## Supporting Information

# Membrane-Assisted Growth of DNA Origami Nanostructure Arrays

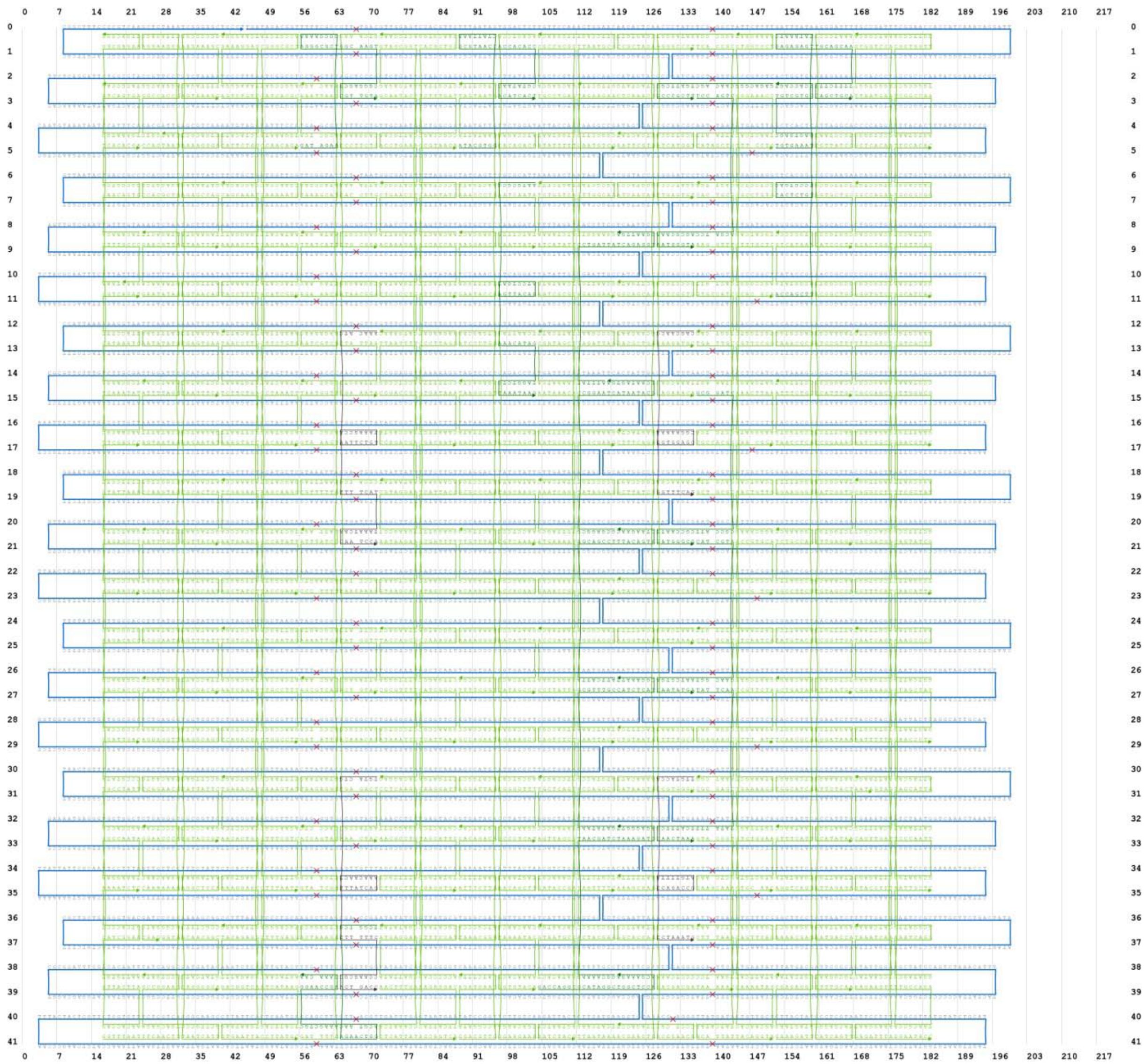
Samet Kocabey[1], Susanne Kempter[1], Jonathan List[2], Yongzheng Xing[1], Wooli Bae[1], Daniel Schiffels[1], William M. Shih[3,4], Friedrich C. Simmel[2], Tim Liedl[1]

*[1]Fakultät für Physik and Center for Nanoscience, Ludwig-Maximilians-Universität, Geschwister-Scholl-Platz 1, 80539 München, Germany;*

*[2]Physik-Department, Technische Universität München, Am Coulombwall 4a, 85748 Garching, Germany;*

*[3]Wyss Institute for Biologically Inspired Engineering and [4]Biological Chemistry and Molecular Pharmacology, Harvard Medical School, Boston, MA, 02115, United States*

**Figure S1. Schematic design of DNA origami block.** Scaffold routing and staple design in two-dimensional representation. Graphics and sequences were created using caDNAno software package.[1] Black staples show the staples chosen for cholesterol labeling and dark green staples show the staples chosen for dye labeling.



