

## Scientific CV of Nicole BOUCHERON

**Date of Birth:** 25 Juni 1974  
**Place of Birth:** Bethune, France  
**Nationality:** French  
**Acad. Degree:** Dipl. Biotech. Dr (PhD)  
**Current Position:** Junior principal investigator at the department of Immunobiology headed by Wilfried Ellmeier at the Institute of Immunology, Medical University of Vienna, Austria  
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### Main Research Interests

My main Research Interests are the activation, differentiation and modulation of T helper cells, as well as their role during immune responses. In particular I am interested in the fine-tuning of particular T helper subsets, as this was shown to have considerable impact on the effectiveness of an immune reaction. Naïve CD4<sup>+</sup> T cells achieve this fine-tuning by sensing their environment, and signaling events connected to epigenetic mechanisms lead to the final identity of a particular T helper cell. In this respect Tec kinases have an important role in these processes as well as HDACs, and both of these enzyme groups represent important targets for disease treatment. Therefore, understanding their role in T helper differentiation is of major interest.

### Scientific Education and Career History

**1992-1994** post-'A'-level studies, Metz, France.  
**1994-1997** M.Sc. in molecular and cellular Biology, Ecole Supérieure de Biotechnologie de Strasbourg (ESBS), Université Louis Pasteur, Strasbourg, France, with distinction  
**1997** Diploma thesis in group of Giulia Casorati and Paolo Dellabona at the San Raffaele Scientific Institute, Milan, Italy  
**1997-2002** Ph.D. studies (Biochemistry, Cellular and Molecular Biology) in the group of Immanuel Luescher at the Ludwig Institute for Cancer Research, Lausanne Branch, Switzerland, with distinction.  
**2002- 2010** Postdoctoral fellow in the group of Wilfried Ellmeier at the Institute of Immunology, Medical University of Vienna, Austria.  
**2012-** Junior Principal Investigator at the department of Immunobiology headed by Wilfried Ellmeier at the Institute of Immunology, Medical University of Vienna, Austria.

(April 2007- Sep 2007: first maternity leave, May 2013- May 2014: second maternity leave)

### Supervision of graduate students and PhD fellows/Teaching activities

**Co-supervised PhD Students:** Roland Tschismarov (finished in 2014, MedUni Wien), Lisa Göschl (since 2013, MedUni Wien)

**Supervised Master/Bachelor theses:** Benjamin Vigl (finished his Master in 2003, University of Vienna, Austria), Lars Van Greuningen (finished his Bachelor in 2014, University of Leiden, Netherlands), Marlis Alteneider (since May 2016, University of Vienna, Austria)

**Lectures** Lectures on topics related to T-cell Immunology at the MedUni Wien (since 2012)

## Organization of scientific meetings

- Oct 2011** Part of the organizing committee of the joint Post Doc Retreat of Inflammation and Infection
- Sep 2012** Part of the organizing committee of 3<sup>rd</sup> Retreat of the Center for Pathophysiology, Infectiology and Immunology
- Dec 2012** Part of the organizing committee of the Viennese Symposium on Immunology, Infection biology and Inflammation (VI3) at the Vienna Biocenter

