

Major Resources Table

In order to allow validation and replication of experiments, all essential research materials listed in the Methods should be included in the Major Resources Table below. Authors are encouraged to use public repositories for protocols, data, code, and other materials and provide persistent identifiers and/or links to repositories when available. Authors may add or delete rows as needed.

Animals (in vivo studies)

Species	Vendor or Source	Background Strain	Sex	Persistent ID / URL
Mouse	Jackson Research Laboratory	ApoE ^{-/-}	M/F	https://www.jax.org/strain/002052
Mouse	Jackson Research Laboratory	C57BL/6	M/F	https://www.jax.org/strain/000664
Mouse	Jackson Research Laboratory	LysM-Cre deleter	M/F	https://www.jax.org/strain/004781
Mouse	Jackson Research Laboratory	C57BL/6-Abcg1 ^{tm1Ched/J}	M/F	https://www.jax.org/strain/027954

Genetically Modified Animals

	Species	Vendor or Source	Background Strain	Other Information	Persistent ID / URL
Parent - Male	Mouse	Homemade	Epsin1 ^{fl/fl} , Epsin2 ^{-/-} , C57BL/6	N/A	N/A
Parent - Female	Mouse	Homemade	Epsin1 ^{fl/fl} , Epsin2 ^{-/-} , C57BL/6	N/A	N/A

Antibodies

Target antigen	Vendor or Source	Catalog #	Working concentration
Primary Antibodies			
Rabbit polyclonal anti-Epsin1	Home made	N/A	1:1000(WB) 1:200(IF)
Rabbit polyclonal anti-Epsin2	Abcam	ab74942	1:1000(WB)
Rabbit polyclonal anti-Epsin2	Home made	N/A	1:1000(WB) 1:200(IF)
Rat monoclonal Anti-mouse /SR-B3CD36	R & D System	MAB2519,	1:1000(WB)
Rabbit monoclonal anti-CD36	Invitrogen	VL3153825	1:1000(WB) 1:100(Flow)
Mouse monoclonal anti-GAPDH	Santa Cruz Biotechnology	F118, sc166545	1:1000(WB)
Mouse monoclonal anti-ubiquitin	Cytoskeleton, Inc	AUB01	1:1000(WB)

DOI [to be added]

Rabbit polyclonal anti-ABCA1	Novus Biologicals	NB400-105SS	1:1000(WB)
Rabbit polyclonal anti-ABCG1	Novus Biologicals	NB400-132B	1:1000(WB) 1:100(IF, Flow)
Rabbit monoclonal anti-ABCG1	Invitrogen	VK3126422	1:1000(WB)
Goat polyclonal anti mouse LDLR	R & D System	AF2255	1:1000(WB)
Rat monoclonal Anti-mouse SRA1	R & D System	MAB1797	1:1000(WB)
Monoclonal anti-Flag	Sigma-Aldrich	F3165	1:1000(WB)
Rat monoclonal anti-F4/80	Santa Cruz Biotechnology	sc59171	1:100(Flow)
F4/80 monoclonal antibody, APC	ThermoFisher Scientific	MF48005	1:100(Flow)
Anti-mouse F4/80-Alexa Fluro 488	Invitrogen/eBioscience	2126068	1:100(Flow)
Goat polyclonal anti-EEA1	Santa Cruz Biotechnology	B1813, sc6415	1:100(IF)
Mouse monoclonal anti-Rab11	Santa Cruz Biotechnology	H0919, sc166912	1:100(IF)
Mouse monoclonal anti-Lamp1	Santa Cruz Biotechnology	F1609, sc18821	1:100(IF)
Rabbit polyclonal anti-CD68	Santa Cruz Biotechnology	sc9139	1:100(IF)
Anti-Actin, α -Smooth Muscle - Cy3™ antibody, Mouse monoclonal α -SMA	Sigma-Aldrich	C6198	1:100(IF)
Rat-anti Mouse CD31	BD Pharmingen	550274	1:50(IF)
Mouse monoclonal anti-LRP1	Santa Cruz	sc5731	1:1000(WB)
Goat monoclonal P-selectin	Santa Cruz Biotechnology	G1411, sc6943	1:70(IF)
Mouse monoclonal E-selectin	Santa Cruz Biotechnology	sc137054	1:70(IF)
Goat polyclonal ICAM-1	Santa Cruz Biotechnology	sc1511	1:70(IF)
Mouse monoclonal VCAM-1	Santa Cruz Biotechnology	sc13160	1:70(IF)
Alexa Fluor Conjugated Second Antibodies			
Goat anti-rabbit 647	Invitrogen	A-21244	1:150(IF, Flow)
Goat anti-rat 647	Invitrogen	A-21247	1:150(IF, Flow)
Donkey anti-mouse 594	Invitrogen	A-21203	1:150(IF, Flow)
Donkey anti-rabbit 594	Invitrogen	A-21207	1:150(IF, Flow)
Donkey anti-rat 594	Invitrogen	A-21209	1:150(IF, Flow)
Donkey anti-rat 488	Invitrogen	A-21208	1:150(IF, Flow)
Donkey anti-mouse 488	Invitrogen	A-21202	1:150(IF, Flow)
Donkey anti-rabbit 488	Invitrogen	A-21206	1:150(IF, Flow)

