Jana Lipková

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Experience ⚙

8/2023–now	**School of Medicine, University of California, Irvine**, CA.
-	Assistant professor in the Department of Pathology & Laboratory Medicine
-	UC Health Medical Center
4/2023–now	**U.S. Department of Health and Human Services**.
-	Research assistant in the project "Transformation of the Clinical Trial Enterprise: Lessons Learned from the COVID-19 Pandemic".
-	Contracted by Co-Bio Consulting
2020 – 4/2023	**Harvard Medical School**, *Mass General Brigham*, Boston, MA.
	- Postdoctoral fellow in AI for Pathology Image Analysis Lab
other affiliations:	- Broad Institute of MIT and Harvard
	- Cancer Data Science Program, Dana-Farber Cancer Institute
2020 – 2022	**NVision | Advisory Board**, *University of Florida*, FL, (remote).
	- Start-up developing mobile app. to assist glioma patients, image analysis support
2021 – 2022	**Harvard Biotech Club**, *Graduate School of Arts and Sciences*, Boston,MA.
classes	Biotech Incubator, Innovation and Biodesign Process
8-12/2018	**Klinikum Rechts der Isar**, *Neuroradiology*, Munich, DE.
	- Software development for personalized radiotherapy planning
1/2012–8/2014	**ETH Zürich**, *Computer Science*, CH.
	- Research assistant in the Computational Science and Engineering Lab
7-9 2009	**Oxford University**, *Mathematics*, Oxford, UK.
	- Development of a stochastic algorithm for modeling chemical reactions

Education 🎓

8-10/2022	**mini-MBA**, *Harvard Graduate School of Arts and Sciences*.
2015–2020	**Ph.D. in Computer-Aided Medical Procedures**, *Technical University Munich*.
Ph.D. thesis:	*Image-based modeling in neuro-oncology*
2009–2011	**M.S. in Mathematical Modelling in Physics**, *Charles University in Prague*.
2006–2009	**B.S. in Mathematics**, *Charles University in Prague*, CR.

Professional membership ☘

2023 - now	**Frontiers in Medicine – Pathology**, *Editorial board*.
2020 - now	**Journal of Neuroimaging**, *Editorial board*.
2018 - now	**BrainLes MICCAI**, *Program Committee*.
2021 - 2022	**Computational Pathology ICCV/ECCV**, *Program committee*.

Awards & Grants 🍃

2020	**Summa cum Laude**, *Ph.D. degree*, Technical University Munich.
2018	**NVIDIA GPU Grant**.
2016	**Bavaria California Technology Center (BaCaTec)**, *Student grant*.
2014,2015	**Best Poster Award - PASC Life Sciences**, *Zürich*, Switzerland.
2011	**Summa cum Laude**, *M.S. degree*, Charles University, Czech Republic.

Teaching & Mentoring 🏛

2021	**Teaching assistant**, *Brigham and Women's Hospital*, Boston, MA.
course:	AI in pathology
2017–2019	**Lecturer**, *Technical University Munich*, DE.
course:	Imaging Neurooncology
2012–2014	**Teaching assistant**, *ETH Zürich*, Switzerland.
courses:	Computational Engineering, High Performance Computing for Science & Engineering
2014	**Lecturer**, *CIMST Summer school, ETH Zürich*, Switzerland.
2021 – now	**Ph.D. Mentor**, *to Ivan Ezhov (TUM)*, DE.
2013 – now	**Thesis advisor**, to Lottie Zhang (Harvard), Christine Eilers (TUM), Christina Frost (TUM), Enes Senel (TUM), Christoph Berger (TUM), Fabian Gura (ETHZ), etc.

Publications 📖 (*Google Scholar*)

under revision 📖   L. Zhuang*, J. **Lipkova***, R. J. Chen, T. Miller, F. Mahmood. Ai-based multimodal integration of radiology, pathology and genomics for outcome prediction. *Under revision in Nature Cancer*

📖   B. Chen*, M. Y. Lu*, J. **Lipkova***, T. Y. Chen, D. F. Williamson, F. Mahmood. A 3D Printed Embedded AI-based Pathologist. *Under revision in Nature Communications* * co-first authors

📖   S. Sahai, R. J. Chen, J. **Lipkova**, C. Chengkuan, D. F. Williamson, F. Mahmood. Multimodal ai for renal allograft biopsy assessment. *Under revision in Nature Medicine*

📖   R. J. Chen, T. Y. Chen, J. **Lipkova**, J. J. Wang, D. F. Williamson, M. Y. Lu, et al. Algorithm fairness in AI for medicine and healthcare. *Accepted for publication in Nature Communications*

published 📖   J. **Lipkova**, R. J. Chen, B. Chen, M. Y. Lu, M. Barbieri, D. Shao, et al. Artificial intelligence for multimodal data integration in oncology. *Cancer Cell*, 40(10):1095–1110, 2022

📖   J. **Lipkova**, T. Y. Chen, M. Y. Lu, R. J. Chen, M. Shady, M. Williams, et al. Deep learning-enabled assessment of cardiac allograft rejection from endomyocardial biopsies. *Nature medicine*, 28(3):575–582, 2022

