

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 (ex vivo studies)

Species	Vendor or Source	Background Strain	Sex	Persistent ID / URL
Mouse adult	University Medical Center Göttingen	C57BL/6N	Female, Male	Does not apply
Rat neonatal	University Medical Center Göttingen	Wistar	Female, Male	Does not apply

Genetically Modified Animals (ex vivo studies)

	Species	Vendor or Source	Background Strain	Other Information	Persistent ID / URL
Male	Mouse	Jackson labs	C57BL/6N	CAV1 KO	https://www.jax.org/strain/007083
Female	Mouse	Jackson labs	C57BL/6N	CAV1 KO	https://www.jax.org/strain/007083
Male	Mouse	Columbia University	C57BL/6N	Tg FLAG-F1759A-Na _v 1.5	https://www.jci.org/articles/view/84669
Female	Mouse	Columbia University	C57BL/6N	Tg FLAG-F1759A-Na _v 1.5	https://www.jci.org/articles/view/84669
Male	Mouse	Columbia University	C57BL/6N	Tg Myh6-rtTA	https://www.jci.org/articles/view/84669
Female	Mouse	Columbia University	C57BL/6N	Tg Myh6-rtTA	https://www.jci.org/articles/view/84669

Antibodies

Target antigen	Vendor or Source	Catalog #	Working concentration	Persistent ID / URL
α-Actinin	Sigma Aldrich	A7811	1:1000 for WB	https://www.sigmaaldrich.com/catalog/product/sigma/a7811?lang=de&region=DE
β-Actin	Santa cruz	sc-47778	1:1000 for WB	https://www.scbt.com/de/p/beta-actin-antibody-c4
Aqp1	Santa cruz	sc-25287	1:500 for WB	https://www.scbt.com/de/p/aqp1-antibody-b-11
Caveolin-1	Abcam	ab2910	1:1000 for WB	https://www.abcam.com/caveolin-1-antibody-caveolae-marker-ab2910.html
Caveolin-1	Abcam	Ab17052	1:50 for IF	https://www.abcam.com/caveolin-1-antibody-7c8-ab17052.html
Caveolin-3	Abcam	ab2912	1:1000 for WB 1:500 for IF	https://www.abcam.com/caveolin-3-antibody-caveolae-marker-ab2912.html
Caveolin-3	Abcam	ab182739	1:500 for WB	https://www.abcam.com/caveolin-3-antibody-epr18975-ab182739.html
cTnT	Thermo Fisher Scientific	MS-295-P0	1:50 for FC	https://www.fishersci.de/shop/products/troponin-t-cardiac-isoform-ab-1-mouse-monoclonal-antibody/p-4563797
Cx43	BD transduction	610062	1:500 for WB	https://www.bdbiosciences.com/us/applications/research/stem-cell-research/mesoderm-markers/mouse/purified-mouse-anti-connexin-43-2connexin-43/p/610062
FITC	Jackson	115-097-020	-1:1000 for IF	https://www.jacksonimmuno.com/catalog/p

DOI [to be added]

	Immuno Research Labs			roducts/115-097-020
FLAG	Sigma Aldrich	F1804	1:1000 for WB	https://www.sigmaaldrich.com/catalog/product/sigma/f1804?lang=de&region=DE
GAPDH	Biotrend	5G4 Mab 6C5	1:160000 for WB	https://www.biotrend.com/-186/gapdh-mouse-monoclonal-antibody-181891778.html
IgG-cy3	Jackson Immuno Research Labs	715-165-150	1:100 for FC	https://www.jacksonimmuno.com/catalog/products/715-165-150
McT1	Abcam	ab90582	1:500 for WB	https://www.abcam.com/monocarboxylic-acid-transporter-1-antibody-ab90582.html
McT1	Bioss Antibodies	BS-10249R	1:1000 for WB 1:1000 for IF	https://www.biossantibodies.com/datasheets/bs-10249R
Mouse IgG	DAKO	X0931	1:50 for FC	https://www.agilent.com/store/productDetail.jsp?catalogId=X093101-2
NANOG	Thermo Fisher Scientific	PA1-097	1:1000 for IF	https://www.thermofisher.com/antibody/product/Nanog-Antibody-Polyclonal/PA1-097
Na/K-ATPase α 1	Santa Cruz	sc-21712	1:1000 for WB	https://www.scbt.com/p/na-k-atpase-alpha1-antibody-c464-6?gclid=CjwKCAiAudD BRBXEiwAudakX9yrc VyZQHKpmkOHO6oe7-5fhHZfo-TTtgWFytAljxPo-g0FfHRcLhoCUnQQAvD BwE
Nav1.5	Alomone	ASC-005	1:500 for WB 1:250 for IF	https://www.alomone.com/p/anti-nav1-5/ASC-005?gclid=CjwKCAiAudD BRBXEiwAudakXxmCuOtm3SCOo5VHGGmbo-E3KM5x0eyDy2Pt7LJHvA8j1Q3Kg-fLBoCVGwQAvD BwE
Ncx1	Swant	π 11-13	1:1000 for WB	https://www.swant.com/pdfs/Rabbit anti Na-Ca-exchanger.pdf
OCT4	R and D Systems	AF1759	1:1000 for IF	https://www.rndsystems.com/products/human-mouse-oct-3-4-antibody_af1759
OCT4 conjugated Alexa Fluor 647	BD Biosciences	560329	1:50 for FC	https://www.bdbiosciences.com/eu/applications/research/stem-cell-research/cancer-research/human/alexa-fluor-647-mouse-anti-oct34-40oct-3/p/560329
p115	BD Biosciences	612261	1:1000 for IF	https://www.bdbiosciences.com/eu/reagents/research/antibodies-buffers/cell-biology-reagents/cell-biology-antibodies/purified-mouse-anti-p115-15p115/p/612261
TfR1	Invitrogen	13-6800	1:500 for WB	https://www.thermofisher.com/antibody/product/Transferrin-Receptor-Antibody-clone-H68-4-Monoclonal/13-6800
TRA-1-60	Abcam	ab16288	1:1000 for IF	https://www.abcam.com/tra-1-60-r-antibody-tra-1-60-ab16288.html
TRA-1-60 conjugated Alexa Fluor 488	BD Biosciences	560173	1:50 for FC	https://www.bdbiosciences.com/eu/applications/research/stem-cell-research/pluripotent-stem-cell-markers-esc-and-ipsc/human/alexa-fluor-488-mouse-anti-human-tra-1-60-antigen-tra-1-60/p/560173

