

R&D COLLABORATIVE PROPOSAL / **PARTNER SEARCH**

The information you are about to provide in this form will be distributed for matching your company profile and that might be interested in the proposal of collaborative R&D project that you will be describing in this form.

(Please use English language for filling in the document)

YOUR COMPANY PROFILE

Company name: **Industrial Technology Research Institute (ITRI)**

Number of employees:

Annual turnover:

Balance Total:

Year of latest financial report:

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City: Hsinchu

Province:

Postal Code: 31040

Telephone: +886-3-582-0100

Fax:

Email:

WEB site:

<https://www.itri.org.tw/english/index.aspx>

Contact: Shu-chen (Felice) Cheng

Position: Manager of Drug Delivery
Department

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Additional Contact: Jing-Yuan (Arthur) Lin

Position: R&D Director of Smart
Microsystems Technology Center (MSTC)

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COLLABORATIVE R&D PROJECT PROPOSAL

(Describe as precisely as possible the technology cooperation proposal. Describe what you have to offer and what you expect from your potential partner) Include: Sector Group; Abstract of Project; Innovations Offered; and Current State of Development

Title	Electroporation based Drug delivery		
Duration (YM- YM)			
Budget(1,000 Euro)	TAIWAN	Czech Republic	TOTAL
Technology Field	microsystem technology, bio-MEMS, intradermal and transdermal delivery		
Summary	<p><u>Technology Description:</u></p> <p>This project aims to develop a MEMS-based devices that integrate fluid channel with high flow pump, electroporation system and a microcontroller for precise and enhanced intradermal and transdermal drug delivery. According to the purpose of use, the devices can be designed as various formats, such as pen-like injectors, handheld injectors, wearable patches/devices and so on. Therefore, our devices will include several basic features, including convenience, ease of carrying and use, dose accuracy, and a point-of-care medication delivery.</p> <p>In addition, we particularly focus on the development of device which is equipped with low-voltage electroporation system. Through ITRI's proprietary electrode design, the device has the potential to provide a highly efficient delivery of various drugs, such as DNA, mRNA, oligonucleotides, small molecules and large biologics. At the same time, the high cell viability will be retained due to reversible electroporation technology used. We believe our technology will bring more broad applications for medicines.</p> <p><u>Special Features:</u></p> <ul style="list-style-type: none"> ◆ Low invasiveness ◆ Easy to use with ID / SC injection ◆ Hand-held device with low electrical power required ◆ Injection and electroporation at the same time <p><u>Potential Applications:</u></p> <ol style="list-style-type: none"> (1) DNA/mRNA vaccines (2) Electroporation therapy in treating cancers <ul style="list-style-type: none"> • electrochemotherapy • cancer immunotherapy, such as IL-12, CpG, immunotoxins... (3) Regenerative medicine of exosome, siRNA, mRNA or others <ul style="list-style-type: none"> • Hair restoration therapy • Skin regeneration, wound healing 		

- (4) Rheumatoid arthritis treatment
 - Enhanced local drug delivery of interphalangeal joint of hands
- (5) Other potential applications
 - Skin management and aesthetic dermatology
 - Personalized medicine
 - Veterinary care and treatment
 - Others

Partner with us:

ITRI is committed to building the next generation delivery technology and is actively seeking potential opportunities for partnership to apply our technology to various therapeutics and applications. We are open to new ideas and collaboration.

Czech PARTNERS

(When you know a potential Czech company, write its name and contact details in this section.) Please, make a description of the desire type of the Czech Technology Partner.

We are looking for pharmaceutical and biotech company with interesting on Applications of electroporation in the area below:

- (1) DNA/mRNA vaccines
- (2) Electroporation therapy in treating cancers
 - electrochemotherapy
 - cancer immunotherapy, such as IL-12, CpG, immunotoxins...
- (3) Regenerative medicine of exosome, siRNA, mRNA or others
 - Hair restoration therapy
 - Skin regeneration, wound healing
- (4) Rheumatoid arthritis treatment
 - Enhanced local drug delivery of interphalangeal joint of hands
- (5) Other potential applications
 - Skin management and aesthetic dermatology
 - Personalized medicine
 - Veterinary care and treatment
 - Others

YOUR COMPANY DESCRIPTION

(Company Website, Research and development guidelines, strategic alliances, competitive position, etc)

Background of Smart Microsystems Technology Center (MSTC)

The MSTC has long been devoted to the design and rapid production of key components to integrated modules and system integration applications. There is an 8" fast prototyping MEMS fab with lithography, dry etching, wet etching, PECVD, LPCVD, PVD module for the developing of niche MEMS device such as inertial sensors, gas sensors, even to optical sensors but also dedicated in system integration from terminal device to IoT sensor network.

Core Technology:

1. Design of MEMS device and rapid prototyping
2. Intelligent System integration technology
3. AI interaction technology