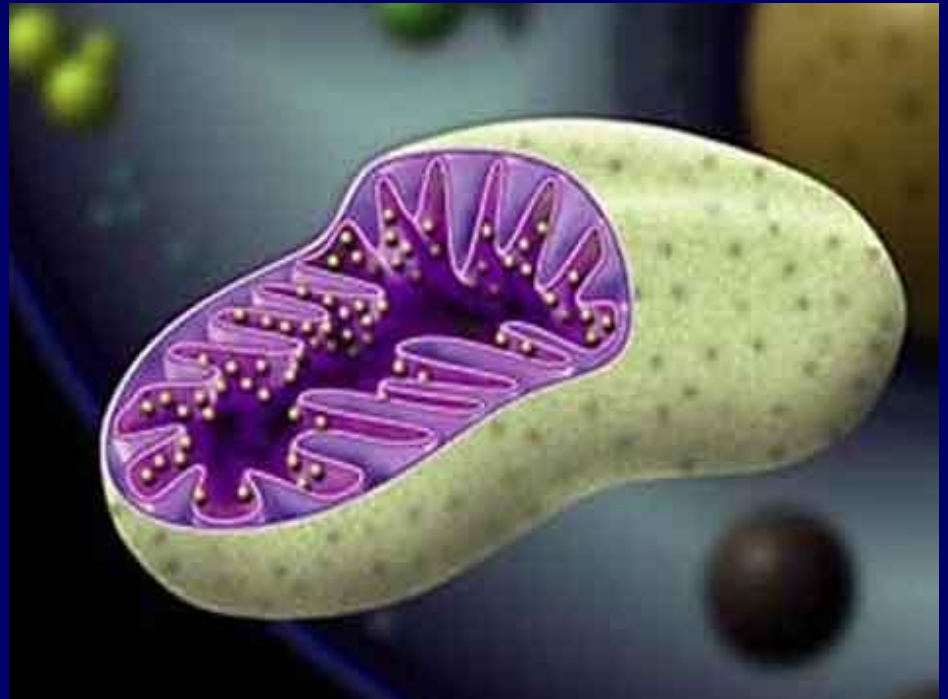
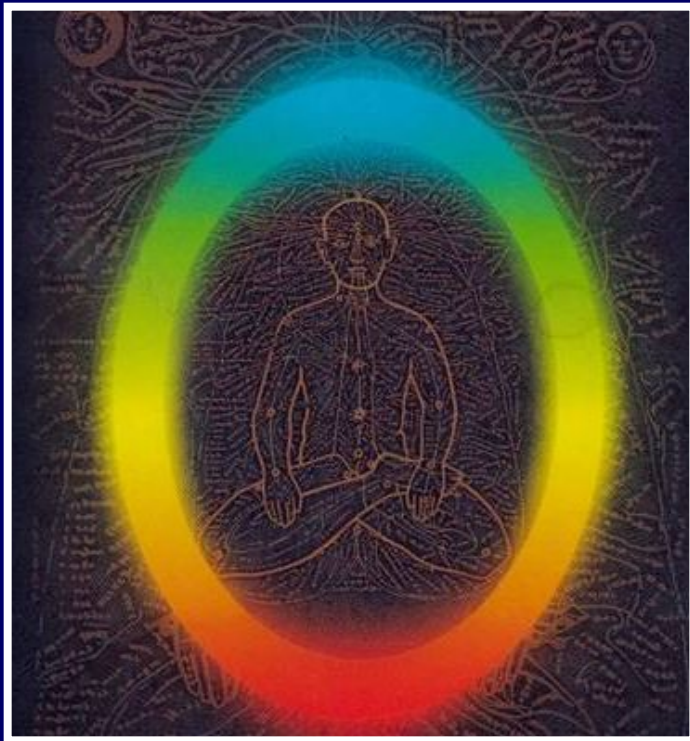


LA NOTION DE CATABOLISME ET D'ANABOLISME. LA BIOENERGETIQUE. LA CHAINE MITOCHONDRIALE DE TRANSFERT D'ELECTRONS.



