

## 7. Literaturverzeichnis

---

- 1 Springer T.A., Traffic signals on endothelium for lymphocyte recirculation and leukocyte emigration. *Annu. Rev. Physiol.*: 57 (1995) 827-872.
- 2 Butcher E.C., Leukocyte-endothelial cell recognition: three (or more) steps to specificity and diversity. *Cell*: 67 (1991) 1033-1036.
- 3 Lorant D.E., Patel K.D., McIntyre T.M., McEver R.P., Prescott S.M., Zimmerman G.A., Coexpression of GMP-140 and PAF by endothelium stimulated by histamine or thrombine: a juxtacrine system for adhesion and activation of neutrophils. *J. Cell. Biol.*: 115(1) (1991) 223-224.
- 4 Zimmerman G.A., Prescott S.M., McIntyre T.M., Endothelial cell interactions with granulocytes: tethering and signaling molecules. *Immunol-Today*: 13(3) (1992) 93-100.
- 5 Wagner R., Erläuterungstafeln zur Physiologie und Entwicklungsgeschichte. *Leopold Voss*: Leipzig. (1839).
- 6 Virchow R., Die Cellularpathologie in ihrer Begründung auf physiologische und pathologische Gewebelehre. *August Hirschwald Verlag*: Berlin (1871).
- 7 Cohnheim J., Lecture on general pathology: A handbook for practioners and students. *The New Sydenham Society*: London (1889).
- 8 Barondes S.H., Bifunctional properties of lectins: lectins redefined. *Trends Biochem. Sci.*: 13 (1988) 480-482.
- 9 Drickamer K., Two distinct classes of carbohydrate-recognition domains in animal lectins. *J. Biol. Chem.*: 263 (1988) 9557-9560.
- 10 Huang K.S., Graves B.J., Wolitzky B.A., Functional Analysis of Selectin Structure, edited by Vestweber. *Amsterdam: Harwood*: 3 (1997) 1-29.
- 11 Gallatin W.M., Weissmann I.L., Butcher E.C., A cell surface molecule involved in organ-specific homing of lymphocytes. *Nature*: 304 (1983) 30-34.
- 12 Stoolman L.M., Rosen S.D., Possible role for cell surface carbohydrate-binding molecules in lymphocyte recirculation. *Cell Biol.*: 96 (1983) 722-729.
- 13 Yednock T.A., Stoolman L.M., Rosen S.D., Phosphomannosyl-derivatized beads detect a receptor involved in lymphocyte homing. *Cell Biol.*: 104 (1987) 713-714.
- 14 Lewinsohn D.M., Bargatze R.F., Butcher E.C., Leukocyte-endothelial cell recognition: evidence of a common molecular mechanism shared by neutrophils, lymphocytes and other leukocytes. *J. Immunol.*: 138 (1987) 4313-4321.
- 15 Hafezi-Moghadam A., Ley K., Relevance of L-Selectin shedding for leukocyte rolling *in-vivo*. *J. Exp. Med.*: 198 (1999) 939-947.
- 16 Steward M., Thiel M., Hagg N., Leukocyte Integrins. *Cell Biol.*: 7 (1995) 690-696.
- 17 Kishimoto T.K., Jutila M.A., Berg E.L., Butcher E.C., Neutrophil Mac-1 and MEL-14 adhesion proteins inversely regulated by chemotactic factors. *Science*: 245 (1989) 1238-1241.
- 18 Ley K., Gaehtgens P., Fennie C., Singer M.S., Lasky L.A., Rosen S.D., Lectin-like cell adhesion molecule 1 mediates leukocyte rolling in mesenteric venules *in-vivo*. *Blood*: 77 (1991) 2553-2555.
- 19 von Andrian U.H., Chambers J.D., McEvoy L.M., Bargatze R.F., Arfors K.E., Butcher

- 
- E.C., Two-step model of leukocyte-endothelial cell interaction in inflammation: distinct roles for LECAM-1 and the leukocyte  $\beta_2$  integrins *in-vivo*. **Proc. Natl. Acad. Sci. USA**: 88 (1991) 7538-7542.
- 20 Jutila M.A., Bargatze R.F., Kurk S., Warnock R.A., Ehsani N., Watson S.R., Walcheck B., Cell surface P- and E-selectin support shear-dependent of bovine  $\gamma/\delta$  T cells. **J. Immunol.**: 153 (1994) 3917-3928.
- 21 Diacovo T.G., Roth S.J., Morita C.T., Rosat J.P., Brenner M.B., Springer T.A., Interactions of human alpha/beta and gamma/delta T lymphocyte subsets in shear flow with E-selectin and P-selectin. **J. Exp. Med.**: 183 (1996) 1193-1203.
