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 Laboratories	C57BL6J	Both	Stock #000664

Genetically Modified Animals

Description	Species	Vendor or Source	Background Strain	Other Information	Persistent ID / URL
AHR$^{tm3.1Bra}$/J	Mouse	Jackson Laboratories	C57BL6J	conditional *Ahr^{fx}* allele was generated originally from 129SvJ genome (targeting vector and ES cells)	Stock #006203
Tg(ACTA1-cre/Esr1*)2Kesr/J	Mouse	Jackson Laboratories	C57BL6J		Stock #025750

Antibodies

Target antigen	Vendor or Source	Catalog #	Working concentration	Lot # (preferred but not required)	Persistent ID / URL
Laminin	Millipore-Sigma	L9393	1:100		https://www.sigmaaldrich.com/US/en/product/sigma/l9393
Alexa Fluor 488 goat anti-rabbit IgG	ThermoFisher	A-11034	1:500		https://www.thermofisher.com/antibody/product/Goat-anti-Rabbit-IgG-H-L-Highly-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-11034
Alexa Fluor 555 goat anti-rabbit IgG	ThermoFisher	A-21428	1:500		https://www.thermofisher.com/antibody/product/Goat-anti-Rabbit-IgG-H-L-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21428
Myosin heavy chain type I	Developmental Studies Hybridoma, University of Iowa	BA-D5	1:50		https://dshb.biology.uiowa.edu/BA-D5
Myosin heavy chain type IIa	Developmental Studies Hybridoma, University of Iowa	SC-71	1:50		https://dshb.biology.uiowa.edu/SC-71

Myosin heavy chain type IIx	Developmental Studies Hybridoma, University of Iowa	6H1	1:50		https://dshb.biology.uiowa.edu/6H1
NG2	Millipore-Sigma	AB5320	1:200		https://www.sigmaaldrich.com/US/en/product/mm/ab5320
alpha-smooth muscle actin	ThermoFisher	14976082	1:400		https://www.thermofisher.com/antibody/product/Alpha-Smooth-Muscle-Actin-Antibody-clone-1A4-Monoclonal/14-9760-82
AHR	Enzo Life Sciences	BML-SA210	1:500		https://www.enzolifesciences.com/BML-SA210/aryl-hydrocarbon-receptor-polyclonal-antibody/
Oxphos Cocktail	Abcam	ab110413	1:1000		https://www.abcam.com/products/panels/total-oxphos-rodent-wb-antibody-cocktail-ab110413.html
Gt anti-Ms IgG2b, Alexa Fluor 647	ThermoFisher	A21242	1:250		https://www.thermofisher.com/antibody/product/Goat-anti-Mouse-IgG2b-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21242
Gt anti-Ms IgG1, Alexa Fluor 488	ThermoFisher	A21121	1:250		https://www.thermofisher.com/antibody/product/Goat-anti-Mouse-IgG1-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21121
Gt anti-Ms IgM, Alexa flour 555	ThermoFisher	A21426	1:250		https://www.thermofisher.com/antibody/product/Goat-anti-Mouse-IgM-Heavy-chain-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21426
Gt anti-Rb IgG, Alexa flour 350	ThermoFisher	A11046	1:250		https://www.thermofisher.com/antibody/product/Goat-anti-Rabbit-IgG-H-L-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-11046
Gt anti-Ms IgG2a, Alexa Fluor 647	ThermoFisher	A21241	1:250		https://www.thermofisher.com/antibody/product/Goat-anti-Mouse-IgG2a-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21241

Gt anti-Rat IgG, Alexa Fluor 555	ThermoFisher	A21434	1:500		https://www.thermofisher.com/antibody/product/Goat-anti-Rat-IgG-H-L-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21434

DNA/cDNA Clones

Clone Name	Sequence	Source / Repository	Persistent ID / URL
pAAV-HSA-GFP		This paper.	
pAAV-HSA-AHR		This paper.	
pAAV-HSA-CAAHR		This paper.	

Cultured Cells

Name	Vendor or Source	Sex (F, M, or unknown)	Persistent ID / URL
C2C12 (Cat. No. CRL1772)	ATCC	unknown	https://www.atcc.org/products/crl-1772
Human Muscle Cells	This Lab	Both Male and Female	N/A

Data & Code Availability

Description	Source / Repository	Persistent ID / URL
snRNA sequencing data from mice	Gene Expression Omnibus	GSE217751
Bulk RNA sequencing data from mice	Gene Expression Omnibus	GSE225607

