

Chonnam National University Hwasun Hospital(CNUHH) - Fraunhofer Institute for Cell Therapy and Immunology(Fraunhofer IZI) Collaboration Research Center

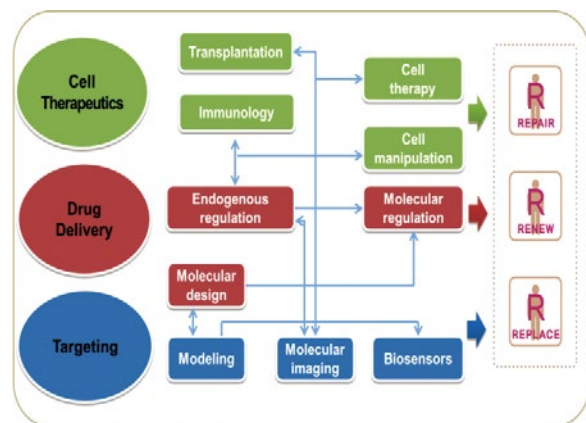


Director
Prof. Hyeoung-joon Kim, M.D., Ph.D.

Major Research Goals

Research initiative for CNUHH – Fraunhofer IZI collaboration center was started in July 2011 as a Global R&D Center(GRDC) program supported by the Ministry of Science, ICTG and Future Planning and the National Research Foundation of Korea.

By recruiting world-famous German Fraunhofer IZI institute and carrying out quality collaborative research in the field of customized dendritic cell and stem cell as cytotherapy to malignant tumors and by utilizing the Fraunhofer's cutting edge expertise on the pre-clinical testing with large animals, we want to help patients using customized dendritic and stem cell which are in the development pipeline. Collaboration research center is dedicated to bridge the gap between basic sciences and clinical applications. The long term goal is to grow a self-sustaining research center based on the combined research activities.



Major Research Topics

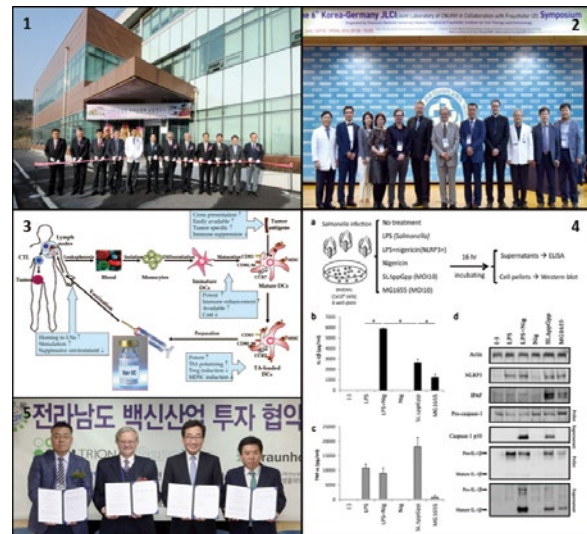
New innovative diagnostic and therapeutic tools are urgently needed to overcome intractable cancers. To achieve these goals, we are conducting collaborative researches between institutes with 1) Rational design of theranostic nanoparticles targeting specifically to tumor or immune cells, 2) Development of bacteria-mediated cancer theranostics combined with phage display, and 3) Development of potent cancer immunotherapeutic method by using dendritic cells and commercialization of the immunotherapeutic cells against target tumors after pre-clinical and

clinical studies.

Major Achievements

1. In 2013, JLCI(Joint Laboratory of CNUHH in collaboration with Fraunhofer IZI) was formally established by both institutes to grow a self-sustaining research center in the future. It is a lab on its own and enables technology transfer between the two institutions by allowing Fraunhofer researchers to use the CNUHH facilities and work with Fraunhofer technologies in a special laboratory as well as convenient subcontracting between the institutions.
2. Since 2011, a total of six Korea-Germany Joint Symposia have been held on annual basis and alternatively in Hwasun and Leipzig, and scientists from both sides have been exchanged to facilitate the spread of scientific outcomes.
3. Successful completion of pre-clinical trial and phase I/IIa clinical trial of Vax-DC/MM, dendritic cell immunotherapeutic agent against relapsed/refractory multiple myeloma.
4. The study of bacteria-mediated cancer theranostics firstly showed that interleukin-1 β and TNF- α play important roles in *Salmonella*-mediated cancer therapy. This study also indicated that a better understanding of host immune responses in *Salmonella* therapy may increase the success of a given drug therapy, particularly when various strategies are combined with bacteriotherapy.
5. On June 2016, completion of MoU between Jeollanam-do, Hwasun-gun, CNUHH and Fraunhofer IZI to collaborate recruitment of a Fraunhofer IZI branch(Fraunhofer project center) in Hwasun.

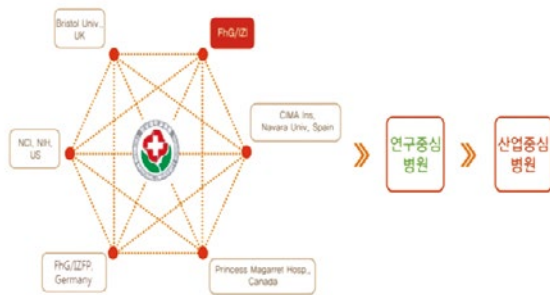
Representative figures of major achievements



Major relevant publications

1. Clonal dynamics in a single AML case tracked for 9 years reveals the complexity of leukemia progression. *Leukemia* 2016 Feb;30(2):295-302.
2. *Salmonella typhimurium* Suppresses Tumor Growth via the Pro-Inflammatory Cytokine Interleukin-1 β . *Theranostics* 2015 Oct 6;5(12):1328-42.
3. Lenalidomide Synergistically Enhances the Effect of Dendritic Cell Vaccination in a Model of Murine Multiple Myeloma. *J Immunother.* 2015 Oct;38(8):330-9.
4. Clinicopathological Implications of Mitochondrial Genome Alterations in Pediatric Acute Myeloid Leukemia. *Ann Lab Med.* 2016 Mar;36(2):101-10.
5. Flagellin-dependent TLR5/caveolin-1 as a promising immune activator in immunosenescence. *Aging Cell.* 2015 Oct;14(5):907-15.

Research networks



- **CNUHH:** Identification of treatment target and validation. Optimization of stem cells and customized immunotherapeutics. Optimization of carrier and vector, molecular imaging technology.
- **Fraunhofer IZI:** Providing phage display libraries to screen therapeutic compounds. Providing facilities for mass production of cells and operation know-how on GLP, GMP and GCP. Pre- and clinical testing using large animal and commercializing know-how.