Resource Summary Report

Generated by RRID on Aug 19, 2026

Laconic/pcDNA3.1(-)

RRID:Addgene_44238
Type: Plasmid

Proper Citation

RRID:Addgene_44238

Plasmid Information

URL: http://www.addgene.org/44238

Proper Citation: RRID:Addgene_44238

Insert Name: Laconic (LACtate Optical Nano Indicator from CECs)

Organism: Synthetic

Bacterial Resistance: Ampicillin

Defining Citation: PMID:23469056

Vector Backbone Description: Backbone Marker:Invitrogen; Backbone Size:5418; Vector Backbone:pcDNA3.1(-); Vector Types:Mammalian Expression, lactate biosensor; Bacterial Resistance:Ampicillin

Comments: Laconic is a genetically-encoded biosensor that detects lactate in the physiological range. The sensor was based on LldR, a bacterial transcription regulator that consists of a lactate-binding/regulatory domain and a DNA-binding domain. Laconic consists of a N-terminal mTFP, followed by the LldR flanked by linkers, and finally a C-terminal Venus. See Addgene plasmid# 46307: NLS-Laconic/pCMV-myc-nuc for a nuclear-targeted version of Laconic: http://www.addgene.org/46307/ .

Plasmid Name: Laconic/pcDNA3.1(-)

Record Creation Time: 20220422T222229+0000

Record Last Update: 20260815T081514+0000

Ratings and Alerts

No rating or validation information has been found for Laconic/pcDNA3.1(-).

No alerts have been found for Laconic/pcDNA3.1(-).

Data and Source Information

Source: Addgene

Usage and Citation Metrics

We found 40 mentions in open access literature.

Listed below are recent publications. The full list is available at RRID .

Liu R, et al. (2025) Harmine promotes axon regeneration through enhancing glucose metabolism. The Journal of biological chemistry, 301(3), 108254.

Nguyen NTB, et al. (2025) Lactate controls cancer stemness and plasticity through epigenetic regulation. Cell metabolism, 37(4), 903.

Wolff C, et al. (2025) Insulin and leptin acutely modulate the energy metabolism of primary hypothalamic and cortical astrocytes. Journal of neurochemistry, 169(1), e16211.

Horikoshi M, et al. (2024) Distinct lactate metabolism between hepatocytes and myotubes revealed by live cell imaging with genetically encoded indicators. Biochemical and biophysical research communications, 694, 149416.

Bischof H, et al. (2024) mitoBKCa is functionally expressed in murine and human breast cancer cells and potentially contributes to metabolic reprogramming. eLife, 12.

Shi C, et al. (2024) MCT1-mediated endothelial cell lactate shuttle as a target for promoting axon regeneration after spinal cord injury. Theranostics, 14(14), 5662.

Calbiague-Garcia V, et al. (2024) Extracellular lactate as an alternative energy source for retinal bipolar cells. The Journal of biological chemistry, 300(4), 106794.

John S, et al. (2024) Real-time resolution studies of the regulation of lactate production by hexokinases binding to mitochondria in single cells. PloS one, 19(3), e0300150.

Hario S, et al. (2024) High-Performance Genetically Encoded Green Fluorescent Biosensors for Intracellular l-Lactate. ACS central science, 10(2), 402.

Todorova V, et al. (2023) Deficits in mitochondrial TCA cycle and OXPHOS precede rod photoreceptor degeneration during chronic HIF activation. Molecular neurodegeneration, 18(1), 15.

Natsubori A, et al. (2023) Serotonergic neurons control cortical neuronal intracellular energy dynamics by modulating astrocyte-neuron lactate shuttle. iScience, 26(1), 105830.

John S, et al. (2023) Real-time resolution studies of the regulation of pyruvate-dependent lactate metabolism by hexokinases in single cells. PloS one, 18(11), e0286660.

Nasu Y, et al. (2023) Lactate biosensors for spectrally and spatially multiplexed fluorescence imaging. Nature communications, 14(1), 6598.

Calbiague García V, et al. (2023) Evaluation of Photobiomodulation and Boldine as Alternative Treatment Options in Two Diabetic Retinopathy Models. International journal of molecular sciences, 24(9).

Lee H, et al. (2023) ApoE4-dependent lysosomal cholesterol accumulation impairs mitochondrial homeostasis and oxidative phosphorylation in human astrocytes. Cell reports, 42(10), 113183.

Calbiague García V, et al. (2023) Imaging of lactate metabolism in retinal Müller cells with a FRET nanosensor. Experimental eye research, 226, 109352.

Lee HW, et al. (2022) Endothelium-derived lactate is required for pericyte function and blood-brain barrier maintenance. The EMBO journal, 41(9), e109890.

Gross D, et al. (2022) IKCa channels control breast cancer metabolism including AMPK-driven autophagy. Cell death & disease, 13(10), 902.

Deck M, et al. (2022) Physiology of PNS axons relies on glycolytic metabolism in myelinating Schwann cells. PloS one, 17(10), e0272097.

Pérez-Liébana I, et al. (2022) A Ca2+-Dependent Mechanism Boosting Glycolysis and OXPHOS by Activating Aralar-Malate-Aspartate Shuttle, upon Neuronal Stimulation. The Journal of neuroscience : the official journal of the Society for Neuroscience, 42(19), 3879.