## Invited Conference Presentations

- *2010, May:* “Conditional deletion of histone deacetylase 1 in T cells leads to enhanced airway inflammation and increased Th2 cytokine production”. Invited talk at the Gordon conference Immunochemistry and Immunobiology, Les Diablerets, Switzerland
- *2010, Sept-Oct:* “The protein tyrosine kinase Tec regulates a CD44<sup>high</sup>CD62L<sup>-</sup> Th17 subset” Invited talk at the Joint FEBS & EFIS Workshop, Vienna, Austria
- *2010, Dec:* “The protein tyrosine kinase Tec regulates a CD44<sup>high</sup>CD62L<sup>-</sup> Th17 subset” Poster presentation at the Annual Meeting of the Austrian Society for Allergology and Immunology, Vienna, Austria
- *2011, Sept:* “The class I histone deacetylases HDAC1 and HDAC2 regulate the expression of CD8 in CD4 T cells”. Poster presentation at the Annual Meeting of the Austrian Society for Allergology and Immunology, Graz, Austria
- *2012, Oct:* “The protein tyrosine kinase Tec regulates a CD44<sup>hi</sup>CD62L<sup>-</sup> Th17 subset”. Invited talk at the Joint Post Doc Retreat on Infection and Inflammation – JPRI2, Gols, Austria
- *2012, Nov:* “CD4<sup>+</sup> T cell lineage integrity is controlled by the histone deacetylases HDAC1 and HDAC2”. Poster presentation at the Annual Meeting of the Austrian Society for Allergology and Immunology, Vienna, Austria
- *2015 Sept:* “The protein tyrosine kinase Tec regulates a CD44<sup>hi</sup>CD62L<sup>-</sup> Th17 subset”. Poster presentation at 4th European Congress of Immunology ECI, Vienna, Austria
- *2015 Sept:* “CD4<sup>+</sup> T cell lineage integrity is controlled by the histone deacetylases HDAC1 and HDAC2” Invited talk at the Hyperflow meeting organized by the austrian flow cytometry association, Vienna, Austria

## Honors & Awards

- 2011** ÖGAI Poster Prize for “CD4<sup>+</sup> T cell lineage integrity is controlled by the histone deacetylases HDAC1 and HDAC2”
- 2014** Sanofi-Aventis Prize for “CD4<sup>+</sup> T cell lineage integrity is controlled by the histone deacetylases HDAC1 and HDAC2”
- April 2015** “Researcher of the Month” award from the Medical University of Vienna

## Key International Collaborators

- Brigitta Stockinger, The Francis Crick Institute, London, UK
- Gérard Eberl, Institut Pasteur, Paris, France

## List of Publications (since 2013)

1. Abramova A, Sakaguchi S, Schebesta A, Hassan H, **Boucheron N**, Valent P, Roers A, 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):77677
2. **Boucheron N\***, Tschismarov R\*, Göschl L, Moser MA, Lagger S, Sakaguchi S, Winter M, Lenz F, Vitko D, Breitwieser FP, Müller L, Hassan H, Bennett KL, Colinge J, Schreiner W, 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. \*equal first co-authorship
3. Tschismarov R, Firner S, Gil C, Göschl L, **Boucheron N**, Ludewig B, Seiser C and Ellmeier W. HDAC1 controls CD8+ T cell homeostasis and antiviral response. *PLoS One*. 2014 Oct 21;9(10).
4. Gualdoni GA, Mayer KA, Göschl L, **Boucheron N**, Ellmeier W, Zlabinger GJ. The AMPAnalogue AICAR modulates the Treg/Th17 axis through enhancement of fatty acid metabolism. *FASEB J*. 2016 Nov;30(11):3800-3809
5. Müller L, Hainberger D, Stolz V, Hamminger P, Hassan H, Preglej T, **Boucheron N**, Sakaguchi S, Wieggers GJ, Villunger A, Auwerx J and Ellmeier W. The corepressor NCOR1 regulates the survival of single-positive thymocytes. *Sci Rep* 2017 Nov 21;7(1):15928.
6. Göschl L, Preglej T, Hamminger P, Bonelli M, Andersen L, **Boucheron N**, Güllich AF, Müller L, Saferding V, Mufazalov IA, Hirahara K, Seiser C, Matthias P, Penz T, Schuster M, Bock C, Waisman A, Steiner G and Ellmeier W. A T cell-specific deletion of HDAC1 protects against experimental autoimmune encephalomyelitis. *J. Autoimmun.* 2018 Jan;86:51-61.

## Review Article (since 2013)

**Boucheron N**. *Tec*. Encyclopedia of signaling molecules. 5349-5357. 2018

## 10 Most Important Publications

I have so far published 23 scientific papers (including 4 reviews) with a cumulative citation index of 1167 with an H-index of 14 according to Google Scholar.