- 22 McEver R.P., Martin M.N., A monoclonal antibody to a Membrane glycoprotein binds only to activated platelets. **J. Biol. Chem.**: 259 (1984) 9799-9804.
- 23 Hsu-Lin S., Bermann C.L., Furie B.C., August D., Furie B., A platelet membrane protein expressed during platelet activation and secretion. **J. Biol. Chem.**: 259 (1984) 9121-9126.
- 24 Hamburger S.A., McEver M.P., GMP-140 mediates adhesion of stimulated platelets to neutrophils. **Blood**: 75 (1990) 550-554.
- 25 Larsen E., Celi A., Gilbert G.E., Furie B.C., Erban J.K., Bonfanti R., Wagner D.D., Furie B., PADGEM protein: a receptor that mediates the interaction of activated platelets with neutrophils and monocytes. **Cell**: 59 (1989) 305-312.
- 26 Geng J.G., Bevilacqua M.P., Moore K.L., McIntyre T.M., Prescott S.M., Kim J.M., Bliss G.A., Zimmermann G.A., McEver R.P., Rapid neutrophil adhesion to activated endothelium mediated by GMP-140. **Nature**: 343 (1990) 757-760.
- 27 Hattori R., Hamilton K.K., Fugate R.D., McEver R.P., Sims P.J., Stimulated secretion of endothelial von Willebrand factor is accompanied by rapid redistribution to the cell surface of the intracellular granule membrane protein GMP-140. **J. Biol. Chem.**: 264 (1989) 7768-7771.
- 28 Subramaniam M., Koedam J.A., Wagner D.D., Divergent fates of P- and E-selectins after their expression on the plasma membrane. **Mol. Biol. Cell**: 4 (1993) 791-801.
- 29 Bevilacqua M.P., Pober J.S., Mendrick D.L., Cotran R.S., Gimbrone M.A., Identification of an inducible endothelial-leukocyte adhesion molecule. **Proc. Natl. Acad. Sci. USA**: 84 (1987) 9238-9242.
- 30 von Asmuth E.J., Smeets E.F., Ginsel L.A., Onderwater J.J.M., Leeuwenberg J.F.M., Buurmann W.A., Evidence for endocytosis of E-selectin in human endothelial cells. **Eur. J. Immunol.**: 22 (1992) 2519-2526.
- 31 Kuijpers T.W., Raleigh, M., Kavanagh T., Janssen H., Calafat J., Roos D., Harlan J.M., Zytokine-activated endothelial cells internalize E-selectin into a lysosomal compartment of vasiculotubular shape: A tubulin driven Process. **J. Immunol.**: 152 (1994) 5060-5069.
- 32 Bevilacqua M.P., Stengelin S., Gimbrone M.A., Jr., Seed B., Endothelial leukocyte adhesion molecule 1: an inducible receptor for neutrophils related to complement regulatory proteins and lectins. **Science**: 243 (1989) 1160-1165.
- 33 Laudanna C., Constantin G., Baron P., Scarpini E., Scarlato G., Cabrini G., Dehecchi C., Rossi F., Cassatella M.A., Berton G., Sulfatides trigger increase of cytosolic free calcium and enhanced expression of tumor necrosis factor- $\alpha$  and interleukin-8 mRNA in human neutrophils. Evidence for a role of L-selectin as a signaling molecule. **J. Biol.**

- 
- Chem.*: 269 (1994) 4021-4026.
- 34 Wadell T.K., Fialkow L., Chan C.K., Kishimoto T.K., Downy G.P., Signaling functions of L-selectin. Enhancement of tyrosin phosphorylation and activation of MAP kinase. *J. Biol. Chem.*: 270 (1995) 15403-15411.
- 35 Kansas G.S., Ley K., Munro J.M., Tedder T.F., Regulation of leukocyte rolling and adhesion to high endothelial venules through the cytoplasmic domain of L-selectin. *J. Exp. Med.*: 177 (1993) 833-838.
- 36 Crockett Torabi E., Sulenbarger B., Smith C.W., Fantone J.C., Activation of human neutrophils through L-selectin and Mac-1 molecules. *J. Immunol.*: 154 (1995) 2291-2302.
- 37 Malhotra R., Priest R., Bird M.I., Role for L-selectin lipopolysaccharide-induced activation of neutrophils. *Biochem. J.*: 320 (1996) 589-593.
- 38 Malhotra R., Taylor N.R., Bird M.I., Anionic phospholipids bind to L-selectin (but not E-selectin) at a site distinct from the carbohydrate-binding site. *Biochem. J.*: 314 (1996) 297-303.
