

MicB 4141W/4171 Early events data sheet

Spring 2011

Name: _____

DUE FEB 3, 2011.

The objectives of this assignment are:

- to provide an alternative method of introducing new material
- to create information interdependence among class members
- to model the process by which scientists move from information-gathering to analysis
- to allow participants to orally rehearse and cognitively process information
- to serve as a building block for the first compare and contrast analysis assignment for MicB 4141W

On Feb 3 in class, we will work together to **compare and contrast** the early events in viral infection, using four representative viruses. We will start with *viral attachment to a susceptible cell* and end with *membrane fusion or penetration*, events that lead to the viral RNA genome being available for mRNA synthesis, or reverse transcription, or translation---depending on the virus. The four representative viruses we will focus on for assignment 1 are: **poliovirus**, **reovirus**, **human immunodeficiency virus**, and **influenza virus**. Two of these viruses are non-enveloped, and the other two are enveloped.

Step 1: Collect information. Writing is an activity that documents and clarifies thinking. As you are reading chapter 5 in the textbook, collect information on the four viruses listed above and fill out the accompanying data sheet. Try to identify the relevant molecular detail and summarize it briefly in the table. You will likely have more information in some of the table cells than in others. You may not be able to fill in every cell using the textbook alone (for example some of those asking for experimental evidence), but you might find clues in the text for some of the viruses. Do not simply cut and paste---your ultimate goal is to describe the processes in your own words.

Step 2: Synthesis and Analysis. Bring two copies of the data sheet to class on the due date. You will turn one in at the start of class (so I can assess how far you got as an individual). You will use the second copy to contribute information and take notes. The more information you can fill in for each of the four viruses, the better. In class, we will work in small

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groups and then as a whole class in order to analyze and integrate all of the material. 4141W students will use this material to write a short comparative analysis (due Feb. 11)

Please fill out this data sheet. As you insert text, the cells will grow in size. Bring two hard copies to class.

Virus	Influenza virus	Poliovirus	Reovirus	HIV
Viral attachment molecule or structure (name)				
General structural information				
Critical domain(s) for attachment				
Other important information?				
Cellular receptors (names) and their functions				
General structural information				

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Critical domain(s) for attachment				
How was the receptor(s) identified?				
Other information?				
Where does membrane penetration or uncoating occur? (Plasma membrane, endosome, lipid raft?)				
Experimental evidence?				
What conditions and/or events regulate membrane penetration (or uncoating)? Examples might include pH, activity of certain				

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proteases, interactions between particular proteins, etc.				
Important conformational changes? In what molecule(s)?				
Experimental evidence?				
By what mechanism does the genome gain access to the cytoplasm? (fusion, pore formation, other?)				
Other important information?				

If you include information from a source ***other than our textbook***, please provide the reference below and indicate in the table (with a #) where the information came from.

References:

Please use the Journal of Virology format for your references. (see class website for details)