

Curriculum vitae

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Acad. Degree: Mag. Dr. rer. nat
Current Position: Professor
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Academic milestones and positions

2020-present Professor, Department of Pathology, Medical University of Vienna
2016-present Deputy Director and Key Researcher, Ludwig Boltzmann Institute for Applied Diagnostics (LBI AD)
2014-2020 Associate Professor, Department of Pathology, Medical University of Vienna
2012 Habilitation in "Tumor Biology" at the Medical University of Vienna
2011-2014 Assistant Professor, Department of Pathology, Medical University of Vienna
2009-present Lecturer for Epigenetics at the University of Vienna
2009-2011 Senior Postdoc, Department of Pathology, Medical University of Vienna
2008-2009 Maternity leave
2008 Postdoctoral fellow with Lukas Kenner, Department of Pathology, Medical University of Vienna
2007 Maternity leave
2002-2007 Postdoctoral fellow with Peter Jones, Norris Comprehensive Cancer Center and Hospital, University of Southern California, Los Angeles
1998-2001 Doctoral thesis, Department of Medical Biochemistry, University of Vienna, group Christian Seiser
1996-1997 Master Thesis, Department of Medical Biochemistry, University of Vienna, group Christian Seiser

Areas of research

Keywords: Medical Epigenomics, Biomarker Development, Liquid Biopsies, Advanced preclinical models

My research interest lies in the field of medical epigenomics and cancer. Using different preclinical models, we are aiming to understand the causality of epigenetic aberrations in cancer, how epigenetic signatures are generated and how they can be reversed and remodeled. We have employed genome-scale analyses to define targets of differential DNA methylation in primary tumors to define epigenetic biomarkers and to discover epigenetic drivers of tumorigenesis. Furthermore, as a main objective of the recently established Ludwig Boltzmann Institute Applied Diagnostics we have developed different organotypic 3D tissue culture models from primary patient material and genetic mouse models, which we use to perform functional molecular analyses and drug testing.

Research achievements

Fellowships

- 2009 Elise Richter Female postdoctoral carrier development fellowship (FWF)
2009 Marie Curie FP7 International reintegration grant (EU)

Reviewing Activities

- Journals New England Journal of Medicine, Nature Medicine, Cell Reports, Leukemia Blood, PNAS, Molecular Cancer and others.

Editorial Activity

- 2019 – present Editorial Board Member of Cells

Professional Memberships

- 2013-present ÖGMBT, Österreichische Gesellschaft für Molekulare Biowissenschaften und Biotechnologie
2018-present ÖPPM, Austrian Platform for Personalized Medicine
2019-present AACR, American Association for Cancer Research
2019-present EACR, European Association for Cancer Research

Conference Organization

- 2016 1st Donau Symposium on applied diagnostics for effective cancer treatment, Vienna, Austria September 28-30, 2016. (Organizing committee member and chair)
2019 10th ERIA Meeting and ALKATRAS IP and Clinical Trials Workshop Vienna, July 3-5 2019 (Co-organizer and chair)
2021 1st Workshop Epigenetics, ÖFG, Medical University of Vienna, Austria, September 24, 2021

Teaching responsibilities

- Supervision of master, diploma and PhD students
- Seminars related to tumor biology and epigenetics for MD and PhD students
- Lectures and courses on Epigenetics at the University of Vienna
- Postgraduate courses on Epigenetics for physicians and teachers

5 most important externally funded projects

| Funding organization | Number | Project duration | Project title |
|--------------------------------|-------------------------|-------------------------|-----------------------------------------------------------------|
| Austrian Science Fund (FWF) | DOC 59 doc.fund | 2019-2023 | MUW International PhD Program in Translational Oncology (IPPTO) |
| Ludwig Boltzmann Society (LBG) | LBI Applied Diagnostics | 2016-2023 | PL Molecular Pathology |
| Austrian Science Fund (FWF) | I 4066 | 2019-2021 | Dissecting the role of HDAC1 in T Cell Lymphoma |
| Austrian Science Fund (FWF) | P 32771 | 2020-2024 | The biological role of PSMA for prostate cancer |
| Austrian Science Fund (FWF) | SFB F 83/ 8302-B | 2021-2025 | SFB Immunometabolism |

Publications (10 most important)

