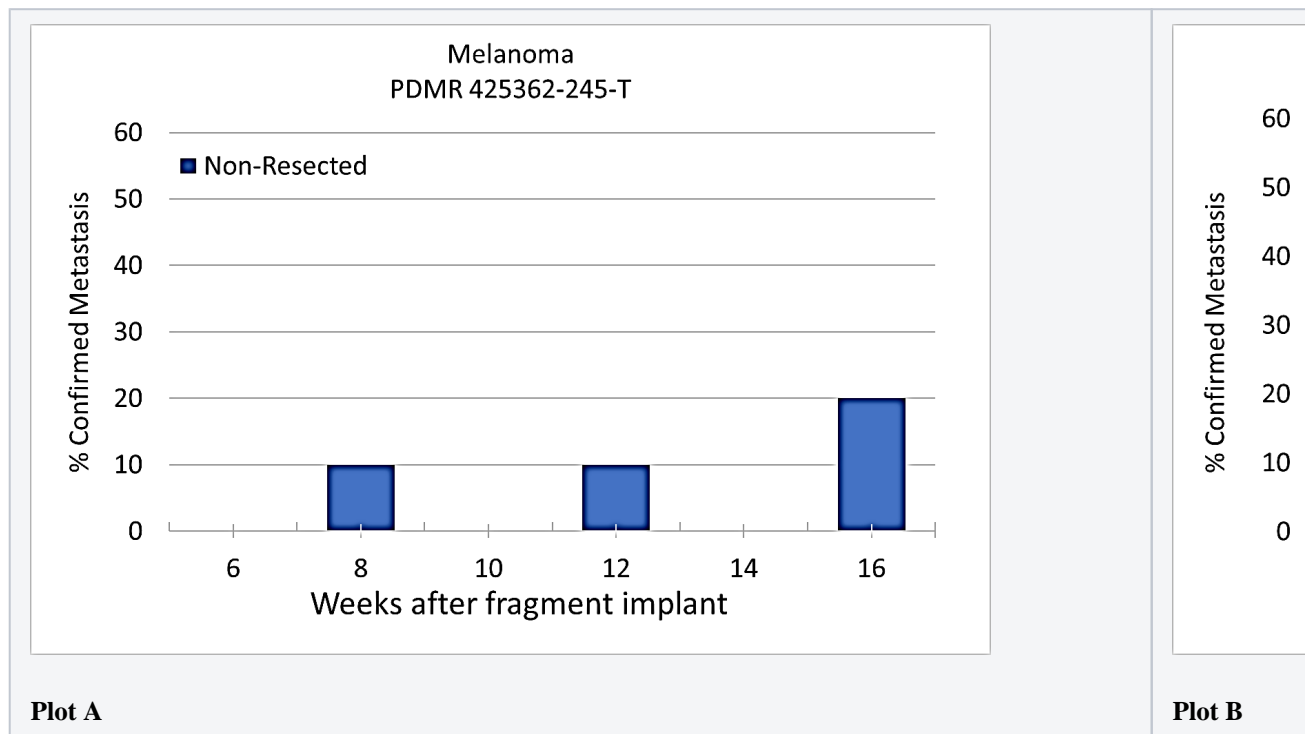
Results: Melanoma (PDMR-425362-245-T)

Table 1: Penetrance and location of pathological confirmed metastatic lesion(s).

# animals in group	# animals that displayed metastasis in MRI and confirmed by Pathology	Pathology confirmation of MRI (primary imaging site)	Other confirmed Location (s)	Mouse ID: MRI with pathology confirmation of metastasis
10 (non-resected)	4 (6 mice were EU due to xenograft size prior to observation of metastasis)	Lung	Kidney	1512, 1516, 1518, 1520

10 (resected)	10	Lung	Kidney, Liver, Pancreas	1506, 1508, 1509, 1510, 1511, 1515, 1517, 1519, 1521, 1523
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Percent penetrance with respect to the average time-to-metastasis for non-resected (plot A: time from implant) and resected (plot B: time from tumor resection) cohorts.



PET/CT Characterization of the primary tumor: Baseline PET (SOP attached) were performed when tumor reached an approximate 200 mm³. Average SUVmax values (n=5) were calculated; [¹⁸F]FDG: 2.7 ± 0.5 and [¹⁸F]FLT: 2.0 ± 0.3.

Conclusion:

Melanoma PDMR-425362-245-T model can be challenging due to the rapid growth of the xenograft and regrowth. Metastases was well observed on T2 MRI imaging allowing non-invasive evaluation in treatment trials.

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Data Access

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Images (DICOM, 2.3 GB)	  (Download requires NBIA Data Retriever)
Tracking spreadsheet for PDMR-425362-245-T	Download
SR Conversion Routine (Converts a tracking spreadsheet into a DICOM Structured Report)	Download
PDMR Patient Specimen (external)	
Standard Operating Procedure 50101 MRI T2 Weighted Non-Contrast Protocol Single Mouse Pulmonary Gated and Multi-Mouse Non-Gated	
Standard Operating Procedure 50102 Positron Emission Tomography (PET) imaging protocol	

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Detailed Description

Detailed Description

Image Statistics	
Modalities	MR, SR
Number of Subjects	20
Number of Studies	115

Number of Series	210
Number of Images	3509
Images Size (GB)	2.3 GB

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Tatum, J. L., Kalen, J. D., Jacobs, P. M., Ileva, L. V., Riffle, L. A., Keita, S., Patel, N., Sanders, C., James, A., Difilippantonio, S., Thang, L., Hollingshead, M. G., Phillips, J., Edmondson, E., Evrard, Y., Clunie, D. A., Liu, Y., Smith, K. E., Wagner, U., ... Doroshov, J. H. (2020). *Imaging characterization of a metastatic patient derived model of melanoma: PDMR-425362-245-T* [Data set]. The Cancer Imaging Archive. <https://doi.org/10.7937/TCIA.2020.7YRS-7J97>

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Clark K, Vendt B, Smith K, Freymann J, Kirby J, Koppel P, Moore S, Phillips S, Maffitt D, Pringle M, Tarbox L, Prior F. **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**, Journal of Digital Imaging, Volume 26, Number 6, December, 2013, pp 1045-1057. DOI: <https://doi.org/10.1007/s10278-013-9622-7>




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PDMR Patient Specimen (external)	
Standard Operating Procedure 50101 MRI T2 Weighted Non-Contrast Protocol Single Mouse Pulmonary Gated and Multi-Mouse Non-Gated	
Standard Operating Procedure 50102 Positron Emission Tomography (PET) imaging protocol	

Added two supplementary files: 1) an example tracking spreadsheet for multi-cohort murine studies and 2) an SR Conversion Routine to convert the tracking spreadsheet parameters into a DICOM Structured Report (SR).

Version 1: Updated 2020/05/22

Data Type	Download all or Query/Filter
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Standard Operating Procedure 50102 Positron Emission Tomography (PET) imaging protocol	