

# Karin PFISTERER, PhD

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## personal data

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**Position** Principal Investigator / Senior Postdoc at Medical University of Vienna  
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## research statement

My special interest lies in exploring regulatory pathways that maintain tissue homeostasis and investigating how this equilibrium is disrupted in pathological conditions.

## education

**Oct 2024** Venia docendi in “Tissue homeostasis, inflammation and immunity” at the Medical University of Vienna  
**2015-2019** Postdoctoral Training at King’s College London, UK  
**Dec 2014** PhD in Immunology, completed with distinction, Medical University of Vienna  
Dissertation: “Molecular and cellular investigations of the regulatory role of CD222 in cell signalling and protein transport”  
**2011-2014** PhD studies performed at the Molecular Immunology Unit, Medical University of Vienna under the supervision of Dr. Vladimir Leksa and Prof. Hannes Stockinger  
**Dec 2010** MSc degree in Immunobiology, completed with distinction, University of Vienna  
Thesis: “Human Dermal Mesenchymal Stem Cell Subsets Induce FoxP3 in Naive T cells”  
**2007-2010** Master Studies performed at the Department of Dermatology, Medical University of Vienna under the supervision of Prof. Adelheid Elbe-Bürger  
**2002-2007** Undergrad Studies of Biology (Genetics/Microbiology) with special training in spectroscopic methods and human anatomy at the University of Vienna

## scientific and academic positions (research area)

**2021-present** Principal Investigator at the Department of Dermatology, Medical University of Vienna, Austria (tissue homeostasis, skin immunology and inflammation, advanced imaging)  
**2019-present** Senior Postdoc / University Assistant at the Department of Dermatology, Medical University of Vienna, Austria (skin biology, immunology, cell and molecular biology, advanced imaging)

<b>2017-2018</b>	Visiting Scientist at the Advanced Imaging Centre, HHMI Janelia Research Campus, Ashburn, USA (advanced imaging)
<b>2015-2019</b>	Postdoctoral Research Associate at the Randall Centre for Cell & Molecular Biophysics, King's College London, UK (mentor: Prof. Maddy Parsons; cell biology, molecular biology, cancer cell migration, F-actin dynamics, advanced imaging)
<b>2015</b>	Postdoctoral Researcher at the Molecular Immunology Unit, Medical University of Vienna, Austria (mentor: Prof. Hannes Stockinger; Immunology and Molecular Biology)
<b>2013</b>	Visiting Scientist at the Istituto Clinico Humanitas, Milan, Italy (cell biology, immune synapse imaging)
<b>2011-2014</b>	Postgraduate Researcher at the Molecular Immunology Unit, Medical University of Vienna, Austria (immunology and molecular biology)
<b>2009-2011</b>	Research Assistant at the Department of Dermatology, Medical University of Vienna, Austria (skin immunology and molecular biology)
<b>2007-2010</b>	Undergrad Researcher at the at the Department of Dermatology, Medical University of Vienna, Austria (skin immunology, cell and molecular biology)

### other university posts

<b>2020-present</b>	Sicherheitsvertrauensperson, Dermatologie 4P, Medical University of Vienna
<b>2016-2017</b>	Randall Research Staff Representative, King's College London, UK
<b>2016-2017</b>	Research Staff Network Wider Committee Member of the Faculty of Life Science & Medicine, King's College London, London, UK

### science outreach

<b>2018</b>	Public outreach event for primary school children within the art installation 'Under' by Martina Amati hosted by the Wellcome Collection, London, UK
<b>2018</b>	'King's STARS' bringing pupils from under-resourced state schools to science

### plenary talks & keynote lectures

<b>2023</b>	Keynote Speaker at the CECAM-Lorentz ECM Workshop, Lausanne, CH
<b>2022</b>	Plenary Speaker at the CEB-2022, 3 <sup>rd</sup> Cell and Experimental Biology Conference
<b>2018</b>	Keynote Speaker at the PGT career afternoon, King's College, London, UK

