### RNA Icosahedral Virus Mnemonic

**Original Mnemonic by Rafi Ali (Class of 1997)**

As told by Sidney Jain (class of 1999).

Many thanks to Ken Lin (class of 2001) in finding an old coop version (author unknown)

Adobe Acrobat conversion by Shishin Yamada (Class of 2001)

<table>
<thead>
<tr>
<th>1. Two types of DNA virus:</th>
<th>2. First we will look at the icosahedral RNA viruses... represented by the hexagon.</th>
<th>3. First, we put a big (+) in the middle indicating all these guys are (+) sense... meaning they are already mRNA, so they replicate in the cytoplasm (with a few exceptions).</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Icosahedral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Helical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Then we split the hexagon in half with the envelope for enveloped RNA viruses on the right side. And we put the fig leaf for naked or non-enveloped RNA viruses on the left side.</td>
<td>5. Our story starts in &quot;REO&quot; (ROTA). What can we say about the &quot;Reo&quot; Grande? Remember a big fort in San Antonio? The Alamo! The Alamo had 10 walls that were double thick! Yup, this virus has 10 segments and is double-stranded RNA (the only double-stranded RNA virus). Note: ROTA virus is the most common of diarrhea.</td>
<td></td>
</tr>
<tr>
<td>6. Let's meet our here, PICO (that's short for Picorna). Notice he is riding his pet Rhino (Rhinovirus), while playing Polo (Polio). Did you notice his saddlebags... or Sacks (Coxsackie A/B). Oh yeah, Pico has some drinking problems (note the bottle), so throw Hep-A and Enteroviruses into this group!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Our antagonist hates Pico... And knowing Pico's epicurian tastes, sets a trap for him... Some smelly cheese. I often reflect on why I add cheese to my food to add fat, some spice, and... flavor... Yeah! These are the FLAVI viruses. And while thinking about cheese I can't help but think of its color... yellow. Of course Flavi viruses cause: Yellow fever and its close friend, Dengue Fever!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Examples:

What can you say about TOGA viruses?

1. They are RNA (single strand)  
2. Positive (+) sense  
3. Enveloped  
4. Causative agent of Rubella  

CONGENITAL RUBELLA CAN CAUSE:

- **bad haircut** -- encephalopathy  
- **cyclops eye** -- blindness  
- **ear rings** -- deafness  
- **PDA tattoo on heart** - patent ductos arteriosus
RNA Helical Virus Mnemonic
Original mnemonic by Rafi Ali (class of 1997)
As told by Sidney Jain (class of 1999).
Many thanks to Ken Lin (class of 2001) in finding a old coop version (author unknown)
Adobe Acrobat conversion by Shishin Yamada, (class of 2001)

Now we must look at the second half of the RNA viruses, the helical RNA viruses. We know something right off the bat, they all live in this very negative home called "Helical House." But they are all rather modest and they don't walk around the house naked (these viruses have envelopes). So helical RNA viruses are:
1. Negative (–) sense (with one exception)
2. Enveloped.

What does (–) sense mean? The viral RNA must be acted upon by a transcriptase to make viral mRNA. Therefore, this requires the nucleus for its replication!

The only (+) sense helical virus...
Think positive...
Sitting on a sunny beach in Mexico with a long neck bottle of this...
Yeah CORONA! (Corona viruses).

1. We comes to the entrance of "Helical House" and notice the rather strange bullet-shaped door and the pet dog who is drooling at the mouth. Yes, these are the RHABDO viruses. They have bullet-shaped virions (includes Rabies).

2. We move to the second room on the ground floor. The first of two brothers, ORTHOMYXO. When we think of Orthomyxo, we think "O" and an Octopus immediately comes to mind. An Octopus has eight legs, like Orthomyxo viruses have eight segments. Notice the stars in the eyes. Remember the star path from the icosahedral viruses. In this case, the Orthomyxo viruses (which is only influenza), even though it is negative sense, replicates in both the nucleus and the cytoplasm.

3. Upstairs from Ortho lives his big brother, PARAMYXO. Paramyxvo is the big brother because he causes the formation of big cells or giant cells. All four of the viruses listed above (measles, mumps, respiratory syncitial virus, and parainfluenza) cause the formation of giant cells.

4. Living in this negative house makes me think of negative things. Like Cleveland, Houston, Tampa Bay... All these football teams are leaving their fans... for what? A new stadium or ARENA! Yeah, these are the ARENA viruses. Notice the stars in the eyes. Remember the star path from the icosahedral viruses. In this case, the Orthomyxo viruses (which is only influenza), even though it is negative sense, replicates in both the nucleus and the cytoplasm.

5. Now, for the craziest creation of this story... Our mutant creature in room #5. Kind of looks like a rabbit... How about a mutant Engenerizer-BUNNY! Yeah, these are the BUNYA viruses. But notice something about our bunny -- he's got three ears! Yes, Bunya viruses have three segments. Notice the circular nose and circular tail -- Bunya viruses have circular RNA.

6. The last room is the storage room for files... The classified "X-Files." For dangerous incurable viral diseases that could wipe out the entire planet! Not too much is known about the EBOLA and MARBURG viruses!