

Project 11/2005 – Developing Two Biosystems for Monitoring Dioxins or Polycyclic Aromatic Hydrocarbons

Purpose

This paper seeks Members' advice on funding the captioned application for ECF submitted by The Chinese University of Hong Kong.

Background

2. The funding requested by this project is \$775,100.00 for the staff cost of employing one Research Assistant for 24 months (\$360,000.00), the cost for the chemicals (\$314,000.00), and the overhead administrative cost (\$101,100.00). The project is expected to last for 24 months.

3. The objectives of this proposed research are as follows:

- a) To improve a cell culture system developed a decade ago for the detection of dioxins/PAHs. The system will provide a rapid detection as well as the underlying biological significance of exposure.
- b) To establish a fruitfly reporter system for monitoring the compounds in air. A XRE-driven green fluorescent protein (GFP) or luciferase reporter system is genetically incorporated into *Drosophila melanogaster* to monitor the airborne dioxins/hydrocarbons.

4. The Environmental Protection Department (EPD) and two external expert assessors have reviewed the proposal. EPD points out that the project proposes a biochemistry method for real-time monitoring of dioxins and PAH in air, which differs from the existing instrumental methods. EPD has major reservation on the practical needs and benefits of the proposed bio-monitoring systems. EPD considers it more appropriate for the PI to apply for funding from the Research Grants Council for this type of research specific projects.

5. Assessor 1 supports the proposal largely based on its academic merit. The development of new assay systems may provide potentially better alternatives to existing methods. The use of fruit fly is an interesting research idea and a feasible one. However, the Assessor also points out that there are existing analytical methods for dioxins and PAHs and he sees no great urgency in developing new techniques. He considers that the project is

research-oriented and cannot be directly applied in environmental conservation in the near future. Assessor 2 supports the proposal and agrees with the PI's opinion that bioassays using recombinant cell lines and/or transgenic organisms would be good screening tools to detect and monitor the dioxin-like contaminants in the environment. When established and successfully proved, the developed cell lines or transgenic organisms can be used for many other researchers in scientific manner. Nevertheless, Assessor 2 also doubts its utilization in commercial manner.

6. Regarding the nature of the project, the "Guide to Application for the Fund" specified that research, technology demonstration and other related projects should have contribution in a direct and practical way towards the environmental improvement and conservation of the local environment and should not be too theoretical in nature. Regarding the budget, the "Guide to Application for the Fund" stipulated that funding for general administrative costs incurred by the applicant organization in undertaking the project will not normally be given. Accordingly, the proposed overhead administrative cost of \$101,100.00 should not be supported.

Advice sought

7. Members are invited to advise whether the application for ECF should be supported as detailed in paragraphs 2 to 3 above and if supported, the exact amount of fund to be recommended to the ECF Committee for approval.

**Secretariat, ECF Research Projects Vetting Subcommittee
May 2006**