Other

Description	Source / Repository	Persistent ID / URL
FITC-labeled inulin	Millipore-Sigma	Cat. No. F3272
bicinchoninic acid protein assay	ThermoFisher	Cat No. A53225
Mayers's hematoxylin	Millipore-Sigma	Cat. No. MHS1
eosin	Millipore-Sigma	Cat. No. HT110132
Permount	ThermoFisher	Cat. No. SP15-500
Griffonia Simplicifolia Lectin 1 Isolectin B4, Dylight 649	Vector Laboratories	Cat. No. DL-1208
CelLytic M	Millipore-Sigma	Cat. No. C2978
Laemmli sample buffer	Bio-Rad	Cat. No. 1610737
SDS-PAGE gels	Bio-Rad	Cat. Nos. 5678044 or 4561094
blocking buffer	Licor	Cat. No. 927-60001
Direct-zol RNA MiniPrep kit	Zymo Research	Cat. No. R2052
LunaScript RT Supermix kit	New England Biolabs	Cat. No. E3010L
Luna Universal qPCR master mix	New England Biolabs	Cat. No. M3003X
Taqman Fast Advanced Master mix	ThermoFisher	Cat. No. 4444557
Dulbecco's Modified Eagle Medium + GlutaMAX	Gibco	Cat. No. 10569
Fetal Bovine Serum	VWR	Cat. No. 97068

Penicillin/Streptomycin	Gibco	Cat. No. 15140
horse serum	Gibco	Cat. No. 26050
insulin/transferrin/selenium	Gibco	Cat. No. 41400
Chromium Next GEM Single Cell 3' HT Reagent kits v3.1	10x Genomics	Cat. No. PN-100370
Chromium nuclei isolation kit	10x Genomics	Cat. No. PN-100494

Primers and Probes for mRNA analysis			
Species	**Gene**	**Chemistry**	**Sequence or Product Number**
Mus Musculus	Ahr	Sybr Green	5'– TTCCAGGTTCTCAGGCATTC – 3'
			5'– TGGGAGCTACAGGAATCCAC – 3'
Mus Musculus	Cyp1a1	Sybr Green	5'– CAGCCTTCCCAAATGGTTTA – 3'
			5'– GCCTGGGCTACACAAGACTC – 3'
Mus Musculus	L32	Sybr Green	5'– TTCCTGGTCCACAATGTCAA – 3'
			5'– GGCTTTTCGGTTCTTAGAGGA – 3'
Mus Musculus	Cox7a1	Sybr Green	5' – GCTCTGGTCCGGTCTTTTAGC – 3'
			5' – GTACTGGGAGGTCATTGTCGG – 3'
Mus Musculus	Cox8	Sybr Green	5' – GCGAAGTTCACAGTGGTTCC – 3'
			5' – GGAACCATGAAGCCAACGAC – 3'
Mus Musculus	Atp5k	Sybr Green	5' – GTTCAGGTCTCTCCACTCATCA – 3'
			5' – CGGGGTTTTAGGTAACTGTAGC – 3'
Mus Musculus	Atp5d	Sybr Green	5' – TGCTTCAGGCGCGTACATAC – 3'
			5' – CACTTGCTTGACGTTGGCA – 3'
Mus Musculus	Cs	Sybr Green	5' – GGACAATTTTCCAACCAATCTGC – 3'
			5' – TCGGTTCATTCCCTCTGCATA – 3'
Mus Musculus	Ndufa5	Sybr Green	5' – AGCTGGATATGGTCAAGGCG – 3'
			5' – GCCACTTCCACTGGTTAGCA – 3'
Mus Musculus	Tfam	Sybr Green	5' – ATTCCGAAGTGTTTTTCCAGCA – 3'
			5' – TCTGAAAGTTTTGCATCTGGGT – 3'
Mus Musculus	Sod2	Sybr Green	5' – ACAAACCTGAGCCCTAAGGGT – 3'
			5' – GAACCTTGGACTCCCACAGAC – 3'
Mus Musculus	Pdha1	Sybr Green	5' – GAAATGTGACCTTCATCGGCT – 3'
			5' – TGATCCGCCTTTAGCTCCATC – 3'
Mus Musculus	Sdhb	Sybr Green	5' – AATTTGCCATTTACCGATGGGA – 3'
			5' – AGCATCCAACACCATAGGTCC – 3'
Mus Musculus	Hif1a	Sybr Green	5' – GGGGAGGACGATGAACATCAA – 3'
			5' – GGGTGGTTTCTTGTACCCACA – 3'
Mus Musculus	Vegfa	Sybr Green	5' – CGAGATAGAGTACATCTTCAAGCC – 3'
			5' – TCATCGTTACAGCAGCCTGC – 3'
Mus Musculus	Vegfb	Sybr Green	5' – TGCCATGGATAGACGTTTATGC – 3'
			5' – TGCTCAGAGGCACCACCAC – 3'
Mus Musculus	Vegf121	Sybr Green	5' – TGCAGGCTGCTGTAACGATG – 3'
			5' – CCTCGGCTTGTCACATTTTTCT – 3'
Mus Musculus	Vegf165	Sybr Green	5' – TGCAGGCTGCTGTAACGATG – 3'
			5' – GAACAAGGCTCACAGTGATTTTCT – 3'
Mus Musculus	Angpt1	Sybr Green	5' – CATTCTTCGCTGCCATTCTG – 3'
			5' – GCACATTGCCCATGTTGAATC – 3'
Mus Musculus	Angpt2	Sybr Green	5' – TTAGCACAAAGGATTCGGACAAT – 3'
			5' – TTTTGTGGGTAGTACTGTCCATTCA – 3'