**Schematic design of DNA origami triskelion.** Scaffold routing and staple design in two-dimensional representation. Graphics and sequences were created using caDNAno software package.[1] Black staples indicate the staples chosen for cholesterol labeling, dark green staples for dye labeling, grey staples were used for trimer formation and blue staples were used for lattice formation.

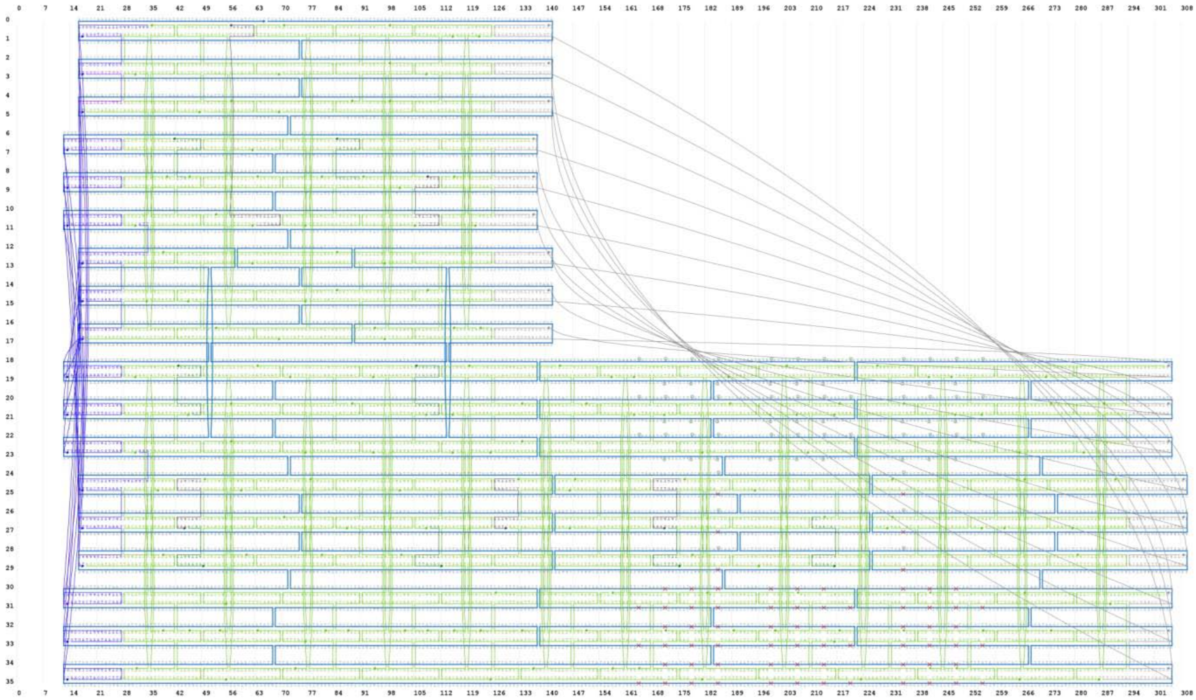


**Figure S2. Gel Analysis of DNA Origami Blocks Folded with Cholesterol.** 2 % Agarose gel, 1x TAE buffer 11 mM $Mg^{2+}$. 1) 1 kb ladder 2) p8064 scaffold 3) Block with 1 cholesterol 4) Block with 2 cholesterol 5) Block with 3 cholesterol 6) Block with 4 cholesterol 7) Block without cholesterol.

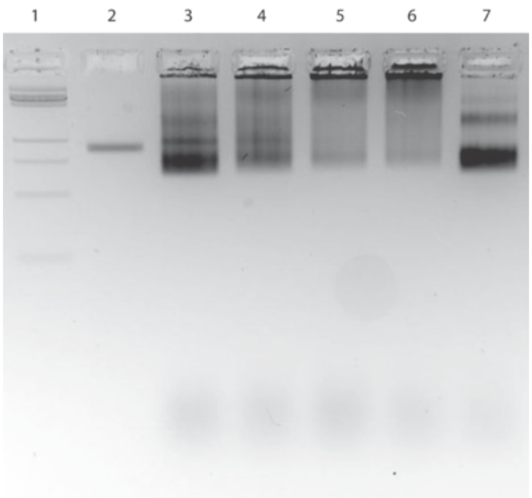


**Figure S3. Schematic design of DNA origami block dimer (right edge).** Scheme showing DNA origami block dimer formation. 6 pairs of complementary staples at the right edge of the origami were used. Arrows indicate the hybridization of 10 nt-long complementary regions. The helix numbers and their positions within the square lattice orientations are depicted at the bottom right corner.

