Development of pancreatic cancer targeting aptamer and therapeutic application

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Aptamer is “nucleic acid antibody”

Aptamer sequence

3D structure formation

Target binding

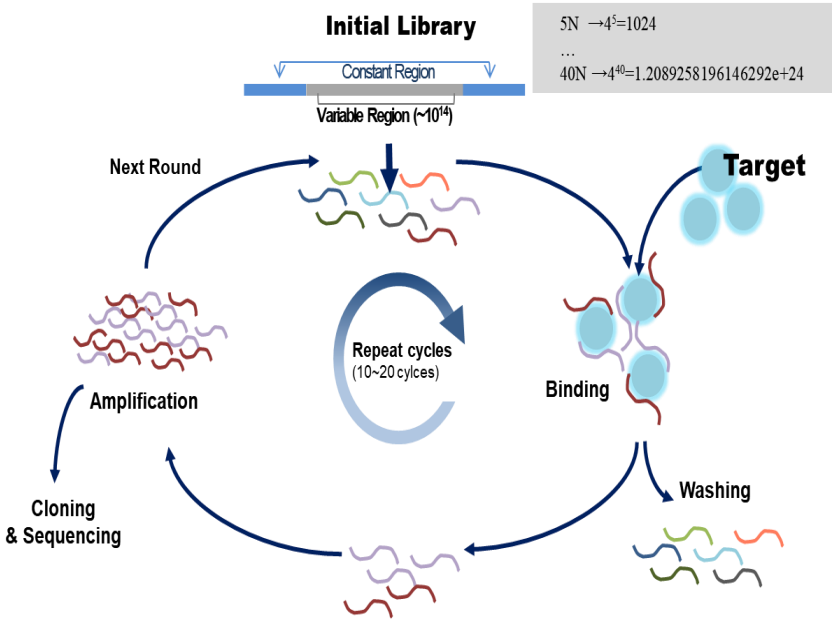
Binding mechanism

- Structure compatibility
- Electrostatic interaction

Definition	Single-stranded oligonucleotide molecules
Affinity	High (pM – nM)
specificity	High
Material	Nucleic acid (long-term stability as dry powder or in solution)
Production	*In vitro* Chemical process
Target	Wide range of target (protein, sugar, ion, cell, toxins, …)
Batch to batch variation	Little or no
Modification	Easy and straightforward : site-specific modification possible
Size	20 kDa
Penetration	Fast tissue penetration

