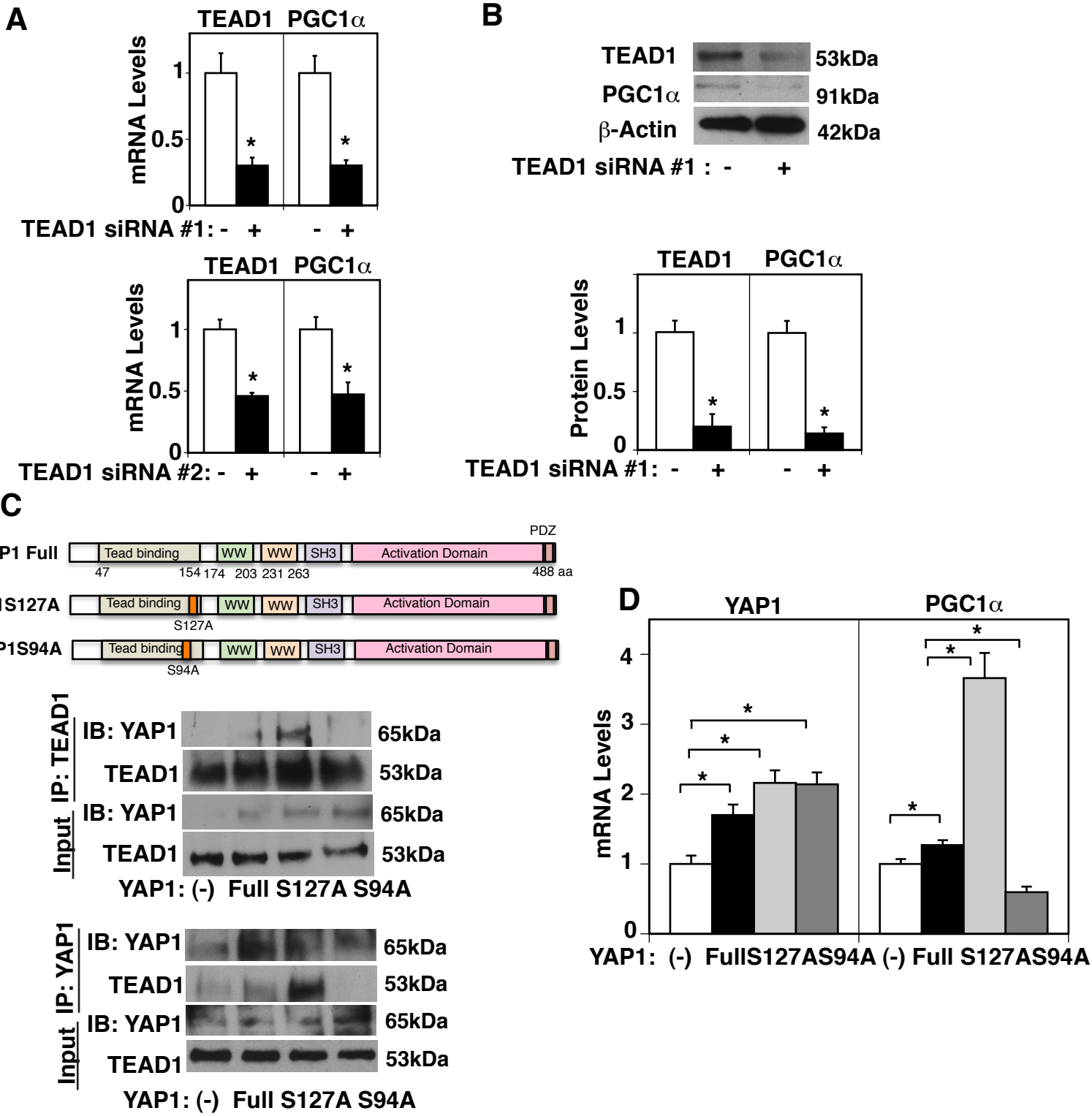

A
TEAD1 PGC1α
mRNA Levels
1
0.5
0
TEAD1 siRNA #1: - + - +
TEAD1 PGC1α
mRNA Levels
TEAD1 siRNA #2: - + - +
B
TEAD1 53kDa
PGC1α 91kDa
β-Actin 42kDa
TEAD1 siRNA #1 : - +
TEAD1 PGC1α
Protein Levels
TEAD1 siRNA #1: - + - +
C
PDZ
YAP1 Full
Tead binding
WW
WW
SH3
Activation Domain
47 154 174 203 231 263 488 aa
YAP1S127A
S127A
YAP1S94A
S94A
Input IP: TEAD1
IB: YAP1 65kDa
TEAD1 53kDa
IB: YAP1 65kDa
TEAD1 53kDa
YAP1: (-) Full S127A S94A
Input IP: YAP1
IB: YAP1 65kDa
TEAD1 53kDa
IB: YAP1 65kDa
TEAD1 53kDa
YAP1: (-) Full S127A S94A
D
YAP1
PGC1α
mRNA Levels
4
3
2
1
0
YAP1: (-) Full S127A S94A (-) Full S127A S94A