LE CATABOLISME DES SUBSTANCES ALIMENTAIRES

LIPIDES

**ACIDES
GRAS**

GLYCERINE

GLUCIDES

MONOSACCHARIDES

PROTEINES

ACIDES AMINES

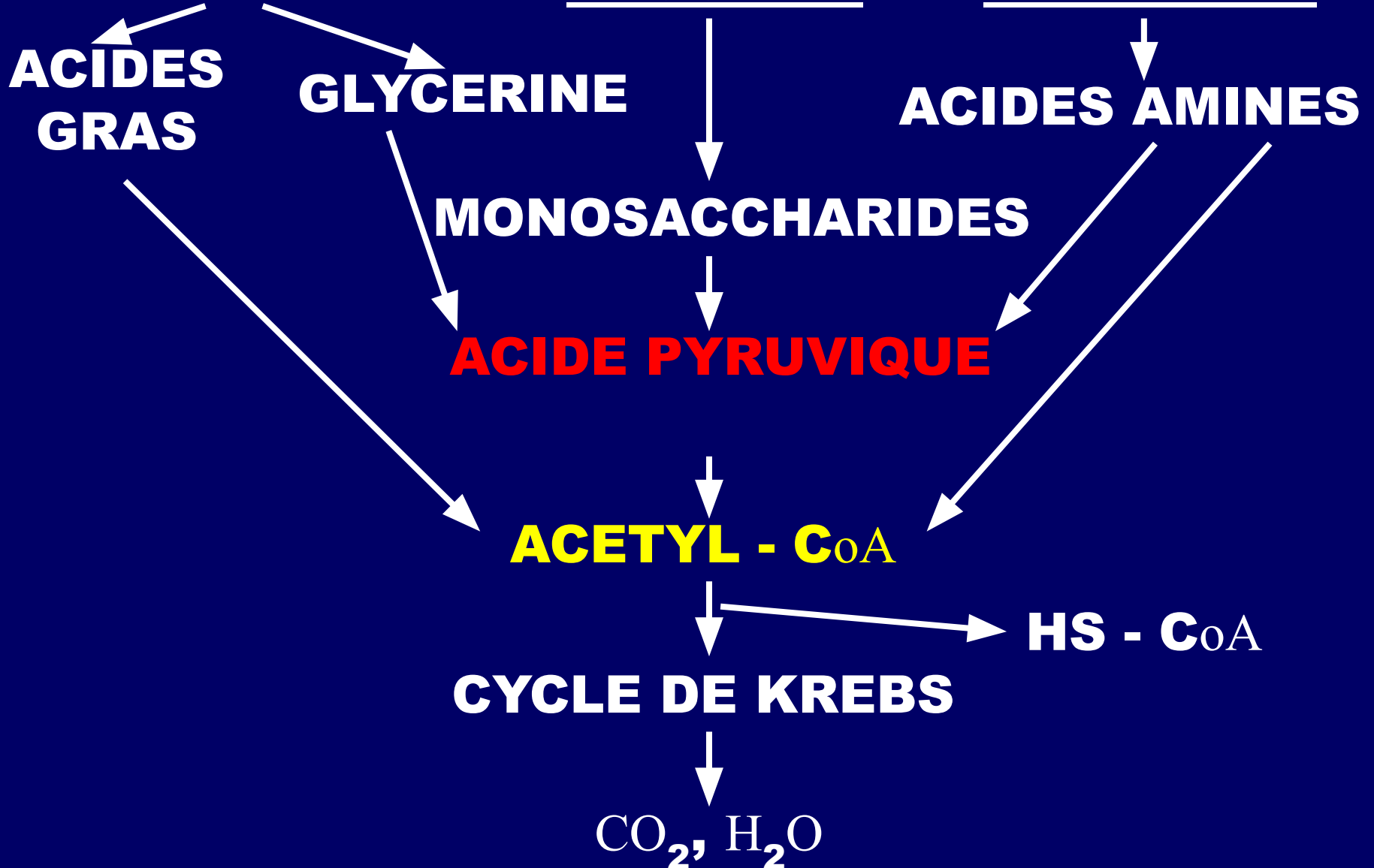
ACIDE PYRUVIQUE

ACETYL - CoA

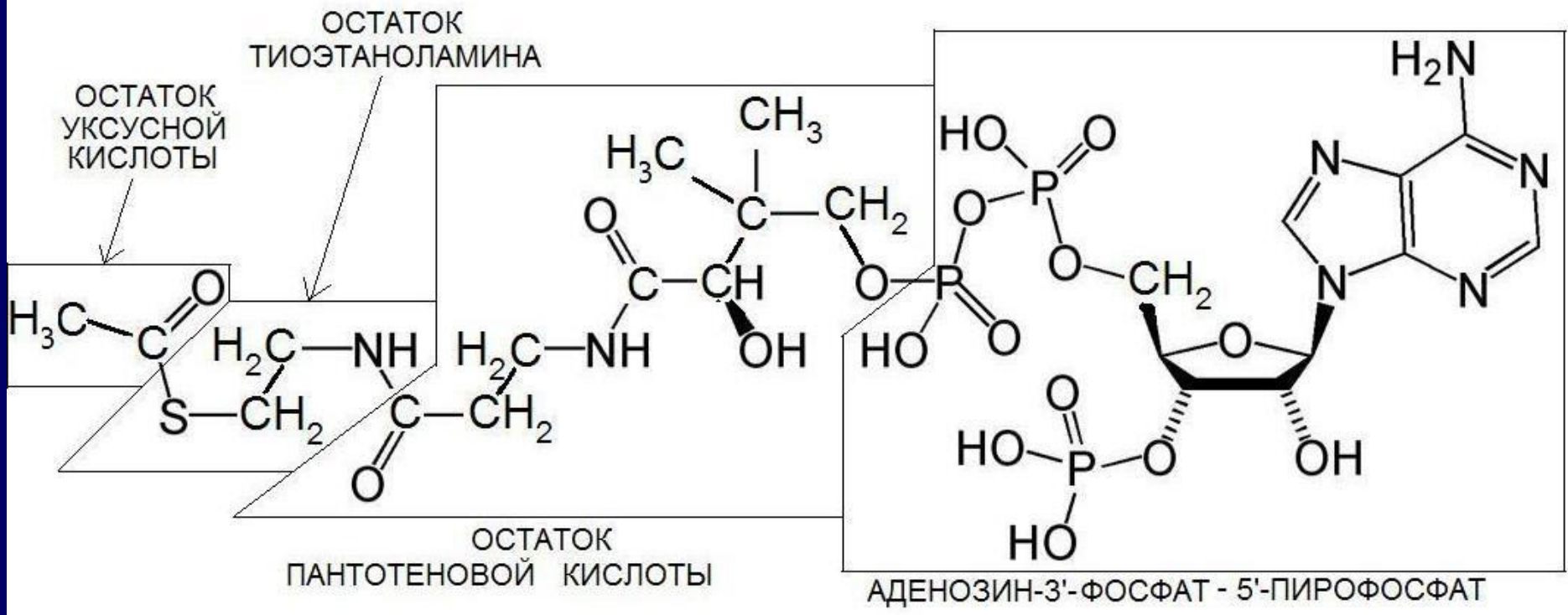
HS - CoA

CYCLE DE KREBS

CO₂, H₂O



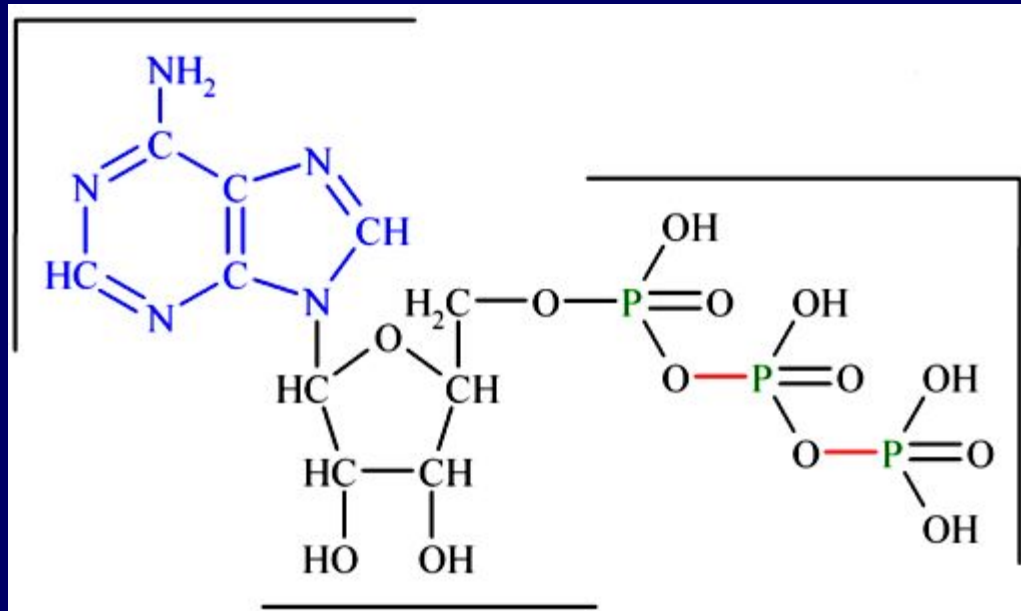
LA MOLECULE D'ACETYL-CoA



LES COMPOSES MACROERGSIQUES

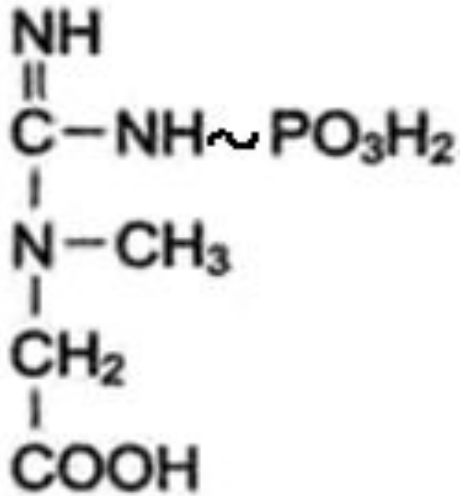
