

**Floris P. Barthel, M.D.**

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**Professional Appointments**

<i>Assistant Professor</i> at the Translational Genomics Research Institute (TGen) Cancer and Cell Biology Division	2021 – pres.
<i>Assistant Professor</i> at the Beckman Research Institute at City of Hope Department of Computational and Quantitative Medicine	2021 – pres.
<i>Adjunct Professor</i> at Arizona State University (ASU) School of Life Sciences and College of Liberal Arts and Sciences	2021 – pres.
<i>Adjunct Professor</i> at The University of Arizona (UoA) Department of Basic Medical Sciences at the College of Medicine	2021 – pres.
<i>Postdoctoral Associate</i> at The Jackson Laboratory for Genomic Medicine. Laboratory of prof. dr. Roel G.W. Verhaak	2016 – 2021
<ul style="list-style-type: none"><li>o Extensive experience in multi-omics data generation and analysis (including whole genome/exome sequencing, RNA sequencing, single-cell sequencing, DNA methylation)</li><li>o Streamlined pipeline development and data analysis using Python, R, MATLAB, Java, C++</li><li>o Optimized database design for rapid genomic data storage and retrieval (PostgreSQL 11)</li><li>o Efficient high performance computing using PBS/Torque and Slurm on Linux OS</li><li>o Effective version management using git (public profile: <a href="https://github.com/fpbarthel">https://github.com/fpbarthel</a>)</li><li>o Skilled in mammalian cell culture (BSL2), (confocal) microscopy and other cell biology techniques</li><li>o Experience with PCR, electrophoresis and other molecular biology techniques</li></ul>	
<i>Senior Research Assistant</i> at the UT MD Anderson Cancer Center Laboratory of prof. dr. Roel G.W. Verhaak	2014 – 2016
<i>Research Intern</i> at the UT MD Anderson Cancer Center Laboratory of prof. dr. Roel G.W. Verhaak	2014

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**Research Support**

Sylvia Chase Early Career Training Program Title: <i>Mapping the signatures of telomere dysfunction in glioma</i>	Role: PI	10/13/2021-present
4R00 CA226387-03 Title: <i>Genetic and Epigenetic Strategies for the Acquisition of Telomere Maintenance in Human Cancer Cells</i>	Role: PI	4/1/2018-present
Forbeck Foundation COVID-19 recovery grant	Role: PI	5/1/2021-3/31/2022
JAX Scholar Award Competitive institutional award supporting exceptional postdoctoral associates become independent investigators	Role: PI	1/1/2018-12/31/2019

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**Training and Education**

- Postdoctoral Associate at the Jackson Laboratory for Genomic Medicine	2016 – 2021
- Medicine (M.D.) at the Vrije Universiteit Amsterdam Medical Center	2011 – 2014
- Medicine (B.Sc.) at the Vrije Universiteit Amsterdam Medical Center	2007 – 2011

## Honors and Awards

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- ASCI Young Physician-Scientist Award	2022
- Brain Tumor Charity Celebrating You Research Rising Star Award	2020
- William Guy Forbeck Research Foundation Scholar Award	2019
- Dutch Cancer Society (KWF) Research Intern Award	2014
- Foundation of Renswoude Research Intern Award	2014
- European Society for Neurological Surgery Travel Award	2013

## Peer Reviewed Publications

\* denotes first authorship, † denotes corresponding authorship

Johnson KC, Anderson KJ, Courtois ET, Gujar AD, **Barthel FP**, Varn FS, et al., Verhaak RGW. *Single-cell multimodal glioma analyses identify epigenetic regulators of cellular plasticity and environmental stress response*. **Nat Genet**. 2021 Oct;53(10):1456-1468. doi: 10.1038/s41588-021-00926-8.

