仿多特異性抗體之奈米元件：用於癌症免疫治療

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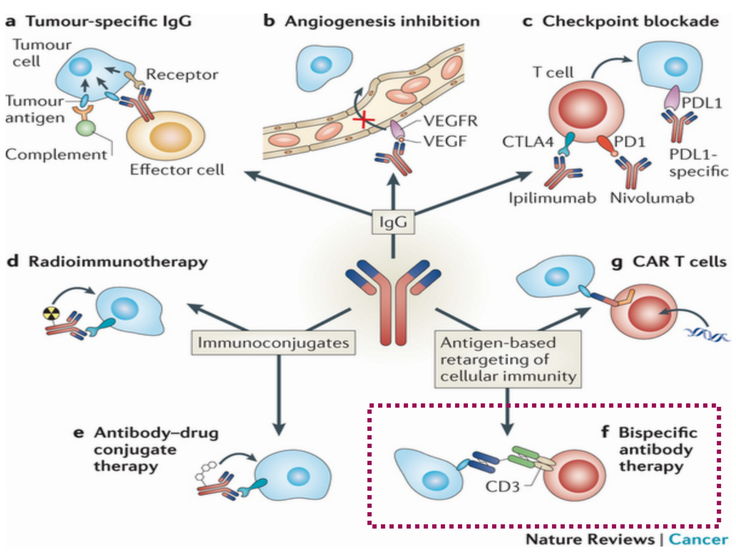
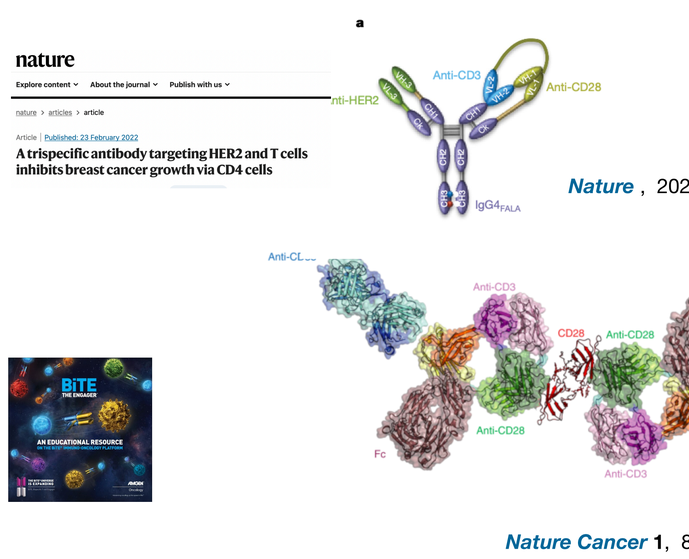
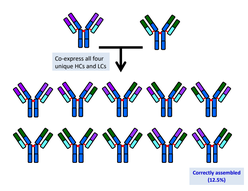
癌症免疫治療



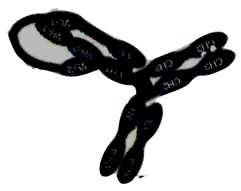
多特異性抗體的挑戰



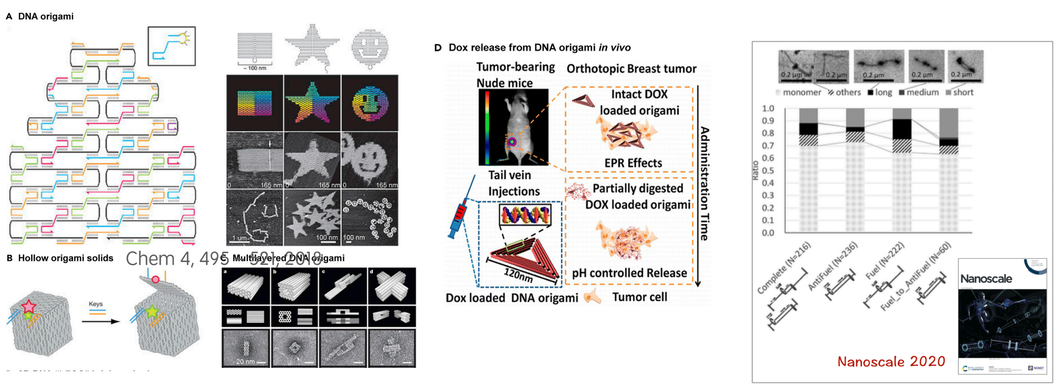
蛋白質組裝複雜
製程困難
穩定度低
不易修飾



DNA origami



生物相容性高　製程容易



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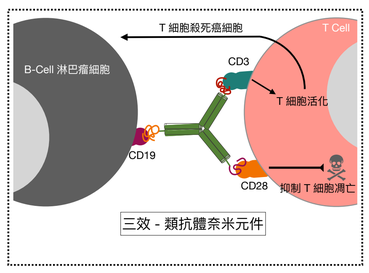
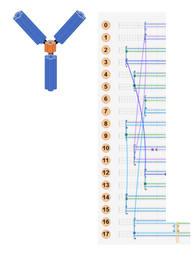
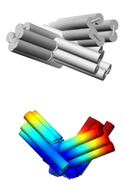
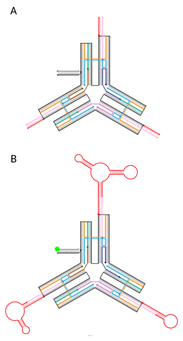
透過 DNA 互補配對，可以摺出對應奈米結構，可精準設計

