

ZITRONENSÄURE ZYKLUS

CITRAT / KREBS / TCA

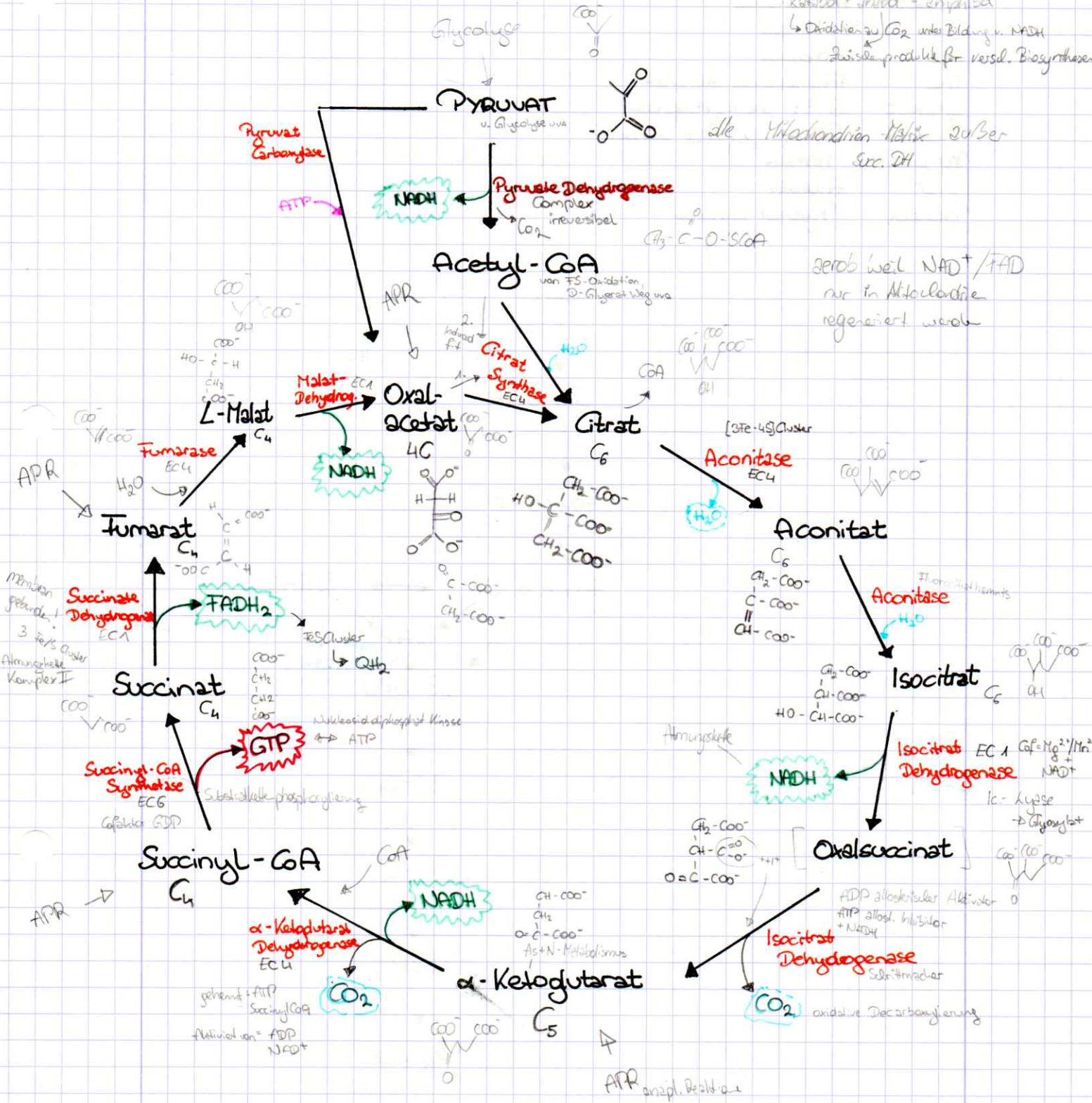
nur unter aeroben Bedingungen

CO₂ nicht aus Acetyl-CoA

katabol + anabol = amphibol

→ Oxidation zu CO₂ unter Bildung v. NADH

Zwischenprodukte für versch. Biosynthesen



katabol: Endoxidation d. Nahrungssstoffe
anabol: stellt Zwischenprodukte bereit

nachgeschaltete Atmungskette: 1 NADH → 3 ATP 2,5
1 FADH₂ → 2 ATP 1,5

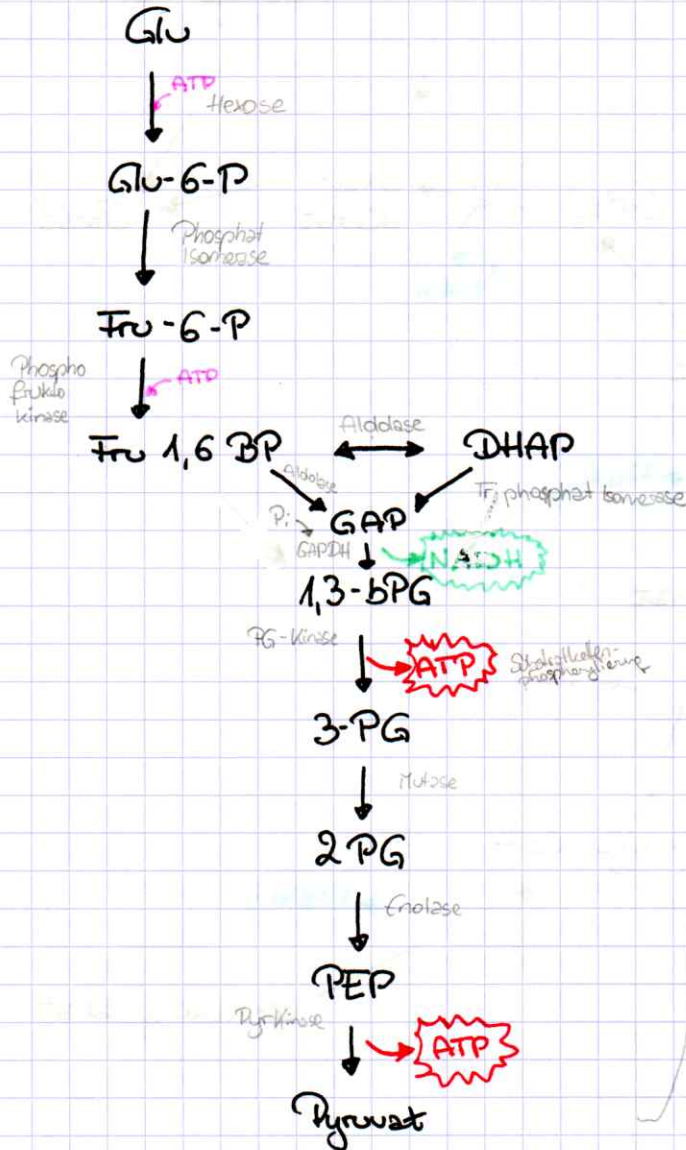
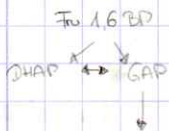
GLYCOLYSE

Hungry
Pirates
Pick
All
The
greatest
Pickled
Pumpkins
ever
Picked

Hexose Hexokinase/Glucokinase $\text{G6P} \leftarrow \text{Mg}^{2+}$ Hemmung d. G6P
Ph. Isomerase
P-Kinase
Aldolase
Triphosphat Isomerase TIM-barrel typische Struktur
G3P Dehydrogenase $\rightarrow \text{NADH}$
Phosphoglycerat Kinase $\text{in Später} + \text{Mg}^{2+}$
Mutase $\text{GAP} \rightarrow 2,3 \text{ Bisphosphoglycerat (Hefe, Mammale)}$ 2 NADH
Endase 2 ATP
Pyruvat Kinase $\text{Mg}^{2+}, \text{K}^{+}$