📖   J. **Lipková**, B. Menze, B. Wiestler, P. Koumoutsakos, J. S. Lowengrub. Modelling glioma progression, mass effect and intracranial pressure in patient anatomy. *Journal of the Royal Society Interface*, 19(188):20210922, 2022

📖   R. J. Chen, M. Y. Lu, D. F. Williamson, T. Y. Chen, J. **Lipkova**, Z. Noor, et al. Pan-cancer integrative histology-genomic analysis via multimodal deep learning. *Cancer Cell*, 40(8):865–878, 2022

📖   M. Y. Lu, R. Chen, D. Kong, J. **Lipkova**, R. Singh, T. Chen, et al. Federated learning for computational pathology on gigapixel whole slide images. *Medical image analysis*, 76:102298, 2022

📖   M. Y. Lu, T. Y. Chen, D. F. Williamson, M. Zhao, M. Shady, J. **Lipkova**, F. Mahmood. AI-based pathology predicts origins for cancers of unknown primary. *Nature*, 594(7861):106–110, 2021

📖   I. Ezhov, K. Scibilia, K. Franitza, F. Steinbauer, J. **Lipkova**, F. Kofler, et al. Learn-morph-infer: a new way of solving the inverse problem for brain tumor modeling. *Medical Image Analysis*, page 102672, 2022

📖   P. Bilic, P. Christ, H. B. Li, E. Vorontsov, A. Ben-Cohen, G. Kaissis, et al. The liver tumor segmentation benchmark (lits). *Medical Image Analysis*, page 102680, 2022

📖   I. Ezhov, T. Mot, S. Shit, J. **Lipkova**, J. C. Paetzold, F. Kofler, et al. Geometry-aware neural solver for fast bayesian calibration of brain tumor models. *IEEE Transactions on Medical Imaging*, 41(5):1269–1278, 2021

📖   P. Herhaus, J. **Lipkova**, F. Lammer, I. Yakushev, T. Vag, J. Slotta-Huspenina, et al. CXCR4-targeted PET imaging of central nervous system B-cell lymphoma. *Journal of Nuclear Medicine*, 61(12):1765–1771, 2020

📖   A. B. Qasim, I. Ezhov, S. Shit, O. Schoppe, J. C. Paetzold, J. **Lipkova**, et al. Red-gan: Attacking class imbalance via conditioned generation. yet another medical imaging perspective. In *Medical Imaging with Deep Learning*, pages 655–668. PMLR, 2020

📖   C. M. Metz, M. R. Molina, J. **Lipkova**, J. Gempt, F. Liesche-Starnecker, P. Eichinger, et al. Predicting glioblastoma recurrence from preoperative MR scans using fractional-anisotropy maps with free-water suppression. *Cancers*, 12(3):728, 2020

F. Kofler, C. Berger, D. Waldmannstetter, J. **Lipkova**, I. Ezhov, G. Tetteh, et al. Brats toolkit: translating brats brain tumor segmentation algorithms into clinical and scientific practice. *Frontiers in neuroscience*, 14:125, 2020

J. **Lipkova**, P. Angelikopoulos, S. Wu, E. Alberts, B. Wiestler, C. Diehl, et al. Personalized radiotherapy design for glioblastoma: Integrating mathematical tumor models, multimodal scans, and Bayesian inference. *IEEE transactions on medical imaging*, 38(8):1875–1884, 2019

P. Herhaus, J. **Lipkova**, F. Lammer, J. Slotta-Huspenina, B. Wiestler, T. Vag, et al. CXCR4-targeted positron emission tomography imaging of central nervous system B-cell lymphoma, 2019

I. Ezhov, J. **Lipkova**, S. Shit, F. Kofler, N. Collomb, B. Lemasson, et al. Neural parameters estimation for brain tumor growth modeling. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, pages 787–795. Springer, Cham, 2019

P. Bilic, P. F. Christ, E. Vorontsov, G. Chlebus, H. Chen, Q. Dou, et al. The liver tumor segmentation benchmark (LITS). *arXiv preprint arXiv:1901.04056*, 2019

J. **Lipkova**, G. Arampatzis, P. Chatelain, B. Menze, P. Koumoutsakos. S-leaping: An adaptive, accelerated stochastic simulation algorithm, bridging tau-leaping and r-leaping. *Bulletin of Mathematical Biology*, 80(459), 2018

S. Bakas, M. Reyes, A. Jakab, S. Bauer, M. Rempfler, A. Crimi, et al. Identifying the best machine learning algorithms for brain tumor segmentation, progression assessment, and overall survival prediction in the brats challenge. *arXiv preprint arXiv:1811.02629*, 2018

L. Xu, G. Tetteh, J. **Lipkova**, Y. Zhao, H. Li, P. Christ, et al. Automated whole-body bone lesion detection for multiple myeloma on 68Ga-pentixafor PET/CT imaging using deep learning methods. *Contrast media & molecular imaging*, 2018, 2018

