

## Harvard Medical School Curriculum Vitae

**Date Prepared:** October 4, 2022

**Name:** Janick Georg Weberpals

**Office Address:** 1 Brigham Circle, 1620 Tremont Street, Suite 3030, Boston, 02120 MA

**Home Address:** 2 Soldiers Field Park, Apt 511, Boston, 02163 MA

**Work Phone:** +1 617-278-0930

**Work Email:** jweberpals@bwh.harvard.edu

**Work FAX:** -

**Place of Birth:** Bruchsal, Germany

### Education

2009	Abitur/High school diploma	Biotechnology, Bioinformatics	Kaethe-Kollwitz Gymnasium, Bruchsal, Germany
2015	Registered Pharmacist	Pharmacy	College of Pharmacy, Philipps University Marburg, Germany
2018	Pharmacy specialization	Drug Information	Bavarian State Chamber of Pharmacists, Germany
2019	Doctor Scientiarum Humanarum ( <i>summa cum laude</i> )	Epidemiology (Thesis Advisor: Hermann Brenner, MD, MPH); Minors: Internal Medicine, Health Services Research	Medical Faculty of Heidelberg, Ruperto Carola University Heidelberg, Germany

### Postdoctoral Training

11/14-04/15	Research Scholar	Pharmacoepidemiology	College of Pharmacy, University of Florida, Gainesville, FL
10/18-04/20	Postdoctoral Fellow	Data Science & Machine learning	Roche Innovation Center Munich (RICM), Roche, Germany

### **Appointments at Hospitals/Affiliated Institutions**

07/22-	Investigator	Department of Medicine, Division of Pharmacoepidemiology and Pharmacoeconomics	Brigham and Women's Hospital, Boston, MA
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### **Other Professional Positions**

05/20-06/21	Data Scientist	Real World Data Collaborations, Personalized Healthcare (PHC) Data Science, F. Hoffmann-La Roche, Basel, CH	
07/21-05/22	Data Scientist	Data, Analytics & Imaging, Personalized Healthcare (PHC) Center of Excellence, F. Hoffmann-La Roche, Basel, CH	Full time (40 hours/week)

### **Committee Service**

#### **Regional**

2019-2020	Doctoral research committee Hugo Loureiro	Munich School of Data Science, Helmholtz Center Munich, University of Munich, Germany
2019		Search committee
2019-2020		Thesis co-advisor

#### **National**

2019	M.Sc. thesis and oral examination committee, Patrick Hanel	Justus Liebig University Giessen, Germany
2019		Thesis co-advisor
2019		Oral examination committee

### **Professional Societies**

2012-	<b>German Pharmaceutical Society (DPhG)</b>	
2016-	<b>International Society for Pharmacoepidemiology (ISPE)</b>	
2016-		Member, Special Interest Group (SIG) Oncology
2020-		Core member, Real World Evidence Task Force Statistical Methods
2020-2021		Reviewer of abstracts submitted to Annual Conference

### **Editorial Activities**

#### ***Ad hoc Reviewer [# reviews]***

*British Medical Journal (BMJ) [3x]*  
*BMJ Open*  
*British Journal of Dermatology*  
*International Journal of Cancer [2x]*  
*JAMA Oncology*  
*Radiotherapy and Oncology*

