

Curriculum Vitae

Name & Address

Wilfried Ellmeier – *Professor of Immunobiology*

Current Position: Full Professor of Immunobiology Medical University Vienna

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Main Research Interests

My long-term research interest is to characterize molecular mechanisms that regulate the development and function of T cells. Together with my laboratory I made important contributions to the transcriptional control of Cd8 gene expression and identified that the transcription factor MAZR is an important regulator of CD8 expression as well as of CD4/CD8 lineage development. Moreover, I am interested in elucidating the roles of histone deacetylases (HDACs) in T cells and e.g. we recently identified that CD4⁺ T cell lineage integrity is regulated by HDAC1 and HDAC2. I have also a long-standing interest in revealing the role of Tec family kinases in the regulation of immune responses. In ongoing studies my team addresses topics like: (1) Transcriptional control of conventional and innate-like T cell development; (2) Transcription factor networks regulating peripheral T cell function and tissue homeostasis; (3) Maintenance of T cell lineage identity and integrity; (4) Characterization of signaling pathways modulating Th differentiation. The experimental strategies to address our research interests include immunological tools, biochemical and molecular approaches, retroviral-mediated gene transduction into hematopoietic stem cells, and mouse molecular genetics tools.

Scientific Education and Career History

Since 2007	Full Professor of Immunobiology
2005 – 2007	Associate Professor (a.o.Univ.Prof), Medical University of Vienna
12/2002	Habilitation in Immunology, University of Vienna Medical School
Since 2000	Group Leader, Institute of Immunology, University of Vienna
1995 – 1999	Postdoctoral Fellow in Dan Littman's laboratory, Skirball Institute, Howard Hughes Medical Institute, New York University Medical Center, New York, NY, USA
1990 – 1994	Doctoral studies, University of Vienna, with distinction; PhD Thesis performed at the Institute for Molecular Pathology (IMP) in Vienna
1989 – 1990	Diploma thesis at the Institute for Molecular Pathology (IMP) in Vienna
1985 – 1990	Studies in Biochemistry, University of Vienna, with distinction
1985	University entrance qualification, HTL-Mödling, with distinction

Experience in Scientific Management, Organization & Student Supervision (selected)

Since 2000	Supervisor of 7 Postdocs, Supervision & training of 10 Diploma/Masters (M.Sc.) & 17 PhD students . Awards and fellowships won by lab members: Postdoctoral fellowships: German Research Foundation. PhD fellowships: DOC - Austrian Academy of Sciences; Schering foundation. Prizes: Karl Landsteiner prize (3x); Sanofi-Aventis prize (3x); Best dissertation award (2x)
2005 - 2009	Speaker and coordinator of the FWF SFB-F23 (Special Research Program)
Since 2007	Head of the Division of Immunobiology at the Institute of Immunology
Since 2008	Program coordinator of the MedUniWien PhD program "Immunology".

2010	Co-organizer of the Joint FEBS/EFIS international meeting “Inflammatory diseases and immune response: basic aspects, novel approaches and experimental models”, Vienna, Austria
Since 2010	Deputy speaker: FWF/MedUniWien PhD program “Inflammation and Immunity”
Since 2011	Speaker of the coordination board of the MedUniWien “Immunology Research Cluster (IRC)”: cluster.meduniwien.ac.at/irc
2014	Member of the local scientific advisory committee of the European Macrophage and Dendritic Cell Society Meeting, Vienna, Austria
2015	Member of the local organizing committee of the European Congress of Immunology, Vienna, Austria.
2017	Co-organizer of the 2nd Midwinter Conference “Advances in Immunobiology”, January 21-25, Seefeld, Austria

Supervision of Doctoral (PhD) Thesis Students (past five years – 17 since 2000)

Matthias Hombauer – PhD Student 2007-2013

“A novel Cd8-cis-regulatory element preferentially directs expression in CD44^{hi}CD62L⁺ CD8⁺ T cells and in CD8 $\alpha\alpha$ ⁺ dendritic cells”

Anastasia Abramova– PhD Student 2007-2013

“Transcriptional regulation of mast cell development and function”

