• 系統編號	RC9008-0029
• 計畫中文名稱	Cyclopenta[cd]pyrene 在體內所引起去氧核醣核酸傷害之探討
• 計畫英文名稱	Cyclopenta[cd]pyrene-Induced DNA Damage in vivo
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC89-2320-B038-010
• 執行機構	台北醫學院公共衛生系
• 本期期間	8808 ~ 8907
• 報告頁數	7 頁
• 使用語言	英文
• 研究人員	徐景宏 Hsu, Ching-Hung
• 中文關鍵字	多環芳香烴化合物；Cyclopenta[cd]pyrene；DNA 鍵結物；癌症；多環芳香烴化合物
• 英文關鍵字	Polycyclic aromatic hydrocarbon；Cyclopenta[cd]pyrene；DNA adduct；Cancer；Polycyclic aromatic hydrocarbons (PAHs)
• 中文摘要	根據流行病學研究顯示空氣污染較嚴重地區居民之肺癌死亡率及發生率較高。而台灣都會區主要之空氣污染來自於機車排放廢氣中之致癌性多環芳香碳烴(PAHs)，例如 Benzo[a]pyrene (B[a]P)、Cyclopenta[cd]pyrene(CPP)等，其總量遠超過其他國家。因此，了解 PAH 與肺癌發生間的關聯性，實爲台灣環境醫學之重要課題。本計劃針對 CPP 在體內試驗(動物模式)所產生之去氧核醣核酸鍵結物(DNA adducts)加以研究。目前成果包括(1)成功建立測量 CPP-DNA adducts 之 HPLC 條件及方法，(2)已獲得 2 種主要 CPP-DNA 異構物標準品各約 1mg [cis-3-(Deoxyguaonsin-N2-yl)-4-hydroxy-3,4-dihydroCPP]，以及(3)探討影響正反 DNA adduct 異構物生成比例之催化因子(如鹵離子)，期對於 CPP 與 DNA 間之化學鍵結機制能有較深入之瞭解。
• 英文摘要	Air pollution is a serious human health problem around the world including Taiwan. Some genotoxic compounds have been found in airborne particles, including polycyclic aromatic hydrocarbons (PAHs). The amount of PAHs in air particles from urban area in Taiwan is much higher than that of UK, Japan, and US. Therefore, cancer, especially lung cancer, induced by PAHs should be an important environmental medical concern in Taiwan. Cyclopenta[cd]pyrene (CPP), a highly carcinogenic PAH, is a ubiquitous environment contaminant. It is usually found with benzo[a]pyrene (B[a]P) and from certain sources, it is up to 7-fold higher than B[a]P. Thus, it is chosen for this study. The current project aims to investigate DNA modification caused by CPP (in vivo in the near future). We first developed the analytical method of CPP-DNA adducts using HPLC. Then, two major adducts, the diastereomers of cis-3-(deoxyguaonsin-N2-yl)-4-hydroxy-3,4-dihydroCPP), were made, with approx. 1 mg each. These synthetic standards will be employed for generating corresponding antibodies. We anticipate that an immunochemical method, or ELISA, for detecting CPP-DNA adducts will be established. ELISA is considered to be more suitable for

adduct quantification when compared to the /sup 32/P-postlabeling assay. To further understand the chemistry between CPP and DNA, factors that may affect the formation of different stereoisomeric adducts were examined.