Verburg N, **Barthel FP\***, Anderson KJ, Johnson KC, et al., Wesseling P, De Witt Hamer PC, Verhaak RGW. *Spatial concordance of DNA methylation classification in diffuse glioma*. **Neuro-Oncology**. 2021. doi: 10.1093/neuonc/noab134

Kocakavuk E, Anderson KJ, Varn FS, Johnson KC, Amin SB, Sulman EP, Lolkema M, **Barthel FP†**, Verhaak RGW. *Radiotherapy is associated with a deletion signature that contributes to poor outcomes in patients with cancer*. **Nat Genet**. 2021. doi 10.1038/s41588-021-00874-3

Wen PY, Weller M, Lee EQ, Alexander BA, Barnholtz-Sloan JS, **Barthel FP**, et al. *Glioblastoma in Adults: A Society for Neuro-Oncology (SNO) and European Society of Neuro-Oncology (EANO) Consensus Review on Current Management and Future Directions*. **Neuro-Oncology**. 24 April 2020. doi: 10.1093/neuonc/noaa106

Amin SB, Anderson KJ, Boudreau CE, Martinez-Ledesma E, Kocakavuk E, Johnson KC, **Barthel FP**, et al. *Comparative Molecular Life History of Spontaneous Canine and Human Gliomas*. **Cancer Cell**. 2020 Feb 10;37(2):243-257.e7. doi: 10.1016/j.ccell.2020.01.004. PubMed PMID: 32049048.

Anderson KJ, Tan AC, Parkinson J, Back M, Kastelan M, Newey A, Brewer J, Wheeler H, Hudson AL, Amin SB, Johnson KC, **Barthel FP**, Verhaak RGW, Khasraw M. *Molecular and clonal evolution in recurrent metastatic gliosarcoma*. **Cold Spring Harb Mol Case Stud**. 2020 Jan 2. pii: mcs.a004671. doi: 10.1101/mcs.a004671. PubMed PMID: 31896544.

**Barthel FP\***, Johnson KC\*, Varn FS, Moskalik AD, Tanner G, The GLASS Consortium, Huse JT, Groot JF de, Stead LF, Verhaak RGW. *Longitudinal Molecular Trajectories of Diffuse Glioma in Adults*. **Nature**. 2019 Dec;576(7785):112-120. doi: 10.1038/s41586-019-1775-1. PubMed PMID: 31748746.

Menghi F, **Barthel FP**, Yadav V, Tang M, Ji B, Tang Z, Carter GW, Ruan Y, Scully R, Verhaak RGW, Jonkers J, Liu ET. *The Tandem Duplicator Phenotype Is a Prevalent Genome-Wide Cancer Configuration Driven by Distinct Gene Mutations*. **Cancer Cell**. 2018 Aug 13;34(2):197-210.e5. doi: 10.1016/j.ccell.2018.06.008. Epub 2018 Jul 12. PubMed PMID: 30017478.

**Barthel FP†**, Wesseling P, Verhaak RGW. *Reconstructing the molecular life history of gliomas*. **Acta Neuropathol**. 2018 May;135(5):649-670. doi: 10.1007/s00401-018-1842-y. Epub 2018 Apr 3. PubMed PMID: 29616301.

Hu X, Wang Q, Tang M, **Barthel FP**, Amin S, Yoshihara K, Lang FM, Martinez-Ledesma E, Lee SH, Zheng S, Verhaak RGW. *TumorFusions: an integrative resource for cancer-associated transcript fusions*. **Nucleic Acids Res**. 2018 Jan 4;46(D1):D1144-D1149. doi: 10.1093/nar/gkx1018. PubMed PMID: 29099951.

Hu X, Martinez-Ledesma E, Zheng S, Kim H, **Barthel FP**, Jiang T, Hess KR, Verhaak RGW. *Multigene signature for predicting prognosis of patients with 1p19q co-deletion diffuse glioma*. **Neuro Oncol**. 2017 Jun 1;19(6):786-795. doi: 10.1093/neuonc/now285. PubMed PMID: 28340142.

Cancer Genome Atlas Research Network. *Comprehensive and Integrated Genomic Characterization of Adult Soft Tissue Sarcomas*. **Cell**. 2017 Nov 2;171(4):950-965.e28. doi: 10.1016/j.cell.2017.10.014. PubMed PMID: 29100075.

