

## 6. Literatur

1. Adkison D, et al. (1986) Role of free radicals in ischemia-reperfusion injury to the liver. *Acta Physiol Scand Suppl* 548: 101-107.
2. Anthuber M, et al. (1997) Angiotensin-converting enzyme inhibition by enalapril: a novel approach to reduce ischemia/reperfusion damage after experimental liver transplantation. *Hepatology* 25: 648-651.
3. Arvidsson D, et al. (1988) Laser-Doppler flowmetry for estimating liver blood flow. *Am J Physiol* 254: G471-476.
4. Battistini B, et al. (1996) Potential roles for endothelins in systemic inflammatory response syndrome with a particular relationship to cytokines. *Shock* 5: 167-183.
5. Bauer M, et al. (1993) Comparative effects of crystalloid and small volume hypertonic hyperoncotic fluid resuscitation on hepatic microcirculation after hemorrhagic shock. *Circ Shock* 40: 187-193.
6. Bauer M, et al. (2000) Functional significance of endothelin B receptors in mediating sinusoidal and extrasinusoidal effects of endothelins in the intact rat liver. *Hepatology* 31: 937-947
7. Bellomo G, et al. (1991) Ca<sup>(2+)</sup>-dependent and independent mitochondrial damage in hepatocellular injury. *Cell Calcium* 12: 335-341

8. Benz S, et al. (1998) Impairment of pancreatic microcirculation in the early reperfusion period during simultaneous pancreas-kidney transplantation. *Transpl Int* 11:S433-435
9. Benz S, et al. (1998) Ischemia/reperfusion injury of the pancreas: a new animal model. *J Surg Res* 75: 109-115
10. Benz S, et al. (2001) Impairment of microcirculation in the early reperfusion period predicts the degree of graft pancreatitis in clinical pancreas transplantation. *Transplantation* 71: 759-763
11. Benz S, et al. (2002) Effect of nitric oxide in ischemia/reperfusion of the pancreas. *J Surg Res* 106: 46-53
12. Biberthaler P, et al. (2001) In vivo assessment of colon microcirculation: comparison of the new OPS imaging technique with intravital microscopy. *Eur J Med Res* 17: 525-534
13. Biberthaler P, et al. (2001) Ischemia at 4 degrees C: a novel mouse model to investigate the effect of hypothermia on postischemic hepatic microcirculatory injury. *Res Exp Med* 200: 93-105
14. Biberthaler P, et al. (2002) Comparison of the new OPS Imaging technique with intravital microscopy: analysis of the colon microcirculation. *Eur Surg Res* 34: 124-128
15. Bindoli A, et al. (1988) Lipid peroxidation in mitochondria. *Free Radic Biol Med* 5: 247-261
16. Boerma EC, et al. (2005) Quantifying bedside-derived imaging of microcirculatory abnormalities in septic patients: a prospective validation study. *Crit Care* 9: R601-606

17. Boerma EC, et al. (2005) Sublingual microcirculatory flow is impaired by the vasopressin-analogue terlipressin in a patient with catecholamine-resistant septic shock. *Acta Anaesthesiol Scand* 49: 1387-1390
18. Broe PJ, Zuidema GD, Cameron JL. The role of ischemia in acute pancreatitis: studies with an isolated perfused canine pancreas. *Surgery* 1982; 91(4):377-382
19. Campra J.L., et al.. The hepatic circulation. In Arias IM, Jakoby WB, Popper H, et al., eds. *The liver: biology and pathophysiology*. New York: Raven, pp 911ff. 1988
20. Carini R, et al. (1995) Alteration of Na<sup>+</sup> homeostasis as a critical step in the development of irreversible hepatocyte injury after adenosine triphosphate depletion. *Hepatology* 21: 1089-1098
21. Carini R, et al. (1995) Sodium-mediated cell swelling is associated with irreversible damage in isolated hepatocytes exposed to hypoxia or mitochondrial toxins. *Biochem Biophys Res Commun* 206: 180-185
22. Chaland P, et al. (1990) Orthotopic liver transplantation with hepatic artery anastomoses. Hemodynamics and response to hemorrhage in conscious rats. *Transplantation* 49: 675-678
23. Cheung AT, et al. (1999) Improvements in diabetic microangiopathy after successful simultaneous pancreas-kidney transplantation: A computer-assisted intravital microscopy study on the conjunctival microcirculation. *Transplantation* 68: 927-932
24. Cheung J, et al. (1986) Calcium and ischemic injury. *N Engl J Med* 314: 1670-1676

