

## お問い合わせ先



神戸大学

# Radiation-Induced Cancer Vaccine: "Burst Therapy"

## Redefining Cancer Radiotherapy with Transforming Local Therapy into Systemic Therapy

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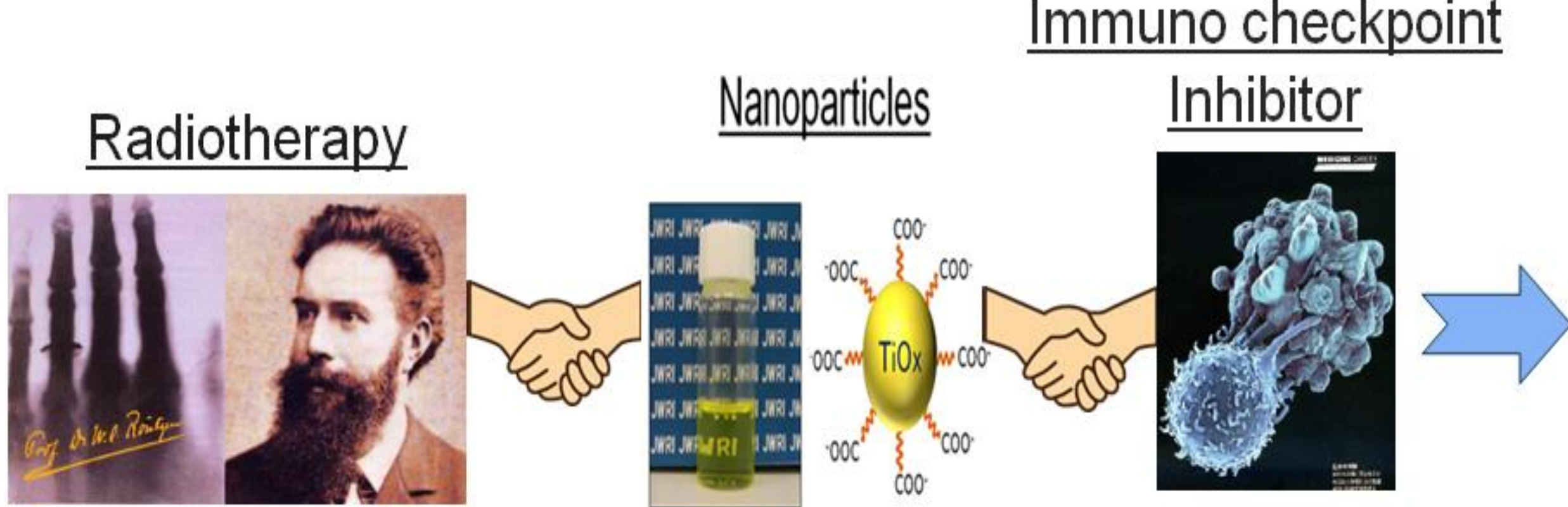
### Limitations of Current Cancer Treatments

- Radiation-resistant cancers:** Sarcomas and other refractory cancers show resistance to radiotherapy, limiting treatment efficacy
- Metastasis management:** Radiotherapy as a local treatment has limited effect on metastatic lesions
- Recurrence risk:** Insufficient surveillance mechanisms after treatment, leading to high recurrence rates
- Normal tissue toxicity:** Conventional radiotherapy affects normal tissues, increasing risk of adverse effects

