

Methods for Measuring Physical Parameters

Lesson Title: The Ecology of Your Skin 1: Bacteria that Live on the Skin

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Name: _____



If you were an ecologist working in a forest, you not only would look at the organisms but you also would be interested in the many physical parameters of the forest such as rainfall, sunlight, and temperature. The same can be said for the ecological terrain of the skin. A minimum assignment might be to measure surface temperatures all over the body and produce a chart.

However, it may be best to brainstorm this investigation with other students and try to avoid rigid protocols. For example, there may be instruments or tests in the physics or chemistry labs that you could appropriate and reconfigure for your own investigations! All you need to do is monitor safe use. The chemistry lab may have other sorts of test papers besides pH paper. The physics lab may have a more sophisticated method for measuring surface temperatures.

The bacteria of the skin are distributed according to all sorts of physical parameters, some of which could be easily measured by you. Suggestions include:

1. Skin temperatures taken in several places on the surface of the body. This could be done with regular thermometers or with digital thermometers and (if you have access) with infrared remote thermometers. Make it as low- or high-tech as you like or as is feasible with equipment at your school. You might generate a graph of sorts, such as an outline of the human body with various temperatures recorded on it. (Time permitting, additional factors such as the effects of the presence or absence of clothing, individual differences, and the effect of physical activity might be included.)
2. Determining skin pH might be tried with ordinary pH paper. Moist samples work best. Don't apply the pH paper directly to the skin surface. Instead have on hand some cotton swabs and some water at pH 7 (check it). Dampen a swab and rub it on a body part and then dab the pH paper. Be sure to check the pH of the mouth too. In that case, the swab need not be pre-dampened.
3. If you have a light meter, you might experiment with determining exactly the shading effects of certain coverings of clothing or shoes or long hair.
4. Other parameters might be approached more subjectively or qualitatively. For example, on a scale of 1-5, you might estimate how oily various parts of your body are. (And you will have to take into account your use of oil-drying acne products too.)