L. Xu, G. Tetteh, M. Mustafa, J. **Lipkova**, Y. Zhao, M. Bieth, et al. W-Net for Whole-Body Bone Lesion Detection on 68Ga-Pentixafor PET/CT Imaging of Multiple Myeloma Patients. In *Molecular Imaging, Reconstruction and Analysis of Moving Body Organs, and Stroke Imaging and Treatment*, pages 23–30. Springer, Cham, 2017

P. F. Christ, F. Ettlinger, F. Grün, M. E. A. Elshaera, J. **Lipkova**, S. Schlecht, et al. Automatic liver and tumor segmentation of CT and MRI volumes using cascaded fully convolutional neural networks. *arXiv preprint arXiv:1702.05970*, 2017

J. **Lipkova**, K. C. Zygalakis, S. J. Chapman, R. Erban. Analysis of brownian dynamics simulations of reversible bimolecular reactions. *SIAM Journal on Applied Mathematics*, 71(3):714–730, 2011

Abstracts 🗎

R. J. Chen, D. F. Williamson, M. Y. Lu, T. Y. Chen, J. Lipkova, M. Shaban, F. Mahmood. Abstract a007: Racial disparities bias oncology ai models. In *Cancer Epidemiology, Biomarkers & Prevention*, volume 32, pages A007–A007. AACR, 2023

M. Shaban, M. Y. Lu, D. F. Williamson, R. J. Chen, J. Lipkova, T. Y. Chen, F. Mahmood. Abstract pr005: Deep learning-based multimodal integration of histology and genomics improves cancer origin prediction. *Cancer Research*, 83(2_Supplement_2):PR005–PR005, 2023

J. **Lipkova**, T. Y. Chen, M. Y. Lu, R. J. Chen, M. Shady, M. Williams, et al. Reducing inter-observer variability in endomyocardial biopsy assessment. *Journal of Pathology Informatics*, page 100058, 2022

L. Zhuang, J. **Lipkova**, R. Chen, F. Mahmood. Deep learning-based integration of histology, radiology, and genomics for improved survival prediction in glioma patients. In *Medical Imaging 2022: Digital and Computational Pathology*, volume 12039, page 120390Z. SPIE, 2022

J. **Lipkova**, T. Y. Chen, M. Y. Lu, M. Shady, M. Williams, J. Wang, et al. International evaluation of weakly-supervised ai-model for cardiac allograft rejection screening. *Journal of the American College of Cardiology*, 77(18_Supplement_1):520–520, 2021

M. Y. Lu, T. Y. Chen, D. D. Williamson, M. Zhao, J. **Lipkova**, M. Shady, F. Mahmood. Abstract PO-007: Deep learning-based computational pathology predicts origins for cancers of unknown primary, 2021

B. Chen*, M. Lu*, J. **Lipkova***, F. Mahmood. Abstract PR-01: Real-time, point-of-care pathology diagnosis via embedded deep learning, 2021 *co-first authors

R. J. Chen, M. Y. Lu, M. Shady, J. **Lipkova**, T. Chen, D. F. Williamson, et al. Abstract PO-002: Pan-cancer integrative histology-genomic analysis via interpretable multimodal deep learning, 2021

M. Y. Lu, D. Kong, J. **Lipkova**, R. J. Chen, R. Singh, T. Y. Chen, et al. Abstract PO-008: Federated learning on whole slide images using weakly supervised computational pathology, 2021

M. Ginese, C. Piedra-Mora, M. N. Gurcan, G. Beamer, B. Chen, J. **Lipkova**, et al. Through the prism of innovation. *Pathology Visions 2020: Through the Prism of Innovation*, page 12, 2020

- 📄 J. **Lipkova**, D. Rossinelli, P. Koumoutsakos, J. Lowengrub, B. Menze. Peak of the iceberg - scientific visualization. *The Art of Theoretical Biology*, page 9, 2020
- 📄 J. **Lipkova**, D. Rossinelli, P. Koumoutsakos, B. Menze. Out of the comfort zone - scientific visualization. In *The Art of Theoretical Biology*, pages 110–111. Springer, Cham, 2020

Invited Talks 💬 (recent)

5/2023	**The University of British Columbia, Vancouver**, *Canada*, AI-based diagnostics in computational pathology, keynote speaker for UBC Pathology Day.
2/2023	**Massachusetts General Hospital, Radiation BioPhysics Seminar**, *USA*, Optimizing radiotherpy planning through digitial twins..
12/2022	**Novartis**, *Swtizerland*, AI-based multimodal data integration in oncology.
12/2022	**Sano Centre for Computational Medicine**, *Poland*, AI-based assessment of endomyocardial biopsies.
11/2022	**Center for Computational Oncology**, *UT Austin*, Personalized radiotherapy planning: Integration of mathematical modeling and multimodal imaging.
11/2022	**Data Science for Health, Dartmouth College**, *New Hampshire*, AI methods in medical imaging.
6/2022	**TIAC seminar, University Warwick**, *UK*, Deep learning-enabled assessment of cardiac allograft rejection from endomyocardial biopsie.
3/2022	**SIAM Imaging Science conference**, *Pennsylvania*, Modeling glioma progression, mass effect and intracranial pressure in patient anatomy.