

Curriculum vitae:

Prof. Dr. med. Katharina Maria Pachmann
SIMFO GmbH
Transfusion Center Bayreuth
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Civil Status

Born 11/1/47 in Neuendettelsau, Kreis Ansbach, Germany
Married, Four Children

Experience

- 2012 currently **SIMFO GmbH**, Head of Research and Development Transfusion Center Bayreuth, Germany
- 2000-2012 **Klinik für Innere Medizin II Friedrich-Schiller Universität Jena**, C3 Professorship Experimental Hematology and Oncology
- 1999- 2000 **Spezielle Immunhämatologie und Forschung (SIMFO) Bayreuth, Germany**
- 1999 **Gemeinsame Einrichtung für Klinische Immunologie, Landeskrankenhaus der Universität Graz, Austria**
Prof. Tilz,
Application of Laser Scanning Cytometry for detection of minimal residual disease.
- 1996-1998 **MD Anderson Cancer Center Houston, Texas U.S.A.**
Immediate Supervisor: M Andreeff
Section of Molecular Hematology and Therapy
Research in molecular analysis of bcr/abl expression in chronic myeloid leukemia.
- 1989-1996 **Ludwig-Maximilians University Munich, Germany**
Medical Clinic, Klinikum Innenstadt Research assistant for B. Emmerich, since 1993 assistant professor
Research in analysis of surface marker pattern, gene configuration and transcriptional activity of antigen receptor genes in leukemias and lymphomas
- 1984-1989 **Technical University Munich, Germany**
1. Medical Clinic Research assistant for B. Emmerich
Research in gene analysis in lymphatic leukemias

- 1977-1983 **Institute of Hematology, GSF Munich, Germany**
Department for Experimental Hematology
 Research assistant for P. Doermer
 Research in the development of fluorescence in situ hybridization
- 1976-1977 **Institute of Hematology GSF Munich, Germany**
Department for Immunology
 Research assistant for S. Thierfelder
 Fellowship from the Deutsche Forschungsgemeinschaft (DFG)
 Research in quantitative expression of surface markers in murine lymphomas
- 1975-1976 **Max-Planck Institute of Biochemistry Martinsried, Germany**
 Immediate Supervisor: K. Hannig
 Fellowship from the Deutsche Forschungsgemeinschaft (DFG)
 Research in support free electrophoresis and 1g sedimentation of lymphoid cells
- 1974-1975 **Karolinka Institute Stockholm, Sweden**
Nobel Institute for Cell Research
 Immediate Supervisor: D. Killander
 Fellowship from the Deutsche Forschungsgemeinschaft. (DFG)
 Research in microfluorimetric analysis of immunoglobulin expression in lymphoid cells

Education

- 1977 Swedish Medical School Stockholm, Sweden
 Obtained MD degree
 Dissertation in immunology (see Scientific Background)
- 1966-1974 Medical School Munich, Germany
 Obtained MD degree
 Dissertation in immunology (see Scientific Background)
- 1957-1966 Neusprachliche High School Lindau, Germany Obtained a High School Diploma

Scientific Background

State exam 1973

Dissertation 1974 at the Max-von-Pettenkofer Institute Munich, entitled:
 Primary and secondary immune response in mice to native and protein conjugated erythrocytes.

1974-75 studies on individual murine lymphocytes using Feulgen-spectrophotometry,

interferometry and microfluorimetry to quantify immunoglobulin production in individual cells at the Karolinska Institute, Institute for Cell research (director: T. Caspersson) and Karolinska Hospital, Radiumhemmet (director: J. Einhorn) in the group of D. Killander in cooperation with H. Wigzell, Institute for Tumorimmunology (director: G. Klein).

Development of a method for dual color microfluorimetry for simultaneous analysis of IgM and IgG in individual cells.

1976 techniques of support free electrophoresis and Ig-sedimentation at the Max Planck Institute for Biochemistry, in the group of K. Hannig.

1976-77 quantitative microfluorimetric analysis of T- and B-cell markers in murine lymphomas. Development of a method for simultaneous analysis of a third marker using microbeads at the Institute for Hematology GSF, department for Immunologie (director: S. Thierfelder)

1977 Dissertation at the Karolinska Institute, Sweden entitled: Immunoglobulin Contents in Individual Splenic Lymphoid Cells During Primary Immune Response.

