

2007 TAIWAN INTERNATIONAL SCIENCE FAIR

CATEGORY : Biochemistry

**PROJECT : Screening, Isolation, and Characterization
of Fluorescent Proteins from Nudibranchs**

AWARDS : Biochemistry Third Award

**SCHOOL : Philippine Science High School Main
Campus**

FINALISTS : Ivy Razel B. Ventura

COUNTRY : Philippines

ABSTRACT OF EXHIBIT

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TITLE: Screening, Isolation, and Characterization of Fluorescent Proteins from Nudibranchs

NAME: Ivy Razel B. Ventura

COUNTRY: Philippines

Fluorescent proteins are used to label and tag tumor cells. These are also used in molecular cloning methods, and in monitoring cellular processes. However, the Philippines does not have a local source of fluorescent proteins, and thus imports these expensive chemicals from other countries. Possible sources of fluorescent proteins may come from marine organisms and certain plants. This work presents the screening, isolation, and characterization of fluorescent proteins from a potential local source—nudibranchs. The pigments of nudibranchs function to make their different body parts, as well as the *cerata*, brilliantly colored for defense and protection as in camouflage and aposematic behavior. The pigmentation in the skin of the nudibranchs was used as the fluorescent protein source. Crude protein extracts from the seven species of nudibranchs collected from Mabini, Batangas, Philippines were run through Reversed-Phase High Performance Liquid Chromatography (HPLC) for screening. Graphs of the absorbance of the seven species showed which species exhibit the most number of aromatic amino acids, the main component of fluorescent proteins. The species with the highest absorbance at 280 nm, which is *Chromodoris willani*, was run through the HPLC again for recovery and collection of fractions. The fractions were examined through fluorescence microscopy, wherein the samples were filtered at three emission ranges, the first at 450-470 nm, the second at 515-545 nm, and the third at 600-650 nm, which corresponds to blue, green, and red, respectively. The proteins which emit at the said ranges were the only component allowed to pass through. The results, which are images of the excited proteins, showed that fluorescent proteins are present in the fractions of Sample 6—*Chromodoris willani*.

評語

The project aims to isolate fluorescent proteins from Nudibranchs. The experiment of using reversed-HPLC led to fractionation of proteins that could be excited to emit fluorescence by fluorescent microscope. The project is interesting and can be encouraged for further purification.