ADENINE

**3
RESIDUS
DE
 H_3PO_4**

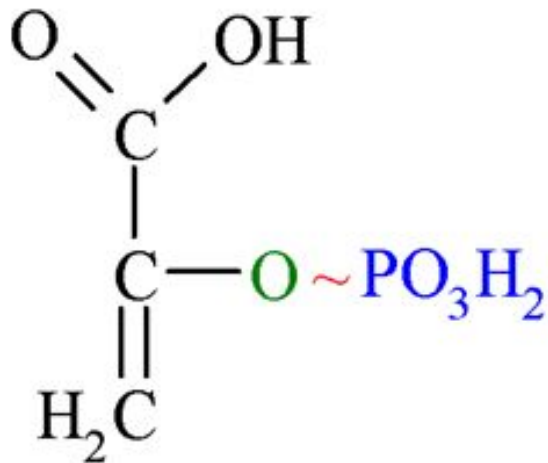
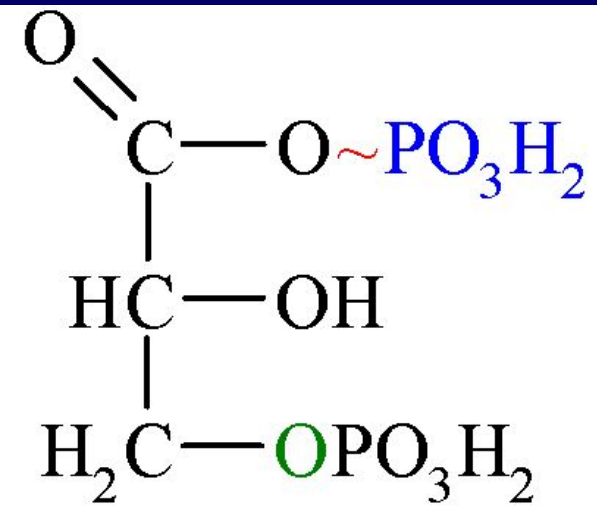


RIBOSE

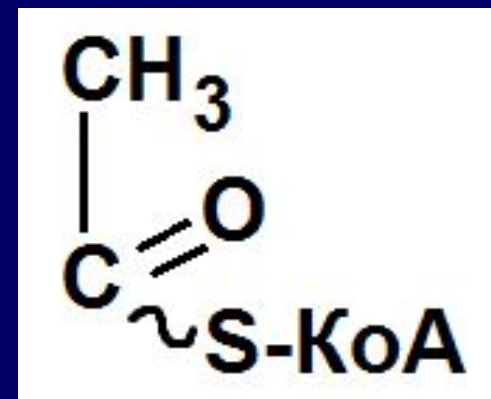
ATP



PHOSPHOCREATINE 1,3-BIPHOSPHOGLYCERATE

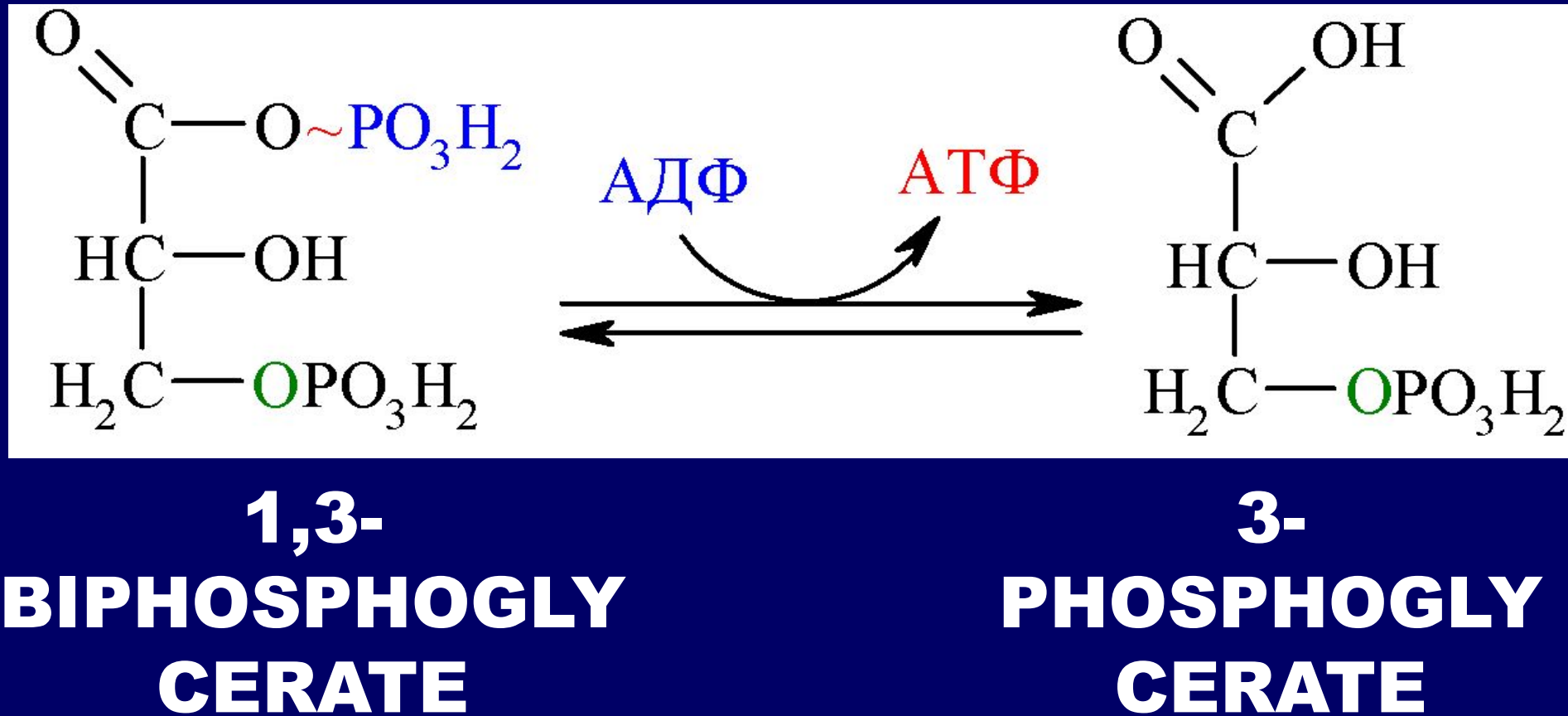


PHOSPHOENOLPYRUVATE



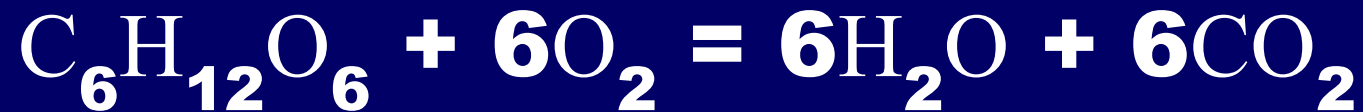
ACETYL-CoA

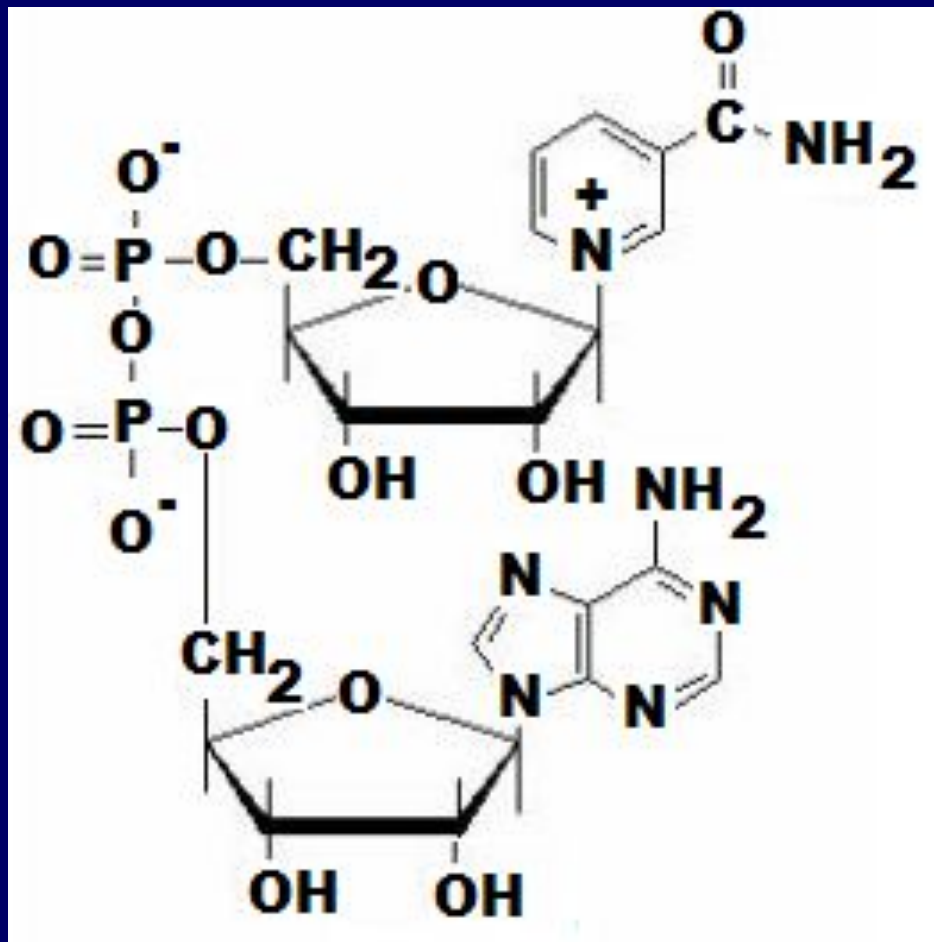
LA PHOSPHORYLATION AU NIVEAU DU SUBSTRAT