DOI [to be added]

Mus Musculus	Dll4	Sybr Green	5’ – AGGTGCCACTTCGGTTACAC – 3’
			5’ – GGGAGAGCAAATGGCTGATA – 3’
Mus Musculus	Egf	Sybr Green	5’ – AGCATCTCTCGGATTGACCCA – 3’
			5’ – CCTGTCCCGTTAAGGAAAACTCT – 3’
Mus Musculus	Nos2	Sybr Green	5’ – CAGCTGGGCTGTACAAACCTT – 3’
			5’ – CATTGGAAGTGAAGCGTTTCG – 3’
Mus Musculus	Edn1	Sybr Green	5’ – GCACCGGAGCTGAGAATGG – 3’
			5’ – GTGGCAGAAGTAGACACACTC – 3’
Homo Sapiens	Cyp1a1	Sybr Green	5’– GATTGAGCACTGTCAGGAGAAGC – 3’
			5’– ATGAGGCTCCAGGAGATAGCAG – 3’
Homo Sapiens	L32	Sybr Green	5’– GTCAAGGAGCTGGAAGTGCT – 3’
			5’– CTCTTTCCACGATGGCTTTG – 3’
Mus Musculus	Ahr	Taqman	Mm00478932_m1
Mus Musculus	Cyp1a1	Taqman	Mm00487218_m1
Homo Sapiens	Ahr	Taqman	Hs00169233_m1
Homo Sapiens	Cyp1a1	Taqman	Hs01054796_g1
Homo Sapiens	Cyp1b1	Taqman	Hs00164383_m1
Homo Sapiens	Nqo1	Taqman	Hs01045993_g1
Homo Sapiens	Aldh3a1	Taqman	Hs00964880_m1
Homo Sapiens	Ahrr	Taqman	Hs01005075_m1
Homo Sapiens	18S	Taqman	Hs99999901_s1
Primers used for Validation of DNA Recombination in AHR^{mKO} mice			
Species	**Gene**	**Primer Location**	**Sequence**
Mus Musculus	Ahr	Forward	5’– ATCTTGTGTCAGGAACAGGCCATC – 3’
		Reverse	5’– GGTACAAGTGCACATGCCTGC – 3’

DOI [to be added]

ARRIVE GUIDELINES

The ARRIVE guidelines (https://arriveguidelines.org/) are a checklist of recommendations to improve the reporting of research involving animals. Key elements of the study design should be included below to better enable readers to scrutinize the research adequately, evaluate its methodological rigor, and reproduce the methods or findings.

Study Design

Groups	Sex	Age	Littermates (Yes/No)	Other description
$AHR^{fl/fl}$ (Casein)	Both	4-6 mo.	Yes	Floxed control without CKD
$AHR^{fl/fl}$ (Adenine)	Both	4-6 mo.	Yes	Floxed control with CKD
AHR^{mKO} (Casein)	Both	4-6 mo.	Yes	Muscle-specific AHR knockout without CKD
AHR^{mKO} (Adenine)	Both	4-6 mo.	Yes	Muscle-specific AHR knockout with CKD
AAV-HSA-GFP	Both	4 mo.	Yes	C57BL6J mice infected with AAV-HSA-GFP
AAV-HSA-AHR	Both	4 mo.	Yes	C57BL6J mice infected with AAV-HSA-AHR
AAV-HSA-CAAHR	Both	4 mo.	Yes	C57BL6J mice infected with AAV-HSA-CAAHR

Sample Size: An any a *prior* sample size estimation was performed based on detecting a 20% difference in peak specific force (muscle function) in the surgically ischemic EDL muscle. Using a two-way ANOVA (alpha=0.05, power=0.8, groups=8) indicates that a sample size of 12 mice/group/sex will be necessary to adequately power the muscle AHR knockout experiments using an effect size of F = 0.429 (determined from previous HLI muscle function data). An additional 8-12 animals/group were planned inclusions due to incompatibility of muscle/vascular staining procedures to assess muscle/vascular regeneration.

Inclusion Criteria. None.

Exclusion Criteria. None.

Randomization. Mice were randomized to treatments based on body weight prior to intervention.

Blinding. Both experimenters and surgeon were blinded to the treatment and/or interventional groups until data analysis was completed.