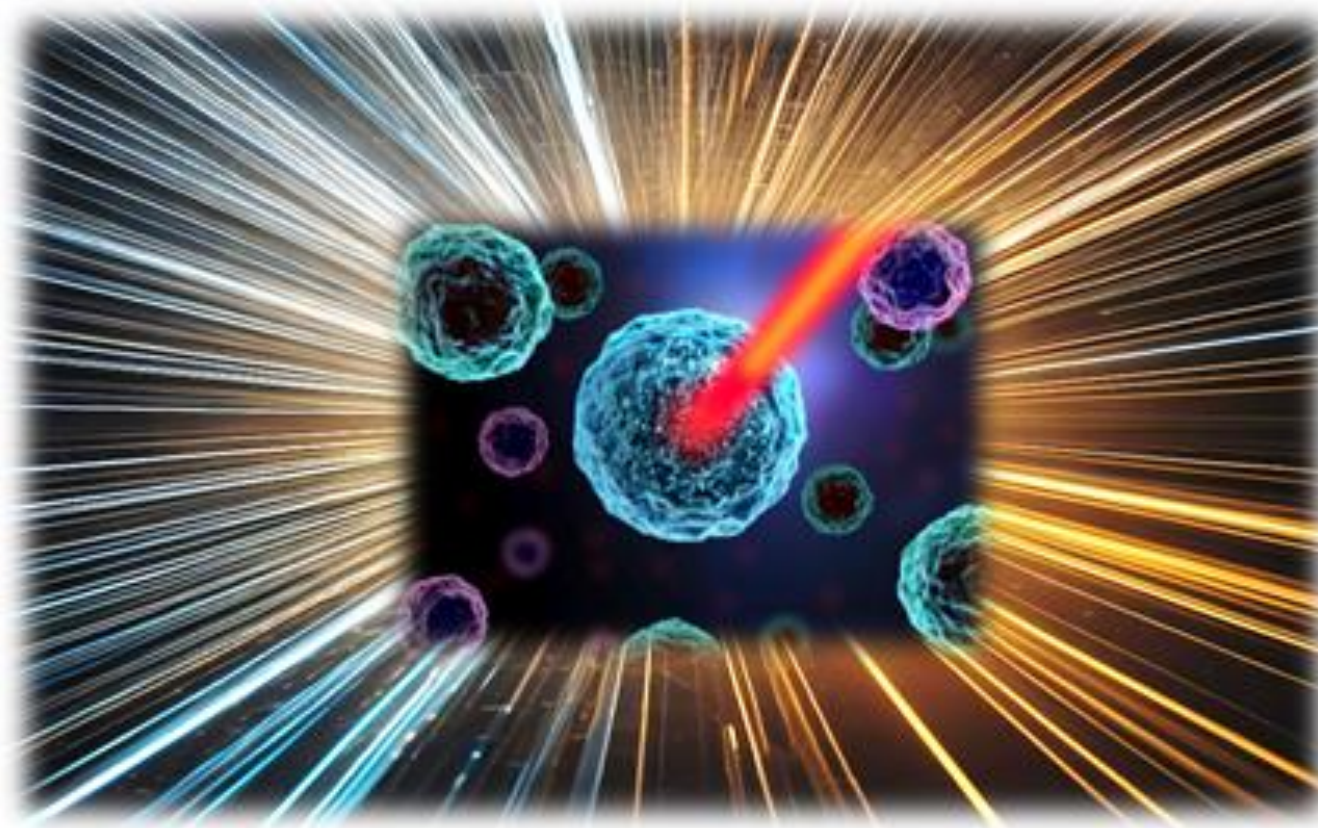
### Challenges with Immune Checkpoint Inhibitors

- Limited response rates:** Single-agent efficacy remains at 20-30%, with limited effectiveness
- Immune-related adverse events:** Risk of autoimmune reactions requiring treatment discontinuation in severe cases