<https://www.ncbi.nlm.nih.gov/myncbi/1Pg-2XC1tIDAg/bibliography/public/>

- 1) **Egger, G.**, Liang, G., Aparicio, A. & Jones, P. A. Epigenetics in human disease and prospects for epigenetic therapy. *Nature* **429**, 457-463, doi:10.1038/nature02625 (2004).
- 2) **Egger, G.**, Jeong, S., Escobar, S. G., Cortez, C. C., Li, T. W., Saito, Y., Yoo, C. B., Jones, P. A. & Liang, G. Identification of DNMT1 (DNA methyltransferase 1) hypomorphs in somatic knockouts suggests an essential role for DNMT1 in cell survival. *Proc Natl Acad Sci U S A* **103**, 14080-14085, doi:10.1073/pnas.0604602103 (2006).
- 3) Saito, Y., Liang, G., **Egger, G.**, Friedman, J. M., Chuang, J. C., Coetzee, G. A. & Jones, P. A. Specific activation of microRNA-127 with downregulation of the proto-oncogene BCL6 by chromatin-modifying drugs in human cancer cells. *Cancer Cell* **9**, 435-443, doi:10.1016/j.ccr.2006.04.020 (2006).
- 4) **Egger, G.**, Aparicio, A. M., Escobar, S. G. & Jones, P. A. Inhibition of histone deacetylation does not block resiliencing of p16 after 5-aza-2'-deoxycytidine treatment. *Cancer Res* **67**, 346-353, doi:10.1158/0008-5472.CAN-06-2845 (2007).
- 5) Gal-Yam, E. N.* , **Egger, G.***, Iniguez, L., Holster, H., Einarsson, S., Zhang, X., Lin, J. C., Liang, G., Jones, P. A. & Tanay, A. Frequent switching of Polycomb repressive marks and DNA hypermethylation in the PC3 prostate cancer cell line. *Proc Natl Acad Sci U S A* **105**, 12979-12984, doi:10.1073/pnas.0806437105 (2008). *equal contribution
- 6) Exner, R., Pulverer, W., Diem, M., Spaller, L., Woltering, L., Schreiber, M., Wolf, B., Sonntagbauer, M., Schroder, F., Stift, J., Wrba, F., Bergmann, M., Weinhausel, A. & **Egger, G.** Potential of DNA methylation in rectal cancer as diagnostic and prognostic biomarkers. *Br J Cancer* **113**, 1035-1045, doi:10.1038/bjc.2015.303 (2015).
- 7) Hassler, M. R., Pulverer, W., Lakshminarasimhan, R., Redl, E., Hacker, J., Garland, G. D., Merkel, O., Schiefer, A. I., Simonitsch-Klupp, I., Kenner, L., Weisenberger, D. J., Weinhaeusel, A., Turner, S. D. & **Egger, G.** Insights into the Pathogenesis of Anaplastic Large-Cell Lymphoma through Genome-wide DNA Methylation Profiling. *Cell Rep* **17**, 596-608, doi:10.1016/j.celrep.2016.09.018 (2016).
- 8) Guccini I, Revandkar A, D'Ambrosio M, Colucci M, Pasquini E, Mosole S, Troiani M, Brina D, Sheibani-Tezerji R, Elia A, Rinaldi A, Pernigoni N , Rüschoff JH, Dettwiler S, De Marzo AM, Antonarakis ES, Borrelli C, Moor AE, Garcia-Escudero R, Alajati A, Attanasio G, Losa M, Moch H, Wild P, **Egger G.** and Alimonti A. Senescence reprogramming in primary tumors initiates prostate cancer metastases. *Cancer Cell*, 2021 Jan 11;39(1):68-82.e9. doi: 10.1016/j.ccell.2020.10.012.
- 9) Redl E, Sheibani-Tezerji R, Cardona CJ, Hamminger P, Timelthaler G, Hassler MR, Zrimšek M, Lagger S, Dillinger T, Hofbauer L, Draganić K, Tiefenbacher A, Kothmayer M, Dietz CH, Ramsahoye BH, Kenner L, Bock C, Seiser C, Ellmeier W, Schweikert G, **Egger G.** Requirement of DNMT1 to orchestrate epigenomic reprogramming for NPM-ALK-driven lymphomagenesis. *Life Sci Alliance*. 2020 Dec 11;4(2):e202000794. doi: 10.26508/lsa.202000794. Print 2021 Feb.
- 10) Dillinger T, Sheibani-Tezerji R, Pulverer W, Stelzer I, Hassler MR, Scheibelreiter J, Pérez Malla CU, Kuroll M, Domazet S, Redl E, Ely S, Brezina S, Tiefenbacher A, Rebhan K, Hübner N, Grubmüller B, Mitterhauser M, Hacker M, Weinhaeusel A, Simon J, Zeitlinger M, Gsur A, Kramer G, Shariat SF, Kenner L, **Egger G.** Identification of tumor tissue-derived DNA methylation biomarkers for the detection and therapy response evaluation of metastatic castration resistant prostate cancer in liquid biopsies. *Mol Cancer*. 2022 Jan 3;21(1):7. doi: 10.1186/s12943-021-01445-0.