

Systemic Delivery of siRNA through Atelocollagen Nano-Particle

Takahiro Ochiya (Natl. Cancer Ctr. RI)

Oligonucleotides therapies, using siRNAs and antisense oligonucleotides, are believed to be a next generation of therapeutic strategy for serious diseases. However, there are a lot of challenges that have to be overcome, such as improving nuclease resistance, biodistribution, and cellular uptake of oligonucleotides, before the strategy is suitable for a practical principle. The goal of our research is to provide the solution by using drug delivery system (DDS). We previously demonstrated the efficacy of atelocollagen for nucleotide delivery, such as plasmid DNA (Ochiya et al., Nature Med, 1999) and antisense oligonucleotides (Hirai et al., J Gene Med, 2004) *in vitro* and *in vivo*. The atelocollagen nano-particle-mediated DDS can be available for *in vivo* treatments as both local and systemic applications (Minakuchi et al., Nuc Acid Res, 2004; Hanai et al., Human Gene Ther, 2004). Here, the following describes the recent research outcomes, especially about systemic applications of siRNAs against bone-metastatic human prostate cancer (Takeshita et al., Proc Natl Acad Sci USA, 2005).