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국문 강연제목: 유전자 전달 나노플랫폼을 활용한 C 형 간염 바이러스(HCV) 진단과 간암 치료 연구

영문 강연제목: A gene delivery nanoplatforms for diagnosis of hepatitis C virus and treatment of chronic liver cancer.

Abstract
Hepatitis C virus (HCV) infects more than 180 million people worldwide. Moreover, the overexpression of HCV proteins has oncogenic potential by activating oncogenic molecular pathways and cellular proliferation, and over 70% of virus infection cases progress to chronic liver cancer. Since no vaccine for hepatitis C and early detection is difficult, a more focused strategy on "diagnosis" and "therapeutic" is needed. This talk introduces several approaches to detecting HCV gene at a molecular level and treating liver cancer using an animal model based on two-dimensional (2D) nanomaterials. Considering the specified interaction with nucleic acid or small drugs by the unique physical and chemical properties of 2D nanomaterials, we design the biosensors for simultaneous sensing and silencing the hepatitis C virus gene in liver cells. Moreover, novel drug delivery systems encapsulating different molecules for combinatorial therapeutics are developed based on the multifunctionalities of engineered 2D materials. Finally, we introduce the latest result of liver cancer treatment via electrotherapy using 2D nanomaterials. We expect that they will provide a promising multimodal platform for treating viral diseases and drug-resistant and refractory cancers in the near future.

Brief Biosketch

2023 – present	Research Fellow Feinberg School of Medicine, Northwestern University
2020 – present	Research Scientist, Postdoctoral Fellow Biomedical Research Division, Korea Institute of Science and Technology
2018 – 2020	Postdoctoral Associate Center for Biomaterials, Korea Institute of Science and Technology
2018 – 2018	Postdoctoral Fellow Chemistry and Molecular Engineering, Seoul National University
2012 – 2018	Graduated Research Fellow Center for RNA Research, Institute for Basic Science (IBS) Department of Chemistry, Seoul National University

Ph.D. from the Department of Chemistry at Seoul National University in 2018. Then has worked as a Postdoctoral Fellow at the Korea Institute of Science and Technology with award "Young Scientist Award" in 2020. Now worked as a Research Fellow at Northwestern University. Research interests cover synthesizing and functionalizing various nanostructures for sustainable materials and biomedical applications.