Electronic Journal Directions

You need to create and maintain an electronic journal reflecting on your weekly progress in the course.

**Criteria:**

* It must exist in electronic format (note:  scanned handwritten entries are okay).
* It must exist online.
* It must be shared with me.
* It does not have to be public, but if you are comfortable with it being public, I encourage it to be.  Public work generally requires your best effort, since people can read it.  You really shouldn’t be writing for just me.  I will post links to all public works on the AP Journal Page.

**Example Structures (all are free):**

* Your own blog (not the course blog)
* A shared evernote notebook
* A website of your own creation
* A Google Doc that you share with me (and publish to the web if you want to make it public).
* I am open to other options if you think you have a good one that I haven’t outlined above.

**Process:**

* Every week you will be responsible for making at least one substantial entry in your EJ.
* The topic for every week is:  **Weekly Reflection for Week of <DATE Here>**
* Things to consider within that context
* How did you do on the work?
* What do you think you understand well?
* Where do you think you improve?
* What strategies will you use to improve/?
* How does the work we are doing fit into the context/narrative of the course?
* You do not need to address every work product generated in class during a week.
* You do have to address at least one work product generated in class during a week.
* Please add your entries in **Reverse Chronological Order (most recent at the top).**
* Please respond to any questions that I leave on any entries.
* Please do not address summative assignments (tests, lab reports) or content coverage (PDQ materials).
* [The list of course standards is available here](https://docs.google.com/a/deerparkschools.org/document/d/1KpLR_ucK88ImgCpUwg5DIrTY9VB2U9K76Qcfm0Clpl4/pub).

**Example Entries:**

*The following example journal entries all address the requirements of keeping a good journal in accordance with the instructions above:*

**Sample Entry 1:**

     This week in class we completed activities that dealt with standards 1.1, 1.3, 1.4, 1.5, 1.6, and 1.9. The molecular clock activity and POGIL: Phylogenetic tree activity addressed the concepts that biological evolution is supported by scientific evidence from many disciplines, including mathematics (1.4), organisms share many conserved core processes and features that evolved and are widely distributed among organisms today (1.5), and that phylogenetic trees and cladograms are graphical representations (models) of evolutionary history that can be tested (1.6). After I initially completed these activities both in class and at home, I realized that I did not have the firmest grasp on that particular course material. However, I found the supplemental informative article on how to read phylogenetic trees and the suggested practice worksheet pages to be extremely beneficial in helping me to better understand the standards being addressed through this coursework. The phylogenetic lab that we completed in class also dealt with these standards, reinforcing my understanding of them. I believe that the website we used to generate phylogenetic trees (phlogeny.fr) drew distinct comparisons between DNA relatedness and an organisms position on a phylogenetic tree as a result of this. While the website calculated what the true phylogenetic tree would look like, it gave me ample time to come up with what I believed the phylogenetic tree would look like based on the organisms' DNA samples, and check my prediction against the true result. This week in class a second lab activity was addressed, Population Spreadsheet Modeling. This lab furthered standards 1.4, 1.5. and 1.6, and addressed the concepts that natural selection is a major mechanism of evolution (1.1), and that evolutionary change is also driven by random processes (1.3). These “random processes” were simulated by the random functions we utilized on google spreadsheets to mix alleles. Though not appearing to be overwhelmingly difficult when being walked through the activity step-by-step during class time, I believe that emulating this activity would be a challenge with my limited knowledge of spreadsheets . Overall, I found the material covered this week to be slightly more challenging than the material covered in the weeks prior. However, I found the supplemental resources available to me to be extremely helpful in allowing me to further understand the coursework.

**Sample Entry 2:**

        One activity from this week was the Population Genetics Class Simulation with music.  One standard related to this activity was Standard 1.1: Natural selection is a major mechanism of evolution.  I used Standard 1.1a by collecting data into a table, and using that data for the Hardy-Weinberg equations.  The experimental data differed from the theoretical Hardy-Weinberg values, and I was able to identify some possible causes, such as a relatively small population.  I used Standard 1.1b by analyzing the differences in allele and genotype frequencies between the different cases of the experiment, some of which had selective pressures against one or more genotypes.  It seemed that one of the cases didn’t exactly follow my predictions about the allele frequencies at the end, although chance effects could be more significant with a small population.  We calculated the allele and genotype frequencies and compared them to the theoretical values to try to see the overall trend of evolution in each case.  I used Standard 1.1c to answer questions like whether the recessive allele would be eliminated completely in some cases.  I used calculations to find the average loss of the recessive allele in each generation to see how the number of offspring per parent might affect the answer.

        The activity was also related to Standard 1.3: Evolutionary change is also driven by random processes.  I understood Standard 1.3a, because the small class size made random events affect a larger proportion of the population (maybe random effects would have been smaller at the beginning of the year).  Chance events played an even larger role when we split into three groups, as the results from each group varied a lot: for example, our group had only one copy of the dominant allele at the end, while another group had the same number of dominant and recessive alleles.  Standard 1.3b was used in the practice Hardy-Weinberg problems at the end, where we had to calculate theoretical allele and genotype frequencies.  I used Standard 1.3c by making predictions about what would happen at the end of each case in the activity.  It might have been fun to simulate migration when we split into the three different populations.

**Sample Entry 3:**

**Weekly Reflection for Week of September 29-October 3**

**Week Standards: [1.4, 1.5, 1.6]**

**How did you do on the work?**

I feel that I did well on the work given. The work was mainly based on molecular clocks, tool used by biologists to determine how long ago two different species diverged, and some concepts of phylogeny. I understand how to read and analyze cladograms (a diagram that shows relations between organisms). This Domain of the course doesn’t seem really difficult (not underestimating) but I did well in the activities we did this week.