25. Chien K, et al. (1978) Accelerated phospholipid degradation and associated membrane dysfunction in irreversible, ischemic liver cell injury. *J Biol Chem* 10: 4809-4817
26. Christ F, et al.. Monitoring of the microcirculation in cardiac surgery and neonates using orthogonal polarisation spectral imaging. In: Messmer K ed. *Orthogonal Polarization Spectral Imaging*. Basel: Karger, 2000: 82-93
27. Clemens M, et al. (1985) Hepatic microcirculatory failure after ischemia and reperfusion: improvement with ATP-MgCl<sub>2</sub> treatment. *Am J Physiol* 248: H804-H811
28. De Baker D, et al.. Use of orthogonal polarization spectral imaging in intensive care. In: Messmer K ed. *Orthogonal Polarization Spectral Imaging*. Basel: Karger, 2000: 104-109
29. Duke-Elder SS. The anatomy of the visual system. In: Wybar SSD-EaKC, editor. *System of ophthalmology*. Vol 2. London. Henry Kimpton, 1961: 547-551
30. Ekataksin W, et al. (1999) Liver microvascular architecture: an insight into the pathophysiology of portal hypertension. *Semin Liver Dis* 19: 359-382
31. Farber J, et al. (1981) Accelerated phospholipid degradation in anoxic rat hepatocytes. *Arch Biochem Biophys* 211: 312-320
32. Farber J, et al. (1981) The role of calcium in cell death. *Life Sci* 28: 1289-1295

33. Fenton BM, et al. (1979) Quantitative morphometry of conjunctival microcirculation in diabetes mellitus. *Microvasc Res* 18: 153-166
34. Ferguson D, et al. (1993) Spatial relationship between leukocyte accumulation and microvascular injury during reperfusion following hepatic ischemia. *Int J Microcirc Clin Exp* 12: 45-60
35. Fiedler F, et al. (1999) The endothelin antagonist bosentan does not improve survival in severe experimental pancreatitis in rats. *Int J Pancreatol* 26: 147-154
36. Florine-Casteel K, et al. (1991) Lipid order in hepatocyte plasma membrane blebs during ATP depletion measured by digitized video fluorescence polarization microscopy. *FASEB J* 5: 2078-2084
37. Foitzik T, et al. (1998) Endothelin receptor blockade improves fluid sequestration, pancreatic capillary blood flow, and survival in severe experimental pancreatitis. *Ann Surg* 228: 670-675
38. Furukawa H, et al. (1991) Effect of cold ischemia time on the early outcome of human hepatic allografts preserved with UW solution. *Transplantation* 51: 1000-1004
39. Gasbarrini A, et al. (1992) Effect of anoxia on intracellular ATP,  $\text{Na}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ , and cytotoxicity in rat hepatocytes. *J Biol Chem* 267: 6654-6663
40. Gatmaitan Z, et al. (1996) Studies on fenestral contraction in rat liver endothelial cells in culture. *Am J Pathol* 148: 2027-2041
41. Genzel-Boroviczeny O, et al. (2002) Orthogonal polarization spectral imaging (OPS): a novel method to measure the microcirculation in term and preterm infants transcutaneously. *Pediatr Res* 51: 386-391

42. Genzel-Boroviczeny O, et al. (2004) Blood transfusion increases functional capillary density in the skin of anemic preterm infants. *Pediatr Res* 56: 751-755
43. Gibson BE, et al. (1986) Lack of correlation between transconjunctival O<sub>2</sub> and cerebral blood flow during carotid artery occlusion. *Anaesthesiology* 64: 277-279
44. Gidlof A, et al. (1988) Fine structure of the human skeletal muscle capillary. A morphometric analysis. *Int J Microcirc Clin Exp* 7: 43-66
45. Glanemann M, et al. (2002) Clinical results after orthotopic liver transplantation dependent on ischemia/reperfusion injury. *TransplLinc* 2: 58-66
46. Gores G, et al. (1990) Plasma membrane bleb formation and rupture: a common feature of hepatocellular injury. *Hepatology* 11: 690-698
47. Goto M, et al. (1994) Endothelin-1 is involved in the pathogenesis of ischemia/reperfusion liver injury by hepatic microcirculatory disturbances. *Hepatology* 19: 675-681
48. Granger D (1988) Role of xanthine oxidase and granulocytes in ischemia-reperfusion injury. *Am J Physiol* 255: H1269-H1275
49. Grisham MB, et al. (1986) Xanthine oxidase and neutrophil infiltration in intestinal ischemia. *Am J Physiol* 251: G567-G574
50. Groner W, et al. (1999) Orthogonal polarization spectral imaging: a new method for study of the microcirculation. *Nat Med* 5: 1209-1212

