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PERSONAL INFORMATION

Nationality Germany and USA
Place and date of birth Thuine (West Germany), May 12th 1967

EDUCATION

Massachusetts Institute of Technology and Harvard Medical School, 1994-1998

Visiting Scientist to conduct research leading to my doctoral degree awarded from the

Vrije Universiteit te Amsterdam, the Netherlands, 1998

PhD thesis advisor: Hidde L. Ploegh, PhD, Massachusetts Institute of Technology and Harvard Medical School

PhD thesis title: "Biochemical and Cell Biological Aspects of Protein Biosynthesis and Proteolysis in the Context of Adaptive Immunity"

Freie Universität Berlin, Germany, 1989-1994

Diploma in Biochemistry (German equivalent to masters degree), 1995, "sehr gut" ("very good")

Diploma thesis advisor: Hidde L. Ploegh, PhD, Massachusetts Institute of Technology

Diploma thesis title: "Molecular and Cell Biological Aspects of MHC Class II Mediated Antigen Presentation"

RESEARCH EXPERIENCE

- 2015-present Associate Professor, Institute for Hygiene and Applied Immunology (HAI), Medical University of Vienna
- 2012-2015 Assistant Professor, Institute for Hygiene and Applied Immunology (HAI), Medical University of Vienna
- 2005-2011 Basic Science Research Associate, Department of Microbiology and Immunology, Stanford University Medical School and the Howard Hughes Medical Institute
Project: Single molecule studies of T Cell Receptor –peptide/MHC interactions *in situ*
P.I.: Mark M. Davis, PhD
- 1999-2005 Postdoctoral Research, Department of Microbiology and Immunology, Stanford University Medical School and the Howard Hughes Medical Institute
Project: Multidimensional imaging of T cell antigen recognition in the context of the immunological synapse
Mentor: Mark M. Davis, PhD
- 1995-1998 Graduate Research, Massachusetts Institute of Technology and Harvard Medical School.
Advisor: Hidde L. Ploegh, PhD
Project: Assembly, quality control and degradation of the T cell receptor for antigen in the endoplasmic reticulum

RESEARCH EXPERIENCE (continued)

- 1994 Diploma Research, Massachusetts Institute of Technology. Advisor: Hidde Ploegh, PhD
Project: Monitoring the redox-dependence of proper folding and assembly of the T cell receptor-CD3 complex using a microsomal-supplemented *in vitro* translation system
- 1992-1993 Undergraduate internships in the laboratories of
- Christiane Nüsslein-Vollhard, PhD, Max Planck Institute for Developmental Biology, Tübingen, Germany: on the role of *snail* in the ventral furrow formation during *Drosophila* embryogenesis.
 - Yosef Yarden, PhD, Department of Chemical Immunology, The Weizmann Institute of Science, Rehovot, Israel: cloning of the *flt-4* receptor tyrosine kinase.
 - Greg Winter, PhD Laboratory of Molecular Biology, Cambridge, UK: evaluating a native gel band shift assay to measure the affinity of single chain antibody fragments.
 - Jacques Neefjes, PhD, Netherlands Cancer Institute, Amsterdam, The Netherlands: TAP-mediated peptide transport across the ER-membrane.

AWARDS AND HONORS

- 2007-2010 Fellowship awarded by the iFREC Immunology Frontiers Research Center) imaging consortium, Osaka, Japan
- 1999-2002 Postdoctoral Fellowship awarded by the Cancer Research Institute (also accepted for postdoctoral funding by the Irvington Foundation and the Arthritis Foundation)
- 1994-1997 Predoctoral Fellowship awarded by the Boehringer Ingelheim Fonds, Germany
- 1993-1993 Predoctoral Fellowship awarded by the Gottlieb Daimler- and Carl Benz-Foundation, Germany
- 1986 "Abitur Preis" of the "Gymnasium Velbert-Langenberg" (award for excellence in final high school exams)