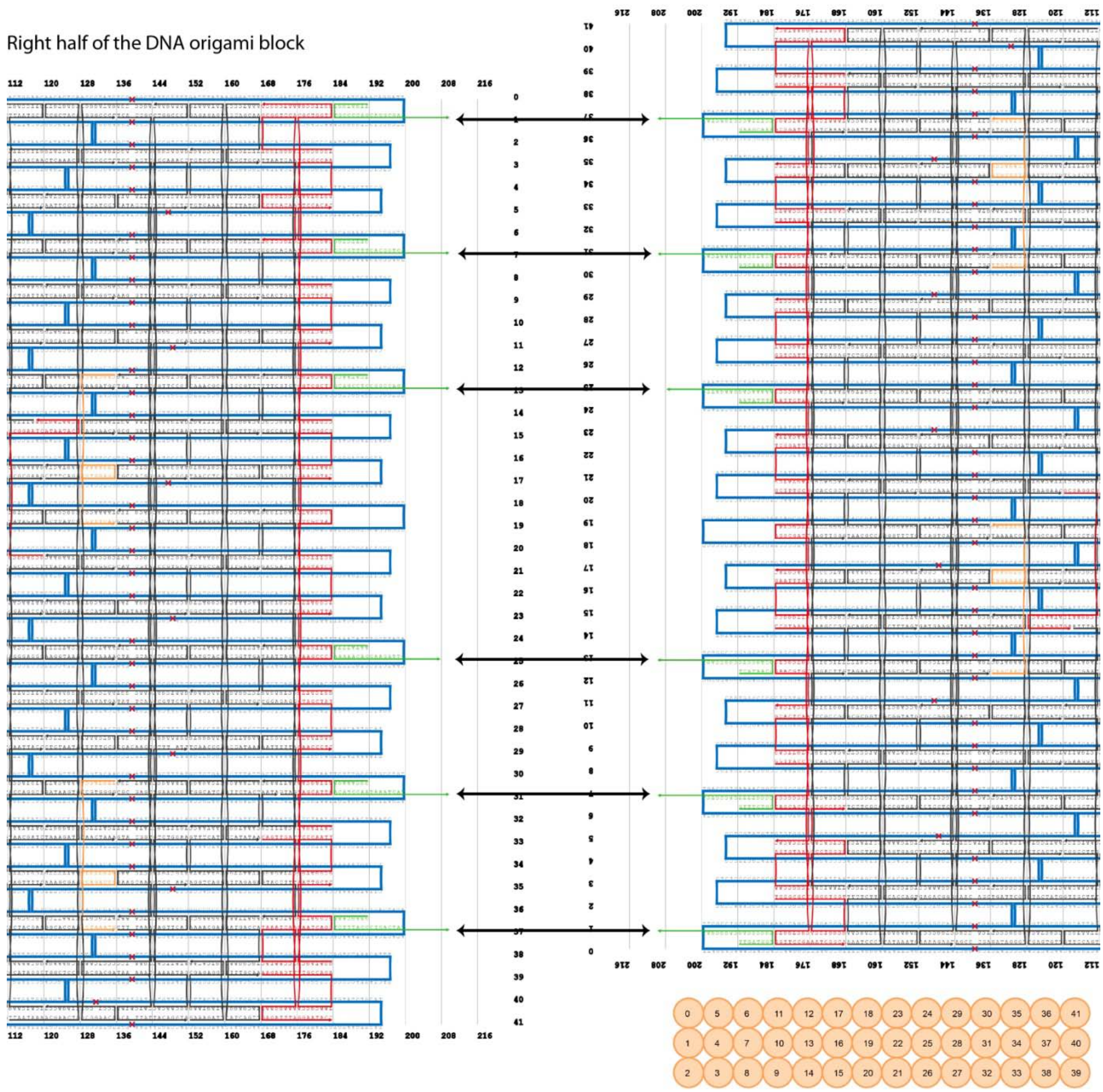


**Figure S4. Schematic design of alternative DNA origami block dimer (left edge).** Scheme showing DNA origami block dimer formation. 6 pairs of complementary staples at the left edge of the origami were used. Arrows indicate the hybridization of 10 nt-long complementary regions. The helix numbers and their positions within the square lattice are depicted at the bottom right corner.

