

J. Barbara Nebe, Principal Investigator

**J. Barbara Nebe, Dr.**

Vice-Chair, Dept. of Cell Biology

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**Curriculum Vitae**

2011           apl Professor for Cell Biology

2006 to date   Vice Chair of the Dept. of Cell Biology, Center of Medical Research, Medical Faculty,  
University of Rostock

2006           Venia legendi for animal physiology

2005           Habilitation, University of Rostock: *Integrin receptors and their importance for cell  
adhesion and extracellular matrix-interaction and cell signalling – clinical aspects*

1995           Dissertation, University of Rostock: thesis title: *Flow cytometric characteristics of  
epithelial cells concerning integrin mediated interactions with extracellular matrix  
molecules*, summa cum laude

1991           Dipl.-Ing. agr., University of Rostock: *Principle investigations on hollow fiber coatings  
with collagen I*

1980-91       Laboratory engineer, Center for Bioengineering, University of Rostock

1980           Laboratory engineer for veterinary medicine and diagnostics (equivalent to Dipl.-Ing.  
(FH))

**Awards and Notable Services**

- Member of the Executive Committee of the German Society of Biomaterials, 2008-to date
- Equal Opportunity Commissioners, University of Rostock, Medical Faculty, 2008-to date

Congress organizer/co-organizer

- Organizer Symposium Biomaterials-C „*Functionalized Materials for Therapeutic Applications*“, THERMEC'2009 International Conference on Processing and Manufacturing of Advanced Materials, Berlin, 2009.
- Co-organizer of the international congress „*Interface Biology of Implants*“ (IBI) in Rostock-Warnemünde, 2009.
- Organizer lecture „*Biosystem-Material-Interaction*“ University of Rostock, Interdisciplinary Faculty, WS 2008/2009.
- Co-organizer of the international congress „*Interface Biology of Implants*“ (IBI) in Rostock-Warnemünde, 2006.
- Co-organizer E-MRS Fall Meeting, Symposium J „*Surface Functionalization and activation of biomaterials*“, Warschau/Poland, 2006.
- Co-organizer of the international congress „*Interface Biology of Implants*“ (IBI) in Rostock-Warnemünde, 2003.
- Co-organizer of the congress of the German Society of Cell Biology in Rostock, 1999.

Award: Joachim-Jungius Price of the University of Rostock, awarded 1996.

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Reviewer (on inquiry) for Biomaterials, Materials Science and Engineering, Biomedical Materials, Journal of Biomedical Materials Research, Part: A, International Journal of Materials, Acta Biomaterialia, Advanced Biomaterials, International Journal of Nanomedicine, BIOmaterialien, Materials Science and Engineering

Invited speaker (international congresses):

- Quebec, Canada 04.08.2011, THERMEC'2011
- Tampere, Finland 09 2011, ESB
- Berlin, 28.08.2009, THERMEC'2009
- Singapore, 26.06.2009, ICMAT 2009
- Warschau, Polen 08.09.2006, E-MRS Fall Meeting 2006
- Vancouver, Canada 07 2006, THERMEC'2006
- Teneriffa, Spanien 03.08.2005, ICCE-12

## DFG Projects

DFG GRK 1505/1 welisa: theme A-4: *Analysis of initial adhesion mechanisms in dependence of chemical, topographical and electrical characteristics of implant surfaces*  
2008-to date

DFG NE560/7-1, 7-2: *Mathematical modelling of cell material interaction*  
2008-to date

DFG NE560/3-1, 3-2, 3-3, 3-4: Priority program SPP 322 1100 *Interface interactions and Biosystems*  
2000-2006

DFG NE560/5-1, 5-2, 5-5: *Adhesion inhibition of lens epithelial cells to prevent Cataracta secundaria*  
2001-2007

