Prof. Waldemar Kolanus, PhD

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Life and Medical Sciences Institute (LIMES), Molecular Immunology & Cell Biology, Director

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Research Expertise

Prof. Kolanus and his group are interested in intracellular signal transduction events which control leukocyte adhesion, migration, and effector functions. The main emphasis of their current research activities lies in elucidating the role of integrin adhesion receptors and the cytoskeleton in the functional adaptation of leukocyte motility to specific microenvironments, some of which include force-dependent slow migration of immune cells on and across barriers, versus force-independent, fast migration in the interstitium.

Education / Training

University of Hannover, Molecular Biology, PhD, 1987

University of Hannover, Biology, Chemistry, State examination, 1984

Appointments / Positions Held

2002 - present
Full Professorship, Molecular Immunology, University of Bonn

1999 - 2002
Associate Professor, Biochemistry, University of Munich (LMU)

1999
Habilitation in Biochemistry, Faculty of Chemistry, University of Munich (LMU)

1994 - 1999
Independent Group Leader, Gene Center Munich, University of Munich (LMU)

1990 - 1993
Post-doc Fellow, Molecular Immunology, Harvard Medical School

1988 - 1990
Post-doc Fellow, Immunology, Hannover Medical School

Honors / Awards

2009
US Patent 20090105286, Low molecular inhibitors of cyohesin-family guanine nucleotide exchange factors

2007
US Patent 20070287153 - Methods for identification and validation of functional intracellular targets with intramers or in vivo selection

2004
US Patent 20040170990 - Intracellular nucleic acid inhibitors of small guanine nucleotide exchange factors
US Patent 20040029775 - Methods and compounds for influencing beta3-integrin- dependent intracellular processes

2003
US Patent 20030138410 - Targeted cytolysis of HIV-infected cells by chimeric CD4 receptor-bearing cells

2002
US Patent 20020176851 - Redirection of cellular immunity by protein-tyrosine kinase chimeras

1996
US Patent 6573362 - Cytohesin-PH peptides that affect the ability of integrins to adhere

1994
Munich Gene Center Junior Group Leader 5-year-Award, BMBF and University of Munich

10 Most Relevant Publications for Prof. Waldemar Kolanus

1. Bald T, Quast T, Landsberg J, Rogava M, Glodde N, Lopez-Ramos D, Kohlmeyer J, Riesenberg S, van den Boorn-Konijnenberg D, Hömig-Hölzel C, Reuten R, Schadow B, Weighardt H, Wenzel D, Helfrich I, Schadendorf D, Bloch W, Bianchi M.E, Lugassy C, Barnhill RL, Koch M, Fleischmann BK, Förster I, Kastenmüller W, **Kolanus W**, Hölzel M, Gaffal E, Tüting T. 2014.Ultraviolet-radiation-induced inflammation promotes angiotropism and metastasis in melanoma. Nature. 507,109-13.

2. Müller S, Quast T, Schröder A, Hucke S, Klotz L, Jantsch J, Gerzer R, Hemmersbach R, **Kolanus W**. Salt-dependent chemotaxis of macrophages. 2013 PLoS One. 16 :e73439.

3. Ulbricht A, Eppler FJ, Tapia VE, van der Ven PF, Hampe N, Hersch N, Vakeel P, Stadel D, Haas A, Saftig P, Behrends C, Fürst DO, Volkmer R, Hoffmann B, **Kolanus W**, Höhfeld J.

Cellular mechanotransduction relies on tension-induced and chaperone-assisted autophagy., Curr Biol., 2013, 23, 430-435.

4. Quast T, Eppler F, Semmling V, Schild C, Homsi Y, Levy S, Lang T, Kurts C, **Kolanus W.** CD81 is essential for the formation of membrane protrusions and regulates Rac1-activation in adhesion-dependent immune cell migration., Blood, 2011, 118, 1818-1827.

5. Loer B, Bauer R, Bornheim R, Grell J, Kremmer E, **Kolanus W**, Hoch M. 2008. The NHLdomain protein Wech is crucial for the integrin-cytoskeleton link. Nat Cell Biol 10: 422-8.

6. Hafner M, Schmitz A, Grune I, Srivatsan SG, Paul B, **Kolanus W,** Quast T, Kremmer E, Bauer I, Famulok M. 2006. Inhibition of cytohesins by SecinH3 leads to hepatic insulin resistance. Nature 444: 941-4.

7. Shamri R, Grabovsky V, Gauguet JM, Feigelson S, Manevich E, **Kolanus W**, Robinson MK, Staunton DE, von Andrian UH, Alon R. 2005. Lymphocyte arrest requires instantaneous induction of an extended LFA-1 conformation mediated by endothelium- bound chemokines. Nat Immunol 6: 497-506.

8. Boehm T, Hofer S, Winklehner P, Kellersch B, Geiger C, Trockenbacher A, Neyer S, Fiegl H, Ebner S, Ivarsson L, Schneider R, Kremmer E, Heufler C, **Kolanus W**. 2003. Attenuation of cell adhesion in lymphocytes is regulated by CYTIP, a protein which mediates signal complex sequestration. EMBO J 22: 1014-24.

9. Geiger C, Nagel W, Boehm T, van Kooyk Y, Figdor CG, Kremmer E, Hogg N, Zeitlmann L, Dierks H, Weber KS, **Kolanus W**. 2000. Cytohesin-1 regulates beta-2 integrin-mediated adhesion through both ARF-GEF function and interaction with LFA-1. EMBO J 19: 2525-36.

10. **Kolanus W**, Nagel W, Schiller B, Zeitlmann L, Godar S, Stockinger H, Seed B. 1996. Alpha L beta 2 integrin/LFA-1 binding to ICAM-1 induced by cytohesin-1, a cytoplasmic regulatory molecule. Cell 86: 233-42.