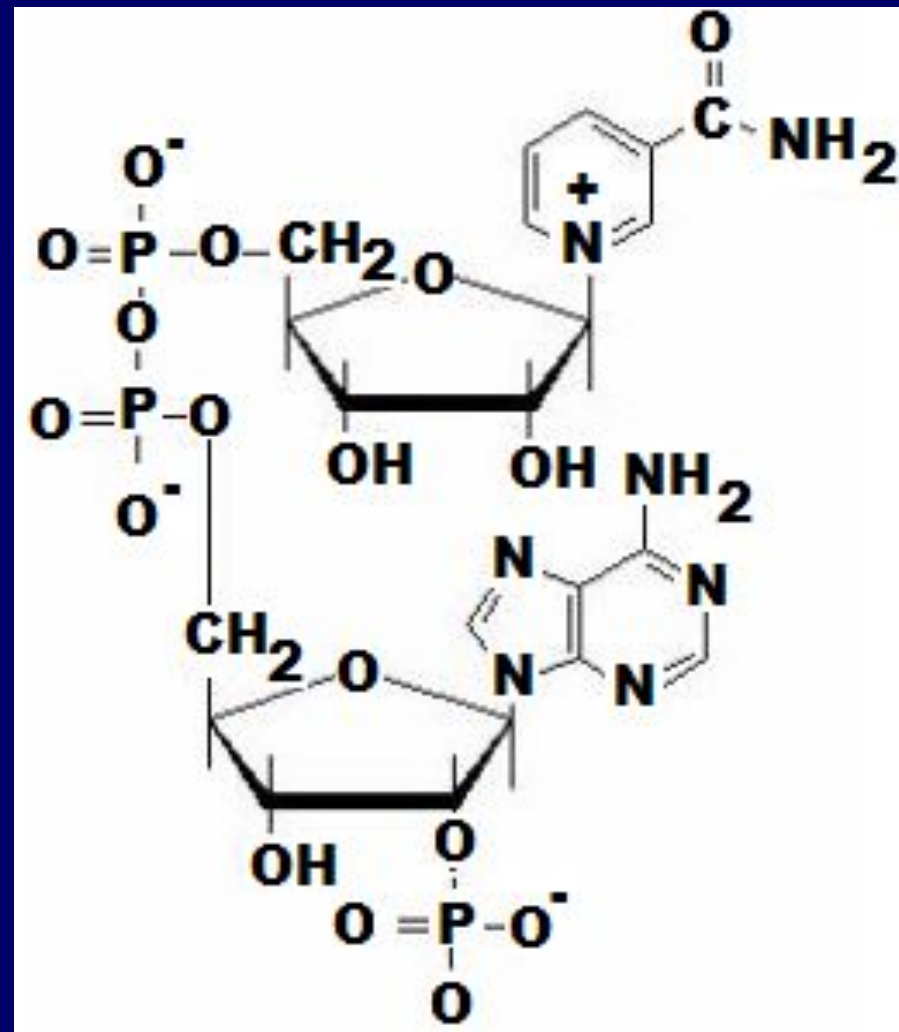
ANTOINE LAURENT LAVOISIER



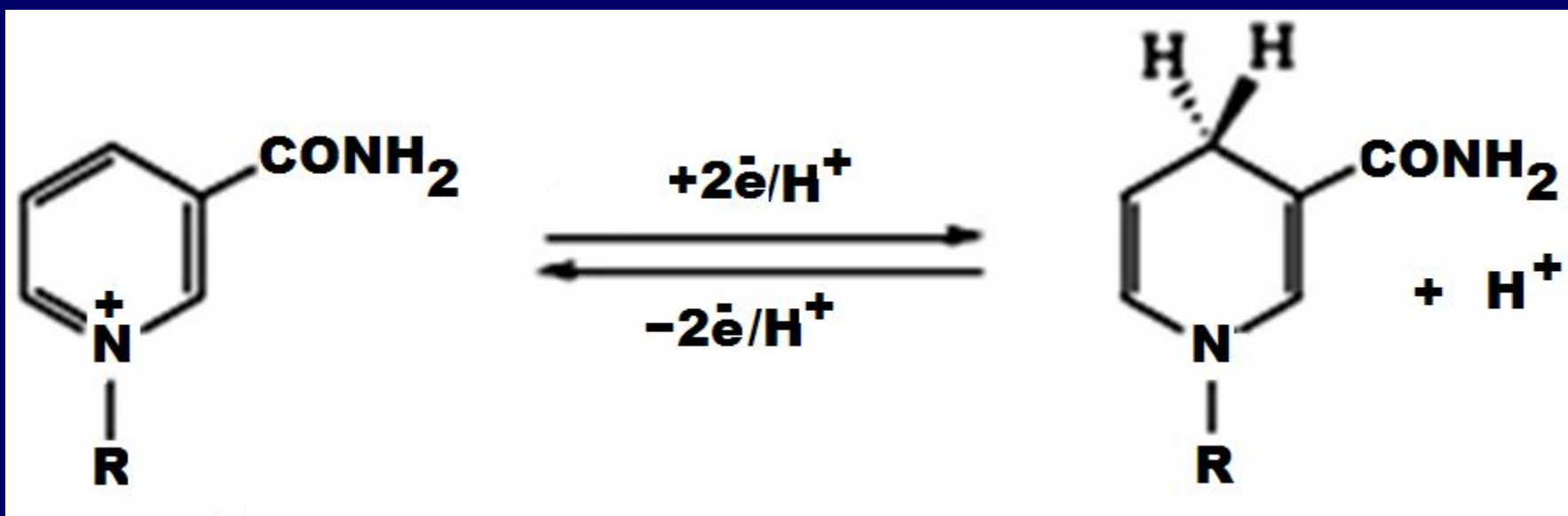




NAD⁺

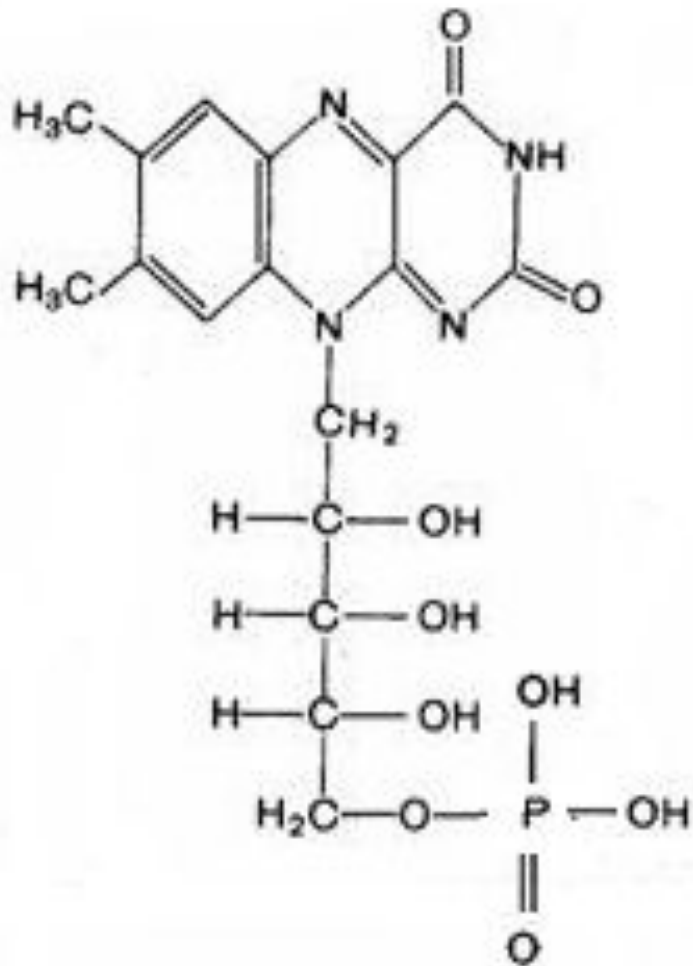


NADP⁺

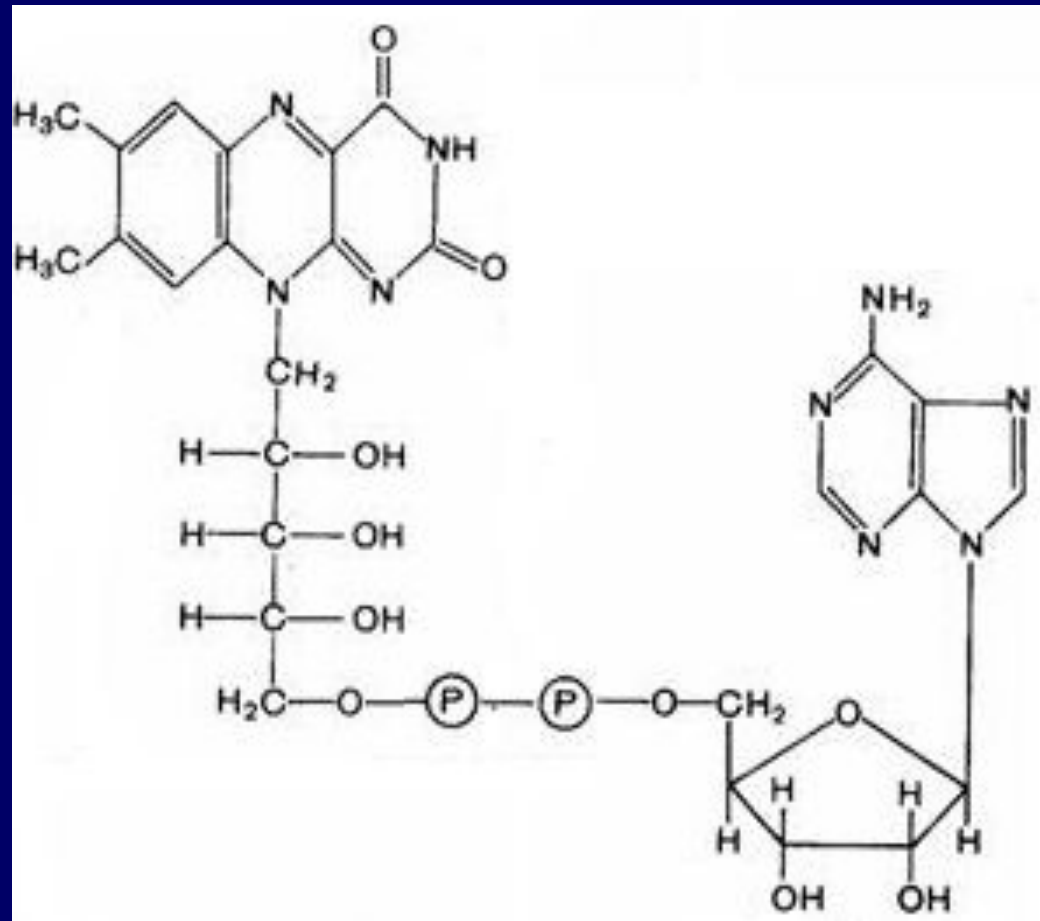


NAD⁺
FORME
OXYDEE

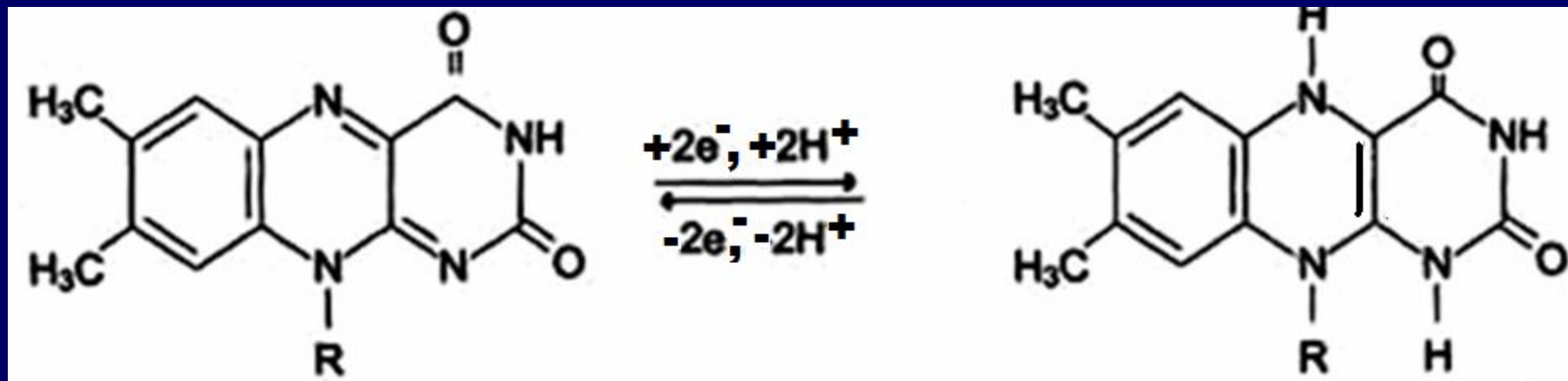
