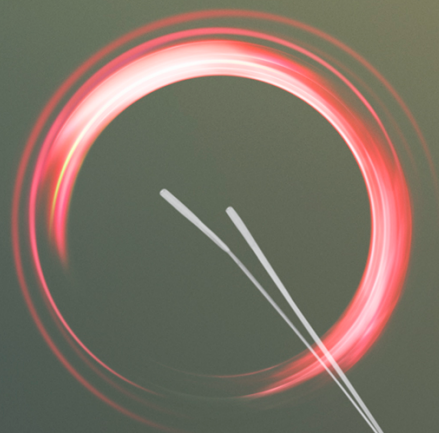


**Rakuten Medical**  
**ガン克服。生きる。**  
**CONQUERING Cancer.**



日本製薬工業協会  
第104回 医薬品評価委員会・臨床評価部会総会  
*19 February 2021*

**この発表に関し、開示すべき利益相反はありません。**

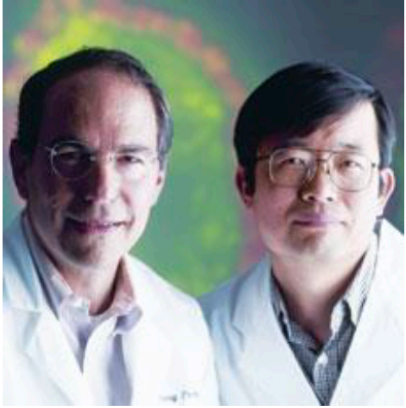
**この発表は日本製薬工業協会会員向けに限定されたものであり、発表内容及び本資料の関係者以外への開示はお控えください。**

# Our Technology

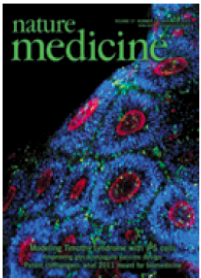


# Illuminox<sup>®</sup> Platform

Photoimmunotherapy  
with IRDye 700DX first  
described by the  
National Cancer Institute  
in 2011



Dr. Peter Choyke  
Dr. Hisataka Kobayashi



NATURE MEDICINE | TECHNICAL REPORT

## Cancer cell–selective *in vivo* near infrared photoimmunotherapy targeting specific membrane molecules

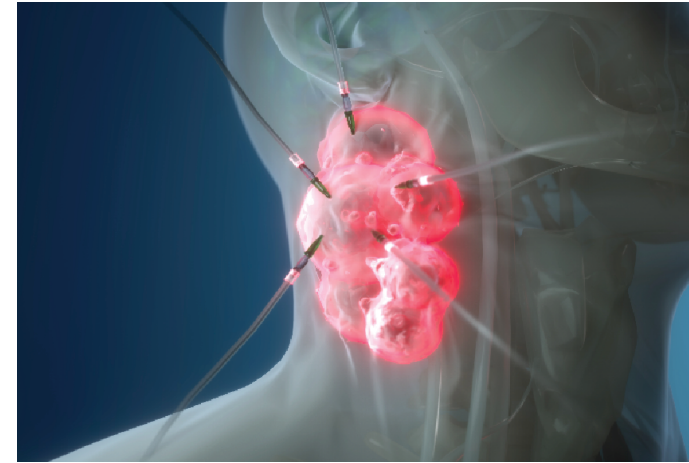
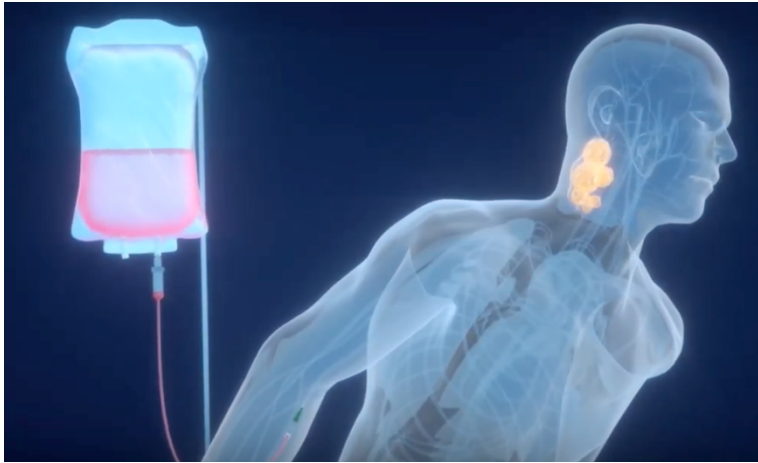
Makoto Mitsunaga, Mikako Ogawa, Nobuyuki Kosaka, Lauren T Rosenblum, Peter L Choyke &  
Hisataka Kobayashi

