

• 系統編號	RD9911-0824		
• 計畫中文名稱	牙齒之再生組織工程研究---以豬之齒芽細胞與齒髓幹細胞之各別分離培養且併合血漿素膠與富含血小板纖維蛋白為支架之移植入豬齒槽與裸鼠之皮下發育		
• 計畫英文名稱	The Studies of Tooth Regeneration: Dental Bud Cells and Dental Pulp Stem Cells Isolated from Mini Pig for Cultivation and Implantation with Plasmin Glue and Prf as Scaffold into Pig Alveolus and under Dermis of Nude Mice for Development		
• 主管機關	行政院國家科學委員會	• 計畫編號	NSC97-2313-B002-009-MY3
• 執行機構	國立臺灣大學獸醫學系暨研究所		
• 本期期間	9708 ~ 9807		
• 報告頁數	0 頁	• 使用語言	中文
• 研究人員	郭宗甫 KUO TZONG-FU		
• 中文關鍵字	--		
• 英文關鍵字	--		
• 中文摘要	<p>數十年來，學者一直試圖以組織工程方式製造出牙齒，包括在體內以不同的位置使牙齒生長或是在體外以牙胚培育牙齒的生長。本研究之目的乃是利用組織工程的方法達成牙齒的再生。取 1.5 月齡的迷你豬，以外科手術取其下顎骨未萌發之白齒之牙胚組織，切碎成 < 1 mm³ 的碎塊，將其培養於含有 1.5%PC/ST (Penicillin/streptomycin)和 20%FCS(Fetal calf serum)的 DMEM(Dulbecco's modified eagle medium)培養液中，待細胞數量達到 10⁶cell/ml 後，將含有牙胚細胞/支架/富含血小板纖維素埋入同源豬的口腔原齒槽內，裸鼠則埋入背部之皮下處。同源豬植入九個月以放射線照影評估牙齒生長情形並犧牲，以組織切片評估牙齒發育情形；裸鼠則於 16 週後犧牲，以組織切片評估牙齒發育情形。牙齒組織進行組織染色，包括：H&E 染色等。而牙釉質特有的 CK14 及齒本質特有的 BMP1 亦將利用 Vectstain ABC kit 進行免疫組織化學分析。目前於再生醫學領域，牙齒再生方面並無臨床突破性的成果，本實驗以再生醫學三要素：幹細胞(Stem cell)、形態原(Morphogen)及支架(Scaffold)為基礎以期達到牙齒的再生。</p>		
• 英文摘要	<p>A biological tooth substitute that could replace lost teeth would provide a vital alternative to currently available clinical treatments. The purpose of this project is to generate a tooth crown by tissue engineering. For this purpose, we used a tissue engineering approach to research the tooth regeneration. Using surgical operation to remove 1.5 month-old miniature pig molar tooth before eruption, minced into < 1 mm³ pieces, and then cultured in DMEM (Dulbecco's modified eagle medium)+1.5 %PC /ST(Penicillin/streptomycin) + 20 % FCS (Fetal calf serum). When the cell yielded 1 x 10⁶ cell/ml combined with scaffold and PRF (platelet-rich fibrin). The cell/scaffold/PRF constructs were implanted in both autograft into pig and xenograft into nude mice. After nine month, developing tooth tissues will be taken X ray picture after anesthesia and sacrifice for pig. Nude mice will be sacrifice after 16weeks. The developing tooth tissues will be excised and histology analysis. Immunohistochemical analysis will be performed by means of Vectstain ABC kit for CK14 and DMP1 analysis. The design of experimentation based on the three major elements of regeneration medicine, and expect to complete the teeth regeneration.</p>		