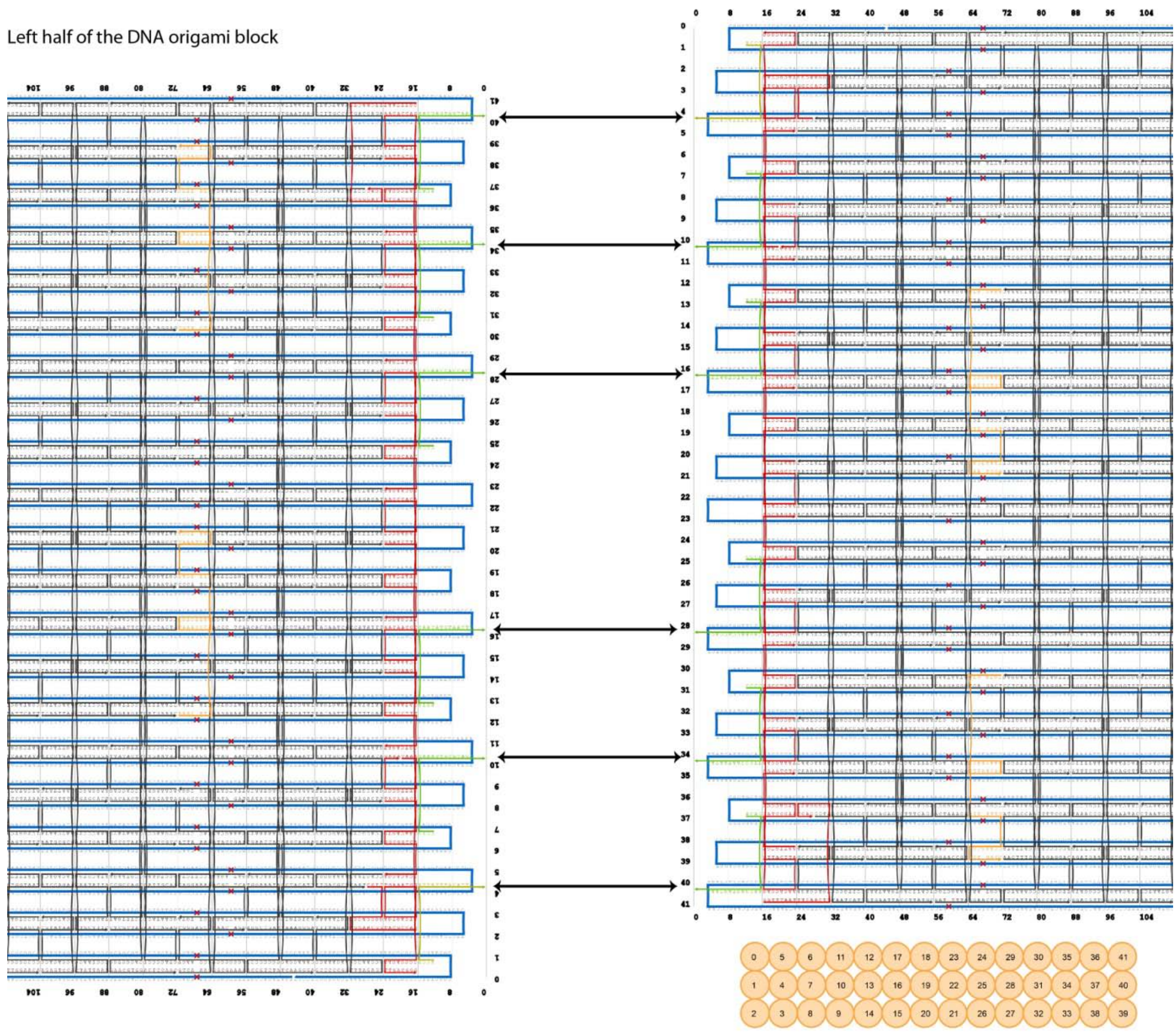


**Figure S5. Gel Analysis of DNA Origami Block Monomers and Dimers.** 2 % Agarose gel, 1x TAE buffer 11 mM $Mg^{2+}$. 1) 1 kb ladder 2) Block monomer 3) Block dimer assembled from the left side 4) Block monomer 5) Block dimer assembled from the right side.

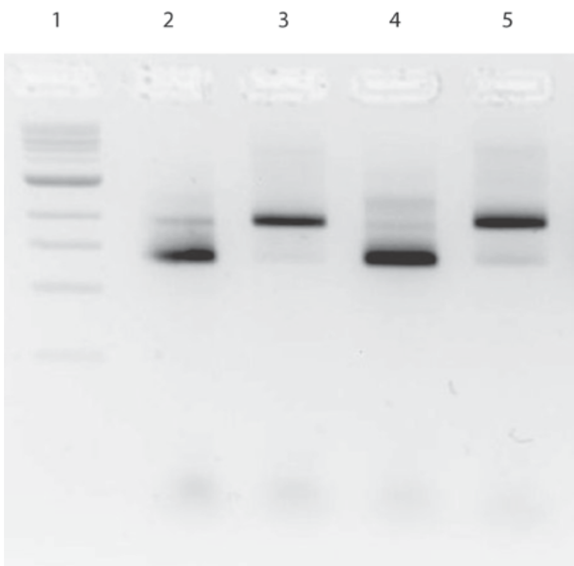



**Figure S6. FRAP Analysis of DOPC/Texas Red Membrane.** Left: Representative fluorescence images of DOPC bilayer before and after photobleaching. 20 frame were captured over the course of 14 s. For clarity, only 6 frames are depicted here. Right: Time (in s) *vs.* Intensity plot acquired from the images shown in the left panel. A one-phase association approach was used for curve fitting.[2]

