Figure 1

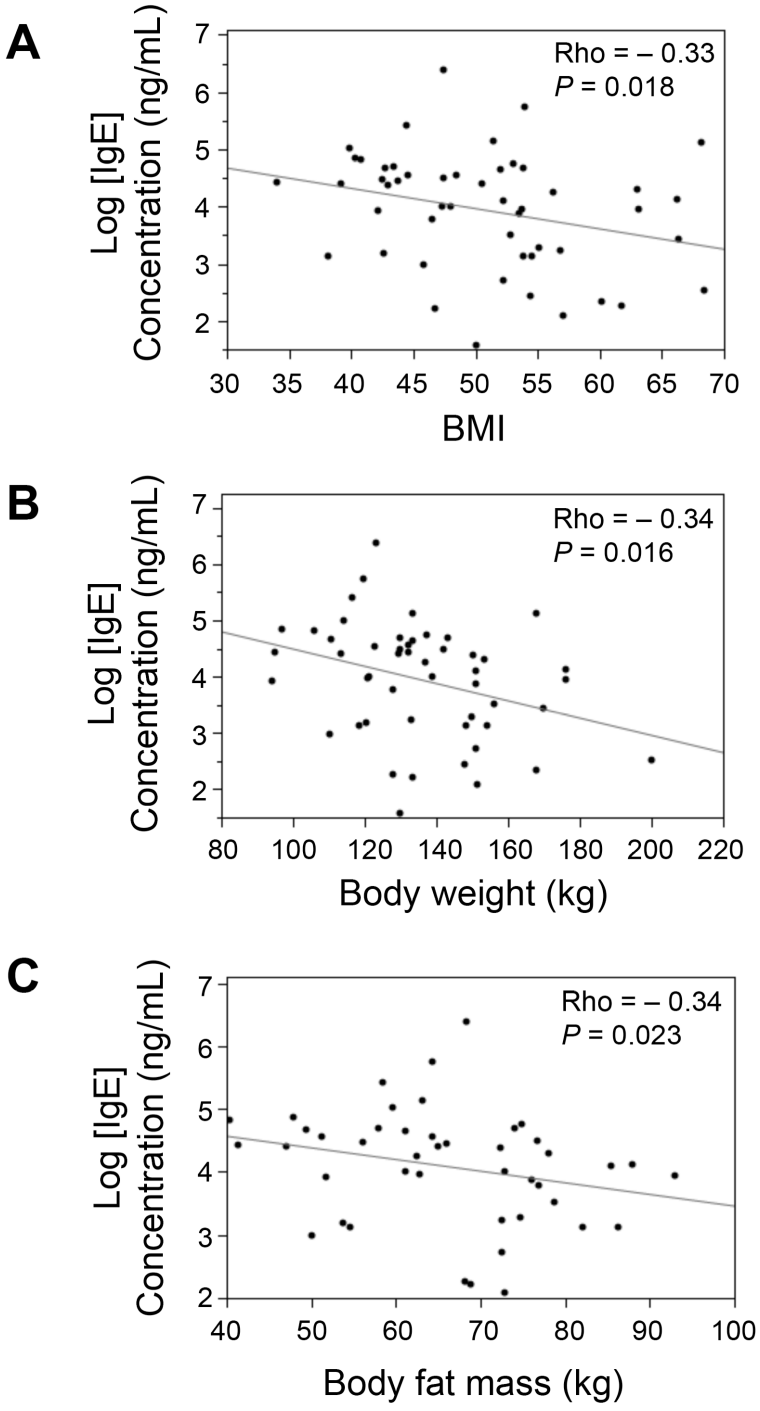

A
Log [IgE] Concentration (ng/mL)
Rho = – 0.33
P = 0.018
BMI
B
Log [IgE] Concentration (ng/mL)
Rho = – 0.34
P = 0.016
Body weight (kg)
C
Log [IgE] Concentration (ng/mL)
Rho = – 0.34
P = 0.023
Body fat mass (kg)

