Bioluminescence on the Web: The Digital Photobiology Compendium

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The Digital Photobiology Compendium www.photobiology.info is an educational resource comprising thirteen sections covering the various sub-disciplines of the field. Each section consists of an introductory module, and usually 3 to 9 more advanced modules. The coverage is designed for the mid to upper undergraduate level, and all the modules can be organized into a format to suit the aims of any particular course. The DPC Bioluminescence section leads the student from a general view of the subject to more advanced modules that deal with "cutting edge" investigations that are written in such a way as to not overwhelm the student with the detail found in a literature review. Interactive tools are used to aid understanding and some structural examples developed by Leo Lin from McGill University are especially impressive. The first module introduces the student to the wide range of occurrence of bioluminescence, the second gives a brief treatment of historical aspects, and the third describes a number of experimental exercises suitable for the undergraduate laboratory. These three are written in a way to be quite suitable for high school or beginning college level students. Four advanced modules deal with the most active subjects of research, the bioluminescence mechanism of the firefly, the bioluminescent bacteria, the calcium regulated photoproteins, and the application to clinical diagnostics. Another module is descriptive of bioluminescent systems occurring on land and adds some recent studies of their biochemistry, and the last covers the great variety of species from the ocean depths. Overall we try to make clear that the majority of bioluminescent systems have hardly been studied, there are probably many yet to be discovered, and that there is a bountiful supply of subjects for future investigation. This work is supported by the American Society for Photobiology, the Photobiology Foundation and the U.S. Department of Education.