**Barthel FP**, Wei W, Tang M, Martinez-Ledesma E, Hu X, Amin SB, Akdemir KC, Seth S, Song X, Wang Q, Lichtenberg T, Hu J, Zhang J, Zheng S, Verhaak RG. *Systematic analysis of telomere length and somatic alterations in 31 cancer types*. **Nat Genet**. 2017 Mar;49(3):349-357. doi: 10.1038/ng.3781. Epub 2017 Jan 30. PubMed PMID: 28135248.

Wang Q, Hu B, Hu X, Kim H, Squatrito M, Scarpacci L, deCarvalho AC, Lyu S, Li P, Li Y, **Barthel FP**, et al., Heimberger AB, Sulman EP, Nam DH, Verhaak RGW. *Tumor Evolution of Glioma-Intrinsic Gene Expression Subtypes Associates with Immunological Changes in the Microenvironment*. **Cancer Cell**. 2018 Jan 8;33(1):152. doi: 10.1016/j.ccell.2017.12.012. PubMed PMID: 29316430.

Ceccarelli M\*, **Barthel FP**\*, Malta TM\*, Sabedot TS\*, TCGA Research Network, Nounshmehr H, Iavarone A, Verhaak RG. *Molecular Profiling Reveals Biologically Discrete Subsets and Pathways of Progression in Diffuse Glioma*. **Cell**. 2016 Jan 28;164(3):550-63. doi: 10.1016/j.cell.2015.12.028. PubMed PMID: 26824661

### Pre-prints and Submitted Manuscripts

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\* denotes first authorship, † denotes corresponding authorship

Varn FS, Johnson KC, Wade TE, Malta TM, Sabedot TS, **Barthel FP**, et al., Roel GW Verhaak, The GLASS Consortium. *Longitudinal analysis of diffuse glioma reveals cell state dynamics at recurrence associated with changes in genetics and the microenvironment*. Accepted in *Cell*. Pre-print via **bioRxiv** (2021-05-03). doi: 10.1101/2021.05.03.442486

### Book Chapters

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**Barthel FP**, Johnson KC, Wesseling P, Verhaak RGW. *Evolving Insights into the Molecular Neuropathology of Diffuse Gliomas in Adults*. **Neurol Clin**. 2018 Aug;36(3):421-437. doi: 10.1016/j.ncl.2018.04.002. PubMed PMID: 30072063.

### Invited Talks

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**Barthel FP**. *The Molecular Life History of Adult Gliomas*. Invited talk at the Barrow Neurological Institute Neuroscience Conference; 2022 Jan 18; Zoom.

**Barthel FP**. *The Molecular Life History of Adult Gliomas*. Invited talk at the City of Hope Comprehensive Cancer Center Molecular and Cellular Biology of Cancer Program Meeting; 2022 Jan 13; Zoom.

**Barthel FP**. *The Barthel Lab*. Short invited talk at the City of Hope Early-Stage PI Virtual Retreat; 2021 Dec 3; Zoom.

**Barthel FP**. *Reconstructing the Molecular Life History of Gliomas*. Invited talk at the Arizona State University 2021 AZ Regenerative Medicine Symposium; 2021 Nov 18; Tempe, Arizona.

**Barthel FP**. *Reconstructing the Molecular Life History of Gliomas*. Invited talk at the City of Hope Department of Computational and Quantitative Medicine Friday Speaker Series; 2021 Nov 12; Zoom.

**Barthel FP**. *Development and Evolution of Adult Glioma*. Invited talk at the Forbeck Foundation Fall Scholar Retreat; 2021 Oct 16; The Abbey Resort, Fontana, Wisconsin.

**Barthel FP**. *Overview of the Barthel Lab*. Short talk at the AZ Wellbeing Commons Hybrid Meeting; 2021 Oct 8; Desert Willow Conference Center, Phoenix, Arizona.

**Barthel FP**. *Reversing immortality in brain cancer*. Short talk at the City of Hope/TGen Young PI group; 2021 Sep 27; Microsoft Teams.