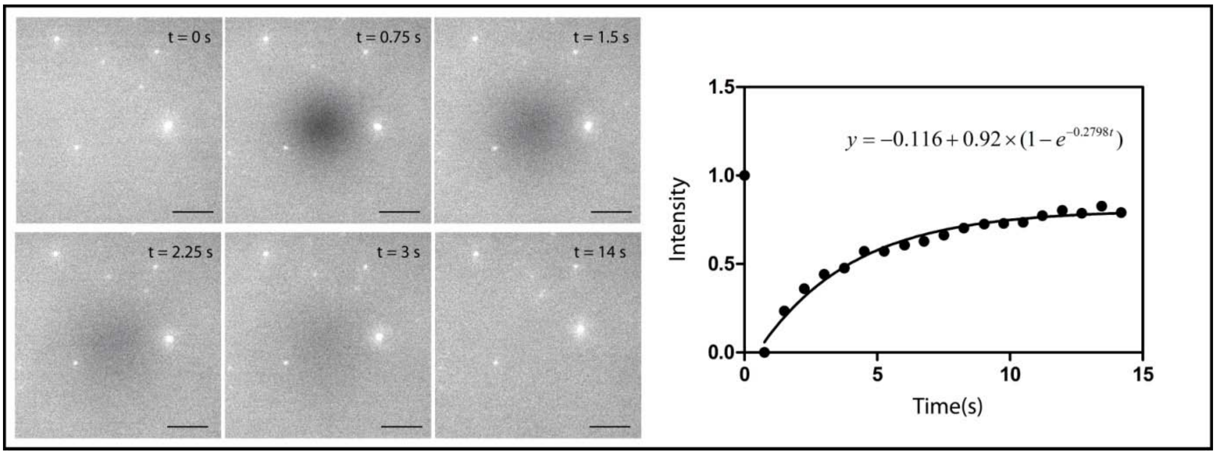


**Figure S7. Schematic design of DNA origami block for 1D polymerization.** The connector staples for 1D polymerization are depicted in orange.

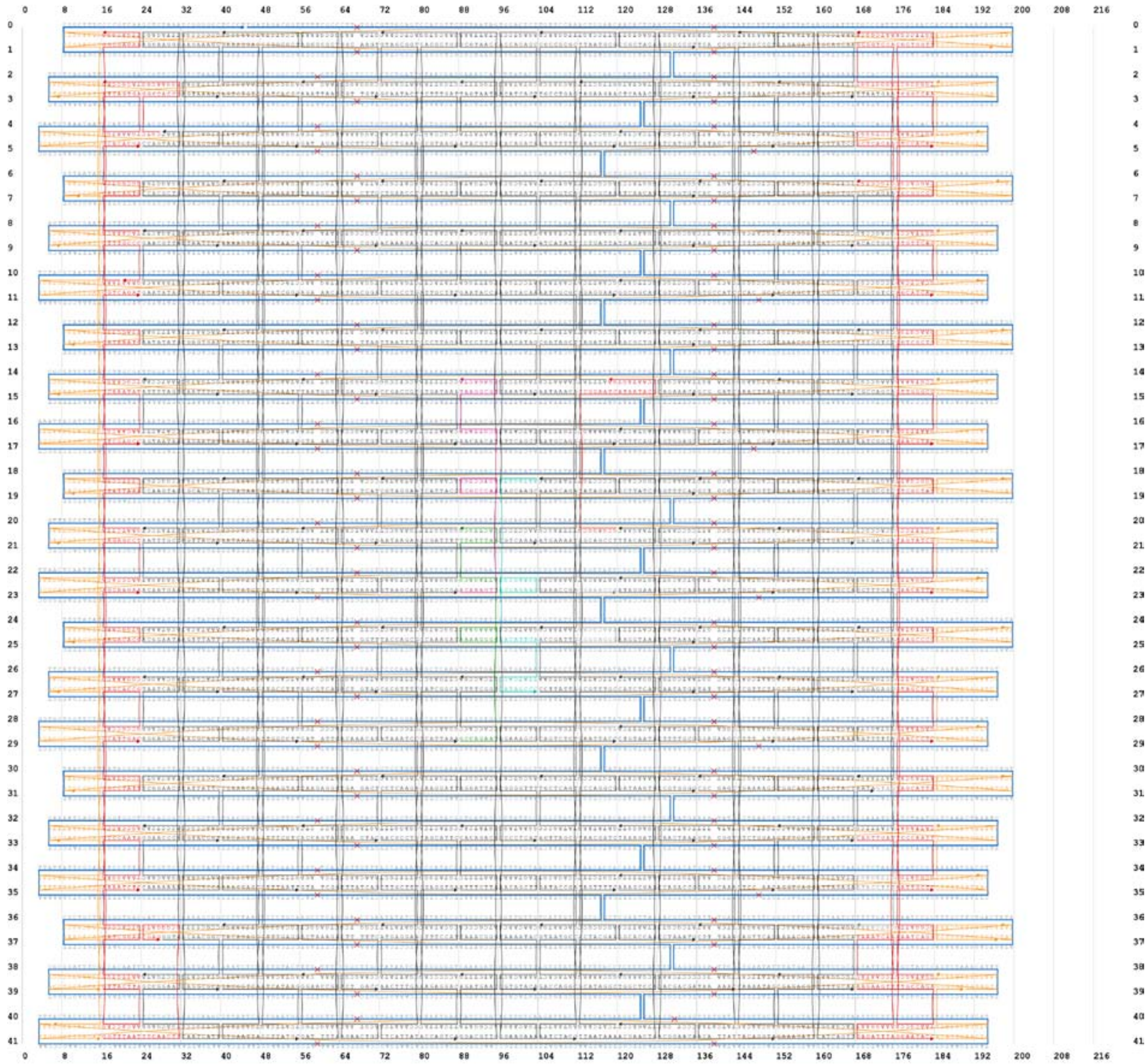


**Figure S8. Fluorescence images of DNA origami arrays.** Images show the 1D polymerization of DNA origami blocks. The same region on the SLB was captured with 1 h intervals. (scale bars: 5 µm)