DNA/cDNA Clones

Clone Name	Source / Repository	Catalog #
pcDNA	Kai Song et al, 2021	N/A
Flag-Epsin1 ^{WT}	Yunzhou Dong et al, 2020	N/A
Flag-Epsin1 Δ UIM	Yunzhou Dong et al, 2020	N/A
Flag-Epsin1 Δ ENTH	Yunzhou Dong et al, 2021	N/A
CD36-bio-His: CMV plasmid	Addgene	Cat# 52025
ABCG1-pCSdest: SP6 plasmid	Addgene	Cat# 53952
rAAV8-D377Y-mPCSK9	Boston Children's Hospital Viral Core Facility	N/A

Cultured Cells

Name	Vendor or Source	Sex (F, M, or unknown)	Persistent ID / URL
HEK-293T	ATCC (CRL-3216)	unknown	
THP1	ATCC (TIB-202)	unknown	

Reagents, Peptides, and Recombinant Proteins

Description	Source / Repository	Catalog #
Oil Red O (ORO)	AMRESCO	Cat# 0684-100G
Hematoxylin and Eosin stain kit	Vector Laboratories	Cat# H-3502
Oxidized LDL (ox-LDL)	Athens Research and Technology	Cat#12-16-120412-ox
Acetylated LDL (Ac-LDL)	Invitrogen	Cat#2300941
Low Density Lipoprotein from Human Plasma, oxidized, Dil conjugate (Dil-OxLDL)	ThermoFisher Scientific	Cat# L34358
TopFluor Cholesterol	Avanti Polar Lipids, Inc	Cat# 810255p
MG132	Sigma-Aldrich	Cat# M7449
N-Ethylmaleimide (NEM)	Alfa Aesar	Cat# 40526
Brewer Thioglycollate Medium	Sigma-Aldrich	Cat#124k0115

DOI [to be added]

Bodipy 493/503	Invitrogen	Cat# D3922
SlowFade mount with DAPI	Invitrogen	Cat# 1896320
M-CSF mouse	Prospec	Cat# cyt-439-b
Protein inhibitor cocktail	TargetMol	Cat# C0001
Phalloidin-iFluor 594 reagent	Abcam	Cat# ab176751
Liver x receptor agonist (LXR T0901317)	Apexbio Tech LLC	Cat#A2249
Mouse seroblock FCR	Bio-Rad	Cat# BuF041B
Phosphotungstic acid hydrate	ACROS	Cat#A0417659
[1,2- ³ H]-Cholesterol	PerkinElmer	Cat#NET139001MC
Liquid scintillation fluid OPTI-Flour	PerkinElmer	Cat# 47-20081
Apoprotein A-I (ApoA1)	Sigma-Aldrich	Cat# A0722
High density lipoprotein (HDL)	Sigma-Aldrich	Cat# L8039
Hexane	ThermoFisher Scientific	Cat# 610070040
Isopropanol, molecular biology grade	ThermoFisher Scientific	Cat# T036181000CS
Cholesterol acyltransferase (ACAT) inhibitor	Sigma-Aldrich	Cat# S9318-5mg
Lipofectamine 2000 transfection reagent	Invitrogen	Cat#11668027
Lipofectamine LTX	Invitrogen	Cat# A12621
ImageiT™ signal enhancer	Invitrogen	Cat# 136933

Qiagen RNeasy Mini Kit	Qiagen	Cat# 74106
RNase-free DNase 1	New England Biolabs	Cat# M0303S
SuperScript III First-Strand Synthesis SuperMix	ThermoFisher Scientific	Cat# 18080400
SYPR Green PCR Master Mix reagent	GeneCopoeia	Cat# QP001-01
Aqueous Mounting Medium	R & D Systems	Cat# CTS011
Protein A/G plus agarose	Santa Cruz Biotechnology	Cat# Sc-2003
EZ-Link Sulfo-NHS-LC-Biotin	ThermoFisher Scientific	Cat# 21335
Neutravidin Beads	ThermoFisher Scientific	Cat# 29200
S2P-peptide (CRTLTVRKC)	GLS Biochem Systems Inc	Cat# 625358
DSPE-PEG-Mal (MW, 3.4 kDa)	Nanocs Inc.	Cat# PG2-DSML-3k
Cationic ethylenediamine core- poly(amidoamine) (PAMAM) dendrimer generation 0 (G0)	Sigma-Aldrich	Cat# 412368
Ester-terminated PLGA	DURECT Corporation	Cat# B6013-2
Amata™ Mouse macrophage nucleofector kit	Lonza	Cat# VPA-1009
Collagenase type I	Gibco by Life technologies	Cat# 1866783
Collagenase type IV	Gibco by Life technologies	Cat# 2383671
Liberase	Roche	Cat# 05401127001