51. Gross J, et al. (1972) Mathematical models of capillary flow. A critical review. *Biorheology* 9: 225-264
52. Gruessner AC, et al. (1998) Report of the International Pancreas Transplant Registry. *Transplant Proc* 30: 242-243
53. Gumucio JJ, et al. (1981) Transport of fluorescent compounds into hepatocytes and the resultant zonal labeling of the hepatic acinus in the rat. *Gastroenterology* 80: 639-646
54. Gumucio JJ, et al. (1986) The isolation of functionally heterogeneous hepatocytes of the proximal and distal half of the liver acinus in the rat. *Hepatology* 6: 932-944
55. Harris AG, et al. (2000) The Cytoscan Model E-II, a new reflectance microscope for intravital microscopy: comparison with the standard fluorescence method. *J Vasc Res* 37: 469-476
56. Harris AG, et al. (2002) Validation of OPS imaging for microvascular measurements during isovolumic hemodilution and low hematocrits. *Am J Physiol Heart Circ Physiol* 282: H1502-H1509
57. Haussinger D (1996) The role of cellular hydration in the regulation of cell function. *Biochem J* 313: 697-710
58. He X, et al. (2003) Influence of warm ischemia injury on hepatic functional status and survival of liver graft in rats. *Hepatobiliary Pancreat Dis Int* 4: 504-508
59. Herrero I, et al. (1999) Prevention of cold ischemia-reperfusion injury by an endothelin receptor antagonist in experimental renal transplantation. *Nephrol Dial Transplant* 14: 872-880

60. Intaglietta M, et al. (1975) Capillary flow velocity measurements in vivo and in situ by television methods. *Microvasc Res* 10: 165-179
61. Jaeschke H, et al. (1990) Neutrophils contribute to ischemia/reperfusion injury in rat liver in vivo. *FASEB J* 4: 3355-3359
62. Jaeschke H, et al. (1993) Functional inactivation of neutrophils with a Mac-1 (CD11b/CD18) monoclonal antibody protects against ischemia-reperfusion injury in rat liver. *Hepatology* 17: 915-923
63. Karwinski W, et al. (1989) Sixty minutes of normothermic ischemia in the rat liver: correlation between adenine nucleotides and bile excretion. *J Surg Res* 46: 99-103
64. Kawachi S, et al. (1997) Efficacy of intraportal infusion of prostaglandin E1 to improve the hepatic blood flow and graft viability in porcine liver transplantation. *Transplantation* 64: 205-209
65. Keck T, et al. (2003) Characterization of ischemia/reperfusion injury after pancreas transplantation and reduction by application of monoclonal antibodies against ICAM-1 in the rat. *Surgery* 134: 63-71
66. Keck T, et al. (2005) Pancreatic proteases in serum induce leukocyte-endothelial adhesion and pancreatic microcirculatory failure. *Pancreatology* 5: 241-250
67. Kehrer J, et al. (1990) Mechanisms of hypoxic cell injury. Summary of the symposium presented at the 1990 annual meeting of the Society of Toxicology. *Toxicol Appl Pharmacol* 106: 165-178