1. $(3+7) = 10$

alle 3 Kinasen irreversibel
 Glucose-ase =
 Pyr-Garb.
 Fru 1-6 bPase
 Glu 6-P. ase

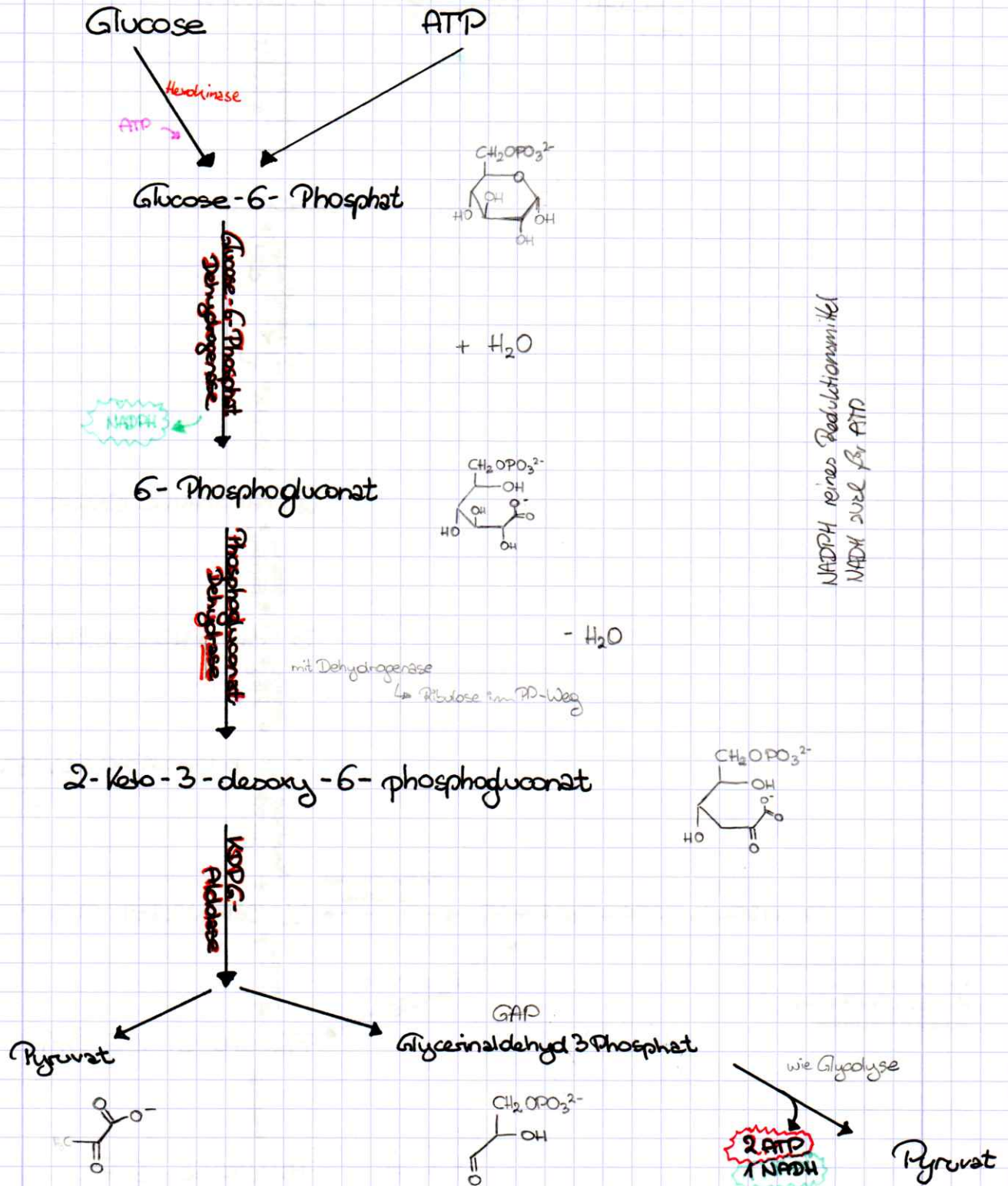


alles
2x

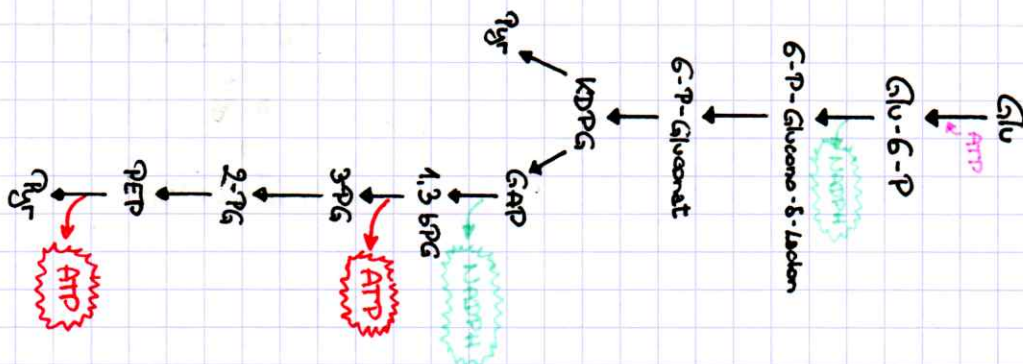
→ Gärung
 → TCA + Atmungskette

KDPG-Weg

Entner-Doudoroff-Weg
Alternative zur Glykolyse (2 ATP)
hier: 1 ATP

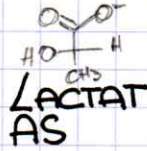


NADPH reines Reduktionsmittel
NADH zu 2 ATP



GLUCONEOGENESE

Glykolyse mit
3x anderen Enzymen
in andere Richtung



Lactat
Dehydrogenase



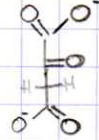
PYRUVAT



Pyruvat
Carboxylase

ATP

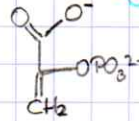
OXALACETAT



PEP
Carboxylase

GTP

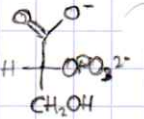
PEP



Enolase

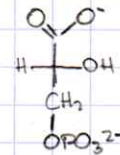
+H₂O

2 PHOSPHOGLYCERAT



Phosphat
mutase