SAP97	Abcam	ab3437	1:1000 for WB	https://www.abcam.com/sap97-antibody-ab3437.html
V5	Invitrogen	R960-25	1:1000 for WB 1:1000 for IF	https://www.thermofisher.com/antibody/product/R960CUS.html?gclid=CjwKCAiAudD_BRBXEiwAudakX3ZY6ql6BiNQnTOvy8bwYYV5BRP_NMIsQ98QXa1HyEkqccZnAH_FCxoCQZcQAvD_BwE&ef_id=CjwKCAiAudD_BRBXEiwAudakX3ZY6ql6BiNQnTOvy8bwYYV5BRP_NMIsQ98QXa1HyEkqccZnAH_FCxoCQZcQAvD_BwE:s&s_kwcid=AL!3652!3!459736943987!b!!g!!
goat anti-mouse Alexa Fluor 633	Thermo Fisher Scientific	A-21052	1:1000 for IF	https://www.thermofisher.com/antibody/product/Goat-anti-Mouse-IgG-H-L-Highly-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21052
goat anti-rabbit Alexa Fluor 514	Thermo Fisher Scientific	A-31558	1:1000 for IF	https://www.thermofisher.com/antibody/product/Goat-anti-Rabbit-IgG-H-L-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-31558
donkey anti-goat Alexa Fluor 555	Thermo Fisher Scientific	A-21432	1:1000 for IF	https://www.thermofisher.com/antibody/product/Donkey-anti-Goat-IgG-H-L-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-21432
donkey anti-rabbit Alexa Fluor 555	Thermo Fisher Scientific	A-31572	1:1000 for IF	https://www.thermofisher.com/antibody/product/Donkey-anti-Rabbit-IgG-H-L-Highly-Cross-Adsorbed-Secondary-Antibody-Polyclonal/A-31572
goat anti-rabbit STAR 635P	Abberior Instrument s	2-0012-007-2	1:1000 for IF	https://abberior.shop/abberior-STAR-635P
goat anti-mouse STAR 635P	Abberior Instrument s	2-0002-007-5	1:1000 for IF	https://abberior.shop/abberior-STAR-635P
goat anti-rabbit STAR 580	Abberior Instrument s	2-0012-005-8	1:1000 for IF	https://abberior.shop/abberior-STAR-580
goat anti-mouse STAR 580	Abberior Instrument s	2-0002-005-1	1:1000 for IF	https://abberior.shop/abberior-STAR-580

