

LGG-1p19qDeletion

Summary

Redirection Notice

This page will redirect to <https://www.cancerimagingarchive.net/collection/lgg-1p19qdeletion/> in about 5 seconds.

These MRIs are pre-operative examinations performed in 159 subjects with Low Grade Gliomas (WHO grade II & III). Segmentation of tumors in three axial slices that include the one with the largest tumor diameter and ones below and above are provided in NiFTI format. Tumor grade and histologic type are also available. All of these subjects have biopsy proven 1p/19q results, performed using FISH. For the 1p/19q status "n/n" means neither 1p nor 19q were deleted. "d/d" means 1p and 19q are co-deleted.

Acknowledgements

Harmonization of the components of this dataset, including into standard DICOM representation, was supported in part by the NCI Imaging Data Commons consortium. NCI Imaging Data Commons consortium is supported by the contract number 19X037Q from Leidos Biomedical Research under Task Order HHSN26100071 from NCI.

Data Access

Data Access

Some data in this collection contains images that could potentially be used to reconstruct a human face. To safeguard the privacy of participants, users must sign and submit a [TCIA Restricted License Agreement](#) to help@cancerimagingarchive.net before accessing the data.

Data Type	Download all or Query/Filter	License
Images and Segmentations (DICOM, 2.7 GB)	Download Search (Download requires NBIA Data Retriever)	TCIA Restricted
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1p19q Status and Histologic Type (XLS, 53 kB)	Download	CC BY 3.0

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Detailed Description

Detailed Description

Collection Statistics	Radiology image statistics
Modalities	MR, SEG
Number of Participants	159

Number of Studies	160
Number of Series	478
Number of Images	17,519
Image Size (GB)	2.7

Supporting Documentation and Metadata

For the 1p/19q status "n/n" means neither 1p nor 19q were deleted. "d/d" means 1p and 19q are co-deleted.

Citations & Data Usage Policy

Citations & Data Usage Policy

Users must abide by the [TCIA Data Usage Policy and Restrictions](#). Attribution should include references to the following citations:

Data Citation

Erickson, B., Akkus, Z., Sedlar, J., & Korfiatis, P. (2017). **Data from LGG-1p19qDeletion (Version 2) [Data set]**. The Cancer Imaging Archive. <https://doi.org/10.7937/K9/TCIA.2017.DWEHTZ9V>

Publication Citation

Akkus, Z., Ali, I., Sedlá, J., Agrawal, J. P., Parney, I. F., Giannini, C., & Erickson, B. J. (2017). **Predicting Deletion of Chromosomal Arms 1p/19q in Low-Grade Gliomas from MR Images Using Machine Intelligence**. In Journal of Digital Imaging (Vol. 30, Issue 4, pp. 469–476). Springer Science and Business Media LLC. <https://doi.org/10.1007/s10278-017-9984-3> . PMID: PMC5537096

Publication Citation

Erickson, B. J., Korfiatis, P., Akkus, Z., Kline, T., & Philbrick, K. (2017). **Toolkits and Libraries for Deep Learning**. In Journal of Digital Imaging (Vol. 30, Issue 4, pp. 400–405). Springer Science and Business Media LLC. <https://doi.org/10.1007/s10278-017-9965-6>

TCIA Citation

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**. In Journal of Digital Imaging (Vol. 26, Issue 6, pp. 1045–1057). Springer Science and Business Media LLC. <https://doi.org/10.1007/s10278-013-9622-7>

Other Publications Using This Data

TCIA maintains [a list of publications](#) which leverage our data. If you have a publication you'd like to add, please [contact TCIA's Helpdesk](#) .

