



# Molecular Imaging Researches at Okayama Medical Innovation Center (OMIC)

おかやまメディカルイノベーションセンター(OMIC)における分子イメージング研究

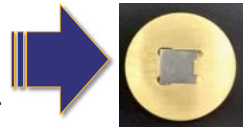
Masaru Akehi 大学院医歯薬学総合研究科 産学官連携センター 助教 明日 卓

**Theranostics (Therapeutics + Diagnosis) enables personalized cancer therapy.**

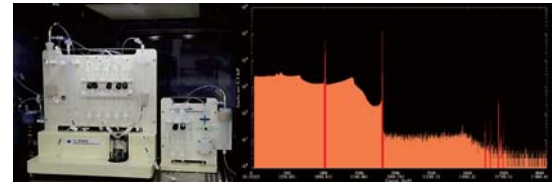
## PET imaging of macromolecules

- Macro-biomolecules have a long physiological half-life.
- PET imaging with macromolecules is required for their suitable (occasionally longer) half-life.

78.4時間の半減期を有するポジトロン放出核種<sup>89</sup>Zrの製造・精製システムを確立。  
We have developed production and purification system for <sup>89</sup>Zr (T<sub>1/2</sub> = 78.4 hours).



<sup>89</sup>Y target holder



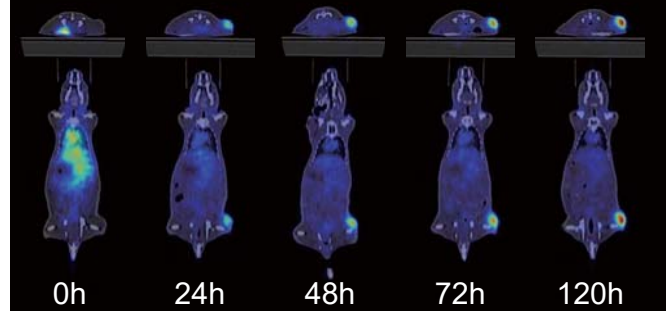
Semi-automated purification module

## Immuno-PET

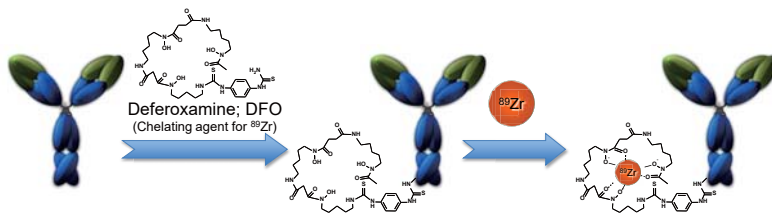
- Use a therapeutic antibody for companion PET diagnosis.
- Non-invasively visualize bio-distribution of antibody.
- Predict therapeutic effect without *in vitro* diagnosis.

非侵襲的に抗体医薬の生体内分布を可視化。

### Example of immuno-PET (anti-HER2 antibody)



### <sup>89</sup>Zr-labeling with antibody

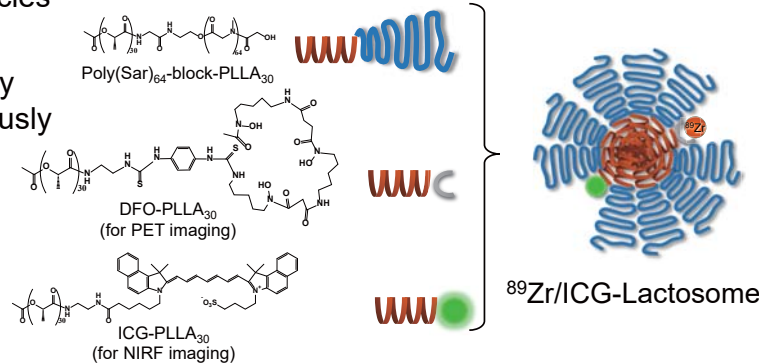


## DDS-imaging

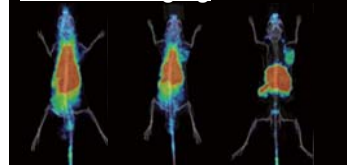
- Use therapeutic nanoparticles for molecular imaging.
- Visualize biodistribution by PET, before or simultaneously with treatment.
- Predict and monitor therapeutic effect.

### Example of DDS-imaging

ナノ粒子製剤を分子イメージングプローブに応用。



### PET/CT imaging



### NIRF imaging



## Molecular Imaging Facilities



Cyclotron HM-12S (Sumitomo Heavy Industries, Ltd.)



Clairvivo PET (Shimadzu Corp.)



Eminence STARGATE (Shimadzu Corp.)



Small Animal SPECT/CT (Gamma Medica-Ideas, Inc.)



Imaging Mass Spectrometry System (Shimadzu Corp.)



IVIS Imaging System (Xenogen Corp.)

OMICは最先端分子イメージング研究設備の外部利用を受け入れています。

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