**Review guide for Quiz 4\_Lec\_13\_Aug\_13\_2025**

**Lecture 13: Metabolism: Nucleotides**

1. Describe and distinguish nucleosides and nucleotides.
2. Explain the different functions of nucleotides in metabolism.
3. Compare and contrast DNA versus RNA. What does it mean that the two strands of a double stranded DNA is antiparallel. Can RNA be double stranded?
4. Distinguish between de novo and salvage pathway of nucleotide biosynthesis.
5. Recognize which molecules contribute to the chemical content of nucleotides in the de novo synthesis of purine nucleotides.
6. Understand and recognize the key step of nucleotide biosynthesis (purine and pyrimidine de novo synthesis).
7. How are NTPs made from NMPs?
8. What is the role of ribonucleotide reductase in the formation of nucleotides? What does ribonucleotide reductase need in order to function? What molecule is an inhibitor of ribonucleotide reductase?
9. Understand and memorize the nucleotide biosynthetic steps that methotrexate and fluorouracil inhibit. What is trimethoprim used for? What is its mechanism of action?
10. What effect would the inhibition of glutamine amidotransferases by azaserine and acivicin have on nucleotide biosynthesis.
11. What causes gout and how can it be treated (which drug and which enzyme is inhibited?).
12. What types of foods contribute to gout and how? Which foods and conditions should you avoid if you are diagnosed with Gout?
13. What is another way to treat gout in addition to xanthine oxidase inhibitors?