



Continuing Innovations for the next 100 years

**HOSOKAWA MICRON CORPORATION**

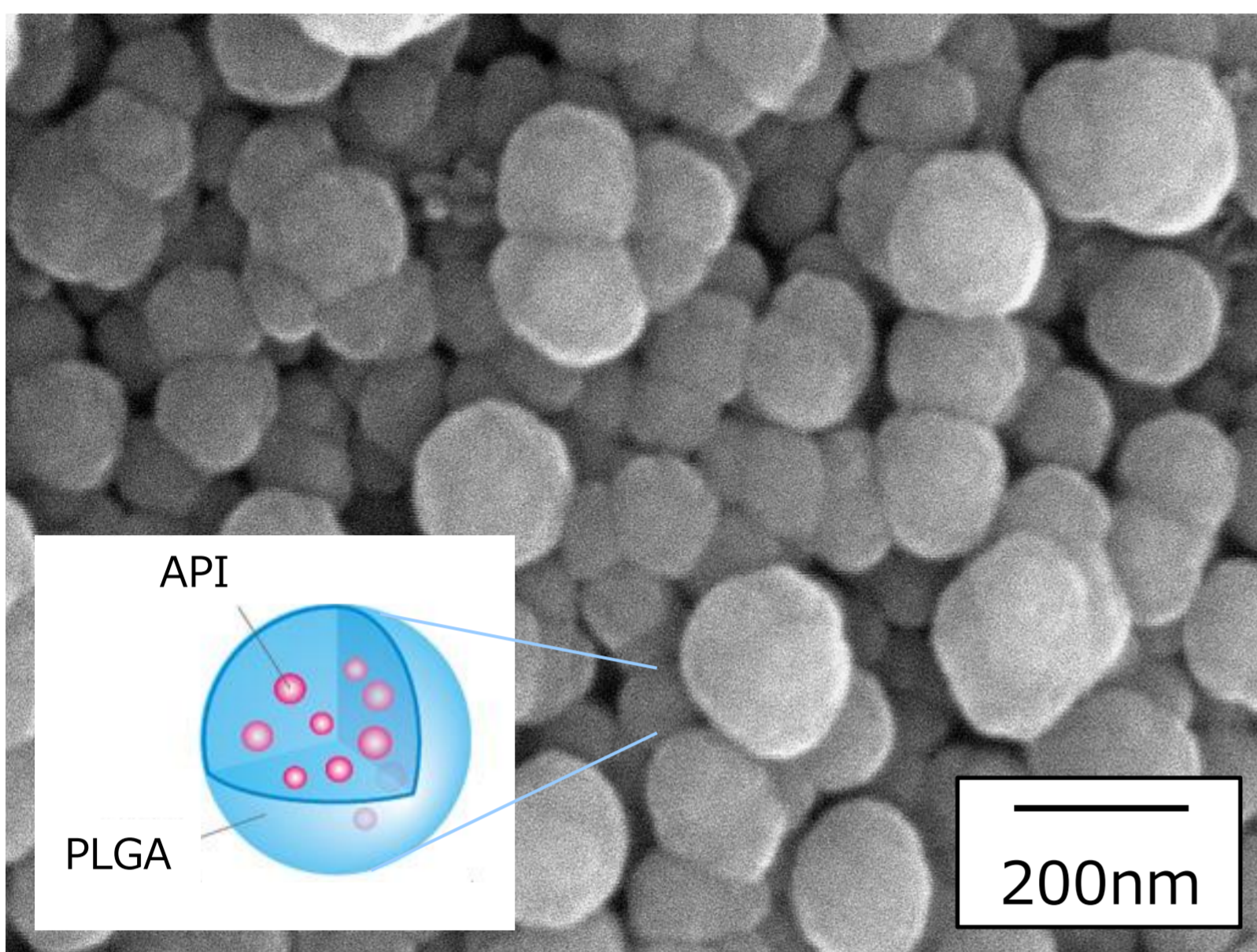
# PLGA

Poly-(Lactide-co-Glycolide) Acid

# nano particle

# DDS

Drug Delivery System



- Safety Biocompatible, Bioabsorbable
- Functionality Increasing drug absorption, Sustained-release, Endocytosis, Drug protection
- Productivity GLP/GMP manufacturing
- Diversity Solid preparation (DPI, tablet etc.), Injection, Suspension, Coating layer
- Sterilization Filter sterilization for injectable formulation

