

Entrance into PreAP Biology:
Project-The Branches of Biology

Due Date: _____

Objective: You will generate the 5 branches of Biology using a bubble map poster.

Materials Needed:

Other science/biology resources

Colors (map, pencils, crayons, etc..)

Poster Board (regular size)

This project will request and expect you to explore the five branches of biology that we will learn within the school year. Below you will find the instructions and rubric of expectations:

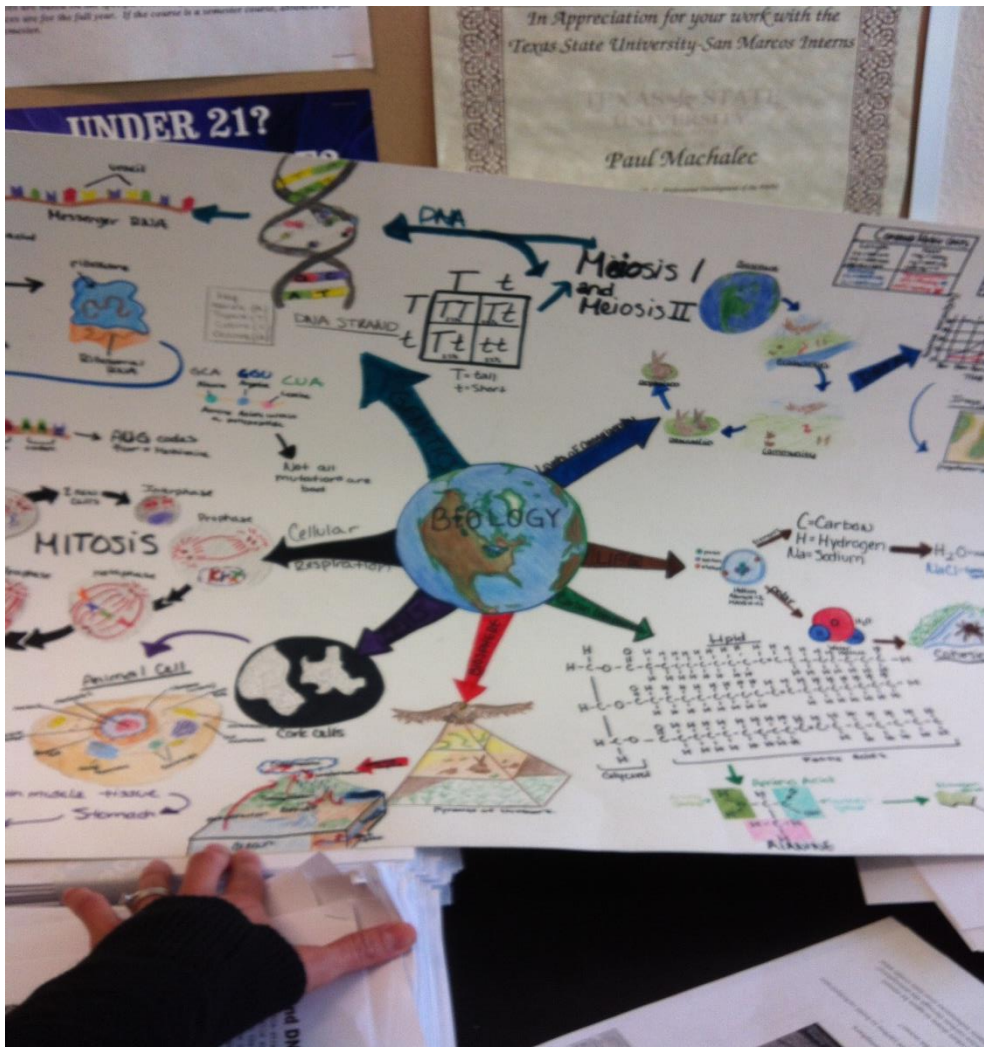
The five branches of Biology and their topics that we will cover are the following:

1. **cell structure and function:** Prokaryotic vs Eukaryotic cells, cell membrane transport, osmosis, diffusion, animal cell, plant cell, the 4 biomolecules (macromolecules): carbohydrates, lipids, proteins, and nucleic acids, cell differentiation, cell cycle (mitosis), organic molecule organization (structure of DNA), Virus
2. **mechanisms of genetics:** RNA, Protein Synthesis, changes in DNA (mutations), genetic combinations (traits, homo vs heterozygous, dominant vs recessive traits, phenotypes vs genotypes), Mendelian genetics (monohybrid and dihybrid Punnett square, non-mendelian inheritance, asexual vs sexual
3. **biological evolution and classification:** common ancestry evidence (fossil record, molecular homology, biogeography, anatomical homology, developmental homology), taxonomy (hierarchical classification-King Phillip Came Over For Grape Soda), Natural selection, genetic drift, gene flow, evolution, autotroph, heterotroph, binomial nomenclature, phylogeny, cladogram
4. **biological processes and systems:** photosynthesis, cellular respiration, enzymes, levels of organization, feedback mechanisms, homeostasis, organ systems (digestive, excretory, circulatory, endocrine, immune, integumentary, lymphatic, muscular, nervous, reproductive, and skeletal).
5. **interdependence with environmental systems:** symbiosis (mutualism, predation, parasitism, commensalism), matter and energy flow (food chain, food web, energy pyramid), cycles (nitrogen, carbon) ecological succession (primary and secondary), carrying capacity, abiotic vs biotic, limiting factors and biodiversity.

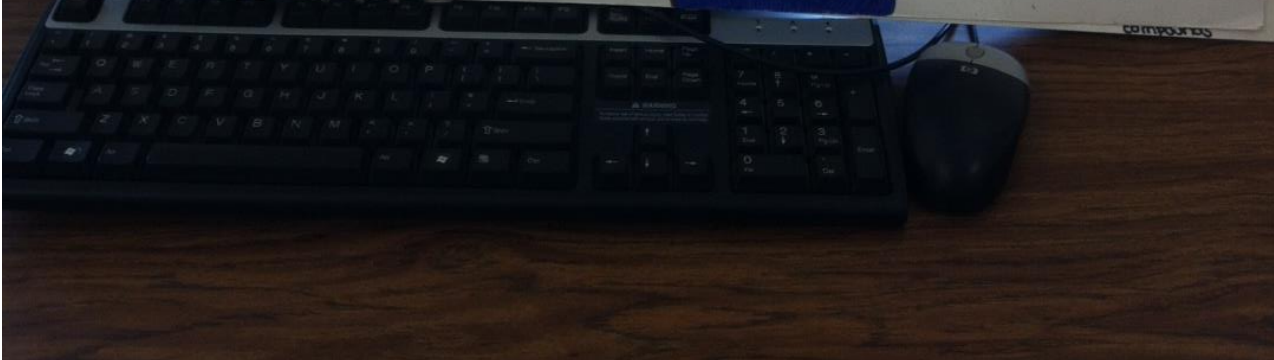
Rubric of Expectations:

Expectations	Possible Points
The five branches of biology are “branched” out in a organized fashion	10
Each branch covers its topic (refer to 1 st page): Topics are listed and an illustration/diagram is labeled . Not looking for explanations but rather pictures. Side annotations (small description of pic) are accepted.	70
Poster board is normal length	5
Illustrations/diagrams are drawn, neat, organized, and detailed	Expected or will not be graded!
Your Name is on the back of the poster!!! (points will be deducted if it is missing)	5
Title of the poster is present (The Branches of Biology) In middle section of poster in which everything else branches out from	10
Total points	100

