

BIOGRAPHICAL SKETCH

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NAME Jian-xing Ma, M.D., Ph.D.	POSITION TITLE Laureate Professor		
eRA COMMONS USER NAME jian-xing-ma			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Jiangxi Medical School, Jiangxi Province, China	M.D.	1984	Medicine
Chinese Academy of Medical Sciences, Beijing, China	M.S.	1987	Pharmacology
Medical University of South Carolina, Charleston, SC	Ph.D.	1993	Biochem & Mol. Biol.

A. Positions and Honors.

Positions

- 1984-1987 Graduate Student, Department of Anti-cancer Pharmacology and Oncology, Chinese Academy of Medical Sciences (Beijing Union Medical University).
- 1987-1989 Postdoctoral fellow, Cloning Laboratory, Department of Biology, City of Hope Beckman Research Institute, Duarte, California.
- 1989-1993 Ph.D. Student, Dept. of Biochem. and Mol. Biol., Medical University of South Carolina.
- 1994-1999 Assistant Professor, Dept of Ophthalmol, Storm Eye Institute, Medical University of South Carolina.
- 1999-2003 Associate Professor, Dept of Ophthalmol, Storm Eye Institute, Medical University of South Carolina.
- 2003-present Laureate Professor, Dept of Cell Bio, Dept of Med Endocrinol, Oklahoma University Health Sciences Center
- 2005-present Director of Research, Dept of Med., Endocrinol, Oklahoma University Health Sciences Center

Honors and Awards

- Research Career Development Award from National Science Foundation, 1996
- FASEB Summer Research Scholarship, 1998, 1999
- Developing Scholar Award from Health Science Foundation of MUSC, 1999

Other Experience and Professional Memberships

- Member in NIH/NEI BDCN12 Study Section
- Member in Grant Review Panel of American Diabetes Association
- ad hoc member for Spinal Injury Foundation grant review panel
- ad hoc member of NIH/NEI special interest panel
- ad hoc member of NIH/NCI special interest panel
- ad hoc member of NIH/NIDDK special interest panel
- ad hoc member of NIH/NEI BDPE study section
- ad hoc member of NIH/NEI Vis-A special interest panel

B. Selected peer-reviewed publications (in chronological order) (Selected from 84 papers)

- Ma, J-x.**, Chao, J. and Chao, L. (1992) Molecular cloning and characterization of rKlk10, a cDNA encoding T-kininogenase from rat submandibular gland and kidney. Biochemistry, 31, 10922-10928.
- Ma, J-x.**, Wang, D-z., Ward, D.C., Chen, L., Desai, T., Chao, J. and Chao, L. (1994) Molecular cloning and localization of the gene encoding human bradykinin B2 receptor to chromosome 14q32. Genomics, 23, 362-369.
- Ma, J-x.**, Yang, Z. Chao, J. and Chao, L. (1995) Intramuscular delivery of rat kallikrein-binding protein gene reverses hypotension in transgenic mice expressing human tissue kallikrein. J. Biol. Chem., 270, 451-455.
- Chen, L-M., **Ma, J-x.**, Liang, Y-M., Chao, L. and Chao, J. (1996) Tissue kallikrein-binding protein reduces blood pressure in transgenic mice. J. Biol. Chem., 271, 27590-27594.
- Ma, J-x.**, Znoiko, S., Othersen, K.L., Ryan, J.C., Das, J., Isayama, T., Kono, M., Oprian, D.D., Corson, D.W., Cornwall, C., Makino C. and Crouch, R.K. (2001) Identical visual pigment in salamander green rod and blue cone. Neuron, 32, 451-461 (Cover Article).