- 39 Kaplansky G., Farnarier C., Benoliel A.-M., Foa C., Kaplansky S., Bongrad P., A novel role for E- and P-selectins: shape control of endothelial cell monolayers. *J. Cell Sci.*: 107 (1994) 2449-2457.
- 40 Yoshida M., Westlin W.F., Wabg N., Ingber D.E., Rosenzweig A., Resnick N., Gimbrone M.A., Leukocyte adhesion to vascular endothelium induces E-selectin linkage to the actin cytoskeleton. *J. Cell Biol.*: 133 (1996) 445-455.
- 41 Crovello C.S., Furie B.C., Furie B., Rapid phosphorylation and selective dephosphorylation of P-selectin accompanies platelet activation. *J. Biol. Chem.*: 268 (1993) 14590-14593.
- 42 Crovello C.S., Furie B.C., Furie B., Histidine phosphorylation of P-selectin upon stimulation of human platelets: a novel pathway for activation-dependent signal transduction. *Cell*: 82 (1995) 279-286.
- 43 Elstad M.R., Lapine T.R., Cowley F.S., McEver R.P., McIntyre T.M., Prescott S.M., Zimmermann G.A., P-selectin regulates platelet-activating factor synthesis and phagocytosis by monocytes. *J. Immunol.*: 155 (1995) 2109-2122.
- 44 Lorant D.E., Topham M.K., Whatley R.E., McEver R.P., McIntyre T.M., Prescott S.M., Zimmermann G.A., Inflammatory roles of P-selectin. *J. Clin. Invest.*: 92 (1993) 559-570.
- 45 Feizi T., Demonstration by monoclonal Antibodies that carbohydrate structures of glycoproteins and glycolipids are onco-developmental antigens. *Nature*: 314 (1985) 53-57.
- 46 Varki A., Selectin ligands. *Proc. Natl. Acad. Sci. USA*: 91 (1994) 7390-7397.
- 47 Berg E.L., Magnani J., Warnock R.A., Robinson M.K., Butcher E.C., Comparison of L-selectin and E-selectin ligand specificities: the L-selectin can bind the E-selectin ligands sialyl Le<sup>x</sup> and sialyl Le<sup>a</sup>. *Biochem. Biophys. Res. Commun.*: 184 (1992) 1048-1055.
- 48 Berg E.L., Robinson M.K., Mansson O., Butcher E.C., Magnani L., A carbohydrate domain common to both sialyl Le(a) and Le(x) is recognized by endothelial cell leukocyte adhesion molecule ELAM-1. *J. Biol. Chem.*: 266 (1991) 14869-14872.
- 49 Etzioni A., Frydman M., Pollak S., Avidor I., Phillips M.L., Paulson J.C., Gershoni-

- 
- Baruch R., Recurrent severe infections caused by a novel leukocyte adhesion deficiency. *New Engl. J. Med.*: 327 (1993) 1789-1792.
- 50 Moore K.L., Stultz N.L., Diaz S., Smith D.F., Cummings R.D., Varki A., McEver R.P., Identification of a specific glycoprotein ligand for P-selectin (CD62) on myeloid cells. *J. Cell Biol.*: 118 (1992) 445-456.
- 51 Sako D., Chang X.-J., Barone K.M., Vachino G., White H.M., Shaw G., Veldman G.M., Bean K.M., Ahern T.J., Furie B., Cumming D.A., Larsen G.R., Expression cloning of a functional glycoprotein ligand for P-selectin. *Cell*: 75 (1993) 1179-1186.
- 52 Vachino G., Chang X.-J., Veldman G.M., Kumar R., Sako D., Fouser L.A., Berndt M.C., Cumming D.A., P-selectin glycolipid ligand-1 is the major counter receptor for P-selectin on stimulated T-cells and is widely distributed in non-functional form on many lymphocytic cells. *J. Biol. Chem.*: 270 (1995) 21966-21974.
- 53 Asa D., Raycroft L., Ma L., Aeed P.A., Kaytes P.S., Elhammer A.P., Geng J.G., The P-selectin glycoprotein ligand functions as a common human leukocyte ligand for P- and E-selectin. *J. Biol. Chem.*: 270 (1995) 11662-11679.
- 54 Goetz D.J., Greif D.M., Ding H., Camphausen R.T., Howes S., Comess K.M., Snapp K.R., Kansas G.S., Luskinskas F.W., Isolated P-selectin glycoprotein ligand-1 dynamic adhesion to P- and E-selectin. *J. Cell Biol.*: 137 (1997) 509-519.