### **Honors and Prizes**

2016	Fellow	Helmholtz International Graduate School	Awarded fellow title as result of a competitive selection process for a Ph.D. position at the German Cancer Research Center (DKFZ)
2016	Travel Grant	Helmholtz International Graduate School	Travel grant Recipient for attendance of the 7 <sup>th</sup> EuroScience Open Forum (ESOF), Manchester, UK
2016	Travel Grant	International Society for Pharmacoepidemiology (ISPE) Scholarship Recipient	Travel grant recipient for attendance of the 32 <sup>nd</sup> Annual Meeting, Dublin, Ireland
2017	Scholarship	German Academic Exchange Service (DAAD)	Competitive travel grant for attendance of the 33 <sup>rd</sup> Annual Meeting, Montréal, Canada
2017	Travel Grant	International Society for Pharmacoepidemiology (ISPE) Scholarship Recipient	Travel grant recipient for attendance of the 33 <sup>rd</sup> Annual Meeting, Montréal, Canada
2017	Poster Award	Helmholtz International Graduate School/German Cancer Research Center (DKFZ)	Best poster presentation in the category "Epidemiology/ Cancer prevention" at the annual DKFZ research showcase day
2018	Advancement Award	German Association for Medical Informatics,	Best national Ph.D. thesis in the category "Epidemiology" in 2018

		Biometry and Epidemiology (GMDS) e.V.	
2018	Stephan-Weiland Award (1 <sup>st</sup> prize)	German Society for Epidemiology (DGEpi) e.V.	Early career award for the publication “Immortal time bias in pharmacoepidemiologica l studies on cancer patient survival: empirical illustration for beta-blocker use in four cancers with different prognosis, European Journal of Epidemiology (2017), 32 (11), 1019- 1031.”
2019	Summa cum laude	Ph.D. thesis in Epidemiology	Medical Faculty of Heidelberg, Ruperto Carola University Heidelberg, Germany

## **Report of Funded and Unfunded Projects**

### **Funding Information**

#### **Current**

2022-2023	<p><b>Approaches to handling partially observed confounder data from electronic health records (EHR) in non-randomized studies of medication outcomes</b></p> <p>US Food and Drug Administration Sentinel Innovation Center, WO2016</p> <p><u>Role:</u> Lead investigator (PI: Rishi Desai)</p> <p>The proposal aims to systematically investigate approaches to detect underlying missingness mechanisms, compare imputation approaches and develop a toolkit to implement and build confidence in pharmacoepidemiological analyses with partially observed confounder variables.</p>
2022-2026	<p><b>Calibrating real-world evidence studies in oncology against randomized trials</b></p> <p>US Food and Drug Administration (in response to FDABAA-22-00123)</p> <p><u>Role:</u> Lead Investigator (Multi-PI: Drs. Sebastian Schneeweiss and Shirley Wang)</p> <p>The proposal seeks to investigate when and how real-world evidence studies can be used to emulate and complement evidence coming from randomized trials in the field of oncology.</p>

## **Projects Submitted for Funding**

Pending      **Platform for Real-world Evaluation of Targeted Treatments in oncology before and after indication-specific approval (*PRETTY*)**  
German Ministry of Health (BMG/GBA) innovation fund  
Role: Co-Investigator (Multi-PI: Drs. Andreas Meid and Walter E. Haefeli [University of Heidelberg])  
The proposal aims to develop a systematic approach to run comparative effectiveness analyses in the field of oncology with best supportive care/standard of care comparator cohorts with focus on targeted treatments (including immunotherapy) under different situations.

## **Training Grants and Mentored Trainee Grants**

2019      **Risk and prognostic factors in non-small cell lung cancer patients with a non-smoking history**  
Individual research project funding by Roche Diagnostics GmbH  
Role: Co-PI, conceptualized project proposal  
Mentor of Patrick Hanel  
Six-month funding for Master thesis I co-advised to investigate prognosis and treatment success among non-small cell lung cancer patients with and without smoking history

2019-2020      **Real-world data analysis to support precision medicine in oncology**  
Individual research project funding by Roche Diagnostics GmbH  
Role: Co-PI (until change of Department in 2020), conceptualized PhD project proposal  
Mentor of Hugo Loureiro  
Three-year funding for PhD project at Helmholtz Munich School for Data Science (MuDS) in collaboration with Helmholtz Center Munich (Dr. Narges Ahmidi) & TU Munich (TUM) to investigate and develop novel methodologies to support precision medicine in oncology using machine learning

