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## Asia 3 Roundtable on Nucleic Acids 2024

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2002 - Present Professor of Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences  
2006.12-2007.5 Visiting Professor, University of California at Santa Barbara with Nobel Laureate Prof. Alan J. Heeger  
2000-2002 NSF Laboratory for Molecular Sciences, California Institute of Technology with Nobel Laureate Prof. A. H. Zewail  
1996-2000 Department of Biochemistry, School of Medicine, UMMC with Prof. J. B. Chaires  
1989-1995 PhD Candidate, President's Award of the Chinese Academy of Sciences (1995), Changchun Institute of Applied Chemistry, Chinese Academy of Sciences

#### **Research Interests:**

Design and synthesize nucleic acids- and related protein-binding ligands, and study their interaction mechanisms and biological effects  
1) Bioinorganic Chemistry ; 2) Chemical Biology;  
3) Nanozymes and Their Applications;  
4) Bio-nano Engineering and Bio-mimetic Catalysis

#### **Selected Publications:**

1. Qin, G., Liu, Z., Yang, J., Liao, X., Zhao, C., Ren, J., **Qu, X.** *Nat. Cell Biol.* **2024**, *26*, 1212-1224.
2. Huang, C., Zhao, C., Deng, Q., Zhang, H., Yu, D., Ren, J., **Qu, X.** (Cover article) *Nat. Catal.* **2023**, *6*, 729-739.
3. Zhu, J., You, Y., Zhang, W., Pu, F., Ren, J., **Qu, X.** *J. Am. Chem. Soc.* **2023**, *145*, 1955-1963.
4. Qin, G., Zhao, C., Liu, Y., Zhang, C., Yang, G., Yang, J., Wang, Z., Wang, C., Tu, C., Guo, Z., Ren, J., **Qu, X.** *Cell Discovery* **2022**, *8*, 86.
5. You, Y., Deng, Q., Wang, Y., Li, G., Sang, Y., Fu, F., Ren, J., Qu, X. *Nat. Commun.* **2022**, *13*, 1459.
6. Qin, G., Yang, J., Zhao, C., Ren, J., **Qu, X.** *PNAS* **2022**, *119*, e2204725119.
7. Wang, Z., Niu, J., Zhao, C., Wang, X., Ren, J., Qu, X. *Angew. Chem. Int. Ed.* **2021**, *60*, 12431-2437.
8. Zhao C, Qin G, Niu J, Wang Z, Wang C, Ren J, Qu X, *Angew. Chem. Int. Ed.*, **2021**, *60*, 432-438.

# How to Precisely Modulate One Particular G-quadruplex in Living Cells

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## Abstract

G-quadruplexes (G4), an important type of noncanonical secondary structures formed by guanine-rich DNA and RNA sequences, have attracted increasing attention thanks to their unique structural features and significant biological functions. Besides their presence in human genomes, G4s also widely exist in yeasts, bacteria and multiple viruses, including herpes simplex virus (HSV), human immunodeficiency virus (HIV), human papilloma virus (HPV), Epstein-Barr virus (EBV), Zika virus (ZIKV), hepatitis C virus (HCV) and tick-borne encephalitis virus (TBEV), SARS-CoV-2, etc. Recently, our group reported the first example to identify SARS-CoV-2 G4 formed in living cells, which could be a promising drug target. In this report, we will summarize our recent progress on targeting G4 and applying G4 aptamer for treatment of cancer and SARS-CoV-2, and our developed new strategy on how to specifically target one particular G4 in living cells.

- 1.Qin, G., Liu, Z., Yang, J., Liao, X., Zhao, C., Ren, J., **Qu, X.** *Nat. Cell Biol.* **2024**, *26*, 1212-1224.
2. Huang, C., Zhao, C., Deng, Q., Zhang, H., Yu, D., Ren, J., **Qu, X.** (Cover article) *Nat. Catal.* **2023**, *6*, 729-739.
3. Qin, G., Zhao, C., Liu, Y., Zhang, C., Yang, G., Yang, J., Wang, Z., Wang, C., Tu, C., Guo, Z., Ren, J., **Qu, X.** *Cell Discovery* **2022**, *8*, 86.
4. Zhao C, Qin G, Niu J, Wang Z, Wang C, Ren J, **Qu X**, *Angew. Chem. Int. Ed.*, **2021**, *60*, 432-438.