## Our Strength

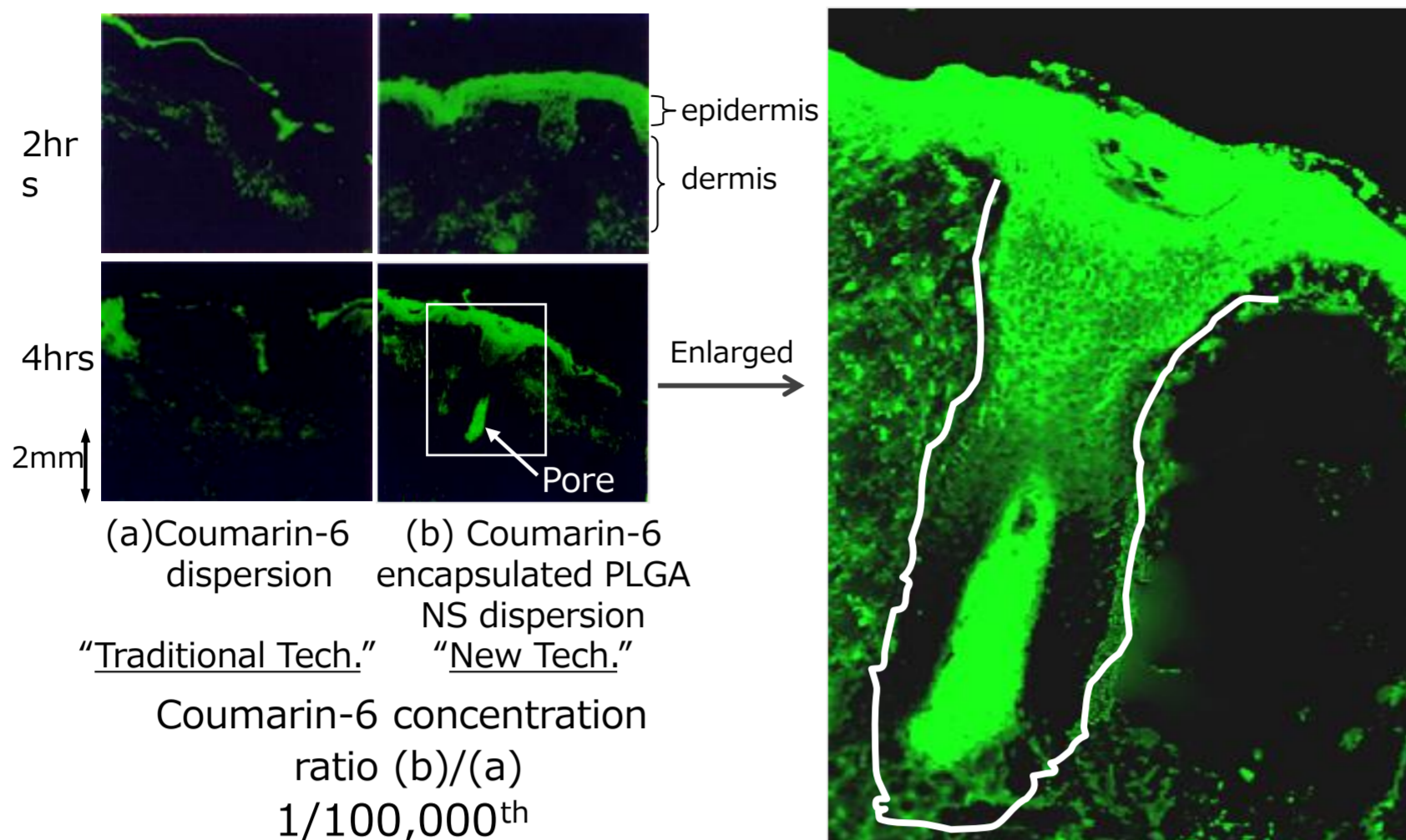
- Wide experience (low molecule ~ nucleic acid, peptide and protein)
- High drug encapsulation (from <2% to over 20%)
- Particle size control (from 50nm to 100µm)
- Powder processing (DPI, Tablet, Capsule)
- Unique application (Coating onto balloon, stent)
- Mass production (over 100L scale/batch)
- cGMP (Injection etc)