### invited talks (selected)

<b>2025</b>	10 <sup>th</sup> ÖGDV Science Days 2025, Werfenweng, Austria; Title: Mechanosensitive fibroblasts regulate tissue stiffness via LOX secretion in psoriasis
<b>2016</b>	Actin 2016, Bristol, UK; Title: Subcellular spatial and temporal regulation of the actin bundling protein fascin
<b>2015</b>	MRC National Institute for Medical Research, Mill Hill, London, UK; (now merged into The Francis Crick Institute)

- 2015** 3rd Vascular Biology Meeting, Vienna, Austria; Title: Perivascular CD90+ dermal stromal cells induce regulatory T cells and might represent a local source for endothelial cell replacement
- 2013** 9th YSA PhD Symposium, Vienna, Austria; Title: The endosomal transporter CD222 spatially regulated T cell signaling molecules
- 2012** European Congress of Immunology, Glasgow, Scotland; Title: CD222 - a carrier of T cell signaling molecules?
- 2012** 10th EFIS-EJI Tatra Immunology Conference, Strbské Pleso, Slovakia; Title: Novel role for the endosomal transporter CD222 in T cell activation
- 2011** 6th Annual Congress of the German Society for Stem Cell Research, Düsseldorf, Germany; Title: Human skin-derived mesenchymal stem cells induce the differentiation of naive helper T cells into FoxP3+ regulatory T cells without CD28-costimulation
- 2010** Annual Meeting of the Austrian Society for Allergology and Immunology (ÖGAI), Vienna, Austria; Title: Human skin-derived mesenchymal stem cells drive the differentiation of naive helper T cells towards a regulatory phenotype without provision of costimulatory molecules

## awards

- 2015** MUW Researcher of the Month (March)
- 2014** Poster Price, 11th EFIS-EJI Tatra Immunology Conference
- 2013** Best oral presentation, 9th YSA PhD Symposium
- 2012** INiTS Life Science Award (3<sup>rd</sup> price)
- 2012** INiTS Woman Award
- 2012** Best oral presentation, 10th EFIS-EJI Tatra Immunology Conference

## memberships

- 2011-present** ÖGDV member
- 2011-present** ÖGAI member
- 2018-present** member of the Integrated Biological Imaging Network (IBIN), UK
- 2016-2019** Biochemical Society membership
- 2016-2019** BSCB membership - British Society for Cell Biology
- 2011-2023** ÖGMBT member

## editorial

- 2023-present** Guest Associate Editor in Cell Adhesion and Migration, Frontiers in Cell and Developmental Biology

## teaching

- 2023-present** Master student supervision (Ms Lea Lemajic, University of Vienna, graduated), master student supervision (Ms Pauline Weinzettl, FH Technikum Wien, graduated with distinction), diploma student supervision (Ms Bahareh Horr, Medical University of Vienna, ongoing)

<b>2020-present</b>	Lectures, seminars and tutorials at Medical University of Vienna and Karl-Landsteiner University
<b>2020-present</b>	MCCA PhD student supervision as junior mentor (Ms Parvaneh Balsini, Medical University of Vienna, ongoing)
<b>2023-2024</b>	Master student co-supervision (Mr David Samardzic, University of Vienna, graduated with distinction)
<b>2017-2018</b>	Biomedical and Molecular Sciences Research student co-supervision (Ms Royina Saha, King's College London), PhD student co-supervision (Ms Brooke Lumicisi, King's College London)
<b>2017-2018</b>	Cell Biology tutorials at King's College London
<b>2015</b>	Internship supervision (Ms Kathrin Fink, Medical University of Vienna)

## research support

<b>Year</b>	<b>Funding body</b>
2021	Fellinger Krebsforschung Grant (PI)
2020	Danube Allergy Research Cluster, Land Niederösterreich (project leader; PI: Prof. Wolfgang Weninger)
2019	FFG Career Grant (PI)
2018	Funding from the Biochemical Society UK for visiting the Advanced Imaging Centre (AIC) at HHMI Janelia Research Campus, Ashburn, USA (PI), £ 750.-
2018	Travel Award from King's College London, UK (PI), £ 500.-
2018	AIC visiting scientist fellowship at HHMI Janelia Research Campus, Ashburn, USA (PI), \$ 4,000.-
2017	Travelling Fellowship from the Company of Biologists for visiting the Advanced Imaging Centre at Janelia Research Campus, Ashburn, USA (PI), £ 1,500.-
2017	AIC visiting scientist fellowship at Janelia Research Campus, Ashburn, USA, for the conduction of experiments on the modified Lattice Light Sheet Microscope (PI), \$ 4,000.-
2015	FFG, GEN-AU Summer School for hosting a student
2014	ÖGAI Travel Award to present at the EFIS-EJI Tatra Immunology conference, Slovakia (PI)
2012	INiTS (PI)
2012	EFIS Travel Award to present at the European Congress of Immunology, Glasgow, UK (PI)
2012	ÖGAI Travel Award to present at the EFIS-EJI Tatra Immunology conference, Slovakia (PI)