Fig. 1

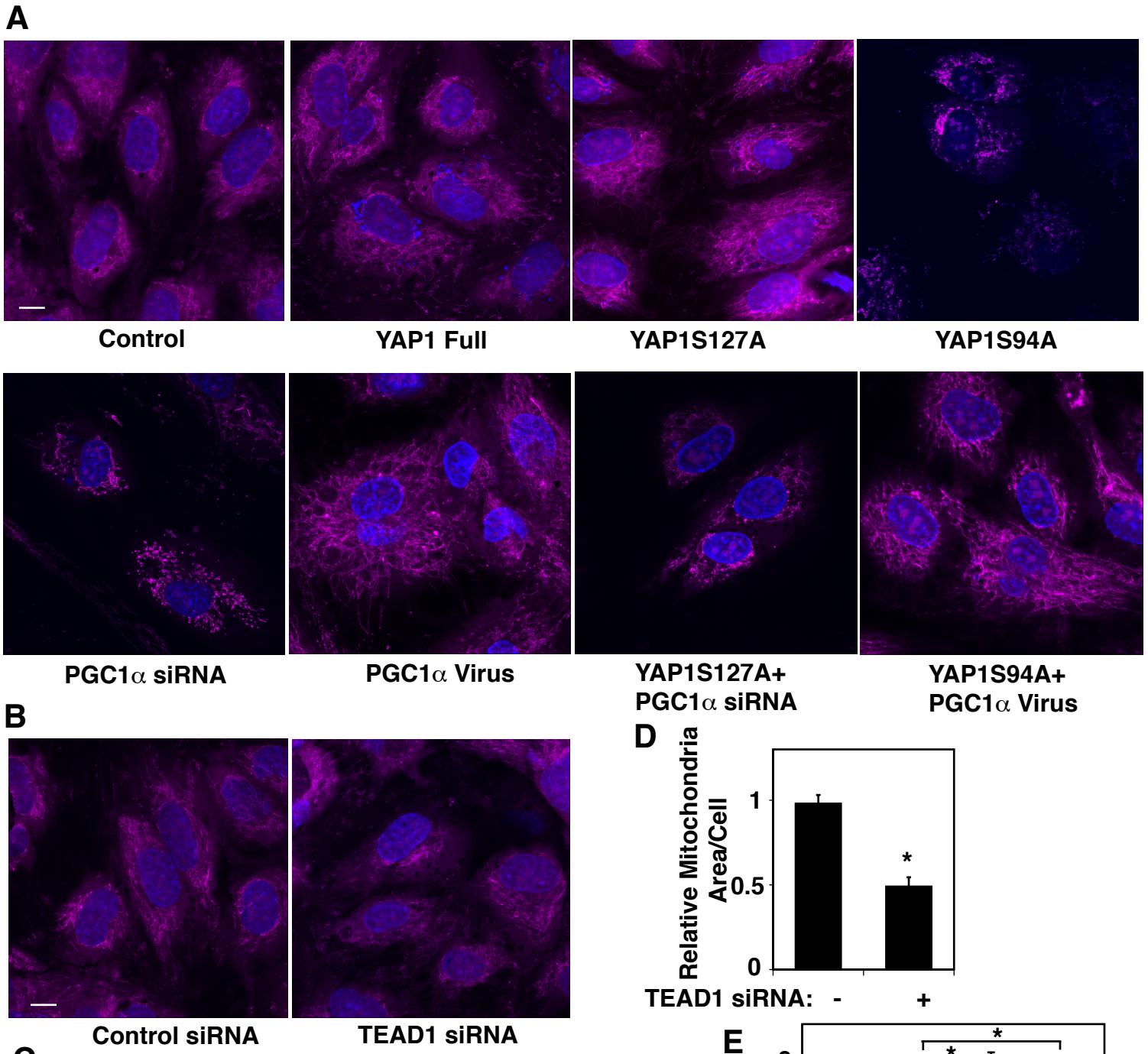

A
Control
YAP1 Full
YAP1S127A
YAP1S94A
PGC1α siRNA
PGC1α Virus
YAP1S127A+
PGC1α siRNA
YAP1S94A+
PGC1α Virus
B
Control siRNA
TEAD1 siRNA
D
Relative Mitochondria Area/Cell
1
0.5
0
*
TEAD1 siRNA: - +
C
Relative Mitochondria Area /Cell
2
1
0
*
YAP1: - Full S127A S94A - - S127A S94A
PGC1α: - - - - - + - +
PGC1α siRNA: - - - - + - + -
E
mtDNA/nDNA
8
6
4
2
0
*
YAP1: (-) Full S127A S94A
mtDNA/nDNA
1
0.5
0
*
TEAD1 siRNA: - +