NADH⁺
FORME REDUITE



FMN



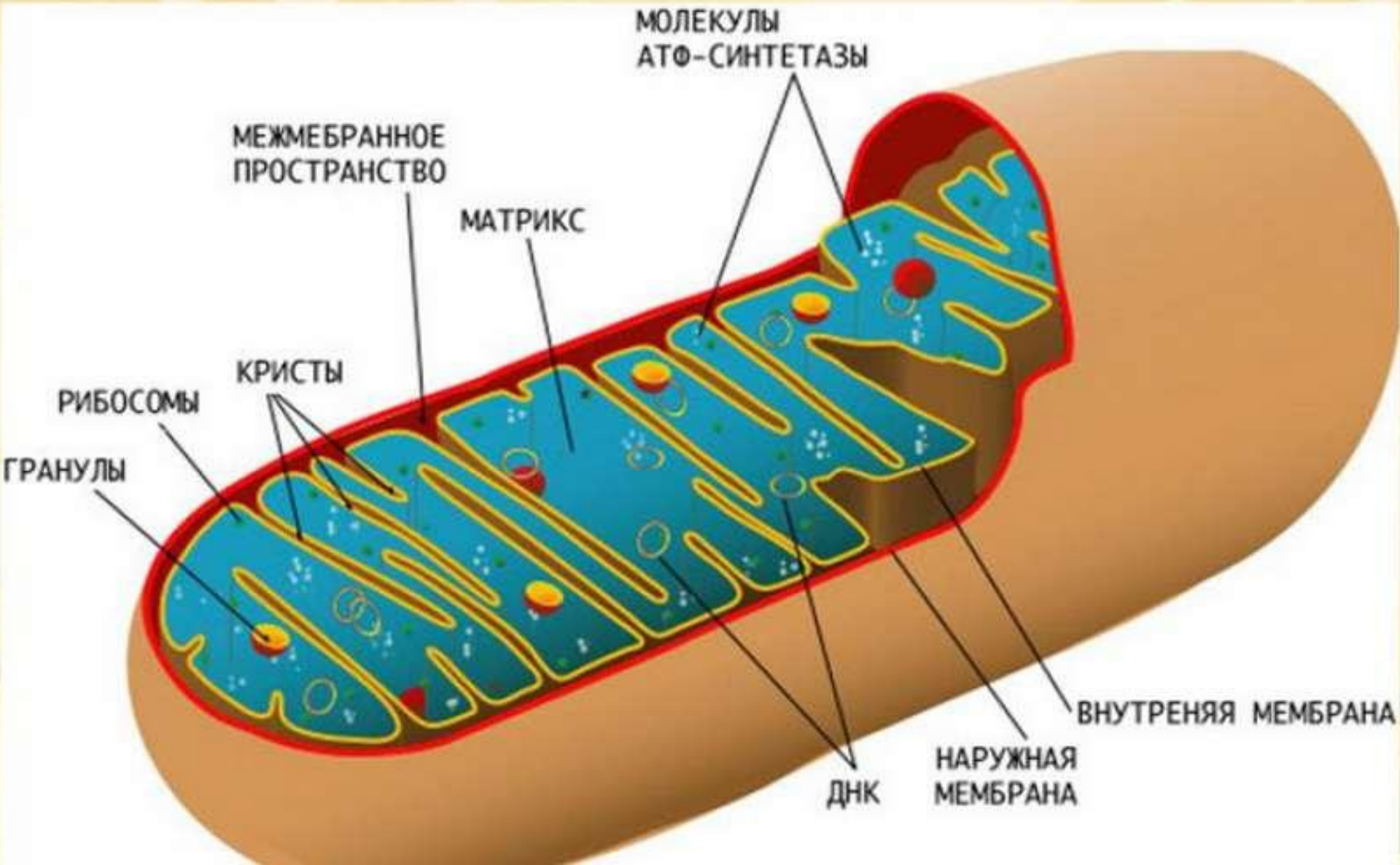
FAD



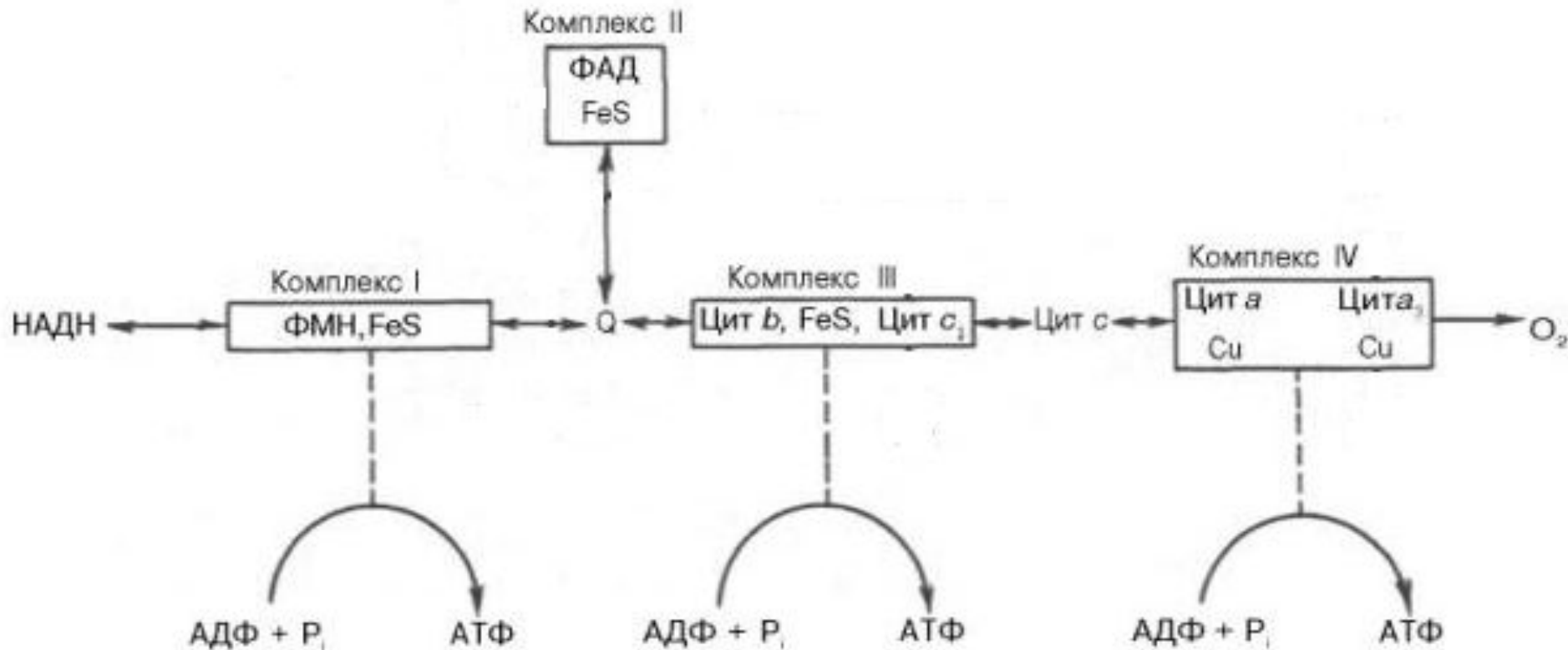
FAD
FORME
OXYDEE

FADH₂
FORME REDUITE

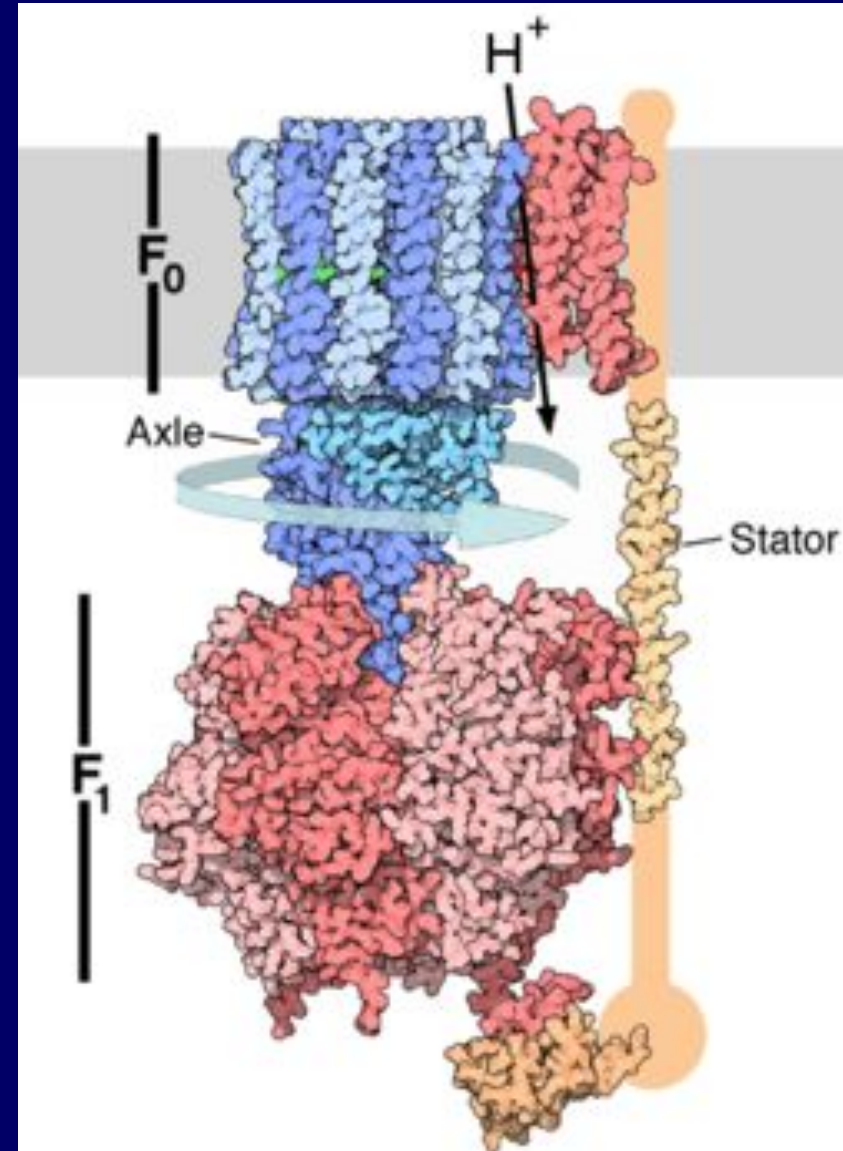
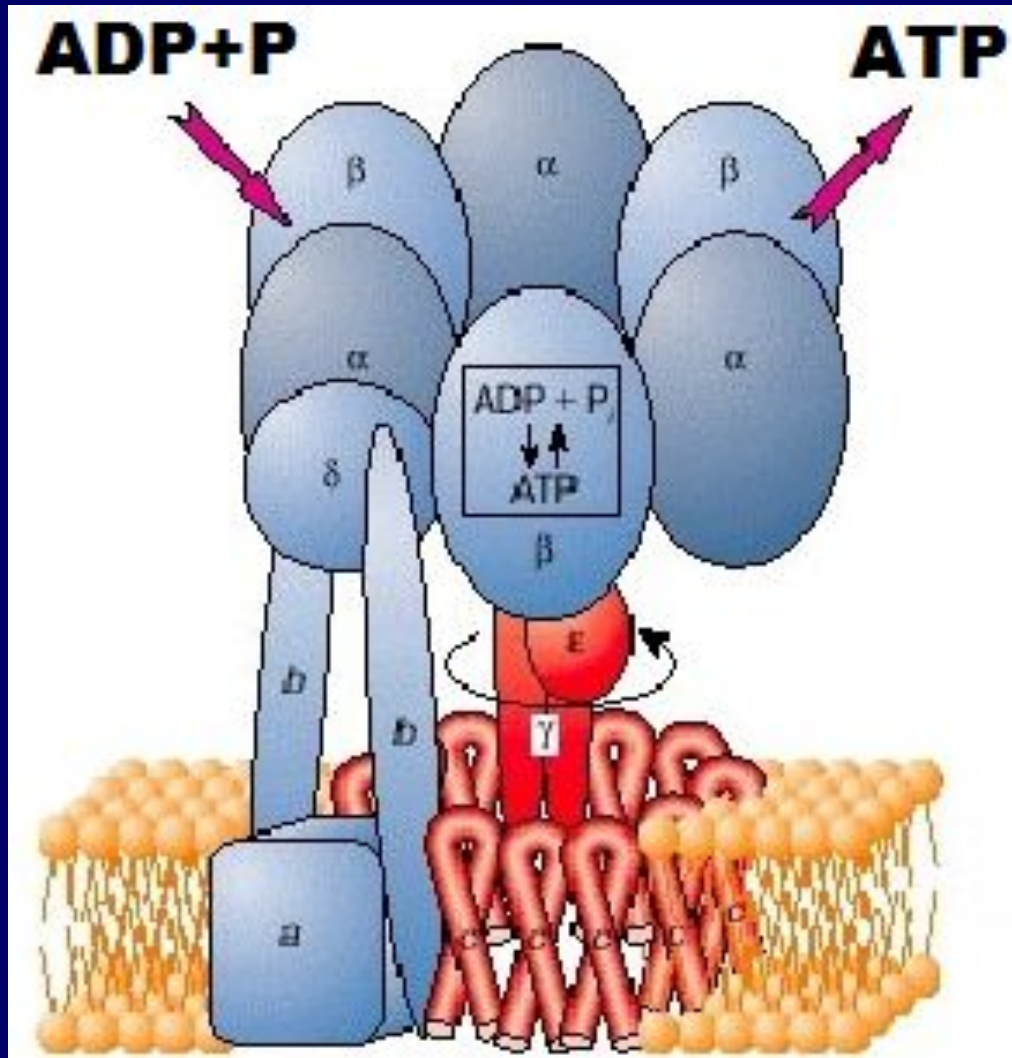
LA STRUCTURE DE LA MITOCHONDRIE