- **Aptamer selection process : SELEX**

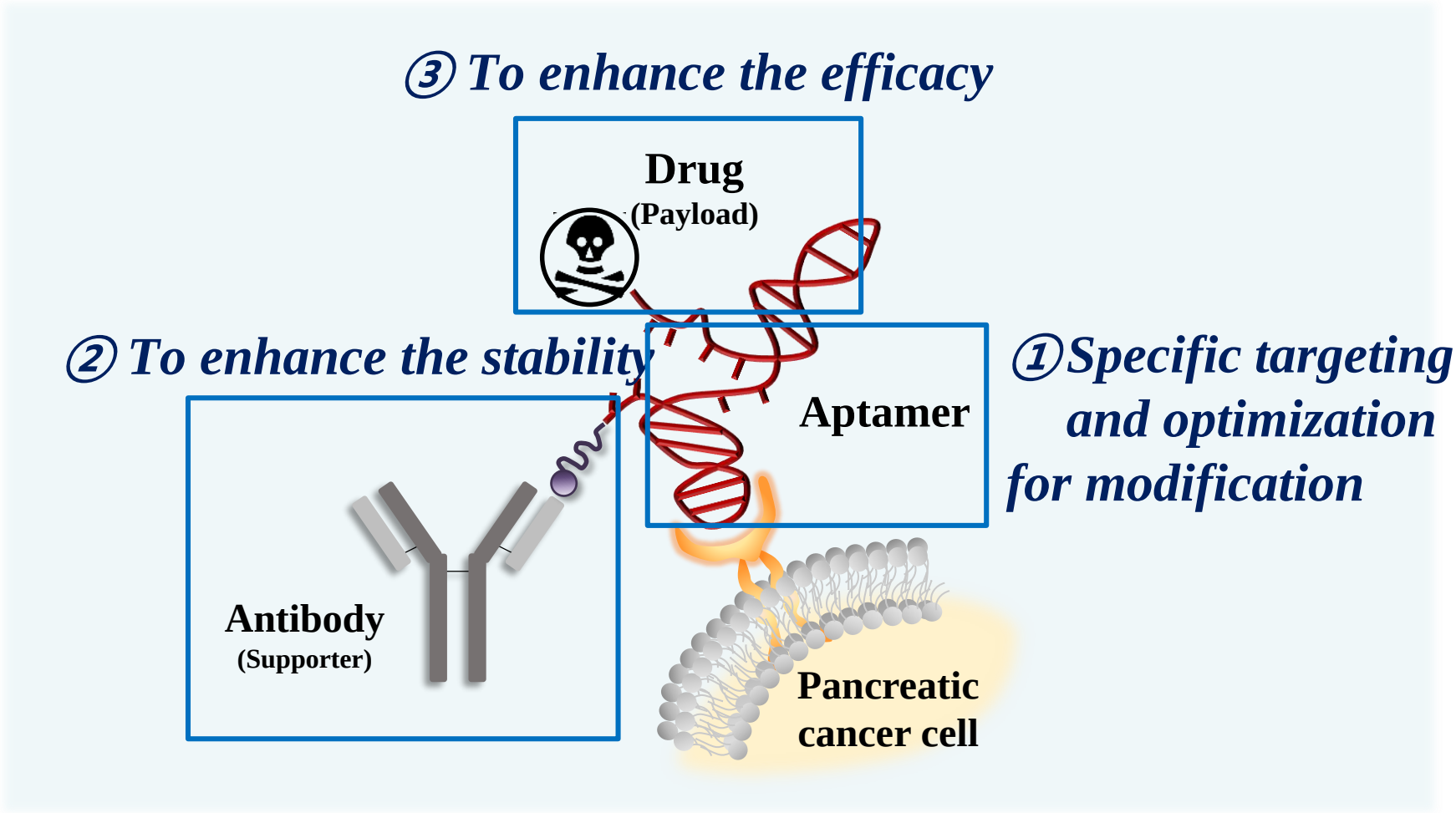
(Systematic Evolution of Ligands by Exponential enrichment)