Fig. 2

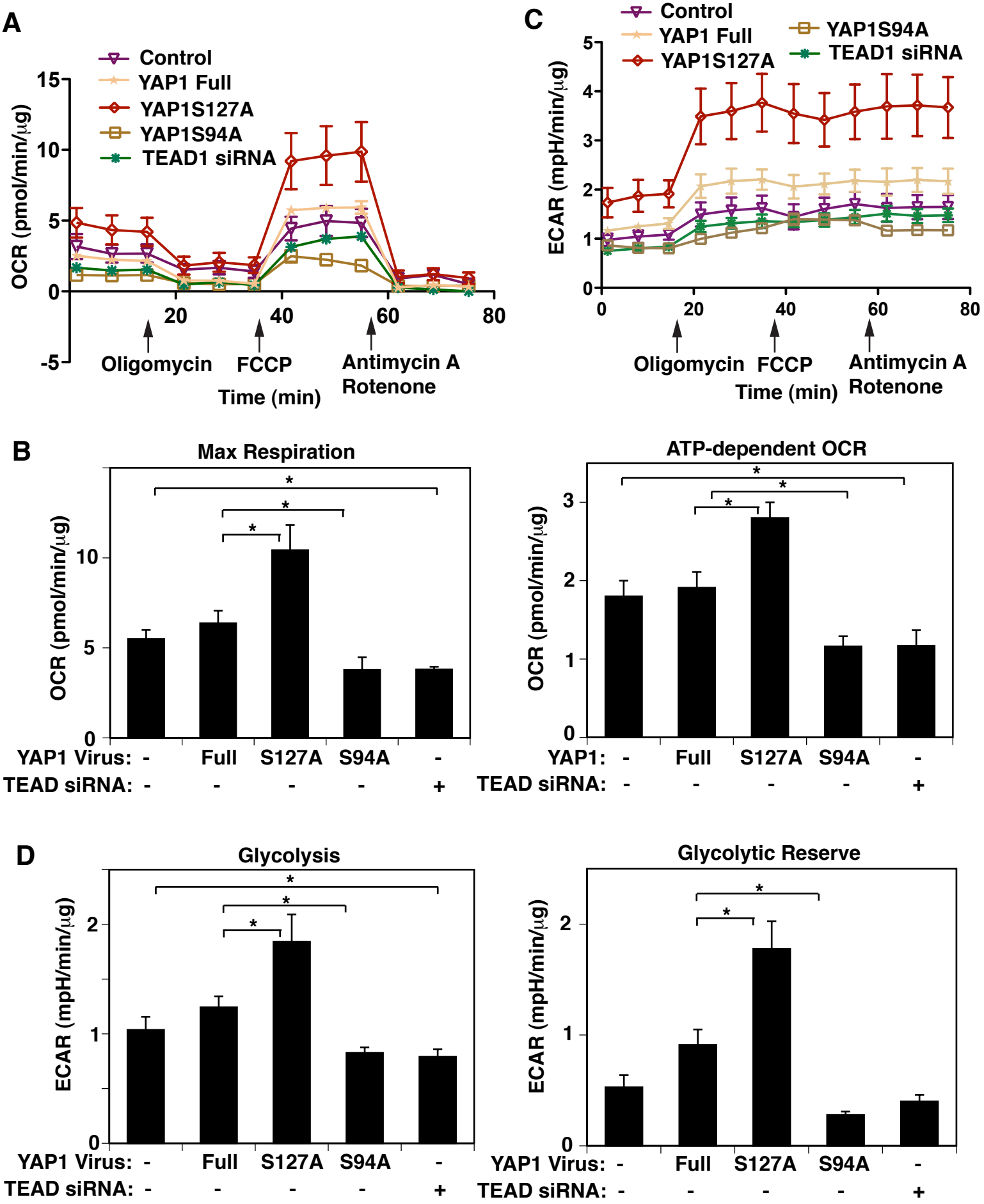