1977-82 qualitative and quantitative analysis of the expression of T- and B-cell markers in normal and leukemic human lymphoid cells during culture in diffusion chambers (SFB 51 Teilprojekt A16) at the Institute for Hematology GSF, department for Experimental Hematology (director: P. Dörmer).

Development of a method for analysis of specific mRNA in individual cells by in situ hybridization using fluorochrome labeled complementary probes. Supervision of a medical thesis.

1984-1989 analysis of human lymphatic leukemic cells using in situ hybridization, Southern and Northern blot analysis (DFG research project: Em 20/6-1-3), 1. Med Klinik, Klinikum rechts der Isar, in the group of B Emmerich. Supervision of a medical thesis.

1989-1996 analysis of surface marker pattern, gene configuration and gene transcription for diagnosis and prognosis of malignant leukemias and lymphomas in the Medizinische Klinik Klinikum Innenstadt, department of Hämatologie (DFG research project: Pa 205/1-3) 1991 development of a method for application of the polymerase chain reaction to single cells for analysis of minimal residual disease in leukemias and for analysis of HIV sequences in individual cells.

since 1993 assistant professor in experimental hematology

1996-1998 MD Anderson Cancer Center Houston Texas Sect Molecular hematology and Therapy (M. Andreeff): Analysis of bcr/abl expression in CML cells by In Situ Amplifikation.

1999 Landeskrankenhaus University of Graz, Austria. Establishment of a method for detection of minimal residual circulating tumor cells using laser scanning cytometry

1999-2000 SIMFO (Special Immunhematology and Research) Bayreuth Germany. Detection of minimal residual disease in solid tumors using magnetic bead enrichment and laser scanning cytometry

Since 2000 Klinik für Innere Medizin II Friedrich-Schiller Universität Jena, C3 Professorship

List of most important publications 2001 – 2016

1. Pachmann K, Zhao S, Schenk T, Kantarjian H, El-Naggar AK, Siciliano MJ, Guo JQ, Arlinghaus RB, Andreff M. Expression of bcr-abl mRNA in individual chronic myelogenous leukaemia Cells as determined by in situ amplification. *British Journal of Haematology* 2001, 112:749-759
2. Pachmann K, Heiss P, Demel U, Tilz G. Detection and quantification of small numbers of circulating tumour cells in peripheral blood using laser scanning cytometer (LSC®). *Clin Chem Lab Med* 2001, 39:811-817
3. Wagner K, Kautz A, Röder M, Schwalbe M, Pachmann K, Clement JH, Schnabelrauch M. Synthesis of oligonucleotide-functionalized magnetic nanoparticles and study on their invitro cell uptake. *Appl. Organometal Chem* 2004, 18:514-519
4. Pachmann K. Neoadjuvant Chemotherapy for Breast Cancer Can Cause Release of Tumor Cells. *Oncology News International*, 2005, 03:29
5. Pachmann K, Clement JH, Schneider CP, Willen B, Camara O, Pachmann U, Höffken K. Standardized quantification of circulating peripheral tumor cells from lung and breast cancer. *Clin Chem Lab Med* 2005; 43:617-627
6. Carlson RH. Finding & Identifying Disseminated Tumor Cells as Biomarkers for Solid Cancers. *Oncology Times* 2005, XXVII(11):10-11
7. Pachmann K. Longtime Recirculating Tumor Cells in Breast Cancer Patients. *Clinical Cancer Research* 2005, 11:5657-5658
8. Hümmer H, Pachmann K, Pachmann U. Adjuvante homöopathische Therapie bei konventionell behandeltem Mammakarzinom, *AHZ* 2005, 250:127-133
9. Rolle A, Günzel R, Pachmann U, Willen B, Höffken K, Pachmann K. Increase in number of circulating disseminated epithelial cells after surgery for non-small cell lung cancer monitoring by MAINTRAC is a predictor for relapse: A preliminary report. *World Journal surgical Oncology* 2005, 3:18
10. Pachmann K, Camara O, Kavallaris A, Schneider U, Schünemann S, Höffken K. Quantification of the Response of Circulating Epithelial Cells (CEC) to Neoadjuvant Treatment of Breast Cancer: A New Tool for Therapy Monitoring. *Breast Cancer Research* 2005, 7:R975-R979
11. Schwalbe M, Jörke C, Buske N, Höffken K, Pachmann K, Clement JH. Selective reduction of the interaction of magnetic nanoparticles with leucocytes and tumor cells by human plasma. *Journal of Magnetism and Magnetic Materials* 2005, 293:433-437
12. Schwalbe M, Buske N, Vetterlein M, Höffken K, Pachmann K, Clement JH. The Carboxymethyl Dextran Shell is an Important Modulator of Magnetic Nanoparticle Uptake in Human Cells. *Z Phys Chem* 2006, 220:125-131
13. Clement JH, Schwalbe M, Buske N, Wagner K, Schnabelrauch M, Görnert P, Kliche KO, Pachmann K, Weitschies W, Höffken K. Differential interaction of magnetic nanoparticles with tumor cells and peripheral blood cells. *J Cancer Res Clin Oncol* 2006, 132:287-292
14. Schwalbe M, Pachmann K, Höffken K, Clement JH. Improvement of the separation of tumour cells from peripheral blood cells using magnetic nanoparticles. *J Phys Condens Matter* 2006, 18:1-12

