



1. Title :

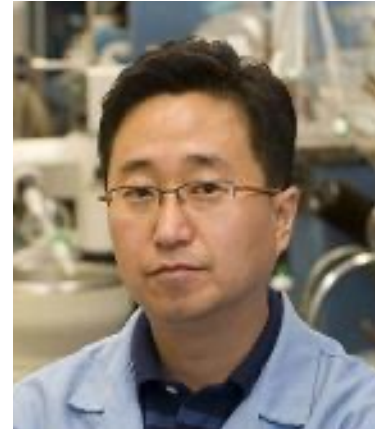
Advanced Gene and Stem Cell Therapy Using Bio-Inspired Nanotechnology for CNS Repair

2. Speaker : Professor Kibum Lee

Rutgers University – New Brunswick

3. Time : 2022-05-19 (Thu) 10:30-11:30

4. Location : 301-1420, Zoom (Meeting ID: 931 7152 0922)



<https://snu-ac-kr.zoom.us/j/93171520922?pwd=VUNmYWNBMMm5MZUQ1WWFkZHM2dEp5UT09>

5. **Abstract** : This presentation will focus on the interface between nanomedicine and stem cell therapeutics. Neurological disorders typically result in cellular dysfunctions that may cause severe and permanent paralysis. Given the intrinsically limited regenerative abilities of the central nervous system (CNS) and the highly complex inhibitory environment of the damaged tissue, gene- and stem cell-based therapies have great potential for CNS repair to regenerate a robust population of functional neural cells and to modulate the neuroinhibitory microenvironment.

To this end, our approach is three-fold: i) to develop a non-viral genetic manipulation method by mimicking the function of natural transcription factors. (TFs) that can control neuronal functions, ii) to develop a nanomaterial-based bioscaffold methodology for the controlled delivery of therapeutic molecules in vivo [Figure 1.], and iii) to incorporate our nanobioscaffold approach to enhance stem cell transplantation.

Given that numerous neuro-degenerative diseases and neuro-injuries deal with damaged neural circuits and neuro-inflammation, our developed system can be broadly applicable to many different indications. In this presentation, a summary of the most updated results from these efforts and future directions will be discussed.

6. **Bio** : KiBum Lee is a professor of Chemistry and Chemical Biology at Rutgers University, where he has been a faculty since 2008. He received his Ph.D. in Chemistry from Northwestern University (with Chad. A. Mirkin; 2004) and completed his postdoctoral training at The Scripps Research Institute (with Peter G. Schultz; 2007) respectively.

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