Figure 2

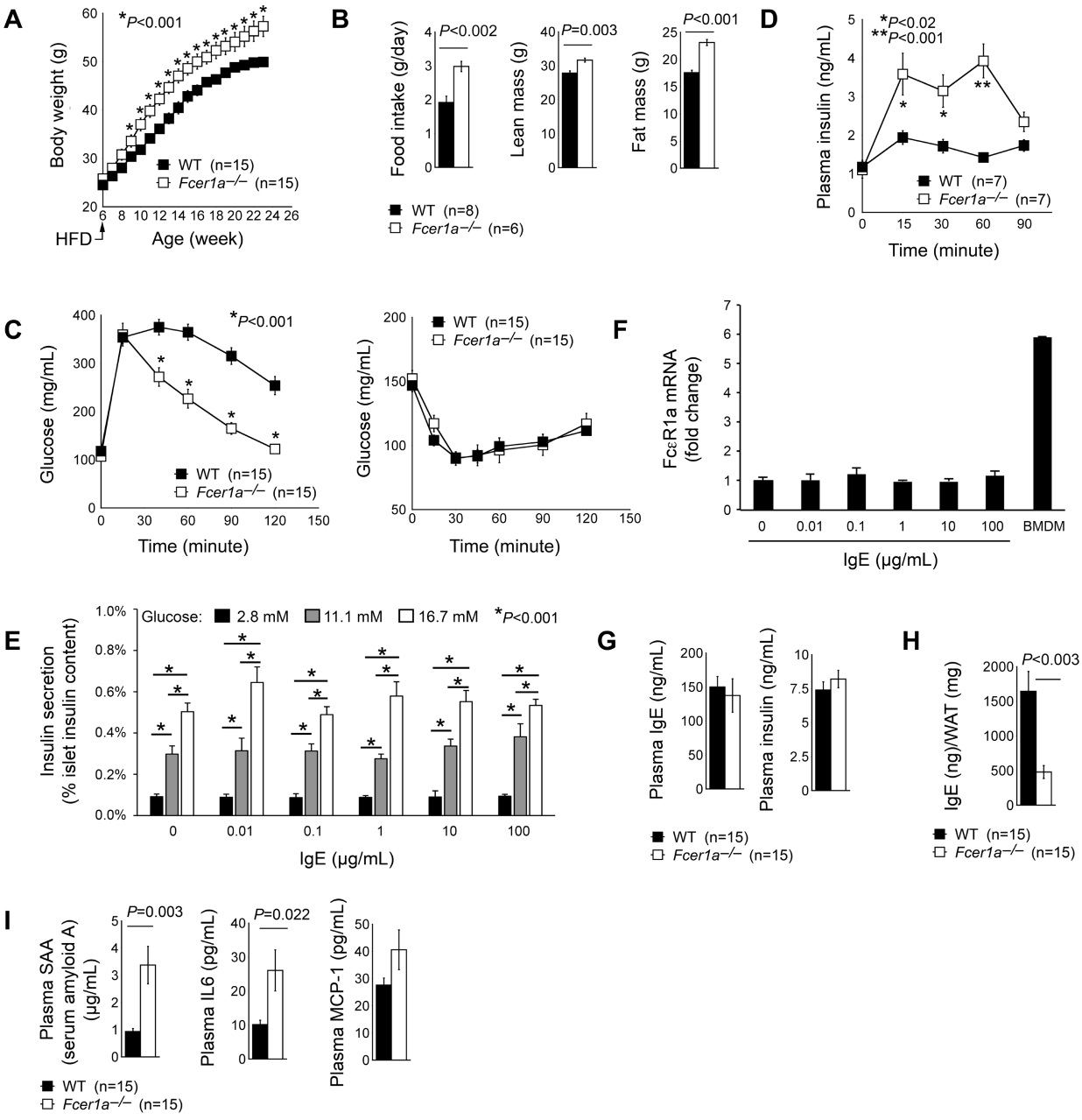

A
*P<0.001
Body weight (g)
WT (n=15)
Fcer1a−/− (n=15)
HFD
Age (week)
B
P<0.002
Food intake (g/day)
P=0.003
Lean mass (g)
P<0.001
Fat mass (g)
WT (n=8)
Fcer1a−/− (n=6)
D
*P<0.02
**P<0.001
Plasma insulin (ng/mL)
WT (n=7)
Fcer1a−/− (n=7)
Time (minute)
C
*P<0.001
Glucose (mg/mL)
WT (n=15)
Fcer1a−/− (n=15)
Time (minute)
F
FcεR1a mRNA (fold change)
BMDM
IgE (μg/mL)
E
Glucose: 2.8 mM 11.1 mM 16.7 mM
*P<0.001
Insulin secretion (% islet insulin content)
IgE (μg/mL)
G
Plasma IgE (ng/mL)
Plasma insulin (ng/mL)
WT (n=15)
Fcer1a−/− (n=15)
H
P<0.003
IgE (ng)/WAT (mg)
WT (n=15)
Fcer1a−/− (n=15)
I
P=0.003
Plasma SAA (serum amyloid A) (μg/mL)
P=0.022
Plasma IL6 (pg/mL)
Plasma MCP-1 (pg/mL)
WT (n=15)
Fcer1a−/− (n=15)

