

## Scientific CV of **Iris K. GRATZ** (previously Iris Oberndorfer)

**Academic degree:** Mag. Dr. (PhD)  
**Current position:** Associate Professor at the University of Salzburg  
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**All Published Work:** <http://www.researcherid.com/rid/L-6267-2015>  
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## Scientific Education

03/2019 Habilitation in Immunology; University of Salzburg, Austria  
2001 – 2005 PhD thesis in Immunology Identification of intracellular interaction partners of mIgE B cell receptor; University of Salzburg, Austria  
1995 – 2001 Studies in Biology/Genetics at the University of Salzburg, Austria. Masters thesis: Genetic immunization in allergy therapy

## Positions

Since Nov 2019 Deputy Chair of the Department of Biosciences, University of Salzburg, Austria  
2019 – present Associate Professor, Department of Biosciences, University of Salzburg, Austria  
2017 – present Appointment as Affiliate Investigator of the Benaroya Research Institute at Virginia Mason, Seattle WA, USA  
2014 – present Affiliate Researcher at the EB House Austria, Dept. of Dermatology, University Hospital Salzburg, Austria  
2014 – 2019 Assistant Professor, Department of Biosciences, University of Salzburg, Austria  
2012 – 2014 Assistant Adjunct Professor, Department of Dermatology, University of California, San Francisco, USA  
2009 – 2012 Postdoc, Department of Pathology, University of California, San Francisco, USA  
Mentor: Prof. Abul Abbas  
2008 Postdoc/trainee, Department of Dermatology, University of Heidelberg, Germany  
2006 – 2009 Postdoc, Department of Dermatology, University Hospital Salzburg, Austria

**Break:** Maternity leave: 03/2020 – 12/2020

## Main Research Interests

The principal goal of my research is to understand the role of cutaneous T cells in skin inflammation, wound healing and cancer. Specifically, we aim to 1) Understand mechanisms of immune regulation in (auto)inflammatory settings and 2) Elucidate mechanisms of disease pathology in patients with skin inflammatory diseases. In our research, we utilize organotypic 3D-skin cultures, mouse models of T cell-mediated skin inflammation and unique xenografting mouse models to answer basic research questions and perform preclinical studies with the goal to develop novel therapeutic strategies to treat inflammatory skin conditions and skin cancer. Previously, I have discovered the concept of tissue-resident memory regulatory T cells (Treg) (Rosenblum & Gratz et al, Nature 2011; Gratz et al, JI, 2013) and elucidated the mechanisms of generation of peripheral Treg cells (Gratz et al, JI, 2014; Pinheiro et al, JI, 2020). In recent work, we have uncovered the recirculation behavior human skin resident memory T cells (Klicznik et al, Sci Immunol, 2019), functionally and transcriptionally analyzed circulating human CD4<sup>+</sup> T cells vivo (Höllbacher et al, Immunohorizons, 2020), and developed a novel skin-humanized mouse model to study T cell migration and activation of human skin T<sub>RM</sub> in vivo (Klicznik et al, Sci Rep, 2020).

### Mentoring and supervision experience:

Since 2014      Supervisor of 5 Postdocs, 6 PhD students (3 already finished), 5 master students (4 already finished)

### Teaching Activities (selected)

Since 2016      Faculty member of the Doctoral school PLUS (DSP) Biomolecule, University of Salzburg

Since 2014      Faculty member of the FWF/PLUS PhD Program “Immunity in Cancer and Allergy (ICA)”  
Teaching within the Bachelor’s and Master’s programs Medical Biology at the University of Salzburg; Classes on Immunology, Virology, Biochemistry and Soft Skills

### List of the 10 most important publications

- I have so far published 37 scientific articles.
- Total number of citations >1600; with 43.5 average citations per publication and a Hirsch-index of 17. (Metrics based on publons ResearcherID L-6267-2015)

