



# Bloom X<sup>3</sup> Co. Ltd.

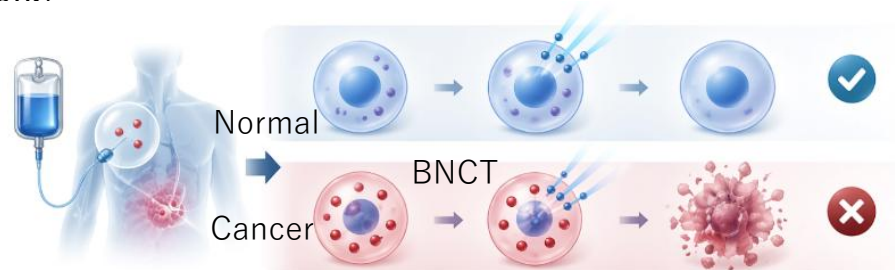
Transformative BNCT (Boron Neutron Capture Therapy) Platform Development:  
Refractory Cancers, Rejuvenation, and Regenerative Medicine

## Purpose of the Project

Next-generation Boron Neutron Capture Therapy (BNCT) is a frontier modality in which boron-conjugated drugs home to diseased cells and, under neutron irradiation, trigger cell-selective nuclear reactions — destroying disease cells from within while sparing healthy tissue. It is, in effect, “molecular microsurgery” without a scalpel. Today’s BNCT is confined to a narrow slice of oncology. Its full potential hinges on the next leap: novel boron drugs with disease- and tissue-selective targeting.

This project lays the foundation for that leap. By integrating drug synthesis and supply, cell-based evaluation, clinical-equipment neutron irradiation, and a Japan-anchored global collaboration network into a single execution platform, we establish the implementation backbone for commercialization and Foreign Direct Investment (FDI) attraction.

Our vision extends beyond refractory cancers — into aging-related disease, rejuvenation, and regenerative medicine, opening therapeutic frontiers where conventional options have reached their limits. The ambition is unambiguous: to originate in Japan the next generation of life-science innovation, and to deliver it globally.



## Details of Demonstration

Bloom X<sup>3</sup> Co. Ltd. served as the integrating hub, uniting domestic basic-evaluation and clinical-irradiation sites with overseas networks such as the United States and Singapore.

Headline achievement: the project successfully verified a synthesis route for a novel boron compound and delivered the compound needed to advance the next stage of investigation.

Four workstreams ran in parallel:

(1) Cell-based candidate selection at the National Center for Geriatrics and Gerontology (NCGG) under a joint research agreement; (2) Construction of a neutron-irradiation preliminary-evaluation system on clinical equipment at the Kansai BNCT Medical Center of Osaka Medical and Pharmaceutical University; (3) A multilayered international collaboration framework via overseas partners; (4) Staged execution of joint-research, contract-research, and non-disclosure agreements across multiple institutes — building a clinical-translation-ready testing structure. In parallel, dialogues with U.S. and Singapore research institutes, U.S.-based scientific advisors, and domestic and international investors and business stakeholders, the project explored emerging technologies, research needs, and potential technology-introduction opportunities from overseas.

These efforts sharpened its strategic focus on novel BNCT targets, indication expansion, and commercialization pathways.





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## Project Outcome

First — Supply foundation secured. Recognizing BNCT drug development as a technology base of national-interest significance, the project built its supply backbone domestically. Despite the need to procure certain reagents from overseas, synthesis was completed within the project period and met the baseline criteria — a direct dividend of rigorous synthesis route verification — clarifying the real-world constraints of yield, quality, and lead time, while providing a clear direction for yield improvement and supply stabilization in the next phase.

Second — A coherent evaluation flow established. At NCGG, candidates were narrowed from a cultured cell panel into a flow connecting seamlessly to preliminary irradiation studies using human cancer cells and related lines.

Third — Clinical-grade irradiation studies completed. At the Kansai BNCT Medical Center, the project completed in-period neutron irradiation investigation on clinical equipment, validating the full implementation chain — pre-processing, transport, irradiation, and evaluation — on site, in real conditions.

Fourth — International foothold crystallized. Through overseas partners, we advanced U.S. research-site collaboration points, secured priority access to a fundraising platform, and crystallized a Japan-core cross-collaboration opportunity with a U.S. startup operating an innovative exploration platform. Together, these efforts integrated a diverse network of specialized facilities, establishing "device × drug" implementation know-how and a credible international foothold for joint research and FDI attraction.

## Challenges and Solutions

Three principal challenges: (1) building multiple stable supply routes beyond the currently secured path (lead time, yield, and quality reproducibility); (2) designing an upgraded preliminary irradiation evaluation; (3) accelerating the cell-to-animal transition in drug-discovery validation.

Three targeted solutions: (1) multilayered supply backups; (2) an improved evaluation system that embeds identified refinements with streamlined, standardized processes; (3) drug-discovery-grade basic-to-animal linkage, built stepwise for seamless flow. Together, these rationally accelerate not only research throughput but also clinical development and regulatory approval timelines.

## Future Plans

Next-stage execution: (1) an upgraded evaluation system delivering sharper interpretability and drug-discovery-grade quality; (2) applied synthesis route work for yield and supply stabilization; (3) deepened collaboration with domestic and international academia, biotechs, pharma, and medical institutions; (4) a decision-ready data package underpinned by rigorous logic. Looking forward, we will accelerate the BNCT program as planned — driving joint development, fundraising, FDI attraction, and overseas expansion. The goal: the earliest possible Japan-originated next-generation therapy for refractory disease, delivered globally.