2020      **Patient representation learning in the Flatiron Health - Foundation Medicine (FMI) clinic-genomics database (CGDB) linkage**  
Individual research project funding by Roche Advanced Analytics Network (Note: Proposal was approved but application was withdrawn due to change of Department in 2020)  
Role: PI, conceptualized project proposal  
Six-month funding for Roche Advanced Analytics intern to leverage a comprehensive EHR-genomics database linkage for patient representation learning

## **Report of Local Teaching and Training**

### **Teaching of Students in Courses**

#### **Medical Faculty of Heidelberg, Rupert Carola University Heidelberg (Germany) Courses**

2019-	Introduction to Pharmacoepidemiology, Epidemiology Module, Medical Biometry/Biostatistics MSc course	Institute for Medical Biometry and Informatics (IMBI) 6-hr one day session, 2 yr cycle
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### **Mentored Trainees and Faculty**

2019	Patrick Hanel, BSc, Bioinformatics and Systems Biology, Justus Liebig University Giessen, Germany <i>Career stage:</i> MSc candidate, <i>Mentoring role:</i> Co-advisor on MSc thesis, <i>Accomplishments:</i> graduated with distinction and was in result awarded competitive PhD position at Munich School for Data Science
2019	Hugo Loureiro, MS, Institute for Computational Biology, Helmholtz Center Munich and Technical University Munich, Germany <i>Career stage:</i> PhD candidate, <i>Mentoring role:</i> Co-advisor on PhD thesis, <i>Accomplishments:</i> published comprehensive benchmarking manuscript on artificial intelligence algorithms for prognostic scores development in oncology

## **Report of Regional, National and International Invited Teaching and Presentations**

### **Invited Presentations and Courses**

*Those presentations below sponsored by outside entities are so noted and the sponsor is identified in parentheses.*

#### **National**

2019	High-dimensional real-world data: chances, challenges and exemplary use cases. Global Data Science Conference, Roche pRED early development, Baden-Baden, Germany (Roche sponsored)
2019	Deep Learning in Pharmacoepidemiology & Drug Development. Clinical advanced training lecture, Department for Clinical Pharmacology and Pharmacoepidemiology, University Hospital Heidelberg, Heidelberg, Germany
2019	Real-world Data Science in Pharmaceutical Research & Early Drug Development, Research & Development Career Day and Mentoring Event, German Cancer Research Center (DKFZ), Heidelberg, Germany
2022	Deep Learning on Electronic Health Records for Research in Pharmacoepidemiology: Examples from The Field of Oncology. Invited speaker at FDA Sentinel Innovation and Methods Seminar series on September 7, 2022 (virtual)

## National Abstract Oral Presentations

- 2018 Comparative performance of a modified landmark approach when no time of treatment data are available within oncological databases: exemplary cohort study among resected pancreatic cancer patients. 9<sup>th</sup> Workshop of the working group Pharmacoepidemiology of the German Society for Epidemiology (DGEpi). Bremen, Germany
- 2019 Deep Learning-based Propensity Score Computation: Exemplary Cohort Study in Second-Line Metastatic Cancer Patients Treated with Cancer Immunotherapy Versus Non-Cancer Immunotherapy. 10<sup>th</sup> Workshop of the working group Pharmacoepidemiology of the German Society for Epidemiology (DGEpi). Berlin, Germany

## International

- 2019 Deep Learning on Real-World Data: Overview and Application in Early Drug Development. Symposium Clinical Pharmacology & Clinical Pharmacy. Reims, France
- 2019 Cancer Pharmacoepidemiology: Researching the Diffusion of Innovation. University of Florida, Gainesville, FL, USA
- 2022 Landscape Analysis on Techniques to Deal with Missing Data in Longitudinal Healthcare Databases. The presentation was part of the pre-conference educational course *Advanced Pharmacoepidemiology Methods: Mitigating Missing Data Concerns with External or Internal Subset Validation Populations*. 38<sup>th</sup> International Conference on Pharmacoepidemiology and Therapeutic Risk Management, Copenhagen, Denmark