- 55 Lenter M., Levinovitz A., Isenmann S., Vestweber D., Monospecific and common glycoprotein ligands for E- and P-selectin on myeloid cells. *J. Cell Biol.*: 125 (1994) 471-481.
- 56 Patel K.D., Moore K.L., Nollert M.U., McEver R.P., Neutrophils use both shared and distinct mechanisms to adhere to selectins under static and flow conditions. *J. Clin. Invest.*: 96 (1995) 1887-1896.
- 57 Alon R., Fuhlbrigge R.C., Finger E.B., Springer T.A., Interactions through L-selectin between leukocytes and adherent leukocytes nucleate rolling adhesions on selectins and VCAM-1 in shear flow. *J. Cell Biol.*: 135 (1996) 849-865.
- 58 Spertini O., Corday A.S., Monai N., Giuffre L., Schapira M., P-selectin glycoprotein ligand 1 is a ligand for L-selectin on neutrophils, monocytes and CD34+ hematopoietic progenitor cells. *J. Cell Biol.*: 135 (1996) 523-531.
- 59 Moore K.L., Patel K.D., Bruehl R.E., Li L., Johnson D.A., Lichenstein H.S., Cummings R.D., Bainton D.F., McEver R.P., P-selectin glycoprotein ligand-1 mediates rolling of human neutrophils on P-selectin. *J. Cell Biol.*: 128 (1995) 661-667.
- 60 Norman K.E., Moore K.L., McEver R.P., Ley K., Leukocyte rolling *in-vivo* is mediated by P-selectin glycoprotein ligand-1. *Blood*: 86 (1995) 4417-4421.
- 61 Borges E., Eytner R., Moll T., Steegmaier M., Matthew A., Campbell P., Ley K., Mossmann H., Vestweber D., The P-selectin glycoprotein ligand-1 is important for recruitment of neutrophils into inflamed mouse peritoneum. *Blood*: 90 (1997) 1934-1942.
- 62 Lenter M., Levinovitz A., Isenmann S., Vestweber D., Monospecific and common glycoprotein ligands for E- and P-selectin on myeloid cells. *J. Cell. Biol.*: 125 (1994) 471-481.
- 63 Pouyani T., Seed B., PSGL-1 recognition is controlled by tyrosine sulfation consensus at the PSGL-1 amino terminus. *Cell*: 83 (1995) 333-343.
- 64 Sako D., Comess K.M., Barone K.M., Camphausen R.T., Cumming D.A., Shaw G.D.,

- 
- A sulfated peptide segment at the amino terminus of PSGL-1 is critical for P-selectin binding. *Cell*: 83 (1995) 323-331.
- 65 Wilkins P.P., Moore K.L., McEver R.P., Cummings R.D., Tyrosin sulfation of glycoprotein ligand-1 is required for high affinity binding to P-selectin. *J. Biol. Chem.*: 270 (1995) 22677-22680.
- 66 Li F., Wilkins P.P., Crawley S., Weinstein J., Cummings R.D., McEver R.P., Post-translational modifications of recombinant P-selectin glycoprotein ligand-1 required for binding to P- and E-selectin. *J. Biol. Chem.*: 271 (1996) 3255-3264.
- 67 Norgard K.E., Moore K.L., Diaz S., Stulz N.L., Ushiyama R.P., McEver R.P., Cummings R.D., Varki A., Characterization of a specific ligand for P-selectin on myeloid cells: a minor glycoprotein with sialylated O-linked oligosaccharides. *J. Biol. Chem.*: 268 (1993) 12764-12774.
- 68 Wilkins P.P., McEver R.P., Cummings R.D., Structures of the O-glycans on P-selectin glycoprotein ligand-1 from HL60 cells. *J. Biol. Chem.*: 271 (1996) 18732-18742.
- 69 Phillips M.L., Nudelman E.D., Gaeta F.C.A., Perez M., Singahl A.K., Hakomori S., Paulson J.C., ELAM-1 mediates cell adhesion by recognition of a carbohydrate ligand, sialyl-Le<sup>x</sup>. *Science*: 250 (1990) 1130-1132.
- 70 Buerke M., Weyrich A.S., Murohara T., Queen C., Klingbeil C.K., Co M.S., Lefer A.M., Humanized monoclonal antibody DREG-200 directed against L-selectin protects in feline myocardial reperfusion injury. *J. Pharmacol Exp.*: 271 (1994) 134-142.
- 71 Walz G., Aruffo A., Kolanus W., Bevilacqua M.P., Seed B., Recognition by ELAM-1 of the sialyl-Le<sup>x</sup> determinant on myeloid and tumor cells. *Science*: 250 (1990) 1132-1135.