1. Banerjee, S., Mitra, S., Masulli, F., & Rovetta, S. (2020). Glioma Classification Using Deep Radiomics. *SN Computer Science*, 1(4), 209. doi:10.1007/s42979-020-00214-y
2. Bhattacharya, D., Sinha, N., & Saini, J. (2020). Radial Cumulative Frequency Distribution: A New Imaging Signature to Detect Chromosomal Arms 1p/19q Co-deletion Status in Glioma. Paper presented at the International Conference on Computer Vision and Image Processing.
3. Casale, R., Lavrova, E., Sanduleanu, S., Woodruff, H. C., & Lambin, P. (2021). Development and external validation of a non-invasive molecular status predictor of chromosome 1p/19q co-deletion based on MRI radiomics analysis of Low Grade Glioma patients. *Eur J Radiol*, 139, 109678. doi:10.1016/j.ejrad.2021.109678
4. Du, R., & Vardhanabhuti, V. (2020, 06-08 July 2020). 3D-RADNet: Extracting labels from DICOM metadata for training general medical domain deep 3D convolution neural networks. Paper presented at the Third Conference on Medical Imaging with Deep Learning (MIDL 2020), Montréal, QC, Canada. Available from <https://proceedings.mlr.press/v121/du20a.html>.
5. Gore, S., & Jagtap, J. (2021). Radiogenomic analysis: 1p/19q codeletion based subtyping of low-grade glioma by analysing advanced biomedical texture descriptors. *Journal of King Saud University - Computer and Information Sciences*. doi:10.1016/j.jksuci.2021.08.024
6. Kobayashi, T. (2022). RadiomicsJ: a library to compute radiomic features. *Radiol Phys Technol*, 15(3), 255-263. doi:10.1007/s12194-022-00664-4
7. Kocak, B., Durmaz, E. S., Ates, E., Sel, I., Turgut Gunes, S., Kaya, O. K., . . . Kilickesmez, O. (2019). Radiogenomics of lower-grade gliomas: machine learning-based MRI texture analysis for predicting 1p/19q codeletion status. *Eur Radiol*. doi:10.1007/s00330-019-06492-2
8. Ning, Z., Luo, J., Xiao, Q., Cai, L., Chen, Y., Yu, X., . . . Zhang, Y. (2021). Multi-modal magnetic resonance imaging-based grading analysis for gliomas by integrating radiomics and deep features. *Ann Transl Med*, 9(4), 298. doi:10.21037/atm-20-4076
9. Öksüz, C., Urhan, O., & Güllü, M. K. (2022). Brain tumor classification using the fused features extracted from expanded tumor region. *Biomedical Signal Processing and Control*, 72, 103356. doi:10.1016/j.bspc.2021.103356
10. Parekh, V. S., Pillai, J. J., Macura, K. J., LaViolette, P. S., & Jacobs, M. A. (2022). Tumor Connectomics: Mapping the Intra-Tumoral Complex Interaction Network Using Machine Learning. *Cancers (Basel)*, 14(6). doi:<https://doi.org/10.3390/cancers14061481>
11. Rathore, S., Chaddad, A., Bukhari, N. H., & Niazi, T. (2020). Imaging Signature of 1p/19q Co-deletion Status Derived via Machine Learning in Lower Grade Glioma. In *Radiomics and Radiogenomics in Neuro-oncology* (Vol. 11991, pp. 61-69): Springer International Publishing.
12. van der Voort, S. R., Incekara, F., Wijnenga, M. M., Kapsas, G., Gardeniers, M., Schouten, J. W., . . . French, P. J. (2019). Predicting the 1p/19q co-deletion status of presumed low grade glioma with an externally validated machine learning algorithm. *Clinical Cancer Research*, clincanres. 1127.2019. doi:10.1158/1078-0432.CCR-19-1127
13. Yogananda, C. G. B. (2021). Non-invasive Profiling of Molecular Markers in Brain Gliomas using Deep Learning and Magnetic Resonance Images. (Ph.D. Doctor of Philosophy in Biomedical Engineering Dissertation). The University of Texas at Arlington, Proquest. Retrieved from <http://hdl.handle.net/10106/29765>
14. Yogananda, C. G. B., Shah, B. R., Nalawade, S. S., Murugesan, G. K., Yu, F. F., Pinho, M. C., . . . Maldjian, J. A. (2021). MRI-Based Deep-Learning Method for Determining Glioma MGMT Promoter Methylation Status. *American Journal of Neuroradiology*, 1-8. doi:10.3174/ajnr.A7029

Versions

Version 2 (Current): Updated 2020/06/26

Data Type	Download all or Query/Filter
Images and Segmentations (2.7GB)	Download Search (Download requires NBIA Data Retriever)
Segmentations only (DICOM)	Download

	(Download requires NBIA Data Retriever)
1p19q Status and Histologic Type	Download

Previously the segmentations of the tumors were provided in NIfTI format and only included three axial slices (the one with the largest tumor diameter and ones below and above). In version 2 segmentations of the entire T2 signal abnormality are provided in DICOM-SEG format.

Version 1: Updated 2017/09/30

Data Type	Download all or Query/Filter
Images (2.7GB)	Download (Download requires NBIA Data Retriever)
Segmentations (NIfTI, 2.9GB)	Download (Redirects to large-file storage "Box")
1p19q Status and Histologic Type	Download