

Supporting Information

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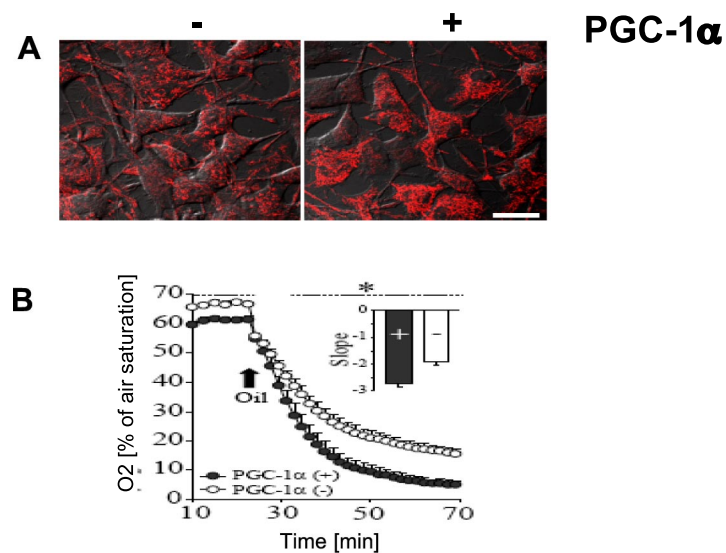


Fig. S1. PGC-1 α overexpression decreases intracellular oxygen levels in PC-12 cells. (A) PC-12 cells were transfected with either a pcDNA-PGC-1 α -expressing vector or an empty pcDNA control vector, and mitochondrial membrane potential was imaged with the potentiometric probe, TMRM. (Bar: 20 μ m.) (B) PC12 cells were cotransfected with near-infrared (NIR) oxygen probes, and either a pcDNA-PGC-1 α expression vector or an empty pcDNA vector and oxygen consumption was determined. *, $P < 0.05$; mean \pm SEM; $n = 3$.

