

Dr. Marlene DeLuca begins duties as one of 12 members of the new Environmental Measurements Subcommittee of the Environmental Protection Agency

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Dr. Marlene DeLuca, associate professor of chemistry in residence at the University of California, San Diego, begins her duties this month (May) as one of 12 members of the new Environmental Measurements Subcommittee of the Environmental Protection Agency.

The subcommittee is one of three science advisory boards recently created by Congress to give the Environmental Protection Agency expert scientific counseling.

"The purpose of our subcommittee is to ensure the scientific accuracy by which decisions are made with regard to measuring pollutants in the environment," explained DeLuca. "In addition to special projects which we will undertake, the subcommittee will make sure that the agency receives sound scientific advice."

DeLuca's expertise is in the area of bioluminescence, a field of science in which her husband, UC San Diego Chancellor William McElroy, was a pioneer. Her continuing studies are based on the chemical reaction which causes fireflies and other life forms to glow. According to DeLuca, the glow is created when an enzyme called luciferinase combines with oxygen and a compound called adenosine triphosphate, or ATP.

ATP is found only in living cells, DeLuca said, so if luciferinase is introduced into a system and light is produced, it can be concluded that living cells are present. The amount of ATP present can be measured by the degree of bioluminescence, she added.

Several applications for this process have been discovered or are being explored. DeLuca is researching the possibility of using the process to determine the stage of development of certain diseases in the human body. The test can be used to detect life in a variety of media, from lunar samples to ocean samples.

One important use of the process is as a test for the presence of bacterial pollution in water. It is this procedure which could play a vital part in the work of the Environmental Measurements Subcommittee.

"I think it's going to be a tremendous opportunity for me as a scientist to have input in issues that I feel are important and have not had the necessary scientific backing in the past," DeLuca said.

DeLuca was appointed to the subcommittee for a two-year term which can be renewed. She said the subcommittee will meet approximately six times a year, beginning in May.

For further information contact: Leslie Franz, 452-3120

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