Derya Köprülü - PhD Student 2007-2012

“The non-receptor protein tyrosine kinases Btk and Tec and their role in macrophages in response to infection”

Roland Tschismarov - PhD Student 2008-2014

“Multiple roles for HDAC1 and HDAC2 in T cell development and function”

Lena Müller - PhD Student 2011 - [ongoing](#) (inbetween maternity leave)

“The role of NCOR1 during T cell development”

Lisa Göschl- PhD Student 2012 - [ongoing](#)

“HDAC1 and autoimmuninflammation”

Liisa Andersen - PhD Student 2014 - [ongoing](#)

“The role of MAZR in CD4⁺ T cells”

Teresa Preglej - PhD Student 2014 - [ongoing](#)

“Dissecting the role of HDAC1 and HDAC2 in the induction of CD4⁺ T cells with cytotoxic effector function”

Daniela Hainberger - PhD Student 2014 - [ongoing](#)

“Studies on NCOR1 functions in CD4⁺ T cells”

Patricia Hamminger - PhD Student 2016 - [ongoing](#)

“Characterization of the HDAC1 and HDAC2 interactome”

Invited presentations to conferences and/or international advanced schools (5 selected)

- *2014, November:* Invited talk at the 4th international Conference of regulatory T cells and T helper subsets (China Treg 2014) conference, Shanghai, China
- *2015, April:* Talk at the Venice Thymus meeting, San Servolo Island, Italy; part of the Global Thymus Network conference series
- *2015 August:* Invited talk, 5th Lower Saxony International Summer Academy in Immunology, Hannover, Germany
- *2017, January:* Invited talk at the 2nd Midwinter Conference “Advances in Immunobiology”, Seefeld, Austria.
- *2017 March:* Invited talk at the 7th 6th International Workshop of Kyoto T Cell Conference, Kyoto Japan; part of the Global Thymus Network conference series.

Honors & Awards (5 most relevant)

1995 - 1997	Erwin-Schrödinger Postdoctoral Fellowship, FWF
2000 - 2002	APART Habilitation Fellowship, Austrian Academy of Sciences
06/2001	START Prize of the Austrian Science Fund (most prestigious prize in Austria for young scientist; similar to ERC Starting Grant)
01/2005	Novartis prize 2004 in Biology
Since 2012	Elected corresponding member of the Austrian Academy of Sciences

Member of Reviewing Panels, Editorial Boards, Scientific Organizations (5 selected)

2000 - date	Reviewer for journals, including Nature Immunology, Nature Medicine, Immunity, Journal of Experimental Medicine, EMBO Journal, Journal of Immunology, European Journal of Immunology, PLOS ONE, Immunology Letters, etc.
2000 - date	Frequent reviewer for various funding agencies: MRC (UK), Telethon (Italien), The French National Research Agency (ANR), Dutch Reumafonds, Czech Science Foundation, Biotechnology and Biological Sciences Research Council (BBSRC; UK)
2005 - date	Member: Austrian Academy of Sciences APART and DOC fellowship committee
2014 - date	Editor of FEBS Letters
2015	Member of the Evaluation committee of ANR (French research agency)

Most Important Research Funding (selection of most relevant in past 5 years)

Since the establishment of my own research group in 2000, I was able to finance my laboratory with 18 internationally peer-reviewed research grants with a total funding of approx. 5.6 Mill €. Among the research grants was also the highly competitive START prize 2001 of the Austrian Science Fund (1.1 Million €/5years; which is similar to an ERC Starting Grant).