**Would you like to develop a DDS preparation  
or medical device using our PLGA  
nanoparticle technology?**

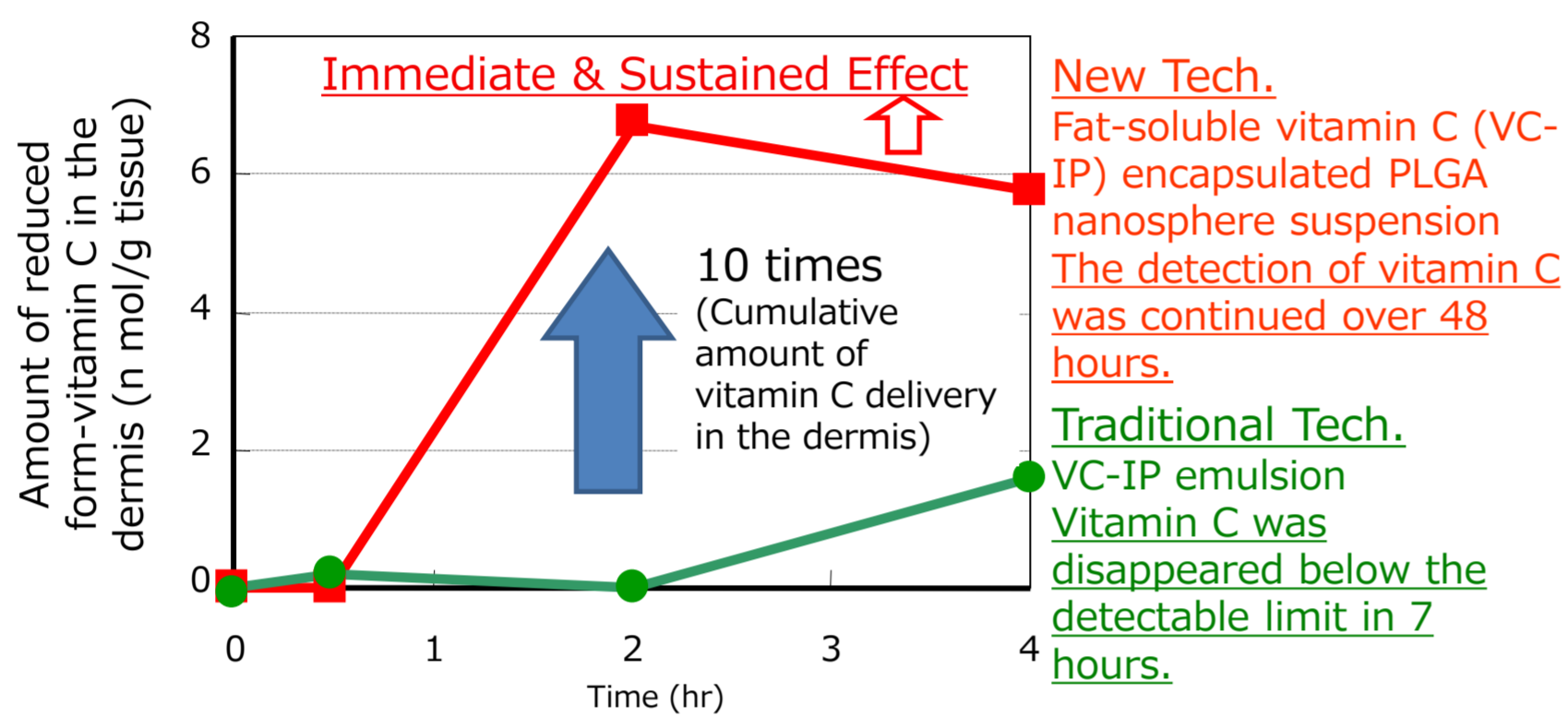
# DDS performance of PLGA nanoparticle

## Transdermal

“Enhancement effect of drug skin permeability using PLGA nanoparticle”