ADHOC REVIEWS AND ORGANIZING ACTIVITIES

- Journals: Nature, Nature Reviews in Immunology, Nature Methods, Immunity, European Journal of Immunology, Molecular Immunology, Human Immunology, Cellular and Molecular Bioengineering, PLoS One, Frontiers in Immunology
- Funding agencies: European Commission (ERC-2017-STG), Israel Science Foundation, MRC (Great Britain), OeAD (Austria), Human Frontiers Science Program
- Organizer of the 1st and 2nd Viennese T-Cell Colloquium (2016, 2018)

PRESENTATIONS, invited speaker

Dr. Huppa has given > 30 talks internationally. Most important are listed below:

- 2018 INSERM Toulouse Purpan, France
- 2017 Landsteiner Lecture, Sanquin, Amsterdam, The Netherlands
- 2017 Dunn School, Research Seminar Series, Oxford University, Great Britain
- 2017 2nd Midwinter Immunology Conference (Advances in Immunology), Seefeld, Austria
- 2015 Institute for Immunology, Ludwig Maximilian University of Munich, Germany
- 2015 Max Delbrück Center Berlin for Molecular Medicine, Germany
- 2015 Novel Fluorescence-Based Methods in Immunology, Karolinska Institute, Stockholm, Sweden
- 2014 EFIS-EJI Tatra Immunology Conference, Štrbské Pleso, Slovakia
- 2013 Else Kröner Symposium "Translational Immunology – From Target to Therapy", Würzburg, Germany
- 2011 Sandia National Laboratories, Albuquerque, NM, USA
- 2011 MGH, Harvard Medical School, Immunology Seminar Series, Charlestown, MA, USA
- 2010 BIOS Conference "Signaling meets Synthetic Biology", Freiburg, Germany
- 2010 Gordon Conference, "Immunochemistry and Immunobiology", Les Diablerets, Switzerland
- 2010 National Jewish Health, University of Colorado Denver, Denver, CO, USA

PRESENTATIONS, invited speaker (continued)

- 2010 Immunobiology Seminar Series, Yale University, New Haven, CT, USA
2010 National Institute of Allergy and Infectious Disease, NIH, Bethesda, MD, USA
2009 2nd international iFReC meeting Osaka, Japan
2008 FASEB Meeting, "Immunoceptors", New Haven, CT, USA
2008 Cold Spring Harbor Meeting, "Gene Expression and Signaling in the Immune System", NY, USA
2007 Twinbrook Seminar Series, NIAID, Bethesda, MD, USA
2006 Keystone Symposium, "Lymphocyte Activation and Signaling", Steamboat Springs, CO, USA
2003 FASEB Meeting "Signal Transduction in the Immune System", Snowmass Village, CO, USA

BIBLIOGRAPHY

IF (total) = **521.572**; total citations = **2966** (ISI); h-index = **19** (ISI)

36. TCRs are randomly distributed on the plasma membrane of resting antigen-experienced T cells. Rosssboth B., Arnold A.M., Ta H., Platzer R., Kellner F., **Huppa J.B.**, Brameshuber M., Baumgart F., Schütz G.J. (2018) *Nature Immunology* 19(8):821-827. doi: 10.1038/s41590-018-0162-7. ISI impact factor (projected): **21.506**, citations: **0**

35. Extracellular Purine Metabolism Is the Switchboard of Immunosuppressive Macrophages and a Novel Target to Treat Diseases With Macrophage Imbalances. Ohradanova-Repic A., Machacek C., Charvet C., Lager F., Le Roux D., Platzer R., Leksa V., Mitulovic G., Burkard T.R., Zlabinger G.J., Fischer M.B., Feuillet V., Renault G., Blüml S., Benko M., Suchanek M., **Huppa J.B.**, Matsuyama T., Cavaco-Paulo A., Bismuth G., Stockinger H. (2018) *Frontiers in Immunology* 9:852. doi: 10.3389/fimmu.2018.00852 ISI impact factor (projected): **6.429**, citations: **0**

