

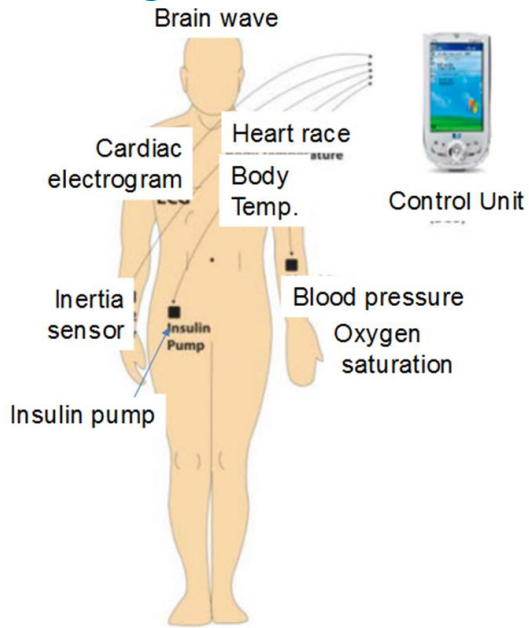


Research Progress of Next-Generation Biomedical Sensor & Network Project in International Joint Research between NCTU and Tohoku Univ.

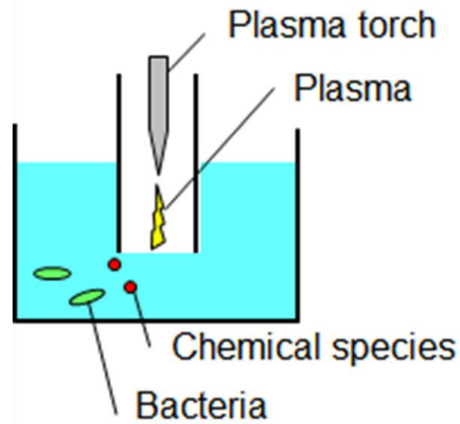
GL: Tetsu TANAKA

Graduate School of Biomedical Engineering
Tohoku University, JAPAN

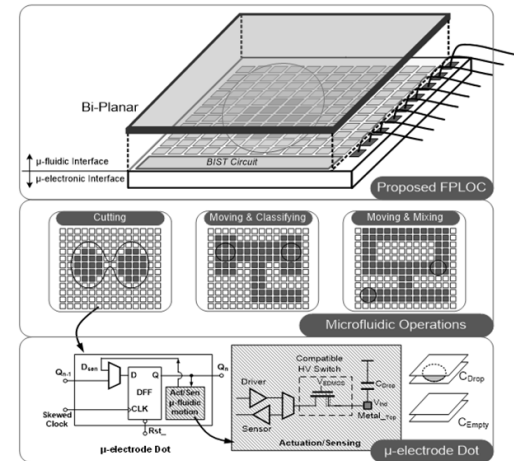
Battery free IoT sensor platform for biological sensors