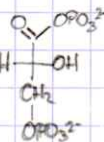
3 PHOSPHOGLYCERAT



Phosphat
kinase

ATP

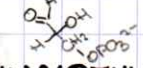
1,3 BIPHOSPHOGLYCERAT



GAP
Dehydrog.

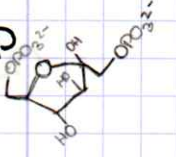
NADH

GLYCERINALDEHYD-3-P



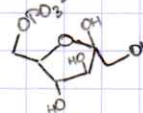
Aldolase

FRUCTOSE 1,6 BI-P



+H₂O

FRUCTOSE-6-P



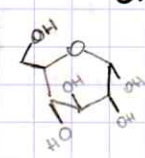
Phosphat
isomerase

GLUCOSE-6-P



GAP
ase

GLUCOSE



Hungry Pirates Pick All the greatest
Hexokinase Triosephosphate kinase Phosphatase Aldolase Triosephosphate isomerase Dehydrogenase

Pickled Pumpkins ever Picked
Phosphoglycerat kinase Mutase Enolase Pyruvat kinase

ADP ATP GTP GDP
-2 ATP +4 ATP

Glykolyse:
alle 3 Kinasen → irreversibel

Pyruvat Carboxylase
Fructose 1,6 Bisphosphatase
Glucose 6 Phosphatase