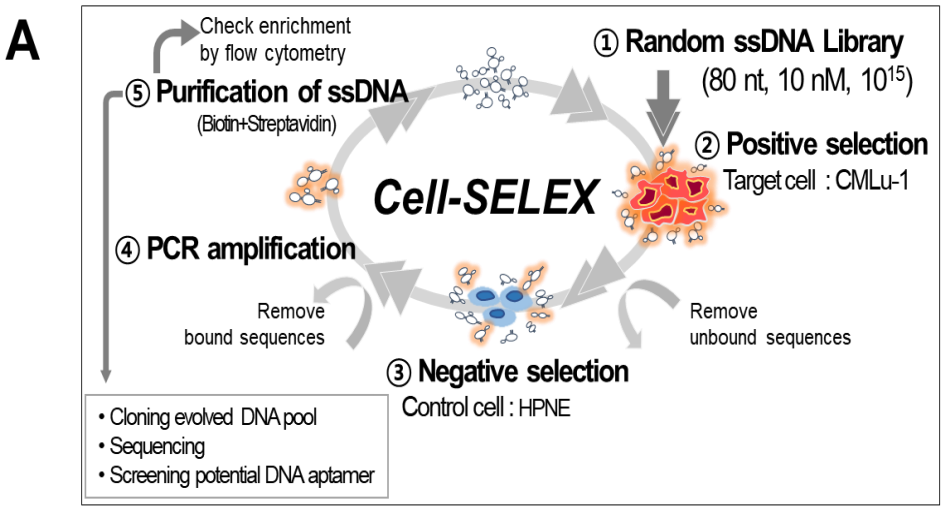
Objective of study

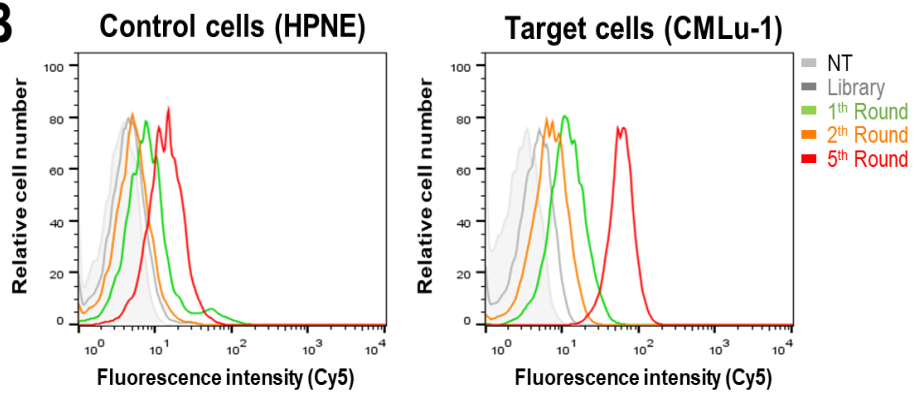
To develop aptamer-based therapeutics with high specificity and efficacy for pancreatic cancer

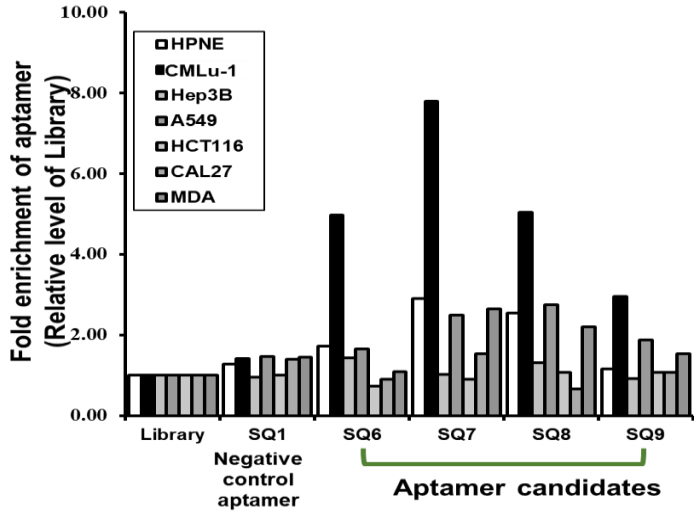
❖ The strategy of Doligobody (Drug-oligomer-antibody complex)

