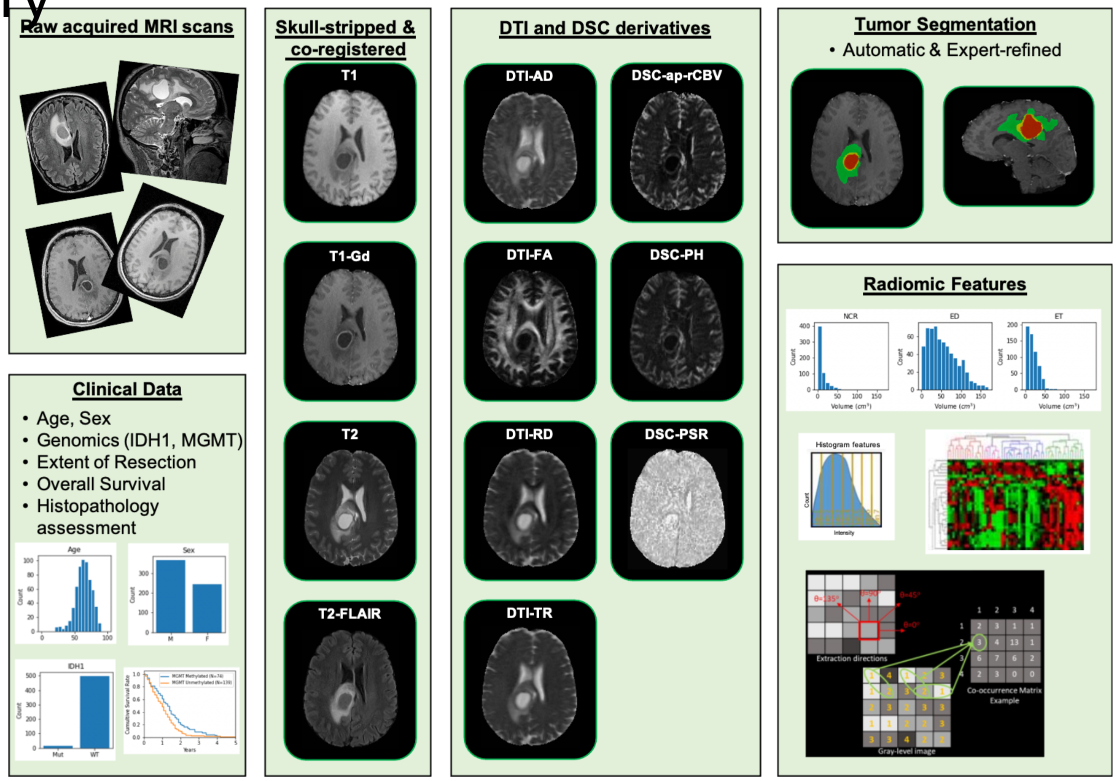
Multi-parametric magnetic resonance imaging (mpMRI) scans for de novo Glioblastoma (GBM) patients from the University of Pennsylvania Health System (UPENN-GBM)

Summary



This collection comprises multi-parametric magnetic resonance imaging (mpMRI) scans for de novo Glioblastoma (GBM) patients from the University of Pennsylvania Health System, coupled with patient demographics, clinical outcome (e.g., overall survival, genomic information, tumor progression), as well as computer-aided and manually-corrected segmentation labels of multiple histologically distinct tumor sub-regions, computer-aided and manually-corrected segmentations of the whole brain, a rich panel of radiomic features along with their corresponding co-registered mpMRI volumes in NIfTI format. Scans were initially skull-stripped and co-registered, before their tumor segmentation labels were produced by an automated computational method. These segmentation labels were revised and any label misclassifications were manually corrected/approved by expert board-certified neuroradiologists. The final labels were used to extract a rich panel of imaging features, including intensity, volumetric, morphologic, histogram-based and textural parameters. The segmentation labels enable quantitative computational and clinical studies without the need to repeat manual annotations whilst allowing for comparison across studies. They can also serve as a set of manually-annotated gold standard labels for performance evaluation in computational challenges. The provided panel of radiomic features may facilitate research integrative of the molecular characterization offered, and hence allow associations with molecular markers (radiogenomic biomarker research), clinical outcomes, treatment responses and other endpoints, by researchers without sufficient computational background to extract such features. Additional data accompanying the UPENN-GBM data collection include H&E-stained digitized tissue sections from resected tumor specimens of matched de novo and recurrent cases for a few of the patients in this collection.

Acknowledgements

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Data Access

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Additional Resources for this Dataset

The NCI Cancer Research Data Commons (CRDC) provides access to additional data and a cloud-based data science infrastructure that connects data sets with analytics tools to allow users to share, integrate, analyze, and visualize cancer research data.

- Imaging Data Commons (IDC) (Imaging Data)

Detailed Description

Detailed Description

Image Statistics		
Modalities	MR	Pathology
Number of Patients	630	34
Number of Studies	3,301	N/A
Number of Series	3,680	N/A
Number of Images	828,234	71
Images Size (GB)	139.4	149

Note from the submitting group: The NIfTI images are all registered to a common atlas (SRI) using a uniform preprocessing and the segmentation are aligned with them. Therefore the NIfTI images will not align with the DICOM images, by design. If you load the NIfTI images (like T1/T2) and their related segmentation, these will line up.

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Citations & Data Usage Policy

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Bakas, S., Sako, C., Akbari, H., Bilello, M., Sotiras, A., Shukla, G., Rudie, J. D., Flores Santamaria, N., Fathi Kazerooni, A., Pati, S., Rathore, S., Mamourian, E., Ha, S. M., Parker, W., Doshi, J., Baid, U., Bergman, M., Binder, Z. A., Verma, R., … Davatzikos, C. (2021). **Multi-parametric magnetic resonance imaging (mpMRI) scans for de novo Glioblastoma (GBM) patients from the University of Pennsylvania Health System (UPENN-GBM)** (Version 2) [Data set]. The Cancer Imaging Archive. https://doi.org/10.7937/TCIA.709X-DN49

Publication Citation

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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. (2013). **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**. Journal of Digital Imaging, 26(6), 1045–1057. https://doi.org/10.1007/s10278-013-9622-7

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Versions

Version 2 (Current): 2022/10/24

Note: 2023/12/5: updated clinical data file (v1.2) to include more information about censor/survival.

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changes: Histopathology NDPI slides added to collection. CSV file for mapping Radiology subject IDs to Histopathology patient and image IDs where available (note: not all Radiology data has associated pathology data and vice versa).

Version 1: 2022/06/21

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