Figure 3

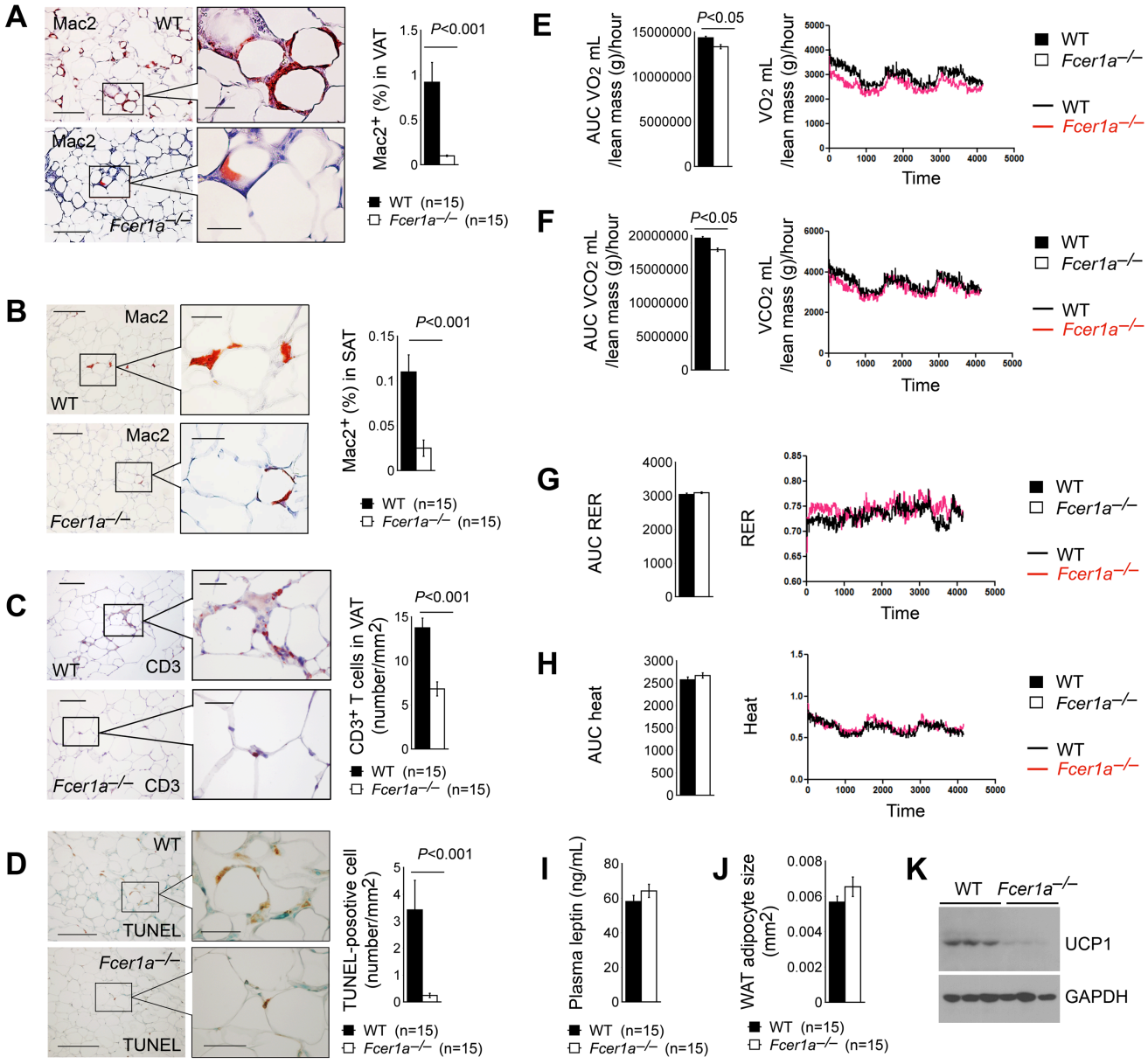

A
Mac2
WT
Mac2
Fcer1a−/−
Mac2+ (%) in VAT
P<0.001
WT (n=15)
Fcer1a−/− (n=15)
B
Mac2
WT
Mac2
Fcer1a−/−
Mac2+ (%) in SAT
P<0.001
WT (n=15)
Fcer1a−/− (n=15)
C
WT
CD3
Fcer1a−/−
CD3
CD3+ T cells in VAT (number/mm2)
P<0.001
WT (n=15)
Fcer1a−/− (n=15)
D
WT
TUNEL
Fcer1a−/−
TUNEL
TUNEL-posotive cell (number/mm2)
P<0.001
WT (n=15)
Fcer1a−/− (n=15)
E
AUC VO2 mL /lean mass (g)/hour
P<0.05
VO2 mL /lean mass (g)/hour
Time
WT
Fcer1a−/−
F
AUC VCO2 mL /lean mass (g)/hour
P<0.05
VCO2 mL /lean mass (g)/hour
Time
WT
Fcer1a−/−
G
AUC RER
RER
Time
WT
Fcer1a−/−
H
AUC heat
Heat
Time
WT
Fcer1a−/−
I
Plasma leptin (ng/mL)
WT (n=15)
Fcer1a−/− (n=15)
J
WAT adipocyte size (mm2)
WT (n=15)
Fcer1a−/− (n=15)
K
WT
Fcer1a−/−
UCP1
GAPDH