- 72 Steegmaier M., Levinovitz A., Isenmann S., Borges E., Lenter M., Kocher H.P., Kleuser B., Vestweber D., The E-selectin-ligand ESL-1 is a variant of a receptor for fibroblast growth factor. *Nature*: 373 (1995) 615-620.
- 73 Picker L.J., Warnock R.A., Burns A.R., Doerschuk C.M., Berg E.I., Butcher E.C., The neutrophil selectin LECAM-1 presents carbohydrate ligands to the vascular selectins ELAM-1 and GMP-140. *Cell*: 66 (1991) 921-933.
- 74 Brustein M., Kraal G., Mebius R.E., Watson S.R., Identification of a soluble form of a ligand for the lymphocyte homing. *J. Exp. Med.*: 176(5) (1992) 1415-1419.
- 75 Baumhater S., Singer M.S., Henzel W., Hemmerich S., Renz M., Rosen S.D., Lasky L.A., Binding of L-selectin to the vascular sialomucin CD34. *Science*: 262 (1993) 436-438.
- 76 Bargatze R.F., Jutila M.A., Butcher E.C., Distinct roles of L-selectin and integrins  $\alpha_4\beta_7$  and LFA-1 in lymphocyte homing to Peyer's Patch-HEV in situ: the multistep model confirmed and refined. *Immunity*: 3 (1995) 99-108.
- 77 Berg E.L., McEvoy L.M., Berlin C., Bargatze R.F., Butcher E.C., L-selectin-mediated lymphocyte rolling on MAdCAM-1. *Nature*: 366 (1993) 695-698.
- 78 Briskin M.K., McEvoy L.M., Butcher E.C., MAdCAM-1 has homology to immunoglobulin and mucin-like adhesion receptors and to IgA1. *Nature*: 363 (1993) 461-464.
- 79 Norgard-Sumnicht K.E., Varki N.M., Varki A., Calcium dependent heparin-like ligands for L-selectin in nonlymphoid endothelial cells. *Science*: 261 (1993) 480-483.
- 80 Bargatze R.F., Kurk S., Butcher E.C., Jutila M.A., Neutrophils roll on adherent

- 
- neutrophils bound to cytokine induced endothelial cells via L-selectin on the rolling cells. *J. Exp Med.*: 180 (1994) 1785-1792.
- 81 Jacob G.C., Kirmaier C., Abbas S.Z., Howard S.C., Steininger C.N., Welply J.K., Scudder P., Binding of the Sialyl Lewis X to E-selectin as measured by fluorescence polarization. *Biochemistry*: 34 (1995), 1210-1217.
- 82 Thoma G., Kinzy W., Bruns C., Patton J.T., Magnani J.L., Banteli R., Synthesis and biological evaluation of a potent E-selectin antagonist. *J. Med. Chem.*: 42 (23) (1999) 4909-4913.
- 83 Steegmaier M., Borges E., Berger J., Schwarz H., Vestweber D., The E-Selectin Ligand ESL-1 is located in the Golgi as well as on microvilli on the cell surface. *J. Cell Sci.*: 110 (1997) 687-694.
- 84 Bruehl R.E., Springer T.A., Bainton D.F., Quantitation of L-Selectin distribution on human leukocyte microvilli by immunogold labeling and electron microscopy. *J. Histochem. Cytochem.*: 44 (1996) 835-844.
- 85 Bruehl R.E., Moore K.L., Lorant D.E., Borregaard N., Zimmerman G.A., McEver R.P., Bainton D.F., Leukocyte activation induces surface redistribution of P-Selectin Glycoprotein Ligand-1. *J. Leukocyte Biol.*: 61 (1997) 489-499.
- 86 Ley K., Zakrzewicz A., Hanski C., Stoolman L.M., Kansas G.S., Sialylated O-glycans and L-selectin sequentially mediate myeloid cell rolling *in-vivo*. *Blood*: 85 (1995) 3727-3735.
- 87 Ley K., Granulocyte adhesion to microvascular and cultured endothelium. *Studia Biophys.*: 134 (1989) 179-184.
- 88 Ley K., Tedder T.F., Leukocyte interactions with vascular endothelium: New insights into selectin-mediated attachment and rolling. *J. Immunol.*: 155 (1995) 525-528
- 89 Chien S., Usami S., Skalak R., Blood flow in small tubes. The Cardiovascular system, Microcirculation. *Handbook of physiology; MD Am. Physiol Soc.*: (1984) 217-249.
- 90 Renemann R.S., Woldhuis B., oudeEgbrink, M.G.A., Slaaf D.W., Tangelder G.J., Concentration and velocity profiles of blood cells in the microcirculation. Advances of cardiovascular engineering. *New York: Plenum Press*: (1992) 25-40.