15. **Camara O, Kavallaris A, Nöschel H, Rengsberger M, Jörke C, Pachmann K. Seeding of epithelial cells into circulation during surgery for breast cancer: the fate of malignant and benign mobilized cells. World Journal of Surgical Oncology 2006, 4:67**
16. Pachmann K. Release of tumor cells during neoadjuvant therapy. Breast-Cancer-Research, Nov 1, 2006, Leserbrief zu: Breast Cancer Research 2006, 8:R60
17. Lobodasch K, Dengler R, Fröhlich F, Rengsberger M, Schubert R, Pachmann U, Pachmann K. Quantification of circulating tumour cells for monitoring of adjuvant therapy in breast cancer: An increase in cell number at completion of therapy is a predictor of early relapse. The Breast 2007, 16:211-218
18. Pachmann K, Dengler R Lobodasch K, Fröhlich F, Kroll T, Rengsberger M, Schubert R, Pachmann U. Quantification of circulating tumor cells (CETC) for monitoring of adjuvant therapy in breast cancer. An increase in cell number at completion of therapy may develop as an indicator of early relapse. J Cancer Res Clin Oncol DOI 10.1007/s00432-007-0248-3
19. Camara O, Rengsberger M, Egbe A, Koch A, Gajda M, Hammer U, Jörke C, Rabenstein C, Untch M, Pachmann K. The Relevance of Circulating Epithelial Tumour Cells (CETC) for Therapy Monitoring during Neoadjuvant (Primary Systemic) Chemotherapy in Breast Cancer. Annals of Oncology 2007, 18:1484-1492
20. Pachmann K, Camara O, Kavallaris A, Krauspe S, Malarski N, Gajda M, Kroll T, Jörke C, Hammer U, Altendorf-Hofmann A, Rabenstein C, Pachmann U, Runnebaum I, Höffken K. Monitoring the Response of Circulating Epithelial Tumor Cells (CETC) to Adjuvant Chemotherapy in Breast Cancer Allows Detection of Patients at Risk of Early Relapse. JCO 2008, 26:1208-1215
21. Pachmann K Camara O, Kohlhase A, Rabenstein C, Kroll T, Runnebaum IB, Hoeffken K. Assessing the efficacy of targeted therapy using circulating epithelial tumor cells (CETC:): the example of SERM therapy monitoring as a unique tool to individualize therapy. J Cancer Res Clin Oncol 2011, 137:821-828, doi: 10.1007/s00432-010-0942-4
22. Hekimian K, Camara O, Kroll T, Joerke C, Krauspe S, Pachmann K, Runnebaum I. The impact of trastuzumab on the course of disease in HER2/neu positive breast cancer. Archives of Gynecology and Obstetrics 2010, 282(Suppl 1): S48 (FV-Onko 03.17)
23. Pachmann U, Hekimian K, Carl S, Ruediger N, Rabenstein C, Pachmann K. Comparing Sequential Steps For Detection Of Circulating Tumor Cells: More Specific Or Just Less Sensitive? WebmedCentral CANCER 2011;2(2):WMC001490
24. Pachmann K. Tumor cell seeding during surgery - possible contribution to metastasis formation. Cancers 2011, 3: 2540-2553; doi:10.3390/cancers3022540
25. Pachmann K, Camara O, Kroll T, Gajda M, Gellner AK, Wotschadlo J, Runnebaum IB. Efficacy control of Therapy Using Circulating Epithelial Tumor Cells (CETC) as "Liquid Biopsy": Trastuzumab in HER2/neu-Positive Breast Carcinoma. J Cancer Res Clin Oncol 2011, 137: 1317-1327, DOI: 10.1007/s00432-011-1000-6
26. Pachmann K. Nicht verwunderlich. Leserbrief zu D433/2011: Nachweis zirkulierender Tumorzellen: Nicht für die Routine reif von Vera Zylka-Menhorn. Deutsches Ärzteblatt 2011, 41:A2158
27. Hekimian K, Stein EL, Pachmann U, Pachmann K. Demasking of epithelial cell adhesion molecule (EpCAM) on circulating epithelial tumor cells by Tween(®)20 treatment in breast cancer patients. Clin Chem Lab Med 2011, DOI 10.1515/CCLM.2011.812
28. Hekimian K, Meisezahl S, Trompelt K, Rabenstein C, Pachmann K. Epithelial Cell Dissemination and Readhesion: Analysis of Fractors Contributing to Metastasis