## publications

Balsini P, Weninger W, **Pfisterer K**. SCA<sub>n</sub>ED – An Open-source Skin Segmentation Macro for Semi-automated Cell and Nuclei Detection in Epidermal and Dermal Skin Compartments. Journal of Visualized Experiments. 2025. (222), e68746, doi:10.3791/68746

Balsini P, Weinzettl P, Samardzic D, Zila N, Buchberger M, Freystätter C, Tschandl P, Wielscher M, Weninger W, **Pfisterer K**. Stiffness-Dependent Lysyl Oxidase Regulation through Hypoxia-

Inducing Factor 1 Drives Extracellular Matrix Modifications in Psoriasis. *Journal of Investigative Dermatology*. 2025. doi: 10.1016/j.jid.2024.10.611

**Pfisterer K**, Wielscher M, Samardzic D, Weinzettl P, Symmank D, Shaw LE, Campana R, Huang HJ, Farlik M, Bangert C, Vrtala S, Valenta R, Weninger W. Non-IgE-reactive allergen peptides deteriorate the skin barrier in house dust mite-sensitized atopic dermatitis patients. *Frontiers in Cell and Developmental Biology*. 2023. 11:1240289. doi: 10.3389/fcell.2023.1240289

Wielscher M\*, **Pfisterer K\***, Samardzic D, Balsini P, Bangert C, Jäger K, Buchberger M, Selitsch B, Pjevak P, Willinger B, Weninger W. The phageome in normal and inflamed human skin. *Science advances*. 2023. 9:eadg4015. doi: 10.1126/sciadv.adg4015. \*co-first authorship

Cichoń MA, **Pfisterer K**, Leitner J, Wagner L, Staud C, Steinberger P, Elbe-Bürger A. Interoperability of RTN1A in dendrite dynamics and immune functions in human Langerhans cells. *Elife*. 2022. 11:e80578. doi: 10.7554/eLife.80578

Direder M, Weiss T, Copic D, Vorstandlechner V, Laggner M, **Pfisterer K**, Mildner CS, Klas K, Bormann D, Haslik W, Radtke C, Farlik M, Shaw L, Golabi B, Tschachler E, Hoetzenecker K, Ankersmit HJ, Mildner M. Schwann cells contribute to keloid formation. *Matrix Biology*. 2022. 108:55-76. doi: 10.1016/j.matbio.2022.03.001

Klas K, Ondracek AS, Hofbauer TM, Mangold A, **Pfisterer K**, Laggner M, Copic D, Direder M, Bormann D, Ankersmit HJ, Mildner M. The Effect of Paracrine Factors Released by Irradiated Peripheral Blood Mononuclear Cells on Neutrophil Extracellular Trap Formation. *Antioxidants*. 2022. 11:1559. doi: 10.3390/antiox11081559

**Pfisterer K**, Lumicisi B, Parsons M. Imaging of Human Cancer Cells in 3D Collagen Matrices. *Bio-protocol*. 2021, 11:e3889. doi: 10.21769/BioProtoc.3889

Leitner J, Mahasongkram K, Schatzlmaier P, **Pfisterer K**, Leksa V, Pata S, Kasinrerker W, Stockinger H, Steinberger P. Differentiation and activation of human CD4 T cells is associated with a gradual loss of myelin and lymphocyte protein. *Eur J Immunol*. 2021. 51:848-863. doi: 10.1002/eji.202048603

**Pfisterer K**, Levitt J, Lawson CD, Marsh RJ, Heddlestone JM, Wait E, Ameer-Beg SM, Cox S, Parsons M. FMNL2 regulates dynamics of fascin in filopodia. *Journal of Cell Biology*. 2020. 219:e201906111. doi: 10.1083/jcb.201906111

