VIROLOGY

MICHAEL DEWITT

Caveat Emptor

0.1. Esstman.

- Biology UG
- PhD at Vanderbilt at SOM in Coronaviruses
- This occured during SARS outbreak 2004
- 8th grade science teaching after PhD
- Postdoc at NIH on rotavirus (5 years)
- UVA SOM (Carilion)
- 2017 came to WFU as part of the BME major with Wake Downtown

Research

- Rotaviruses replication and evolution with a focus on viral genome replication amd assebly viral evolution

Kids 13, 14, 15 -> husban Sam

0.2. Exam.

Will be a take on examine which will tie together topics from the course.

0.3. Central Dogma.

Central Dogma of Molecular biology- transcription of DNA to RNA which are then translated into proteins.

- Genes
- Machinery

0.3.1. *Molecular Virology.*

- Basically just self-genes which take over he cells machinery
- the struce and function of viral genes at the molecular level
- the mechanism by which viral genes are expressed and regularated

0.3.2. *Molecular biology.*

Methods are used in almost any lab that does wet lab work.

0.4. Structure.

0.4.1. *DNA.*

4 nitrogenous bases (A, G, C, T) 2 ring or one ring structure (purine; A and G) 1 regin structure is a (pyridimine; C and T) Base + sugar (5 carbon) = Nucleoside Phosphoralated is a is a nucleotide (can be up to three) Can be attached at the and 5′ (phosphate group attached) where the 3′ OH oxygens are present

Two strands run 5′ to 3′. Within strand phosphodiester bond (covalent) (G to C; A to T) Hydrongen bond between the two strands

Human genome is 3 Billion base pairs Highly condensed and also functions as a regulatory mechanism

0.4.2. *RNA.*

- 4 nitrogenous pairs (A, G, C, U)
- OH on 2′ and 3′ (Ribose sugar)

- RNA is not fully linear
- RNA will fold based on intramolecular base pairing (A to U; G to C)
- Proteins within the cell will bind
- Many types of RNA some of which can function as catalytic machines (e.g., ribosomes)
- RNA in the ribosomes catalyzes assembly

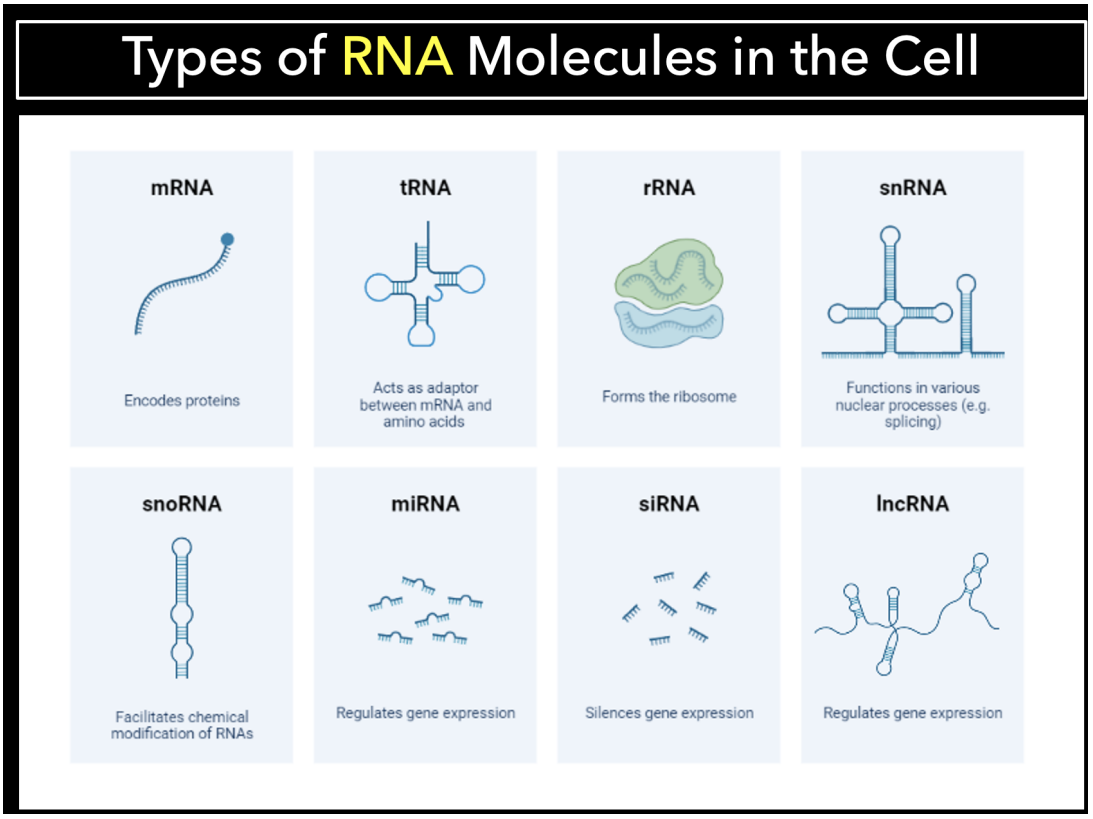

Figure 1.

References

Department of Biology, Wake Forest University, Winston Salem, NC 27101
Email address: dewime23@wfu.edu
URL: www.michaeldewittjr.com