**What do you think you understand well?**

I feel that I understand how to form and read a phylogenetic tree. The longer the line shows the duration of time of that organism. It is a really nice and unique way of specifying organisms. I feel I excel in understanding relations between organisms by DNA sequences. The Exploring Diversity Activity showed how students can understand and apply this concept, and I did fairly well on this activity even though it was a class assignment.

**Where do you think you improve?**

The concept of “indels,” insertions and deletions in a DNA sequence is something I struggle in understanding.  Similar to “indels,” a “substitution,” isn’t all that hard in what it does but I question why it happens, is it an error or was it somewhat intentional? If it was intentional, why and how did it occur. Same questions are applied to the ideal of “indels.” Besides genetic diversity and mutations what else may result from these? It is really simplistic to a degree but to me I do get curious and would like to improve and expand my knowledge on this information.

**What strategies will you use to improve/?**

Concerns and questions about the material are best inquired from the instructor (Mr.Knuffke). I can come to extra help for questions or ask in class. These questions can also be derived from the internet. My strategies to help me improve is simply be more resourceful. I do have the Principles of Life, Textbook, Crash Course and Bozeman Science videos, as well as extra help sessions to help me with anything (related to Biology) I do struggle with.

**How does the work we are doing fit into the context/narrative of the course?**

Well it is already applying itself into the course because it helps support the theory of evolution. We have been learning evolution from the Week 2 and molecular clocks and phylogeny really is applicable to evolution due to the fact it supports DNA (Genetics) and partially the fossil record/common ancestry

**Sample Entry 4:**

This week in class, my classmates and I focused on the different ways of looking at the process of evolution, through modeling data on spreadsheets and through creating, observing and analyzing phylogenetic trees. Both methods are very reliable, and much better than looking at simple appearances or colors of different animals, then making deductions about theirlikeness just from the color and size of their bodies. In my opinion, the phylogenetic tree method s the easiest way for me to observe the data and about evolution, based on the way they are spaced due to DNA examination.

        This past week, I worked on a “Creating Phylogenetic Trees from DNA Sequences” click-and-learn for homework. By going through the click-and-learn, this activity addresses the standards of 1.6 because:

1. I was able to form questions through the click and learn about how specific species are related, such as humans, chimpanzees and gorillas, and then find the answers through DNA analysis and I was able to explain that the more features that an organism shares, the more likely the species are closely related, but I was also able to understand that I must understand DNA similarities and the more DNA similarities, the closer the species. The more imperfections and differences in the DNA, the farther away the species are related.
2. I was able to understand the differences between Indels in the DNA as well as SNPs in the DNA that represent different kinds of differences or different changes that occurred in the DNA.
3. I was able to create the phylogenetic tree for one of the answers showing the relationship between Humans, Chimpanzees, Orangutans, and Gorillas based on the information given in the click-and-learn, as well as create other trees in class throughout the rest of the week, such as phylogenetic trees comparing humans, fish, frogs, and various other animals.

        I feel like this activity really allowed me to understand why DNA is so important when trying to figure out the common ancestor of certain species and which species are more closely related than others. I feel like I do need help with addressing the standard when it comes to creating questions based off of the tree and trying to make inferences, I feel like I read too much into the information and try to overthink the problem, making it a bit harder than it needs to be. However, overall I feel confident in creating phylogenetic trees, especially since I will be creating one for a project that will be talked about more in-depth in the next few days.

**Sample Entry 5:**

* 1.9: Populations of organisms continue to evolve (plus the click and learn based on the standard)

History of Life Timeline Activity

        Over this past week, I really liked learning standard 1.9 and the History of Life Timeline Activity. Standard 1.9 was basically all about humans evolving over time and one of examples was lactose intolerant people. The standard told us that people are always evolving whether you notice it or not. I never really knew in detail why people have tolerance for milk or not. I liked this one particularly because of its focus on the human body and how over time things can change in everyone based on your relatives. Based on where your ancestors lived makes you qualify whether you have a tolerance for milk or not and the click and learn reinforced those ideas for homework that night. The click and learn that you had assigned was really fun. It had different specific examples of evolution in humans. There were three examples that you had to learn about: Malaria and Sickle cell, which we have previously discussed prior to this topic, lactase persistence and bitter taste perception. I learned a lot from this specific standard because there was a helpful click and learn following it and also because it was human oriented. It can be connected back to evolution because over time, you will always be traced back to your ancestors and how they had evolved over time based on where they came from. For example, people in Asia years and years ago, didn’t have a wide variety of cows so over time, they didn’t have a need to drink the milk or use it effectively for themselves- making them lactose intolerant.

        The History of Life Timeline Activity was also fun because we got to make our own flashcards and put them where it was supposed to go. I was always curious about when specific things happened and how everything came to be so this was very informative to me also. The first question on PDQ 7- Evolution, was also related to when we had done this activity. You had to draw a line and place specific events whenever they had occurred and this had clearly showed me exactly when it happened on a measured time scale. Understanding that is really useful in thinking about evolution overall because then we can narrow down certain theories as to when oxygenation happened and the origin of life happened. These two key factors enables us to learn about our past and our common ancestor.

        Learning about how humans are constantly evolving is a useful peice of information and makes me interested in the fact that nobody in the future will be like us. They will eventually change and certain things will need to in order for them to successfully fit into their adapting environments.