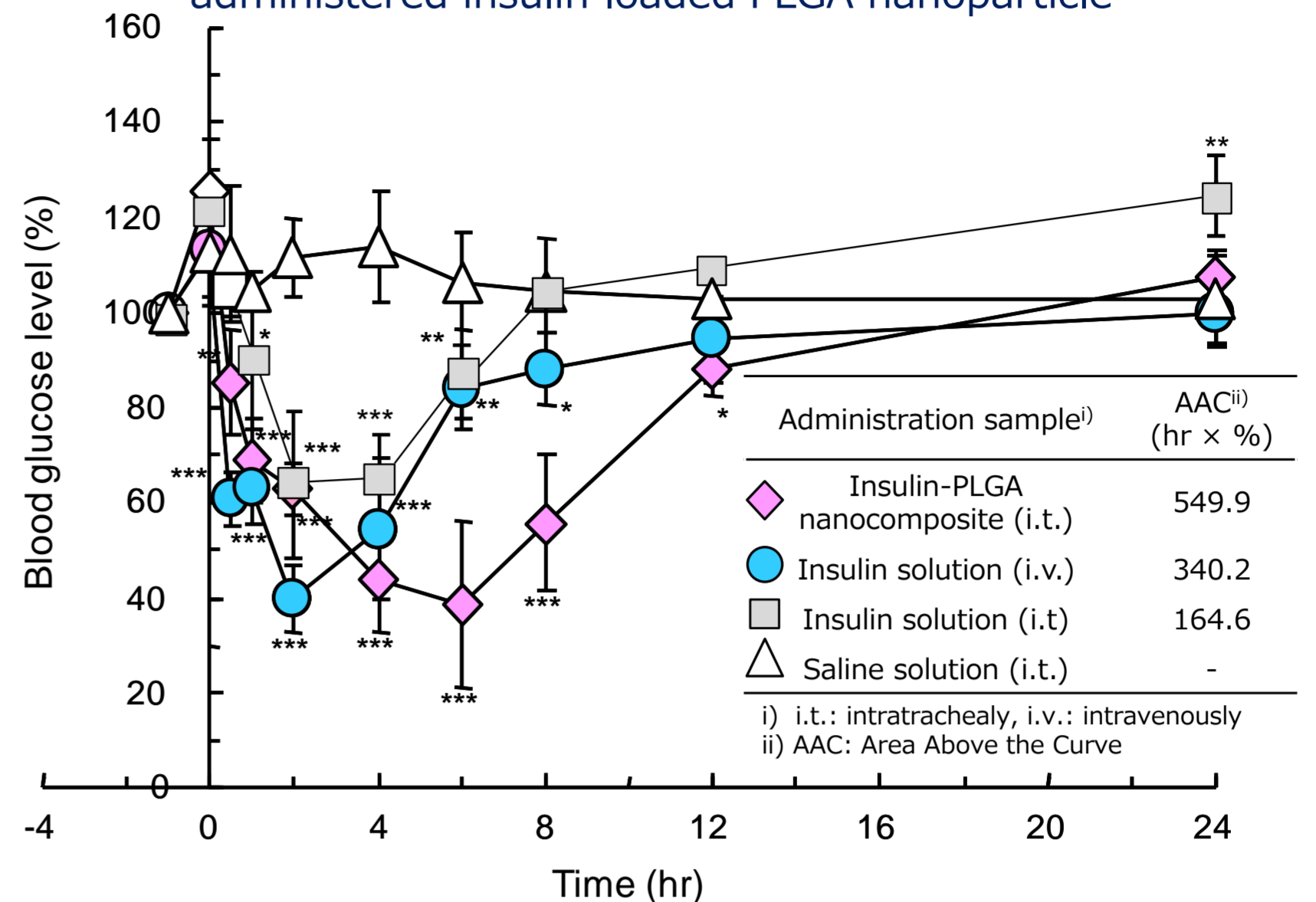
Human skin tissue (35-year-old female, the armpit biopsy)  
By Laboratory of Prof. Miwa of Prefectural University of Hiroshima