Affiliations | Contributions | Corresponding author

Nature Medicine 17, 1685–1691 (2011) | doi:10.1038/nm.2554

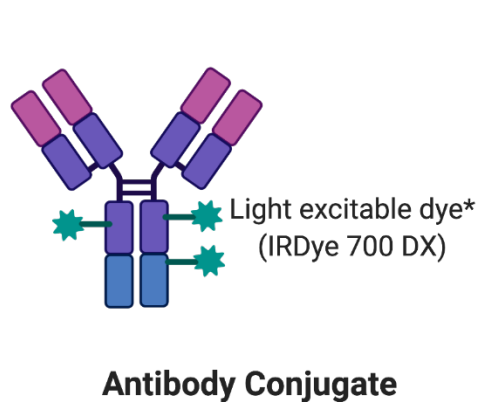


# Treatment Procedure Developed Based on Illuminox<sup>®</sup> Platform

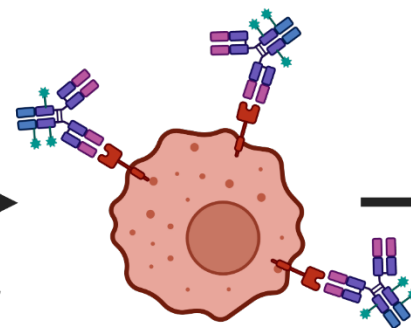


**Infusion and Tumor Binding**  
Infusion over 1-2 hrs

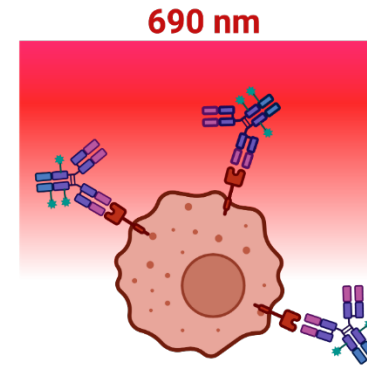
**Illumination and Necrosis**  
~ 5 min light activation



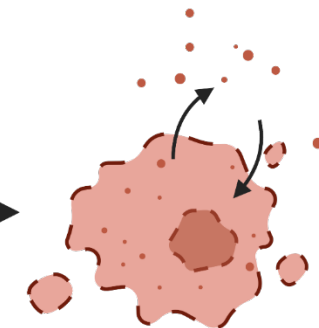
Infusion  
into body



Antibody conjugates  
bind to cancer antigens



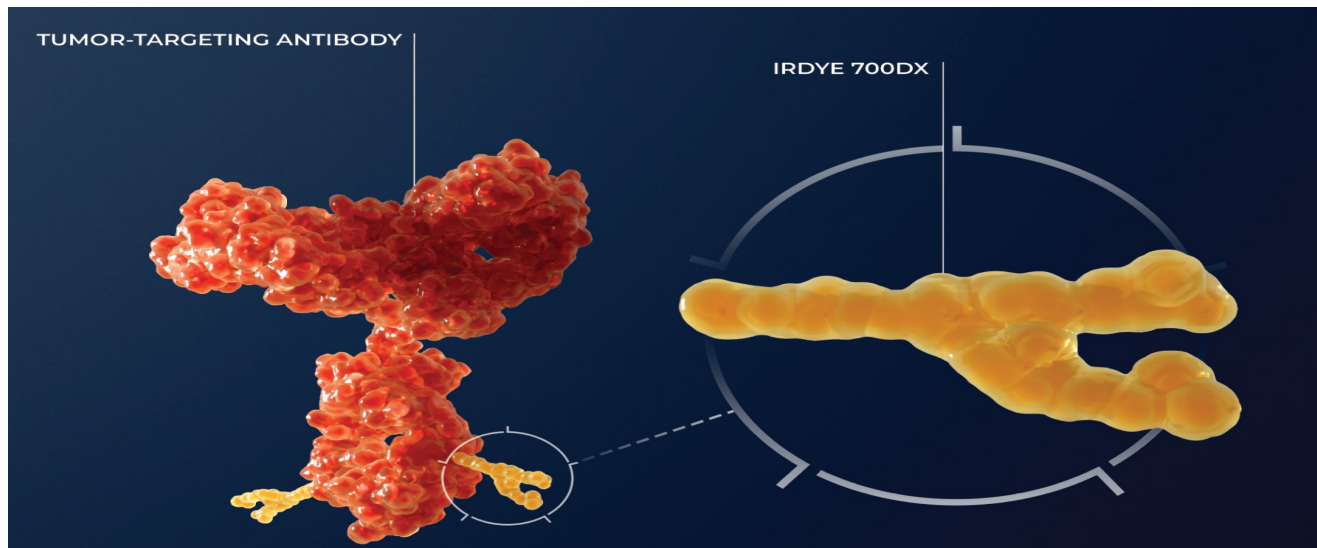
Tumor illumination with  
non-thermal red light