Levitt JA, Poland SP, Krstajic N, **Pfisterer K**, Erdogan A, Barber PR, Parsons M, Henderson RK, Ameer-Beg SM. Quantitative real-time imaging of intracellular FRET biosensor dynamics using rapid multi-beam confocal FLIM. *Scientific Reports*. 2020. 10:5146. doi: 10.1038/s41598-020-61478-1

Marsh RJ, **Pfisterer K**, Bennett P, Hirvonen LM, Gautel M, Jones GE, Cox S. Artifact-free high-density localization microscopy analysis. *Nature Methods*. 2018. 15:689-692. doi: 10.1038/s41592-018-0072-5

Randall TS, Yip YY, Wallock-Richards DJ, **Pfisterer K**, Sanger A, Ficek W, Steiner RA, Bevil AJ, Parsons M, Dodding MP. A small-molecule activator of kinesin-1 drives remodeling of the microtubule network. *Proceedings of the National Academy of Sciences of the United States of America*. 2017. 114:13738-13743. doi: 10.1073/pnas.1715115115

Fox-Roberts P, Marsh R, **Pfisterer K**, Jayo A, Parsons M, Cox S. Local dimensionality determines imaging speed in localization microscopy. *Nature Communications*. 2017. 8:13558. doi: 10.1038/ncomms13558

Jayo A, Malboubi M, Antoku S, Chang W, Ortiz-Zapater E, Groen C, **Pfisterer K**, Tootle T, Charras G, Gundersen GG, Parsons M. Fascin Regulates Nuclear Movement and Deformation in Migrating Cells. *Developmental Cell*. 2016. 38:371-83. doi: 10.1016/j.devcel.2016.07.021

**Pfisterer K**, Lipnik KM, Hofer E, Elbe-Bürger A. CD90(+) human dermal stromal cells are potent inducers of FoxP3(+) regulatory T cells. *Journal of Investigative Dermatology*. 2015. 135:130-141. doi: 10.1038/jid.2014.309

**Pfisterer K**, Forster F, Paster W, Supper V, Ohradanova-Repic A, Eckerstorfer P, Zwirzitz A, Donner C, Boulegue C, Schiller HB, Ondrovičová G, Acuto O, Stockinger H, Leksa V. The late endosomal transporter CD222 directs the spatial distribution and activity of Lck. *Journal of Immunology*. 2014. 193:2718-32. doi: 10.4049/jimmunol.1303349

Leksa V, **Pfisterer K**, Ondrovičová G, Binder B, Lakatošová S, Donner C, Schiller HB, Zwirzitz A, Mrvová K, Pevala V, Kutejová E, Stockinger H. Dissecting mannose 6-phosphate-insulin-like growth factor 2 receptor complexes that control activation and uptake of plasminogen in cells. *Journal of Biological Chemistry*. 2012. 287:22450-62. doi: 10.1074/jbc.M112.339663

Vaculik C, Schuster C, Bauer W, Iram N, **Pfisterer K**, Kramer G, Reinisch A, Strunk D, Elbe-Bürger A. Human dermis harbors distinct mesenchymal stromal cell subsets. *Journal of Investigative Dermatology*. 2012. 132:563-74. doi: 10.1038/jid.2011.355

### review articles, editorials, letters

**Pfisterer K**, Mildner M, Parsons M. Editorial: Extracellular matrix modifications in development and disease. *Frontiers in Cell and Developmental Biology*. 2025. 13:1562296. doi: 10.3389/fcell.2025.1562296

Okamoto I, **Pfisterer K**, Wielscher M, Weninger W. Discovery of a previously unreported deletion in the CDKN2A gene in a case of familial melanoma in Austria. *Eur J Cancer*. 2023. 181:21-22. doi: 10.1016/j.ejca.2022.11.037

**Pfisterer K**, Shaw LE, Symmank D, Weninger W. The Extracellular Matrix in Skin Inflammation and Infection. *Front Cell Dev Biol*. 2021. 9:682414. doi: 10.3389/fcell.2021.682414