Human skin tissue (52-year-old female, the upper eyelid biopsy)  
By Laboratory of Prof. Miwa of Prefectural University of Hiroshima

## Pulmonary

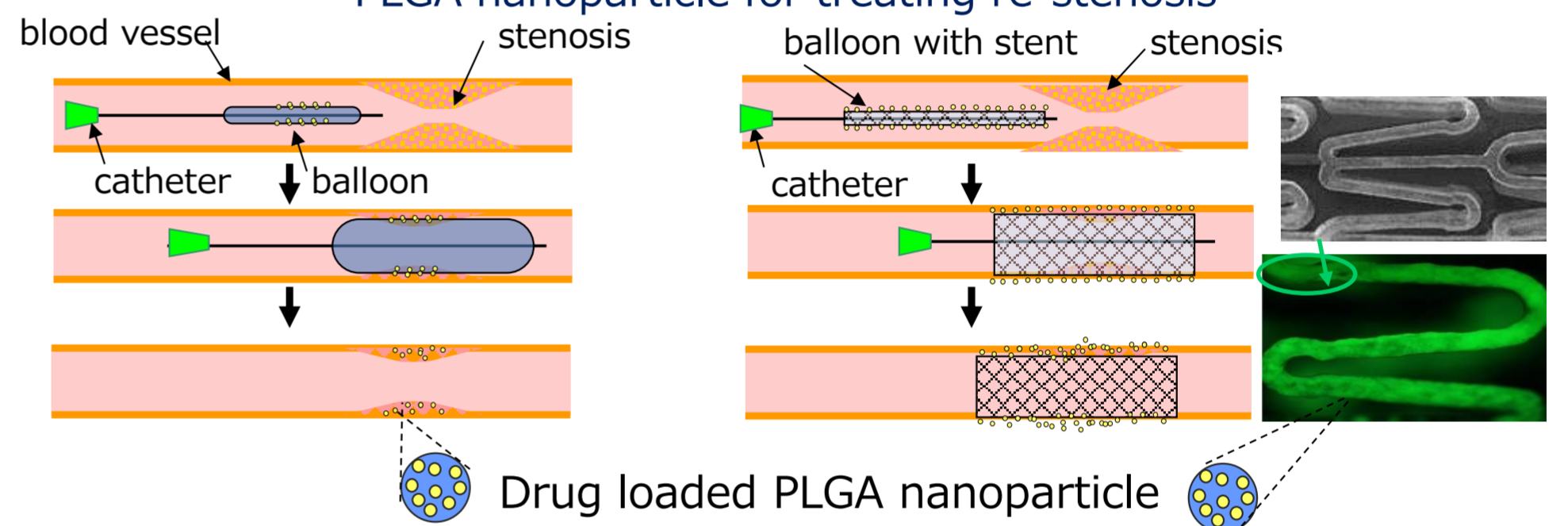
“Sustained decrease in blood glucose level of rat administered insulin loaded PLGA nanoparticle”



Dose of insulin: 3.0 IU/rat (n=6), significantly differently from control group (\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001, student-t test)