- 91 Goldsmith H.L., Spain S., Margination of leukocytes in blood flow through small tubes. *Microvasc. Res.*: 27 (1984) 204-222.
- 92 Schmid-Schönbein G.W., Usami S., Skalak R., Chien S., The interaction of leukocytes and erythrocytes in capillary and postcapillary vessels. *Microvasc. Res.*: 19 (1980) 45-70.
- 93 Nobis U., Pries A.R., Cokelet G.R., Gaehtgens P., Radial distribution of white cells during blood flow in small tubes. *Microvasc. Res.*: 29 (1985) 295-304.
- 94 Chien S., Rheology in the microcirculation in normal and low flow states. *Adv. Shock Res.*: 8 (1982) 71-80.
- 95 Zweifach B.W., The microcirculation in the intestinal mesentery. *Microvasc. Res.*: 5 (1973) 363-367.
- 96 Duling B.R., The preparation and use of the hamster cheek pouch for studies of the microcirculation. *Microvasc. Res.*: 5 (1973) 423-429.
- 97 Schmidt E.E., MacDonald I.C., Groom A.C., Interactions of leukocytes with vessel walls and with other blood cells, studied by high-resolution intravital videomicroscopy of spleen. *Microvasc. Res.*: 40 (1990) 99-117.

- 
- 98 Ensrich B., Asaishi K., Goetz A., Messmer K., Technical report - A new chamber technique for microvascular studies in unanesthetized hamsters. *Res. Exp. Med.*: 177 (1980) 125-134.
- 99 Nolte D., Schmid P., Jäger U., Botzlar A., Roesken F., Hecht R., Uhl E., Messmer K., Vestweber D., Leukocyte rolling in venules of striated muscle and skin is mediated by P-selectin, not by L-selectin. *Am. J. Physiol.*: 267 (1994) H1637-H1642.
- 100 Wiedemann M.P., Preparation of the bat wing for in-vivo microscopy. *Microvasc. Res.*: 5 (1973) 417-422.
- 101 Mayrovitz H.N., Leukocyte rolling: A prominent feature of venules in intact skin of anesthetized hairless mice. *Am. J. Physiol.*: 262 (1992) H157-H161.
- 102 Firell J.C., Lipowsky H.H., Leukocyte migration and deformation in mesenteric venules of rat. *Am. J. Physiol.*: 256 (1989) H1667-H1674.
- 103 Damiano E.R., Westheider J., Tözeren A., Ley K., Variation of velocity, deformation and adhesion energy density of leukocytes rolling in venules. *Circulation Research*: 79(6) (1997) 1122-1130.
- 104 Ley K., Gahtgens P., Endothelial, not hemodynamic differences are responsible for preferential leukocyte rolling in venules. *Circ. Res.*: 69 (1991) 1034-1041.
- 105 Atherton A., Born G.V.R., Relationship between the velocity of rolling granulocytes and that of the blood flow in venules. *J. Physiol. (London)*: 233 (1973) 157-165.
- 106 Bienvenu K., Granger D.N., Molecular determinants of shear rate-dependent leukocyte adhesion in postcapillary venules. *Am. J. Physiol.*: 264 (1993) H1504-H1508.
- 107 Gaboury J.P., Anderson D.C., Kubes P., Molecular mechanisms involved in superoxide-induced leukocyte-endothelial cell interactions *in-vivo*. *Am. J. Physiol.*: 266 (1994) H637-H642.
- 108 Perry M.A., Granger D.N., Role of CD11/CD18 in shear rate-dependent leukocyte-endothelial cell interactions in cat mesenteric venules. *J-Clin-Invest.*: 87(5) (1991) 1798-804.
- 109 Olofsson A., Arfors K.E., Ramezani L., Wolitzky B.A., Butcher E.C., von Adrian U.H., E-Selectin mediates leukocyte rolling in interleukin-1-treated rabbit mesentery venules. *Blood*: 84 (1994) 2749-2758.
- 110 Dore M., Korhous R.J., Granger D.N., Entman M.L., Smith C.W., P-Selectin mediates spontaneous leukocyte rolling *in-vivo*. *Blood*: 82 (1993) 1308-1316.
- 111 Arbones M.L., Ord D.C., Ley K., Ratech H., Maynard-Curry C., Otten G., Capon D.J., Tedder D.F., Lymphocyte homing and leukocyte rolling and migration are impaired in L-Selectin-deficient mice. *Immunity*: 1 (1994) 247-260.