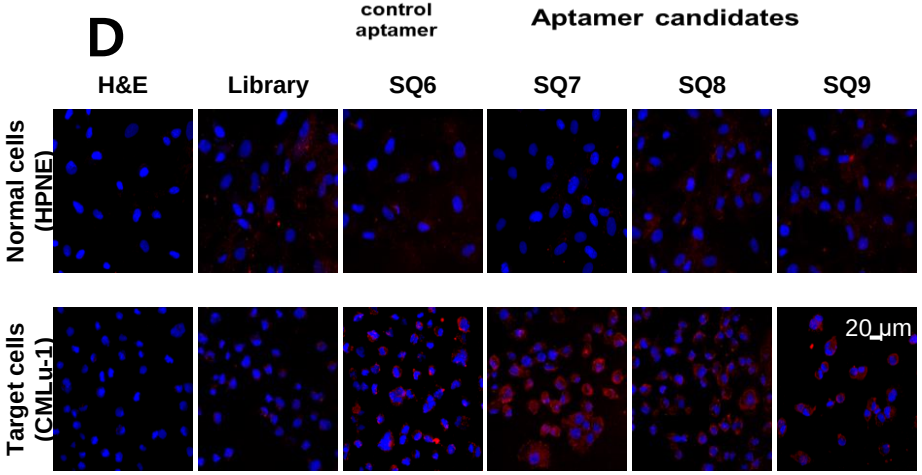


1-1. Cell-SELEX for pancreatic cancer specific aptamer



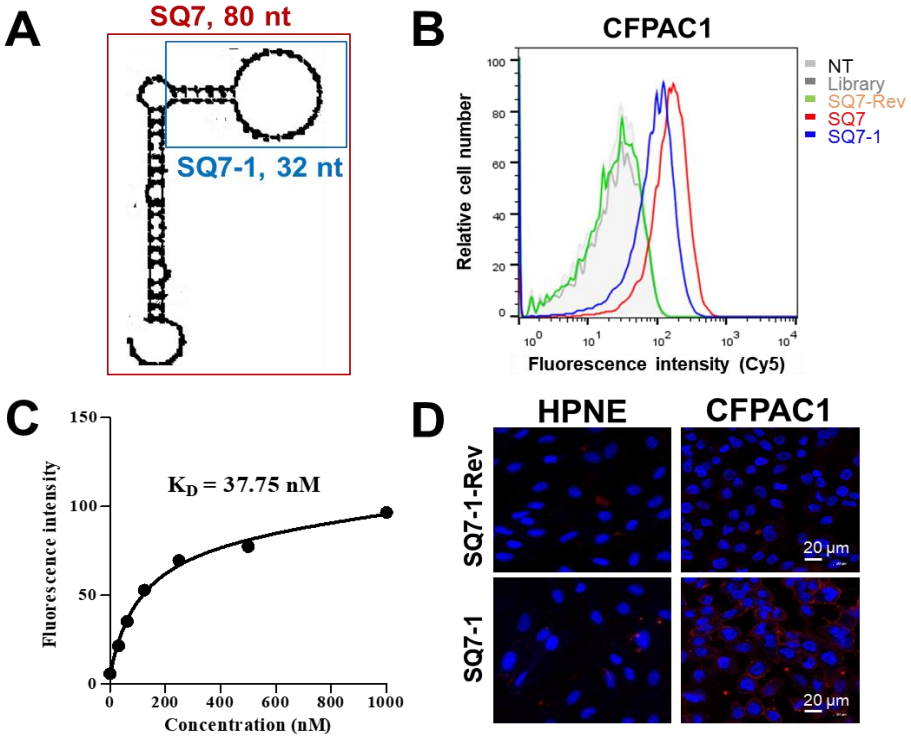




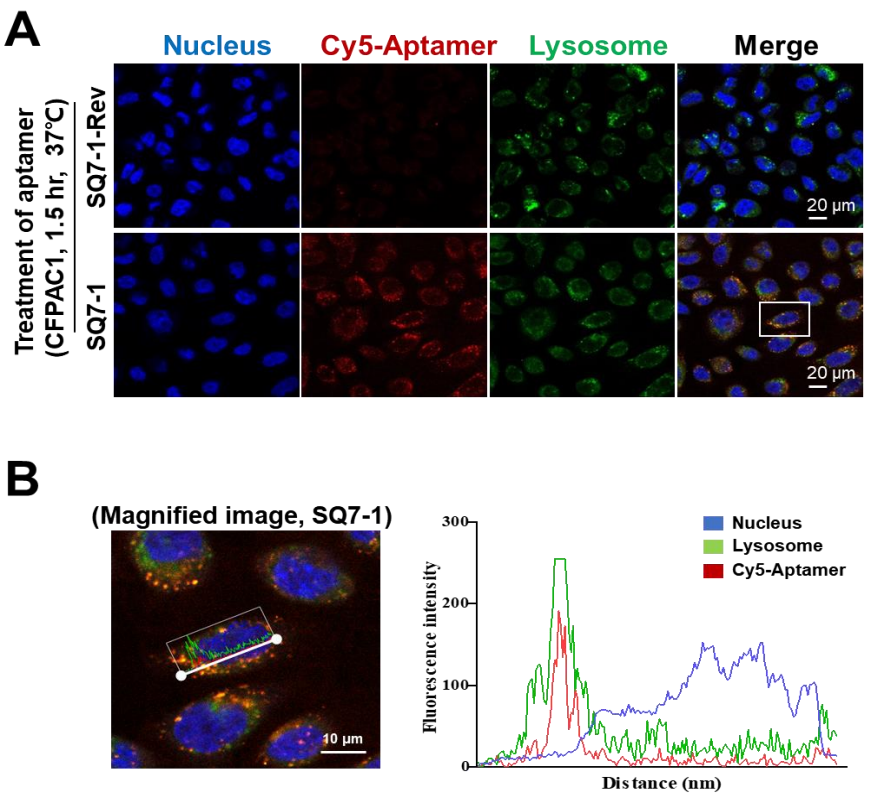


1-2. Size-optimization of SQ7 : SQ7-1 (32 nt)

