

Sentinel lymph node biopsy & metastasis diagnosis of cancer metastasis

• **Intraoperative**

• **No radiation**

• **Quick**

Utilization of magnetic technique



Muscle retractor
(titanium)

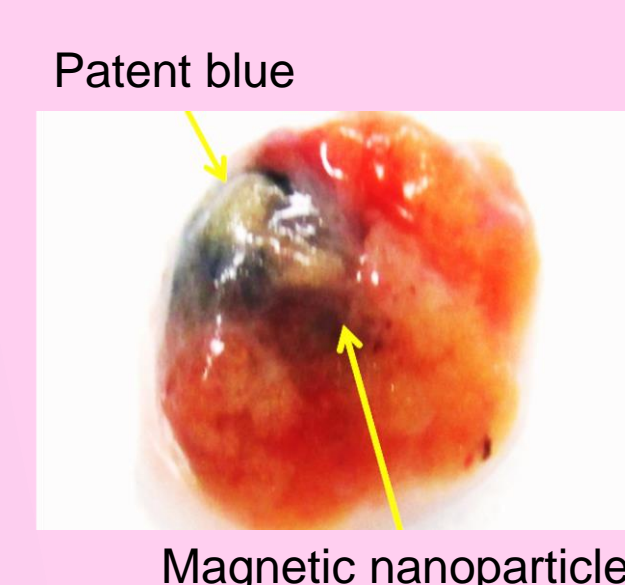


Performing clinical trials in Japan:
**Nippon Medical School /
Showa University**

⇒Quantitative identification
without radiation controlled
facilities

Identification & Extraction of the nodes

Device for quantifying of
iron content in the nodes



⇒Which node
contains the largest
amount of iron?

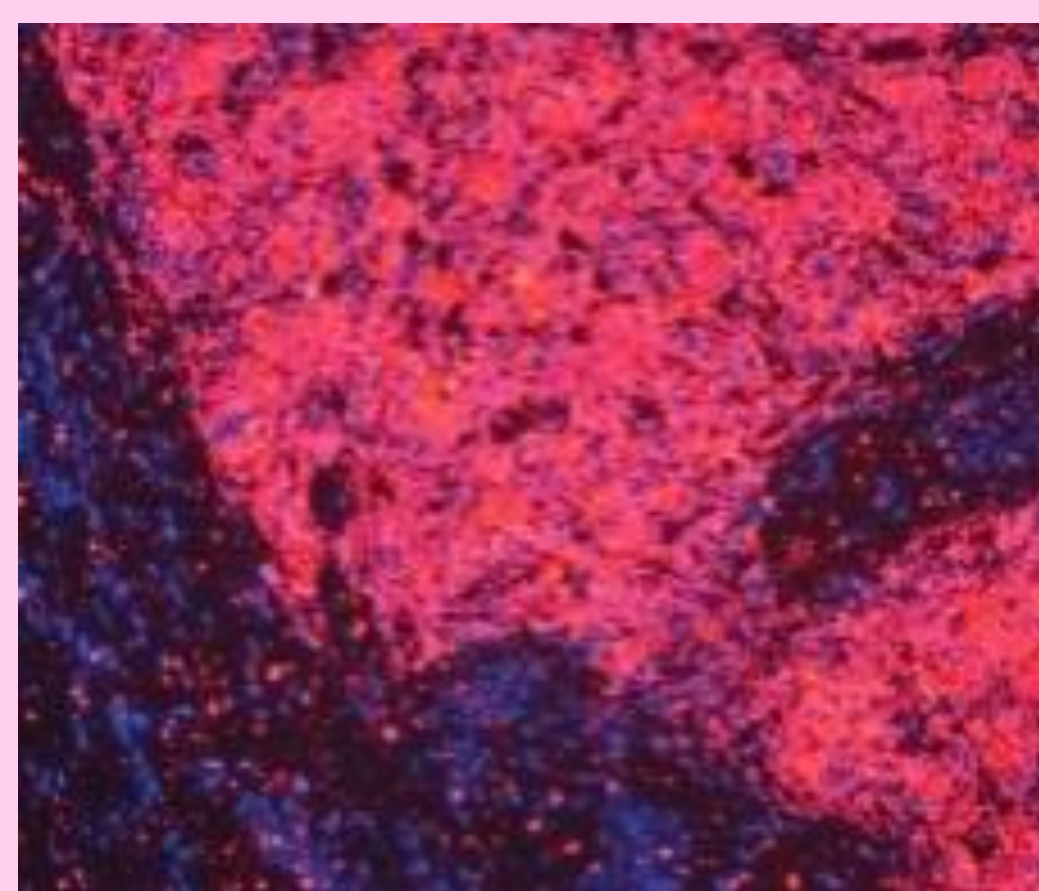
Selection of the first SLN

Device for detecting the
metastasized cancer by
ultrasonic nondestructive
inspecting apparatus