Formation in Breast Cancer. ISRN Oncology Volume 2012, Article ID 601810, 8 pages doi:10.5402/2012/

29. Hartmann K, Becker-Putsche M, Bocklitz T, Pachmann K, Niendorf A, Rösch P, Popp J. A study of Docetaxel-induced effects in MCF-7 cells by means of Raman microspectroscopy Anal Bioanal Chem 2012, DOI 10.1007/s00216-012-5887-9
30. Pachmann K. Die Bedeutung der im Blut zirkulierenden Tumorzellen in der Metastasierungskaskade. Deutsche Zeitschrift für Onkologie 2012, 42:11-16
31. Retsky M, Rogers R, Demicheli R, Hrushesky WJM, Gukas I, Vaidya JS, Baum B, Forget P, DeKock M, Pachmann K. NSAID analgesic ketorolac used preoperatively may suppress early breast cancer relapse: particular relevance to triple negative subgroup. Breast Cancer Res Treat 2010, DOI: 10.1007/s10549-012-2094-5
32. Brede-Hekimian K. Neoadjuvant chemotherapy with HER2 inhibitors for breast cancer. Lancet 2012, 379:2237
33. Pizon M, Zimon DS, Pachmann U, Pachmann K. Insulin-Like Growth Factor Receptor I (IGF-IR) and Vascular Endothelial Growth Factor Receptor 2 (VEGFR-2) Are Expressed on the Circulating Epithelial Tumor Cells of Breast Cancer Patients. PLoS ONE 2013, 8(2): e56836. doi:10.1371/journal.pone.0056836
34. Pachmann K. Disseminated tumor cells: a clinical help or over-information? Europ J Radiol 2012, 81 (Suppl 1): 114-114 Abstract
35. Winkens T, Pachmann K, Freesmeyer M. Circulating epithelial cells in patients with thyroid carcinoma. Can they be identified in the blood? Nuklearmedizin 2013, 52:7-13, doi: 10.3413/Nukmed-0524-12-08
36. El Sherif M, Schneider CP, Rabenstein, C, Hassab AH, El Bordiny MM, Ayad MW, Pachmann K. Behavior of circulating epithelial tumor cells (CETC) and FISH (fluorescence *in situ* hybridisation) of epidermal growth factor receptor (EGFR)-gene amplification in lung cancer patients during the course of therapy. Advances in Lung Cancer 2013, 2:1-8, doi:10.4236/alc.2013.21001
37. Rüdiger N, Stein EL, Schill E, Spitz G, Rabenstein C, Stauch M, Rengsberger M, Runnebaum IB, Pachmann U, Pachmann K. Chemosensitivity Testing of Circulating Epithelial Tumor Cells (CETC) *in Vitro*: Correlation to *in Vivo* Sensitivity and Clinical Outcome. J Cancer Therapy 2013, 4:597-605.
38. Pachmann U. Die unterschätzte Wandlungsfähigkeit von Tumorzellen bei Hormontherapien. Co-Med 2013, Juni: 14-15
39. Pachmann K. Nachweis zirkulierender epithelialer Tumorzellen: Klinische Bedeutung und Zukunftsperspektiven. Journal Onkologie 2013, 5:286-292.
40. Pizon M, Zimon D, Carl S, Pachmann U, Pachmann K, Camara O. Heterogeneity of circulating epithelial tumour cells from individual patients with respect to expression profiles and clonal growth (sphere formation) in breast cancer. *ecancer* 2013, 7:343 DOI: 10.3332/ecancer.2013.343
41. Schuster S, Pachmann K. Zirkulierende Tumorzellen – Potenzielle diagnostische Marker und prognostische Faktoren. Deutsche Apotheker Zeitung 2013, 48: 50-53
42. Winkens T, Pachmann K, Freesmeyer M. The influence of radioiodine therapy on the number of circulating epithelial cells (CEC) in patients with differentiated thyroid carcinoma – a pilot study. Exp Clin Endocrinol Diabetes 2014, 122: 246-253
43. Weigl C, Rabenstein C, Pachmann U, Pachmann K. Erfolgreiche Optimierung einer Chemotherapie mittels Chemosensitivitätsprüfung an zirkulierenden Tumorzellen. Journalonko 2014, 4:285-288
44. Zürich M, Foertsch S, Matzas M, Pachmann K, Kuth R. Christian Spielmann Cancer cell classification with coherent diffraction imaging using an extreme ultraviolet radiation source. Journal of Medical Imaging 1(3), 031008 (Oct–Dec 2014)

