

## Prof. Dr. Carl HERRMANN

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### Scientific Career

- Since 2023 Full professor at Institut for Pharmacy and Molecular Biotechnology (IPMB), University Heidelberg
- 2018-2023 Head of Biomedical Genomics Group at Health Data Science Unit, Medical Faculty Heidelberg and BioQuant; Lecturer at Medical Faculty Heidelberg
- 2013-2018 Head of the *Cancer Regulatory Genomics Group*, Division of Theoretical Bioinformatics, German Cancer Research Center (DKFZ)
- 2012-2013 Visiting scientist, EMBL- Heidelberg
- 2003-2012 Assistant-professor in bioinformatics, Aix-Marseille University (F); research at the Institut *Technologies Avancées pour le Génome et la Clinique* (TAGC) – Inserm, Marseille (F)
- 2001 – 2003 Postdoc in theoretical physics, University of Turin (I)
- 1999 – 2001 Postdoc in theoretical physics, Universität Halle (D)

### Education

- 2021 Certification for University-level didactics; ongoing habilitation procedure
- 1996 – 1999 PhD thesis in theoretical particle physics at University Marseille / CNRS
- 1994-1995 Masters in theoretical physics, Ecole normale supérieure, Paris (F)
- 1991-1994 Engineering degree, Ecole nationale des Ponts et Chaussées, Paris (F)

### Scientific interests

- Transcriptional gene regulation in diseases
- Gene regulatory networks and single-cell omics
- Data integration through machine-learning approaches

### Ongoing fundings

- e:Med project COMMITMENT “COMorbidity Modeling via Integrative Transfer machine-learning in MENTal illness” (PI SP4 Transfer learning)
- DFG SPP2202 Spatial Genome Architecture in Development and Disease; Project “Nuclear landscape of HIV-1 integration in microglia”(PI with M. Lusic CIID)
- DFG Focus COVID-19: Immunität und Pathomechanismen “Identification of the molecular origins of comorbidity in COVID-19 patients” (PI with S. Boulant, CIID)
- DFG Transregio TRR179 “Determinants and dynamics of elimination versus persistence of hepatitis virus infection” (co-PI central project Z03 single-cell sequencing with K. Rippe)

### Scientific and teaching activities

- Member of the French society of bioinformatics (SFBI)
- Associate-editor at PLOS Computational Biology
- Teaching at University Heidelberg within the Molecular Biotechnology Bachelor and Masters program.
- Responsible for the bioinformatics curriculum in the Molecular Biotechnology Bachelor, University Heidelberg
- 5 PhD thesis supervised (Marseille and Heidelberg)

## Selected Publications

- Doncevic, D, **Herrmann, C.** 2023. Biologically informed variational autoencoders allow predictive modeling of genetic and drug induced perturbations. *Bioinformatics* (in press) 10.1093/bioinformatics/btad387
- Cao, H, Zhang, Y. Baumbach, J, Burton, P, Dwyer, D, Koutsouleris, N, Matschinske, J, Marcon, Y. Rajan, S, Rieg, T, Ryser-Welch, P, Späth, J, Consortium, The COMMITMENT, **Herrmann, C\***, Schwarz, E\* (2022) dsMTL: a computational framework for privacy-preserving, distributed multi-task machine learning. *Bioinformatics* btac616.
- Rheinberger, M, Costa, A, Kampmann, M, Glavas, D, Shytaj, I, Sreeram, , Penzo, C, Tibroni, N, Garcia-Mesa, Y, Leskov, K, Fackler, O, Vlahovicek, K, Karn, J, Lucic, B, **Herrmann, C\***, Lusic, M\*. 2023. Genomic profiling of HIV-1 integration in microglia cells links viral integration to the topologically associated domains. *Cell Reports* 42, 112110.  
<https://doi.org/10.1016/j.celrep.2023.112110>
- Ramirez Alvarez, C., Kee, C., Sharma, A. K., Thomas, L., Schmidt, F. I., Stanifer, M. L., Boulant, S.\*, & **Herrmann, C.\*** (2021). The endogenous cellular protease inhibitor SPINT2 controls SARS-CoV-2 viral infection and is associated to disease severity. *PLOS Pathogens*, 17(6), [e1009687](https://doi.org/10.1371/journal.ppat.1009687).
- Jansky, S., Kumar Sharma, A., Kamp, V., Toprak, U. H., Wecht, E. M., Gartlgruber, M., ... **Herrmann, C.**, Höfer, T., Westermann, F. (2021.). Single-cell transcriptomic analyses provide insights into the developmental origins of neuroblastoma. *Nature Genetics*.
- Gartlgruber, M., Sharma, A.K., Quintero, A., Dreidax, D., Jansky, S., Park, Y., Kreth, S., Meder, J., Doncevic, D., Saary, P., Toprak, U.H., Ishaque, N., Afanasyeva, E., Wecht, E., Koster, J., Versteeg, R., Grünewald, T.G.P., Jones, D.T.W., Pfister, S.M., Henrich, K., van Nes, J., **Herrmann, C.\***, Westermann, F.\* (2021). Super enhancers define regulatory subtypes and cell identity in neuroblastoma. *Nature Cancer*, 2(1), 114–128.
- Wu, Y., Fletcher, M., Gu, Z., Wang, Q., Costa, B., Bertoni, A., ... **Eils R.**, ..., **Herrmann, C.\***, Radlwimmer, B.\* (2020). Glioblastoma epigenome profiling identifies SOX10 as a master regulator of molecular tumour subtype. *Nature Communications*, 11(1), 6434.
- Al-Ali, R., Bauer, K., Park, J.-W., Al Abdulla, R., Fermi, V., von Deimling, A., ... **Herrmann, C.**, Wick, W., Turcan, Ş. (2019). Single-nucleus chromatin accessibility reveals intratumoral epigenetic heterogeneity in IDH1 mutant gliomas. *Acta Neuropathologica Communications*, 7(1), 201.
- Bauer T., Trump S., Ishaque N., Thürmann L., Gu L., Bauer M., ... **Herrmann C.\***, Eils R.\*, Lehmann I.\* (2016). Environment-induced epigenetic reprogramming in genomic regulatory elements in smoking mothers and their children. *Molecular Systems Biology*, 12(3), 861–861.