



WASHINGTON STATE UNIVERSITY

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## NEED TO KNOW

NTK NITROGEN 3

**Diagram and describe the synthesis of heme and other porphyrins.**

- $\delta$ -aminolevulinic acid synthase (ALAS<sub>1</sub>)
- $\delta$ -aminolevulinic acid dehydratase
- Ferrochelatase
- Porphyrin synthesis (general, not the specifics, i.e. where and how)

**Describe disorders of heme biosynthesis at the molecular level.**

- Porphyrrias (Porphyria cutanea tarda and acute intermittent porphyria)
- Lead poisoning

**Diagram and describe the metabolism of bilirubin and the disorders related to bilirubin metabolism.**

- glucuronosyltransferase (bilirubin UGT)
- Jaundice (three types that were discussed)
- Bilirubin metabolism



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**Describe the pathways by which catecholamines, histamine, serotonin, and creatine are synthesized and degraded.**

- Catecholamine metabolism
- Serotonin metabolism
- Histamine synthesis
- Creatine synthesis
- Porphyrin breakdown