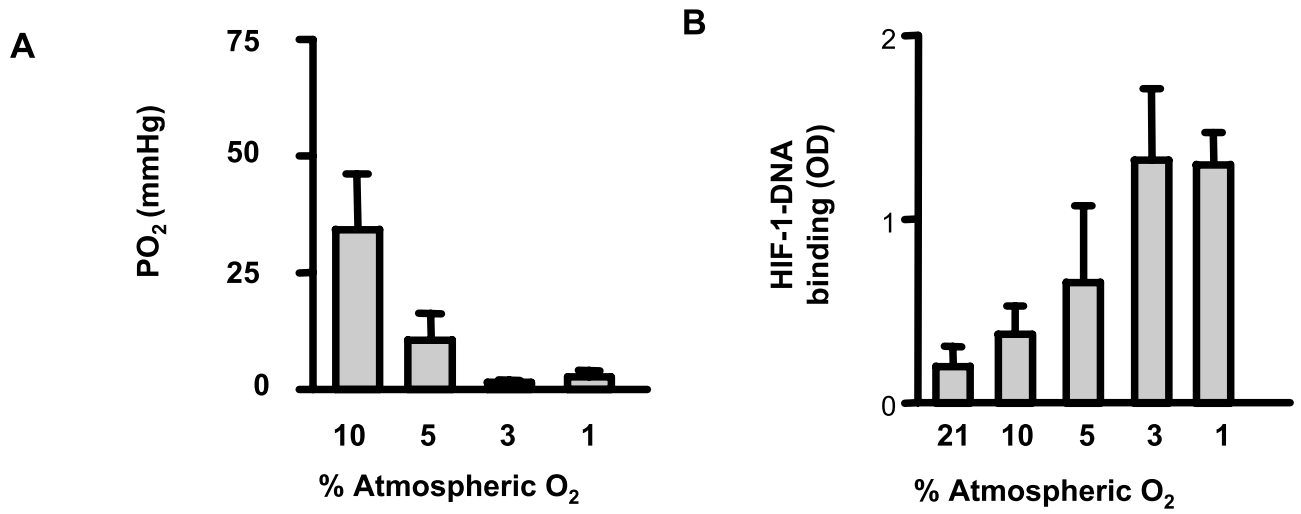


Fig. S2. Effects of decreasing atmospheric oxygen on extracellular PO₂ and HIF-1 α activation in HeLa cells. (A) Media PO₂ levels in HeLa cells were measured by using fluorescence quenching oxymetry in cells exposed to 10–1% atmospheric O₂ for 24 h. (B) HIF-1 α DNA binding assay (TransAM) was performed in HeLa cells exposed to 21–1% atmospheric O₂ for 24 h. Mean \pm SEM; $n = 3$.

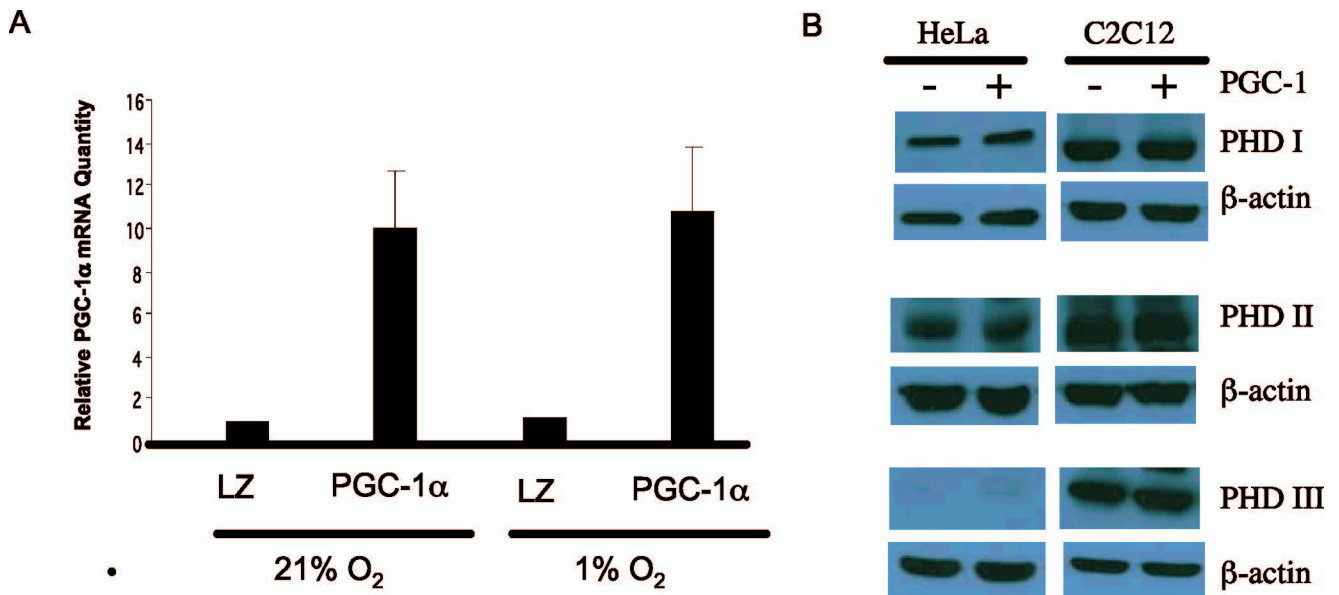


Fig. 53. Hypoxia does not effect PGC-1 α mRNA levels and PGC-1 α overexpression does not alter PHD levels in HeLa or C2C12 cells. **(A)** RT-PCR for PGC-1 α mRNA levels in L6 myotubes stably expressing PGC-1 α (PGC-1 α) compared with control L6-LacZeo (LZ) cells after exposure to 21% or 1% O₂ for 24 h. Mean + SEM; $n = 3$. **(B)** Western blot analysis of PHDI, PHDII, and PHDIII in HeLa and C2C12 cells transfected with either PGC-1 α expression vector or control vector ($n = 2$).

