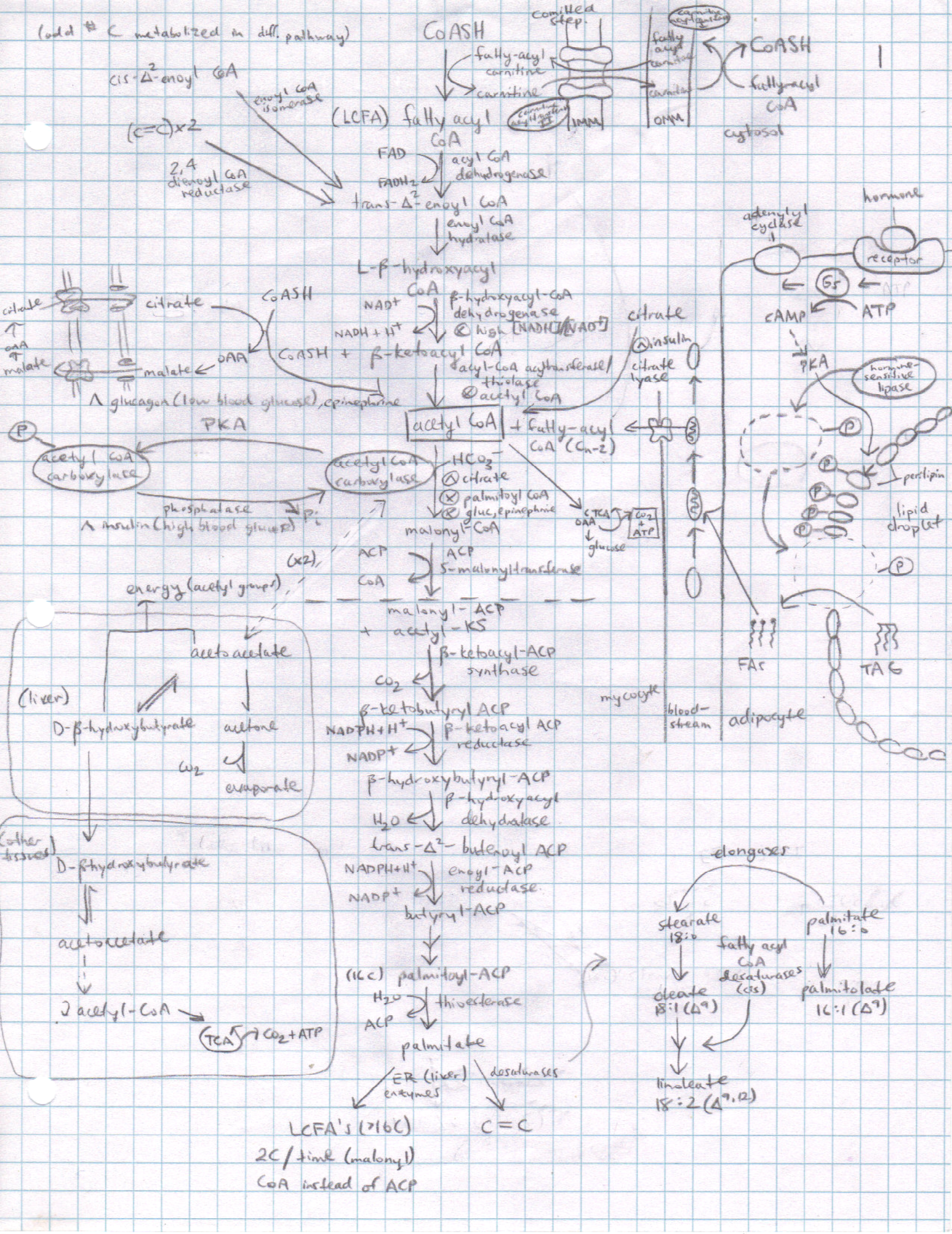
(odd # C metabolized in diff. pathway)
CoASH
comitted step
fatty-acyl carnitine
carnitine
carnitine acyltransferase II
carnitine acyltransferase I
IMM
OMM
fatty acyl carnitine
CoASH
fatty-acyl CoA
cytosol
cis-Δ²-enoyl CoA
enoyl CoA isomerase
(C=C)x2
2,4 dienoyl CoA reductase
(LCFA) fatty acyl CoA
FAD
FADH₂
acyl CoA dehydrogenase
trans-Δ²-enoyl CoA
enoyl CoA hydratase
L-β-hydroxyacyl CoA
NAD⁺
NADH + H⁺
β-hydroxyacyl-CoA dehydrogenase
high [NADH]/[NAD⁺]
β-ketoacyl CoA
acyl-CoA acyltransferase/ thiolase
acetyl CoA
CoASH
citrate
citrate
oAA
malate
malate
oAA
glucagon (low blood glucose), epinephrine
PKA
acetyl CoA carboxylase
phosphatase
Pi
insulin (high blood glucose)
acetyl CoA carboxylase
HCO₃⁻
citrate
palmitoyl CoA
gluc, epinephrine
malonyl-CoA
(x2)
ACP
CoA
ACP S-malonyltransferase
malonyl-ACP
+ acetyl-KS
β-ketoacyl-ACP synthase
CO₂
β-ketobutyryl ACP
NADPH+H⁺
NADP⁺
β-ketoacyl ACP reductase
β-hydroxybutyryl-ACP
H₂O
β-hydroxyacyl dehydratase
trans-Δ²-butenoyl ACP
NADPH+H⁺
NADP⁺
enoyl-ACP reductase
butyryl-ACP
(16C) palmitoyl-ACP
H₂O
ACP
thioesterase
palmitate
ER (liver) enzymes
desaturases
LCFA's (>16C)
2C/turn (malonyl CoA instead of ACP
C=C
energy (acetyl groups)
acetoacetate
(liver)
D-β-hydroxybutyrate
acetone
CO₂
evaporate
(other tissues)
D-β-hydroxybutyrate
acetoacetate
3 acetyl-CoA
TCA
CO₂+ATP
citrate
insulin
citrate lyase
cTCA
oAA
glucose
CO₂ + ATP
mycocyte
blood-stream
adipocyte
hormone
adenylyl cyclase
receptor
Gs
cAMP
ATP
PKA
hormone-sensitive lipase
perilipin
lipid droplet
FAs
TAG
elongases
stearate 18:0
palmitate 16:0
fatty acyl CoA desaturases (cis)
oleate 18:1 (Δ⁹)
palmitolate 16:1 (Δ⁹)
linoleate 18:2 (Δ⁹,¹²)