

**October 2009**

**Issue 6 Volume 5**

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**Word Search:**

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### DR. KRANS GOES SOLAR

Despite the liberal connotations, being 'green' just pays right now. After five years of planning and preparation, Dr. Krans, the Alteris Alternative Energy Company, and the Commonwealth Solar Grant Initiative installed a 3kW system on his family home in Monterey, MA this September. The system will interface with the national grid and is expected to supply 90-100% of the household's electrical usage over a calendar year. Stay tuned for an empirical evaluation of the system in coming months. Photovoltaic panels of this variety contain no moving parts and have a realistic lifespan of between 25 and 30 years. During this period, not only will this system make our household virtually independent of fossil fuels (emphasis on "virtually"), it will increase the albedo of the planet by some exceedingly minute amount. Albedo is a term used to describe the amount of solar energy diffusely reflected off or away from the earth (thus contributing to the earth's cooling) rather than the portion of solar energy which is absorbed (thus heating us up). Solar panels reflect more energy back to space than typical asphalt roofing shingles and thus are also acting to cool our very tiny portion of the planet. If anyone has questions about the process or how to compute the payoff date of a system of this size, feel free to stop in!



### Bio Factoid of the Month:

**Toilet Plant.** Pitcher plants here in Connecticut have a pitcher of water that acts like the roach motel. An insect falls in and never gets out; it is digested by the plant. In Borneo, there is a different species of pitcher plant, found at elevations where insects are less abundant. The Borneo species gets its nutrition not from insects but from tree shrews that use the pitcher of the plant as a toilet! The feces of tree shrews provide nitrogen to the plant.

## October Biology Announcements

### Biology Seminars Mondays at 2:00 pm NC 213

**Dr. David Spector**, CCSU Department of Biology. The Invisible Birds of Ralph Ellison. **5 October.**

**Dr. David Taylor**, University of Portland. Research in Plant Biology. **19 October.**

**Dr. Jeremiah Jarrett**, CCSU Department of Biology. Phenotypic Plasticity in the Barnacle Genus *Chthamalus*. **26 October.**

**A visit and a scrape.** One of the many rewards of being a biologist is having friends who are biologists and visiting them. It's fun to go to a colleague's lab and see powerful equipment, clever experiments, and interesting organisms for myself. I especially enjoy the opportunity to visit field research sites where I can observe research on organisms in their natural context. Seeing equipment, experiments, organisms, and habitats for myself helps me to appreciate the thought that goes into the design of experiments and observations, the painstaking labor often involved in activities as diverse as microscopic procedures on single cells or lugging equipment out to remote field sites, and the practical limitations that may prevent a researcher from having all the controls or as large a sample size as one might wish for. Such a visit helps one to appreciate the amount of work that went into any one sentence in a textbook or lecture.

In August I was fortunate to be in southern California at the same time as Dr. Jarrett of this department, and I was able to visit him at low tide and to see the rocks on which he does much of his barnacle research. I enjoyed seeing the plastic plates that he uses to measure rates of settlement of larval barnacles in different conditions, in this case with chemical signatures of different exposures to predatory snails. The labor involved in anchoring these plates to rocks and removing them on a regular schedule for examination in the laboratory was apparent.

Besides the glimpse of a research project in progress, I enjoyed the opportunity to explore the rocky intertidal habitat, that region between the high and low tide lines richly inhabited by marine life. Anemones, large colorful cousins of the drab, little hydras we find in ponds, huge, colorful sea-stars, a small octopus, a few fish, and, of course, barnacles entertained me. The creatures that fascinated me the most, though, were chitons, mollusks that resemble little armored vehicles hugging the rocks.

Each chiton that I found above the water line was protected by its eight hard plates and sealed like a suction cup against a rock by its girdle of soft tissue. Each was in a little depression slightly larger than the animal itself. Long before the word "niche" acquired an ecological meaning, it referred to a recess in the face of a building where a statue might be placed; these chitons had niches in both senses of the word. Did they find appropriate irregularities in the rock surface or did they make their own shelters? Chitons have radulas, tongue-like structures, equipped with teeth made of the mineral magnetite, one of the hardest substances produced by any animal (harder than the enamel that coats our teeth). They use the radulas to scrape off their algal food; do they also use the radulas to scrape out rock shelters? I don't know, and I hope that someone finds out. Any visit to the rocky intertidal, or to any other natural habitat, can generate enough questions for many lifetimes of research.

--David Spector

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## Bio Word Search #24 Stem Cell Research

BLASTOCYST	MEDICINE
BONEMARROW	MEIOSIS
CHROMOSOME	MITOSIS
CLONING	MULTIPOTENT
CORDBLOOD	PLURIPOTENT
DIFFERENTIATION	REGENERATIVE
ENUCLEATED	THERAPUTIC
EPIGENETIC	TOTIPOTENT