- Gao, G., Li, Y., Gee, S., Dudley, D., Fant, J., Crosson, C. and **Ma, J-x.** (2002) Down-regulation of VEGF and Up-regulation of PEDF: A possible mechanism for the anti-angiogenic activity of plasminogen kringle 5. J. Biol. Chem., 277, 9492-9497.
- Gao, G., Li, Y., Fant, J., Crosson, C. and **Ma, J-x.** (2002) Different susceptibilities to ischemia-induced retinal neovascularization and ischemia-induced VEGF/PEDF ratio changes in Brown Norway and Sprague Dawley rats. Diabetes, 51, 1218-1225.
- Wu, B.X., Chen, Y., Chen, Y., Fan, J., Rohrer, B., Crouch, R.K. and **Ma, J-x.** (2002) Cloning & Characterization of a Novel all-trans Retinol Short-Chain Dehydrogenase/Reductase from the RPE. Invest. Ophthalmol. Vis. Sci., 43, 3365-3372.
- Ablonzy, Z., Goletz, P., Redmond, T.M., Knapp, D.R., **Ma, J-x.**, Crouch, R.K. and Rohrer, B. (2002) 11-cis Retinal reduces constitutive opsin phosphorylation and improves quantum catch in retinoid deficient mouse rod photoreceptors. J. Biol. Chem., 32, 254-260.
- Znoiko, S.L., Crouch, R.K., Moiseyev, G. and **Ma, J-x.** (2002) Identification of the RPE65 protein in mammalian cone photoreceptors. Invest. Ophthalmol. Vis. Sci., 43, 1604-1609.
- Moiseyev, G., Crouch, R.K., Goletz, P. Oatis, J., Redmond, T.M. and **Ma, J-x.** (2003) Retinyl esters are the substrate for retinyl isomerohydrolase. Biochemistry, 42, 2229-2238.
- Gao, G., Dudley, A., Fant, J. and **Ma, J-x.** (2003) Kallikrein-binding protein inhibits retinal neovascularization and decreases vascular leakage. Diabetologia, 46, 689-698.
- Jin, J., Guan, M., Gao, G., Liu, Z., Zhang, M., Fant, J. and **Ma, J-x.** (2003) Decreased PEDF and increased VEGF expression in pterygia. Cornea, 22, 473-477.
- Darden, A.G., Wu, B.X., Znoiko, S.L., Hazard, E.S., Kono, M., Crouch, R.K. and **Ma, J-x.** (2003) A novel Xenopus SWS2, P434 visual pigment: Structure, cellular location, and spectral analyses. Mol. Vis. 9:191-199
<http://www.molvis.org/molvis/v9/a28/>
- Fan, J., Rohrer, B., Moiseyev, G., **Ma, J-x.** and Crouch, R.K. (2003) Isorhodopsin rather than Rhodopsin Mediates Rod Function in RPE65 Knock-out Mice. Proc. Natl. Acad. Sci. USA, 100, 13662-13667.
- Zhang, S.X., Sima, J., Fant, J., Chen, Y., Rohrer, B., Gao, G. and **Ma, J-x.** (2004) Decrease of retinal vascular leakage by plasminogen kringle 5 in a rat model of oxygen-induced retinopathy. Diabetologia, 47, 124-131.
- Sima, J., Zhang, S.X., Shao, C., Fant, J. and **Ma, J-x.** (2004) Angiostatin decreases vascular leakage in rat models of oxygen-induced retinopathy and experimental diabetes. FEBS Lett. 564, 19-23.
- Shao, C., Sima, J., Jin, J., Reinach, P., Wang, Z., and **Ma, J-x.** (2004) Suppression of cornea neovascularization by PEDF release from human amniotic membrane. Invest. Ophthalmol. Vis. Sci., 45, 1758-1762.
- Das, J. Crouch, R.K., **Ma, J-x.**, Oprian, D.D. and Kono, M. (2004) The role of the 9-methyl group of retinal in cone visual pigments. Biochemistry, 43, 5532-5538.
- Tombran-Tink, J., Lara, N., Apricio, S.E., Potluri P, Gee, S., **Ma, J-x.**, Chader, G., Barnstable, C.J. (2004) Retinoic acid and dexamethasone regulate the expression of PEDF in retinal and endothelial cells. Exp. Eye Res. 78, 945-955.