## Combination of 3 modalities



## Burst Therapy



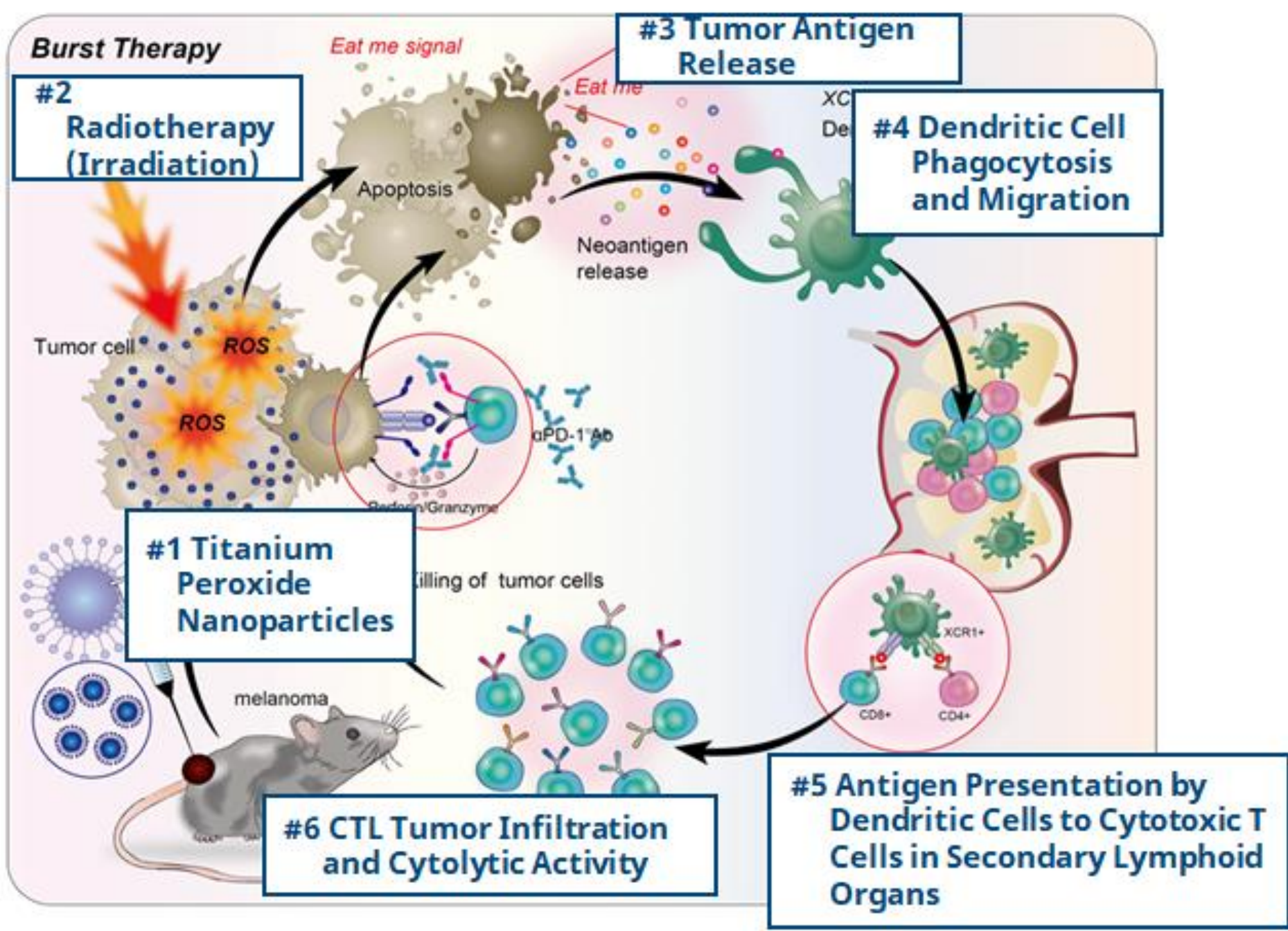
## Technical Significance

### Innovative Solution | Mechanism of "Burst Therapy"

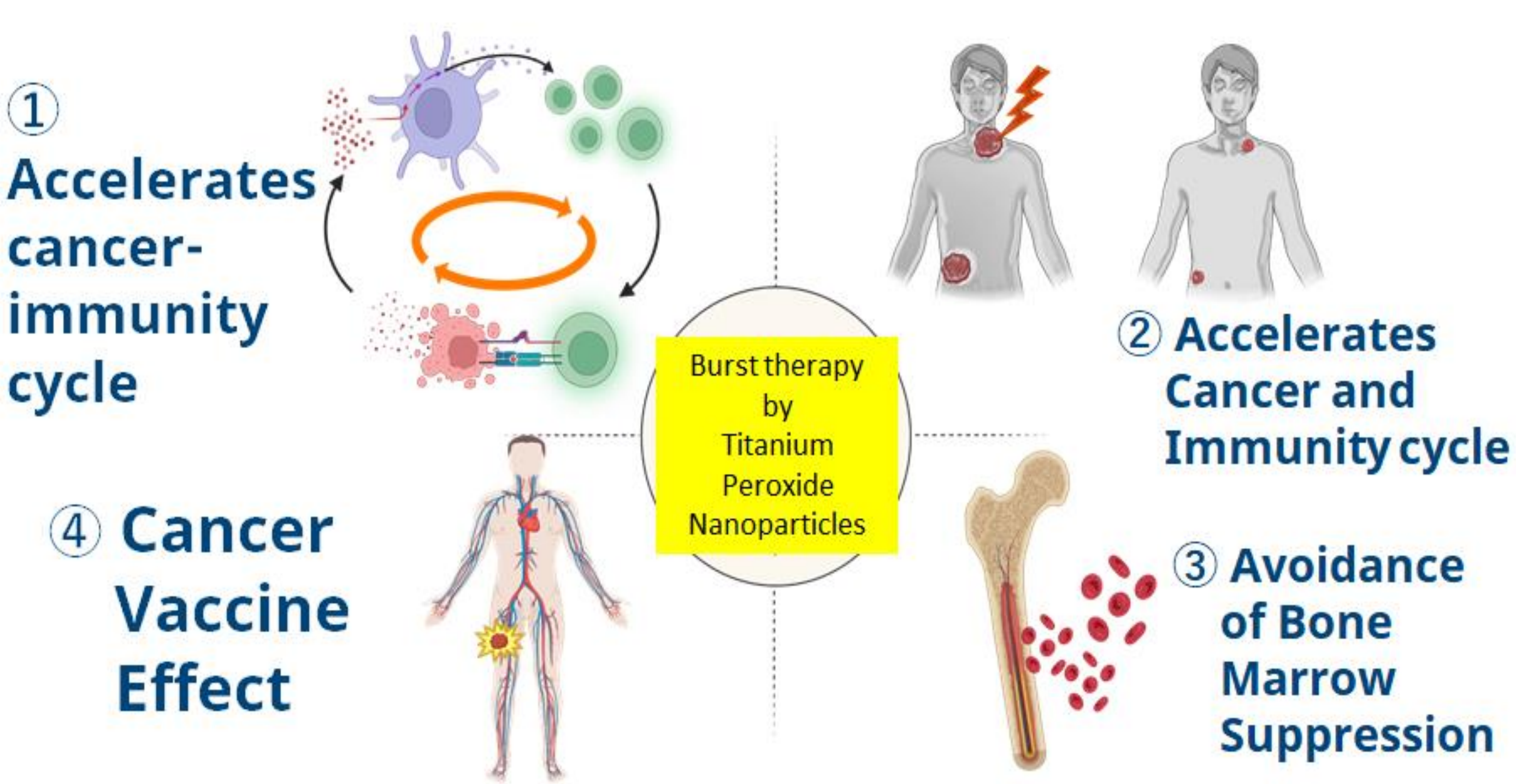
#### Burst therapy

1. Titanium Peroxide Nanoparticles
2. Radiotherapy (Irradiation)
3. Immune Checkpoint Inhibitors (ICIs) (αPD-1 Ab)

The combination of the above three accelerates the cancer-immunity cycle, achieving remarkable anti-tumor effects.

