

Personal Data

Name: Matthias R. Schaefer
Date of Birth: September 12th, 1968
Nationality: German
Address: Medical University of Vienna, Center for Anatomy and Cell Biology,
Division of Cell and Developmental Biology, Schwarzspanierstrasse 17;
A-1090 Vienna, Austria
Phone: +43-1-40160 37702
FAX: +43-1-40160-37542
E-mail: matthias.schaefer@meduniwien.ac.at
Web: <https://bit.ly/39Hbh1A>
ORCID: [0000-0003-1952-8115](https://orcid.org/0000-0003-1952-8115)
Publons: <https://bit.ly/2TTIW2c>

Scientific Education & Career History

Since 2017	Associate Professor at Medical University Vienna, Vienna, Austria
2015- 2017	Assistant Professor at Medical University Vienna, Vienna, Austria
2014- 2015	Group Leader at Max-Perutz Laboratories, Vienna, Austria, Germany
2013	Habilitation in Biochemistry, University of Heidelberg
2008- 2014	Project Leader at DKFZ, Heidelberg, Germany
2004- 2008	Postdoctoral Researcher at DKFZ, Heidelberg, Germany
2002- 2004	Postdoctoral Researcher at Karolinska Institutet, Stockholm, Sweden
1998- 2001 Vienna	PhD in Biochemistry, Institute of Molecular Pathology & University Vienna
1996- 1998	PhD student, Albert-Einstein College of Medicine, New York, USA
1995- 1996	Diploma student, Rockefeller University, New York, USA
1991- 1996	Undergraduate studies in Biochemistry, Freie Universität Berlin, Germany

Main Areas of Research

- (Cytosine-5) methylation of RNA and DNA
- Biology of tRNA fragments
- RNA binding proteins

Awards

2002-2004 EMBO Long-Term Fellow

Member of Consortia

Since 2020	Member of FWF-funded SFB 80 “RNA-DECO: Decorating RNA for a Purpose”
Since 2017	European Commission, CostAction CA16120 (European Epitranscriptomics Network)
2009- 2015	Member of “Forschergruppe” DFG-FOR1082

Selected invited conference talks:

2019	GRC on RNA editing and modification/Italy
2018	RNA and Disease Meeting/Austria
2017	<i>Drosophila</i> Heterochromatin Meeting/Italy
2014	RNA Biochemistry Meeting/Germany
2013	European <i>Drosophila</i> Conference/Spain
2012	EMBO Meeting/France

Ad-hoc reviewing for *Bioessays*, *Cell Reports*, *EMBO Reports*, *EMBO Journal*, *Epigenomics*, *FASEB*, *FEBS Letters*, *Genomics*, *Genes*, *Molecular Cell*, *Nature Communications*, *Nature Reviews Molecular Cell Biology*, *Nature Plants*, *Nucleic Acids Research*, *Nutrients*, *Molecular Cell*, *Oncogene*, *PLoS ONE*, *PLoS Genetics*, *RNA Biology*, *Scientific Reports*, *Science Advances*, *Toxics*, *WIREs RNA*

Reviewer for funding agencies: *Israel Science Foundation (ISF)*, *Austrian Science Foundation (FWF)*, *Biotechnology and Biological Sciences Research Council (BBSRC)*, *Boehringer-Ingelheim Foundation (BIF)*, *The Netherlands Organisation for Health Research and Development (ZonMw)*, *Deutsche Forschungsgemeinschaft (DFG)*, *Science Foundation Ireland (SFI)*, *Medical Research Council (MRC)*, *Research Foundation Flanders (FWO)*, *National Institute of Environmental Health Sciences (NIEHS)*

Major Scientific Achievements

- Developed the RNA bisulfite sequencing (RNA-BisSeq) technique allowing the analysis of (cytosine-5) RNA methylation patterns at nucleotide resolution;
- Uncovered a link between (cytosine-5) RNA methylation and stress-induced tRNA fragmentation;
- Clarified that Dnmt2 enzymes are not (cytosine-5) DNA methyltransferases and that mobile element control in *Drosophila* is independent of DNA methylation;
- Discovered an unusual receptor-independent activation mechanism through heterotrimeric G-protein signaling during asymmetric segregation of cell fate determinants;
- Developed and characterized an antibody against human telomere-binding protein TRF1, which allowed the visualization of human telomeres for the first time;

- Co-developed the “MS2-tagging” technique allowing to monitor RNA movement from transcription to localized translation in living cells and in real-time.