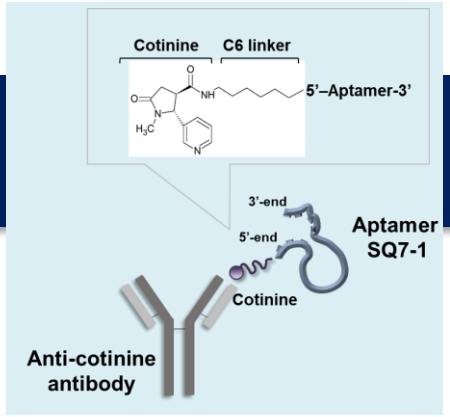
SQ7 aptamer structure-based size minimization to SQ7-1



SQ7-1 aptamer internalizing into CFPAC1 cells



2. Aptamer-antibody complex (Oligobody)



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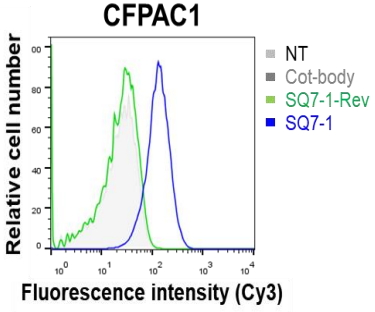

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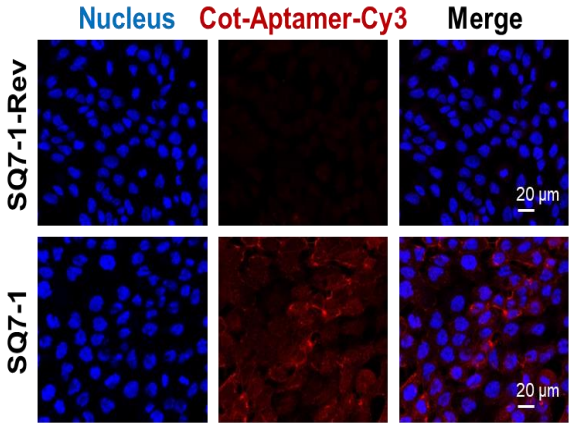
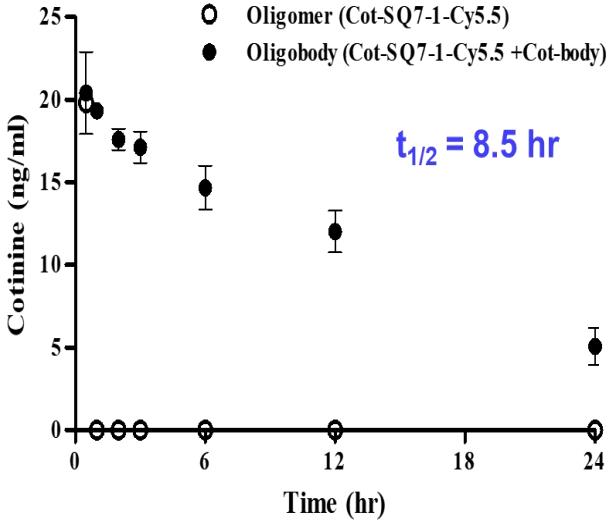
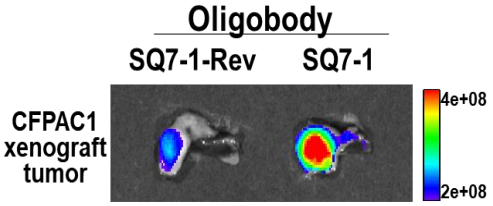


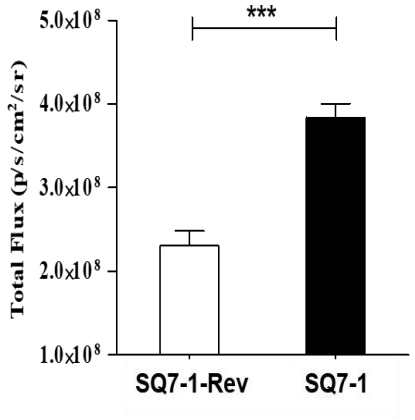
<Pharmacokinetics>

- *Balb/c normal mice*
- *Route : intra venous injection*
- *Dose : 10 mg/kg of b/w*