Figure 4

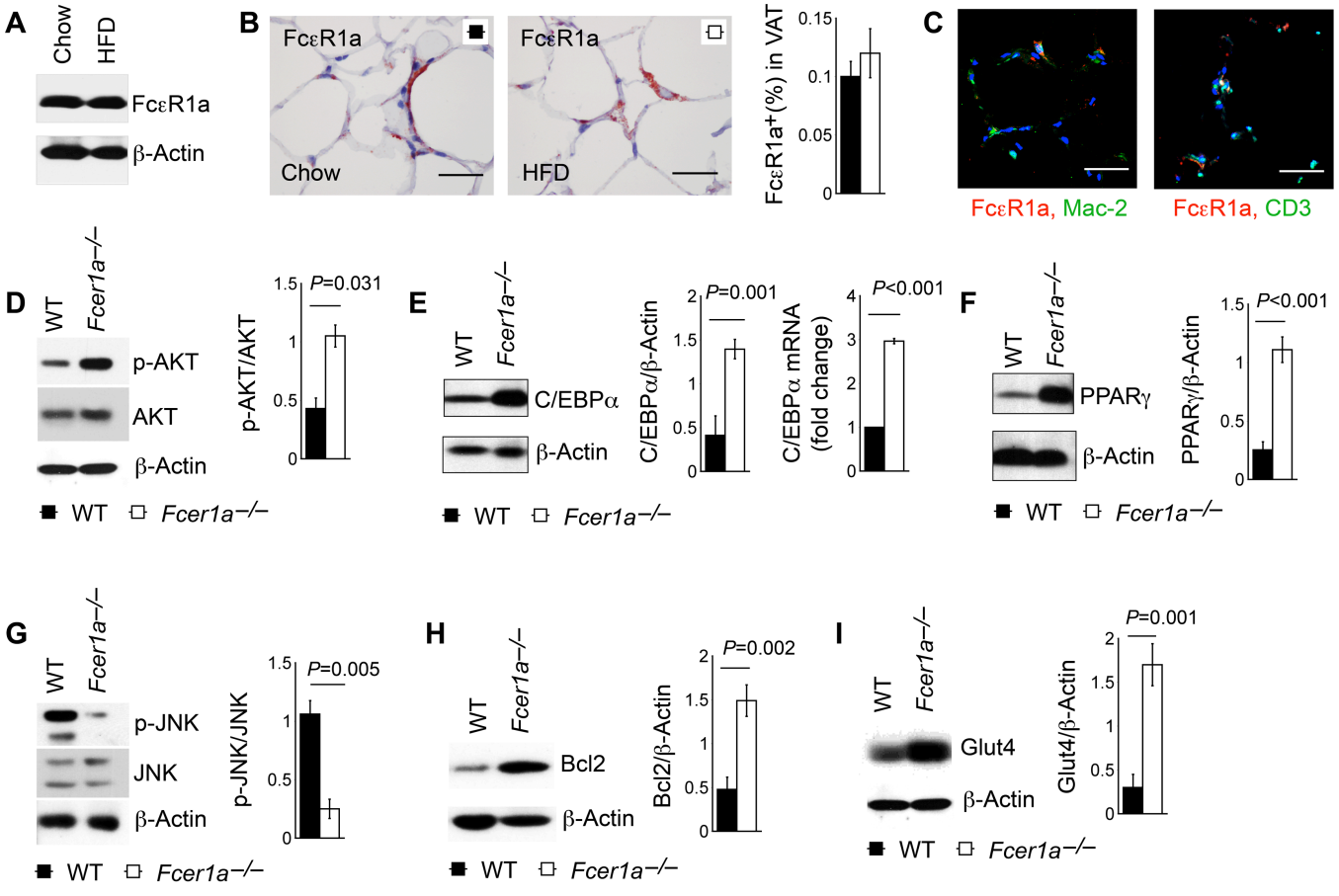

A
Chow
HFD
FcεR1a
β-Actin
B
FcεR1a
Chow
FcεR1a
HFD
FcεR1a+(%) in VAT
0.15
0.1
0.05
0
C
FcεR1a, Mac-2
FcεR1a, CD3
D
WT
Fcer1a−/−
p-AKT
AKT
β-Actin
p-AKT/AKT
P=0.031
WT
Fcer1a−/−
E
C/EBPα
β-Actin
C/EBPα/β-Actin
P=0.001
C/EBPα mRNA (fold change)
P<0.001
F
PPARγ
β-Actin
PPARγ/β-Actin
P<0.001
G
p-JNK
JNK
β-Actin
p-JNK/JNK
P=0.005
H
Bcl2
β-Actin
Bcl2/β-Actin
P=0.002
I
Glut4
β-Actin
Glut4/β-Actin
P=0.001

