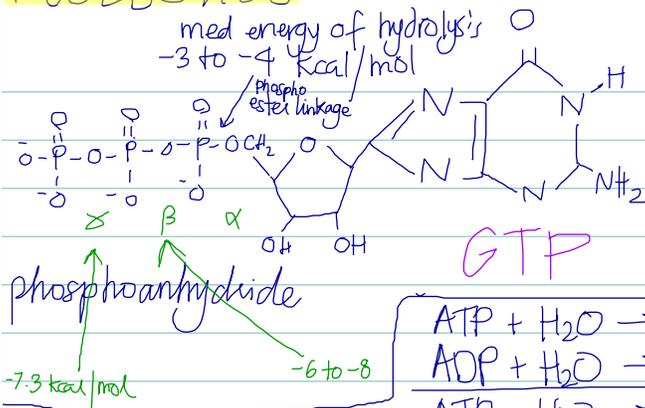


NUCLEOTIDES



Ribonucleotides:

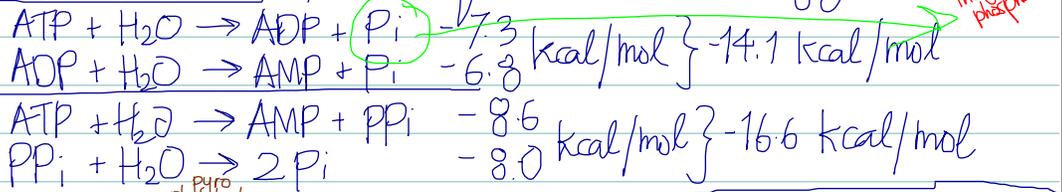
- | | | |
|-----|-----|-----|
| AMP | ADP | ATP |
| GMP | GDP | GTP |
| CMP | CDP | CTP |
| UMP | UDP | UTP |

deoxyribonucleotides:

- | | | |
|------|------|------|
| dAMP | dADP | dATP |
| dGMP | dGDP | dGTP |
| dCMP | dCDP | dCTP |
| TMP | TDP | TTP |

METABOLIC FUNCTION OF MONONUCLEOTIDES

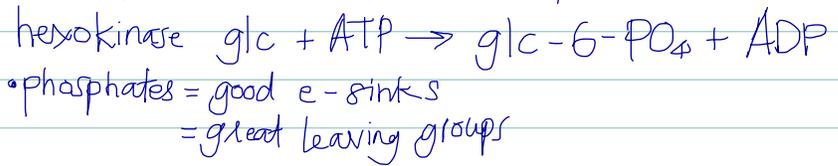
① Source of immediate hi energy:



Ribonucleotides triphosphates

ATP 90%
GTP 9%
UTP + CTP $< 1\%$

② Source of phosphate

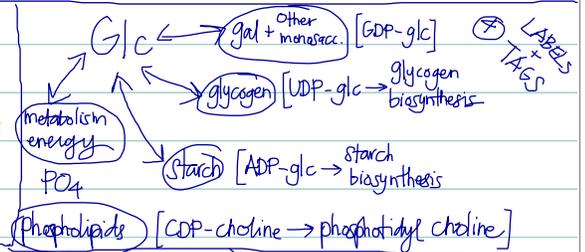
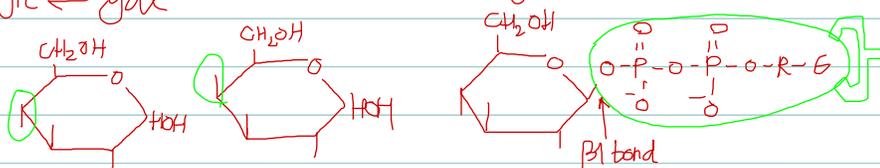


③ Handles on metabolites

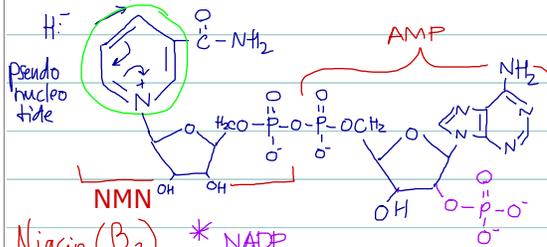
- ↳ better grip + enzymes
- ↳ enlarges the topology of binding

$glc \rightleftharpoons gal$

$GDP-glc \rightleftharpoons GDP-gal$



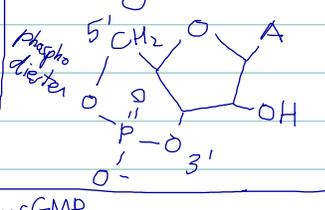
NAD⁺ (nicotinamide adenine dinucleotide)



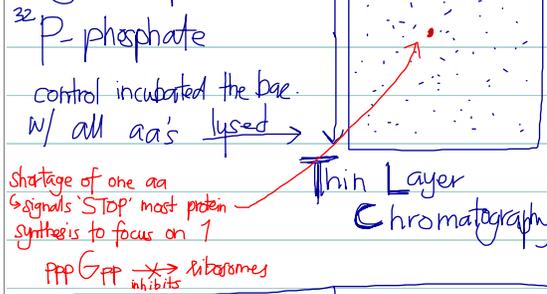
⑤ INTRACELLULAR MESSENGER

- extracellular mess.
- ↳ insulin
 - ↳ glucagon
 - ↳ adrenalin
- don't enter cells
- peptide hormone
- catecholamine