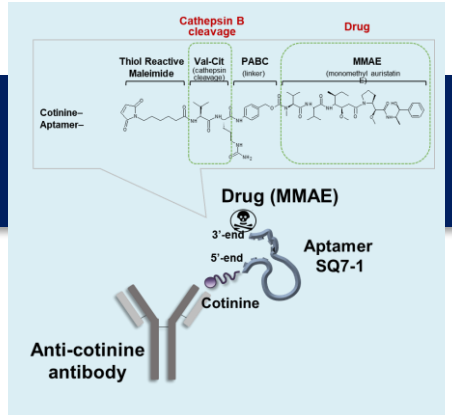


<In vivo tumor targeting>





3. Drug-conjugated Oligobody (DOligobody)



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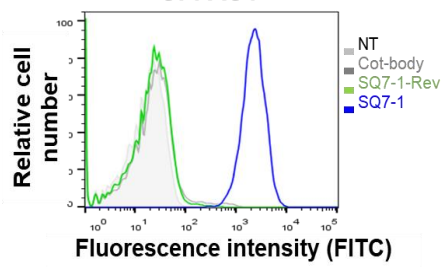

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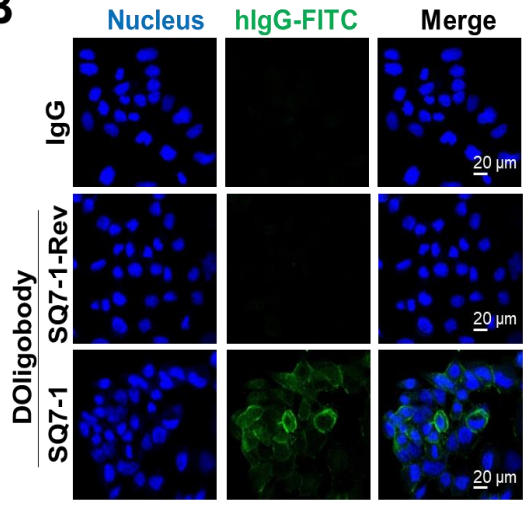

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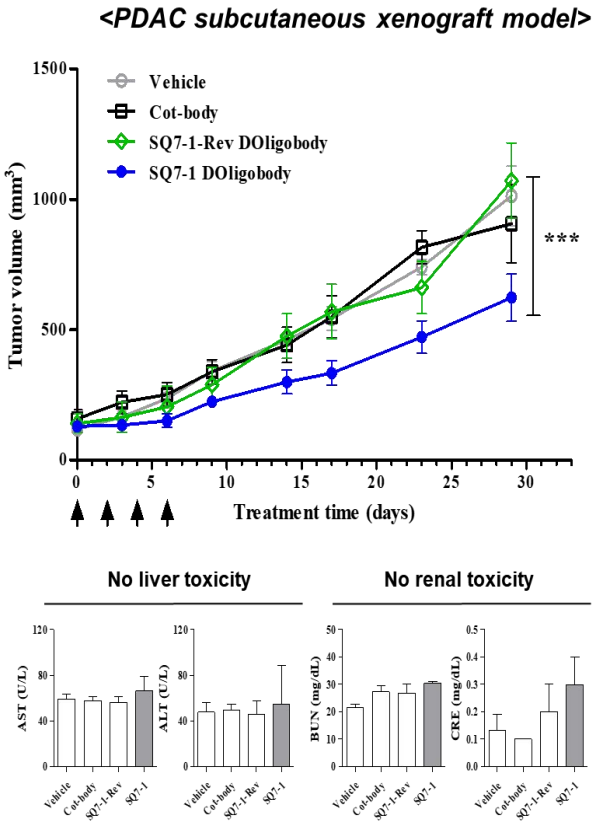