68. Klar E, et al. (1995) Thermodiffusion as a novel method for continuous monitoring of the hepatic microcirculation after liver transplantation. *Transplant Proc* 27: 2610-2612
69. Klar E, et al. (1996) First clinical realization of continuous monitoring of liver microcirculation after transplantation by thermodiffusion. *Transpl Int* 9: S140-S143
70. Klar E, et al. (1999) Thermodiffusion for continuous quantification of hepatic microcirculation--validation and potential in liver transplantation. *Microvasc Res* 58: 156-166
71. Klar E, et al. (2001) Prediction of primary graft failure by intraoperative quantification of liver perfusion. *Transplant Proc* 33: 1370-1371
72. Klar E, Herfarth C, Messmer K. Therapeutic effect of isovolemic hemodilution with dextran 60 on the impairment of pancreatic microcirculation in acute biliary pancreatitis. *Ann Surg* 1990; 211(3):346-353
73. Klitzman B, et al.. Wound-induced angiogenesis: a clinical model. In: Messmer K ed. *Orthogonal Polarization Spectral Imaging*. Basel: Karger, 2000: 110-114
74. Kondo T, et al. (1998) Impact of ischemia-reperfusion injury on dimensional changes of hepatic microvessels. *Res Exp Med* 198: 63-72
75. Korber N, et al. (1986) Microcirculation in the conjunctival capillaries of healthy and hypertensive patients. *Klin Wochenschr* 64: 953-955

76. Kram HB, et al. (1986) Noninvasive conjunctival oxygen monitoring during carotid endarterectomy. Arch Surg 121: 914-917
77. Lange R, et al. (1996) Determination of hepatocellular enzymes in effluent of human liver grafts for preoperative evaluation of transplant quality. Transplantation 62: 1255-1259
78. Langer S, et al. (2001) Assessing the microcirculation in a burn wound by use of OPS imaging. Eur J Med Res 6: 231-234
79. Langer S, et al. (2001) Orthogonal polarization spectral imaging as a tool for the assessment of hepatic microcirculation: a validation study. Transplantation 71: 1249-1256
80. Langer S, et al. (2002) Orthogonal polarization spectral imaging versus intravital fluorescence microscopy for microvascular studies in wounds. Ann Plast Surg 48: 646-653
81. Langrehr JM, et al. (1998) Etiologic factors and incidence of ischemic type biliary lesions (ITBL) after liver transplantation. Langenbecks Arch 115: 1560-1562
82. Lasson A, Berling R, Ohlsson K. CRP predicts complications in pancreatitis and peritonitis. Prog Clin Biol Res 1989; 308:725-729
83. Leaf A (1973) Cell swelling. A factor in ischemic tissue injury. Circulation 48: 455-458
84. Lemasters J, et al. (1987) Blebbing, free Ca<sup>2+</sup> and mitochondrial membrane potential preceding cell death in hepatocytes. Nature 325: 78-81

85. Lerman A, et al. (1991) Elevation of plasma endothelin associated with systemic hypertension in humans following orthotopic liver transplantation. *Transplantation* 51: 646-650
86. Lindeboom JA, et al. (2006) Orthogonal polarization spectral (OPS) imaging and topographical characteristics of oral squamous cell carcinoma. *Oral Oncol* 7 Epub ahead of print
87. Lindert J, et al. (2002) OPS Imaging of human microcirculation: A short technical report. *J Vasc Res* 39: 368-372
88. Lopez Farre A, et al. (1993) Effect of endothelin-1 on neutrophil adhesion to endothelial cells and perfused heart. *Circulation* 88: 1166-1171
89. MacPhee P, et al. (1995) Intermittence of blood flow in liver sinusoids, studied by high-resolution in vivo microscopy. *Am J Physiol* 269: G692-G698
90. Marubayashi S, et al. (1997) Protective effect of monoclonal antibodies to adhesion molecules on rat liver ischemia-reperfusion injury. *Surgery* 122: 45-52
91. Marzi I, et al. (1990) Assessment of Reperfusion Injury by Intravital Fluorescence Microscopy Following Liver Transplantation in the Rat. *Transplant Proc* 22: 2004-2005
92. Marzi I, et al. (1991) Microcirculatory disturbances and leucocyte adherence in transplanted livers after cold storage in Euro-Collins, UW and HTK solutions. *Transpl Int* 4: 45-50
93. Mathie R (1986) Hepatic blood flow measurement with inert gas clearance. *J Surg Res* 41: 92-110