34. Mutations affecting the actin regulator WD repeat-containing protein 1 lead to aberrant lymphoid immunity. Pfajfer L., Mair N.K., Jiménez-Heredia R., Genel F., Gulez N., Ardeniz Ö., Hoeger B., Bal S.K., Madritsch C., Kalinichenko A., Chandra Ardy R., Gerçeker B., Rey-Barroso J., Ijspeert H., Tangye S.G., Simonitsch-Klupp I., **Huppa J.B.**, van der Burg M., Dupré L., Boztug K. (2018) *Journal of Allergy and Clinical Immunology* 2018 May 8. pii: S0091-6749(18) 30694-8. ISI impact factor (projected): **12.485**, citations: **0**

33. Monomeric TCRs Drive T-Cell Antigen Recognition. Brameshuber M., Kellner F., Rosssboth B.K., Ta H., Alge K., Sevcsik E., Göhring J., Axmann M., Baumgart F., Gascoigne N.R.J., Davis S.J., Stockinger H., Schütz G.J. **Huppa J.B.*** (2018) *Nature Immunology*, 19(5):487-496. doi: 10.1038/s41590-018-0092-4. ISI impact factor (projected): **21.506**, , citations: **0** *corresponding author

32. A cellular platform for the evaluation of immune checkpoint molecules. Jutz S., Hennig A., Paster W., Asrak Ö., Dijanovic D., Kellner F., Pickl W.F., **Huppa J.B.**, Leitner J., Steinberger P. (2017). *Oncotarget* 8:64892-64906. doi: 10.18632/oncotarget.17615. ISI impact factor: **5.168**, citations: **0**

31. Förster Resonance Energy Transfer to Study TCR-pMHC Interactions in the Immunological Synapse. Schütz G.J., **Huppa J.B.*** (2017) *Methods in Molecular Biology*:1584:207-229. doi: 10.1007/978-1-4939-6881-7_14. ISI impact factor: ~ **1**, citations: **0**, *corresponding author

30. RASGRP1 deficiency causes immunodeficiency with impaired cytoskeletal dynamics. Salzer E., Cagdas D., Hons M., Mace E.M., Garncarz W., Petronczki Ö.Y., Platzer R., Pfajfer L., Bilic I., Ban S.A., Willmann K.L., Mukherjee M., Supper V., Hsu H.T., Banerjee P.P., Sinha P., McClanahan F., Zlabinger G.J., Pickl W.F., Gribben J.G., Stockinger H., Bennett K.L., **Huppa J.B.**, Dupré L., Sanal Ö., Jäger U., Sixt M., Tezcan I., Orange J.S., Boztug K. (2016) *Nature Immunology* 17:1352-1360. doi: 10.1038/ni.3575. ISI impact factor: **21.506**, citations: **15**

29. Single Molecule Methods to Measure Receptor–Ligand Interactions in Immunological Synapses. **Huppa J.B.** and Schütz G.S. (2016) *Encyclopedia of Cell Biology*, Volume 3: 660-666, Editors: Bradshaw R.A., Stahl P.D., Academic Press

28. Assessment of costimulation and coinhibition in a triple parameter T cell reporter line: Simultaneous measurement of NF-κB, NFAT and AP-1. Jutz S., Leitner J., Schmetterer K., Doel-Perez I., Majdic O., Grabmeier-Pfistershammer K., Paster W., **Huppa J.B.**, Steinberger P. (2016) *Journal of Immunological Methods*: 430:10-20. doi: 10.1016/ ISI impact factor: **1.64**, citations: **9**

BIBLIOGRAPHY (continued)