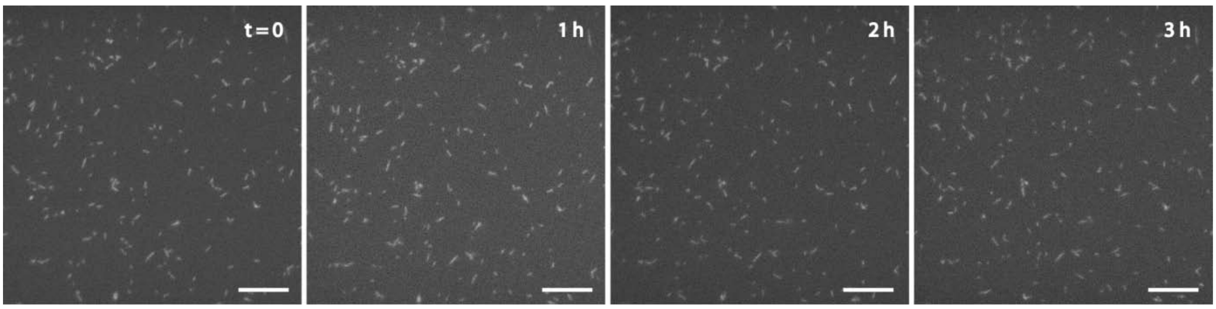


**Figure S9. Schematic design of DNA origami block for 2D polymerization.** The connector staples for 2D polymerization are depicted in pink and turquise for the each two opposite corners.

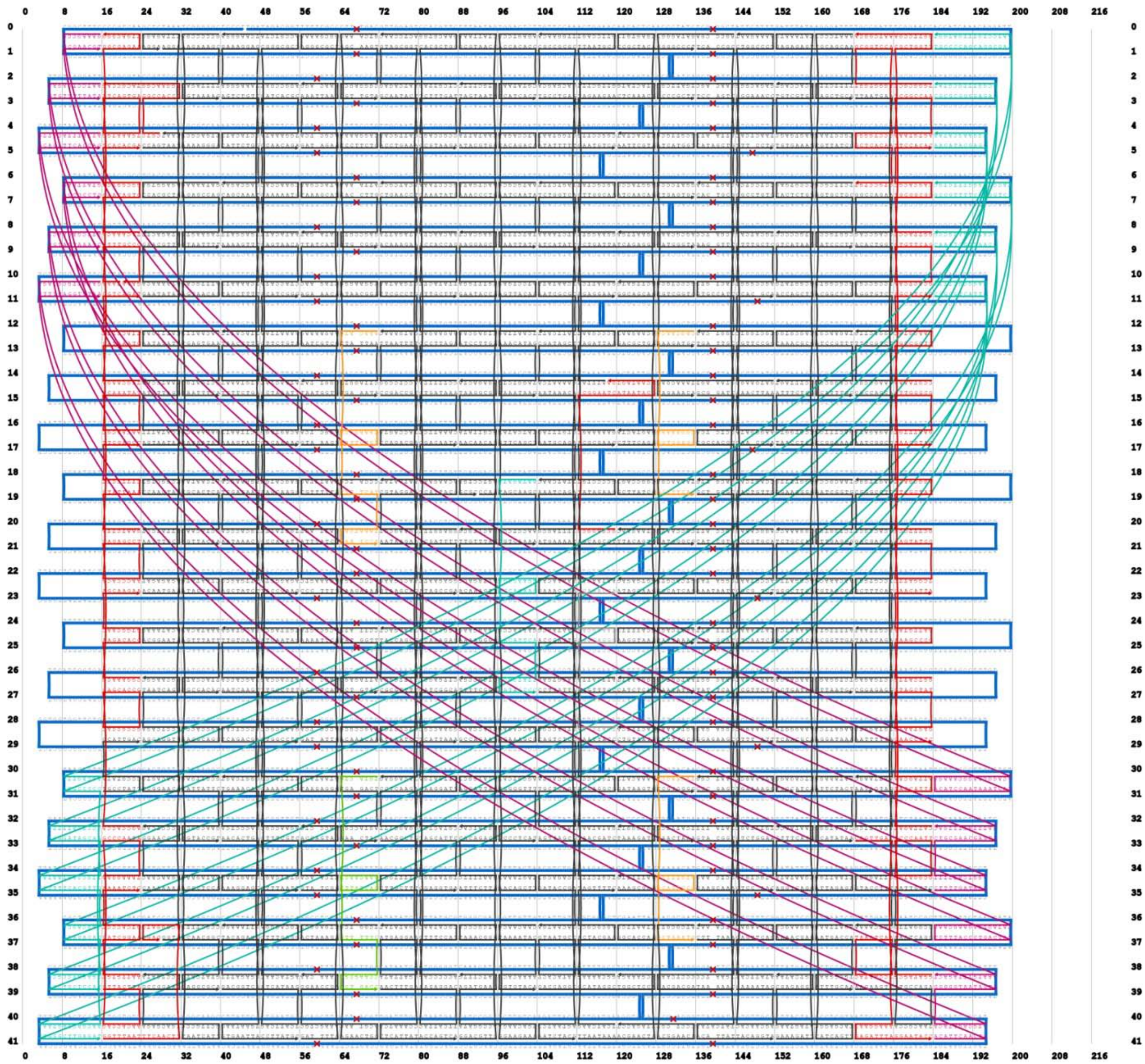


**Figure S10. AFM images of DNA origami block arrays formed without SLB support.** The DNA structures were assembled in solution and then deposited on the mica using high $Mg^{2+}$ concentration (125mM $MgCl_2$, 400mM Tris, 200mM acetic acid, and 10mM EDTA, pH 8.5). The scan rate of the images is 5 Hz and the scan size of the images is 512x512 pixels.

