SUNG KYUN KWAN UNIVERSITY(SKKU)

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Key Words

Gene Expression, Nucleic Acids, RNA interference, Aptamer, Diagnostics, Therapeutics

Research Area

My laboratory focuses on understanding the structure-function relationship of nucleic acid molecules, and based on these knowledges, develops diagnostic and therapeutic tools against various diseases. Nucleic acid aptamers are short, single stranded oligonucleotides which can fold into specific three dimentional structure to bind target molecules with high affinity and specificity. My lab is focusing on generating aptamers targeting cancer cell surface marker proteins, such as pancreatic cancer cells, and trying to use this aptamer for cancer diagnostics and therapeutics. RNA interference is an endogenous gene silencing mechanism which allows short double stranded RNA (siRNA) to specifically target gene of interest and inhibit its expression. My lab has developed a variety of novel RNAi triggering molecular platforms which shows improved features over the original siRNA structures. We continue to develop next generation RNAi technologies and try to use these technologies to develop therapeutics against a variety of diseases.

Education

- 1999 PhD Cornell University
- MSc
- 1993 BSc Korea Advanced Institute of Science and Technology

Experience

- 2008 Mar to present Professor, Sungkyunkwan University
- 2004 Mar-2008 Feb Assistant Professor, Pohang University of Science and Technology

Position

- 2011 to present Asian Editor, Nucleic Acid Therapeutics
- 2012 to present Editorial Board, Molecular Therapy-Nucleic Acids

Selected Publication

- “Efficient intracellular delivery and multiple target gene silencing triggered by tripodal interfering RNA-based nanoparticles: a promising approach in liver-specific RNAi delivery”. J Control Release 196, 28-36 (2014)
- Effect of the guide strand 3'-end structure on the gene silencing potency of asymmetric siRNA. Biochem J 461, 427-434 (2014)
- Alkaline phosphatase ALPPL2 is a novel pancreatic carcinoma-associated protein. Cancer Res 73, 1934-1945 (2013)
- Modified siRNA structure with a single nucleotide bulge overcomes conventional siRNA-mediated off-target silencing . Mol Ther 19, 1676-1687 (2011)
- Asymmetric shorter-duplex siRNA structures trigger efficient gene silencing with reduced non-specific effects. Mol Ther 17, 725-732 (2009)

Others