**Barthel FP**. *What keeps cancer cells from dying?* Short invited talk at the DIPG Scientific Update Meeting (patient advocacy group); 2021 Sep 27; TGen, Phoenix, Arizona.

**Barthel FP**. *Reconstructing the Molecular Life History of Gliomas*. Invited talk at the Arizona State University School of Life Sciences MCB/Neuroscience seminar; 2021 Sep 24; Tempe, Arizona.

**Barthel FP**. *Reconstructing the Molecular Life History of Gliomas*. Invited talk at the University of Arizona Basic Medical Sciences seminar series; 2021 Sep 9; Zoom.

**Barthel FP**. *Attacking brain tumors at its DNA*. Short invited talk at the TGen Board of Directors Meeting; 2021 Sep 7; Scottsdale, Arizona.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the City of Hope Brain Tumor Board Meeting; 2021 Jun 25; Zoom.

**Barthel FP.** *Careers in Academia.* Short invited talk at the Summer Undergraduate & Graduate Experiences in Research seminar series at the American University of Washington DC; 2021 Jun 23; Zoom.

**Barthel FP.** *Clinical Impact of Molecular Neuro-Oncology.* Invited talk at the Maine Cancer Genomics Initiative Forum; 2021 Mar 26-27; Webex.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the Baylor College of Medicine Department for Molecular and Human Genetics; 2021 Feb 25; Zoom.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the Rutgers University Cancer Institute of New Jersey; 2021 Feb 15; Webex.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the Rutgers University Department of Neurosurgery; 2020 Dec 16; Webex.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the University of California San Francisco Brain Tumor Center; 2020 Dec 11; Webex.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the Translational Genomics Institute (TGen); 2020 Dec 8; Webex.

**Barthel FP.** *Treatment with ionizing radiation is associated with a clinically relevant deletion signature in diffuse glioma.* Invited talk at the Bristol-Myers Squibb GBM Research Day; 2020 Jul 8-9; Microsoft Teams.

**Barthel FP.** *Treatment with ionizing radiation is associated with a clinically relevant deletion signature in diffuse glioma.* Invited talk at the Spring Forbeck Scholar Retreat; 2020 Apr 16-19; Lake Geneva, Wisconsin [Cancelled due to Covid-19].

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the Maine Cancer Genomics Initiative Forum; 2020 Apr 3-4; Rockport, Maine [Cancelled due to Covid-19].

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the Francis Crick Institute, London; 2020 Feb 3; London, United Kingdom.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the department of Radiation Oncology, New York University, New York City; 2020 Jan 27; New York, New York.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the department of Pharmacology, Columbia University, New York City; 2019 Dec 18; New York, New York.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the department of Neurological Surgery, Northwestern University, Chicago; 2019 Dec 2; Chicago, Illinois.

**Barthel FP.** *Reconstructing the Molecular Life History of Gliomas.* Invited talk at the First Friday at Five Cancer Genomics Meeting, Weill Cornell Medicine; 2018 Jan 5; New York, New York.

## **Conference Presentations**

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**Barthel FP,** Verburg N, Anderson KJ, Koopman T, Johnson KC, Wesseling P, Witt Hamer PC, Verhaak R. *Stereotactic image-guided epigenome profiling reveals diverse evolutionary growth routes in diffuse gliomas.* Oral presentation at the Society for Neuro-Oncology (SNO) Annual Meeting 2020; 2020 Nov 19-21; Zoom.

**Barthel FP,** Johnson KC, Varn FS, Moskalik AD, The GLASS Consortium, Verhaak RGW. *Longitudinal Molecular Trajectories of Diffuse Glioma in Adults.* Short talk at the AACR Special Conference on Evolutionary Dynamics in Carcinogenesis and Response to Therapy; 2020 Mar 12-15; Denver, Colorado [Cancelled due to Covid-19].

**Barthel FP,** Johnson KC, Varn FS, Moskalik AD, The GLASS Consortium, Verhaak RGW. *Longitudinal Molecular Trajectories of Diffuse Glioma in Adults.* Short talk at the Keystone Symposium on Cancer Evolution and Combinatorial Cancer Therapies; 2020 Jan 19-23; Banff, Alberta (Canada).