## List of 10 most relevant publications

- [1] Matschegewski C, Staehlke S, Loeffler R, Lange R, Chai F, Kern D, Beck U, **Nebe JB**: *Cell architecture—cell function dependencies on titanium arrays with regular geometry*. Biomaterials 31 (2010) 5729-5740.
- [2] Kunz F, Bergemann C, Klinkenberg E-D, Weidmann A, Lange R, Beck U, **Nebe JB**: *A novel modular device for 3-D bone cell culture and non-destructive cell analysis*. Acta Biomater (2010) DOI: 10.1016/j.actbio.2010.03.015
- [3] Rebl H, Finke B, Rychly J, Schröder K, **Nebe JB**: *Positively charged material surfaces generated by plasma polymerized allylamine enhance vinculin mobility in vital human osteoblasts*. Advanced Biomat (2010) accepted.
- [4] Schröder K, Finke B, Lüthen F, Jesswein H, Ihrke R, Ohl A, Weltmann K.-D., Diener A, Rychly J, **Nebe JB**: *Similarities between plasma amino functionalized PEEK and titanium surfaces concerning enhancement of osteoblast cell adhesion*. Journal of Adhesion Science and Technology JAST 24 (2010) 905–923.
- [5] **Nebe JB**, Mueller L, Luethen F, Ewald A, Bergemann C, Conforto E, Mueller FA: *Osteoblastic adhesion and function response to biomimetically altered titanium surfaces*. Acta Biomater 4 (2008) 1985-1995.
- [6] Nicula R, Lüthen F, Stir M, **Nebe B**, Burkel E: *Spark plasma sintering synthesis of porous*

*nanocrystalline titanium alloys for biomedical applications*. Biomol Eng 24/5 (2007) 564-567.

- [7] Finke B, Luethen F, Schroeder K, Mueller PD, Bergemann C, Frant M, Ohl A, **Nebe JB**: *The effect of positively charged plasma polymerization on initial osteoblastic focal adhesion on titanium surfaces*. Biomaterials 28/30 (2007) 4521-4534.
- [8] Lüthen F, Bulnheim U, Müller P, Rychly J, Jesswein H, **Nebe B**: *Influence of manganese ions on cellular behavior of human osteoblasts in vitro*. Biomol Eng 24/5 (2007) 531-536.
- [9] **Nebe B**, Lüthen F, Lange R, Beck U: *Interface interactions of osteoblasts with structured titanium surfaces and their mathematical correlation*. Macromol Biosci 7 (2007) 567-578.
- [10] Lüthen F, Lange R, Becker P, Rychly J, Beck U, **Nebe JB**: *The influence of surface roughness of titanium on  $\beta$ 1- and  $\beta$ 3-integrin adhesion and the organization of fibronectin in human osteoblastic cells*. Biomaterials 26 (2005) 2423-2440.

### Research Monographs & Textbooks

**Nebe JB**, Lüthen F: *Integrin- and Hyaluronan-mediated cell adhesion on titanium – Hyaluronan-mediated adhesion*. In: *Metallic Biomaterial Interactions*, Eds.: J. Breme, C.J. Kirkpatrick, R. Thull, WILEY-VCH, ISBN 978-3-527-31860-5, 2008, p. 179-182.

Briese V, Abarzua S, Richter D-U, Piechulla B, **Nebe JB**: *Molecular and cell biological investigations to the mode of action of established and potential phytoestrogens for the development of strategies in the prevention and therapy of cancer*. In: *Estrogens: Production, Functions and Applications*, Hrsg. James R. Bartos (Editor). 2009, Nova Science Publishers, Inc., New York, ISBN 978-1-60741-086-7. p. 1-53.

### Research Summary (main focus)

Cell biological investigations to understand the topographical and chemical influences of the biomaterial surface on cell adhesion structures, cell signalling, cell growth, intracellular apoptotic cascades, adhesion receptor expression, cell function (transcription and translation level of proteins), cell differentiation.

Experiences in cross-disciplinary research on the research field of biosystem-material-interaction.