⇒Where is the metastasized
cancer in the excised nodes?

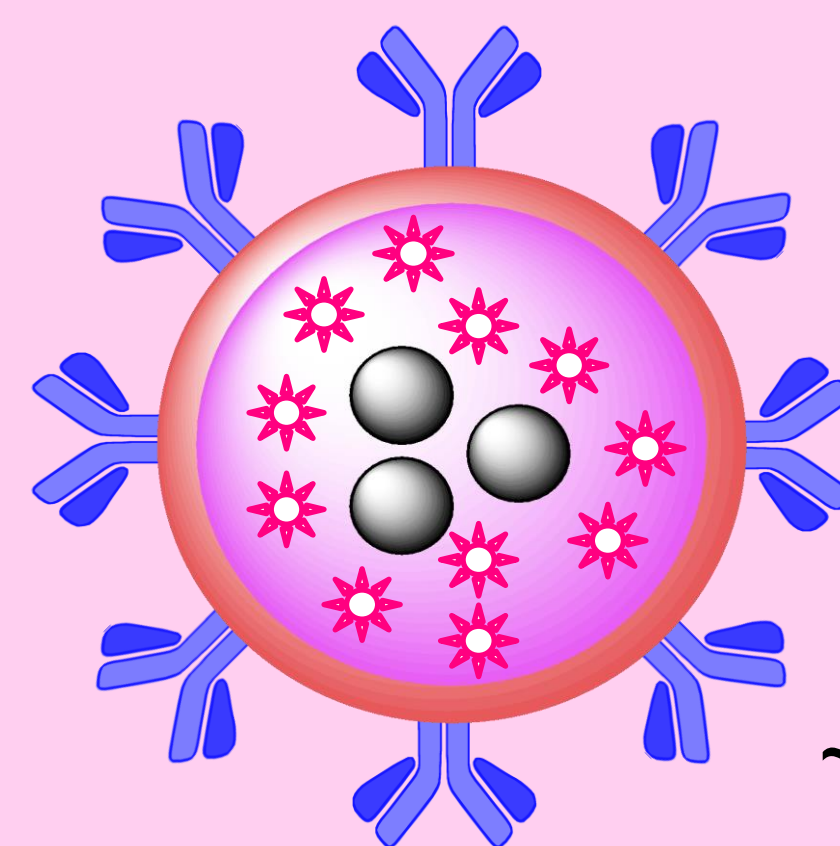
Determination of cutting position

Device for magnetic immunostaining



⇒FF beads shorten immuno
reaction time by magnetic force.
Immunostaining can be done
during operation for accurate
diagnosis of metastasis.

Antibody-labeled fluorescent ferrite (FF) beads



⇒Using cancer-specific
antibody, FF beads specifically
recognize cancer cells.

Magnetic immunostaining by magnetic force

Development of Surgical system for sentinel lymph node biopsy

- Sentinel lymph node biopsy (SLNB) is a method which identify the lymph nodes in which cancer cells firstly metastasize, and histopathologically diagnosing the presence or absence of metastasis. We have developed the new system for SLNB using magnetic technology. Our magnetic sensing technology with newly developed magnetic probe solve the limitation of radioisotope technique and its contribution a minimally invasive radioisotope-free technique for the detection of SLNs, which can greatly enhance the quality of life (QOL) of breast cancer patients.
- Development of this system has been supported by the following research and development grant from AMED (Japan Agency for Medical Research and Development).



Magnetic probe & Muscle retractors
(Non CE-mark)

AMED project name [Development of medical devices and systems for advanced medical services, "Magnetic nanoparticle techniques for identifying sentinel lymph node and rapid diagnosis of tumor metastasis".]