세미나 초록

발표주제	Self-Luminescent Photodynamic Cancer Therapy
발표내용	Despite the potential of photodynamic therapy (PDT), its comprehensive use in cancer treatment is often limited because of the non-degradable risks of photosensitizing drugs and inefficient light penetration and instrumentation. Herein, I present bioluminescence (BL)-induced proteinaceous PDT (BLiP-PDT) as a novel PDT method that requires neither a chemical PS nor gene transfection. Our group has exploited a new role of luciferase as an ROS facilitator, which is divergent from its original function. BLiP-PDT is based on a protein biosensor through the combination of luciferase and an ROS-generating protein (Luc-RGP) and exerts multifunction including self-luminescence, easy degradation, ROS generation, target specificity and therapy. I will focus on the manner in which the BL-sensitive protein probes specifically induce cancer cell death without an external light source and describe how this phenomenon is elicited in breast cancer (BC) cells, primary BC cells from patients, and an in vivo tumor xenograft mouse model; even with extremely low light energy, BLiP-PDT exhibited remarkable targeted effects. These findings suggest that BLiP-PDT is immediately useful as a new theranostic approach against various cancers.