27. Measuring TCR-pMHC Binding In Situ using a FRET-based Microscopy Assay. Axmann M., Schütz G.J., **Huppa J.B.***. (2015) *Journal of Visualized Experiments*:105:e53157. doi: 10.3791/53157. ISI impact factor: **1.325**, citations: **4**, *corresponding author
26. Single Molecule Fluorescence Microscopy on Planar Supported Bilayers. Axmann M., Schütz G.J., **Huppa J.B.***. (2015) *Journal of Visualized Experiments*:105:e53158. doi: 10.3791/53158. ISI impact factor: **1.325**, citations: **1**, *corresponding author
25. Rapid multiplex analysis of lipid raft components with single-cell resolution. Schatzlmaier P., Supper V., Göschl L., Zwirzitz A., Eckerstorfer P., Ellmeier W., Huppa J.B., Stockinger H. (2015) *Science Signaling*: 8:rs11. doi: 10.1126/scisignal.aac5584. ISI impact factor: **6.494**, citations: **5**, *corresponding author
24. The interdisciplinary science of T-cell recognition. **Huppa J.B.***, Davis M.M. (2013) *Advances in Immunology* 119:1-50 *, ISI impact factor: **7.256**, citations: **17** *corresponding author
23. Distinct TCR signaling pathways drive proliferation and cytokine production in T cells. Guy C.S., Vignali K.M., Temirov J., Bettini M.L., Overacre A.E., Smeltzer M., Zhang H., **Huppa J.B.**, Tsai Y.H., Lobry C., Xie J., Dempsey P.J., Crawford H.C., Aifantis I., Davis M.M., Vignali D.A. (2013) *Nature Immunology* 14:262-270. ISI impact factor: **26.008**, citations: **91**
22. Determination of interaction kinetics between the T cell receptor and peptide-loaded MHC class II via single-molecule diffusion measurements. Axmann M., **Huppa J.B.**, Davis M.M., Schütz G.J. (2012) *Biophysical Journal* 103(2):L17-9. ISI impact factor: **3.653**, citations: **19**
21. Photocrosslinkable pMHC monomers stain T cells specifically and cause ligand-bound TCRs to be 'preferentially' transported to the cSMAC. Xie J., **Huppa J.B.**, Newell E.W., Huang J., Ebert P.J., Li Q.J., Davis M.M. *Nature Immunology* 13:674-680. ISI impact factor: **26.008**, citations: **29**
20. Functional Development of the T cell receptor for antigen. Ebert P.J., Li Q.J., **Huppa, J.B.**, Davis M.M. (2010) *Progress in Molecular Biology and Translational Science* 92:65-100, ISI impact factor: **7.195** (2010), citations: **4**
19. Evidence for a functional sidedness to the ab TCR. Kuhns M.S., Girvin A.T., Klein L.O., Chen R., Jensen K.D., Newell E.W., **Huppa J.B.**, Lillemeier B.F., Huse M., Chien Y.H., Garcia K.C., Davis M.M. (2010) *Proceedings of the National Academy of Science U S A* 107:5094-5099, ISI impact factor: **9.432**, citations: **54**
18. TCR-peptide-MHC interactions *in situ* show accelerated kinetics and increased affinity. **Huppa J.B.**, Axmann, M., Mörtelmaier M.A., Lillemeier B.F., Newell E.W, Brameshuber M., Klein L.O., Schütz G.J., Davis M.M.(2010) *Nature*: 463: 963-967, ISI impact factor: **34.48**, citations: **229**
17. TCR and LAT are expressed in separate membrane domains and concatenate during activation. Lillemeier B.F., Mörtelmaier M.A., Forstner M.B., **Huppa, J.B.**, Groves, J.T., Davis, M.M. (2010) *Nature Immunology* 11: 90-97, ISI impact factor (2009): **26.000**, citations: **321**
16. T cells as self-referential, sensory organ. Davis M.M., Krogsgaard M., Huse M., **Huppa J.**, Lillemeier B.F. Li Q.J. (2007) *Annual Reviews in Immunology* 25:681-695, ISI impact factor: **47.9**, citations: **100**
15. A hybrid machine-learning approach for segmentation of protein localization data. Kasson P.M., **Huppa J.B.**, Davis M.M., Brunger A.T. (2005) *Bioinformatics* 21: 3778-3786, ISI impact factor: **6.019**, citations: **8**
14. Agonist/endogenous peptide-MHC heterodimers drive T cell activation and sensitivity. Krogsgaard M., Li Q.J., Sumen C., **Huppa J.B.**, Huse M., Davis M.M. *Nature* 2005 Mar 10; 434:238-243, ISI impact factor: **29.273**, citations: **235**

