Source: ⟦KBBiologyMasterIndex⟧

1 | Overview of Human Diseases

A lecture by the Legendary Dr. Paul Hauser. Slides are here

#flo #disorganized

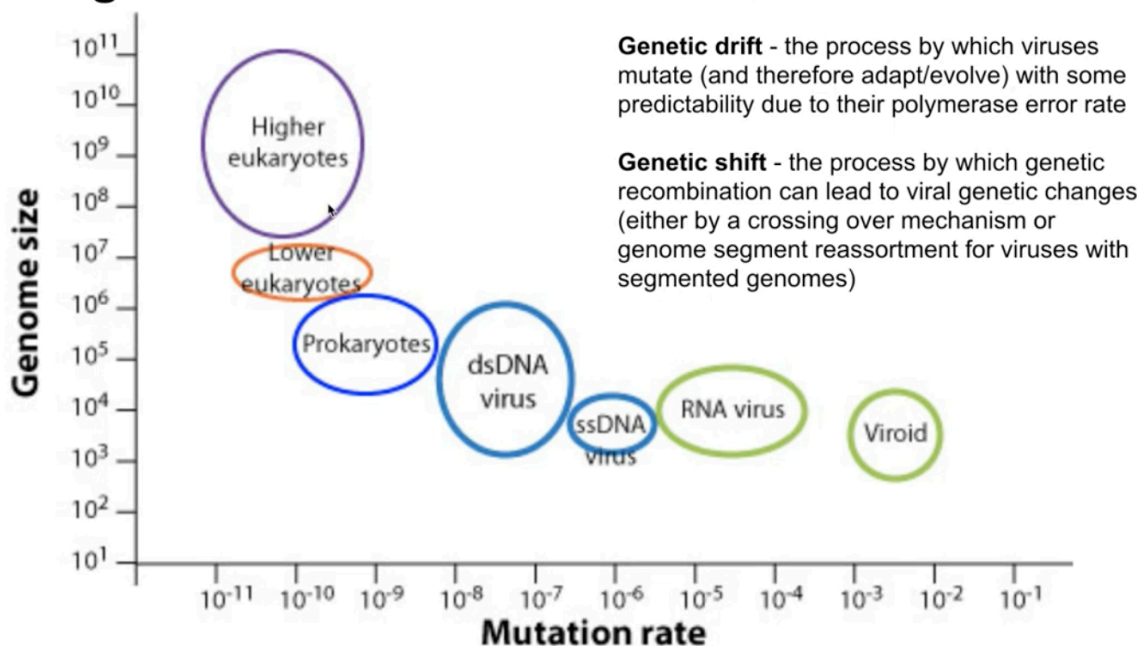### 1.0.1 | Viral Genome vs Mutation Rate

Figure 1: Screen Shot 2020-10-12 at 11.24.39 PM.png

- RNA viruses could mutate more because it does not have checks
- More complex+largest viruses harder to mutate

Genetic drift — viruses mutate due to polymerase error

Genetic shift — viruses recombinate without mutating by crossing-over mechanism or genome segment reassortment. Think! the flu

1.1 | Why are viruses bad

Damage host cells/tissues by…

- Reducing gene expression capacity
- Depleting cellular resources
- Causing cell lysis (to explode)
- Promoting tumorigenisis — cancer
- Creating damaging immunological response

1.2 | **Preventing Viruses**

Let's talk about **Remdesivir**! A drug developed by Pfizer that's used to combat Ebola + influenza viral replication.

Modified nucleotide triphosphate which adds onto the RNA strand copied by the RNA-Dependent RNA Polymerase carried by viruses

- Pretends + gets inserted as a nucleotide
- Once added onto the RNA chain, jams further actual nucleotides from being inserted

Could but usually does not jam up normal RNA polymerase which does normal transcription

- Inhibiting transcription in the short term won't kill you immediately

- So, we hurt normal cell transcription a little in order to rid of the virus

- Need hospital treatment for regular and safe dosing for this exact reason

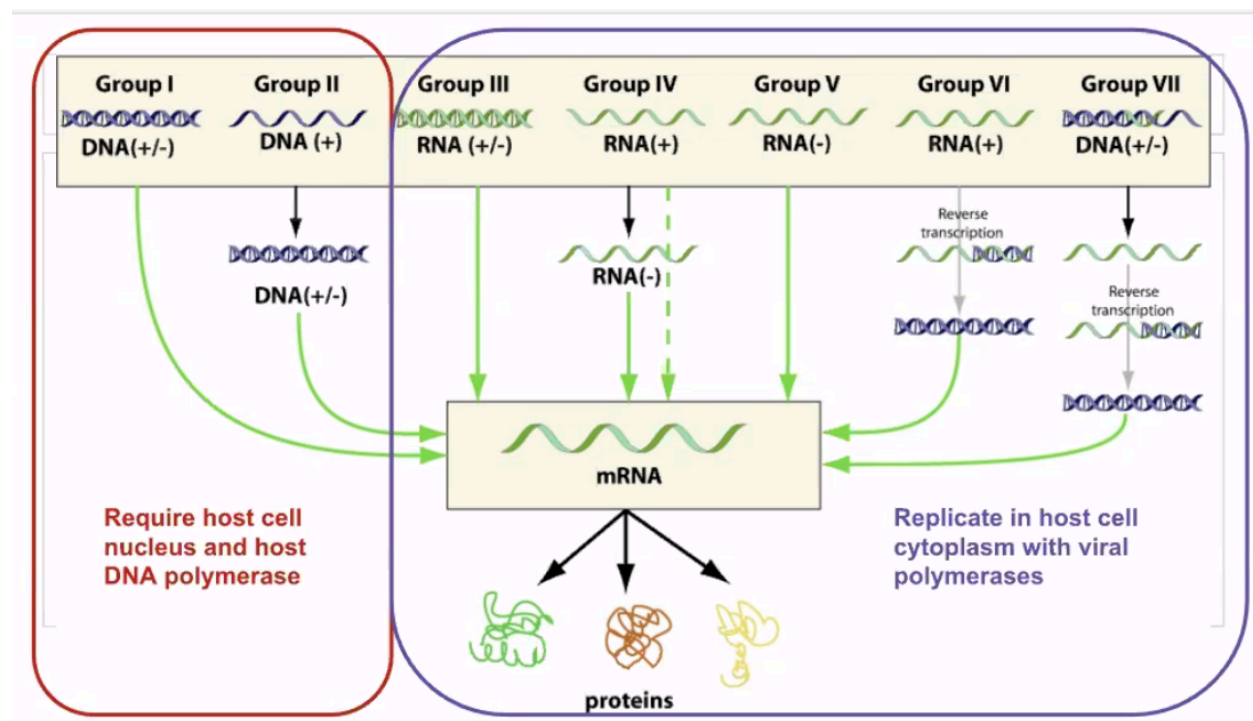- Viral proteins are usually easy to assemble

Figure 2: Screen Shot 2020-11-02 at 2.48.22 PM.png

Question: how are proteins made in the viral genome

- No viruses produce ribosomes
- Ribosomes become centrally important for the virus
- What serves as the template to make new virus copies

Viruses attempt to overwhelm the enzyme to entry.

DNA viruses are "less complex", in that as long as they are able to get into the nucleaus, the rest would just be the body's work automatically.