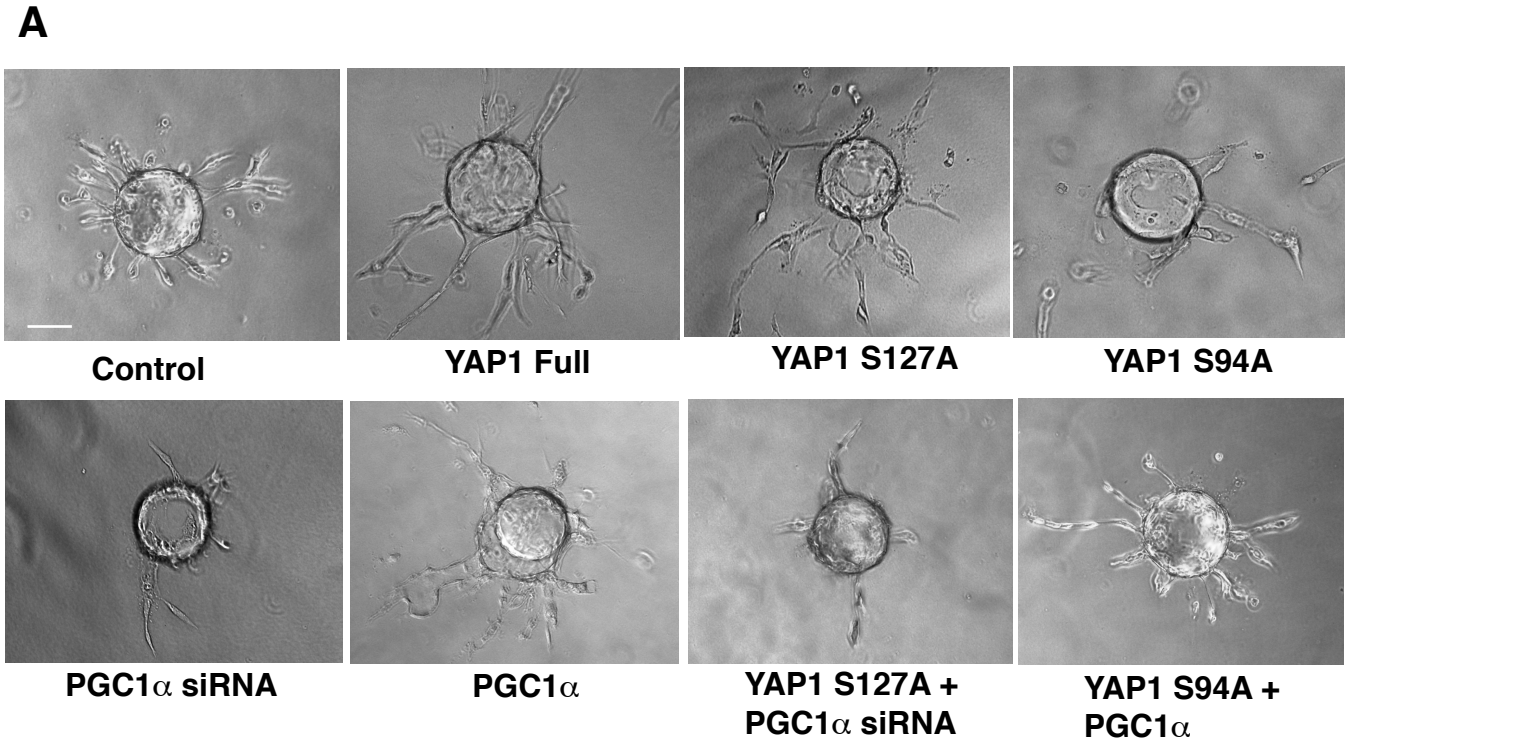
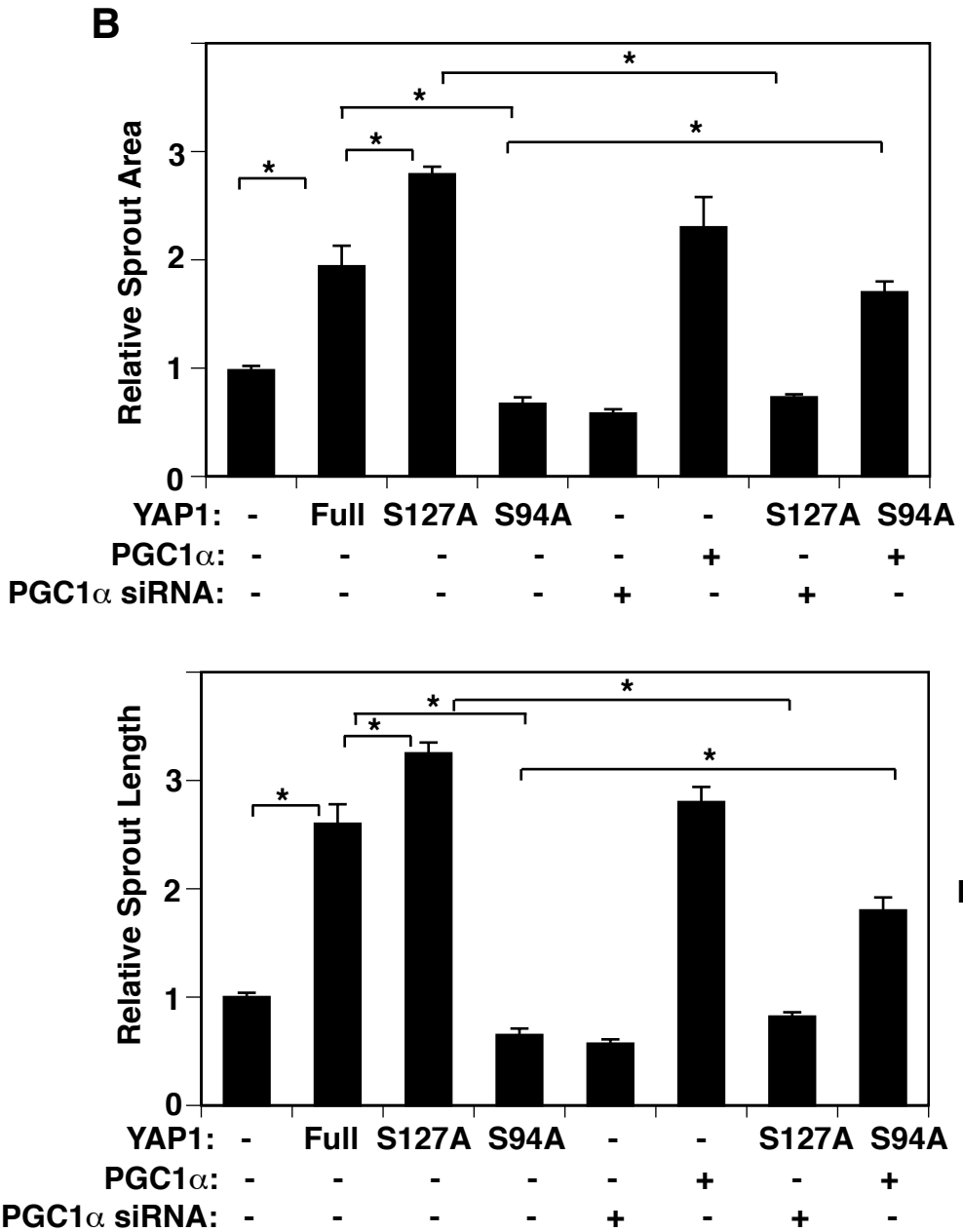