Teaching Duties

Since 2015 Histology and Cell Biology courses at Medical University of Vienna
 2014- 2015 Practical courses in Biochemistry at University of Vienna
 2009- 2014 Courses in Epigenetics and Cell Biology at University of Heidelberg

Supervision of Students

Since 2014 6 Master Students, 3 PhD students
 2009- 2014 3 Diploma Students, 3 Master Students, 1 PhD student

10 most Important Peer-Reviewed Publications

Genencher, B., Durdevic, Z., Hanna, K., Zinkl, D., Mobin, M.B., Senturk, N., Da Silva, B., Legrand, C., Carré, C., Lyko, F., and **Schaefer, M.** (2018). Mutations in Cytosine-5 tRNA Methyltransferases Impact Mobile Element Expression and Genome Stability at Specific DNA Repeats. **Cell Rep.** 22(7): 1861-1874. doi: [10.1016/j.celrep.2018.01.061](https://doi.org/10.1016/j.celrep.2018.01.061).

Durdevic, Z., Mobin, M.B., Hanna, K., Lyko, F. and **Schaefer, M.** (2013). The RNA methyltransferase Dnmt2 is required for efficient Dicer-2 dependent siRNA pathway activity in Drosophila. **Cell Rep.** 4 (5): 931-937. doi: [10.1016/j.celrep.2013.07.046](https://doi.org/10.1016/j.celrep.2013.07.046).

Raddatz, G., Guzzardo, P.M., Olova, N., Fantappiè, M.R., Rampp, M., **Schaefer, M.**, Reik, W., Hannon, G.J., and Lyko, F. (2013). Dnmt2-dependent methylomes lack defined DNA methylation patterns. **Proc Natl Acad Sci USA.** 110(21):8627-31. doi: [10.1073/pnas.1306723110](https://doi.org/10.1073/pnas.1306723110).

Durdevic, Z., Hanna, K., Gold, B., Pollex, T., Cherry, S., Lyko, F., and Schaefer, M. (2013). Efficient RNA virus control in Drosophila requires the RNA methyltransferase Dnmt2. **EMBO Rep.** 14(3): 269–275. doi: [10.1038/embor.2013.3](https://doi.org/10.1038/embor.2013.3).

Tuorto, F., Liebers, R., Musch, T., **Schaefer, M.**, Hofmann, S., Kellner, S., Frye, M., Helm, M., Stöcklin, G. and Lyko, F. (2012). Site-specific cytosine-5 methylation by the mouse RNA methyltransferases Dnmt2 and NSun2 promotes tRNA stability and protein synthesis. **Nat Struct Mol Bio.** 19(9): 900-905. doi: [10.1038/nsmb.2357](https://doi.org/10.1038/nsmb.2357).

Schaefer, M., Pollex, T., Hanna, K., Tuorto, F., Meusburger, M., Helm, M., and Lyko, F. (2010). RNA methylation by the DNA methyltransferase homologue Dnmt2 protects transfer RNAs against stress-induced cleavage. **Genes Dev.** 24(15): 1590-1595. doi: [10.1101/gad.586710](https://doi.org/10.1101/gad.586710).

Schaefer, M., Pollex, T., Hanna, K. and Lyko, F. (2009). RNA cytosine methylation analysis by bisulfite sequencing. **Nucleic Acids Res.** 37(2): e12. doi: [10.1093/nar/gkn954](https://doi.org/10.1093/nar/gkn954).

Schaefer, M., Petronczki, M., Dorner, D., Forte, M. and Knoblich, J. A. (2001). Heterotrimeric G proteins direct two modes of asymmetric cell division in the Drosophila nervous system. **Cell**. 107(2): 183-194.

Schober, M.#, **Schaefer, M.#** and Knoblich, J. A. (1999). Bazooka recruits Inscuteable to orient asymmetric cell divisions in Drosophila neuroblasts. **Nature**. 402(6761): 548-551. doi: [10.1038/990135](https://doi.org/10.1038/990135).

Bertrand, E., Chartrand, P., **Schaefer, M.**, Shenoy, S. M., Singer, R. H. and Long, R. M. (1998). Localization of ASH1 mRNA particles in living yeast. **Mol. Cell**. 2(4): 437-445. doi: [10.1016/S1097-2765\(00\)80143-4](https://doi.org/10.1016/S1097-2765(00)80143-4)

#Equal contribution