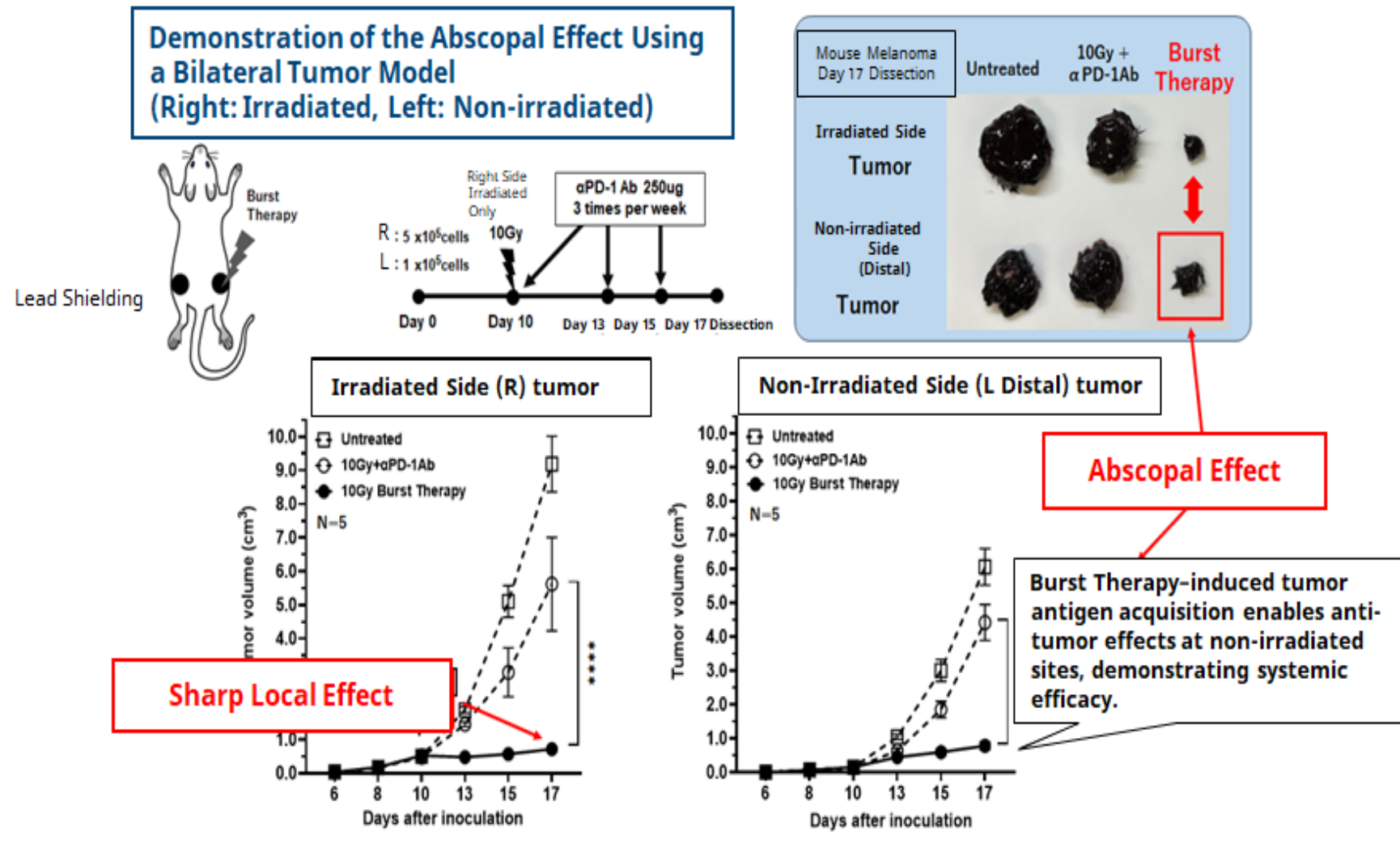


### Summary of Advantages of "Burst Therapy"

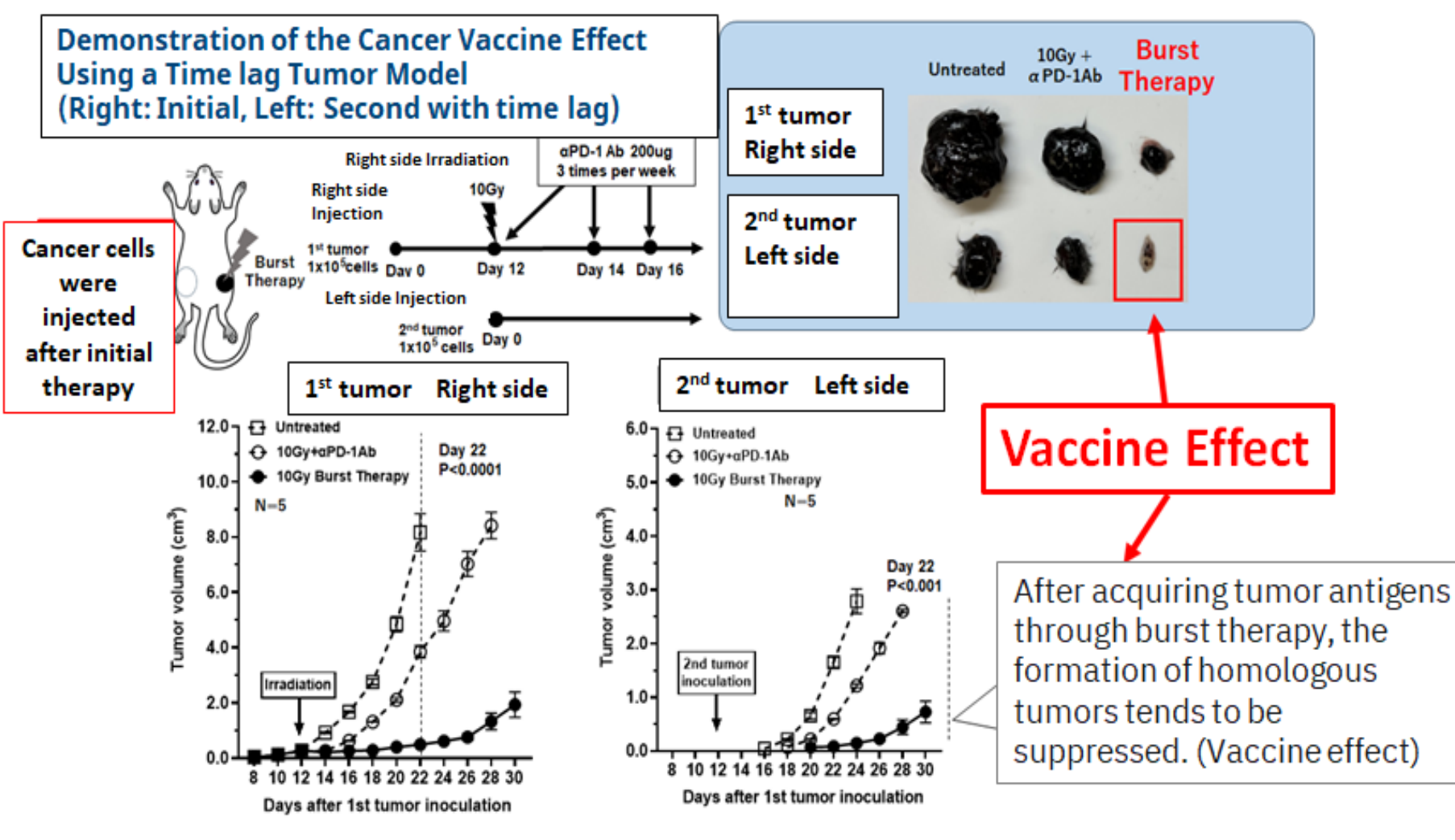


## Significant Findings

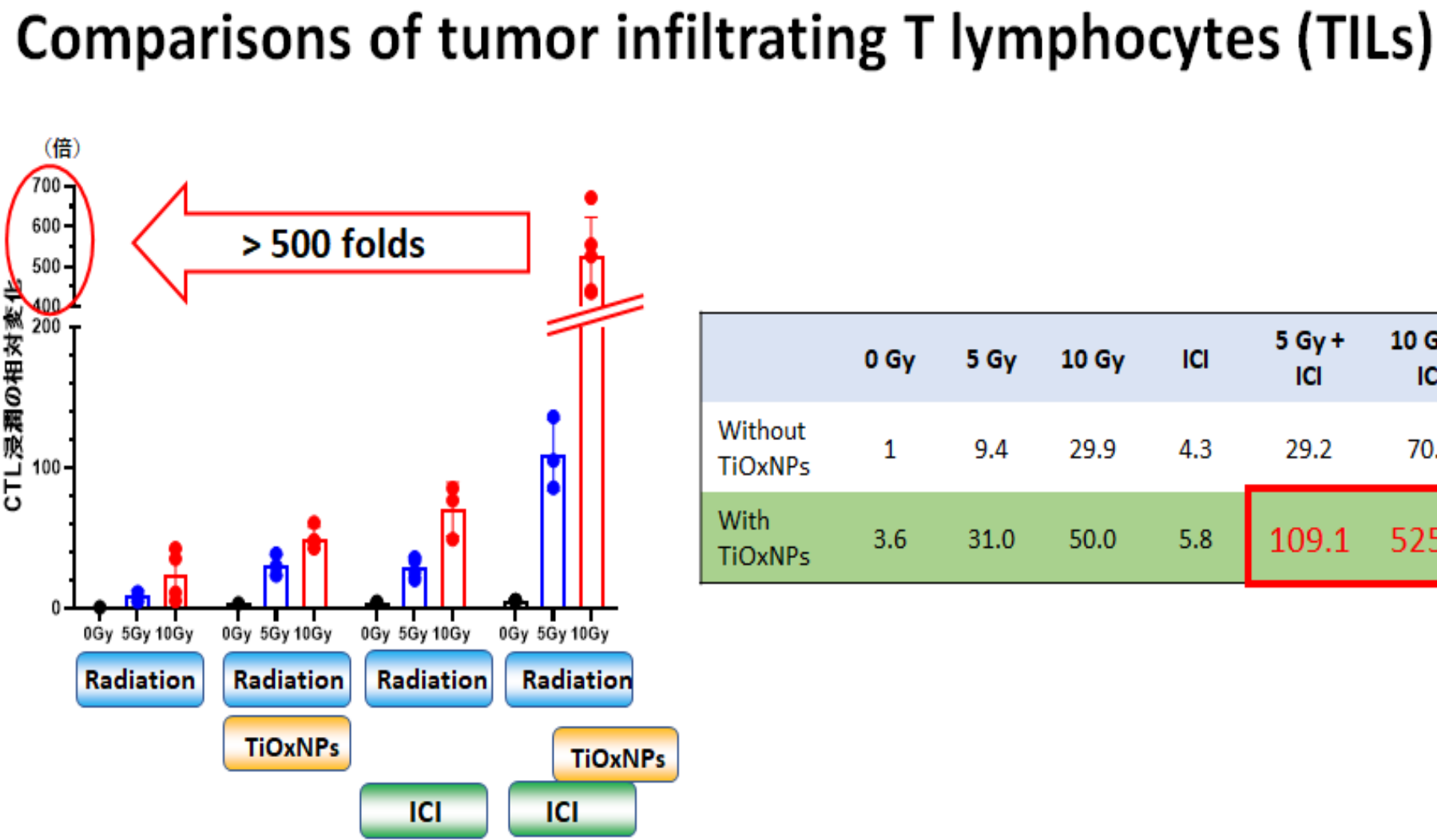
### Innovative Solution | Distinctive effects 1 and 2 : Sharp Local control and Abscopal Effect



### Innovative Solution | Distinctive effects 3: Avoiding Cancer Relapse (=Cancer Vaccine Effect)



### Innovative Solution | Comparison of Immunomodulatory Effects between each combination



## Future Prospective

### Business Model Overview

- R&D Phase:** In-house research and development until preclinical POC
