

# 3<sup>rd</sup> International Conference and Exhibition on Cell & Gene Therapy

October 27-29, 2014 Embassy Suites Las Vegas, USA

## Bacteria-mediated expression of cargo drugs and reporter gene for cancer-specific theranostics

Jung-Joon Min

Chonnam National University Medical School, Republic of Korea

Use of microbial system has attributed to the recent advances in targeted molecular therapy application especially for its tumor-specific accumulation and proliferation. In an attempt to investigate tumor-specific targeting, an *in vivo* optical or PET imaging system was used to monitor the spatial and temporal migration of *E. coli* or attenuated *Salmonella typhimurium* following injection into mice models carrying a variety of tumors. The phenomenon of selective targeting and proliferation of bacteria was observed in a diverse range of tumors, both primary tumors and metastases. Bacterial therapy possesses many unique applications for treating cancer that are unachievable with conventional treatment. Bacteria can specifically target tumors, actively proliferate there, are easily detected and can controllably induce cytotoxicity. When using tissue specific or inducible system, bacteria could be engineered to express target genes specifically in the tumor area, rather than other organs, leading to maintenance of therapeutic efficacy and reduction of toxicity. Furthermore, treatment with the engineered bacteria markedly suppressed metastatic tumor growth. The combination with engineered bacteria (BT) and radiotherapy (RT) had synergistic effect to completely remove the subcutaneously grafted tumor. In this research, synthetic biology techniques can be used to solve many key challenges that are associated with bacterial therapies, such as toxicity, stability and efficiency, and can be used to tune their beneficial features, allowing the engineering of 'perfect' bacteria for cancer treatment.

### Biography

Jung-Joon Min has completed his MD and PhD from Chonnam National University and Postdoctoral studies from UCLA and Stanford University School of Medicine. He is the Professor and Director of Nuclear Medicine at Chonnam National University Medical School and Hospital. He has published up to 90 papers in reputed journals and serving as an Editorial Board Member of repute.

[jjmin@chonnam.ac.kr](mailto:jjmin@chonnam.ac.kr)