Chromium Next GEM Single Cell 3' Reagent Kits v3.1	10X Genomics	
GEM Single Cell 3'GEM Kit v3.1	10X Genomics	PN-1000123
GEM Single Cell 3'Library Kit v3.1	10X Genomics	PN-1000157
GEM Single Cell 3'Gel Bead Kit v3.1	10X Genomics	PN-1000122
Dynabeads™ MyOne™ SILANE	10X Genomics	PN-2000048
GEM Chip G Single Cell Kit, 48rxns	10X Genomics	PN-1000120
Single Index Kit T Set A, 96 rxns	10X Genomics	PN-1000213
SPRIselect Reagent	Beckman Coulter Inc.	Cat# B23317
phorbol 12-myristate 13-acetate (PMA)	Sigma	Cat#p8313

Oligonucleotides

Description	Source / Repository	Catalog #
Epsin1:	This study	N/A
Forward: 5'-CTACCAACGTCCATTGCGGT-3' Reverse: 5'-GCAGCGATGAGGTTCGACATT-3'		
Epsin2:	This study	N/A
Forward: 5'- TCTATCAGACGGCAGATGAAAAAC-3' Reverse: 5'-GTCATTGGAGGTGGCCTCC-3'		
IL-6	This study	N/A
Forward: 5'-AGTCCGGAGAGGAGACTTCA-3' Reverse: 5'-TTCCACGATTTCCCAGAG-3'		
IL-1beta	This study	N/A

Forward: 5'-GAAGAAGAGCCCATCCTCTG-3' Reverse: 5'-TCATCTCGGAGCCTGTAGTG-3'		
TNF-alpha	This study	N/A
Forward: 5'-ATGAGAAGTTCCCAAATGGC-3' Reverse: 5'-CTCCACTTGGTGGTTTGCTA-3'		
MCP-1	This study	N/A
Forward: 5'-GAAGGAATGGGTCCAGACAT-3' Reverse: 5'-ACGGGTCAACTTCACATTCA-3'		
iNOS	This study	N/A
Forward: 5'-CCCTTCCGAAGTTTCTGGCAGC-3' Reverse: 5'- GGCTGTCAGAGCCTCGTGGCTTTGG-3'		
IL-10	This study	N/A
Forward: 5'-CCCAGAAATCAAGGAGCATT-3' Reverse: 5'-TCACTCTTCACCTGCTCCAC-3'		
Arg1	This study	N/A
Forward: 5'-CAGTGGCTTTAACCTTGGCT-3' Reverse: 5'-GTCAGTCCCTGGCTTATGGT-3'		
ABCG1	This study	N/A
Forward: 5'-CCGATGTCCCCTTTCAGATCA-3' Reverse: 5'-AGCAGCGAACAGCACAAAAC-3'		
ABCA1	This study	N/A
Forward: 5'-GTGGGCTCCTCCCTGTTTTT-3' Reverse: 5'-TCTGAGAAACACTGTCCTCCTTTT-3'		
CD36	This study	N/A
Forward: 5'-GCTGTCAGGCGTCAGGATAA-3' Reverse: 5'-CACATTTCAGAAGGCAGCAACT-3'		

CCR7	This study	N/A
Forward: 5'- CATGGACCCAGGTGTGCTT-3' Reverse: 5'- CATGAGAGGCAGGAACCAGG-3'		
Netrin-1	This study	N/A
Forward: 5- GGAGGAACCGGAAGACTGTG-3' Reverse: 5- GTCCTCGGCATTACCCAACA-3'		
Sema 3a	This study	N/A
Forward: 5'- ACGCACCATGGCACCG-3' Reverse: 5'- GTGCTAGGCCAGTATATCTCTCTG-3'		
Beta-actin	This study	N/A
Forward: 5'- TTACTGCTCTGGCTCCTAGCA-3' Reverse: 5'-CCACCGATCCACACAGAGTAC-3'		
Mouse Epsin1 siRNA sequence	This study	N/A
GAACUGGAGGCACGUCUACAAUU		
Mouse Epsin2 siRNA sequence	This study	N/A
GCAGUGCCGUGAGAACAUCUUUU		
Human Epsin1 siRNA sequence	This study	Cat#134054
GAGGAGAGCAAGAGGGAGAUU		
Human Epsin2 siRNA sequence	This study	Cat#S230617
GGGAAGUGGUUGUGCAUAUUU		
Mouse control luciferase siRNA sequence	This study	N/A
CUUACGCUGAGUACUUCGA dT dT		
Mouse clathrin (Picalm) siRNA sequence	This study	Cat#134054
GGAGAUAUUCCAGAUCUUUt		

Software and Algorithms

DOI [to be added]

Description	Persistent ID / URL
Image J	NIH website: https://imagej.nih.gov/ij/
GraphPad Prism	GraphPad software company: https://www.graphpad.com/scientific-software/prism/
Zeiss Zen lite	https://www.zeiss.com/microscopy/us/products/microscope-software/zen-lite.html
Image J	NIH website: https://imagej.nih.gov/ij/
GraphPad Prism	GraphPad software company: https://www.graphpad.com/scientific-software/prism/

Randomization and Blinding

Experimental groups were allocated randomly, and investigators were blinded when performing all data collection.