Gas-liquid plasma sterilization

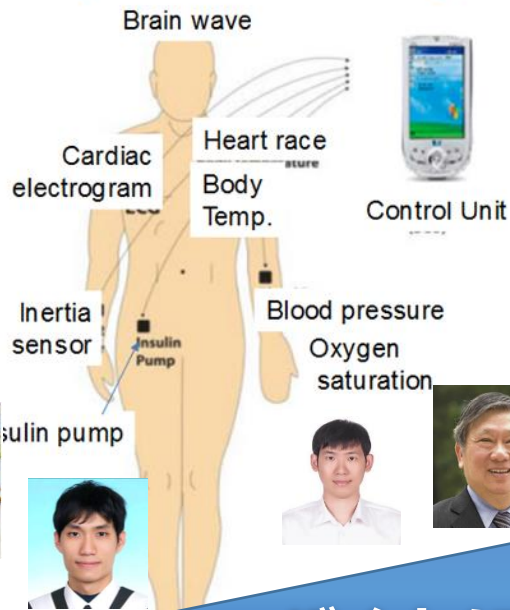


3D-staked Field Programmable Lab-on-a-Chip

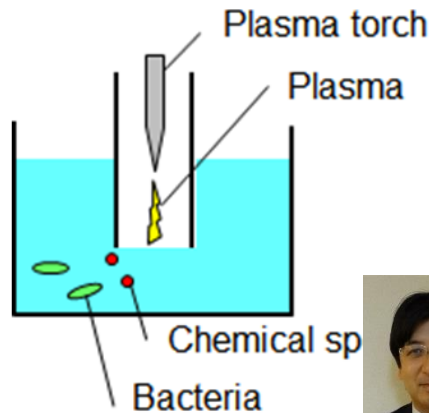


バイオメディカル技術プラットフォームの構築と 新しいヘルスケア・治療診断システムの 実現による医療の革新

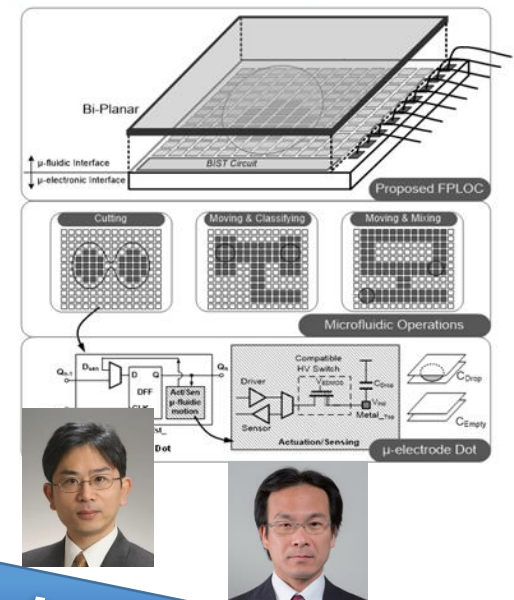
バッテリーレス生体用IoTセンサ
(Chen准教授 & 小野教授)



気液プラズマ滅菌装置
(Wu教授 & 佐藤教授)



3D積層プログラマブルLab-on-a-Chip
(Lee教授 & 田中教授)



バイオメディカル技術プラットフォーム

世界トップクラス半導体集積回路設計技術

【台湾国立交通大学】

マイクロエレクトロニクス分野では世界トップクラスの研究成果を上げており、今や世界一の半導体立国である台湾の電子産業の発展を研究・人材育成の両面で支える

世界トップクラス材料科学・センサ・集積化技術

【東北大学】

材料科学・MEMS・半導体集積化技術で世界トップクラスの研究成果を上げている



國立交通大學
National Chiao Tung University



Morris (Ming-Dou) Ker
Distinguished
Professor/Director
Institute of Electronics
BETRC



Peter (Chung-Yu) Wu
Chair Professor/General Director
Institute of Electronics
BETRC



Tetsu TANAKA
Professor
Dept. of Biomedical Eng



Takahito ONO
Professor/Director
Dept. of Mechanical Systems Eng
Microsystem Integration Center



Chen-Yi Lee
Professor
Dept. of Electronics Eng



Po-Hung Chen
Associate Professor
Dept. of Electronics Eng



Cheng-Hsiang Cheng
Postdoctoral
Research Fellow
BETRC



Takehiko SATO
Professor
Institute of Fluid Science



Makoto OHTA
Professor
Institute of Fluid Science



Nov. 30, 2018@Tohoku Univ.
1st Technical Workshop of Biomedical Sensor and Network Project between NCTU and Tohoku Univ

Dec. 14, 2018@NCTU
2018 Technical Workshop for International Joint Research between NCTU and Tohoku Univ



Aug. 23, 2019@Tohoku Univ.
2nd Technical Workshop of Biomedical Sensor and Network Project between NCTU and Tohoku Univ

Nov. 5, 2019@Tohoku Univ.
2019 Technical Workshop for International Joint Research between NCTU and Tohoku Univ

