

## 附件四、技術說明表



### 多功能多孔盤

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簡歷：<https://sites.google.com/view/ntu-iam-lab102>

#### 市場及需求：

目前多孔盤在新藥開發、生醫製藥、以及生物科學等產業、醫界及學研界領域的應用已經是制式的產品，並已經規格化及有許多大型設備可以對其進行高通量的檢測。但多孔盤在規格化後，因需在維持體溫的培養環境進行培養，在此高溫環境中培養液或試劑的水分会持續散失，造成周圍位置的培養孔產生實驗數據偏差，因而無法使用來進行試驗已是長年以來的問題，造成多孔盤的試驗通量有所限制。另一方面，目前多孔盤因尺寸上的規格化，在操作自由度上有相當大的限制，因此在使用上有許多的窒礙難行的問題。目前市面上亦已有一些新型的多孔盤裝置，但多需要該廠牌的介面系統進行檢測，因不能與實驗室內現有設備匹配，在應用上較為侷限。本案所提出之創新多功能多孔盤裝置即在符合目前多孔盤裝置的尺寸規格下進行創新設計，提供其多工之功能，解決上述之多孔盤的問題，並提供多種使用介面及操作自由度。

#### 技術摘要(含成果)：

本創新多功能多孔盤藉由新型結構設計，解決一般多孔盤的培養孔水分因熱散失而無法使用周圍培養孔來進行試驗的問題，並進行孔盤尺寸設計，可有效降低細胞及試劑使用量。同時，此多孔盤在多孔盤周圍具有創新機械結構設計，讓以薄膜為培養基材上的電極陣列可以同時以快接的方式與介面電路系統連接，使其可進行同步且多次量測，而不造成薄膜的破損。此創新孔盤亦可以提供組裝之多孔盤功能，讓多孔盤可以容易分組別進行分別檢測，以及將器官晶片可組裝成多孔盤裝置尺寸進行實驗等優勢。

#### 優勢：

1. 提升多孔盤可進行試驗之培養孔數量。
2. 降低細胞及試劑的使用量。
3. 可將薄膜的培養基底上的電極陣列與介面電路接出之介面。
4. 可組裝及可操作器官晶片之多孔盤設計，提升多孔盤使用之自由度及操作自由度。

#### 競爭產品：

1. 具電刺激電極之多孔盤裝置。
2. 使用薄膜為基材之多孔盤裝置。

#### 專利現況：

本研究團隊具有相關之器官晶片及微生理系統專利(I893293 & I897410)。

#### 聯絡方式(請不用填)：

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## Multifunction Multi-well Plate

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### Experience:

<https://sites.google.com/view/ntu-iam-lab102>

### Market Needs:

Currently, multi-well plates are standard products used in the drug development, biopharmaceutical, and bioscience industries, as well as in medical and academic research fields. They are standardized, and many large-scale devices can perform high-throughput testing. However, the standardization of multi-well plates has long been hindered by the inability to utilize surrounding culture wells due to moisture evaporation, resulting in reduced throughput and experimental data variability. Furthermore, the standardized size significantly restricts operational flexibility. While some new multi-well plates are available on the market, they often require specific interface systems, limiting their application due to incompatibility with existing laboratory equipment. Our innovative, multi-functional multi-well plate is designed to fit the specifications of standard multi-well plates, offering multiple functions that solve the aforementioned problems and providing various user interfaces and operational flexibility.

### Our Technology:

Currently, multi-well plates are standard products used in the drug development, biopharmaceutical, and bioscience industries, as well as in medical and academic research fields. They are standardized, and many large-scale devices can perform high-throughput testing. However, the standardization of multi-well plates has long been hindered by the inability to utilize surrounding culture wells due to moisture evaporation, resulting in reduced throughput and experimental data variability. Furthermore, the standardized size significantly restricts operational flexibility. While some new multi-well plates are available on the market, they often require specific interface systems, limiting their application due to incompatibility with existing laboratory equipment. Our innovative, multi-functional multi-well plate is designed to fit the specifications of standard multi-well plates, offering multiple functions that solve the aforementioned problems and providing various user interfaces and operational flexibility.

### Strength:

1. Increase the number of culture wells that can be used for experiments on the multi-well plate.
2. Reduce the amount of cells and reagents used.
3. Provide an interface for connecting electrode arrays of a film substrate with an interface circuit.
4. The design of the multi-well plate allows for the assembly and manipulation of organ-on-a-Chip devices, increasing the flexibility of use and operation of the multi-well plate.

### Competing Products:

1. Multi-well plate with electrophysiological electrodes.
2. Multi-well plate with a film substrate.

### Intellectual Properties:

Our team has related patents for the Organ-on-a-Chip and Microphysiological system (I893293 & I897410).

### Contact (do not need to fill out):

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