- Wang, J., Zhang, S.X., Lu, K., Chen, Y., Mott, R., Sato, S. and **Ma, J-x.** (2005) Decreased Expression of Pigment Epithelium-derived Factor Is Involved in the Pathogenesis of Diabetic Nephropathy. Diabetes, 54, 243-250.
- Zhang, S., **Ma, J-x.**, Sima, J., Ottlecz, A., Hu, M., Lambrou, G.N. (2005) Genetic Difference in Susceptibility to the Blood-retina Barrier Breakdown in Diabetes and Oxygen-induced Retinopathy. Am. J. Pathol. 166, 313-321.
- Zhang, S.X., Sima, J., Wang, J.J., Shao, C., Fant, J. and **Ma, J-x.** (2005) Systemic and periocular delivery of plasminogen kringle 5 reduces vascular leakage in rat models of oxygen-induced retinopathy & diabetes. Curr. Eye Res., 30, 681-689.
- Le, Y-z, Ash, J.D., Al-Ubaidi, M.R., Chen, Y., **Ma, J-x.**, Aderson, R.E. (2005) Targeted expression of Cre recombinase to cone photoreceptors in transgenic mice. Mol. Vis. 10, 1011-1018.
- Whitlock, N.A., Argarwal, N., **Ma, J-x.**, Crosson, C.E. (2005) Hsp27 Up-regulation by HIF-1 signaling offers protection against retinal ischemia in rats. Invest. Ophthalmol. Vis. Sci., 46, 1085-1091.
- Whitlock, N.A., Argarwal, N., **Ma, J-x.**, Crosson, C.E. (2005) Hsp27 Up-regulation by HIF-1 signaling offers protection against retinal ischemia in rats. Invest. Ophthalmol. Vis. Sci., 46, 1473-1479.
- Znoiko, S., Rohrer, B., Gresh, J., Crouch, R.K. and **Ma, J-x.** Znoiko, S.L., Rohrer, B., Lu, K. Lohr, H.R., Crouch, R.K. and **Ma, J-x.** (2005) Down-regulation of Cone-specific Gene Expression and Degeneration of Cone Photoreceptors in the Rpe65^{-/-} Mouse at Early Ages. Invest. Ophthalmol. Vis. Sci., 46, 1473-1479.
- Zhang, Z., **Ma, J-x.**, Gao, G., Luo, L., Zhang, M., Chen, J. and Liu, Z. (2005) Plasminogen kringle 5 inhibits alkali burn-induced corneal neovascularization. Invest. Ophthalmol. Vis. Sci., 46, 4062-4071.
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- Yokota, T., Kawakami, Y., Nagai, Y., **Ma, J-x.**, Tsai, J-Y., Kincade, K.W. and Sato, S. (2006) Bone marrow lacks a transplantable progenitor for smooth muscle type alpha-actin expressing cells. *Stem Cells*, 24, 13-22.
- Zhang, S.X., Wang, J.J., Gao, G., Shao, C. Mott, R. and **Ma, J-x.** (2006) Pigment Epithelium-derived Factor (PEDF) Is An Endogenous Anti-inflammatory Factor, *FASEB J.*, 20, 323-325.
- Moiseyev, G., Chen, Y., Takahashi, Y. and **Ma, J-x.** (2005) RPE65 is the isomerohydrolase in the visual cycle. *Proc. Natl. Acad. Sci. USA*, 102, 12413-12418.
- Takahashi, Y., Moiseyev, G., Chen, Y. and **Ma, J-x.** (2005) Identification of conserved histidines and glutamic acid as key residues for isomerohydrolase activity of RPE65, an enzyme of the visual cycle in the retinal pigment epithelium. *FEBS Lett.* 579, 5414-5418.
- Zhang, S.X., Wang, J.J., Lu, K. Mott, R. and **Ma, J-x.** (2006) Therapeutic potential of angiostatin in diabetic nephropathy. *J. Am. Soc. Nephrol.*, 17, 475-486.
- Chen, Y., Moiseyev, G., Takahashi, Y. and **Ma, J-x.** (2006) RPE65 gene delivery restores isomerohydrolase activity and prevents early cone loss in Rpe65^{-/-} mice. *Invest. Ophthalmol. Vis. Sci.* 47, 1177-1184.
- Takahashi, Y., Chen, Y., Moiseyev, G. and **Ma, J-x.** (2006) Two point mutations of RPE65 from patients with retinal dystrophies decrease the protein stability and abolish the isomerohydrolase activity of RPE65. *J. Biol. Chem.* 281, 21820-21825.