- 112 Mayadas T.N., Johnson R.C., Rayburn H., Hynes R.O., Wagner D.D., Leukocyte rolling and extravasation are severely compromised in P-Selectin-deficient mice. *Cell*: 74 (1993) 541-554.
- 113 Kunkel E.J., Ley K., Distinct phenotype of E-Selectin-deficient mice: E-Selectin is required for slow leukocyte rolling *in-vivo*. *Circ. Res.*: 79 (1996) 1196-1204.
- 114 Milstone D.S., Fukumura D., Padgett R.C., O'Donnell P.E., Davis V.M., Benavidez O.J., Monsky W.L., Melder R.J., Jain R.K., Gimbrone M.A., Mice lacking E-Selectin show normal numbers of rolling leukocytes but reduced leukocyte stable arrest on cytokine-activated microvascular endothelium. *Microcirculation*: 5 (1998), 153-171.
- 115 Bullard D.C., Beaudet A.L., Analysis of selectin deficient mice. In: The Selectins. D.

- 
- Vestweber (Ed.). *Harwood Academic Press, Amsterdam*: (1997) 133-142.
- 116 Lawrence M.B., Springer T.A., Leukocytes roll on Selectin at physiologic flow rates: Distinction from and prerequisite for adhesion through integrins. *Cell*: 65 (1991) 859-873.
- 117 Lawrence M.B., Springer T.A., Neutrophils roll on E-Selectin. *J. Immunol.*: 151 (1993) 6338-6346.
- 118 Puri K.D., Finger E.B., Springer T.A., The faster kinetic of L-Selectin than of E-Selectin and P-Selectin rolling at comparable binding strength. *J. Immunol.*: 158 (1997) 405-413.
- 119 Alon R., Hammer D.A., Springer T.A., Lifetime of the P-Selectin carbohydrate bond and its response to tensile force in hydrodynamic flow. *Nature*: 374 (1995) 539-542.
- 120 Fritz J., Katapodis A.G., Kolbinger F., Anselmetti D., Force-mediated kinetics of single P-Selectin/ligand complexes observed by atomic force microscopy. *Proc. Natl. Acad. Sci. USA*: 95 (1998) 12283-12288.
- 121 Patel K.D., Nollert M.U., McEver R.P., P-Selectin must extend a sufficient length from the plasma membrane to mediate rolling of neutrophils. *J. Cell Biol.*: 131 (1995) 1893-1902.
- 122 Müthing J. High-resolution thin-layer chromatography of gangliocytes. *J. of Chromatogr. A*: 720 (1996) 3-25.
- 123 Müthing J., Kemminer S.E., Nondestructive detection of neutral glycosphingolipids with lipophilic anionic fluorochromes and their employment for preparative high performance thin-layer chromatography. *Analyt. Biochem.*: 238 (1996) 195-202.
- 124 Gege Ch., Vogel J., Bendas G., Rothe R. Schmidt R.R., Synthesis of the Sialyl Lewis X epitope attached to glycolipids with different core structures and their selectin-binding characteristics in a dynamic test system. *Chemistry A Europ. J.*: 6 No. 1 (2000) 111-122.
- 125 Hummel G., Schmidt R.R., A versatile synthesis of the lactoneo-series antigen-Synthesis of the Sialyl dimer Lewis X and Dimer Lewis Y. *Tetrahedron Lett.*: 38 (1997) 1173-1176.
- 126 Binnig G., Quate C.F. und Gerber C., Atomic Force Microscope. *Phys. Rev. Lett.*: 56 (1986) 930.
- 127 Hansma H.G., Hoh J.H., Biomolecular Imaging with the Atomic Force Microscope. *Annu. Rev. Biophys. Biomol. Struc.*: 23 (1994) 115 - 139.
- 128 Martini T., Diplomarbeit, *Dissertation Martin-Luther Universität Halle-Wittenberg* (1993).
- 129 Hochmuth R.M., Mohandas N., Blachschar P.L., Measurement of the elastic modulus for red cell membrane using a fluid mechanical technique. *Biophys. J.*: 13 (1973) 747-762.
- 130 Baumgartner, H.R., The role of blood flow in platelet adhesion, fibrin deposition and formation of mural thrombi. *Microvasc. Res.*: 5 (1973) 618-627.
- 131 Lawrence M.B., McIntire L.V., Eskin S.G., Effect of flow on polymorphonuclear leukocyte/endothelial cell adhesion. *Blood*: 70 (1987) 1284-1290.
- 132 Wattenbarger M.R., Graves D.J., Lauffenburger D.A., Specific adhesion of glycophorin liposomes to a lectin surface in shear flow. *Biophys. J.*: 57 (1990) 765-777.