## International Abstract Oral Presentations

- 2019 Deep learning-based propensity score computation - A methodological approach to constructing synthetic control arms. RPF/RiSE Symposium. Basel, Switzerland (Roche sponsored)
- 2020 Deep learning-based propensity scores for confounding control in comparative effectiveness research: a large-scale real-world data study. 36<sup>th</sup> International Conference on Pharmacoepidemiology & Therapeutic Risk Management. Pharmacoepidemiol Drug Saf 2020; 29(S3):382-3 [Meeting was held virtually due to COVID-19]
- 2021 A Systematic Approach Towards Missing Lab Data in Electronic Health Records: A Case Study in Non-Small Cell Lung Cancer and Multiple Myeloma. 37<sup>th</sup> International Conference on Pharmacoepidemiology & Therapeutic Risk Management. Pharmacoepidemiol Drug Saf 2021; 30:36. [Meeting was held virtually due to COVID-19]

## **Report of Clinical Activities and Innovations**

### **Current Licensure and Certification**

2015	License to Practice as Pharmacist in Germany
2018	Specialized Pharmacist in Drug Information

### **Practice Activities**

2014	Pharmacist in training	Private Pharmacy practice	40 hrs/week for 6 months cont.
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## **Report of Technological and Other Scientific Innovations**

Propensity Score Based Assessment Of Patient Data (2020)	<b>Janick Weberpals</b> , Fabian Schmich, Fabian J. Theis, Anna Bauer-Mehren. 2020. PROPENSITY SCORE BASED ASSESSMENT OF PATIENT DATA. International Patent Application Number PCT/EP2020/064 134, filed 20 May 2020, Patent Pending. <a href="#">Publication WO2020234388A1</a>
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### **Educational Material for Patients and the Lay Community**

*No educational materials below were sponsored by outside entities.*

#### **Books, monographs, articles and presentations in other media**

2016	<b>Weberpals J.</b> Krebsprognose und Betablocker - Eine Frage des Studiendesigns [Cancer prognosis and beta-blockers - study design matters.] Pharm Ztg 2016;24. (Article in German) Available From: <a href="https://www.pharmazeutische-zeitung.de/ausgabe-242016/eine-frage-des-studiendesigns/">https://www.pharmazeutische-zeitung.de/ausgabe-242016/eine-frage-des-studiendesigns/</a>
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## **Report of Scholarship**

### **Peer-Reviewed Publications in Print or Other Media**

<https://orcid.org/0000-0003-0404-7394>

#### **Research investigations**

1. **Weberpals J**, Jansen L, Carr PR, Hoffmeister M, Brenner H. Beta blockers and cancer prognosis - The role of immortal time bias: A systematic review and meta-analysis. Cancer Treat Rev. 2016 Jun;47:1-11. doi: 10.1016/j.ctrv.2016.04.004. Epub 2016 Apr 26. PMID: 27179912.
2. Muhlack DC, Hoppe LK, **Weberpals J**, Brenner H, Schöttker B. The Association of Potentially Inappropriate Medication at Older Age With Cardiovascular Events and Overall Mortality: A Systematic Review and Meta-Analysis of Cohort Studies. J Am Med Dir Assoc. 2017 Mar 1;18(3):211-20. doi: 10.1016/j.jamda.2016.11.025. Epub 2017 Jan 26. PMID: 28131719.
3. Jansen L\*, **Weberpals J\***, Kuiper JG, Vissers PAJ, Wolkewitz M, Hoffmeister M, Brenner H. Pre- and post-diagnostic beta-blocker use and prognosis after colorectal cancer: Results from a



population-based study. *Int J Cancer*. 2017 Jul 1;141(1):62-71. doi: 10.1002/ijc.30717. PMID: 28370155.