1. Tschismarov R, Firner S, Gil C, Göschl L, **Boucheron N**, Ludewig B, Seiser C and Ellmeier W. HDAC1 controls CD8+ T cell homeostasis and antiviral response. **PLoS One**. 2014 Oct 21;9(10).
2. **Boucheron N\***, Tschismarov R\*, Göschl L, Moser MA, Lagger S, Sakaguchi S, Winter M, Lenz F, Vitko D, Breitwieser FP, Müller L, Hassan H, Bennett KL, Colinge J, Schreiner W, 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. \*equal first co-authorship
3. Hassan H, Sakaguchi S, Tenno M, Kopf A, Boucheron N, Carpenter AC, Egawa T, Taniuchi I, Ellmeier W. (2011) Cd8 enhancer E8I and Runx factors regulate CD8α expression in activated CD8+ T cells. **Proc Natl Acad Sci U S A**. 108(45):18330-5.
4. **Boucheron N**, Sharif O, Schebesta A, Croxford A, Raberger J, Schmidt U, Vigil B, Bauer J, Bankoti R, Lassmann H, Epstein MM, Knapp S, Waisman A, Ellmeier W. (2010) The protein tyrosine kinase Tec regulates a CD44highCD62L- Th17 subset. **J Immunol**. 185(9):5111-9.
5. Grausenburger R\*, Bilic I\*, **Boucheron N\***, Zupkowitz G, El-Housseiny L, Tschismarov R, Zhang Y, Rembold M, Gaisberger M, Hartl A, Epstein MM, Matthias P, Seiser C, Ellmeier W. (2010) Conditional deletion of histone deacetylase 1 in T cells leads to enhanced airway inflammation and increased Th2 cytokine production. **J Immunol**. 185(6):3489-97. \*equal first co-authorship

6. Blomberg KE, **Boucheron N**, Lindvall JM, Yu L, Raberger J, Berglof A, Ellmeier W, Smith CI. (2009) Transcriptional signatures of Itk-deficient CD3+, CD4+ and CD8+ T-cells. *BMC genomics*. 10(1):233
7. Raberger J, **Boucheron N**, Sakaguchi S, Penninger JM, Ellmeier W. (2008) Impaired T-cell development in the absence of Vav1 and Itk. *Eur J Immunol*. 38(12):3530-42.
8. Raberger J, Schebesta A, Sakaguchi S, **Boucheron N**, Blomberg KE, Berglöff A, Kolbe T, Smith CI, Rüllicke T, Ellmeier W. (2008) The transcriptional regulator PLZF induces the development of CD44 high memory phenotype T cells. *Proc Natl Acad Sci U S A*. 105(46):17919-24.
9. Kalergis AM, **Boucheron N\***, Douc ey MA\*, Palmieri E, Goyarts EC, Vegh Z, Luescher IF, Nathenson SG. (2001) Efficient T cell activation requires an optimal dwell-time of interaction between the TCR and the pMHC complex. *Nat Immunol*. 2(3):229-34. \*equal contribution
10. Arcaro A, Grégoire C, Bakker TR, Baldi L, Jordan M, Goffin L, **Boucheron N**, Wurm F, van der Merwe PA, Malissen B, Luescher IF. (2001) CD8beta endows CD8 with efficient coreceptor function by coupling T cell receptor/CD3 to raft-associated CD8/p56(lck) complexes. *J Exp Med*. 2001 Nov 19;194(10):1485-95 .

#### Funds obtained (March 2013 -2018)

Project leader	Project title	Amount of Funding	Funding Agency	Funding period
<b>Nicole Boucheron</b>	P24265. Regulation of Th17 responses by the protein kinase Tec	Approx. 50k€/year	FWF	03/2012-2018
<b>Nicole Boucheron</b>	P30885. Modulation of T follicular helper cells by Rinl	371 k€ (of this 185 k€ for Ruth Herbst)	FWF	03/2018-02/2021

#### PhD students supervised (March 2018 –now)

SANDNER Lisa: Modulation of T follicular helper cells by Rinl ongoing