

IGAWA-1: Evaluation system of BNCT – *in vitro* and *in vivo*–

Kazuyo Igawa

Neutron Therapy Research Center, Okayama University

井川和代 <pjd566my@s.okayama-u.ac.jp>

Boron neutron capture therapy (BNCT) is expected as a new modality for the minimally invasive cancer treatment. BNCT is a binary therapy based on Boron-10 containing in tumor cells and thermal neutron irradiation. As the BNCT aptitude test, the BNCT evaluation system using neutron exposure accelerator system for biological effect experiments (NASBEE), was established. The *in vitro* BNCT evaluation system consists of the cytotoxicity test by MTT assay, measurement of boron concentration by Inductivity coupled plasma, and neutron dose escalation test by clonogenic assay using human cancer cell lines and/or normal cell lines. The *in vivo* BNCT evaluation system consists of Boron dose escalation studies by survival rate and Neutron dose escalation studies by tumor response in human tumor cell bearing mice. This is the important to determine the effective preclinical dose for new cancer target. Furthermore, it is possible to judge the suitability of BNCT to prepare the boron distribution of human tissue samples by CR-39 track detectors (Figure).

The key factor of BNCT is the high concentration of Boron-10 and lethal neutron irradiation dose in tumor cells. This system is also useful to evaluate the next generation boron drugs and/or neutron sources for BNCT.

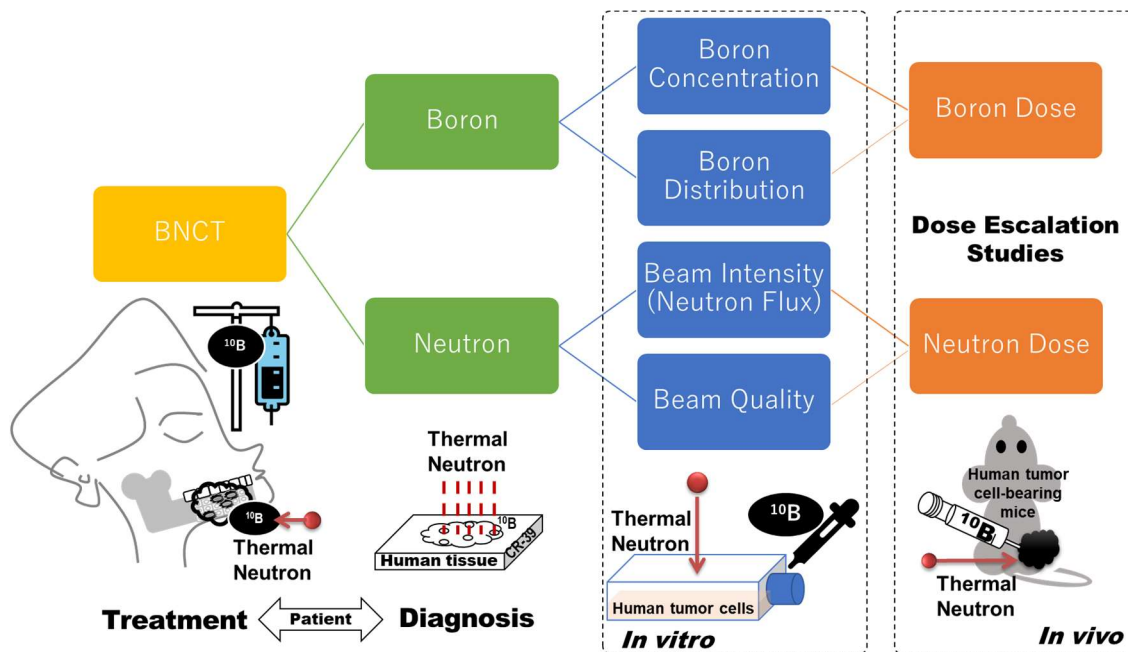


Figure BNCT Evaluation Scheme