A
Control
YAP1 Full
YAP1S127A
YAP1S94A
TEAD1 siRNA
OCR (pmol/min/μg)
Oligomycin
FCCP
Antimycin A
Rotenone
Time (min)
C
ECAR (mpH/min/μg)
B
Max Respiration
ATP-dependent OCR
YAP1 Virus: - Full S127A S94A -
TEAD siRNA: - - - - +
D
Glycolysis
Glycolytic Reserve

Fig. 3


A
Control
YAP1 Full
YAP1 S127A
YAP1 S94A
PGC1α siRNA
PGC1α
YAP1 S127A +
PGC1α siRNA
YAP1 S94A +
PGC1α


B
Relative Sprout Area
0
1
2
3
YAP1: - Full S127A S94A - - S127A S94A
PGC1α: - - - - - + - +
PGC1α siRNA: - - - - + - + -
Relative Sprout Length
0
1
2
3
YAP1: - Full S127A S94A - - S127A S94A
PGC1α: - - - - - + - +
PGC1α siRNA: - - - - + - + -

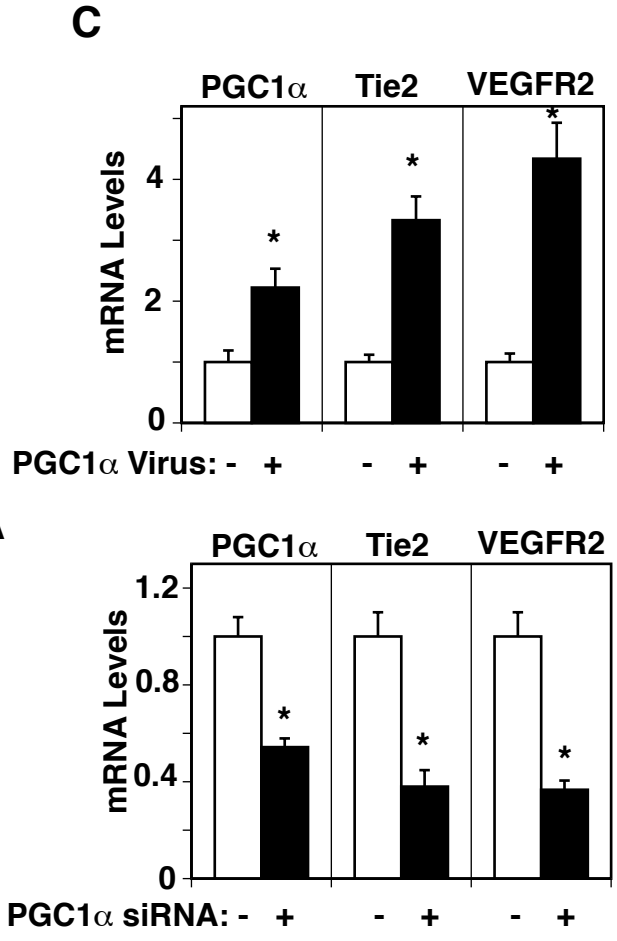
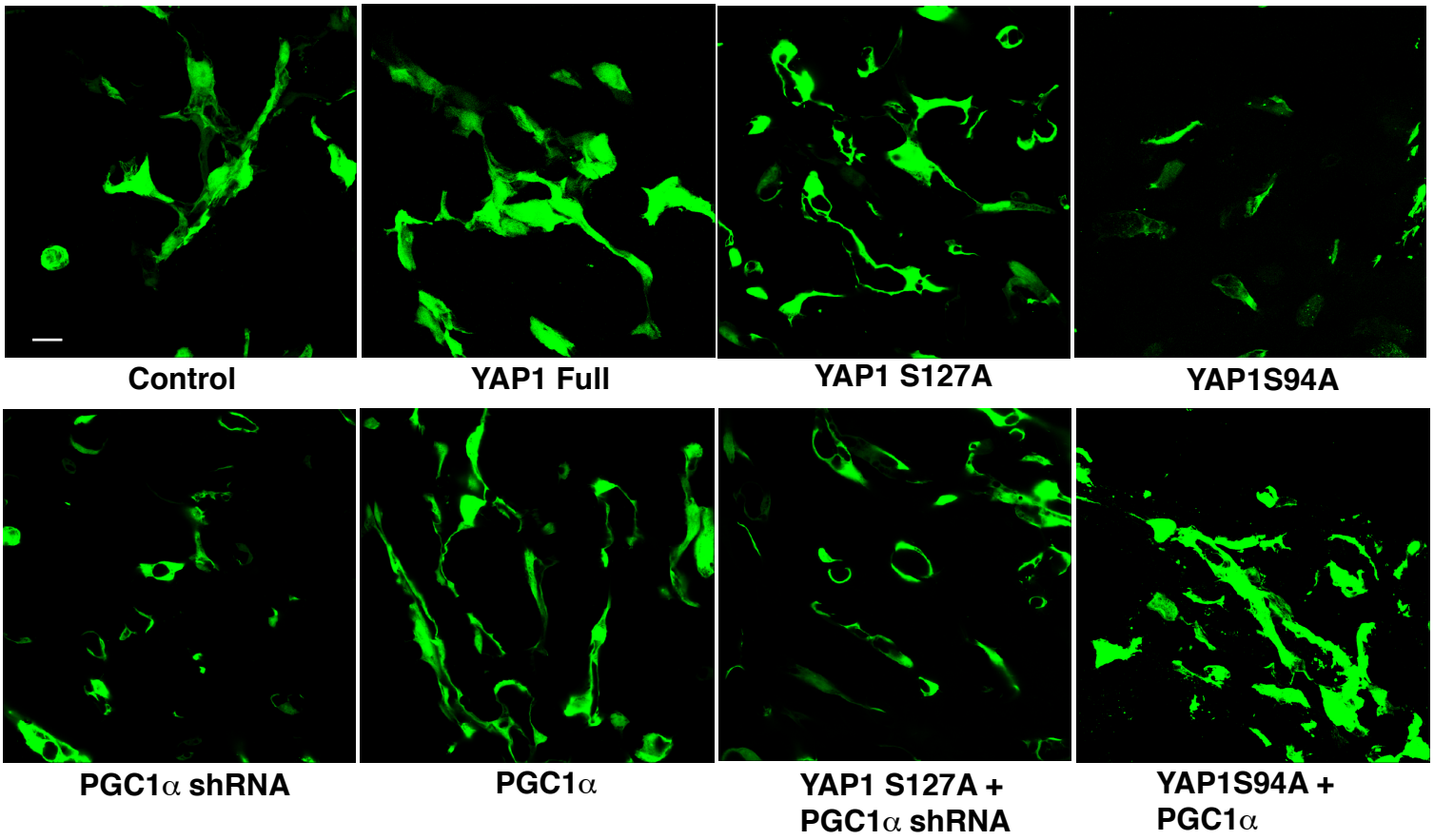

