Curriculum vitae

Clemens Spielvogel, PhD
Postdoctoral Research Scientist
Division of Nuclear Medicine
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Academic Experience and Milestones

Since 2023	**Postdoctoral research scientist** (institutionally funded) at the Division of Nuclear Medicine (Dept. for Biomed. Imaging and Image-guided Therapy) at the Medical University of Vienna as independent scientist at the Department of Prof. Marcus Hacker.
2019-2023	**Postgraduate doctoral researcher and doctoral studies (PhD)** at the Christian Doppler Laboratory for Applied Metabolomics of Assoc. Prof. Alexander Haug (Dept. for Biomed. Imaging and Image-guided Therapy) and Prof. Lukas Kenner (Dept. for Pathology) at the Medical University of Vienna; Thesis title "Molecular disease characterization by application of artificial intelligence in nuclear medicine", graded 1 (best grade)
2019-2022	**Lecturer** at the University of Applied Sciences Technikum Vienna, thesis supervisions and teaching courses related to artificial intelligence, machine learning and computer vision for the Bachelor Program 'Computer Science'
2018-2018	**Scientific machine learning engineer** in the group of Laszlo Papp, PhD (Center for Medical Physics and Biomedical Engineering) at the Medical University of Vienna
2016-2018	**Master of Science (MSc)** in Bioinformatics at the University of Applied Sciences Campus Vienna
2013-2016	**Bachelor of Science (BSc)** in Biomedicine and Biotechnology at the University of Veterinary Medicine Vienna

Research Interest and Important Results

Main focus: Clinical applications of artificial intelligence in cardiovascular imaging
Techniques: Machine learning, vision-based deep learning, explainable artificial intelligence, statistical modeling, quantitative imaging markers, imaging / non-imaging data integration, cardiovascular imaging, single photon emission computed tomography (SPECT), positron emission tomography (PET), and computed tomography (CT)
Results: Development and successful multicenter validation of an artificial intelligence-based opportunistic screening approach for cardiac amyloidosis among patients undergoing scintigraphy; Demonstration that machine learning integration of routinely collected multimodal parameters can detect patients with cardiac amyloidosis before conventional diagnosis by clinicians; Discovery of radiogenomic signatures associated with prognosis in patients with head and neck squamous cell carcinoma

Awards

2025	Researcher of the Month of the Medical University of Vienna
2025	General Sponsorship Award for Nuclear Medicine of the Austrian Society for Nuclear Medicine and Theranostics (OGNT)
2024	Dora-Brücke Teleky Award of the Austrian College of Physicians and the Medical University of Vienna Alumni Club
2024	Society of Nuclear Medicine and Molecular Imaging (SNMMI) Young Investigator Award
2024	Society of Nuclear Medicine and Molecular Imaging (SNMMI) 2nd place Best Clinical Abstract
2024	Best Abstract Award (Digital Cardiology) at the Annual Meeting of the Austrian Society for Cardiology
2024	Carl Apstein Award at the Cardiovascular Research Days
2023	Medical Imaging Cluster Festival Award at the Annual Meeting of the Research Platform Medical Imaging (formerly Medical Imaging Cluster)

Other Achievements

2022-2023	Completion: Stanford University Medical Statistics Professional Program
2021-2022	Completion: IBM-certified Data Science Professional Program
2020, 2025	Co-authoring of the European Nuclear Medicine (EANM) Guide 2020 and 2025
Since 2025	Member of the Austrian Society for Nuclear Medicine's (OGNT) committee for hybrid imaging
Since 2023	Chairing sessions at scientific conferences including the European Nuclear Medicine Association (EANM) conference and the European Molecular Imaging Meeting (EMIM)
Since 2020	Reviewing for various scientific journals e.g. European Heart Journal, npj Digital Medicine, Journal of Nuclear Medicine, Cell Reports Medicine, Med, and Molecular Cancer