**Pfisterer K**, Jayo A, Parsons M. Control of nuclear organization by F-actin binding proteins. *Nucleus*. 2017. 8:126-133. doi: 10.1080/19491034.2016.1267093

### book chapters

**Pfisterer K**, Weninger W, Schwarz T. Immunology. Dermatology: Volume 1-2, Fifth Edition. Vol. 1. Elsevier. 2024. p. 81-99 doi: 10.1016/B978-0-7020-8225-2.00004-4

### varia

**Pfisterer K**. MedUni Wien Researcher of the month, März 2015. *Wiener Klinische Wochenschrift*. 2015.127:234-235. doi: 10.1007/s00508-015-0779-6

### published abstracts (selected)

Weinzettl P, Weninger W, **Pfisterer K**. Investigating the role of the extracellular matrix to induce "pioneer melanoma cells". 5<sup>th</sup> Inflammatory Skin Disease Summit, 15-18 Nov, 2023, Vienna, Austria (published: *Journal of Investigative Dermatology*, 143, 11, p. 358, 2023)

Balsini P, Samardzic D, Weinzettl P, Buchberger M, Zila N, Symmank D, Weninger W, **Pfisterer K**. Lysyl oxidase regulates extracellular matrix modifications in psoriasis. 5<sup>th</sup> Inflammatory Skin Disease Summit, 15-18 Nov, 2023, Vienna, Austria (published: *Journal of Investigative Dermatology*, 143, 11, pp. 353, 2023)

Samardzic D, Wielscher, M, Weinzettl P, Symmank D, Shaw,LE, Campana R, Huang H-J, Farlik-Födinger M, Bagert C, Vrtala S, Valenta R, **Pfisterer K**, Weninger W. Investigating IgE-reactive and non-IgE-reactive allergen effects on skin-resident antigen presenting cells of atopic

dermatitis patients. 5<sup>th</sup> Inflammatory Skin Disease Summit, 15-18 Nov, 2023, Vienna, Austria (published: Journal of Investigative Dermatology, 143, 11, p.361, 2023)

Harikumar N, Sharma V, Platzer R, Bořik-Heil LF, **Pfisterer K**, Petzelbauer P, Menche J, Höller C, Dupre L, Huppa J, Bock C, Stry G. Regulation of T cell functions by cytoskeletal proteins in the melanoma tumor microenvironment. 5<sup>th</sup> Inflammatory Skin Disease Summit, 15-18 Nov, 2023, Vienna, Austria (published: Journal of Investigative Dermatology, 143, 11, p. 359, 2023)

Balsini P, Buchberger M, Symmank D, Weninger WP, **Pfisterer K**. Unraveling the role of extracellular matrix modifications in skin inflammation. 48<sup>th</sup> ADF, 23-26 Feb, 2022, virtual (published: Experimental Dermatology, 31, 2, E37-E38, 2022)

Balsini P, Buchberger M, Symmank D, Weninger W, **Pfisterer K**. Extracellular matrix modification in skin inflammation. European Journal of Immunology, p. 380, 2021

**Pfisterer K**, Lipnik K, Hofer E, Elbe-Bürger A: CD90+ dermal stromal cells induce an immunosuppressive environment via the induction of regulatory T cells in vitro. Inflammatory Skin Disease Summit 2014, November 19-21, 2014, Vienna, Austria (published: Experimental Dermatology, p. 3, 2014)

**Pfisterer K**, Vaculik C, Strunk D, Elbe-Bürger A: Human skin-derived mesenchymal stem cells induce the differentiation of naïve helper T cells into FoxP3+ regulatory T cells without CD28-costimulation. 6<sup>th</sup> Annual Congress of the German Society for Stem Cell Research, November 20-22, 2011, Düsseldorf, Germany (published: J Stem Cells Regen Med, 8:37-160, 2012)

**Pfisterer K**, Vaculik C, Frey C, Strunk D, Elbe-Bürger A. Human dermal-derived interfollicular mesenchymal stem cells drive the differentiation of naive helper T cells towards a regulatory phenotype without provision of costimulatory molecules. 41<sup>st</sup> Annual Meeting of the European Society for Dermatological Research, September 7-10, 2011, Barcelona, Spain (published: Journal of Investigative Dermatology, 131, 2011).