

セミナーのお知らせ

How DNA deals with torsional stress

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Date: Nov 5th Thursday

Time: 4 pm to 5 pm

Location: Taniguchi Memorial Hall (Integrated Life Science Building)

(融合棟 谷口記念講堂)

Sixty years after Watson and Crick elucidated its B-form structure, amazing facts about DNA continue to emerge as tools to study it become increasingly sophisticated. At Baylor College of Medicine, we collaborate with the Wah Chiu laboratory at Baylor College of Medicine, taking advantage of state-of-the-art cryo-electron tomography facilities, to determine the three-dimensional structures of biologically active DNA. We determined how underwinding or overwinding tiny (336 bp) circles of DNA affected their three-dimensional structure, their interactions and activity with human topoisomerase IIalpha, and their susceptibility to chemical and enzymatic probing. Molecular dynamics simulations, in collaboration with Sarah Harris (University of Leeds, U.K.), provide possible atomistic explanations for the dramatic torsional-stress-induced structural alterations from B-form that we observe. The tiny supercoiled DNAs are also being developed as gene therapy vectors.

参考文献

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2. Bullied no more: when and how DNA shoves proteins around. Fogg JM, Randall GL, Pettitt BM, Sumners de WL, Harris SA, Zechiedrich L. **Q Rev Biophys.** 2012 Aug;45(3):257-99. doi: 10.1017/S0033583512000054. Epub 2012 Jul 31. Review.
3. Supercoiled Minivector DNA resists shear forces associated with gene therapy delivery. Catanese DJ Jr, Fogg JM, Schrock DE 2nd, Gilbert BE, Zechiedrich L. **Gene Ther.** 2012 Jan;19(1):94-100. doi: 10.1038/gt.2011.77. Epub 2011 Jun 2.
4. Transfection of shRNA-encoding Minivector DNA of a few hundred base pairs to regulate gene expression in lymphoma cells. Zhao N, Fogg JM, Zechiedrich L, Zu Y. **Gene Ther.** 2011 Mar;18(3):220-4. doi: 10.1038/gt.2010.123. Epub 2010 Oct 21.

連絡先：遺伝子機能解析分野

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※医学系研究科単位認定の対象となるセミナーです。