4. **Weberpals J\***, Pulte D\*, Jansen L, Luttmann S, Holleczeck B, Nennecke A, Rensing M, Katalinic A, Merz M, Brenner H; GEKID Cancer Survival Working Group. Survival of patients with lymphoplasmacytic lymphoma and solitary plasmacytoma in Germany and the United States of America in the early 21st century. *Haematologica*. 2017 Jun;102(6):e229-32. doi: 10.3324/haematol.2016.157768. Epub 2017 Mar 9. PMID: 28280077; PMCID: PMC5451350.
5. **Weberpals J**, Jansen L, Haefeli WE, Hoffmeister M, Wolkewitz M, Herk-Sukel MPPV, Vissers PAJ, Brenner H. Pre- and post-diagnostic  $\beta$ -blocker use and lung cancer survival: A population-based cohort study. *Sci Rep*. 2017 Jun 6;7(1):2911. doi: 10.1038/s41598-017-02913-8. PMID: 28588274; PMCID: PMC5460218.
6. Pulte D\*, **Weberpals J\***, Jansen L, Luttmann S, Holleczeck B, Nennecke A, Rensing M, Katalinic A, Brenner H; GEKID Cancer Survival Working Group. Survival for patients with rare haematologic malignancies: Changes in the early 21st century. *Eur J Cancer*. 2017 Oct;84:81-7. doi: 10.1016/j.ejca.2017.07.014. Epub 2017 Aug 8. PMID: 28800491.
7. **Weberpals J**, Jansen L, van Herk-Sukel MPP, Kuiper JG, Aarts MJ, Vissers PAJ, Brenner H. Immortal time bias in pharmacoepidemiological studies on cancer patient survival: empirical illustration for beta-blocker use in four cancers with different prognosis. *Eur J Epidemiol*. 2017 Nov;32(11):1019-31. doi: 10.1007/s10654-017-0304-5. Epub 2017 Sep 1. PMID: 28864947.
8. Carr PR\*, Alwers E\*, Bienert S, **Weberpals J**, Kloor M, Brenner H, Hoffmeister M. Lifestyle factors and risk of sporadic colorectal cancer by microsatellite instability status: a systematic review and meta-analyses. *Ann Oncol*. 2018 Apr 1;29(4):825-34. doi: 10.1093/annonc/mdy059. PMID: 29438474.
9. Pulte D, **Weberpals J**, Schröder CC, Emrich K, Holleczeck B, Katalinic A, Luttmann S, Sirri E, Jansen L, Brenner H; GEKID Cancer Survival Working Group. Survival of patients with hepatobiliary tract and duodenal cancer sites in Germany and the United States in the early 21st century. *Int J Cancer*. 2018 Jul 15;143(2):324-32. doi: 10.1002/ijc.31322. Epub 2018 Mar 5. PMID: 29479701.
10. **Weberpals J**, Jansen L, Müller OJ, Brenner H. Long-term heart-specific mortality among 347 476 breast cancer patients treated with radiotherapy or chemotherapy: a registry-based cohort study. *Eur Heart J*. 2018 Nov 14;39(43):3896-903. doi: 10.1093/eurheartj/ehy167. PMID: 29635274.
11. **Weberpals J**, Jansen L, Silversmit G, Verbeeck J, van der Geest L, Vissers PA, Zadnik V, Brenner H. Comparative performance of a modified landmark approach when no time of treatment data are available within oncological databases: exemplary cohort study among resected pancreatic cancer patients. *Clin Epidemiol*. 2018 Aug 30;10:1109-25. doi: 10.2147/CLEP.S160973. PMID: 30214315; PMCID: PMC6121745.
12. Brunssen A, Jansen L, Eisemann N, Waldmann A, **Weberpals J**, Kraywinkel K, Eberle A, Holleczeck B, Zeissig SR, Brenner H, Katalinic A; GEKID Cancer Survival Working Group. A population-based registry study on relative survival from melanoma in Germany stratified by tumor thickness for each histologic subtype. *J Am Acad Dermatol*. 2019 Apr;80(4):938-46. doi: 10.1016/j.jaad.2018.09.018. Epub 2018 Sep 20. PMID: 30244061.
13. Pulte D, **Weberpals J**, Jansen L, Brenner H. Changes in population-level survival for advanced solid malignancies with new treatment options in the second decade of the 21st century. *Cancer*. 2019 Aug 1;125(15):2656-65. doi: 10.1002/cncr.32160. Epub 2019 May 16. PMID: 31095726.

