

Nano-pathophysiology: Intractability due to structural characteristics in disease foci limiting drug delivery

Prof. Mitsunobu R Kano, MD, PhD

Department of Pharmaceutical Biomedicine,
Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences

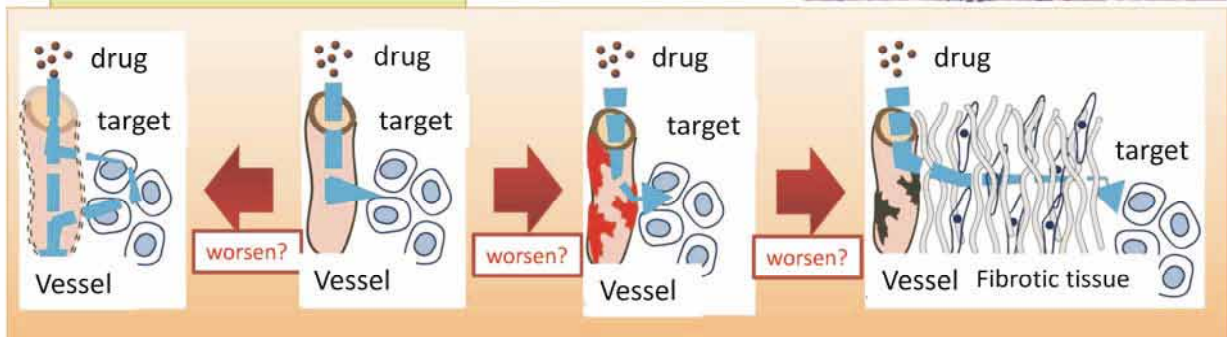
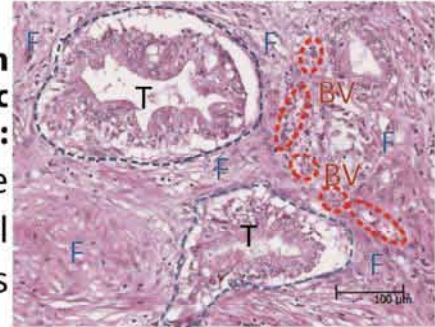
Revealing why a disease is hard to be treated with medication

Not only cellular response, but pathway that drug travels, matters

Systemic administration (of esp. nanoparticle)
→vascular lumen
→vascular wall
→fibrotic tissue
→target cells

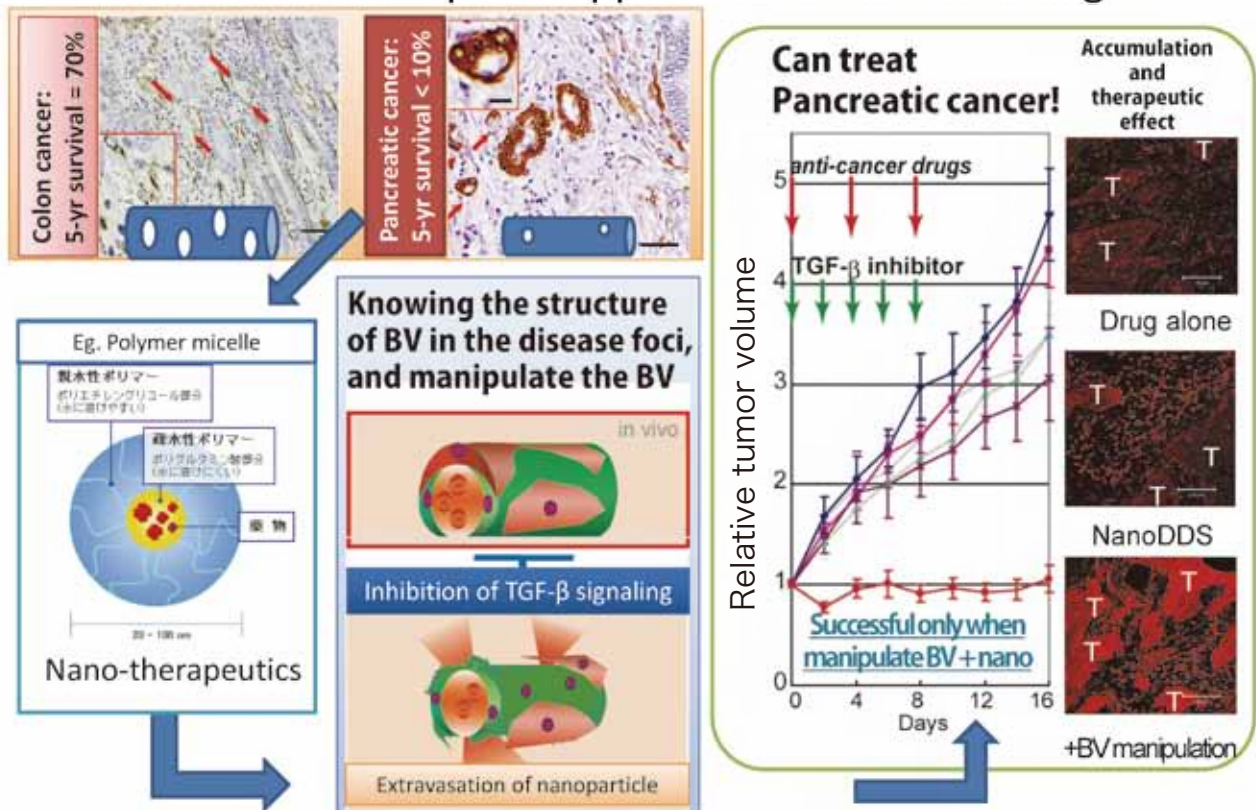
Pathologic specimen of human pancreatic cancer:

F: fibrotic tissue
 BV: blood vessel
 T: tumor cells



Indispensable knowledge for the success of nano-therapeutics!

A successful example of application of the knowledge



Kano, Adv Drug Deliv Rev 2014, Kano et al PNAS 2007, Cabral and Kano et al, Nat Nanotech 2011 etc