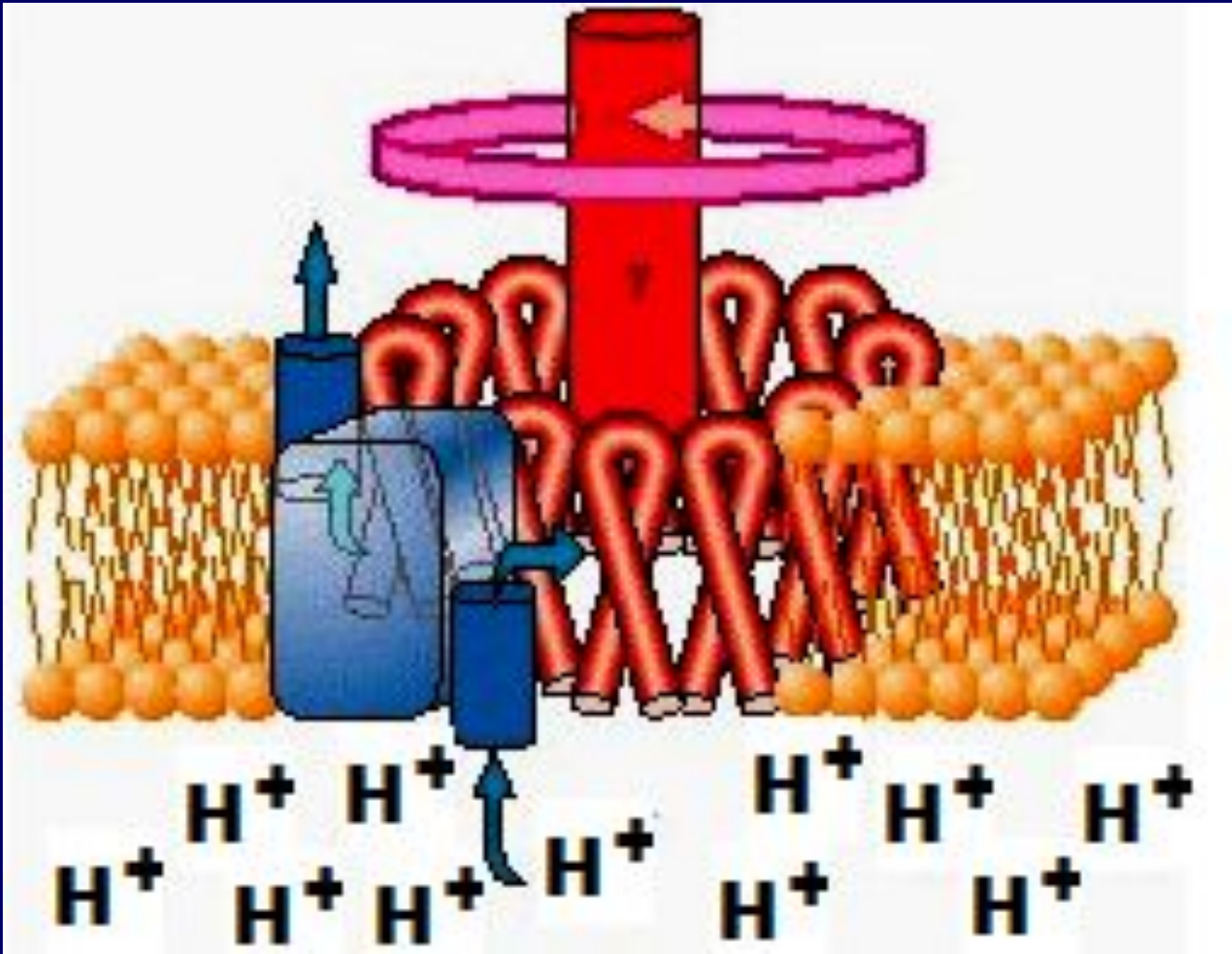
LA CHAÎNE RESPIRATOIRE DES MITOCHONDRIES



LA STRUCTURE DE L'ATP-SYNTHASE



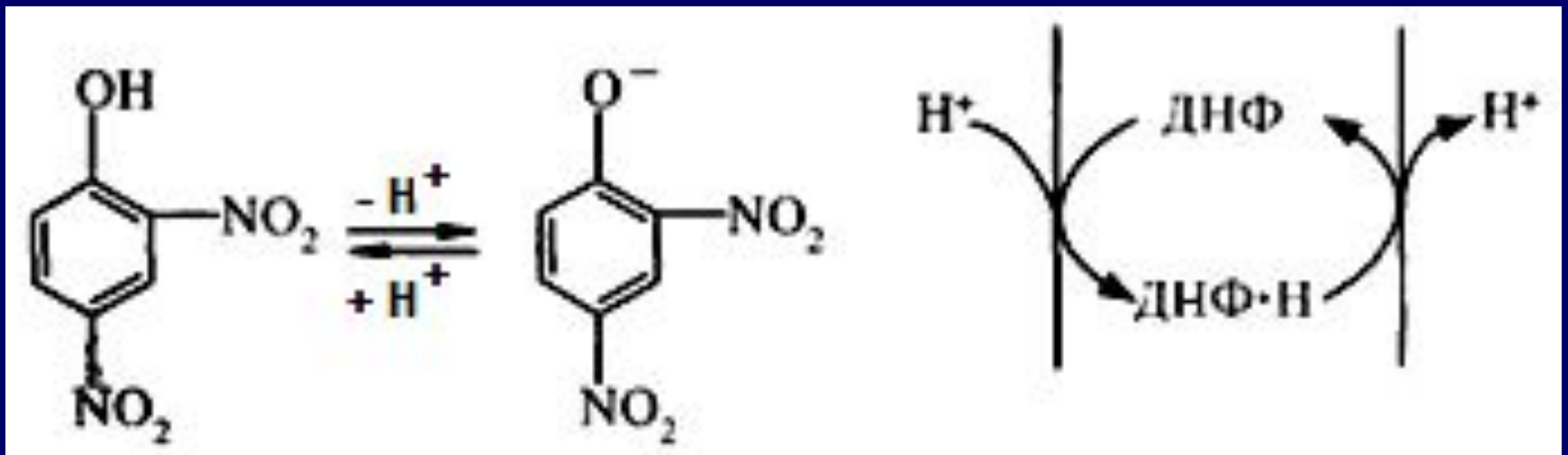
LE TRANSFERT DES PROTONS PAR L'ATP-SYNTHASE



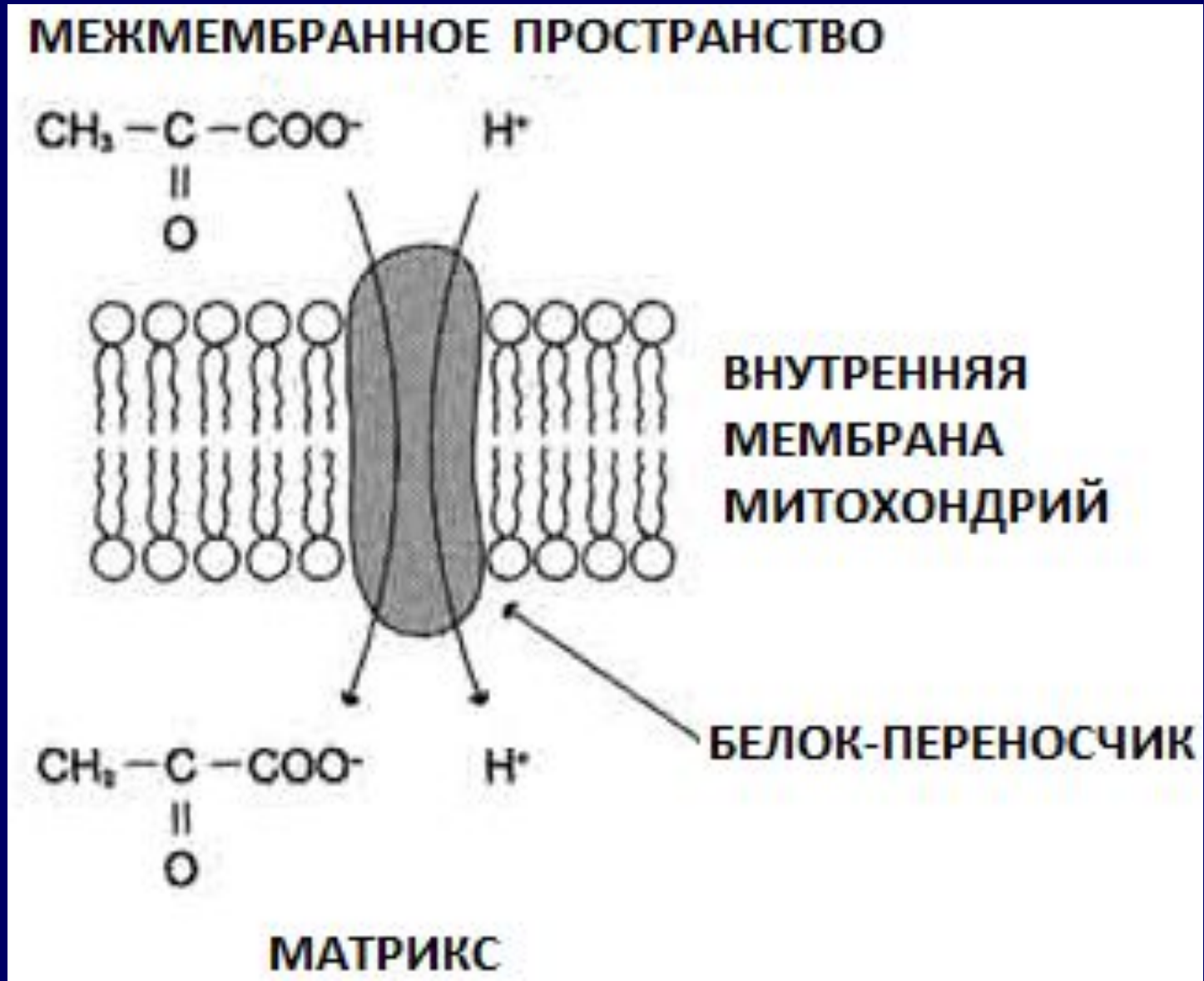
PETER DENNIS MITCHELL



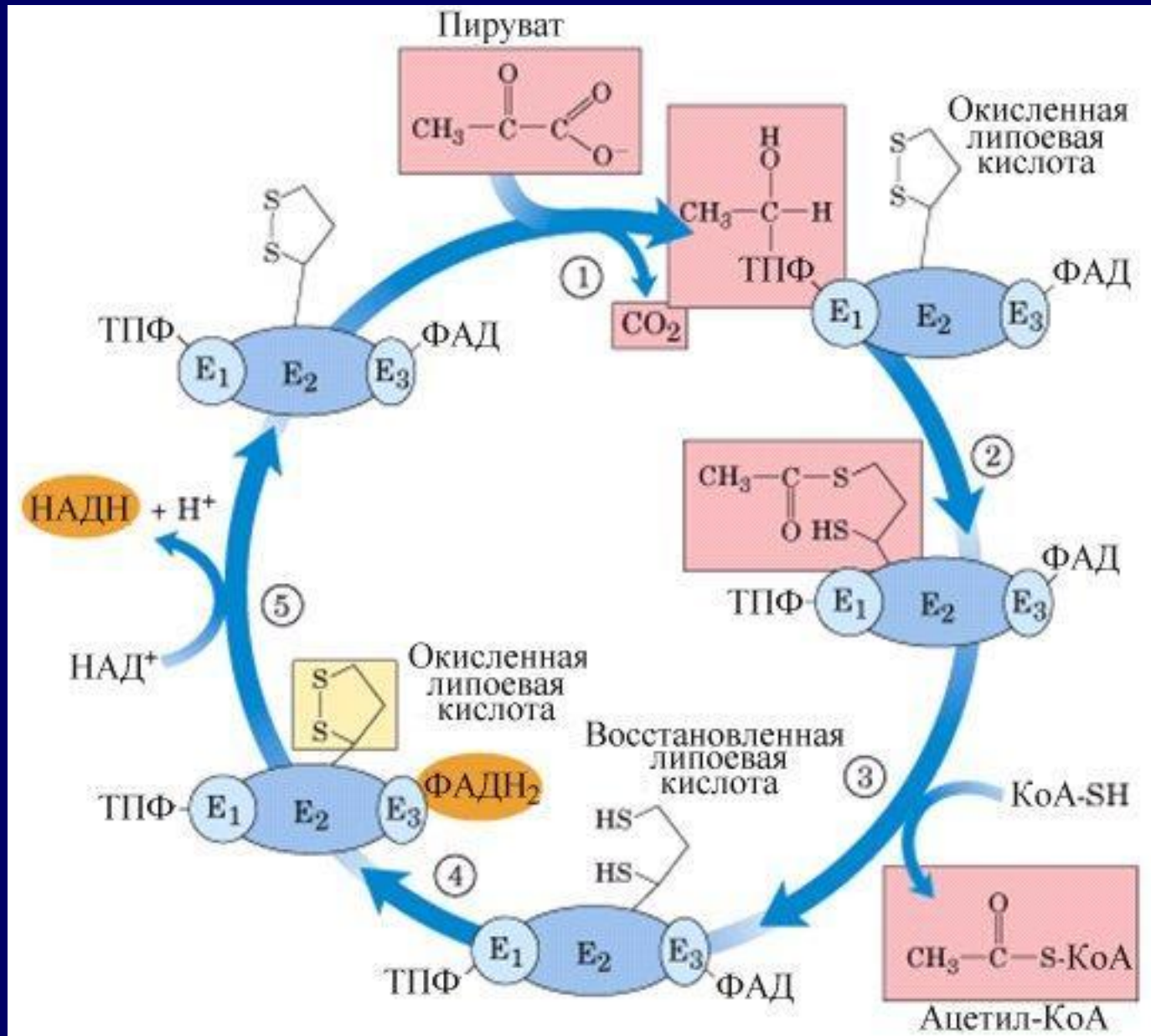
LA SEPARATION DE LA RESPIRATION ET DE LA PHOSPHORYLATION A L'EXEMPLE DU DINITROPHENOL