C
PGC1α
Tie2
VEGFR2
mRNA Levels
0
2
4
PGC1α Virus: - + - + - +
PGC1α
Tie2
VEGFR2
mRNA Levels
0
0.4
0.8
1.2
PGC1α siRNA: - + - + - +

Fig. 4

A


Control
YAP1 Full
YAP1 S127A
YAP1S94A
PGC1α shRNA
PGC1α
YAP1 S127A + PGC1α shRNA
YAP1S94A + PGC1α

B

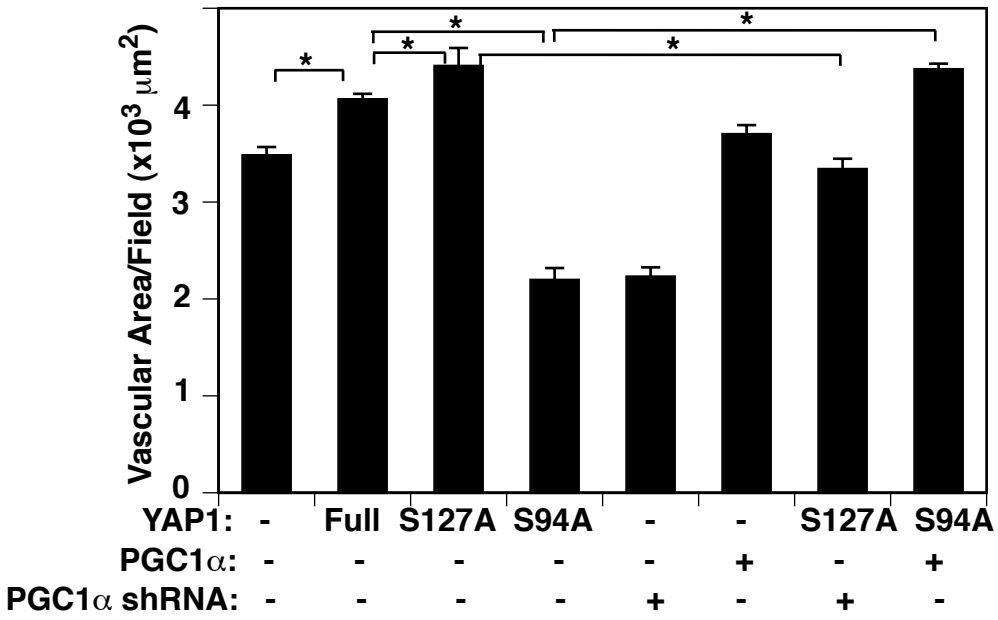
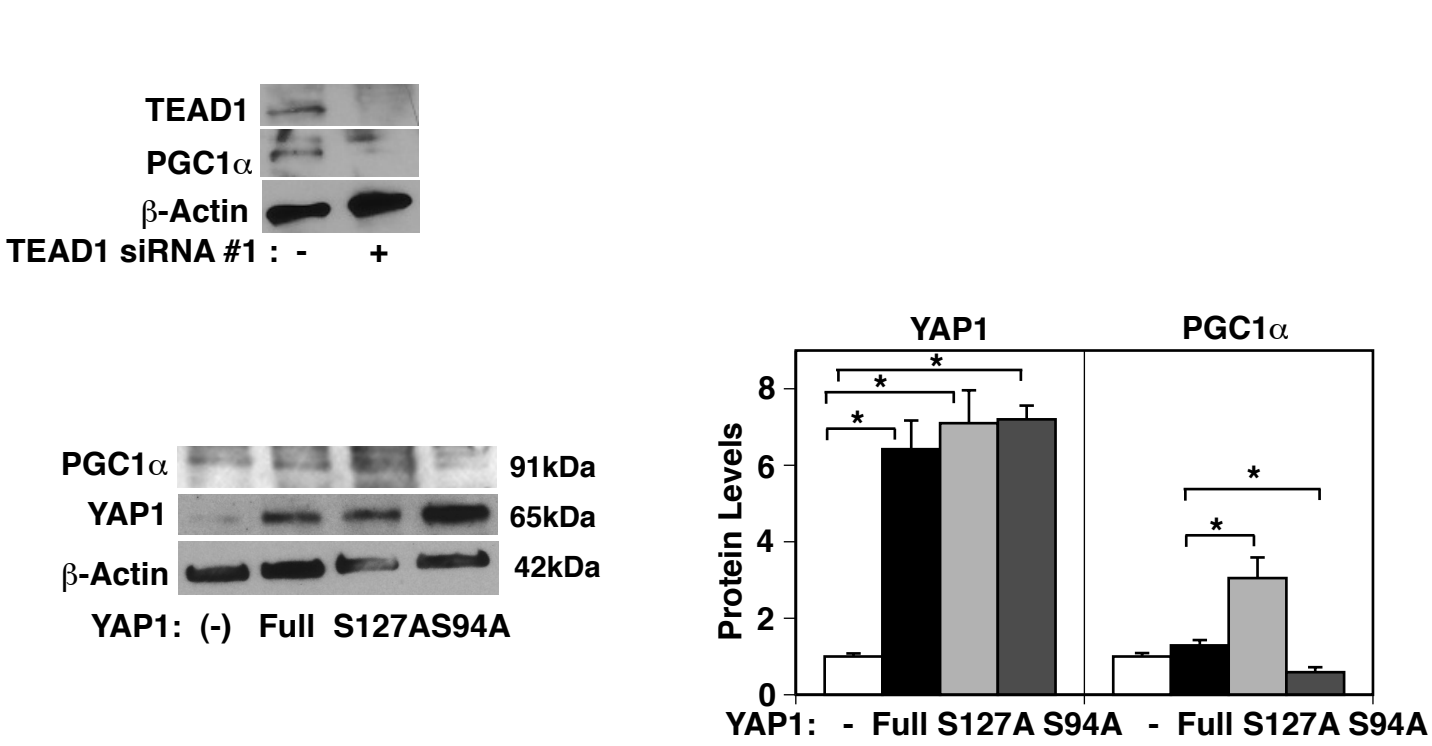
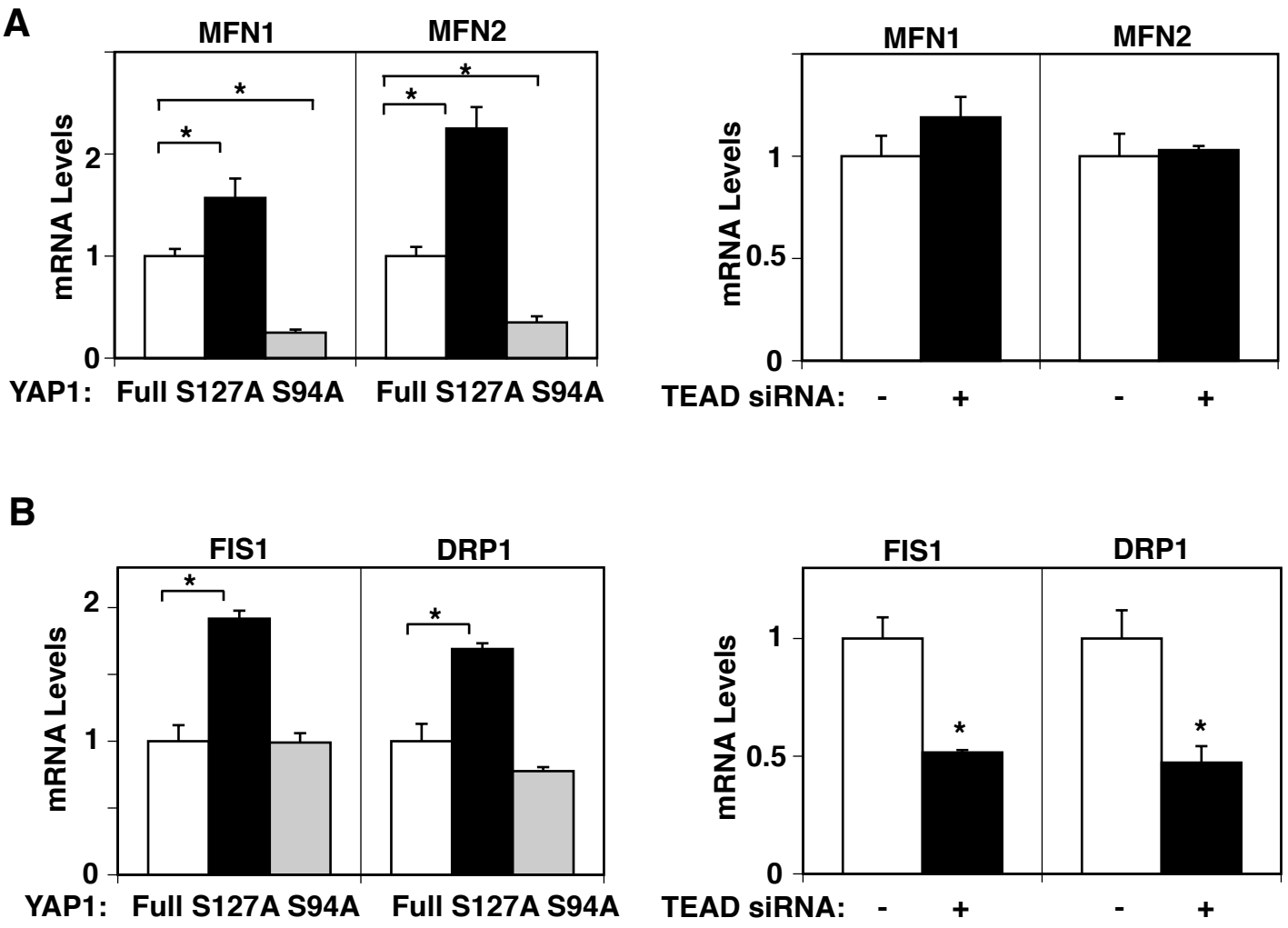

