

• 計畫中文名稱	針對具抗熱緊迫之優良種豬精子進行外在環境控因改良之性別選殖及保存技術開發		
• 計畫英文名稱	Development of Sperm Sex Sorting and Storage Technique in Heat-Stress-Resistive Boar from Correlation between Genetic Mechanisms and Environment Factors		
• 系統編號	PD9808-0118	• 研究性質	技術發展
• 計畫編號	NSC98-2324-B038-002	• 研究方式	學術補助
• 主管機關	行政院國家科學委員會	• 研究期間	9808 ~ 9907
• 執行機構	臺北醫學大學通識教育中心		
• 年度	98 年	• 研究經費	1000 千元
• 研究領域	生物技術, 畜牧獸醫類		
• 研究人員	潘力誠,曾繁根,陳翰民,楊天樹		
• 中文關鍵字	抗熱緊迫；性別篩選；微流晶片；環境控因；種豬精子		
• 英文關鍵字	Heat-stress-receptiveness； Sex sorting； Micro-fluidic chip； Environmental factor； Boar sperm		
• 中文摘要	<p>目前針對優良種豬的研究多集中在抗熱緊迫等相關議題，且此類之繁殖力研究著重於母豬育種改良，鮮少有對種豬進行提高精子繁殖力之環境變因控制之相關研究。更缺乏由環境因素影響基因機轉，在精子公母性別上可能出現選殖差異的研究。現今微機電、微流體等實驗室晶片系統的開發，已成功將原本需要大型儀器的實驗縮減到晶片上執行。由於微流體晶片符合不需離心即可篩選的原則，加上精蟲在受孕過程中乃透過輸卵管做天然篩選，微流體晶片的流道尺寸正好符合這樣的條件。因此，本研究計畫將針對以上所提及的問題，依兩個年度以自行研發的多閥值微流道技術為基礎，導入對精子細胞傷害極低的生物晶片，於晶片內層流來進行豬精性別差異對外界變因各別調控機制的分析。而主要的環境控因則有：滲透壓、淨液壓、溫度、酸鹼度、濃度、以及雜質比等。微流道處理後的精液將由螢光探針雜合法及免疫識別，輔以流式細胞儀進行數值化的校對，並提供有關精子性狀表現的數據。另外，由於精子對外界的環境相當敏感，本研究同時亦將分析不同性別的精子，在不同的儲存條件下對各別品質的影響，以期可以更進步提供一可改善未來豬精運送及保存的技術。</p>		
• 英文摘要	<p>Heat-stress-receptiveness has become one of the most important issues in recent development of pig reproduction industry. Nevertheless, much of the attention is in female breeding method reformation. Therefore, limited references are available of sex difference in the role of environmental factors of for sperm screening and storage. However, traditional method in sperm quality assessment focuses only in total head counts, mobility, density, and abnormal ratio in morphology and impurity. With recent progress in Micro-Electro-Mechanical Systems (MEMS), it is now technologically feasible for practical implementation of micro-fluidic</p>		

channels to provide an integrated environment to study the effects of each and combined effects from both factors that affect the quality of sperm. Therefore, the major purpose of this project is aimed to answer this gap between mobility and unparallel difference in fertility, through the evaluation of possible interplay mechanisms among various environment factors. Thereafter, may provide better protocols for the control of the sperm damages and enhance the current success rate in sex sorting. Four proposed approaches would be carries out in two sequential budge years as the following: First, and most important is to establish essential sperm sorting protocol; Secondly, is to identify the origin of sperm damages as well as its self-resist mechanisms. Thirdly, is to establish a suggested sex sorting process. Lastly, is to realize the sexual difference of sperm damage in storage and shipping condition.