94. Mathura K, et al. (2001) Comparison of OPS imaging and conventional capillary microscopy to study the human microcirculation. *J Appl Physiol* 91: 74-78
95. Mathura K, et al.. First clinical use of orthogonal polarization spectral imaging. In: Messmer K ed. *Orthogonal Polarization Spectral Imaging*. Basel: Karger, 2000: 94-101
96. Mayer H, et al. (1999) Characterization and reduction of ischemia/reperfusion injury after experimental pancreas transplantation. *J Gastrointest Surg* 3: 162-166
97. McCord J (1985) Oxygen-derived free radicals in postischemic tissue injury. *N Engl J Med* 312: 159-163
98. McCuskey R (1966) A dynamic and static study of hepatic arterioles and hepatic sphincters. *Am J Anat* 119: 455-477
99. Menger MD, et al. (1988) Quantitative analysis of microcirculatory disorders after prolonged ischemia in skeletal muscle. Therapeutic effects of prophylactic isovolemic hemodilution. *Res Exp Med* 188: 151-165
100. Menger MD, et al. (1991) In vivo fluorescence microscopy for quantitative analysis of the hepatic microcirculation in hamsters and rats. *Eur Surg Res* 23: 158-169
101. Menger MD, et al. (1991) Role of oxygen radicals in the microcirculatory manifestations of postischemic injury. *Klin Wochenschr* 69: 1050-1055

102. Menger MD, et al. (1992) Microvascular ischemia-reperfusion injury in striated muscle: significance of "no reflow". *Am J Physiol* 263: H1892-H1900
103. Menger MD, et al. (1992) Microvascular ischemia-reperfusion injury in striated muscle: significance of "reflow paradox". *Am J Physiol* 263: H1901-H1906
104. Menger MD, et al. (1996) Ischemia-reperfusion induced pancreatic microvascular injury. An intravital fluorescence microscopic study in rats. *Dig Dis Sci* 41: 823-830
105. Menger MD, et al. (1999) Role of microcirculation in hepatic ischemia/reperfusion injury. *Hepatogastroenterology* 46: 1452-1457
106. Milner SM, et al. (2005) Observations on the microcirculation of the human burn wound using orthogonal polarization spectral imaging. *Burns* 31: 316-319
107. Moench C, et al. (2003) Prevention of ischemic-type biliary lesions by arterial back-table pressure perfusion. *Liver Transpl* 9: 285-289
108. MRC European Carotid Surgery Trial: Interim results for symptomatic patients with severe (70-99%) or with mild (0-29%) carotid stenosis. European Carotid Surgery Trialists Collaborative Group. *Lancet* 1991; 337: 1235-1243
109. Muller JM, et al. (1997) Pentoxifylline reduces venular leukocyte adherence ("reflow paradox") but not microvascular "no reflow" in hepatic ischemia/reperfusion. *J Surg Res* 71: 1-6
110. Nakata K, et al. (1960) Direct measurement of blood pressures in minute vessels of the liver. *Am J Physiol* 199: 1181-1188

111. Nakayama S, et al. (1985) Infusion of very hypertonic saline to bled rats: membrane potentials and fluid shifts. *J Surg Res* 38: 180-186
112. Neuhaus P, et al. (1993) Extracorporeal liver perfusion: applications of an improved model for experimental studies of the liver. *Int J Artif Organs* 16: 729-739
113. Neuhaus P, et al. (1994) Technique and results of biliary reconstruction using side-to-side choledochocholedochostomy in 300 orthotopic liver transplants. *Ann Surg* 219: 426-434
114. North American Symptomatic Carotid Endarterectomy Trial Collaborators (1991) Beneficial effect of carotid endarterectomy in symptomatic patients with high-grade carotid stenosis. *N Eng J Med* 325: 445-453
115. North American Symptomatic Carotid Trialist' Collaborative Group (1998) Randomised trial of endarterectomy for recently symptomatic stenosis: Final results of the NASCET trial. *N Eng J Med* 339: 1415-1425
116. Oda M, et al. (1990) Regulatory mechanisms of the hepatic microcirculation. Involvement of the contraction and dilation of sinusoids and sinusoidal endothelial fenestrae. *Prog. Appl. Microcirc* 17: 103-128
117. Oda M, et al. (1997) Roles of plasma membrane  $Ca^{++}$ -ATPase in the relaxation and contraction of hepatic sinusoidal endothelial fenestrae: effects of Prostaglandine E1 and endothelin 1. *Cells of the Hepatic Sinusoid* 6: 313-317