14. Muñoz MA, Jeon N, Staley B, Henriksen C, Xu D, **Weberpals J**, Winterstein AG. Predicting medication-associated altered mental status in hospitalized patients: Development and validation of a risk model. *Am J Health Syst Pharm*. 2019 Jun 18;76(13):953-63. doi: 10.1093/ajhp/zxz119. PMID: 31361885.
15. Perna L, Wahl HW, **Weberpals J**, Jansen L, Mons U, Schöttker B, Brenner H. Incident depression and mortality among people with different types of dementia: results from a longitudinal cohort study. *Soc Psychiatry Psychiatr Epidemiol*. 2019 Jul;54(7):793-801. doi: 10.1007/s00127-019-01683-0. Epub 2019 Mar 6. PMID: 30840093.
16. Walter V, Boakye D, **Weberpals J**, Jansen L, Haefeli WE, Martens UM, Knebel P, Chang-Claude J, Hoffmeister M, Brenner H. Decreasing Use of Chemotherapy in Older Patients With Stage III Colon Cancer Irrespective of Comorbidities. *J Natl Compr Canc Netw*. 2019 Sep 1;17(9):1089-99. doi: 10.6004/jnccn.2019.7287. PMID: 31487678.
17. Becker T, **Weberpals J**, Jegg AM, So WV, Fischer A, Weisser M, Schmich F, Rüttinger D, Bauer-Mehren A. An enhanced prognostic score for overall survival of patients with cancer derived from a large real-world cohort. *Ann Oncol*. 2020 Nov;31(11):1561-8. doi: 10.1016/j.annonc.2020.07.013. Epub 2020 Jul 31. PMID: 32739409.
18. Brunssen A, Jansen L, Eisemann N, Waldmann A, **Weberpals J**, Kraywinkel K, Eberle A, Holleczer B, Zeissig SR, Brenner H, Katalinic A; GEKID Cancer Survival Working Group. Long-term relative survival from melanoma in Germany 1997-2013. *Melanoma Res*. 2020 Aug;30(4):386-95. doi: 10.1097/CMR.0000000000000482. PMID: 30020195.
19. Jansen L, Holleczer B, Kraywinkel K, **Weberpals J**, Schröder CC, Eberle A, Emrich K, Kajüter H, Katalinic A, Kieschke J, Nennecke A, Sirri E, Heil J, Schneeweiss A, Brenner H. Divergent Patterns and Trends in Breast Cancer Incidence, Mortality and Survival Among Older Women in Germany and the United States. *Cancers (Basel)*. 2020 Aug 26;12(9):2419. doi: 10.3390/cancers12092419. PMID: 32858964; PMCID: PMC7565138.
20. **Weberpals J**, Becker T, Davies J, Schmich F, Rüttinger D, Theis FJ, Bauer-Mehren A. Deep Learning-based Propensity Scores for Confounding Control in Comparative Effectiveness Research: A Large-scale, Real-world Data Study. *Epidemiology*. 2021 May 1;32(3):378-88. doi: 10.1097/EDE.0000000000001338. PMID: 33591049.
21. Loureiro H\*\*, Becker T, Bauer-Mehren A, Ahmidi N\*, **Weberpals J\***. Artificial Intelligence for Prognostic Scores in Oncology: a Benchmarking Study. *Front Artif Intell*. 2021 Apr 16;4:625573. doi: 10.3389/frai.2021.625573. PMID: 33937744; PMCID: PMC8086599.
22. Graf RP, Fisher V, **Weberpals J**, Gjoerup O, Tierno MB, Huang RSP, Sayegh N, Lin DI, Raskina K, Schrock AB, Severson E, Haberberger JF, Ross JS, Creeden J, Levy MA, Alexander BM, MD, Oxnard GR, Agarwal N. Comparative Effectiveness of Immune Checkpoint Inhibitors vs. Chemotherapy by Tumor Mutational Burden in Metastatic Castration-Resistant Prostate Cancer. *JAMA Netw Open*. 2022;5(3):e225394. doi:10.1001/jamanetworkopen.2022.5394
23. **Weberpals J**, Roumpanis S, Barer Y, Ehrlich S, Jessop N, Pedotti R, Vaknin-Dembinsky A, Brill L, Chodick G, Muros-Le Rouzic E. Clinical outcomes of COVID-19 in patients with multiple sclerosis treated with ocrelizumab in the pre- and post-SARS-CoV-2 vaccination periods: insights from Israel. *Multiple Sclerosis and Related Disorders*, 2022, S. 104153 (accepted)