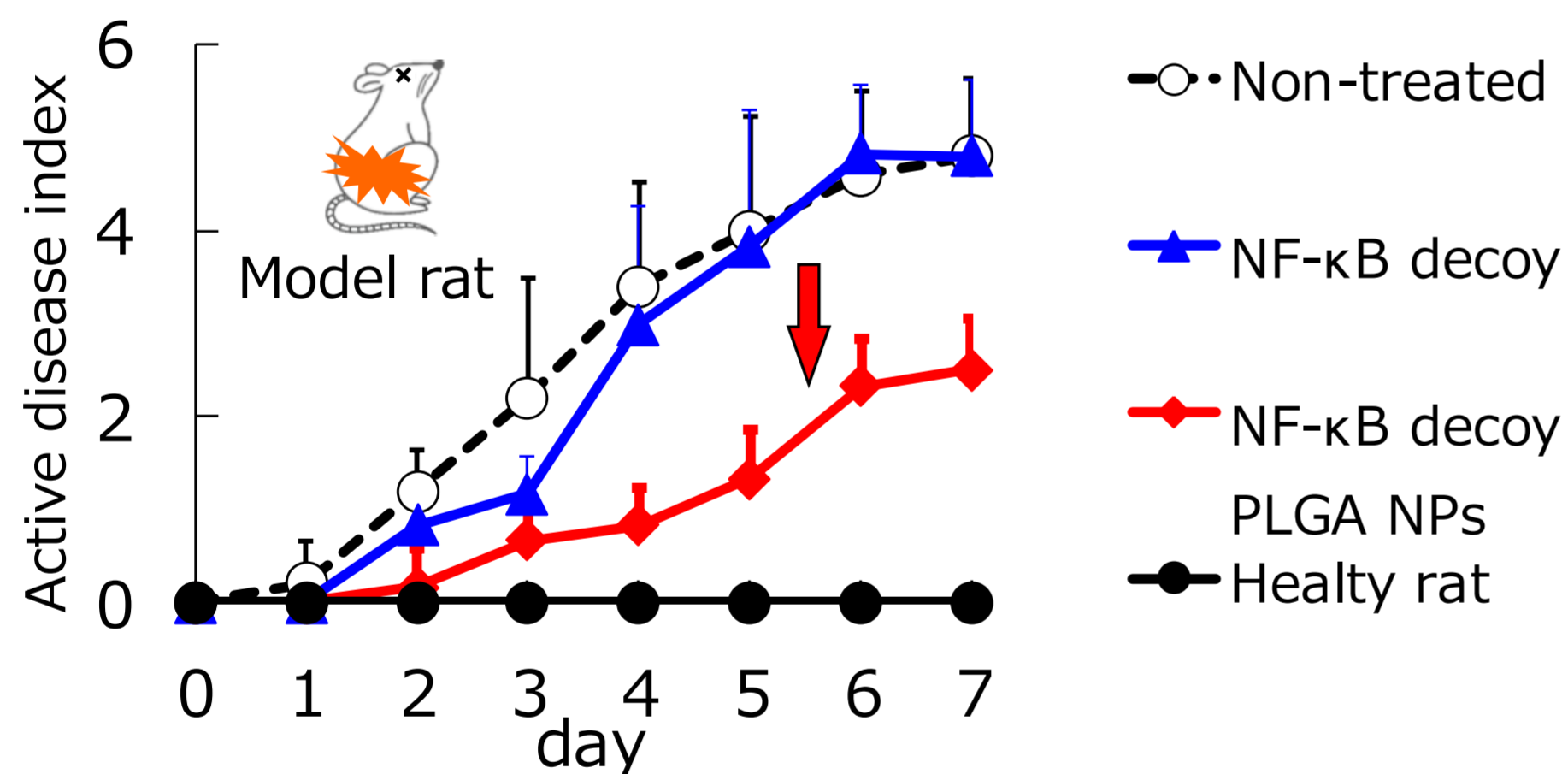
## Medical Device

“Development of drug eluting balloon catheter or stent using PLGA nanoparticle for treating re-stenosis”