- 2017 – 2020, FWF - Molecular control of T helper cell differentiation by the transcription factor MAZR - 400 k€
- 2015 – 2019, H2020-MSCA-ITN-2015 - ITN Training Network: “ENLIGHT-TEN” - 255k€
- 2014 – 2017, FWF - The role of HDAC1 and HDAC2 in CD4⁺ T cells. - 437k€
- 2011 – 2016, FWF - Molecular analysis of the Function of the Transcription Factor MAZR in CD4⁺ T Lymphocytes and in Mast Cells - 404 k€
- 2009 – 2013, WWTF – Epigenetic Regulation of T Cell Development and Function - collaborative grant with Christian Seiser, part of W.E.- 270 k€
- 2007 – 2019, FWF – Doctoral program: Molecular analysis of immune cell development and activation (international evaluation every 3rd year) - Approx. 50k€/year

Key International Collaborators (selection of 5)

- **Ichiro Taniuchi**, RIKEN Center for Integrative Medical Sciences, Yokohama, JPN - ichiro.taniuchi@riken.jp
- **Patrick Matthias**, Friedrich Miescher Institute for Biomedical Research, Basel, CHE patrick.matthias@fmi.ch
- **Hilde Cheroutre**, La Jolla Institute of Immunology, San Diego, CA, USA - hilde@lji.org
- **Johan Auwerx**, Ecole Polytechnique Fédérale de Lausanne, CHE (manuscript submitted).- admin.auwerx@epfl.ch.
- **Michael Farrar**, University of Minnesota, USA (manuscript submitted) - farra005@umn.edu

List of Publications (2012 - 2016)

Overall, **68** scientific papers with a cumulative impact factor of **745** (IF value 2014) (11 IF/publication): Based on Google Scholar, the publications received more than **8300** citations with a current life-time Hirsch **h Index** of **34**.

1. Kuchler, K., Müller, M., Decker, W. and **Ellmeier, W.** (2013) The tyrosine kinase Btk regulates the macrophage response to *Listeria monocytogenes* infection. **PLOS ONE**;8(3):e60476.
2. Mucida M, Husain MM, Muroi S, van Wijk F, Shinnakasu R, Naoe Y, Reis BS, Huang Y, Lambolez F, Docherty M, Attinger A, Shui JW, Kim G, Lena CJ, Sakaguchi S, Miyamoto C, Wang P, Atarashi K, Park Y, Nakayama T, Honda K, **Ellmeier W**, Kronenberg M, Taniuchi I and Cheroutre, H. (2013) Transcriptional Reprogramming of Mature CD4 T helper Cells generates distinct MHC class II restricted Cytotoxic T Lymphocytes. **Nature Immunology**, doi: 10.1038/ni.2523
3. Abramova, A., Sakaguchi, S., Schebesta, A., Hassan, H., Boucheron, N., Valent, P., Roers, A. and **Ellmeier, W.** (2013) The transcription factor MAZR preferentially acts as a transcriptional repressor in mast cells and plays a minor role in the regulation of effector functions in response to FcεRI stimulation. **PLOS ONE**, 8(10):e77677.