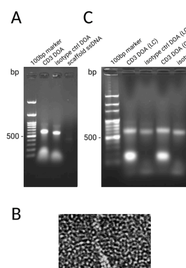
Design of Ab-like DNA origami

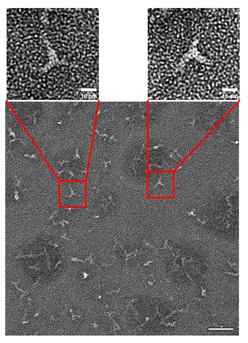












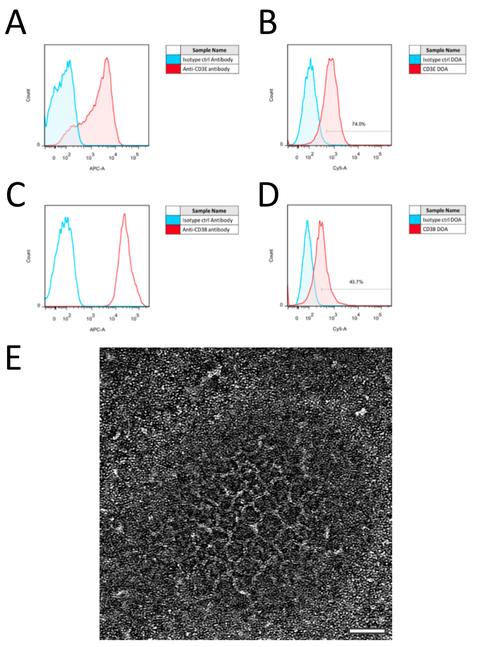
Exploring the optimal method of DNA origami antibodies （DOA) assembly

(A) The agarose gel electrophoresis result represents successfully assembly of scaffold ssDNA, staple ssDNA, with or without aptamer.

(B) TEM image of the isotype control DOA in 38000× of magnification. Scale bar = 50 nm.

(C) The agarose gel electrophoresis result represents the assembly of isotype control DOA and CD3ε DOA in two diverse methods. LC: linear cooling folding method, CS: constant temperature folding method.

(D) The agarose gel electrophoresis result represents the assembly of isotype control DOA and CD3 DOA in three diverse buffer conditions.



Binding ability of DNA origami antibodies

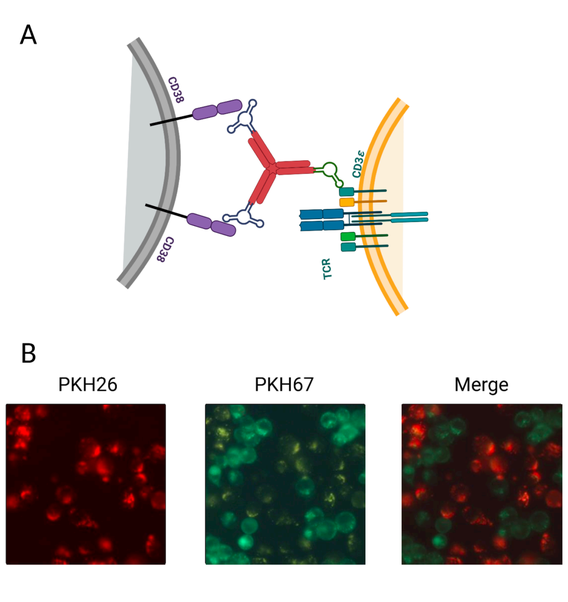
(A) The binding ability of the commercial anti-CD3ε antibody to Jurkat E6.1 cells.

(B) The binding ability of the CD3ε DOA to Jurkat E6.1 cells.

(C) The binding ability of the commercial anti-CD38 antibody to NCI-H929 cells.

(D) The binding ability of the commercial CD38 DOA to NCI-H929 cells

(E) TEM image of the isotype control DOA in 38000× of magnification. Scale bar = 50 nm.



Simultaneous binding of bispecific DOAs to distinct target cells

(A) Scheme of the CD38/CD3ε bispecific DOA bridging a T cell (CD3ε+) and a multiple myeloma cell (CD38+).

(B) The ability of CD38/CD3ε bispecific DOA bridging two types of cells together. Jurkat E6.1 cells and NCI-H929 cells were stained with PKH67 and PKH26 respectively, in order to observe the ability of the bispecific DOA bridging them together. Cells with red fluorescence represents NCI-H929 cells while green fluorescence represents Jurkat E6.1 cells. Images were taken in 400× of magnification.

Future works

- CELL-SELEX/ LIGS
- 結構強度和結合分析
- 動物模式
- 細胞模式

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致謝

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