Invited Presentations

2025	AttRISE (Stockholm, Sweden): "Artificial Intelligence for Improving the Clinical Management of Patients with Transthyretin Cardiac Amyloidosis"
2025	Austrian Society for Nuclear Medicine and Theranostics (OGNT) Annual Congress (Bad Ischl, Austria): "Artificial Intelligence in Diagnostic Medicine"
2025	Pfizer Symposium at the OGNT Annual Congress (Bad Ischl, Austria): "Challenges and Opportunities for Artificial Intelligence in the Nuclear Medicine-guided Diagnosis of Cardiac Amyloidosis"
2023	Austrian Society of Medical Physicists (OGMP) Annual Congress (Salzburg, Austria): "Artificial Intelligence in Nuclear Medicine"
2023	Biomedical Summer School Vienna (Vienna, Austria): "Cardiac Amyloidosis Screening using Artificial Intelligence in Medical Imaging"
2021	Postgraduate COMULIS Training School for Radiomics and AI in Molecular Imaging (Vienna, Austria): "Machine Learning Platforms and Model Validation"
2019	North German Society of Nuclear Medicine (Hamburg, Germany): "The role of Radiomics in Nuclear Medicine"

Funded Projects as Principal Investigator

Contract Agreement: Markers for the detection of cardiac amyloidosis	Pfizer	15 000 EUR (17 449 USD)
FWF Erwin Schroedinger Fellowship Grant: "AI-enabled SPECT/CT imaging for cardiac amyloidosis"	Austrian Science Fund (FWF)	173 380 EUR (201 692 USD)

Peer-reviewed Publications

*First or last authorships are **underlined***

A machine learning approach to identify patients at risk for long-term consequences after pulmonary embolism; S Nopp*, **CP Spielvogel***, […], C Ay and the RIETE Investigators; Scientific Reports	2025
Impact of Regularization in Optimizing Distance-Encoding Biomorphic-Informational Neural Networks for Small Nuclear Medicine Datasets; B Ecsedi, A Boukhari, CP Spielvogel, […], L Papp; EANM Innovation	2025
Spatial imaging features derived from SUVmax location in resectable NSCLC are associated with tumor aggressiveness; Z Jiang, **CP Spielvogel**, […], and M Hacker; European Journal of Nuclear Medicine and Molecular Imaging	2025
Using 18F-FDG PET/CT-derived body composition features to predict lymphovascular invasion in non-small cell lung cancer; Z Jiang, D Haberl, **CP Spielvogel**, […], and M Hacker; European Journal of Nuclear Medicine and Molecular Imaging	2025
Does PARP1 up-regulation correlate with PSMA expression in patients with metastatic castration-resistant prostate cancer studied with [F]PARPi and [Ga]PSMA PET/CT?; H Einspieler, H Ofner, M Ozenil, **CP Spielvogel**, […], and S Rasul; European Journal of Nuclear Medicine and Molecular Imaging	2025
Comparison of conventional and radiomics-based analysis of myocardial infarction using multimodal non-linear optical microscopy; G Giardina, L Papp, A Krause, **CP Spielvogel**, […], A Unterhuber and M Adreana; Scientific Reports	2025
Artificial intelligence-enabled opportunistic identification of immune checkpoint inhibitor-related adverse events using [18F]FDG PET/CT; **CP Spielvogel**, A Lazarevic, […], and R Calabretta; European Journal of Nuclear Medicine and Molecular Imaging	2025
Multimodal Optical Imaging Combined with Radiomic Analysis for Fibrotic Cardiac Tissue Investigation; A Krause, G Giardina, L Papp, D Haberl, **CP Spielvogel**, […], A Unterhuber; Analytical Chemistry	2025
Enhanced vascular inflammation in patients with advanced prostate cancer receiving hormone therapy; H Einspieler, D Muin, IK Langrate, S Schmitl, **CP Spielvogel**, […], and S Rasul; European Journal of Nuclear Medicine and Molecular Imaging	2025
Enhancing Blood–Brain Barrier Penetration Prediction by Machine Learning-Based Integration of Novel and Existing, In Silico and Experimental Molecular Parameters from a Standardized Database; **CP Spielvogel***, N Schindler*, […], and C Vraka; Journal of Chemical Information and Modeling	2025
Clinician-driven automated data preprocessing in nuclear medicine AI environments; D Krajnc, **CP Spielvogel**, […], and L Papp; European Journal of Nuclear Medicine and Molecular Imaging	2025