**Barthel FP**, Johnson KC, Varn FS, Moskalik AD, The GLASS Consortium, Verhaak RGW. *Longitudinal Molecular Trajectories of Diffuse Glioma in Adults*. Oral presentation at the Society for Neuro-Oncology (SNO) Annual Meeting 2019; 2019 Nov 20-24; Phoenix, Arizona.

**Barthel FP**. *Next-generation assay development for probing telomeres in cancer*. Oral presentation at the Forbeck Forum on Telomerase-Mediated Telomere Targeting in Cancer; 2019 Oct 17-20; Denver, Colorado.

**Barthel FP**, Zheng S, Verhaak RGW. A genomic basis for cancer immortalization: a computational biologist's perspective. Oral presentation at the 2016 Symposia on Cancer Research, Cancer Evolution: Mechanisms of Vulnerability and Resistance. 2016 Oct 6-7; Houston, TX.

**Barthel FP**, Ceccarelli M, Malta TM, Sabedot TS, et al., Noushmehr H, Iavarone A, Verhaak RGW. *A pan-glioma characterization of genomic, epigenomic and transcriptomic activities reveals novel relationships between histological subtypes and molecular signature*. *Neuro-Oncology*, Volume 17, Issue suppl\_5, November 2015, Page v92, doi:10.1093/neuonc/nov215.06. Oral presentation at the Society for Neuro-Oncology (SNO) Annual Meeting 2015; 2015 Nov 19-22; San Antonio, TX.

### Mentoring experience

Student Name	Period	Role	Project
Shuvodeep De	Nov 2021 – present	Postdoc	Telomere dysfunction
Abubakr El Sobky	Oct 2021 – present	Undergrad	Interstitial telomeric repeats
Yi-An Chen	August 2021 - present	Postdoc	Telomeric chromatin interactions
Riya Naik	May 2021 – Sept 2021	Undergrad	Interstitial telomeric repeat mapping
Emre Kocakavuk	Nov 2018 - May 2021	Medical student	Radiation damage in glioma
Joshua Fein	Summer 2019	Resident	Non-coding mutations in glioma
Amritha Sridhar	Summer 2019	Summer student	Copy number analysis methods
Georgette Tanner	Spring 2019	Visiting student	Subclonal deconvolution in cancer
Anzhela Moskalik	Apr 2018 - Apr 2019	Medical student	Clinical data analysis in glioma
Zhenyue Li	Summer 2016	Summer student	Telomere length analysis

### Other Experience and Professional Memberships

- Reviewing (papers)
  - o Acta Neuropathologica
  - o Bioinformatics
  - o Cancers (MDPI)
  - o Cell Reports
  - o Clinical Cancer Research
  - o Current Opinion in Genetics and Development
  - o eLife
  - o Frontiers Molecular Neuroscience
  - o Genome Biology
  - o International Journal of Cancer
  - o Journal of Translational Medicine
  - o JCO Precision Oncology
  - o Neuro-Oncology
  - o PLoS Genetics
  - o Science Advances
  - o Scientific Reports
- Reviewing (other)
  - o Served on the institutional research grants committee (RGC) as a reviewer for NIH grants
  - o The Brain Tumour Charity 2018
  - o Graduate school applicants for the ASU Molecular and Cellular Biology PhD Program 2022

- American Society for the Advancement of Science 2019-present
- American Society of Human Genetics, Member 2019-present
  - Moderator at the ASHG 2019 annual meeting session on telomeres
- American Association for Cancer Research, Associate Member 2017-present
- Society for Neuro Oncology, Member 2015-present
- International Federation of Medical Students' Associations, National board 2009-2010
- International Federation of Medical Students' Associations, Local board 2008-2009
- International Federation of Medical Students' Associations, Member 2007-2014

#### **Other Positions and Appointments**

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- Autopsy Assistant, Netherlands Brain Bank 2013-2014
- Radiology Reviewer, VU University Image Analysis Center Amsterdam 2008-2009