118. Oda M, et al. (1999) Roles of sinusoidal endothelial cells in the local regulation of hepatic sinusoidal blood flow - Involvement of endothelins and nitric oxide. *Liver Diseases and Hepatic Sinusoidal Cells* 141-155
119. Oda M, et al. (2000) Local regulators of hepatic sinusoidal microcirculation: recent advances. *Clin Hemorheol Microcirc* 23: 85-94
120. Oda M, et al. (2003) Regulatory mechanisms of hepatic microcirculation. *Clin Hemorheol Microcirc* 29: 167-182
121. Oda M, et al.. Some dynamic aspects of the hepatic microcirculation: demonstration of sinusoidal endothelial fenestrae as a possible regulatory factor, in. *Intravital Observation of Organ Microcirculation*, M. Tsuchia, H. Wayland, M. Oda et al., eds, Excerpta Medica, Amsterdam, 1983: 105-183
122. Ohdan H, et al. (1994) Laser-Doppler flowmetry for serial monitoring of graft blood flow after liver transplantation in rats. *Transplantation* 58: 969-971
123. Okada K, et al. (1998) Role of endogenous endothelin in the development of graft arteriosclerosis in rat cardiac allografts: antiproliferative effects of bosentan, a nonselective endothelin receptor antagonist. *Circulation* 97: 2346-2351
124. Palmer R, et al. (1987) Nitric oxide release accounts for the biological activity of endothelium-derived relaxing factor. *Nature* 327: 524-526
125. Patel VF, et al. (1996) Novel acid labile COL1 trityl-linked difluoronucleoside immunoconjugates: synthesis, characterization, and biological activity. *Bioconjug Chem* 7: 497-510

126. Pennings FA, et al. (2004) Direct observation of the human cerebral microcirculation during aneurysma surgery reveals increased arteriolar contractility. *Stroke* 35: 1284-1288
127. Picker LJ, et al. (1991) The neutrophil selectin LECAM-1 presents carbohydrate ligands to the vascular selectins ELAM-1 and GMP-140. *Cell* 66: 921-933
128. Ploeg RJ, et al. (1993) Risk factors for primary dysfunction after liver transplantation--a multivariate analysis. *Transplantation* 55: 807-813
129. Pluszyk T, et al. (1997) Acute pancreatitis in rats: Effect of sodium taurocholate, CCK-8, and Sec on pancreatic microcirculation. *Am J Physiol* 272: G310-G320
130. Porte R, et al. (1998) Long-term graft survival after liver transplantation in the UW era: late effects of cold ischemia and primary dysfunction. European Multicentre Study Group. *Transpl Int* 11: S164-S167
131. Post S, et al. (1992) The impact of arterialization on hepatic microcirculation and leukocyte accumulation after liver transplantation in the rat. *Transplantation* 54: 789-794
132. Post S, et al. (1993) Assessment of microhemodynamics after liver transplantation by in vivo microscopy in the rat. *Transplant Proc* 25: 2597-2598
133. Post S, et al. (1993) Differential impact of Carolina rinse and University of Wisconsin solutions on microcirculation, leukocyte



adhesion, Kupffer cell activity and biliary excretion after liver transplantation. *Hepatology* 18: 1490-1497

134. Post S, et al. (1993) Hepatic reperfusion injury following cold ischemia in the rat: potentials of quantitative analysis by in vivo microscopy. *Prog Appl Microcirc* 19: 152-166
135. Post S, et al. (1994) Timing of Arterialization in Liver Transplantation. *Ann Surg* 220: 691-698
136. Post S, et al. (1995) Importance of the First Minutes of Reperfusion in Hepatic Preservation Injury. *Transplant Proc* 27: 727-728
137. Puolakkainen PA. Early assessment of acute pancreatitis. A comparative study of computed tomography and laboratory tests. *Acta Chir Scand* 1989; 155: 25-30
138. Rajadhyaksha M, et al. (1995) In vivo confocal scanning laser microscopy of human skin: melanin provides strong contrast. *J Invest Dermatol* 104: 946-952
139. Rappaport AM, et al. (1976) The function of the hepatic artery. *Rev Physiol Biochem Pharmacol* 76: 129-175
140. Rappaport AM, et al. (1980) Hepatic blood flow: morphologic aspects and physiologic regulation. *Int Rev Physiol* 21: 1-63
141. Raud J, et al. (1993) Leukocyte rolling and firm adhesion in the microcirculation. *Gastroenterology* 104: 310-314