Figure 5

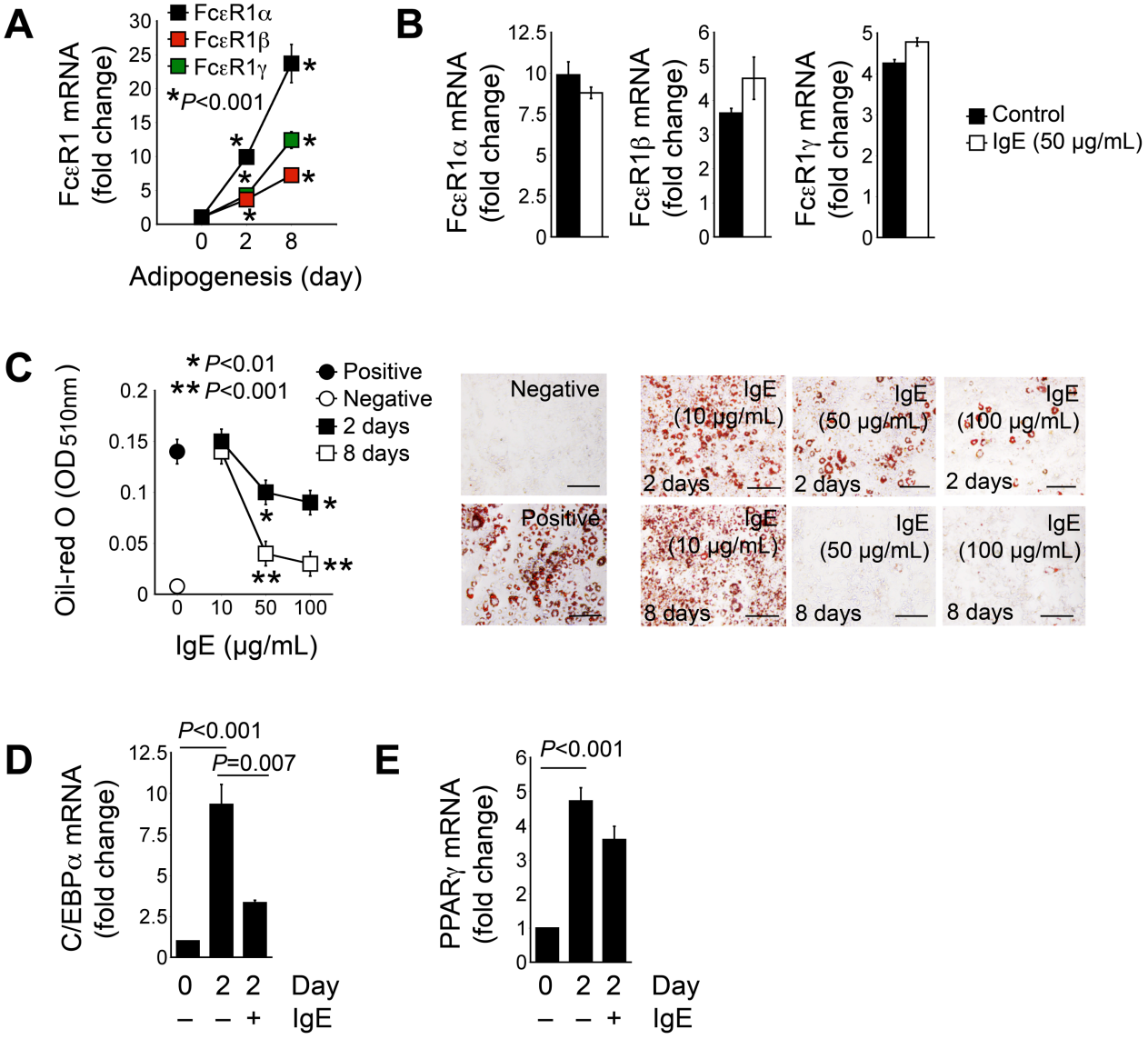

A
FcεR1α
FcεR1β
FcεR1γ
*P<0.001
FcεR1 mRNA (fold change)
Adipogenesis (day)
B
FcεR1α mRNA (fold change)
FcεR1β mRNA (fold change)
FcεR1γ mRNA (fold change)
Control
IgE (50 μg/mL)
C
*P<0.01
**P<0.001
Positive
Negative
2 days
8 days
Oil-red O (OD510nm)
IgE (μg/mL)
Negative
IgE (10 μg/mL)
IgE (50 μg/mL)
IgE (100 μg/mL)
2 days
Positive
8 days
D
P<0.001
P=0.007
C/EBPα mRNA (fold change)
Day
IgE
E
P<0.001
PPARγ mRNA (fold change)
Day
IgE

