Bone marrow transplantation in mice as a tool to study M2 macrophage activation in atherogenesis

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Abbreviations

ABC	ATP-binding cassette
acLDL	acetylated-low density lipoprotein
Akt	protein kinase B
Apo	apolipoprotein
Arg1	arginase 1
Atgl	adipose triglyceride lipase
BAT	brown adipose tissue
BMDMs	Bone marrow-derived macrophages
BMT	bone marrow transplantation
CAD	coronary artery disease
CETP	cholesteryl ester transfer protein
dKO	double knockout
DUSPs	dual-specificity phosphatases
ERK	extracellular regulated protein kinase
FACS	fluorescent activated cell sorting
FASN	fatty acid synthase
FCHL	familial combined hyperlipidemia
FPLC	fast protein liquid chromatography
Glut4	glucose transporter type 4
HDL	high-density lipoprotein
HL	hepatic lipase
HSL	hormone-sensitive lipase
IDL	intermediate-density lipoprotein
IL-1β	interleukin 1β
iNOS	inducible nitric oxide synthase
JNK	c-Jun N-terminal kinase
LDL	low-density lipoprotein
LDLr KO	LDL receptor knockout
LPS	lipopolysaccharides
LRP1	low-density lipoprotein receptor-related protein 1
M1	classically activated macrophages
M2	alternatively activated macrophages
MAPK	mitogen-activated protein kinases
MKPs	MAP kinase phosphatases
MTC	Masson's Trichrome
mtROS	mitochondria-derived reactive oxygen species
MTTP	microsomal triglyceride transfer protein
nNOS	endothelial NOS (eNOS), neuronal NOS
NO	nitric oxide
OAT	ornithine amino-transferase
OGTT	oral glucose tolerance test
oxLDL	oxidized LDL

p38	stress-activated protein kinase
Plin	lipid droplet-associated protein
RCT	reverse cholesterol transport
ROS	reactive oxygen species
SMCs	smooth muscle cells
SR-BI	scavenger receptor class B type I
TG	triglycerides
TNF-α	tumor necrosis factor α
TRL	triglyceride-rich lipoproteins
UCP2	uncoupling protein 2
Usfs	upstream stimulatory factors
VCAM-1	vascular cell adhesion molecule-1
VLDL	very-low-density lipoprotein
VSMC	vascular smooth muscle cells
WAT	white adipose tissue
WBC	white blood cell
WT	wild-type
WTD	Western-Type Diet

List of publications

Baoyan Ren, Erik Van Kampen, Theo JC Van Berkel, Sheena M. Cruickshank, Miranda Van Eck. Hematopoietic arginase 1 deficiency results in decreased leukocytosis and increased foam cell formation but does not affect atherosclerosis. *Atherosclerosis* 256 (2017): 35-46.

Baoyan Ren, Pirkka-Pekka Laurila, Reeni B. Hildebrand, Jarkko Soronen, Vanessa Frodermann, Zhuang Li, Mariëtte R. Boon, Janine J. Geerling, Patrick C.N. Rensen, Christian Ehnholm, Petri T. Kovanen, Matti Jauhiainen, Menno Hoekstra, Miranda Van Eck. Enhanced atherosclerotic lesion development in LDL receptor knockout mice lacking Upstream Stimulating Factor 1 (Usf1) in bone marrow-derived cells. (submitted for publication).

Baoyan Ren, Menno Hoekstra, Janine J. Geerling, Peter Van Santbrink, Robin Plevin, Miranda Van Eck. Macrophage MKP2 deficiency is associated with an M2-driven foam cell phenotype and increases atherosclerosis susceptibility of LDL receptor knockout mice. (submitted for publication).