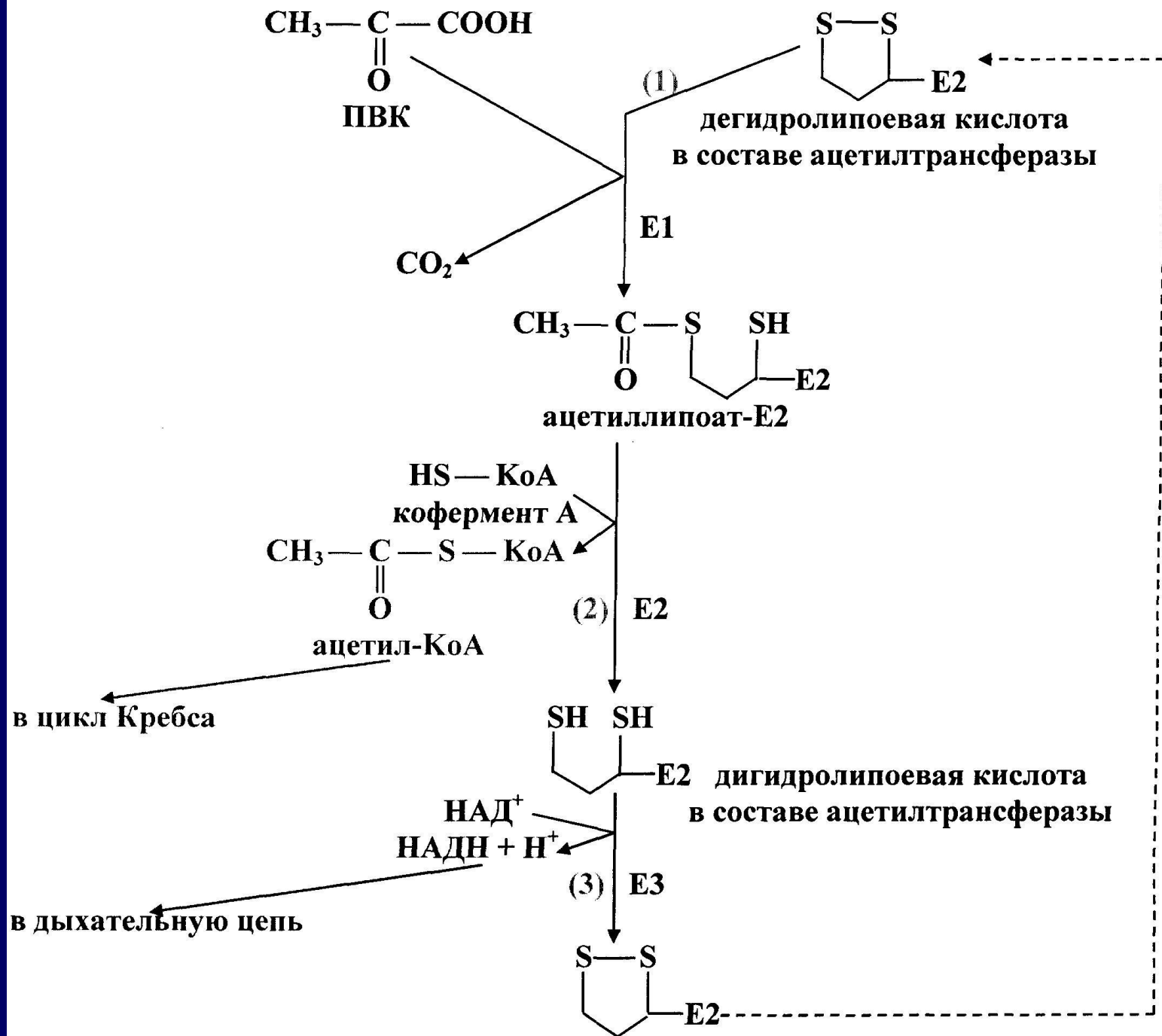


LE TRANSPORT D'ACIDE PYRUVIQUE DANS LA MITOCHONDRIE



LA DECARBOXYLATION OXYDATIVE DE L'ACIDE PYRUVIQUE



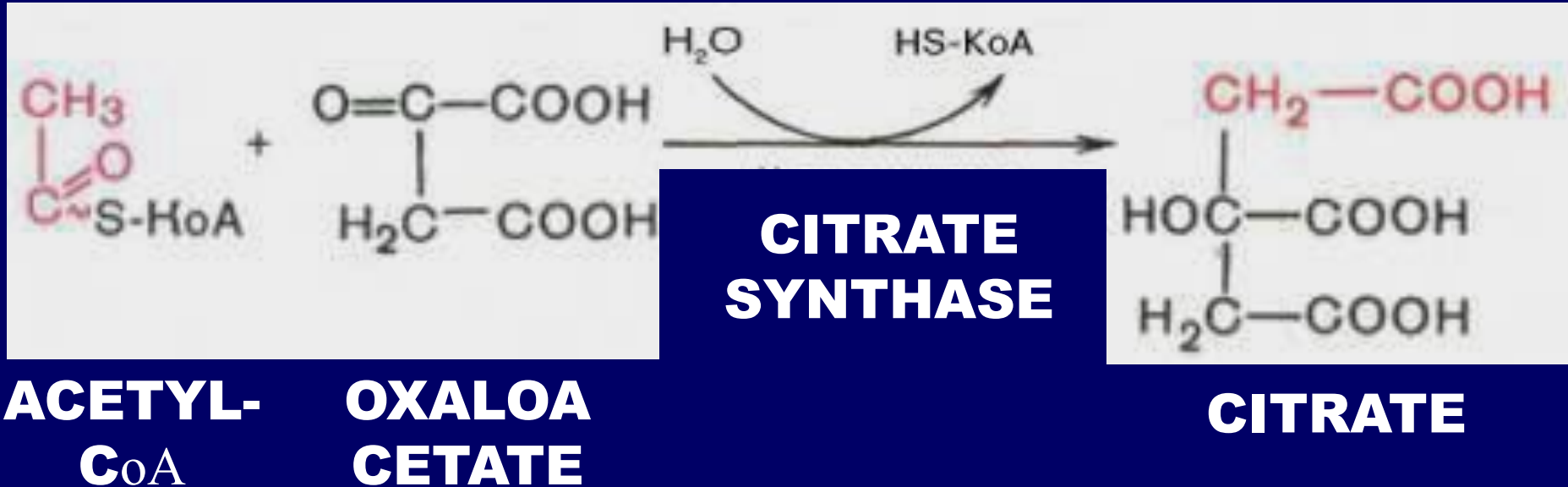


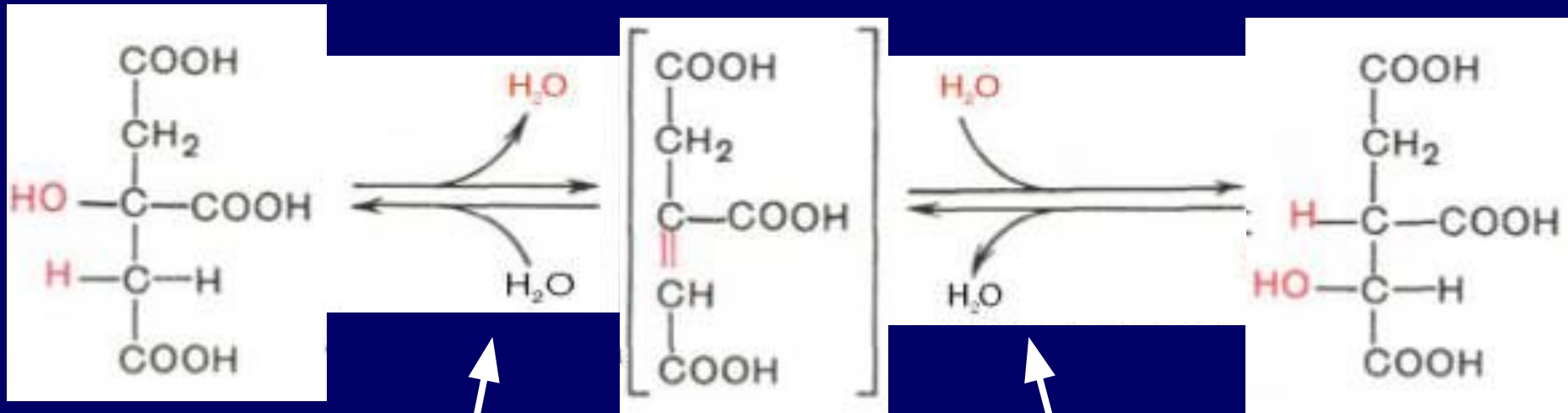


**En 1953 H. Krebs
a reçu le prix
Nobel pour la
decouverte du
cycle d'acides
tricarboxyliques**

Hans Krebs

LES REACTIONS DU CYCLE DE KREBS





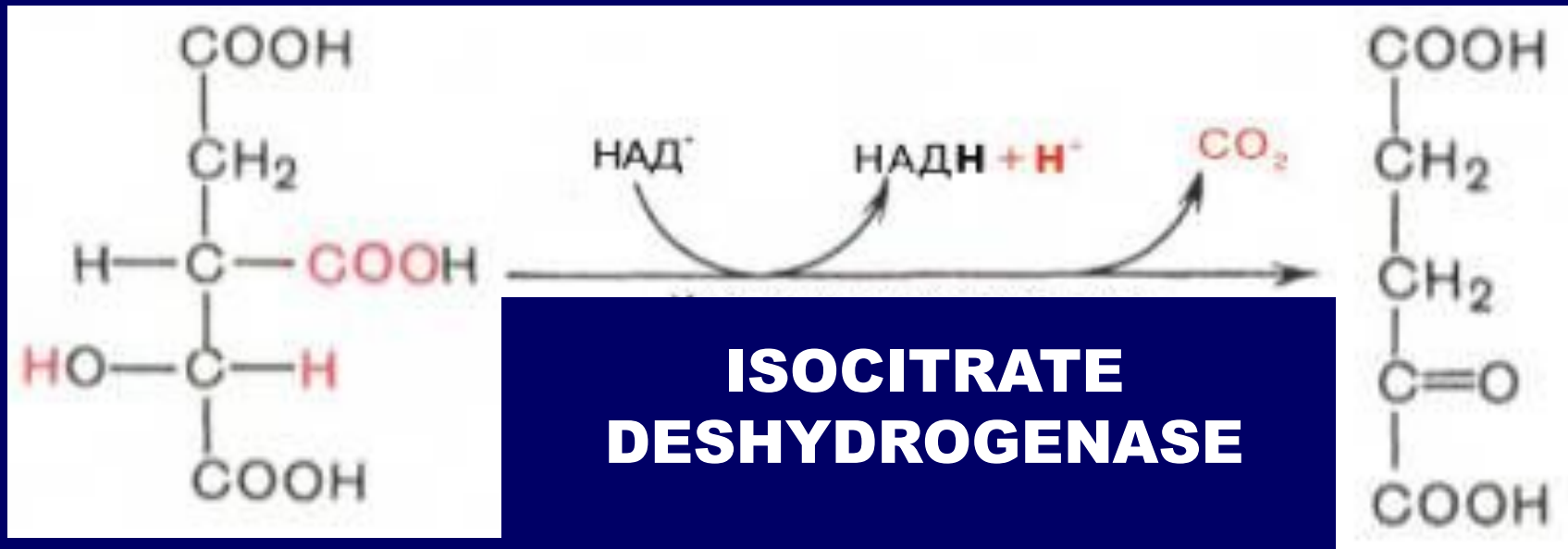
CITRATE

CIS-ACONITATE

ISOCITRATE

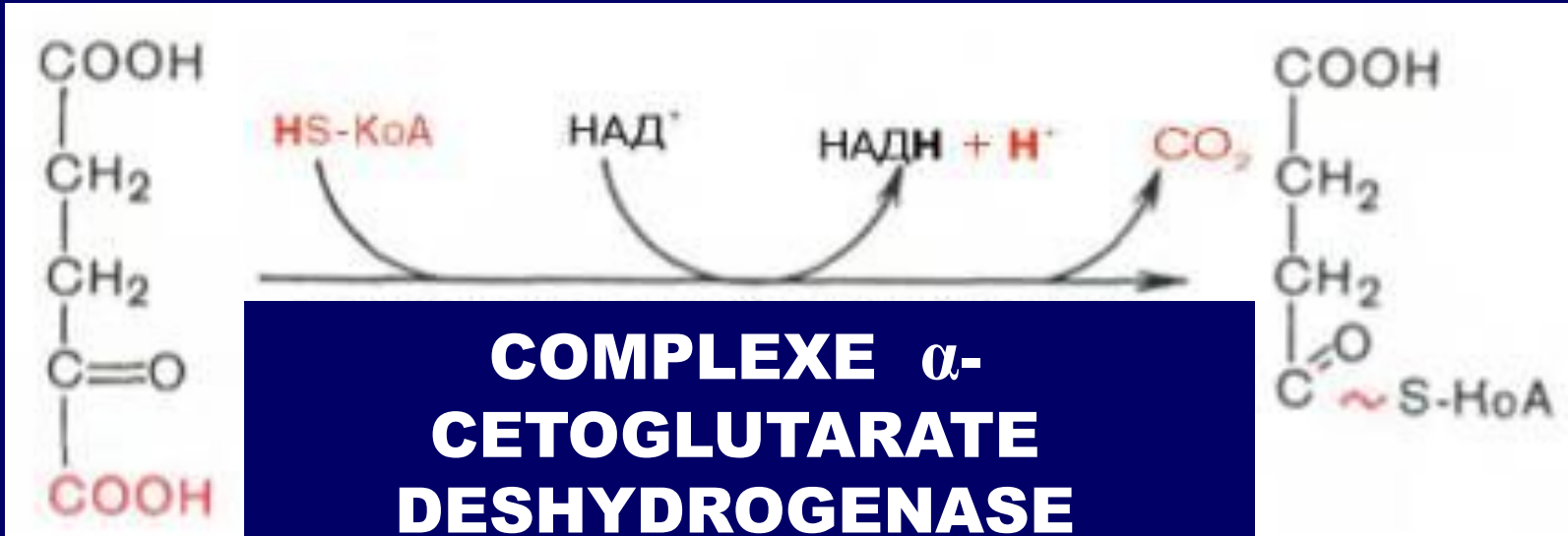
**ACONITATE
HYDRATASE**

**ACONITATE
HYDRATASE**



ISOCITRATE

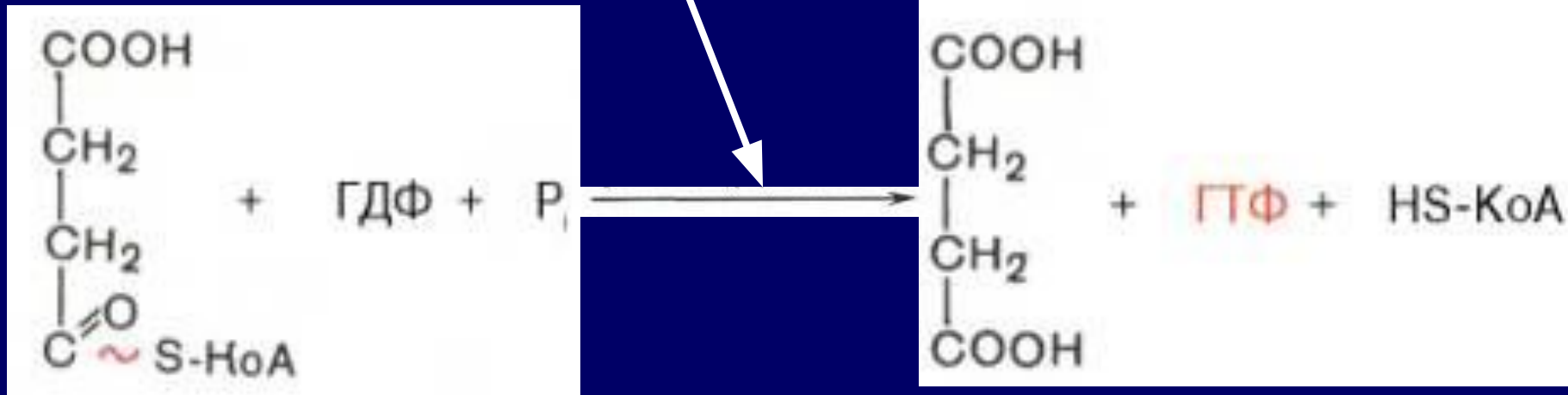
α -CETOGLUTARATE



α - CETOGLUTARATE

SUCCINYL- CoA

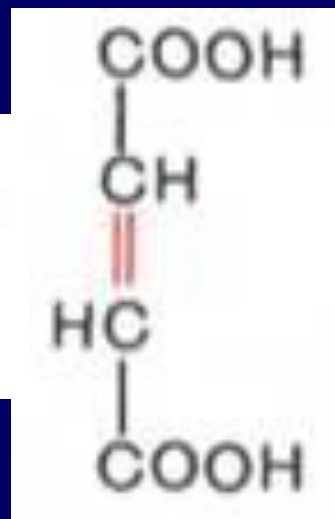
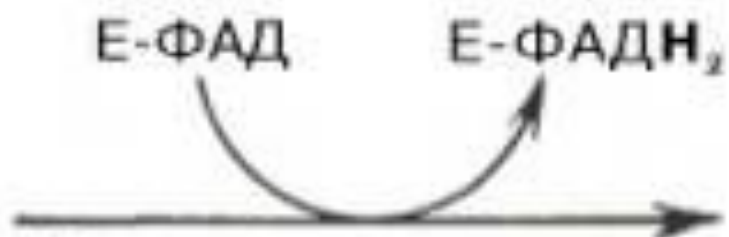
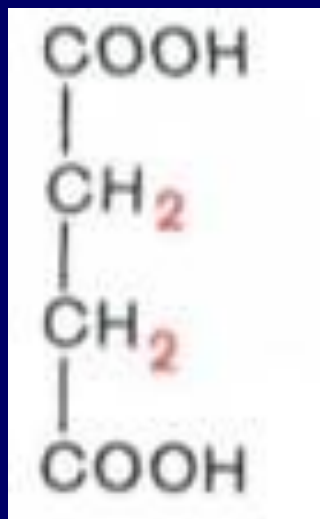
SUCCINYL-CoA SYNTHETASE