Table S1. Selected genes involved in mitochondrial function in PGC-1 α -overexpressing cells through microarray analysis

Transcript Cluster ID	Gene name	Gene symbol	Fold increase (Ad-PGC 1 α /Ad-GFP)	P value	Function
NM_001697	ATP synthase, O subunit	ATP5O	1.58	0.016	OX-PHOS
NM_001866	Cytochrome c oxidase subunit VIIIb	COX7B	2.28	0.002	OX-PHOS
NM_001916	Cytochrome c-1	CYC	2.0	0.029	OX-PHOS
NM_018947	Cytochrome c somatic	CYCS	3.43	0.009	OX-PHOS
NM_014222	NADH dehydrogenase 1 α subcomplex 8	NDUFA8	3.79	0.005	OX-PHOS
NM_004168	Succinate dehydrogenase complex A	SDHA	2.3	0.011	OX-PHOS
NM_003000	Succinate dehydrogenase complex B	SDHB	2.63	0.011	OX-PHOS
NM_006830	Ubiquinol-cytochrome c reductase core protien	UQCRC	4.73	0.027	OX-PHOS
NM_001876	Carnitine palmitoyltranferase	CPT1	2.69	0.005	Fatty acid oxidation
NM_181425	Frataxin	FXN	2.42	0.007	Mitochondrial import protein
NM_000636	Superoxide dismutase 2	SOD	2.06	0.005	Superoxide dismutase activity
NM_004451	Estrogen-related receptor α	ESRRA	3.29	0.037	Transcription factor of nuclear encoded mitochondrial genes
NM_003201	Mitochondrial transcription factor A	TFAM	2.19	0.015	Mitochondrial transcription factor

Shown are microarray data for primary human skeletal muscle cells infected with an adenovirus encoding GFP (Ad-GFP) versus cells infected with an adenovirus encoding PGC-1 α (Ad-PGC-1 α). Only genes with $P \leq 0.05$ are included.

Table S2. Identification of HIF target genes in PGC-1 α -expressing cells by microarray analysis

Transcript cluster ID	Gene name	Gene symbol	Fold increase (Ad-PGC 1 α /Ad-GFP)	P Value	Function
NM_033500	Hexokinase 1	HK1	2.28	0.01	Glycolysis
NM_005165	Aldolase C	ALDOC	1.96	0.002	Glycolysis
NM_000289	Phosphofructokinase (muscle)	PFKM	2.59	0.003	Glycolysis
NM_001025366	Vascular endothelial growth factor	VEGF	1.44	0.014	Angiogenic signaling
NM_003234	Transferrin receptor	TfRC	1.44	0.05	Iron transport
NM_003226	Intestinal trefoil Factor 3	TFF3	1.88	0.05	Matrix and barrier function
NM_000609	Stromal cell-derived factor 1	CXCL12	1.27	0.05	Angiogenic signaling
NM_199168					
NM_001033886					
NM_016282	Adenylate kinase 3	AK3	1.78	0.009	Energy homeostasis
NM_004827	ATP-binding cassette, subfamily G	ABCG2	5.14	0.06	Heme regulation

Shown are microarray data for primary human skeletal muscle cells infected with an adenovirus encoding GFP (Ad-GFP) versus cells infected with an adenovirus encoding PGC-1 α (Ad-PGC-1 α).

Table S3. Primers used for real-time PCR analysis

Gene name	Forward	Reverse
Aldolase C	5'-GGAGTCACGTAGCTCTGC-3'	5'-GACAACTCCTTCTTGCTC-3'
PFKB	5'-CAACAGCTATGAAACCAACC-3'	5'-CACCCAAGATTAACACTT-3'
PFKM	5'-TCTTTGCCATGAGGGTTAT-3'	5'-CAATGACACAGAGATTGGTG-3'
VEGFA	5'-AACCATGAACTTTCTGCTGT-3'	5'-GGCTTGAAGATGTACTCGAT-3'
TfR (Human, murine, rattus)	5'-CTCGTGAGGCTGGATCTC-3'	5'-TAGCATGGACCAGTTTACC-3'