4. Boucheron, N, Tschismarov, R, Goeschl, L, Moser, Mirjam, Lagger, S, Sakaguchi, S, Winter, Lenz, F, Vitko, D., Breitwieser, FP, Haust, L, Hassan, H, Bennett, KL, Colinge, J, Schreiner, W, Matthias, P, Egawa, T, Taniuchi, I, Matthias, P, Seiser, C and **Ellmeier, W.** (2014) CD4 T cell lineage integrity is controlled by the histone deacetylases HDAC1 and HDAC2. **Nature Immunology**, 15(5):439-48.
5. Zwolanek F, Riedelberger M, Stolz V, Jenull S, Istel F, Körülü, AD, **Ellmeier W**, Kuchler K. (2014). The Non-receptor Tyrosine Kinase Tec Controls Assembly and Activity of the Noncanonical Caspase-8 Inflammasome. **PLoS Pathog.** 2014 Dec 4;10(12):e1004525. doi: 10.1371/journal.ppat.1004525.
6. Tschismarov R, Firner S, Gil-Cruz C, Göschl L, Boucheron N, Steiner G, Matthias P, Seiser C, Ludewig B, **Ellmeier W.** (2014). HDAC1 controls CD8+ T cell homeostasis and antiviral response. **PLoS One.** 2014 Oct 21;9(10):e110576. doi: 10.1371/journal.pone.0110576.
7. Prochazkova J, Sakaguchi S, Owusu M, Mazouzi A, Wiedner M, Velimezi G, Moder M, Turchinovich G, Hladik A, Gurnhofer E, Hayday A, Behrens A, Knapp S, Kenner L, **Ellmeier W**, Loizou JI. (2015). DNA Repair Cofactors ATMIN and NBS1 Are Required to Suppress T Cell Activation. **PLoS Genetics.** 11(11):e1005645.
8. Sakaguchi S, Hombauer M, Hassan H, Tanaka H, Yasmin N, Naoe Y, Bilic I, Moser MA, Hainberger D, Mayer H, Seiser C, Bergthaler A, Taniuchi I, **Ellmeier W.** (2015). A novel Cd8-cis-regulatory element preferentially directs expression in CD44^{hi}CD62L⁺ CD8⁺ T cells and in CD8α⁺ dendritic cells. **J Leukoc Biol.** 97(4):635-44 (Selected as Editorial highlight).
9. Manne BK, Badolia R, Dangelmaier C, Eble JA, **Ellmeier W**, Kahn M, Kunapuli SP. (2015). Distinct pathways regulate Syk activation downstream of ITAM and hemITAM receptors in platelets. **J Biol Chem.** 290(18):11557-68
10. Keskin N, Deniz E, Eryilmaz J, Un M, Batur T, Ersahin T, Cetin Atalay R, Sakaguchi S, **Ellmeier W**, Erman B. (2015). PATZ1 is a DNA damage responsive transcription factor that inhibits p53 function. **Mol Cell Biol.** 35(10):1741-53
11. Sakaguchi, S., D. Hainberger, C. Tizian, H. Tanaka, T. Okuda, I. Taniuchi, and **Ellmeier, W.** 2015. MAZR and Runx Factors Synergistically Repress ThPOK during CD8+ T Cell Lineage Development. **J Immunol.** 195(6):2879-87.
12. Schatzlmaier, P., Supper, V., Göschl, L., Zwizitz, A., Eckerstorger, P., **Ellmeier, W.**, Huppa, J.B., Stockinger, H. (2015). Rapid multiplex analysis of lipid raft components with single-cell resolution. **Science Signaling**, 8(395):rs11. doi: 10.1126/scisignal.aac5584.
13. Gualdoni GA, Mayer KA, Göschl L, Boucheron N, **Ellmeier W**, Zlabinger GJ. (2016). The AMP analog AICAR modulates the Treg/Th17 axis through enhancement of fatty acid oxidation. **FASEB J.** 30(11):3800-3809.