142. Reck T, et al. (1996) Impact of arterialization on hepatic oxygen supply, tissue energy phosphates, and outcome after liver transplantation in the rat. *Transplantation* 62: 582-587
143. Reimer K, et al.. Cellular ion and water shifts. In: *Pathophysiology of shock, anoxia, and ischemia*. Edited by R.A.Cowley and B.F. Trump. Baltimore: Williams and Wilkins, 1982: 132-147
144. Rhodin J (1967) The ultrastructure of mammalian arterioles and precapillary sphincters. *J Ultrastruct Res* 18: 181-223
145. Ricciardi R, et al. (2001) Bosentan, an endothelin antagonist, augments hepatic graft function by reducing graft circulatory impairment following ischemia/reperfusion injury. *J Gastrointest Surg* 5: 322-329
146. Richter S, et al. (2000) Effect of warm ischemia time and organ perfusion technique on liver microvascular preservation in a non-heart-beating rat model. *Transplantation* 69: 20-24
147. Richter S, et al. (2001) Hepatic arteriolo-portal venular shunting guarantees maintenance of nutritional microvascular supply in hepatic arterial buffer response of rat livers. *J Physiol* 531: 193-201
148. Rosen HR, et al. (1998) Significance of early aminotransferase elevation after liver transplantation. *Transplantation* 65: 68-72
149. Rothwell PM, et al. (1996) A systematic review of the risks of stroke and death due to endarterectomy for symptomatic carotid stenosis. *Stroke* 27: 260-265

150. Sankary HN, et al. (1995) A simple modification in operative technique can reduce the incidence of nonanastomotic biliary strictures after orthotopic liver transplantation. *Hepatology* 21: 63-69
151. Schmid-Schoenbein G, et al. (1977) The application of stereological principles to morphometry of the microcirculation in different tissues. *Microvasc Res* 14: 303-317
152. Schon MR, et al. (1993) The possibility of resuscitating livers after warm ischemic injury. *Transplantation* 56: 24-31
153. Scommotau S, et al. (1999) Involvement of endothelin/nitric oxide balance in hepatic ischemia/reperfusion injury. *Langenbecks Arch Surg* 384: 65-70
154. Seifalian AM, et al. (1997) Hepatic microcirculation during human orthotopic liver transplantation. *Br J Surg* 84: 1391-1395
155. Seifalian AM, et al. (1998) In vivo demonstration of impaired microcirculation in steatotic human liver grafts. *Liver Transpl Surg* 4: 71-77
156. Sherman IA, et al. (1996) Dynamics of arterial and portal venous flow interactions in perfused rat liver: an intravital microscopic study. *Am J Physiol* 271: G201-G210
157. Spiegel H, et al. (2000) Controlled vasoregulation of postischemic liver microcirculation - a therapeutic approach. *J Invest Surg* 13: 273-278
158. Spronk PE, et al. (2002) Nitroglycerin in septic shock after intravascular volume resuscitation. *Lancet* 360: 1395-1396

159. Spronk PE, et al. (2004) Bench-to-bedside review: sepsis is a disease of the microcirculation. *Crit Care* 8: 462-468
160. Takei Y, et al. (1991) Leukocyte adhesion and cell death following orthotopic liver transplantation in the rat. *Transplantation* 51: 959-965
161. Tawadrous MN, et al. (2001) Microvascular origin of laser-Doppler flux signal from the surface of normal and injured liver of the rat. *Microvasc Res* 62: 355-365
162. Tymk K, et al. (1988) Heterogeneity of microvascular responses to ischemia in skeletal muscle. *Int J Microcirc Clin Exp* 7: 205-221
163. Uhl E, et al. (2003) Intraoperative detection of early microvasospasm in patients with subarachnoid hemorrhage by using orthogonal polarization spectral imaging. *Neurosurgery* 52: 1307-1317
164. Uhl E, et al. Intraoperative observation of human cerebral microcirculation. In: Messmer K ed. *Orthogonal Polarization Spectral Imaging*. Basel: Karger, 2000: 72-81
165. Uhlmann D, et al. (2001) Important role for endothelins in acute hepatic ischemia/reperfusion injury. *J Invest Surg* 14: 31-45
166. Uhlmann D, et al. (2001) Pharmacological regulation of postischemic sinusoidal diameters in rats--a new approach for reducing hepatic ischemia/reperfusion injury. *Clin Hemorheol Microcirc* 24: 233-246
167. Uhlmann S, et al. (1999) Evaluation of hepatic microcirculation by in vivo microscopy. *J Invest Surg* 12: 179-193