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Olga S.C Snip, **Boayan Ren**, D. Huyen Tran, Janine J. Geerling, Miranda Van Eck. Leukocyte ABCA1 Impedes Progression of Established Atherosclerotic Lesions after Dietary Cholesterol Lowering in LDLr-/- Mice. (Manuscript in preparation)

Rick van der Geest, Janine J. Geerling, Menno Hoekstra, **Baoyan Ren**, Lidewij R. de Leeuw, Richard Verbeek, Johannes M. van Noort, Miranda Van Eck. Heat shock protein alpha B-crystallin promotes macrophage foam cell formation and aggravates early atherosclerosis in LDL receptor-deficient mice. (Manuscript in preparation)

Jianhua Li, Qianzhong Han, Pengtao Gong, Tuo Yang, **Baoyan Ren**, Shijie Li, Xichen Zhang. Toxoplasma gondii rhomboid protein 1 (TgROM1) is a potential vaccine candidate against toxoplasmosis. *Veterinary parasitology* 184, 2 (2012): 154-160.

Guilian Yang, Jianhua Li, Xichen Zhang, Quan Zhao, Pengtao Gong, **Baoyan Ren**, Guocai Zhang. Eimeria tenella: Cloning and characterization of telomerase reverse transcriptase gene. *Experimental parasitology* 124, 4 (2010): 380-385.

Curriculum Vitae

Baoyan Ren was born on February 3rd 1985 in Dingzhou, P. R. China. She grew up there and graduated from Experimental High School of Dingzhou in 2004. Afterwards, she went to Jilin University and received five-years education in Veterinary Medicine. In 2009, she obtained her bachelor degree and continued her three-years postgraduate study in the key laboratory of Zoonosis Research under the supervision of Prof. Dr. Xichen Zhang in the same university with a full scholarship funded by Jilin University. During her master studies, she focused on parasite antigens as possible targets for cancer immunotherapy. She finished her master studies and received her master degree in 2012. In Leiden, the Netherlands, she started her PhD program with a full scholarship funded by China Scholarship Council (CSC) in that same year. There she worked at the division of Biopharmaceutics of the Leiden Academic Centre for Drug Research (LACDR) at Leiden University under supervision of Prof. Dr. Miranda van Eck. During her PhD studies, her research focused on bone marrow transplantation in mice as a tool to investigate M2 macrophage activation pathways in atherogenesis, as described in this thesis.

PhD Portfolio

Courses and Workshops

2015	Effective communication
2015	Cardiovascular PhD-training course
2014	Time management, self-management
2014	Communication in science
2014	Introduction to teaching & supervision for LACDR PhD students
2014	LACDR PhD Introductory Course on Drug Research
2014	On being a scientist
2014	Health Physics expert level 5B
2013	ULLA Summer school
2013	Proefdierkunde (Laboratory Animal Science Course)
2012	LACDR course on Atherosclerosis

(Inter)National Poster Presentations

2016	LACDR Spring Symposium, Leiden, The Netherlands
2015	17th International Symposium on Atherosclerosis (ISA2015), Amsterdam, The Netherlands,
2015	LACDR Spring Symposium, Leiden, The Netherlands
2015	Cardiovascular PhD-training course, Arnhem, The Netherlands
2014	LACDR Spring Symposium, Leiden, The Netherlands
2014	20th Annual Scandinavian Atherosclerosis Conference, Humlebæk, Denmark
2014	The 5th Rembrandt Symposium, Noordwijkerhout, The Netherlands
2013	ULLA summer school, London, UK
2013	The 4th Rembrandt Symposium, Noordwijkerhout, The Netherlands
2013	LACDR Spring Symposium, Leiden, The Netherlands

Teaching

2016	9-month research project MSc student Bio-Pharmaceutical Sciences (BPS)
2015	International BPS Summer School
2015	Therapeutic Modulation of Atherosclerosis BSc BPS Laboratory course
2014	Drug Administration and Distribution BSc BPS Laboratory course
2014	10-week research projects BSc students BPS
2014	4-month research project Erasmus MSc student Chemistry and Pharmaceutical Technology (Parma, Italy)
2013	Therapeutic Modulation of Atherosclerosis BSc BPS Laboratory course
2013	Pharmaceutical administration and distribution BSc BPS Laboratory course
2013	10-week research projects BSc students BPS

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