

Supporting Information for

# Toll-like Receptor-mediated Recognition of Nucleic Acid Nanoparticles (NANPs) in Human Primary Blood Cells

Enping Hong<sup>1</sup>, Justin Halman<sup>2</sup>, Ankit Shah<sup>1</sup>, Edward Cedrone<sup>1</sup>, Nguyen Truong<sup>2</sup>, Kirill Afonin<sup>2\*</sup>, and Marina A. Dobrovolskaia<sup>1\*</sup>

1 Nanotechnology Characterization Lab, Frederick National Laboratory for Cancer Research Sponsored by the National Cancer Institute, Frederick, MD 21702, USA; [neunb@mail.nih.gov](mailto:neunb@mail.nih.gov)

2 Nanoscale Science Program, Department of Chemistry, University of North Carolina at Charlotte, Charlotte, NC 28223, USA

\* Correspondence: [marina@mail.nih.gov](mailto:marina@mail.nih.gov); Tel.: +01-301-228-4937 and [kafonin@uncc.edu](mailto:kafonin@uncc.edu); Tel.:+01-704-6870685

## NANP compositions used in this project (5'→3')

To assemble the NANPs the following strands are mixed at equimolar concentrations, followed by the assembly protocol described in Methods.

### RNA cube

rA: GGCAACUUUGAUCCUCGGUUUAGCGCCGGCCUUUUCUCCACACUUUCACG  
rB: GGGAAAUUUCGUGGUAGGUUUUGUUGCCCGUGUUUCUACGAUUACUUUGGUC  
rC: GGACAUUUUCGAGACAGCAUUUUUUCCCGACCUUUGCGGAUUGUAUUUUAGG  
rD: GGCGUUUUUGACCUUCUGCUUUUUGUCCCUAUUUUCUAAUGACUUUUUGGCC  
rE: GGGAGAUUUAGUCAUUAGUUUUACAUAUCCGCUUUGUAAUCGUAGUUUGUGU  
rF: GGGAUUUUACCUACCACGUUUUGCUGUCUCGUUUGCAGAAGGUCUUUCCGA  
rD-AF488: GGCGUUUUUGACCUUCUGCUUUUUGUCCCUAUUUUCUAAUGACUUUUUGGCC-AF488

### DNA cube

dA: GGCAACTTTGATCCCTCGGTTTAGCGCCGGCCTTTTCTCCACACTTTCACG  
dB: GGGAAATTTCTGTTAGGTTTTGTTGCCGTGTTTCTACGATTACTTTGGTC  
dC: GGACATTTTCGAGACAGCATTTTTTCCCGACCTTTGCGGATTGTATTTAGG  
dD: GGCGTTTTGACCTTCTGCTTTATGTCCCCTATTTCTTAATGACTTTTGCC  
dE: GGGAGATTTAGTCATTAAGTTTTACAATCCGCTTTGTAATCGTAGTTTGTT  
dF: GGGATCTTTACCTACCACGTTTTGCTGTCTCGTTTGCAAGGTTTCCGA  
dD-AF488: GGCGTTTTGACCTTCTGCTTTATGTCCCCTATTTCTTAATGACTTTTGCC-AF488

### DNA anticube

anti-dA: CGTGAAAGTGTGGGAGAAAAGGCCGGCGCTAAACCGAGGGATCAAAGTTGCC  
anti-dB: GACCAAAGTAATCGTAGAAACACGGGCAACAAAACCTACCACGAAATTTCC  
anti-dC: CCTAAAATACAATCCGCAAAGGTCGGGAAAAAATGCTGTCTCGAAAATGTCC  
anti-dD: GGCCAAAAGTCATTAAGAAATAGGGGACATAAAGCAGAAGGTCAAAGCGCC  
anti-dE: ACACAAACTACGATTACAAAGCGGATTGTAACCTTAATGACTAAATCTCC  
anti-dF: TCGGAAAGACCTTCTGCAAACGAGACAGCAAAACGTGGTAGGTAAAGATCCC  
anti-dC-AF488: AF488-CCTAAAATACAATCCGCAAAGGTCGGGAAAAAATGCTGTCTCGAAAATGTCC

### RNA ring

nrA: GGGAACCGUCCACUGGUUCCCGCUACGAGAGCCUGCCUCGUAGC  
nrB: GGGAACCGCAGGCUGGUUCCCGCUACGAGAGAACGCCUCGUAGC  
nrC: GGGAACCGCUUCUGGUUCCCGCUACGAGACGUCUCCUCGUAGC  
nrD: GGGAACCGAGACGUGGUUCCCGCUACGAGUCGUGGUCUCGUAGC  
nrE: GGGAACACCACGAGGUUCCCGCUACGAGAACCAUCCUCGUAGC  
nrF: GGGAACCGAUGGUUGGUUCCCGCUACGAGAGUGGACCUCGUAGC  
nrC-AF488: GGGAACCGCUUCUGGUUCCCGCUACGAGACGUCUCCUCGUAGC-AF488

### RNA antiring

anti-nrA: GGGAAAGCUACGAGGCAGGCUCUCGUAGCGGGAACCAGUGGACGGUUCCC  
anti-nrB: GGGAAAGCUACGAGGCUGUUCUCUCGUAGCGGGAACCAGCCUGCGGUUCCC  
anti-nrC: GGGAAAGCUACGAGGAGACGUCUCGUAGCGGGAACCAGAACGCGGUUCCC  
anti-nrD: GGGAAAGCUACGAGACCACGACUCGUAGCGGGAACCAGUCUCGGUUCCC  
anti-nrE: GGGAAAGCUACGAGGAUGGUUUCUCGUAGCGGGAACCUCGUGGUGGUUCCC  
anti-nrF: GGGAAAGCUACGAGGUCCACUCUCGUAGCGGGAACCAACCAUCGGUUCCC  
anti-nrA-AF488: GCUACGAGGCAGGCUCUCGUAGCGGGAACCAGUGGACGGUUCCC-AF488

### RNA ring/antiring monomers

nrA: GGGAACCGUCCACUGGUUCCCGCUACGAGAGCCUGCCUCGUAGC  
anti-nrA: GGGAAAGCUACGAGGCAGGCUCUCGUAGCGGGAACCAGUGGACGGUUCCC

### RNA fibers

A: GGGAAUCCAAGGAGGCAGGAUUCUCCGUCACAGAAGGAGGCACUGUGAC  
B: GGGAACGUAAGCCUCCAACGUUCCCGGAUGCUAAGCCUCCAAGCAUCC  
B-AF488: GGGAACGUAAGCCUCCAACGUUCCCGGAUGCUAAGCCUCCAAGCAUCC-AF488