Tohoku Univ. - NCTU Collaboration

- Collaboration between Prof. Ono and Prof. Chen

1. Member

Tohoku: Prof. Takahito ONO

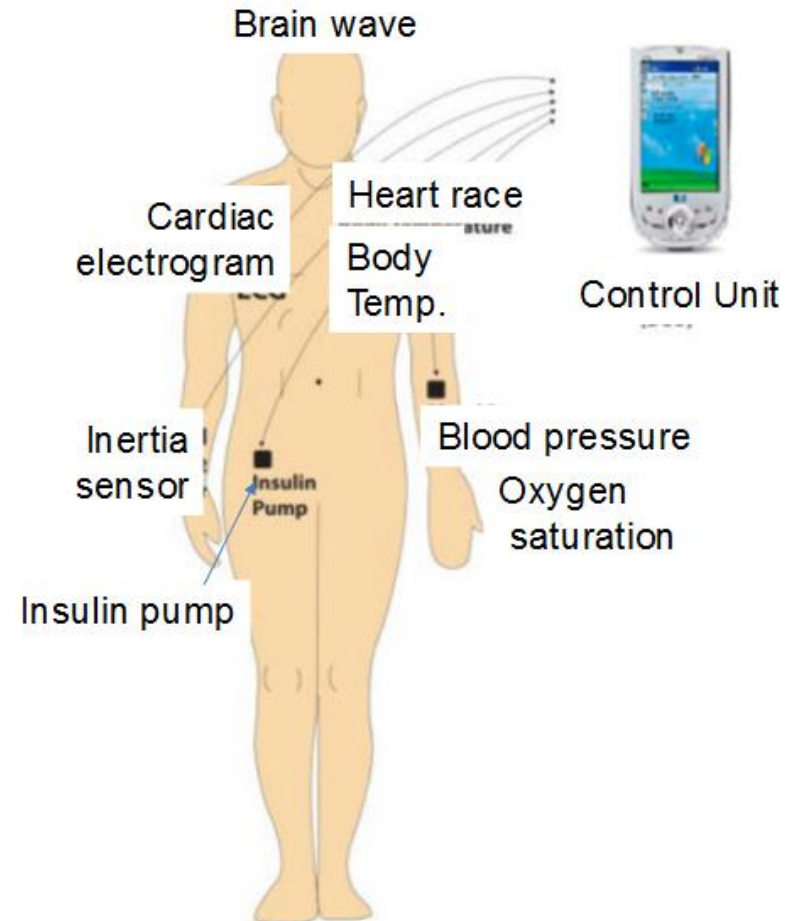
NCTU: Prof. Po-Hung CHEN

2. Project name

**Battery free IoT sensor platform
for biological sensors**

3. Aim (Goal)

**Develop battery free sensor platform
for wireless IoT network
such as body area network**



Concept of body area sensor network

Battery free IoT sensor platform for biological sensors

1. Project name

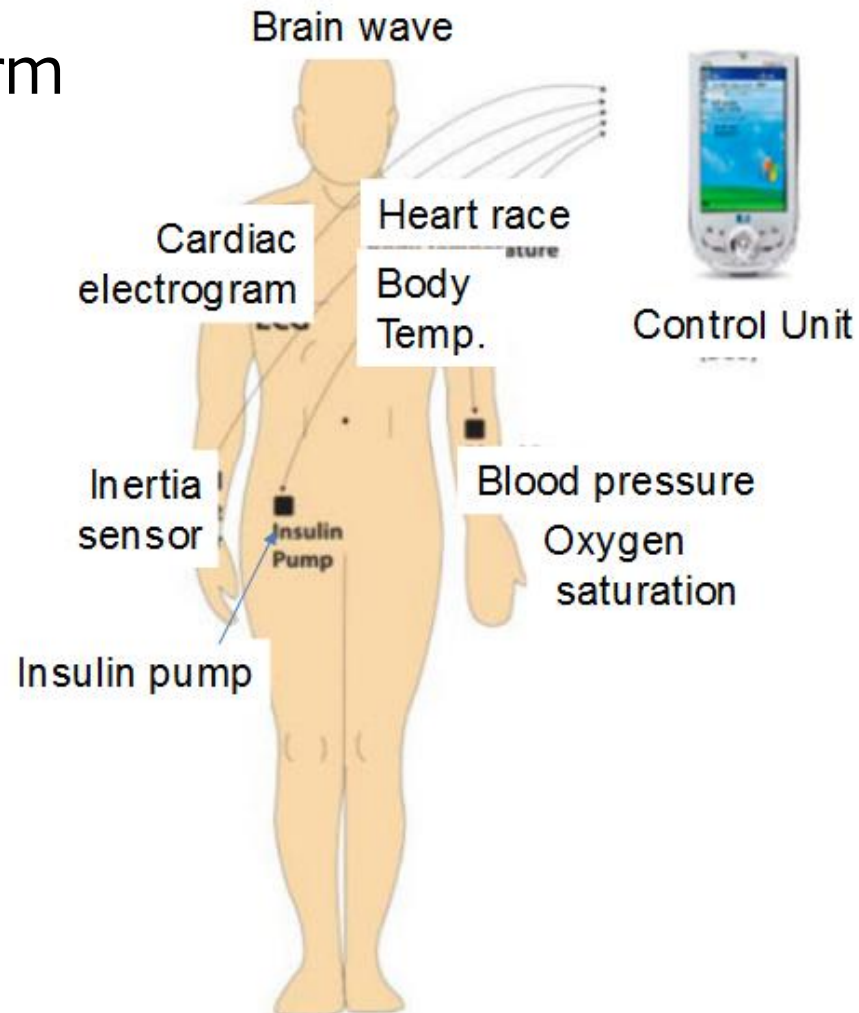
Battery free IoT sensor platform
for biological sensors