Cell membrane  
permeability disrupted

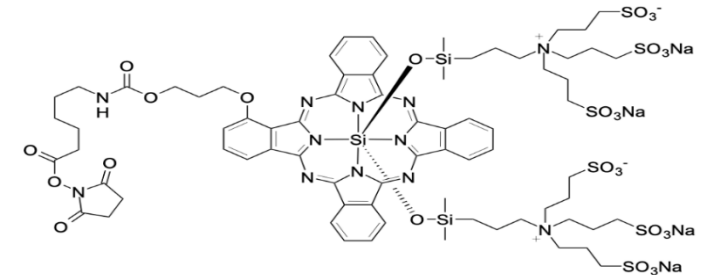
# Illuminox<sup>®</sup> Platform : drug and device combination

Drug: mAb-IRDye700DX conjugate



## Non-toxic payload

(in tumor transient activation to induce anti-cancer activity; exclusive license from LiCor)



phthalocyanine dye  
IRDye 700DX (a.k.a. IR700)



# Corporate History and Story

From Dr. Kobayashi's  
Photoimmunotherapy  
to our Illuminox<sup>®</sup>  
platform

2011

Dr. Hisataka Kobayashi and Peter L Choyke from the NIH develops photoimmunotherapy, and is published by *Nature Medicine*

2013

Rakuten Medical Inc. (Aspyrian Therapeutics, Inc. at the time) receives an exclusive license from the NIH for commercialization

2015

Develops Illuminox<sup>®</sup> platform, based on photoimmunotherapy developed by Dr. Hisataka Kobayashi and his team

Initiation of the first clinical trial



To deliver a treatment  
from Japan to patients  
as soon as possible

2017

Establishment of the Japan entity

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April 2018

Initiated phase 1 clinical trial in Japan for recurrent head and neck cancer patients

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April 2019

Received Sakigake Designation for Akalux®

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May 2019

Obtained Japanese manufacturing/marketing business license for pharmaceuticals and medical devices.

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March 2020

Applied for approval using the conditional early approval system in Japan

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September 2020

Approval of medical drug and device

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**Founded in 2010 with a mission to CONQUER cancer**