BIBLIOGRAPHY (continued)

13. Quantitative imaging of lymphocyte membrane protein reorganization and signaling. Kasson P.M., **Huppa J.B.**, Krogsgaard M., Davis M.M., Brunker A.T. (2005) *Biophysical Journal* 88:579-589, ISI impact factor: **4.507**, citations: **6**
12. CD4 enhances T cell sensitivity to antigen by coordinating Lck accumulation at the immunological synapse. Li Q.J., Dinner A.R., Qi S., Irvine D.J., **Huppa J.B.**, Davis M.M., Chakraborty A.K. (2004) *Nature Immunology* 5:791-799, ISI impact factor: **27.586**, citations: **165**
11. T cell killing does not require the formation of a stable mature immunological synapse. Purbhoo M.A., Irvine D.J., **Huppa J.B.**, Davis M.M. (2004) *Nature Immunology* 5:524-530, ISI impact factor: **27.586**, citations: **323**
10. Linking molecular and cellular events in T cell activation and synapse formation. Krogsgaard M., **Huppa J.B.**, Purbhoo M.A., Davis M.M. (2003) *Seminars in Immunology* 15:307-315. **ISI impact factor: 5.964**, citations: **39**
9. Dynamics of cell surface molecules during T cell recognition. Davis M.M., Krogsgaard M., **Huppa J.B.**, Sumen C., Purbhoo M.A., Irvine D.J., Wu L.C., Ehrlich L. (2003) *Annual Reviews in Biochemistry* 72:717-742, ISI impact factor: **37.647**, citations: **80**
8. T cell antigen recognition and the immunological synapse. **Huppa J.B.**, Davis M.M. (2003) *Nature Reviews in Immunology* 3:973-983. ISI impact factor: **28.18**, citations: **300**
7. Continuous T cell receptor signaling required for synapse maintenance and full effector potential. **Huppa J.B.**, Gleimer M., Sumen C., Davis M.M. *Nature Immunology*:749-755, ISI impact factor: **28.18**, citations: **285**
6. Linker for activation of T cells, zeta-associated protein-70, and Src homology 2 domain-containing leukocyte protein-76 are required for TCR-induced microtubule-organizing center polarization. Kuhne M.R., Lin J., Yablonski D., Mollenauer M.N., Ehrlich L.I., **Huppa J.**, Davis M.M., Weiss A. (2003) *Journal of Immunology* 171:860-866, ISI impact factor: **6.702**, citations: **81**
5. Dislocation of type I membrane proteins from the ER to the cytosol is sensitive to changes in redox potential. Tortorella D., Story C.M. **Huppa J.B.**, Wiertz E.J., Jones T.R., Bacik I., Bennink J.R., Yewdell J.W., Ploegh H.L. (1998) *Journal of Cell Biology* 142:365-376. ISI impact factor: **12.785**, citations: **109**
4. The eS-Sence of -SH in the ER. **Huppa J.B.** and Ploegh H.L. (1998) *Cell* 92:145-148. ISI impact factor: **31.253**, citations: **56**
3. In vitro translation and assembly of a complete T cell receptor-CD3 complex. **Huppa J.B.**, Ploegh H.L. (1997) *Journal of Experimental Medicine* 186:393-403, ISI impact factor: **14.38**, citations: **77**
2. The alpha chain of the T cell antigen receptor is degraded in the cytosol. **Huppa J.B.**, Ploegh H.L. (1997) *Immunity* 1997 Jul; 7:113-122, ISI impact factor: **20.82**, citations: **148**
1. A mouse cytomegalovirus glycoprotein, gp34, forms a complex with folded class I MHC molecules in the ER which is not retained but is transported to the cell surface. Kleijnen M.F., **Huppa J.B.**, Lucin P., Mukherjee S., Farrell H., Campbell A.E., Koszinowski U.H., Hill A.B., Ploegh H.L. (1997) *EMBO Journal* 16:685-694. ISI impact factor: **12.647**, citations: **146**