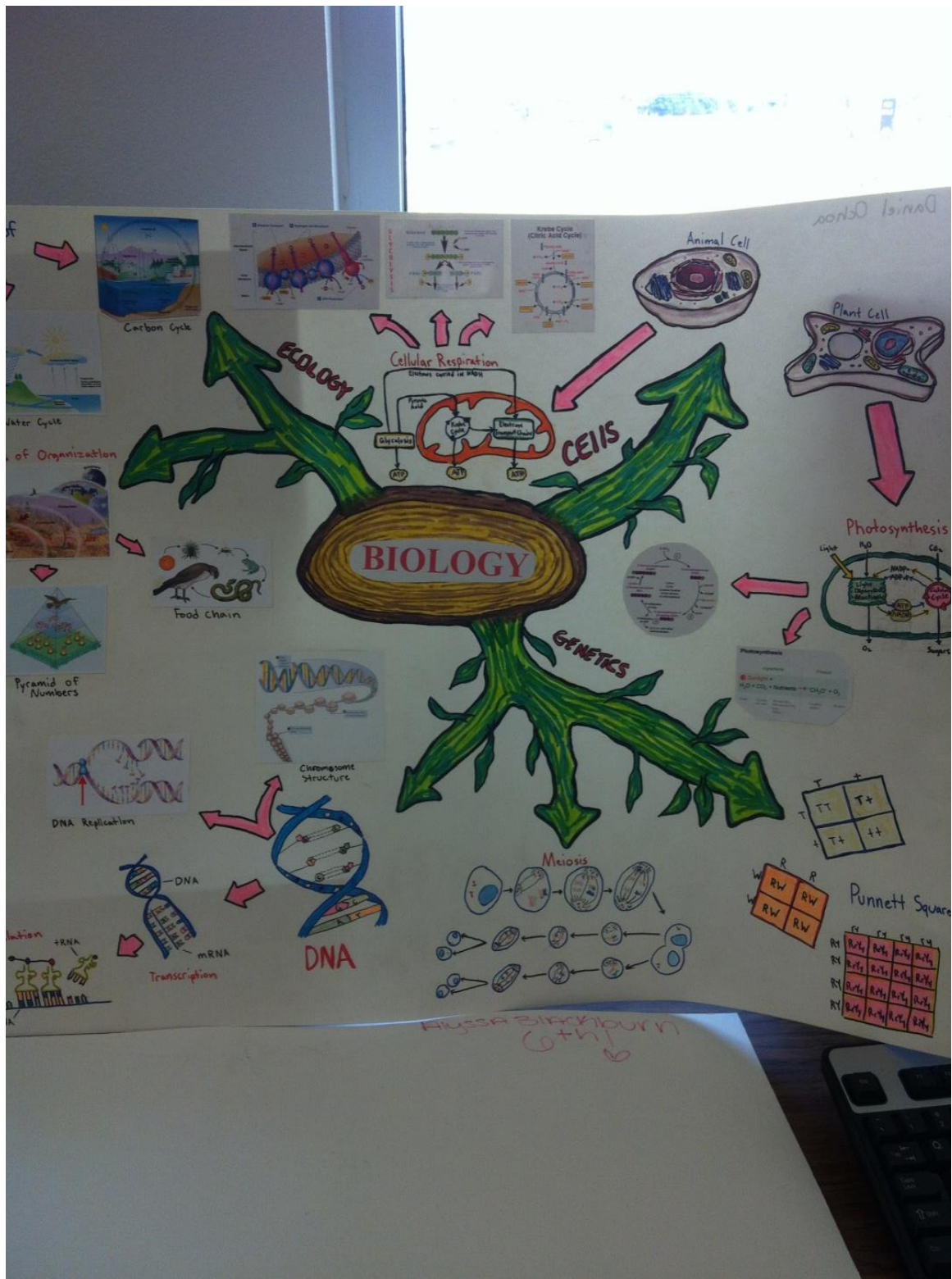
Examples of work: (not to be copied!)