Vascular Area/Field (x10³ μm²)
0
1
2
3
4
*
*
*
*
*
YAP1: - Full S127A S94A - - S127A S94A
PGC1α: - - - - - + - +
PGC1α shRNA: - - - - + - + -

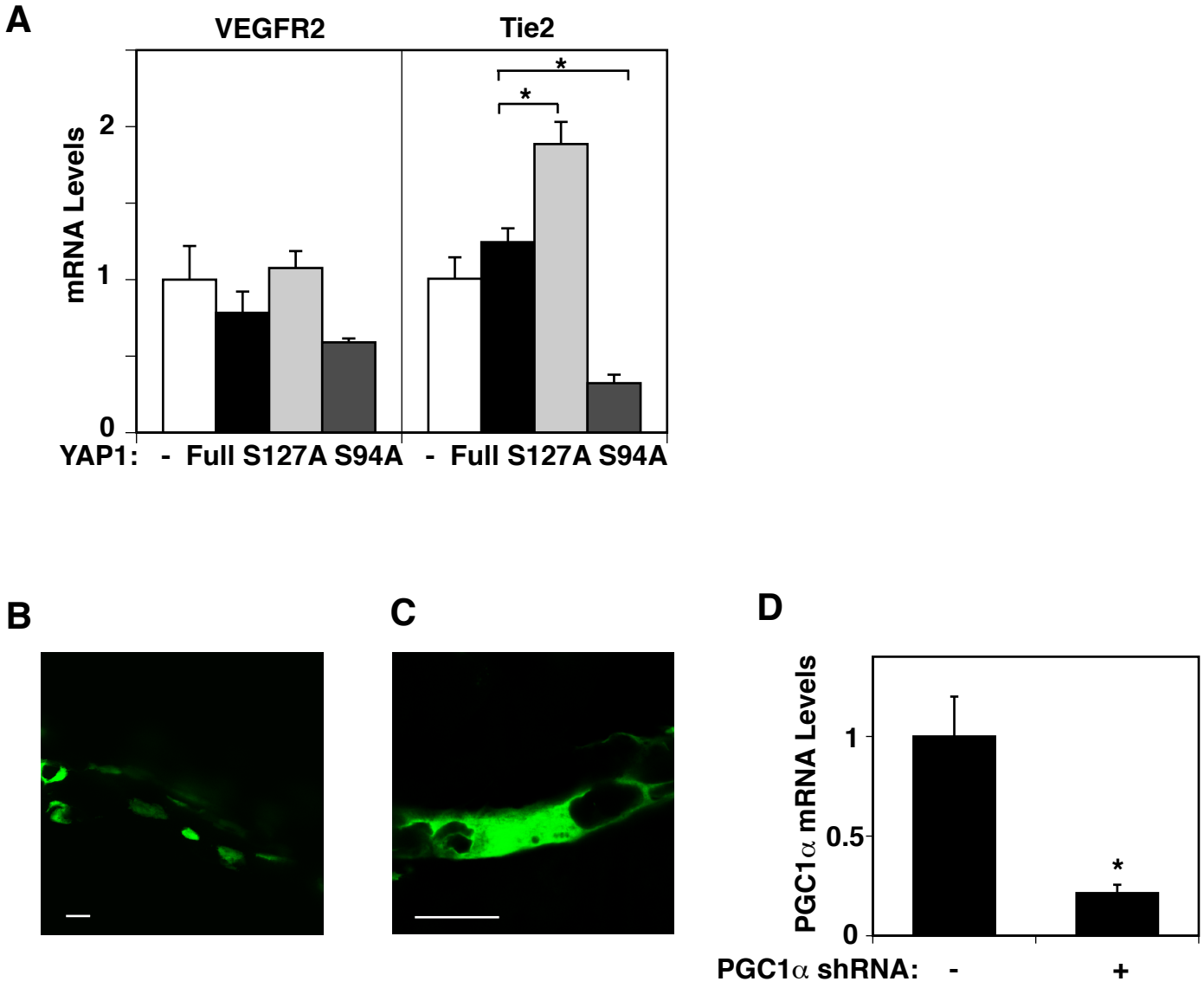
Fig. 5



Supplementary Fig. S1. YAP1-TEAD1 signaling controls expression of PGC1α in HUVE cells.
A) Immunoblots showing TEAD1, PGC1α, and β-actin protein levels in HUVE cells treated with TEAD1 siRNA#1 or control siRNA with irrelevant sequences. **B)** Immunoblots showing PGC1α, YAP1, and β-actin protein levels in HUVE cells treated with virus overexpressing full-length YAP1, YAP1S127A, YAP1S94A, or control vector alone (left). Graph showing YAP1 and PGC1α protein levels normalized by β-actin protein levels in HUVE cells treated with full-length YAP1, YAP1S127A, YAP1S94A, or control vector alone (right, *, $p<0.05$). Error bars represent s.e.m. of three independent experiments.



Supplementary Fig. S2. YAP1-TEAD1 signaling controls mitochondrial dynamics.
A) Graph showing MFN1 and MFN2 mRNA levels in HUVE cells overexpressing full-length YAP1, YAP1S127A, or YAP1S94A (left, *, $p<0.05$). Graph showing MFN1 and MFN2 mRNA levels in HUVE cells treated with TEAD1 siRNA or control siRNA with irrelevant sequences (right, *, $p<0.05$).
Error bars represent s.e.m. of three independent experiments. **B)** Graph showing FIS1 and DRP1 mRNA levels in HUVE cells overexpressing full-length YAP1, YAP1S127A, or YAP1S94A (left, *, $p<0.05$).
Graph showing FIS1 and DRP1 mRNA levels in HUVE cells treated with TEAD1 siRNA or control siRNA with irrelevant sequences (right, *, $p<0.05$). Error bars represent s.e.m. of three independent experiments.



Supplementary Fig. S3. YAP1-TEAD1 signaling controls expression of angiogenic factors in HUVE cells. **A)** Graph showing VEGFR2 and Tie2 mRNA levels in HUVE cells treated with virus overexpressing full-length YAP1, YAP1S127A, YAP1S94A or control vector (*, $p<0.05$). Error bars represent s.e.m. of three independent experiments. **B)** IF micrograph of fibrin gel supplemented with GFP-labeled HUVE cells implanted on mouse lung for 1 day. Scale bar, 25 µm. **C)** IF micrograph of GFP-labeled HUVE cells forming lumen structure in the fibrin gel implanted on mouse lung for 7 days. Scale bar, 25 µm. **D)** Graph showing PGC1α mRNA levels in HUVE cells treated with virus overexpressing PGC1α shRNA or control vector (*, $p<0.05$).
Error bars represent s.e.m. of three independent experiments.