DNA/cDNA Clones/Adenoviral plasmids/ guid RNA in 5'–3' orientation

Clone Name	Sequence	Source / Repository	Persistent ID / URL
CAV3 cDNA	atgatgaccgaagagcacacggatctggaagctcgatcatcaaggacattcactgca aggagatagacttggtgaaccgcgacccaagaacatcaatgaggacatttgaagg tagattttgaagacgtgattgaggagcccgaggacacacgttcgacggtgatgg aagtgagcttcaccacgttcaccgtctccaagtactggtgctaccgctgttctaca ctgctgggtgttccactggccctgctctggggattcctgttcgcttatctccttgcga catctgggcccgtggtgcccgcattaagagctacatgatcgagatccagtgcacagcc acatctactcactgtgtatccgcaccttctgcaaccgctctcgtgctggtggccaggt ctgcagcaacattaaggtggtgctgcaagggaaggc	MR226246, Origene	https://cdn.origene.com/datasheet/mr226246.pdf
V5-APEX2- CAV3 cDNA	atgggcaagcccatcccaaccccctgctgggctggacagcaccggaaagtcttacc caactgtgagtctgattaccaggacgccgttgagaaggcgaagaagaagctcagag gcttcacgtgtagaagagatgcgtcctctaagtctcggttgccattccactctgctg gaaccttgacaagggcacgaagaccggtggacccttcggaaccatcaagcacctg	University Medical Center Göttingen	Does not apply

DOI [to be added]

	ccgaactggctcacagcgctaacaacggcttgacatcgctgtaggctttggagcca ctcaaggcggagttccctattttgagctacgccgatttctaccagttggctggcgttg ccgttgaggtcacgggtggacctaaggttcattccaccctggaagagaggacaagcc tgagccaccaccagagggtcgcttgcccgatcccactaagggttctgaccattgagag atgtgtttggcaaagctatggggcttactgaccaagatatcggtgctctatctggggtc aactattggagctgcacacaaggagcgttctggatttgagggtccctggacctaata cctctattttcgacaactcatactcacggagtgttgagtggtagaaggaagggtctc cttcagctaccttctgacaaggctctttgtctgacctgtattccgacctctcgttgataa atatgcagcggacgaagatgccttcttctgattacgctgaggctcacaaaagcttt ccgagcttgggtttgctgatccgggggcagcggctcgagcatgatgaccgaagagca cacggatctggaagctcgatcatcaaggacattcactgcaaggagatagacttggtg aaccgcgacccaagaacatcaatgaggacattgtaaggtagattttgaagacgtg attgcggagcccagggcacctacagcttcgacgggtgatggaaggtgagcttcacca cgttcaccgtctccaagtactgggtgctaccgctgtgtctacactgctgggtgtccact ggcctgctctggggattctgttcgctgtatctccttctgccacatctgggccgtggtg ccctgcattaagagctacctgatcgagatccagtgcacagccacatctactactgtgt atccgcacctctgcaaccgctcttcgctgcgttgggccaggctcgcagcaacattaag gtggtgctgcgaagggaaggctaa		
CAV3 Fwd Primer	ggggcagcggctcgagcatgatgaccgaagagcaca	Invitrogen	Does not apply
CAV3 Rev Primer	tagatgcatgctcgagttagccttccttc	Invitrogen	Does not apply
pO6A5-CMV- GFP	N/A	Sirion Biotech	https://www.sirion-biotech.com/viral-vectors/adenovirus/
pO6A5-CMV- V5-APEX2- CAV3-IRES- GFP	Please see above for V5-APEX2-CAV3 sequence	Sirion Biotech	https://www.sirion-biotech.com/viral-vectors/adenovirus/
pO6A5-CMV- V5-APEX2- IRES-GFP	Please see above for V5-APEX2 sequence	Sirion Biotech	https://www.sirion-biotech.com/viral-vectors/adenovirus/
CRISPR#1	tccccccagctctcgatgatgg	Invitrogen	Does not apply
CRISPR#2	caccgccagatgtggcagaagg	Invitrogen	Does not apply

Cultured Cells

Name	Vendor or Source	Sex (F, M, or unknown)	Persistent ID / URL
Ventricular differentiated human induced pluripotent stem cells	Stem Cell Unit in Göttingen	unknown	https://herzzentrum.umg.eu/forschung/arbeitsgruppen/stem-cell-unit/
Ventricular neonatal rat cardiomyocytes	Isolated from neonatal wistar rats	F, M	Does not apply
Ventricular mouse cardiomyocytes	Isolated from WT mice	F, M	Does not apply

Data & Code Availability

Description	Source / Repository	Persistent ID / URL
Mass spectrometry proteomic data have been deposited to the ProteomeXchange Consortium	ProteomeXchange Consortium	PXD019399 http://www.ebi.ac.uk/pride
MS dataset APEX2 Proximity Assay by 3-state SILAC-MS	EMBL-EBI PRIDE Archive	https://www.ebi.ac.uk/pride/archive/projects/PXD019398
MS dataset interactome Cav1/Cav3 by AP-DIA-MS	EMBL-EBI PRIDE Archive	https://www.ebi.ac.uk/pride/archive/projects/PXD019399
MS dataet complexome profiling by BN-PAGE-MS	EMBL-EBI PRIDE Archive	https://www.ebi.ac.uk/pride/archive/projects/PXD019380

Other

Description	Source / Repository	Persistent ID / URL
Computational model code	GitHub	https://github.com/JordiHeijman/hIPSC-CM-CAV3/