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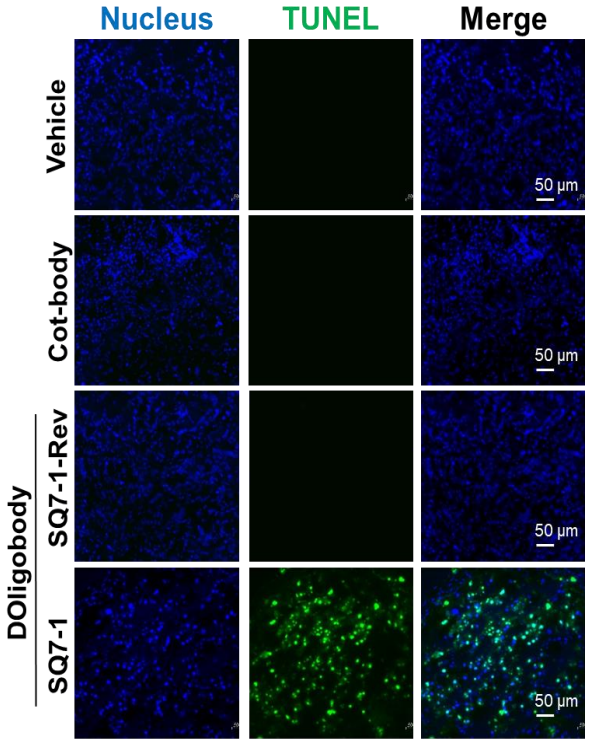
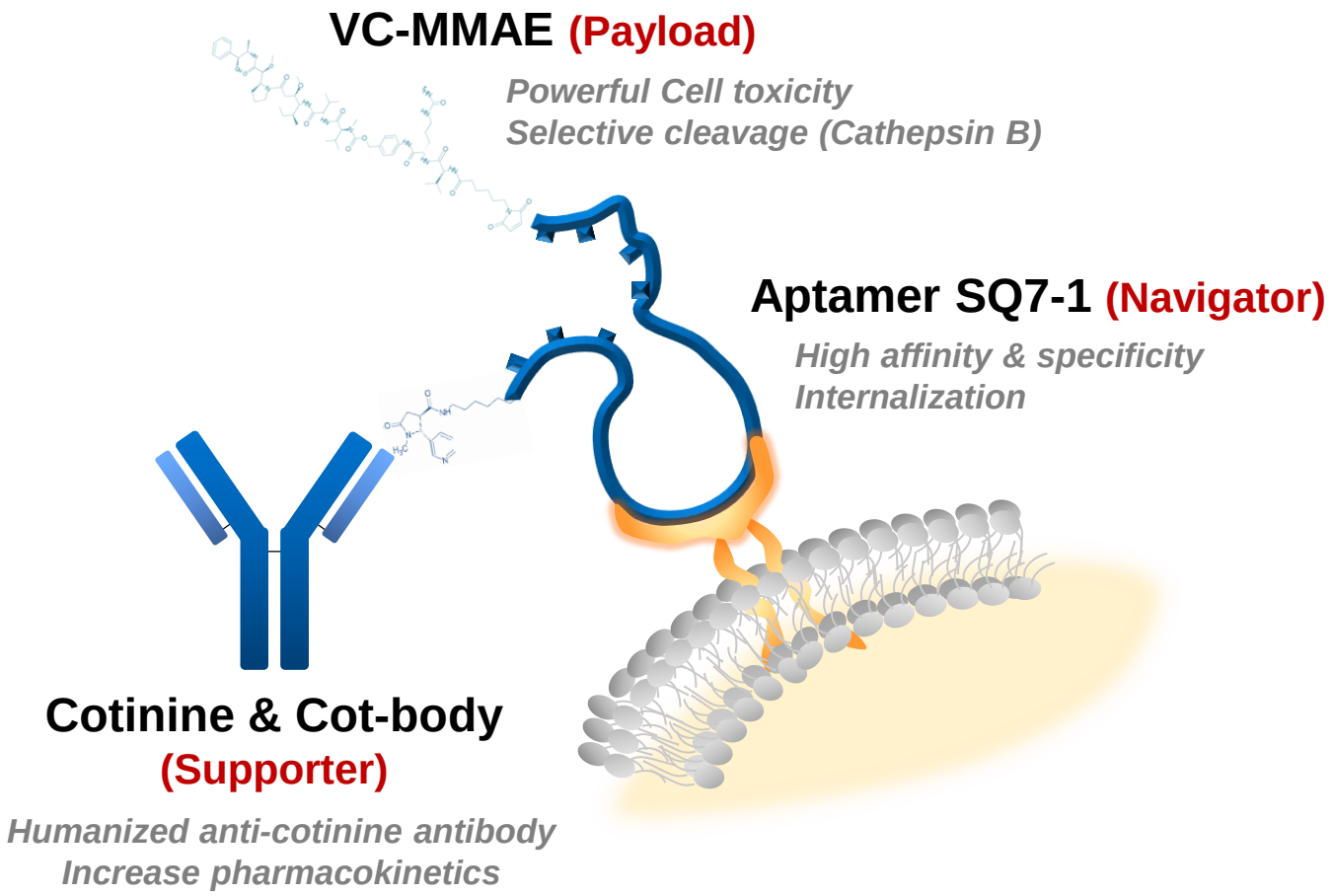