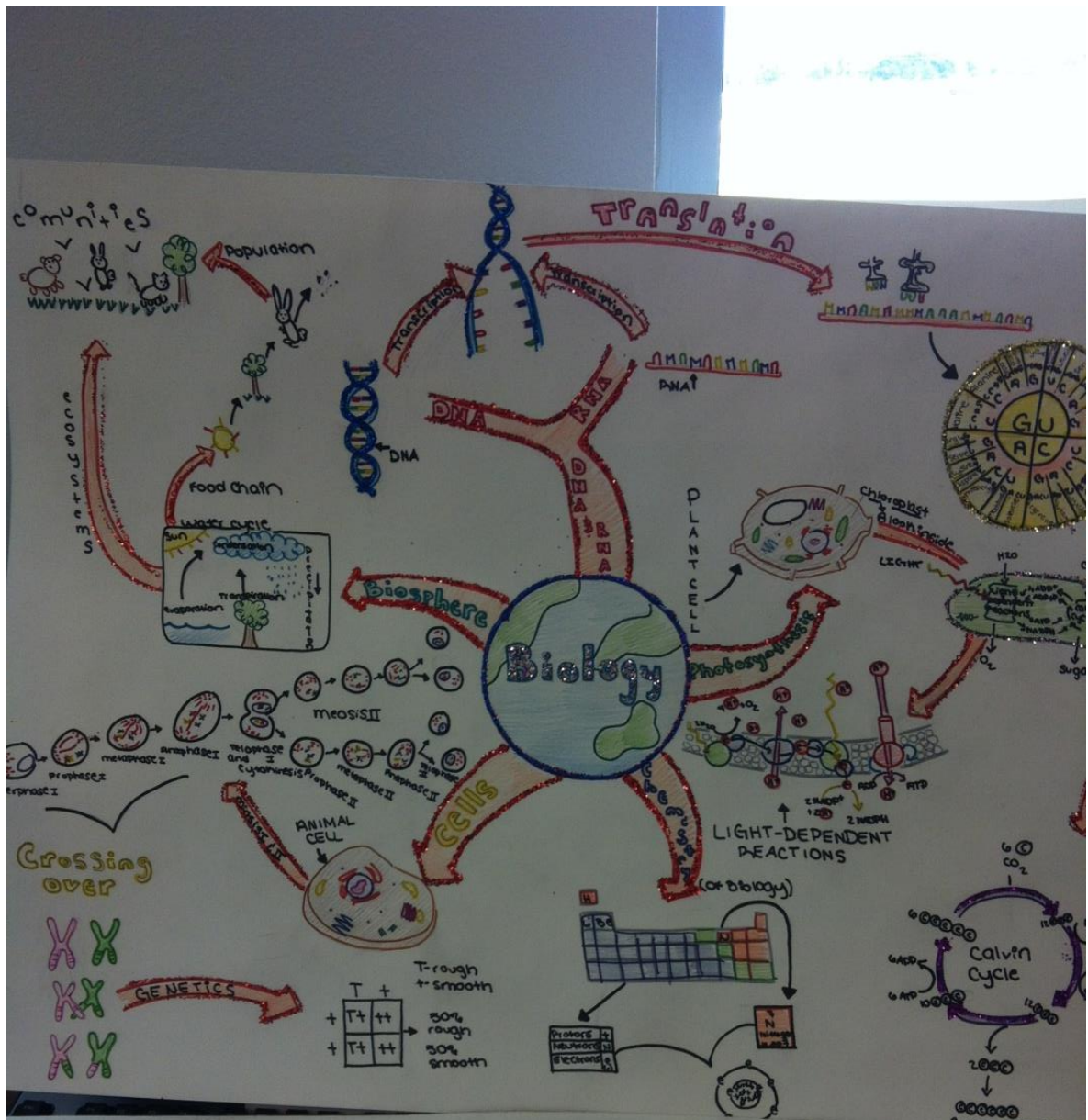
Example 1



Example 3



Example 4



R.S
Darius
Stephen