168. Van As A, et al (2001) Effect of early arterialization of the porcine liver allograft on reperfusion injury, hepatocellular injury, and endothelial cell dysfunction. *Liver Transpl* 7: 32-37
169. Verdant C, et al. (2005) How monitoring of the microcirculation may help us at the bedside. *Curr Opin Crit Care* 11: 240-244
170. Vollmar B, et al. (1994) Hemorrhagic hypotension induces arteriolar vasomotion and intermittent capillary perfusion in rat pancreas. *Am J Physiol* 267: H1936-H1940
171. Vollmar B, et al. (1994) Hepatic microcirculatory perfusion failure is a determinant of liver dysfunction in warm ischemia-reperfusion. *Am J Pathol* 145: 1421-1431
172. Vollmar B, et al. (1994) Impact of leukocyte-endothelial cell interaction in hepatic ischemia-reperfusion injury. *Am J Physiol* 267: G786-G793
173. Vollmar B, et al. (1995) Leukocytes contribute to hepatic ischemia/reperfusion injury via intercellular adhesion molecule-1-mediated venular adherence. *Surgery* 117: 195-200
174. Vollmar B, et al. (1996) Role of microcirculatory derangements in manifestation of portal triad cross-clamping-induced hepatic reperfusion injury. *J Surg Res* 60: 49-54
175. Vollmar B, et al. (1998) The use of intravital microscopy in surgical research. *Langenbeck's Arch Surg* 383: 282-285
176. Vollmar B, et al. (1999) Attenuation of microvascular reperfusion injury in rat pancreas transplantation by L-arginine. *Transplantation* 67: 950-955

177. Vollmar B, et al. (1999) Exocrine, but not endocrine tissue is susceptible to microvascular ischemia/reperfusion injury following pancreas transplantation in the rat. *Transpl Int* 12: 50-55
178. Von Andrian U, et al. (1991) 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: 7538-7542
179. Von Dobschütz E, et al. (2003) Noninvasive in vivo assessment of the pancreatic microcirculation: Orthogonal polarization spectral imaging. *Pancreas* 26: 139-143
180. Watanabe Y, et al. (1994) Presinusoidal and proximal intrasinusoidal confluence of hepatic artery and portal vein in rat liver: functional evidence by orthograde and retrograde bivascular perfusion. *Hepatology* 19: 1198-1207
181. Wheatley AM, et al. (1993) Intraoperative assessment by laser Doppler flowmetry of hepatic perfusion during orthotopic liver transplantation in the rat. *Transplantation* 56: 1315-1318
182. Winwood P, et al. (1993) Kupffer cells: their activation and role in animal models of liver injury and human liver disease. *Semin Liver Dis* 13: 50-59
183. Wisse E (1970) An electron microscopic study of the fenestrated endothelial lining of rat liver sinusoids. *J Ultrastruct Res* 31: 125-150

184. Wolf S, et al. (1994) Quantification of retinal capillary density and flow velocity in patients with essential hypertension. *Hypertension* 23: 464-467
185. Yamamoto K, et al. (1985) Three-dimensional observations of the hepatic arterial terminations in rat, hamster and human liver by scanning electron microscopy of microvascular casts. *Hepatology* 5: 452-456
186. Yanagisawa M, et al. (1988) A novel potent vasoconstrictor peptide produced by vascular endothelial cells. *Nature* 332: 411-415
187. Yokomori H, et al. (2003) Endothelin-1 suppresses plasma membrane  $Ca^{++}$ -ATPase, concomitant with contraction of hepatic sinusoidal endothelial fenestrae. *Am J Pathol* 162: 557-566
188. Zeintl H, et al. (1986) Static and dynamic video image analysis applied to clinical investigations. *Prog Appl Microcirc* 11: 1-10
189. Zhang XY, et al. (2002) Endothelin receptor A blockade ameliorates hypothermic ischemia-reperfusion-related microhemodynamic disturbances during liver transplantation in the rat. *J Surg Res* 102: 63-70