- 
- 133 Tissot O., Pierres A., Foa C., Delaage M., Bongrand P., Motion of cells sedimenting of a solid surface in a laminar shear flow. *Biophys. J.*: 58 (1992) 641-652.
- 134 Ohlsson P.A., Tjärnhage T., Herbai E., Lofas S., Puu G., Liposome and proteoliposome fusion onto solid substrates, studied using atomic force microscopy, quartz crystal microbalance and surface plasmon resonance: Biological activities of incorporated components. *Bioelectrochem. and Bioenerg*: 38 (1) (1995) 137-148.
- 135 Tamm L.K., McConnell H.M., Supported phospholipid bilayers. *Biophys. J.*: 47 (1985) 105-113.
- 136 Gaines G.L., Insoluble Monolayers at Liquid-Gas Interfaces. *Interscience Publishers, New York*, (1966).
- 137 Bakowsky U., Herstellung, Funktionalisierung und physikochemische Charakterisierung von substratgestützten Oberflächenschichten. *Dissertation Martin-Luther Universität Halle-Wittenberg*: (1998).
- 138 Lewis S.D., Shafer J.A., Goldstein I.J., Kinetic parameters for the binding of p-Nitrophenyl  $\alpha$ -D-Mannopyranoside to Concanavalin A. *Arch. Biochem. Biophys.*: 172 (1976) 689-695.
- 139 Bendas G., Vogel J., Bakowsky U., Krause A., Müller J., Rothe U., A liposome-based model system for the simulation of lectin-induced cell adhesion. *Biochim. Biophys. Acta*: 1325 (1997) 297-308.
- 140 Bendas G., Beiträge zu neuartigen antiinflammatorischen Therapieansätzen durch die pharmazeutische Ausnutzung von Selektinen. *Habilitation Martin-Luther Universität Halle-Wittenberg*: (2000) in Vorbereitung.
- 141 Symington F.W., Hedges D.L., Hakamori S.I., Glycolipid antigens of human polymorphonuclear neutrophils and the inducible HL-60 myeloid leukemia line. *J. Immunol.*: 134 (1985) 2498-2506.
- 142 Vogel J., Bendas G., Bakowsky U., Hummel G., Schmidt R.R., Kettmann U., Rothe U. The role of glycolipids in mediating cell adhesion: A flow chamber study. *Biochim. Biophys. Acta*: 1372 (1998) 205-215.
- 143 Ikami T., Kakigami T., Baba K., Hamajima H., Jomori T., Usui T., Suzuki Y., Tanaka H., Ishida H., Hasegawa A., Kiso M., Synthetic studies on selectin ligands/inhibitors: Synthesis and inhibitory activity of 2-O-Fucosyl sulfatides containing 2-branched fatty alkyl residues in place of ceramide. *J. Carbohydrate Chem.*: 17 (1998) 453-470.
- 144 Ikami T., Tomiya N., Morimoto T., Iwata N., Yamashita R., Jomori T., Usui T., Suzuki Y., Tanaka H., Miyamoto D., Ishida H., Hasegawa A., Kiso M., Synthetic studies on selectin ligands/inhibitors: Synthesis and biological activity of the sulfated and phosphorylated multivalent  $\beta$ -D-Galactopyranosides containing fatty alkyl residues. *J. Carbohydrate Chem.*: 17 (1998) 499-518.
- 145 Ikami T., Tsuruta N., Inagaki H., Kakigami T., Matsumoto Y., Tomiya N., Jomori T., Usui T., Suzuki Y., Tanaka H., Miyamoto D., Ishida H., Hasegawa A., Kiso M.: Synthetic studies on selectin ligands/inhibitors: Synthesis and biological evaluation of sulfated and phosphorylated  $\beta$ -D-Galacto- and Lactopyranosides containing fatty alkyl residues of different carbon chain length. *Chem. Pharm. Bull.*: 46 (1998) 797-806.
- 146 Hiramatsu Y., Tsujishita H., Kondo H., Studies on selectin blockers 3: Investigation of the carbohydrate ligand of Sialyl Lewis <sup>x</sup> recognition site of P-Selectin. *J. Med. Chem.*: 39 (1996) 4547-4553.

- 
- 147 Moore K. L., Varki A., McEver R. P., GMP-140 binds to a glycoprotein receptor on human neutrophils: Evidence for a lectin-like interaction. *J. Cell Biol.*: 112 (1991) 491-499.
- 148 Storm G., Vingerhoeds M.H., Crommelin D.J.A., Haisma H.J., Immunoliposomes bearing enzymes (Immunoenzymosomes) for site-specific activation of anticancer prodrugs. *Adv. Drug Del. Rev.*: 24 (1997) 225-231.