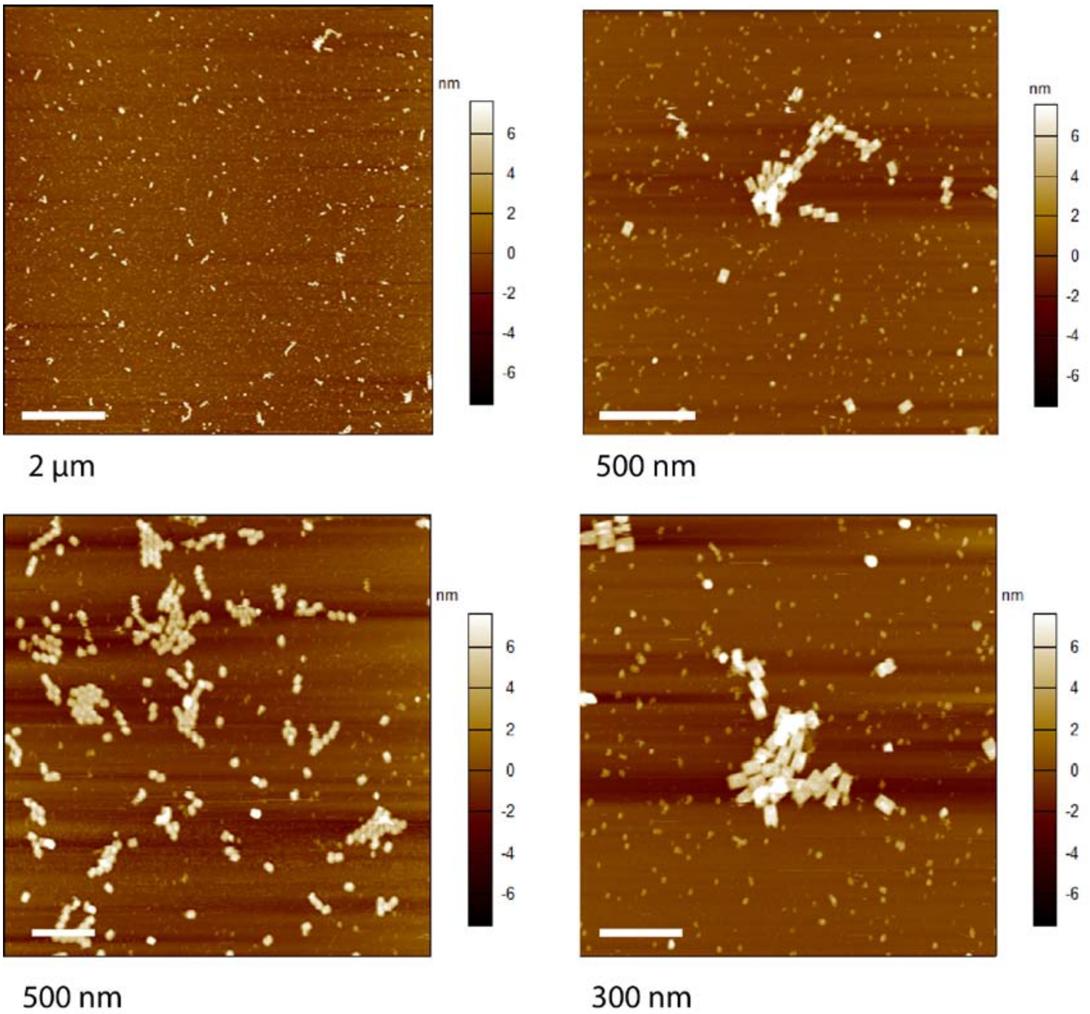



**Figure S11. AFM images of the lipid bilayer at low salt concentration (10 mM HEPES, 150 mM NaCl, 0 mM $Mg^{2+}$, pH 7.6).** The scan rate of the images is 6.5 Hz and the scan size of the images is 512x512 pixels.