\* indicates co-first or co-senior authorship.

\*\* indicates that mentee is first or co-first author

## **Non-Peer Reviewed Scientific or Medical Publications in Print or Other Media**

### **Reviews, chapters, monographs and editorials**

1. Brenner H, **Weberpals J**, Jansen L. Epidemiologische Forschung mit Krebsregisterdaten, Überlebenszeitanalysen, Vergleich nationaler und internationaler Ergebnisse. [Epidemiological research-cancer registry data. Survival time analysis-comparison of national and international results.] ONKOLOGE. 2017 Apr 1;23(4):272-9. (Article in German)
2. **Weberpals J**, Brenner H. Epidemiologie und Risikofaktoren kardiovaskulärer und onkologischer Erkrankungen [Epidemiology and risk factors of cardiovascular and oncological diseases]. In: Müller OJ, Lehmann L, Bokemeyer C. *Kardio-Onkologie*. Berlin. DeGruyter, 2022 (Book chapter in German)

### **Letters to the Editor**

1. **Weberpals J**, Carr PR, Hoffmeister M, Jansen L. Comment on: 'β Blocker use and mortality in cancer patients: systematic review and meta-analysis of observational studies' (Zhong et al., 2015; published Epub ahead of print 3 September 2015). Eur J Cancer Prev. 2018 Jan;27(1):103-4. doi: 10.1097/CEJ.0000000000000243. PMID: 29369941.

### **Thesis**

**Weberpals J**. Associations between β-blocker exposure and cancer prognosis: the role of immortal time bias and analytical approaches in pharmacoepidemiological studies on cancer patient survival. [Doctor Scientiarum Humanarum Dissertation], Medical Faculty of Heidelberg, Rupert Carola University Heidelberg, Germany; 2018

### **Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings**

1. **Weberpals J**, Jansen L, Haefeli WE, Hoffmeister M, Wolkewitz M, Herk-Sukel MPPv, Vissers PAJ, Brenner H. Pre- and post-diagnostic β-blocker use and lung cancer survival: A population-based cohort study. 33<sup>rd</sup> International Conference on Pharmacoepidemiology & Therapeutic Risk Management, Montréal, Canada, 2017. *Pharmacoepidemiol Drug Saf* 2017;26: 269. (*selected juried spotlight poster*)
2. Loureiro H, Becker T, Bauer-Mehren A, Ahmidi N, **Weberpals J**. Improving predictive ability of survival models: comparison of multiple state of the art models. 36<sup>th</sup> International Conference on Pharmacoepidemiology & Therapeutic Risk Management, 2020 [Meeting was held virtually due to COVID-19]. *Pharmacoepidemiol Drug Saf* 2020; 29(S3):35. (*selected oral abstract presented by Ph.D. mentee Hugo Loureiro*)
3. Lenz HJ, **Weberpals J**, Cremolini C, Grothey A, Leutgeb B, Mahrus S, Nimeiri H, Reyes-Rivera I, Seligmann J, Tabernero J, Tejpar S, Yoshino T, Stintzing S. Utilisation and predictors of genomic testing prior to first-line (1L) therapy in patients (pts) with metastatic colorectal cancer (mCRC). European Society for Medical Oncology (ESMO) Annual Meeting 2021. *Ann Oncol* 2021; 32(5); S530-82.
4. Dienstmann R, Turnbull CI, Hackshaw Allan, Blay JY, Maud K, Servant N, Geissler J, Tamborero D, **Weberpals J**, Fear S, Perret S, Perez L, von Meyenn Martina, Le Tourneau C. Conceptualisation of core clinico-molecular variables for registries enrolling patients (pts) with solid tumours profiled with next-generation sequencing (NGS). American Association for Cancer Research Annual Meeting (AACR) 2022.

