



Advanced

Molecular

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Aptamer Based Drug Discovery Services for Immunotherapy

For more information, please contact:

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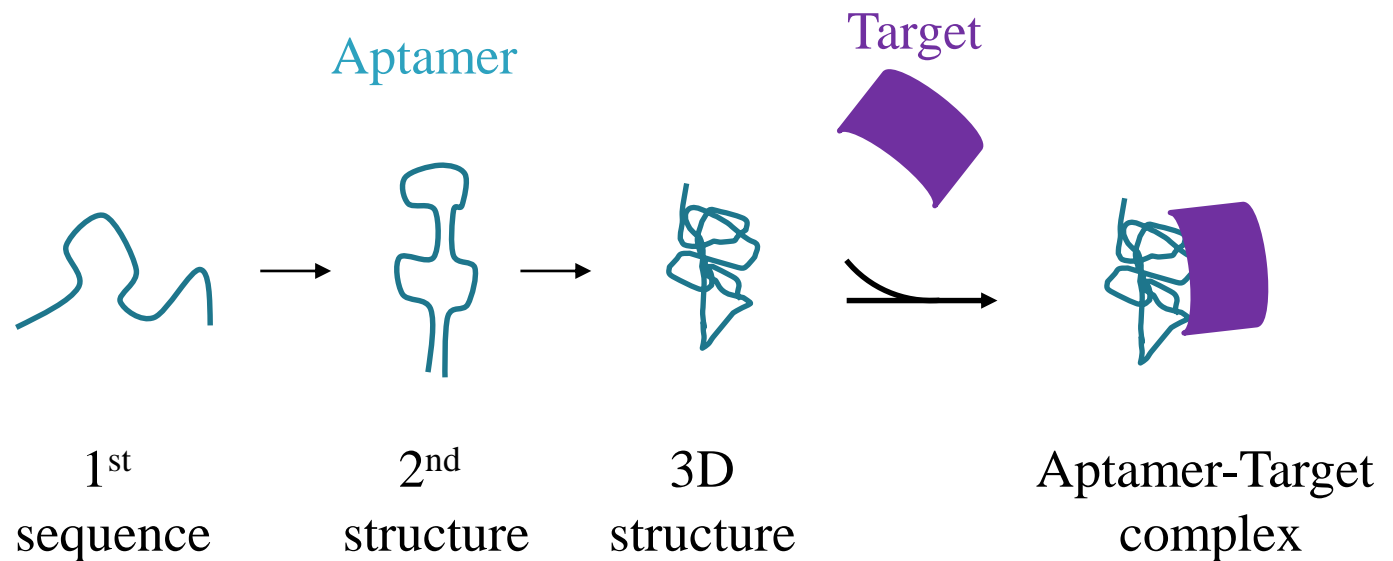
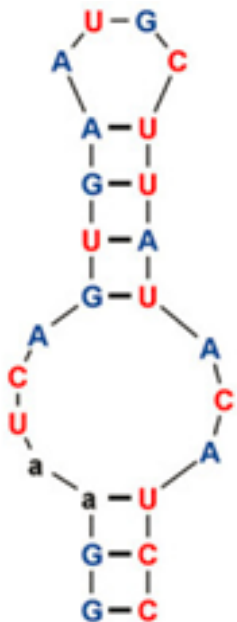
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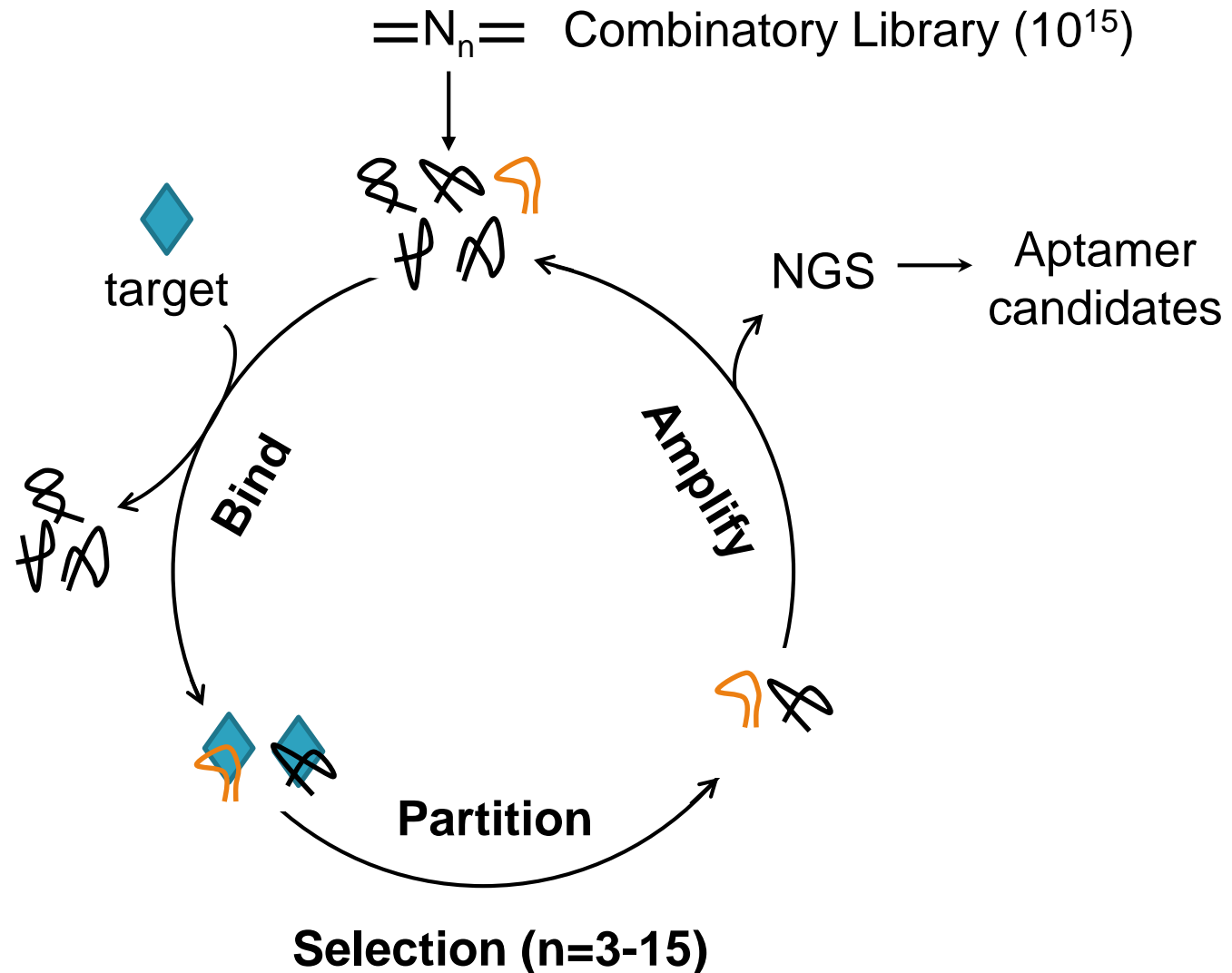
What is an aptamer?