- Partnership Strategy:** License agreement with major pharmaceutical companies developing immune checkpoint inhibitors after preclinical POC
- Revenue Model:** Upfront payment, development milestones, and royalties after market launch
- IP Strategy:** Building patent portfolio for combination therapy of titanium peroxide nanoparticle formulation and immune checkpoint inhibitors

### Market Entry Strategy

- Initial Target:** Radiation-resistant head & neck cancers, sarcomas, and other refractory cancers
- Indication Expansion:** Phased expansion to colorectal and pancreatic cancers
- Regional Deployment:** Priority markets in Japan, US, and Europe

### Potential Partner Companies

- Ono Pharmaceutical:** Developer of Opdivo (nivolumab)
- MSD:** Developer of Keytruda (pembrolizumab)
- Bristol-Myers Squibb:** Developer of Yervoy (ipilimumab)
- AstraZeneca:** Developer of Imfinzi (durvalumab)

Filing Country	Title	Filing Date	Application Number	Patent Number	Status
WO (JP US )	PHARMACEUTICAL 医薬	2024/03/29	WO2024/204688	PCT/JP2024/012996	Under Consideration
WO (JP US CN)	RADIATION THERAPY AGENT 放射線治療剤	2011/02/17	WO/2011/102407	PCT/JP2011/053348	Granted (JP US CN)

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