2. Member

NCTU: Po-Hung CHEN
Tohoku: Takahito ONO

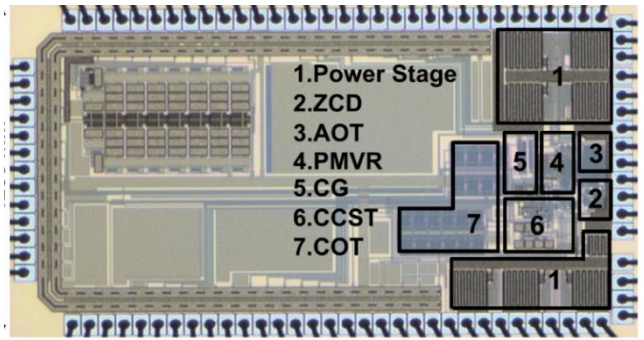
3. Aim (Goal)

Develop battery free sensor
platform for wireless IoT
network such as body area
network

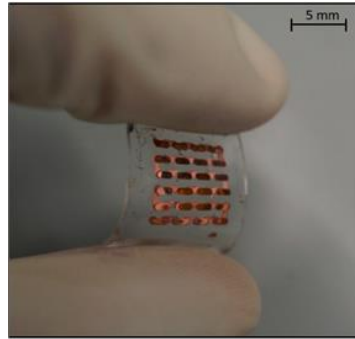


Battery free IoT sensor platform for biological sensors

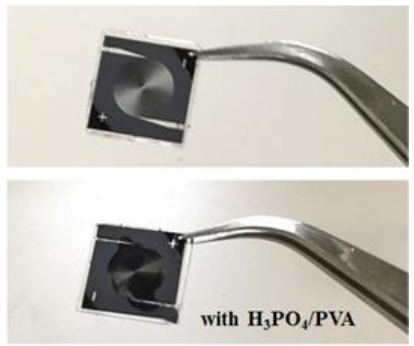
□ Collaboration between Prof. Ono and Prof. Chen



Microelectronics & power management

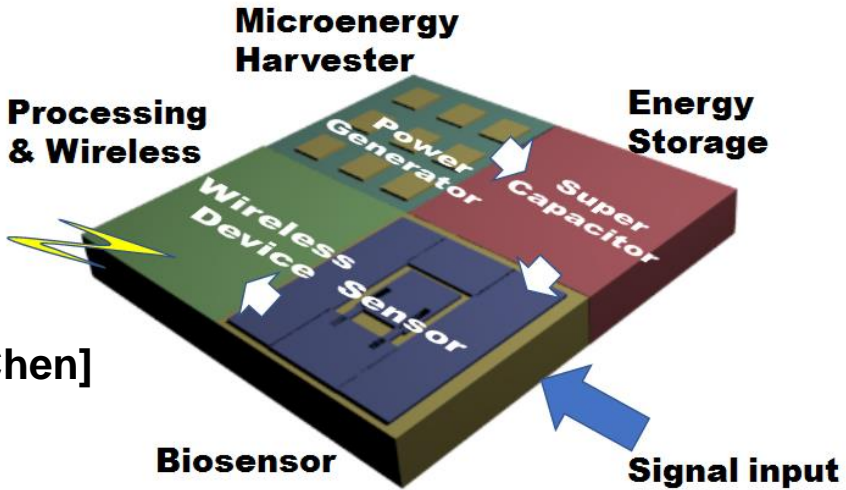


Flexible thermoelectric power generator



Micro-super capacitor

[by Prof. Po-Hung Chen]



[by Prof. Ono]