Enhanced diagnostic and prognostic assessment of cardiac amyloidosis using combined 11C-PIB PET/CT and 99mTc-DPD scintigraph; H Zhihui*, **CP Spielvogel***, [...], and X Li; European Journal of Nuclear Medicine and Molecular Imaging	2025
Generative artificial intelligence enables medical image generation and improves generalization of machine learning models in data-constrained environments; D Haberl, J Ning, K Kluge, [...], and **CP Spielvogel**; European Journal of Nuclear Medicine and Molecular Imaging	2025
Preoperative detection of extraprostatic tumor extension in patients with primary prostate cancer utilizing [68Ga]Ga-PSMA-11 PET/MRI; **CP Spielvogel***, J Ning*, [...], and S Rasul; Insights into Imaging	2024
Systemic Metabolic and Volumetric Assessment via Whole-Body [^{18}F]FDG-PET/CT: Pancreas Size Predicts Cachexia in Head and Neck Squamous Cell Carcinoma; J Yu, **CP Spielvogel**, D Haberl, [...], C Vraka; Cancers	2024
Diagnosis and prognosis of abnormal cardiac scintigraphy uptake at risk for cardiac amyloidosis using artificial intelligence: An international, multi-center, cross-tracer development and validation study; **CP Spielvogel***, D Haberl*, [...], Marcus Hacker and Christian Nitsche; The Lancet Digital Health	2024
A novel assessment of whole-mount Gleason grading in prostate cancer to identify candidates for radical prostatectomy: a machine learning-based multiomics study; J Ning*, **CP Spielvogel***, [...] and L Kenner; Theranostics	2024
Multicenter PET Image Harmonization using Generative Adversarial Networks; D Haberl, **CP Spielvogel**, [...], I Buvat, A Haug, and L Papp; European Journal of Nuclear Medicine and Molecular Imaging	2024
Comparison of discovery rates and prognostic utility of [68Ga]Ga-PSMA-11 PET/CT and circulating tumor DNA in prostate cancer - a cross-sectional study; K Kluge, H Einspieler, D Haberl, **CP Spielvogel**, [...], and A Haug. European Journal of Nuclear Medicine and Molecular Imaging	2024
Examining the Relationship and Prognostic Significance of Cell-Free DNA Levels and the PSMA-Positive Tumor Volume in Men with Prostate Cancer: A Retrospective-Prospective [68Ga]Ga-PSMA-11 PET/CT Study; K Kluge, H Einspieler, D Haberl, **CP Spielvogel**, [...], A Haug; Journal of Nuclear Medicine	2024
Assessment of PSMA expression of healthy organs in different stages of prostate cancer using [68Ga]Ga-PSMA-11-PET examinations; H Einspieler, K Kluge, D Haberl, K Schatz, L Nics, S Schmitl, B K Geist, **CP Spielvogel**, [...], M Hacker, and S Rasul. Cancers	2023
Mitochondrial polymorphism m3017C>T of SHLP6 relates to heterothermy; S V Emser, **CP Spielvogel**, E Millesi, R Steinborn; Frontiers in Physiology	2023
Error mitigation enables PET radiomic cancer characterization on quantum computers; S Moradi, **CP Spielvogel**, D Krajnc, […], L Papp; European Journal of Nuclear Medicine and Molecular Imaging	2023
DEBI-NN: Distance-encoding biomorphic-informational neural networks for minimizing the number of trainable parameters; L Papp, D Haberl, B Ecsedi, **CP Spielvogel**, […], Wolfgang Drexler; Neural Networks	2023
Machine learning predictive performance evaluation of conventional and fuzzy radiomics in clinical cancer imaging cohorts; M Grahovac, **CP Spielvogel**, [...], A Haug & Laszlo Papp; European Journal of Nuclear Medicine and Molecular Imaging	2023
Sex-specific radiomic features of L-[S-methyl-11C] methionine PET in patients with newly-diagnosed gliomas in relation to IDH1 predictability; L Papp, S Rasul, **CP Spielvogel**, [...], M Hacker and T Traub-Weidinger; Frontiers in Oncology	2022