14. Newman, DM, Sakaguchi, S, Lun, A, Preston, S., Pellegrini, M., Khamina, K., Bergthaler, A., Nutt, SL., Smyth, GK, Voss, AK, Thomas, T., **Ellmeier, W.**, Belz, GT, and Allan, RS. (2016). KAT6A determines CD8+ T cell diversity via regulation of co-receptors. **Cell reports**, 16(12):3311-21.
15. de Bruijn, M.J.W., Rip, J., van Greuningen, L., Ta, V.T.B., Kil, L.P., Rimmelzwaan, G.F., **Ellmeier, W.**, Corneth, O.B.J, and Hendriks, R.W.(2017). Distinct and overlapping functions of TEC kinase and BTK in B-cell receptor signaling. **J. Immunol**, in press.
16. Müller, L., Hainberger, D., Hassan, H., Boucheron, N., Sakaguchi, S., Wieggers, G.J., Preglej, T., Hamminger, P., Andersen, L., Villunger, A., Zhang, Y.; Farrar, M.A., Auwerx, J. and **Ellmeier, W.** NCOR1 regulates the development of PLZF+ innate-like T cell lineages. Submitted (currently in revision).

Reviews (since 2012):

1. Boucheron N and **Ellmeier W.** (2012) The role of Tec family kinases in the regulation of T-helper-cell differentiation. **Int Rev Immunol**. 2:133-54.
2. **Ellmeier, W**, Haust, L. and Tschismarov, R. (2013) Transcriptional control of CD4 and CD8 coreceptor expression during T cell development. **Cellular and Molecular Life Sciences**. 70(23):4537-53.
3. **Ellmeier, W**, and Taniuchi I. (2014) The role of BTB-zinc finger transcription factors during T cell development and in the regulation of T cell-mediated immunity. (2014). **Current Topics in Microbiology and Immunology**. 381:21-49. doi: 10.1007/82_2014_374.
4. **Ellmeier, W.** (2015) Molecular control of CD4+ T cell lineage plasticity and integrity. **Int Immunopharmacol**. doi: 10.1016/j.intimp.2015.03.050. [Epub ahead of print]

10 Most Important Career Publications (only as first or corresponding author)

1. **Ellmeier, W.** et al. (1997). An Enhancer that Directs Lineage-Specific Expression of CD8 in Positively Selected Thymocytes and Mature T cells. **Immunity**, 7, 537-547.
2. **Ellmeier, W.** et al. (1998). Multiple Developmental Stage-Specific Enhancers Regulate CD8 Expression In Developing Thymocytes and in Thymus-Independent T Cells. **Immunity**, 9, 485-496.
3. **Ellmeier, W.*** et al. (2002). Combined deletion of CD8 locus cis-regulatory elements affects initiation but not maintenance of CD8 expression. **Immunity**, 5, 623-34. *corresponding author.
4. Bilic, I., Kösters, K., Unger, B., Sekimata, M. Hertweck, A., Maschek, R., Wilson, C.B. and **Ellmeier, W.** (2006). Negative regulation of CD8 expression via CD8 enhancer-mediated recruitment of the zinc finger protein MAZR. **Nature Immunology**, 7, 392-400.
5. Raberger, J., Schebesta, A., Sakaguchi, S. Boucheron, N., Blomberg, E.M., Bergloef, A., Kolbe, T., Smith, C.I.E., Rüllicke, T, and **Ellmeier, W.** (2008). The Transcriptional Regulator PLZF Induces the Development of CD44-High Memory-Phenotype T Cells. **PNAS**, 105.17919.
6. Sakaguchi S, Hombauer M, Bilic I, Naoe Y, Schebesta A, Taniuchi I, **Ellmeier, W.** (2010). The zinc-finger protein MAZR is part of the transcription factor network that controls the CD4 versus CD8 lineage fate of double-positive thymocytes. **Nature Immunology**, 11:442-8 (selected in the News & Views section).
7. Grausenburger, R, Bilic, I., Boucheron, N., Zupkovitz, G., El-Housseiny, L., Tschismarov, R., Zhang, Y., Rembold, M., Gaisberger, M., Hartl, A., Epstein, M.M., Matthias, P., Seiser, C.*, **Ellmeier, W.*** (2010). Conditional deletion of HDAC1 in T cells leads to enhanced airway inflammation and increased Th2 cytokine production. **Journal of Immunology**, 185(6): 3489-97 (selected for "in this issue" section). (*shared senior-authorship).
8. Hassan, H., Sakaguchi, S., Tenno, M., Kopf, A., Boucheron, N. Carpenter, A., Egawa, T., Taniuchi, I. **Ellmeier, W.** (2011) Cd8 enhancer E8I and Runx factors regulate CD8 α expression in activated CD8+ T cells. **PNAS**, 108(45):18330-5.

9. Boucheron, N, Tschismarov, R, Goeschl, L, Moser, Mirjam, Lagger, S, Sakaguchi, S, Winter, Lenz, F, Vitko, D., Breitwieser, FP, Haust, L, Hassan, H, Bennett, KL, Colinge, J, Schreiner, W, Matthias, P, Egawa, T, Taniuchi, I, Matthias, P, Seiser, C* and **Ellmeier, W.*** (2014). CD4 T cell lineage integrity is controlled by the histone deacetylases HDAC1 and HDAC2. **Nature Immunology**, 15(5):439-48. (*shared senior-authorship).

10. Sakaguchi, S., D. Hainberger, C. Tizian, H. Tanaka, T. Okuda, I. Taniuchi, and **Ellmeier, W.** 2015. MAZR and Runx Factors Synergistically Repress ThPOK during CD8+ T Cell Lineage Development. **J Immunol**. 195(6):2879-87.