1. Project name

AIoD (Artificial Intelligence on Devices) with 3D-IC technology

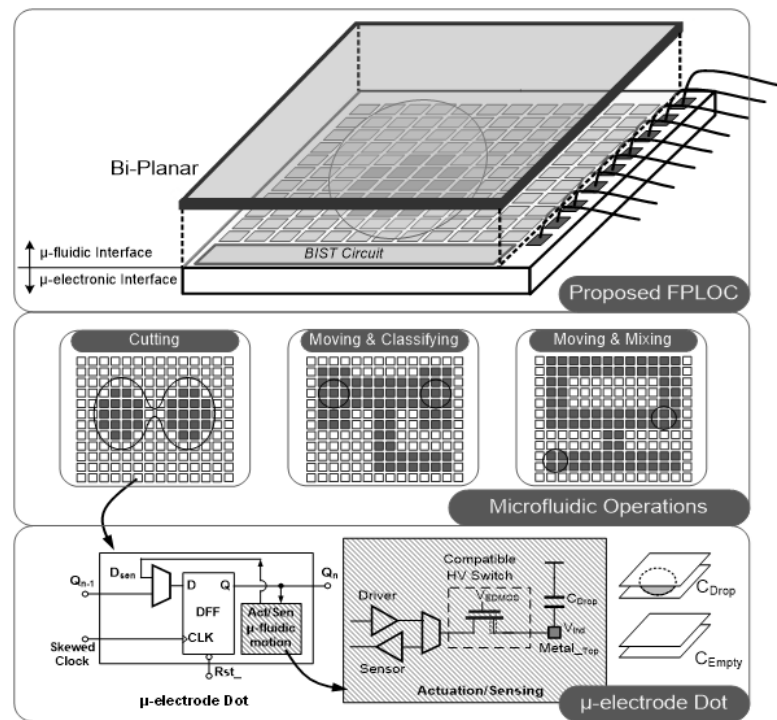
2. Member

NCTU: Chen-Yi Lee
Tohoku: Tetsu TANAKA

3. Aim (Goal)

To develop a smart sensing solution with sensor/learning model and 3D-IC integration for cell-biology applications

3D-staked Field Programmable Lab-on-a-Chip





1. Project name

Development of gas-liquid plasma sterilization device and cell measurements

2. Member

NCTU: Jong-Shinn Wu

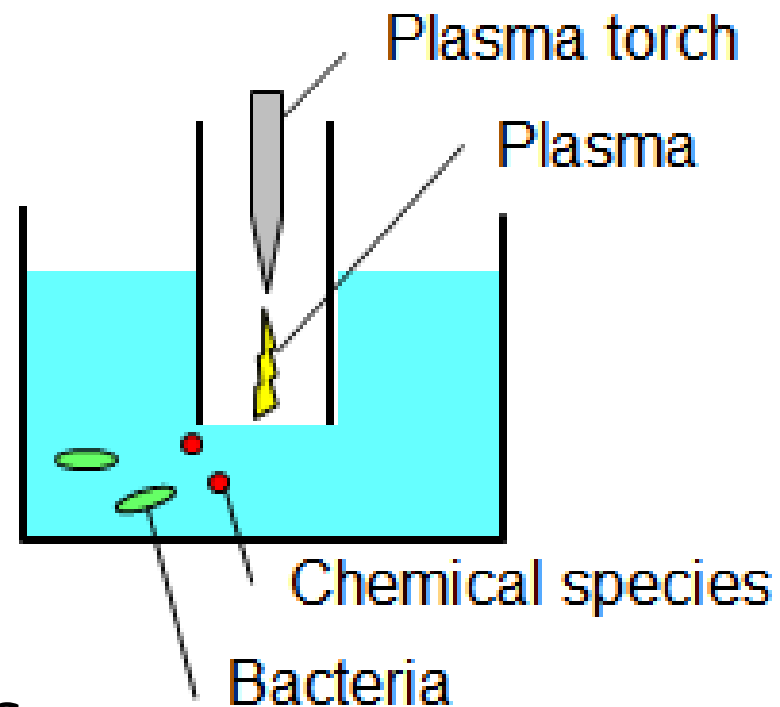
Mu-Chien Wu

Tohoku: Takehiko Sato

Satoshi Uehara

3. Aim (Goal)

Development of new plasma sterilization device combined by NCTU and TU original devices to improve efficacy of sterilization in water





1. Project name (IFS collaboration research project 2018)
Individual effects of plasma-generated electrical field,
short-life species, and long-life species on cell

2. Member

NCTU: Yun-Chien Cheng

Jong-Shinn Wu, Po-Chien Chien

Tohoku: Takehiko Sato

Chia-Hsing Chang

3. Aim (Goal)

Evaluation of effect of short/long-life
ROS and electrical field
on cell responses