Radiogenomic markers enable risk stratification and inference of mutational pathway states in head and neck cancer; **CP Spielvogel**, S Stoiber, L Papp, [...], L Kenner and A R Haug; European Journal of Nuclear Medicine and Molecular Imaging	2022
Automated data preparation for in vivo tumor characterization with machine learning; D Krajnc, **CP Spielvogel**, M Grahovac, [...], T Beyer, and L Papp; Frontiers in Oncology	2022
Multi-lesion radiomics of PET/CT for non-invasive survival stratification and histologic tumor risk profiling in patients with lung adenocarcinoma; M Zhao, K Kluge, L Papp, M Grahovac, S Yang, C Jiang, D Krajnc, **CP Spielvogel**, [...], W Zhang, and X Li; European Radiology	2022
Clinical data classification with noisy intermediate scale quantum computers; S Moradi, C Brandner, **CP Spielvogel**, D Krajnc, S Hillmich, R Wille, W Drexler and L Papp; Scientific Reports	2022
Bleeding risk assessment in end-stage kidney disease: validation of existing risk scores and evaluation of a machine learning-based approach; S Nopp, **CP Spielvogel**, S Schmaldienst, [...], O Königsbrügge, and C Ay; Thrombosis and Haemostasis	2021
Toward Quantitative in vivo Label-Free Tracking of Lipid Distribution in a Zebrafish Cancer Model; M Andreana, C Sturtzel, **CP Spielvogel**, [...], M Distel and A Unterhuber; Frontiers in Cell and Developmental Biology	2021
Morpho-Molecular Metabolic Analysis and Classification of Human Pituitary Gland and Adenoma Biopsies Based on Multimodal Optical Imaging; G Giardina, A Micko, D Bovenkamp, A Krause, F Placzek, L Papp, D Krajnc, **CP Spielvogel**, [...], S Wolfsberger and A Unterhuber; Cancers	2021
Supervised machine learning enables non-invasive lesion characterization in primary prostate cancer with [Ga]Ga-PSMA-11 PET/MRI; L Papp, **CP Spielvogel**, B Grubmüller, [...], M Hartenbach and M Hacker; European Journal of Nuclear Medicine and Molecular Imaging	2021
Breast Tumor Characterization Using [18F]FDG-PET/CT Imaging Combined with Data Preprocessing and Radiomics; D Krajnc, L Papp, T S Nakuz, H F Magometschnigg, M Grahovac, **CP Spielvogel**, [...], T H Helbich and K Pinker; Cancers	2021
Transcription factors CP2 and YY1 as prognostic markers in head and neck squamous cell carcinoma: analysis of The Cancer Genome Atlas and a second independent cohort; J Schnoell, B J Jank, L Kadletz-Wanke, S Stoiber, **CP Spielvogel**, E Gurnhofer, L Kenner & G Heiduschka; Journal of Cancer Research and Clinical Oncology	2021
Personalizing Medicine Through Hybrid Imaging and Medical Big Data Analysis; L Papp, **CP Spielvogel**, I Rausch, M Hacker and T Beyer; Frontiers in Physics	2018