5. **Weberpals J**, Fruechtenicht C, Davis R, Huntley M, Oki Y, Wyatt S, Castro F, Trinh H. Patient characteristics, outcomes and potential for bias in oncological real-world data studies with imaging-derived response endpoints. 38<sup>th</sup> International Conference on Pharmacoepidemiology & Therapeutic Risk Management, Copenhagen, Denmark 2022. Pharmacoepidemiol Drug Saf 2022. (Poster)

## **Narrative Report**

I am a faculty candidate for an initial appointment as Instructor in Medicine at Harvard Medical School and Investigator in the Department of Medicine, Division of Pharmacoepidemiology and Pharmacoeconomics at Brigham and Women's Hospital.

My main research areas are located in the field of cancer pharmacoepidemiology and in the development and validation of methods to improve the validity of observational comparative effectiveness and safety studies using large, automated healthcare databases. Oncology often underlies fundamentally different disease and treatment trajectories than chronic diseases, leading to methodological challenges in non-randomized studies. In this context, prognostic scores and ways to reduce bias in observational studies have been an important area of my work. During a research stay at the University of Florida, for example, I contributed as part of a multidisciplinary team to the development of a prognostic model to identify hospitalized patients at the highest risk for drug-induced adverse events ([AJHP, 2019](#)). Another more recent achievement was the contribution to the development of a novel pan-cancer prognostic score ([Ann Oncol, 2020](#)) for overall survival which strongly outperformed contemporary prognostic scores such as the Royal Marsden Hospital prognostic score and which may be used for patient matching and baseline risk adjustment in real-world evidence studies and clinical research. This pivotal work enabled me to receive funding for two further individual research projects during my postdoctoral fellowship, one of which gave me the opportunity to supervise a Ph.D. project to investigate to what extent machine learning methods such as survival neural networks and super learner algorithms may enhance classic survival models for prognostic modeling ([Front Artif Intell, 2021](#)).

Further work centered around the development and application of models and methods to leverage large oncological databases to support early clinical drug development, e.g. by constructing external control arms for single-arm clinical trials to contextualize early phase trial findings. The main project focused on the development of a deep learning-derived propensity score for causal inference, which was published in [Epidemiology](#), presented at the International Conference on Pharmacoepidemiology in 2020 and filed for patent. Deep learning and machine learning have seen many great achievements lately in the fields of imaging, genomics and digital pathology. In my vision, the integration of all of these data elements into data-driven and multimodal oncological research will provide tremendous opportunities for future research. The innovation of pivotal work in this field, which I aim to continue as part of my BWH and HMS appointments, was also recently recognized by my former employer's senior management with a product development innovation breakthrough award and a seven-figure internal project funding to enhance capabilities in this field.

As part of my appointment, I further aim to share the experience and knowledge I have gained in the intersection of oncology and advanced healthcare database analytics by teaching at HMS. My teaching experience up to now may be highlighted by recent mentoring opportunities for MSc and Ph.D. students in addition to pharmacoepidemiology introductory courses I have been teaching since 2019 for biostatistics graduate students at the University of Heidelberg, which have been evaluated with the best possible teaching grades.