SUCCINYL-CoA

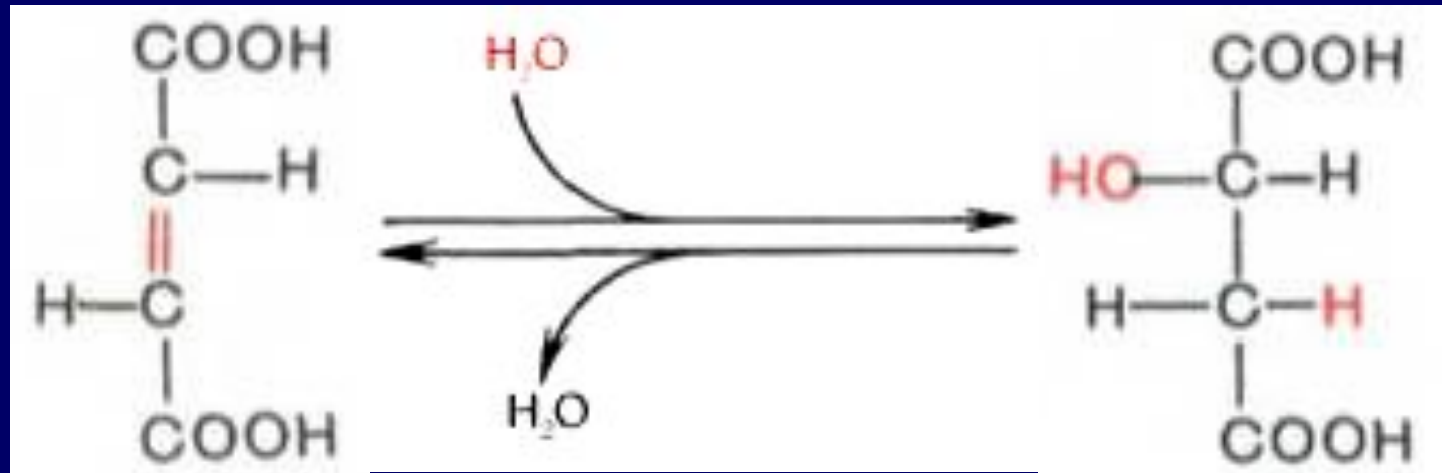
SUCCINATE





SUCCINATE

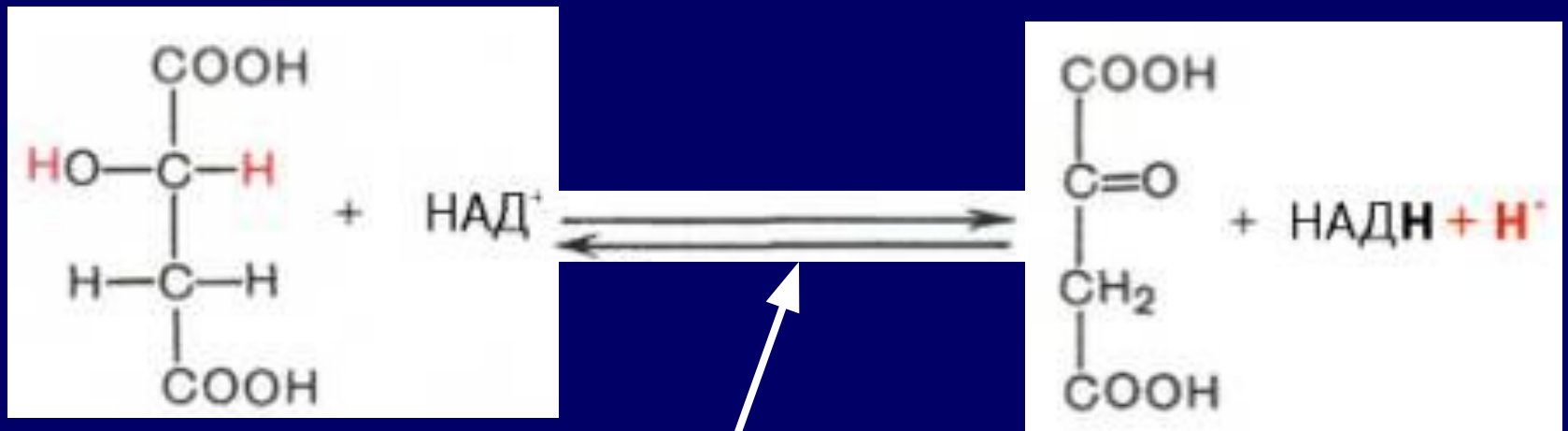
SUCCINATE DESHYDROGENASE FUMARATE



FUMARATE

FUMARASE

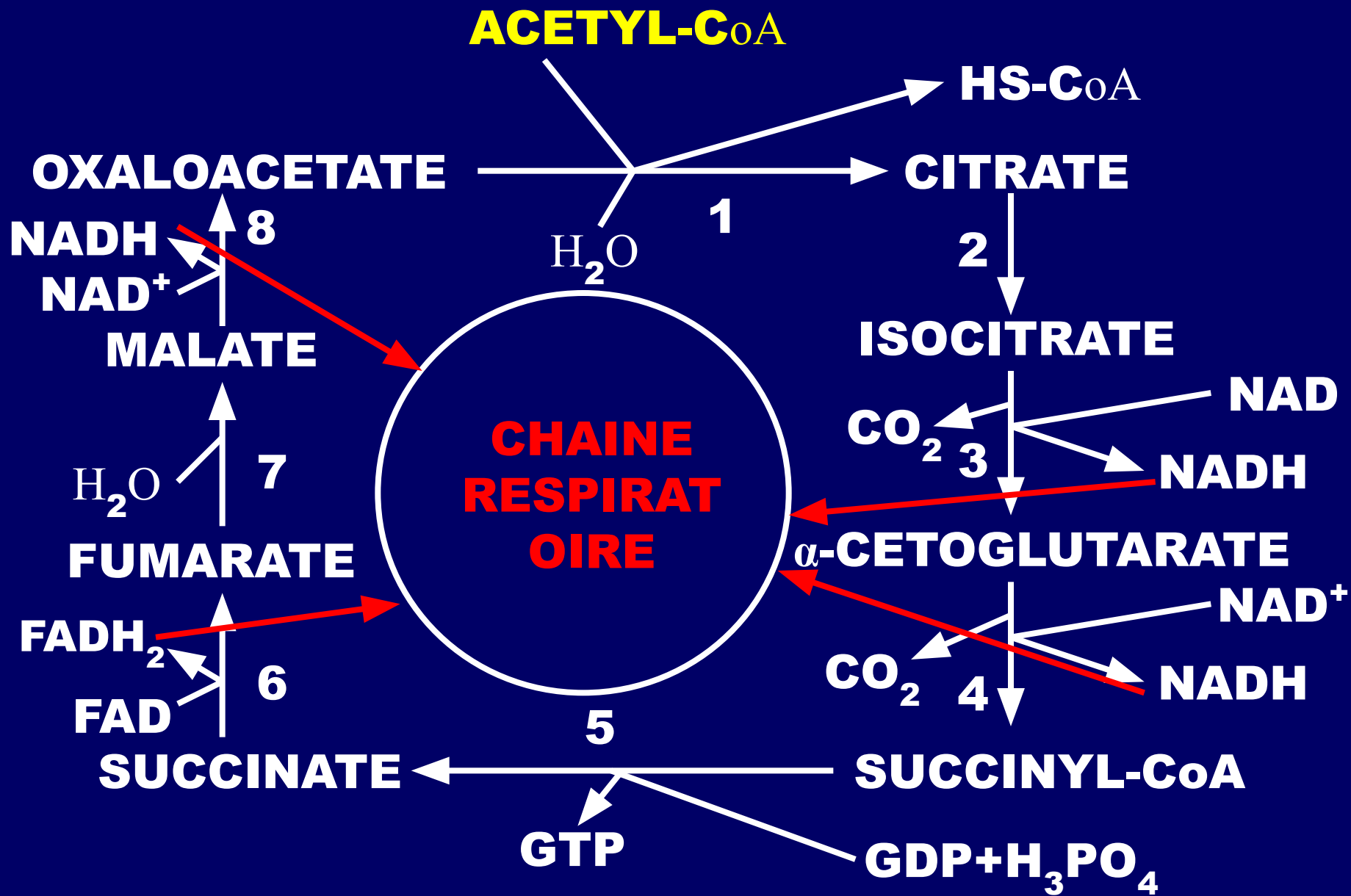
L-MALATE



L-MALATE

OXALOACETATE

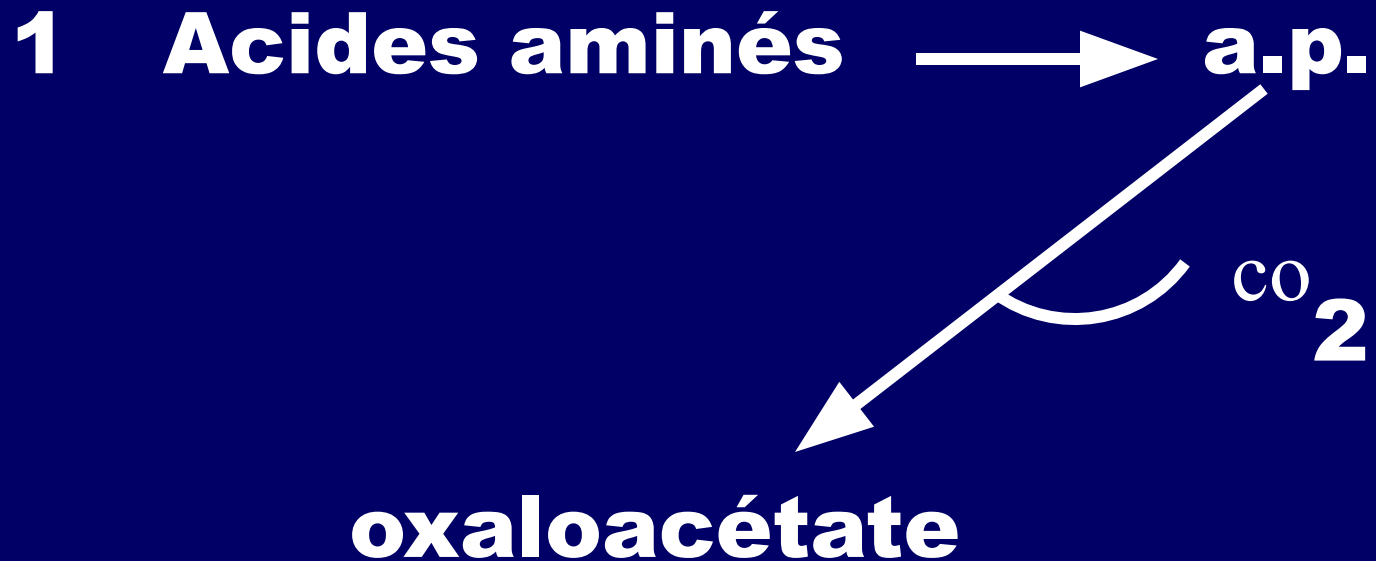
MALATE DEHYDROGENASE



LES FONCTIONS DU CYCLE DE KREBS

1. Интегративная функция — цикл является связующим звеном между реакциями анаболизма и катаболизма.
2. Катаболическая функция — превращение различных веществ в субстраты цикла:
Жирные кислоты, пируват, Лей, Фен — Ацетил-КоА.
Арг, Гис, Глу — α -кетоглутарат.
Фен, тир — фумарат.
3. Анаболическая функция — использование субстратов цикла на синтез органических веществ:
Оксалацетат — глюкоза, Асп, Асн.
Сукцинил-КоА — синтез гема.
 CO_2 — реакции карбоксилирования.

LES REACTIONS ANAPLEROTIQUES:



2 Acides aminés → Glutamate
 α -cétoglutarate

```
graph TD; A[Acides aminés] --> B[Glutamate]; B --> C["α-cétoglutarate"]
```

3 Valine
Isoleucine

Propionyl-CoA

Succinyl-CoA

```
graph TD; A[Valine] --> C[Propionyl-CoA]; B[Isoleucine] --> C; C --> D[Succinyl-CoA]
```


4 Acides aminés —→ Fumarate

5 Acides aminés —→ Oxaloacétate

LA REGULATION DE LA VOIE GENERALE DU CATABOLISME

