

Name:

Date:

Class:

## UV Light and Reproductive Success Student Activity Sheet

While Nina Jablonski and George Chaplin had found a *correlation* between ultraviolet intensity and skin reflectance, they knew more evidence was needed to show a *cause and effect relationship*. They asked the questions: What would be the reproductive advantage of having more darkly pigmented skin where UV intensity is higher? What would be the reproductive advantage of having more lightly pigmented skin where UV intensity is lower? Jablonski and Chaplin collected more evidence (facts) from other scientists' work to answer these questions. Assemble the evidence they found to discover some answers.

### Directions:

1. You may want to cut the facts apart or take notes on a separate sheet of paper.
2. Select the facts that have to do with advantages of darkly pigmented skin.
3. Organize this group of facts into a logical explanation about how skin pigmentation contributes to reproductive success.
4. In a short paragraph (about 100 words), write out your explanation. You can use the wording of the facts where appropriate, but you must make the connections.
5. Repeat the process for the group of facts that have to do with advantages of lightly pigmented skin. (Some facts are used in both groups.)

The skin pigment melanin filters out UV light.	Folate is essential in the production of sperm.	The body changes the folic acid from foods into folate.
Folate is essential in the production of sperm.	Pregnant and nursing women need extra vitamin D.	The body uses folate to make DNA.
Lack of folate in Africans and African Americans is uncommon.	Folate is photosensitive. Sunlight, especially UV radiation, breaks it down.	UV radiation changes a substance in the skin into vitamin D.
Deeply pigmented skin must be exposed to the sun five times longer than lightly pigmented skin to make vitamin D.	Pregnant women who do not have enough folate miscarry or have babies with brain and spinal cord defects.	Above 40 degrees north latitude there is not enough UV for skin cells to make vitamin D during the winter months.
Melanin absorbs toxic substances produced by light acting on the body.	Vitamin D is abundant in fish, seals, and whales.	Vitamin D is required for the normal growth, development, and health of the skeleton.