- ssDNA/RNA (15-100 nt) binds its target avidly and specifically via tertiary interactions (*chemical antibodies*).

Pegaptanib



General Aptamer Screening Process

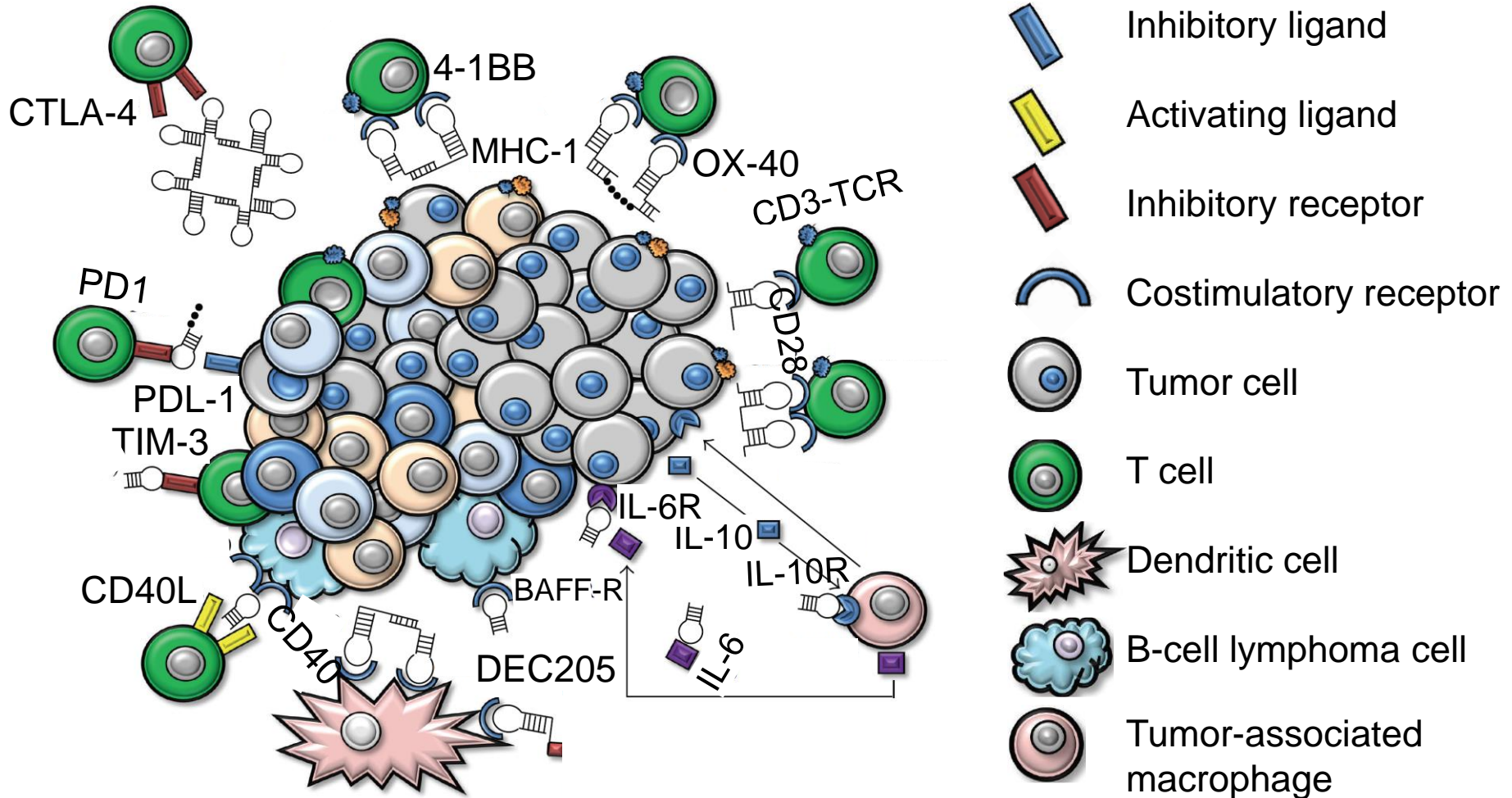


Aptamer vs. Antibody

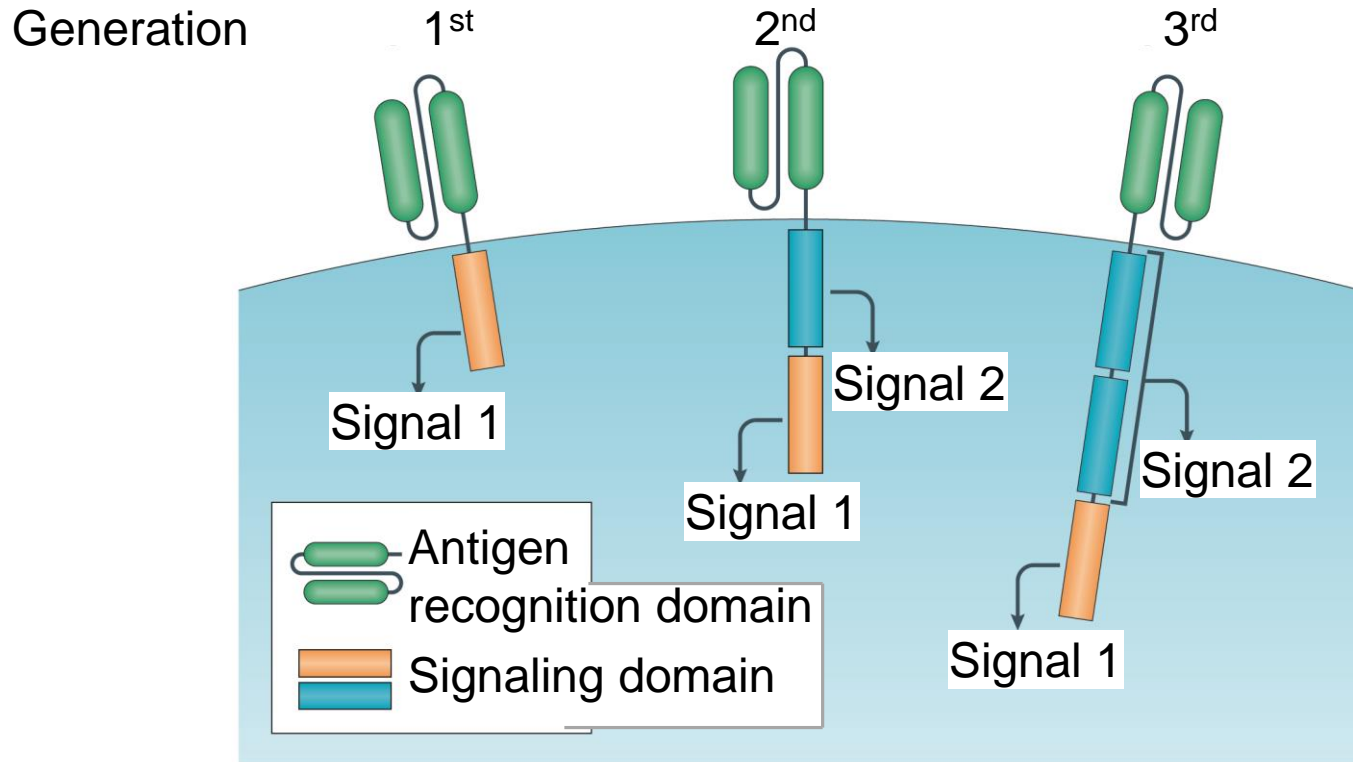
	Aptamers	Antibodies
Composition	A, T/U, C, G with modifications	22 amino acids
size	5-30 KDa (15-100 nt)	150 KDa
targets	all molecules	proteins/Haptens
affinity (K_d)	nM-pM	nM-pM
specificity	High	High
multivalency	easily achievable	difficult to achieve
development	<i>in vitro</i> selection 4-12 weeks	<i>in vivo</i> immunization/hybridoma > 6 months
production	chemical synthesis low cost	<i>in vivo</i> /hybridoma cell culture high cost
batch variation	none/low	significant
physical/thermal stability	stable with long shelf-life	unstable with limited shelf-life
function intracellularly	Yes	No
immunogenicity	No	Yes
antidotes	antisense oligonucleotides	No
tissue penetration	fast	slow

Major Opportunities in Immunotherapy