Figure 6

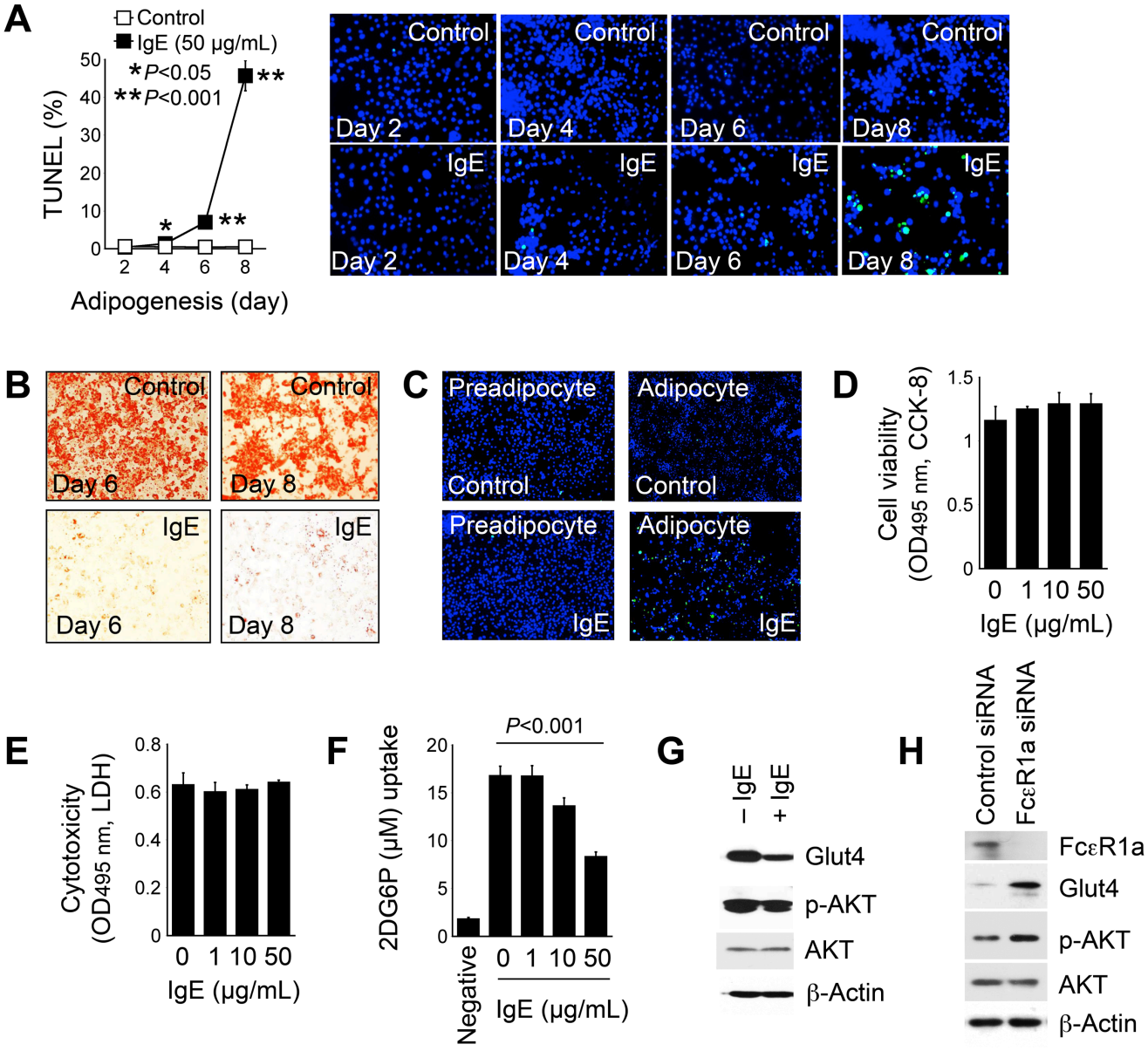
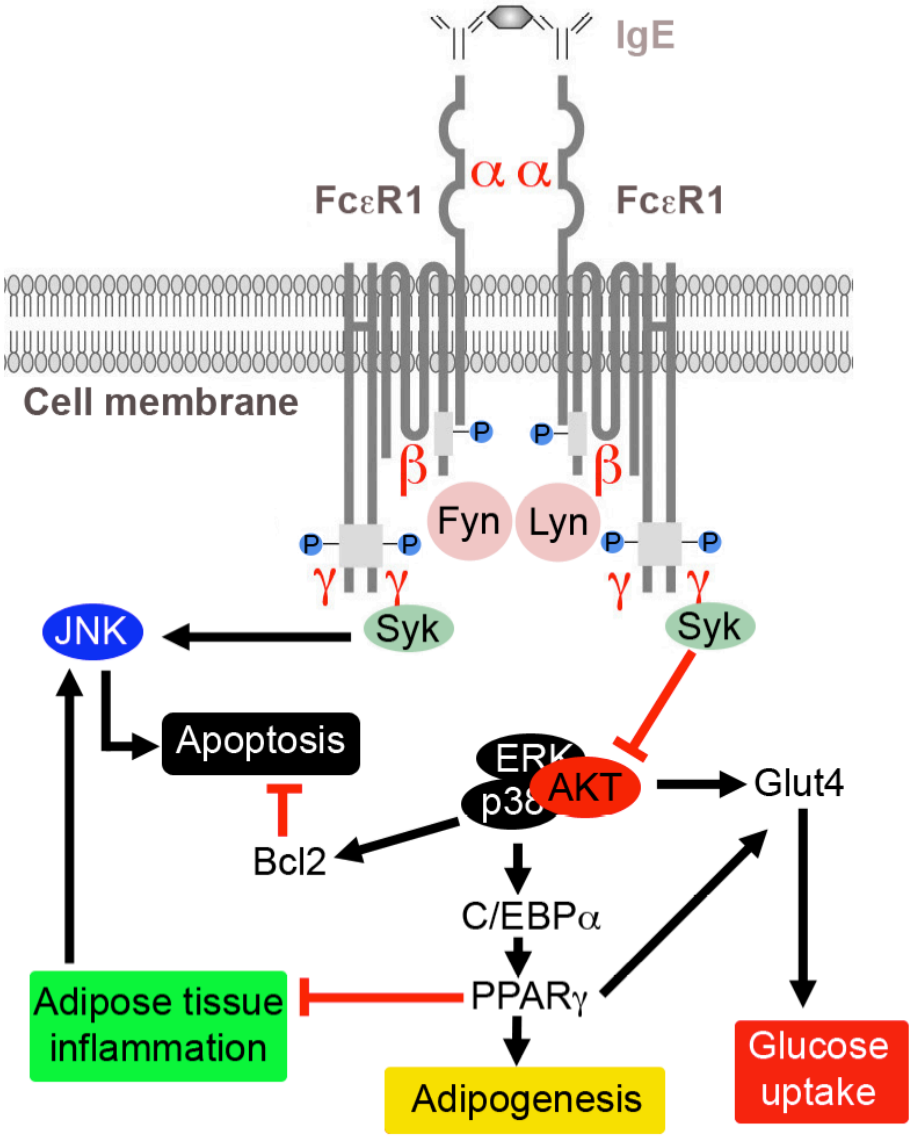

A
Control
IgE (50 μg/mL)
*P<0.05
**P<0.001
TUNEL (%)
Adipogenesis (day)
Control
IgE
Day 2
Day 4
Day 6
Day8
Day 8
B
Day 6
Day 8
C
Preadipocyte
Adipocyte
D
Cell viability (OD495 nm, CCK-8)
IgE (μg/mL)
E
Cytotoxicity (OD495 nm, LDH)
F
2DG6P (μM) uptake
P<0.001
Negative
G
– IgE
+ IgE
Glut4
p-AKT
AKT
β-Actin
H
Control siRNA
FcεR1a siRNA
FcεR1a

Figure 7


IgE
FcεR1
α α
FcεR1
Cell membrane
β
β
Fyn
Lyn
γ γ
γ γ
JNK
Syk
Syk
Apoptosis
ERK
p38
AKT
Glut4
Bcl2
C/EBPα
Adipose tissue inflammation
PPARγ
Glucose uptake
Adipogenesis