- Moiseyev, G., Takahashi, Y., Chen, Y., Gentleman, S., T.M., Redmond, Crouch, R.K. and **Ma, J-x.** (2006) RPE65 is an Iron(II)-dependent Isomerohydrolase in the Retinoid Visual Cycle. *J. Biol. Chem.*, 281, 2835-2840.
- Murata, M., Takanami, T., Shimizu, S., Kubota, Y., Horiuchi, S., **Ma, J-x.**, and Sato, S. (2006) Inhibition of ocular angiogenesis by diced small interfering RNAs (siRNAs) specific to vascular endothelial growth factor (VEGF). *Curr. Eye Res.* 31,171-180.
- Tomasek, J.J., Haaksma, C.J., Schwartz, R.J., Vuong, D.T., Zhang, S.X., Ash, J.D., **Ma, J-x.**, Al-Ubaidi, M.R. (2006) Deletion of smooth muscle α -actin alters blood-retina barrier permeability and retinal function. *Invest. Ophthalmol. Vis. Sci.* 47, 2693-700.
- Wang, J.J., Zhang, S.X., Mott, R., Knapp, R., Cao, W., Lau, K. and **Ma, J-x.** (2006) Salutary effect of pigment epithelium-derived factor in diabetic nephropathy: evidence for anti-fibrogenic activities. *Diabetes*, 55, 1678-1685.
- Yang, X., Chen, R., Li, C., Cai, W., **Ma, J-x.**, Liu, Q., Yang, Z., Song, Z., Liu, Z., Gao, G. (2006) Kringle 5 of human plasminogen suppresses hepatocellular carcinoma growth both in grafted xenografted mice by anti-angiogenic activity. *Cancer Biol. Therapy*, 5, 399-405.
- Zhang, S.X., Wang, J.J., Gao, Guo, Park, K. and **Ma, J-x.** (2006) PEDF: down-regulates VEGF expression and inhibits VEGF-VEGFR2 binding in diabetic retinopathy. *Mol. Endocrinol.*, 37, 1-12.
- Chen, Y., Moiseyev, G., Takahashi, Y. and **Ma, J-x.** (2006) Impacts of Two Point Mutations of RPE65 from Leber's Congenital Amaurosis on the Stability, Subcellular Localization and Isomerohydrolase Activity of RPE65. *FEBS Lett.* 580, 4200-4204.
- Takahashi, Y., Moiseyev, G., Chen, Y., and **Ma, J-x.** (2006) The roles of three palmitoylation sites of RPE65 in its membrane association and isomerohydrolase activity. *Invest. Ophthalmol. Vis. Sci.* 47, 5191-5196.
- Szatmari, I., Pap, A., Ruechl, R., **Ma, J-x.**, Illarionov, P.A., Besra, G.S., Rajnavolgyi, E., Nagy, L. (2006) PPAR γ controls CD1d expression by turning on retinoic acid synthesis in developing human dendritic cells. *J. Exp. Med.*, in press.
- Isayama, T., Chen, Y., Kono, M., DeGrip, W.J., **Ma, J-x.**, Crouch, R.K. and Makino, C.L. (2006) Differences in the pharmacological activation of visual opsins. *Vis. Neurosci.*, 23, 899-905.
- Wu, B.X., Darden, A.G., Laser, M., Crosson, C.E., Hazard, E.S. and **Ma, J-x.** (2006) The Rat Apg3p/Aut1p Homologue is Up-regulated by Ischemic Preconditioning in the Retina. *Mol. Vis.* 12, 1292-1302.
- Kanan, Y., Moiseyev, G., Agarwal, N., **Ma, J-x.**, and Al-Ubaidi, M.R. (2007) Light induction of multiple caspases and cell death in a cone photoreceptor cell line. *Invest. Ophthalmol. Vis. Sci.* 48, 40-51.
- Lu, K., Zhou, Y., Kaufman, K., Mott, R., and **Ma, J-x.** (2007) Rat Strain-dependent Susceptibility to Ischemia-induced Retinopathy through Factors Regulating Retinal VEGF Expression. *J. Mol. Endocrinol.*, in press.
- McClellan, M.E., **Ma, J-x.**, Lem, J., Anderson R.E., and Rajala, R.V.S. (2007) G-Protein Coupled Receptor Rhodopsin Regulates the Phosphorylation of Retinal Insulin Receptor. *J. Biol. Chem.* In press.
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Research Support. (Active and Completed in past 3 years only)