## Oral nucleic acid delivery

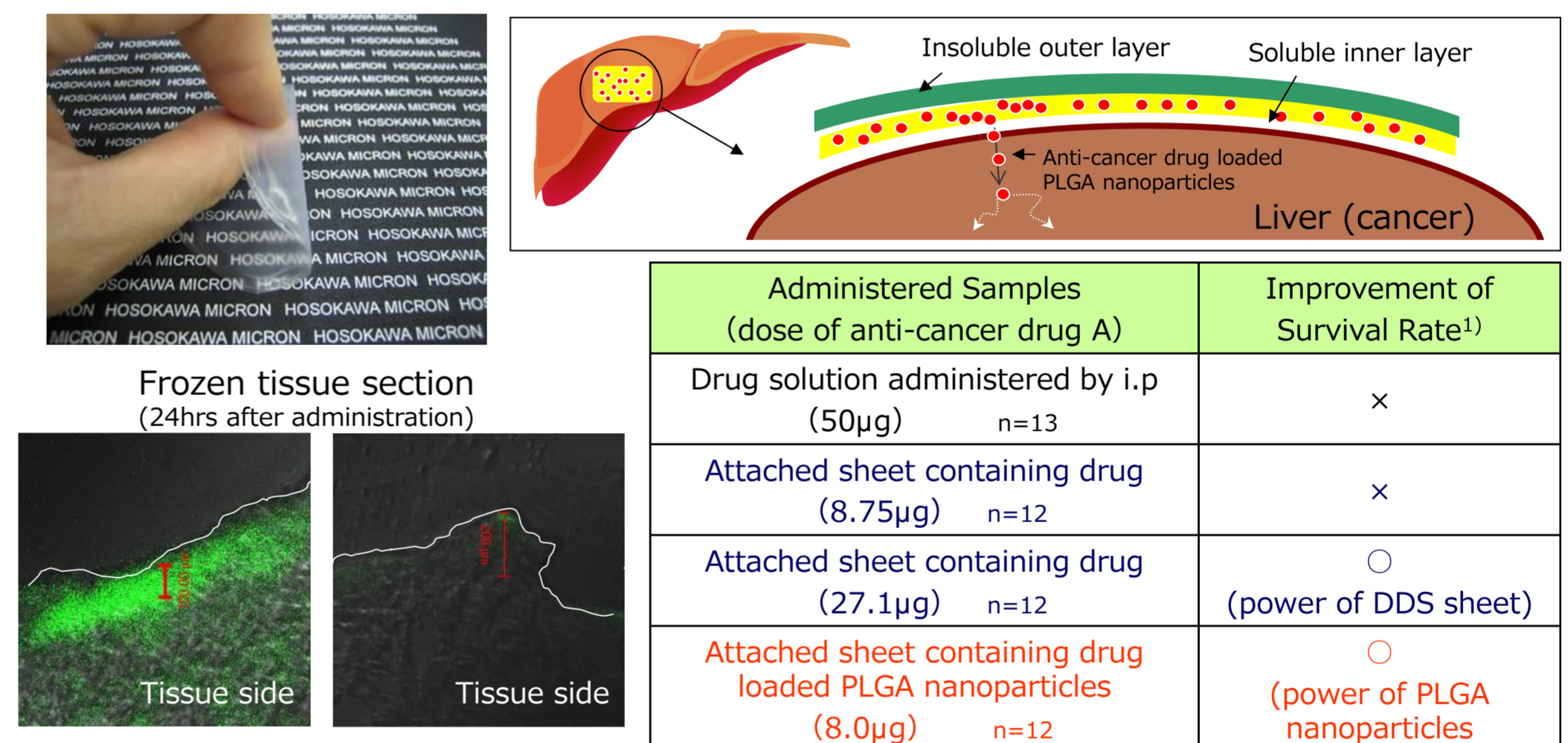
“Suppression of active disease index of model rat (Inflammatory bowel disease) by orally administered NF-κB decoy PLGA nanoparticle”



Tahara K, et al. Biomaterials, 1-9 (2010)

## Bioabsorbable DDS sheet

“Improvement of survival effect of rat model (liver cancer) administered DDS sheet containing anti-cancer drug loaded PLGA nanoparticle”



1) Significant difference v.s. control (saline solution administered by i.p., n=13); α<0.01, Mann-Whitney test, 60 days (max) after administration

## Business Model