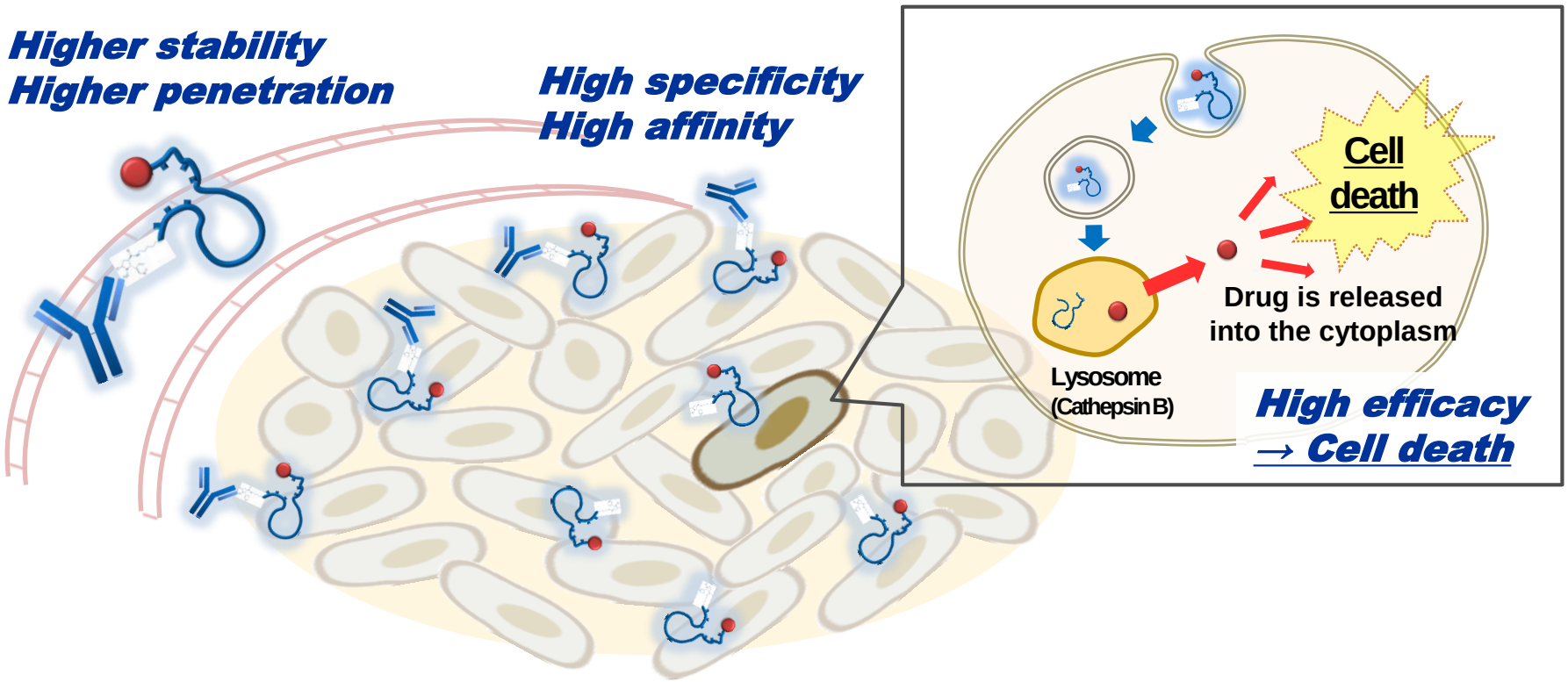
Summary

- **DOligobody (Drug + Oligomer + Antibody) has anti-cancer effect.**



CONCLSION

Development of aptamer-based therapeutics for pancreatic cancer



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