Current:

R01EY012231 **Ma (PI)** 05/01/06 – 04/30/10
NIH/NEI
Studies of RPE65
The major goal is to establish RPE65 as the isomerohydrolase in the visual cycle and to study the structure and function of RPE65.

R21/R33 EY015650 **Ma (PI)** 09/30/03 - 09/29/08
NIH/NEI
A new therapy for diabetic macular edema
Specific Aims: 1. To study the mechanism responsible for the K5-induced reduction of vascular permeability. 2. To develop and optimize a sustained ocular delivery system for K5 and determine its long-term effect on vascular leakage. 3. To evaluate the long-term efficacy of a sustained delivery of K5 on retinal edema in a dog model. 4. To determine possible ocular toxicities of the long-term K5 administration.

OCAST **Ma (PI)** 09/01/04 - 08/31/07
Therapeutic Effect of PEDF on Diabetic Macular Edema
The major goal is to identify an active peptide from PEDF for the treatment of diabetic macular edema and develop a sustained release system.

ADA Research Award 1-05-RA-75 **Ma (PI)** 01/01/05 - 12/31/07
American Diabetes Association
A new anti-inflammatory effect of PEDF in diabetic retinopathy
The major goal is to explore the anti-inflammatory effect of PEDF and study its mechanism of action.

JDRF Innovative Partnership Grant **Ma (co-PI)** 10/01/06 to 09/30/08
Role of Pericytes in Diabetic Retinopathy
The major goal of this project is to study the role of pericytes in ischemia-induced retinal vascular leakage and neovascularization using the smooth muscle actin knockout mouse.

Completed:

Juvenile Diabetes Research Foundation Innovative Grant **Ma (PI)** 01/01/06 - 12/31/06
Retinal Muller cells in diabetic retinopathy
The major goal to characterize a Muller cell-specific VEGF knockout mouse and study retinal neovascularization and vascular leakage induced by ischemia in this model.

JDRF Research Grant **Ma (PI)** 08/01/03 - 07/31/06
Juvenile Diabetes Research Foundation
Treatment of Vascular Leakage Using Angiogenic Inhibitors
Specific Aims: 1. To reveal the structural basis responsible for the K5-induced reduction of vascular leakage. 2. To develop a sustained delivery system for K5 or its deletion mutants and determine its long-term effect on vascular leakage in the diabetic retina.

ADA Research Grant **Ma (PI)** 01/01/02 - 12/31/04
American Diabetes Association Research Grant
Structure and Function of PEDF

R01EY12231 **Ma (PI)** 07/01/98 - 06/30/2006
NIH/NEI
Studies of RPE65
