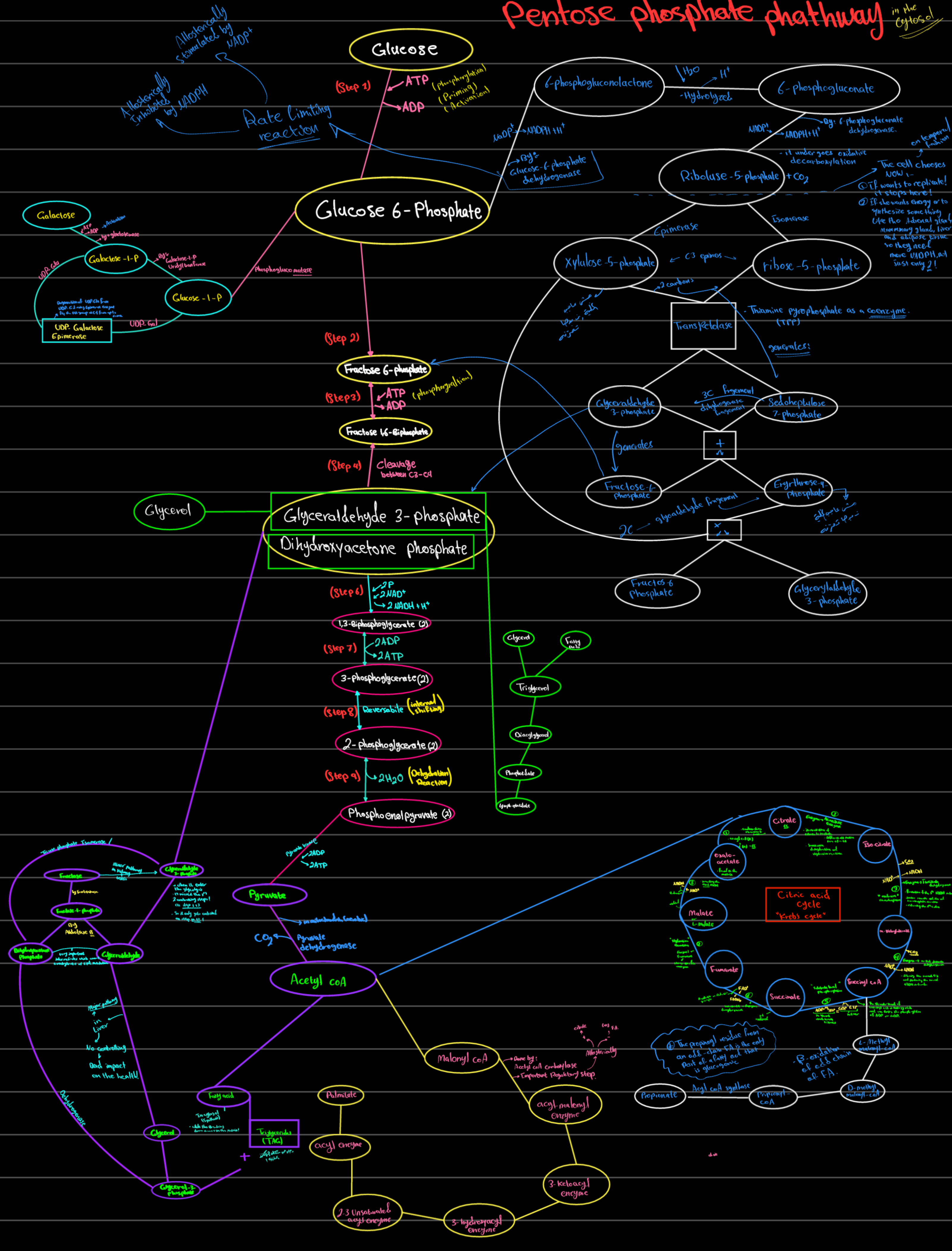
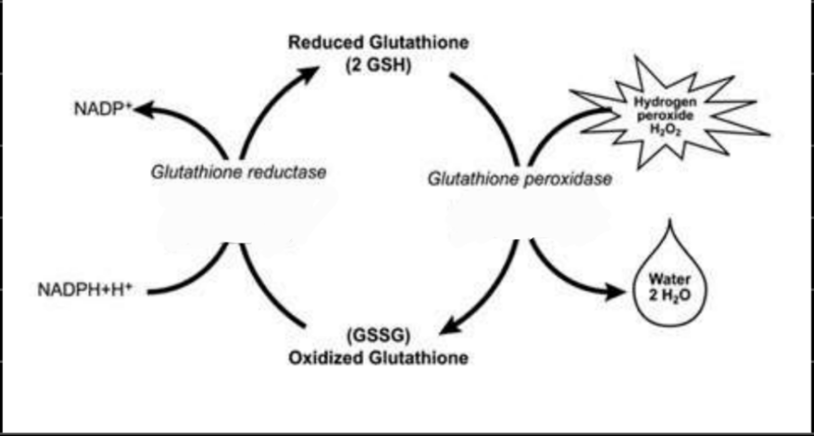
Pentose phosphate phathway in the cytosol



G6P Dehydrogenase Deficiency:

- Also known as FAVISM
- it is X - Linked recessive genetic condition
- Inborn Error
- Congenital
- Inherited Disorder
- results in reduced intracellular NADPH level which participates in the glutathione cycle to protect cells against hydrogen peroxide.



- NADPH in RBCs is important to keep a high ratio of the reduced glutathione which is vital to protect cells from damaging effect of ROS (detoxification process)
- G6PD enzyme prevents oxidative damage
- G6PD deficiency is characterized by hemolytic anemia, especially in state of oxidative stress such as exposure to infection, some medications and certain foods (e.g. broad or fava beans).

- Oxidative stress is due to imbalance between the generation of ROS or free radicals (e.g. H2O2, .OH,...) and the removal by specific cellular enzymes (antioxidants) like glutathione peroxidase (enzyme abundant in cells).

- Oxidative stress depletes the reduced form of glutathione (GSH) and G6P dehydrogenase deficiency disorder can not supply enough NADPH to regenerate GSH from the oxidized one (GSSG) .

- Damaged RBCs are recycled to the spleen. The hemoglobin is metabolized to bilirubin causing jaundice in high concentration .

THE END

Made by:
Mohannad Refat Ja'Awin.
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