Aptamers targeting immune checkpoints

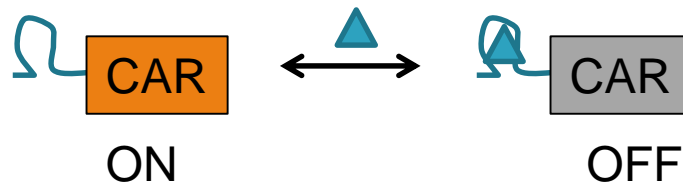


Aptamer-controllable Chimeric Antigen Receptors-T (CAR-T) cell therapy



Jackson HJ, et al, Nat Rev Clin Oncol. 2016, PMID: 27000958

Controllability:
Potency/Safety



Aptamer/
aptazyme

drug

Our aptamer solutions to immunotherapy

- Aptamer drugs
(immune checkpoint modulators)
- CAR-T regulated by drug-aptamer/aptazyme interactions
(controllable potency and safety)

Case studies

- Developed a drug controllable aptazyme-based gene therapy technology platform for a top biopharma.
- Developed aptamers for inhibition of EBOV replication by breaking protein-protein interactions in its replication complex (PMID: 24067086)
- Developed an aptasensor prototype for early detection of acute kidney injury using Lcn2 protein as a biomarker (PMID: 22946879).
- Developed first aptamer-controllable chemistry (PMID: 19778045).
- Developed a panel of aptamers for lung cancer diagnosis.



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