1. Douglas F. Pinheiro\*, Antal B. Szenes-Nagy\*, Megan M. Maurano, Melanie Lietzenmayer, Maria M. Klicznik, Raimund Holly, Daniel Kirchmeier, Sophie Kitzmueller, Gertrude Achatz-Straussberger, Michael D. Rosenblum, Josef Thalhamer, Abul K. Abbas, **Iris K. Gratz**. *Cutting Edge: Tissue Antigen Expression Levels Fine-Tune T Cell Differentiation Decisions In Vivo*. J Immunol October 9, 2020, j1901094; DOI: <https://doi.org/10.4049/jimmunol.1901094>
2. Klicznik Maria M., Ariane Benedetti, Laura M. Gail, Suraj R. Varkhande, Raimund Holly, Martin Laimer, Angelika Stoecklinger, Andreas Sir, Roland Reitsamer, Theresa Neuper, Jutta Horejs-Hoeck, Michael D. Rosenblum, Daniel J. Campbell, Eva M. Murauer, **Iris K. Gratz** *A novel humanized mouse model to study the function of human cutaneous memory T cells in vivo in human skin*. Sci Rep. 2020 Jul 7;10(1):11164. doi: 10.1038/s41598-020-67430-7.
3. Klicznik MM, Morawski PA, Höllbacher B, Varkhande SR, Motley S, Kuri-Cervantes L, Goodwin E, Rosenblum MD, Long SA, Brachtl G, Duhon T, Betts MR, Campbell DJ\*, **Gratz IK\*** (\*Authors contributed equally to this work) *Human CD4+CD103+ cutaneous resident memory T cells are found in the circulation of healthy individuals*. Sci Immunol. 2019 Jul 5;4(37). pii: eaav8995. doi: 10.1126/sciimmunol.aav8995.
4. Scharschmidt TC, Vasquez KS, Truong HA, Gearty SV, Pauli ML, Nosbaum A, **Gratz IK**, Otto M, Moon JJ, Liese J, Abbas AK, Fischbach MA, Rosenblum MD. *A Wave of Regulatory T Cells into Neonatal Skin Mediates Tolerance to Commensal Microbes*. Immunity. 2015 Nov 17. doi: 10.1016/j.immuni.2015.10.016.
5. **Gratz IK**, Rosenblum MD, Maurano MM, Paw JS, Truong HA, Marshak-Rothstein A, Abbas AK. *Cutting Edge: Self-Antigen Controls the Balance between Effector and Regulatory T Cells in Peripheral Tissues*. J Immunol. 2014 Feb 15;192(4):1351-5. Epub 2014 Jan 17. doi: 10.4049/jimmunol.1301777
6. **Gratz IK**, Truong HA, Yang SH, Maurano MM, Lee K, Abbas AK, Rosenblum MD. *Cutting Edge: memory regulatory t cells require IL-7 and not IL-2 for their maintenance in peripheral tissues*. J Immunol. 2013 May 1;190(9):4483-7. Epub 2013 Mar 29. doi: 10.4049/jimmunol.1300212
7. Ettinger M, Peckl-Schmid D, Gruber C, Laimer M, Thalhamer J, Hintner H, **Gratz IK\*** and Bauer JW\* (\* Authors contributed equally to this work) *Transcutaneous gene gun delivery of NC16A induces BPAG2-specific tolerance*. J Invest Dermatol. 2012 Jun;132(6):1665-71, doi: 10.1038/jid.2012.19.
8. Ettinger M\*, **Gratz IK\***, Gruber C, Johnson T, Mahnke K, Thalhamer J, Hintner H, Peckl-Schmid D, and Bauer JW (\* Authors contributed equally to this work) *Targeting of the NC16A collagen domain to dendritic cells induces tolerance to human type XVII collagen*. Exp Dermatol. 2012 May;21(5):395-8, doi: 10.1111/j.1600-0625.2012.01474.x.
9. Rosenblum MD\*, **Gratz IK\***, Paw JS, Lee K, Marshak-Rothstein A, Abbas AK. (\* Authors contributed equally to this work) *Response to self antigen imprints regulatory memory in tissues*. Nature. 2011 Nov 27;480(7378):538-42. doi: 10.1038/nature10664.
10. **Oberndorfer I**, Schmid D, Geisberger R, Achatz-Straussberger G. Cramer R, Lamers M, Achatz G HAX-1 interacts with membrane bound IgE: Impact of receptor mediated internalization. J. Immunol. Vol 177 / No. 2 / Jul 15, 2006