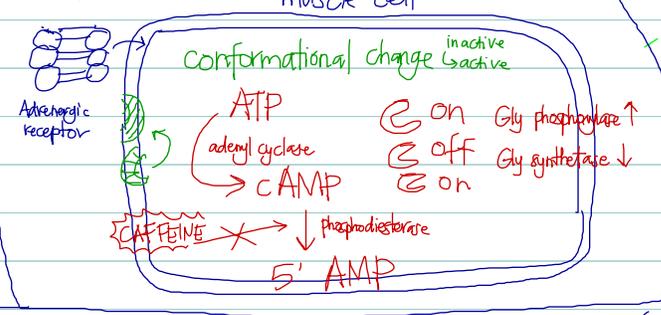
3' 5' cyclic AMP



Magic Spot



Adrenalin



VITAMINS

- exogenous substances needed for normal health & reprod.
- A: Sterol (lipid soluble)
 - B₁₋₁₂: Nitrogen-containing small organic aqueous soluble molecules

PPP A auxin plant growth hormone

⑥ Precursors to polynucleotides

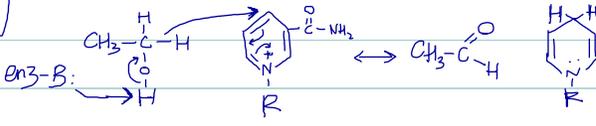
dATP, dGTP, dCTP, TTP \rightarrow DNA poly.

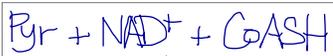
ATP, GTP, CTP, UTP \rightarrow RNA poly

C: small organic aqueous soluble (but no N)

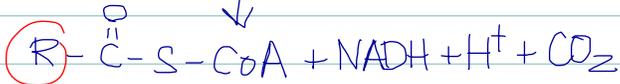
D, E, K: Lipid soluble

H

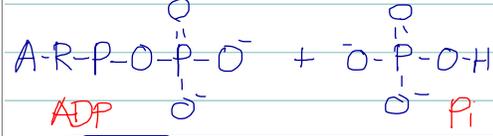
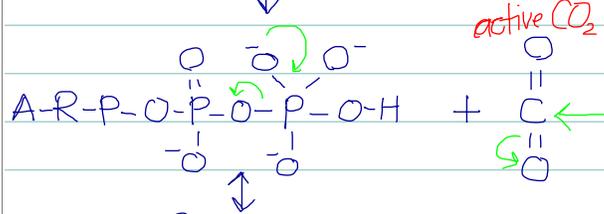
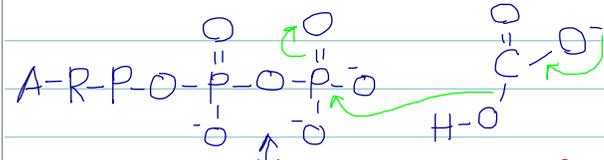




α ketoglutarate dehydrogenase

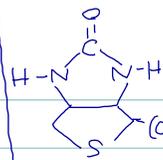


Acetyl-S-CoA carboxylase



Transcarboxylase Rxn

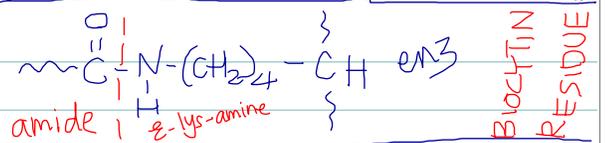
BIOTIN



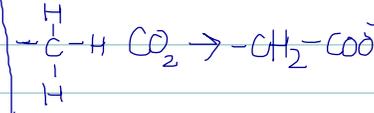
enzyme-bound covalent

Produced by gut bacteria

deficiency due to raw egg white consumption
 ↳ avidin binds biotin 10¹⁰ fold



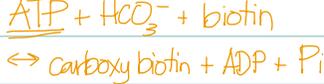
CARBOXYLATION



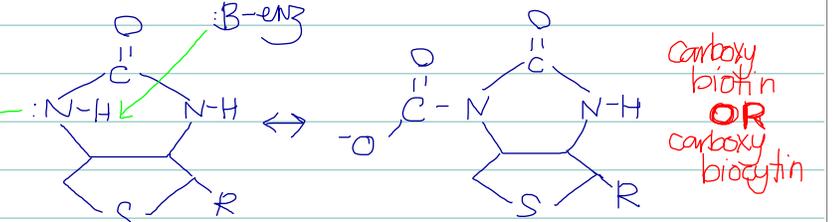
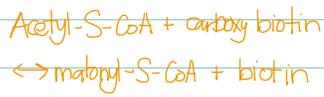
1 enzyme complex

2 enzyme actions

① Cocarboxylase
 - carboxylates biotin



② Transcarboxylase
 -COO⁻ → acceptor biotin → substrate



Different 4 every 4 different carboxylase

1 of the subs. removes CO2 from biotin