**Rakuten Medical**  
**ガン克服。生きる。**  
**CONQUERING Cancer.**

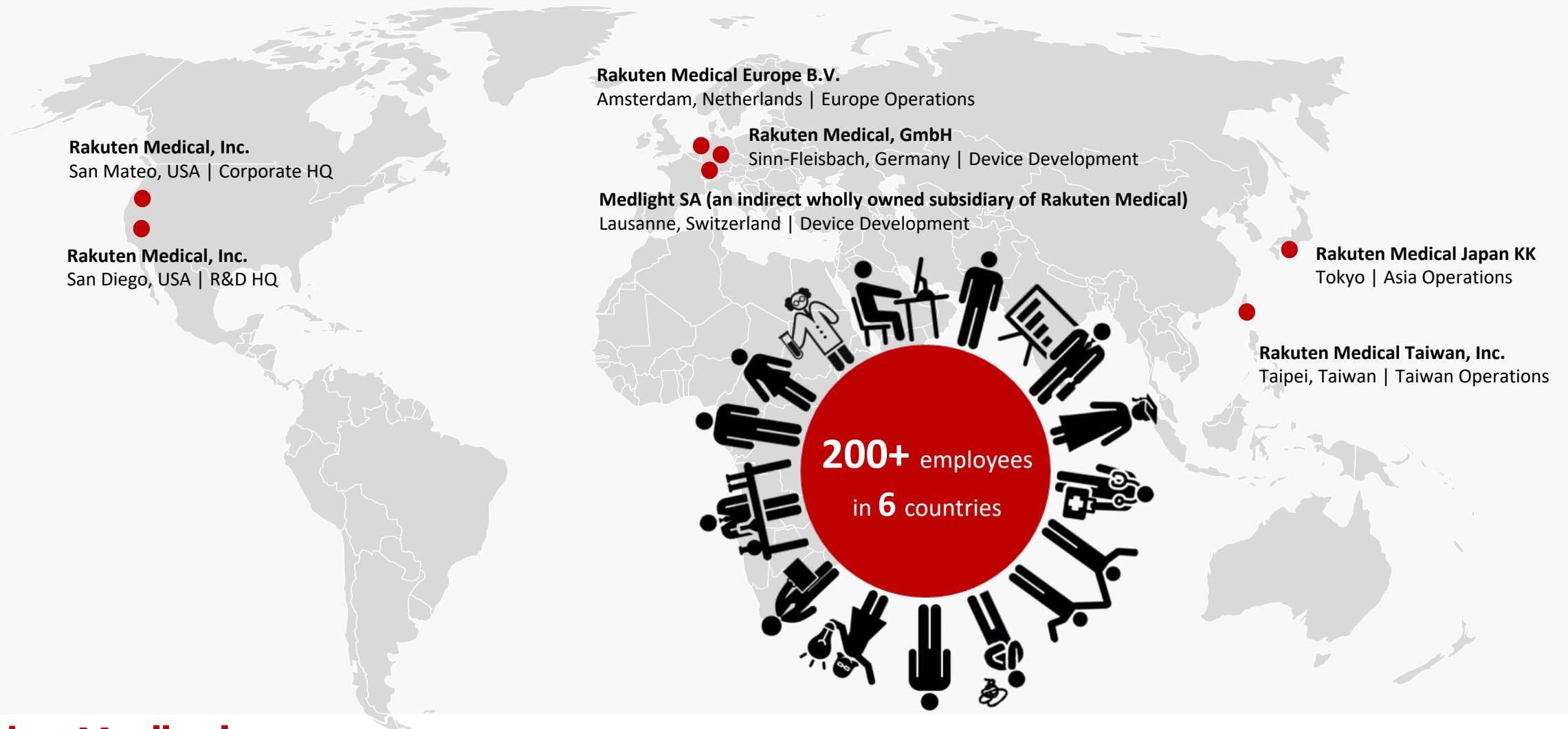
Rakuten Medical, Inc. is a global biotechnology company developing precision, cell-targeting investigational therapies on its Illuminox® technology platform.



Note: Illuminox® platform is not a drug or device available in clinical trials or by prescription. It is a platform on which Rakuten Medical develops its pipeline of investigational oncology therapies.

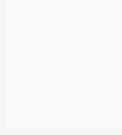
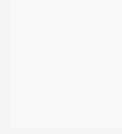

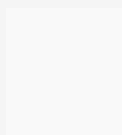
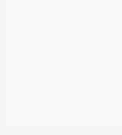


# Rakuten Medical maintains a global presence with corporate headquarters in California, USA



# Brand Concept

The Rakuten Medical Brand Concept is the oath symbolizing our determination to deliver our treatments as quickly and safely as possible to as many patients as possible to one day witness when cancer is truly conquered.

<b>On a Mission: Empowerment</b> 大義名分	We pioneer new <u>compassionate approaches</u> to treat cancer	
<b>Behave Ethically: Integrity</b> 品性高潔	We believe in the <u>power of “Shinrai”</u> (trust). We hold ourselves accountable to patients, families and the healthcare ecosystem	
<b>Prepare to Succeed: Professionalism</b> 用意周到	We are prepared; and tackle challenges with fresh thinking and <u>out-of-the-box</u> solutions	
<b>Complete Commitment: <u>Get Things Done</u></b> 信念不拔	We are <u>action-driven</u> , and <u>exceed outcomes</u> with urgency, while being nimble and resourceful	
<b>Solidarity: Succeed as a Team</b> 一致團結	<u>The team starts with each of us.</u> We collectively align to exceed outcomes	



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