45. Sorg S, Pachmann K, Brede-Hekimian K, Freesmeyer M, Winkens T. Determining tissue origin of circulating epithelial cells (CEC) in patients with differentiated thyroid cancer by real-time PCR using thyroid mRNA probes. *Cancer Letters*. dx.doi.org./10.1016/j.canlet.2014.09.046
46. Katharina Mahal¹, Erika Schill², Sandra Breyer¹, Ulrich Pachmann², Katharina Pachmann², Rainer Schobert¹, and Bernhard Biersack¹ Activity of a Doxorubicin Menthol Conjugate Against Circulating Epithelial Tumor Cells of Cancer Patients *J. Pharm. Sci. Pharmacol.* 2014, Vol. 2, No. 1
47. Pachmann K. Current and potential use of MAINTRAC method for cancer diagnosis and prediction of metastasis. *Expert Rev Mol Diagn* 2015, Early online, 1–9
48. Pachmann K. Wie beeinflusst die Therapie solider epithelialer Tumore die im Blut zirkulierenden Tumorzellen. *DZO* 2015, 47:82-87
49. Guntinas-Lichius O, Pachmann K. Zirkulierende Tumorzellen bei Kopf-Hals-Tumoren. DOI 10.1055/s-0035-1548921, *Laryngo-Rhino-Otol* 2015, 94:367-73
50. Pachmann K, Schuster S. Brustkrebsüberwachung: Bieten zirkulierende epitheliale Tumorzellen eine Entscheidungshilfe? *DZKF* 2015, 3:15-19
51. Pachmann K, Schuster, S. Brustkrebs-Überwachung nach Ende der Hormontherapie: Bieten zirkulierende epitheliale Tumorzellen eine Entscheidungshilfe? *Gyne* 2015, 05:28-32
52. Inhestern J, Oertel K, Stemmann V, Schmalenberg H, Dietz A, Rotter N, Veit J, Görner M, Sudhoffs H, Junghans C, Wittekindt C, Pachmann K, Guntinas-Lichius O. Prognostic Role of Circulating Tumor Cells during Induction Chemotherapy Followed by Curative Surgery Combined with Postoperative Radiotherapy in Patients with Locally Advanced Oral and Oropharyngeal Squamous Cell Cancer. *PLoS One* 2015, 10:7, e0132901
53. Monika Pizon, Dorothea Schott, Ulrich Pachmann, Katharina Pachmann. The number of tumorspheres cultured from peripheral blood is a predictor for presence of metastasis in patients with breast cancer *Oncotarget*. 2016;7:48143-48154.
54. Willecke-Hochmuth R, Pachmann K, Drevs J. Treatment of advanced solid tumours with NSAIDs: Correlation of quantitative monitoring of circulating tumour cells and positron emission tomography-computed tomography imaging. *Oncol Lett*. 2016 Sep;12(3):1711-1716.