## Additional research achievements:

### Funded research projects (since 2016)

Project leader	Project title	Amount of Funding	Funding Agency	Funding period
Iris GRATZ	Immune regulation in the skin and induction of immunological tolerance	Approx. 1104 k€ (140 k€/yr)	Debra Austria	2014 – 2022
Iris GRATZ (Deputy speaker)	SFB-F70 “HDACs as Regulators of T-Cell-Mediated Immunity in Health and Disease” Project P06 “HDAC-dependent generation and function of peripheral regulatory T-cells in skin immunity”	Approx 401 k€ (100 k€/yr)	FWF	2019 - 2023
Iris GRATZ	Preclinical studies using skin-humanized mice: Cross-talk of cutaneous $\gamma\delta$ T cells and tissue cells	Approx 450 k€ (150 k€/yr)	GammaDelta Therapeutics (GLT)	2018 - 2021
Iris GRATZ	Regulation of cutaneous tissue-repair by a specialized population of CD4 <sup>+</sup> T cells	Approx 629 k€ (146 k€/yr)	National Institute of Health (NIH) R01AI127726	2017 - 2022
Iris GRATZ	ICA Doctoral Programme W1213 – Phase III & IV “Lineage commitment and stability of regulatory T cells”	Approx. 350 k€ (55 k€/yr)	FWF	2015 – 2021

**Lifetime grant income: 3 100 k€**

### Patent

Patent “Humanized Mouse Model” filed on April 19, 2018; European Patent file number EP18168258 / US 16389821 (Inventors Iris K. Gratz, Maria M. Klicznik, Eva M. Murauer)

### Invited speaker (5 selected)

- 2019 16<sup>th</sup> International Workshop on Langerhans Cells, Mainz, Germany (plenary talk)
- 2017 Wilske Seminar Guest Speaker at the Benaroya Research Institute (BRI) at Virginia Mason, Seattle, WA, USA
- 2016 12th EFIS-EJI Tatra Immunology Conference, Štrbské Pleso, Slovakia (plenary)
- 2015 “Rising Star” speaker at the 23<sup>rd</sup> World Congress of Dermatology (WCD), Vancouver, Canada (workshop talk)
- 2015 World Immune Regulation Meeting–IX (WIRM), Davos, Switzerland (plenary)

### Fellowships & Awards (5 selected)

- 2020 Kurt-Zopf-Prize for internationally recognized scientific publication achievements, Awarded by the University of Salzburg, Austria
- 2014 Christian-Doppler-Prize for Scientific Achievements, Awarded by the County of Salzburg, Austria
- 2010 – 2012 Erwin-Schroedinger Postdoctoral Fellowship J 2997-B13, Austrian Science Fund (FWF) *Skin Immunity towards neo-self antigens*
- 2008 Stipend for research on Epidermolysis bullosa (EB), Network EB
- 2007 VWR-International Prize for Dissertations Awarded by the Austrian Society for Biochemistry and Molecular Biology (ÖGBM).

### Peer-Review Activities/Commission of Trust

- Ad hoc reviewer for international journals (e.g. Nature Immunology, Science Immunology, Mucosal Immunology, FEBS letters, Scientific Reports) and for several funding agencies
- 2019 - 2021 Board Member of the Austrian Society for Allergy and Immunology (OeGAI)