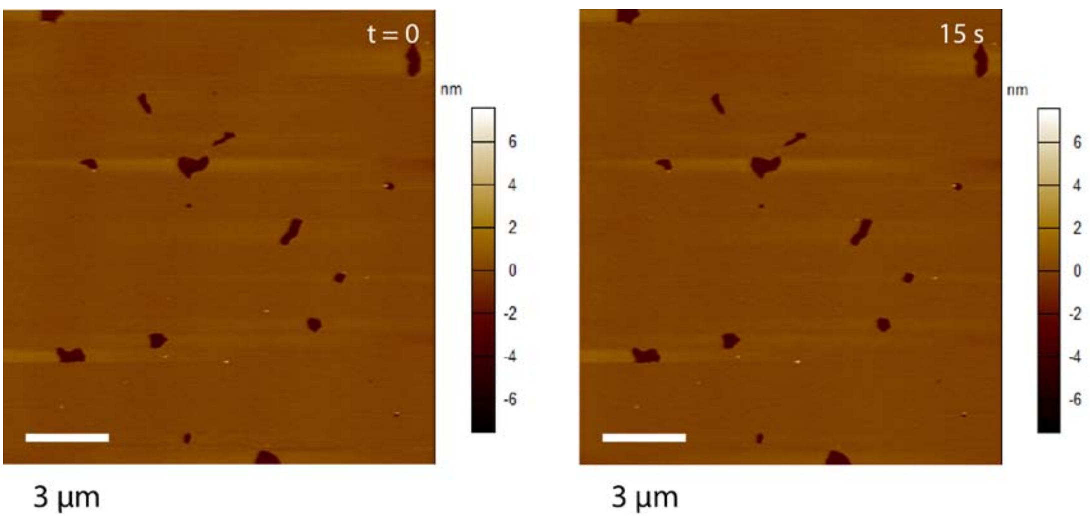


**Figure S12. TEM image of triskelion arrays.** Both hexagons and pentagons form during the assembly. Clusters and multiple layers of lattices were also observed. The triskelion lattices were assembled in solution (without SLB support) and deposited on the carbon-coated EM grids. (scale bars: 100 nm)

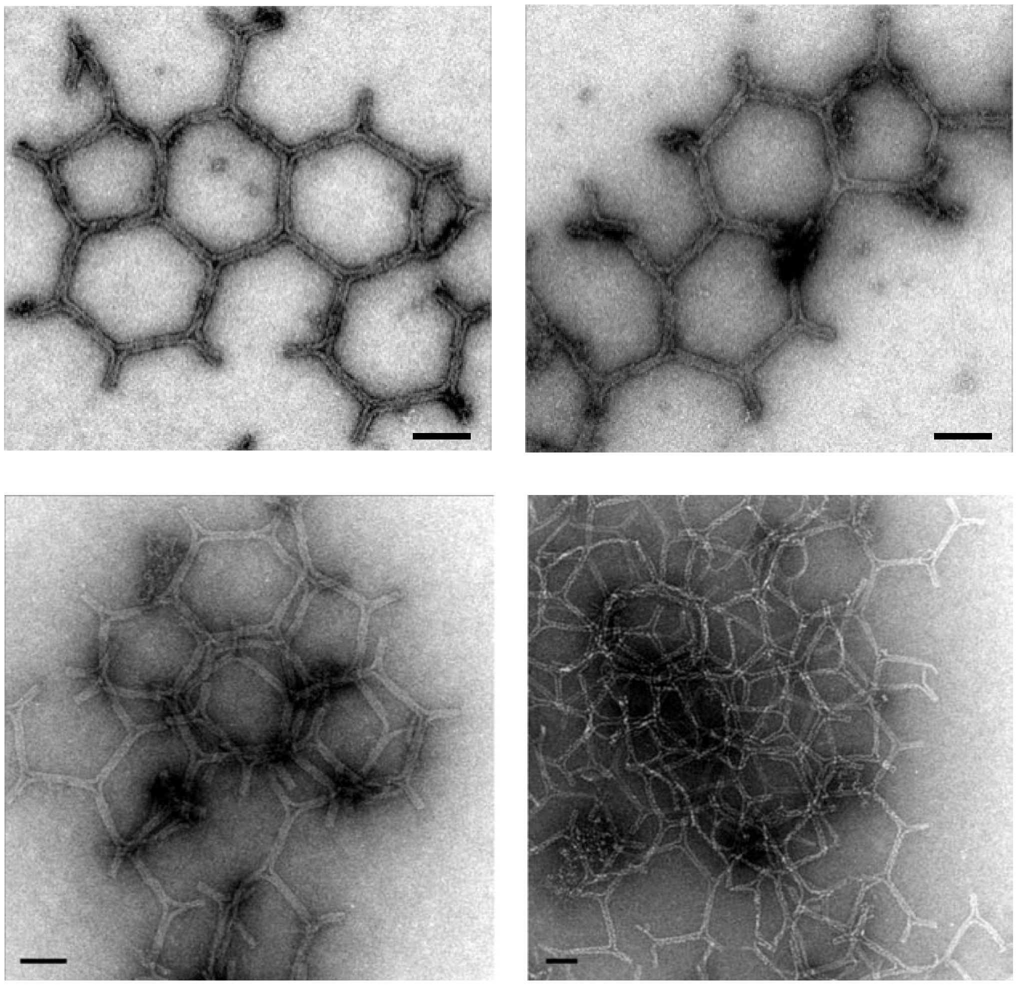


**Figure S13. SUVs without DNA origami nanostructures.** Left: TEM image of SUVs without DNA origami nanostructures. Right: DLS measurements of SUVs without DNA origami nanostructures.

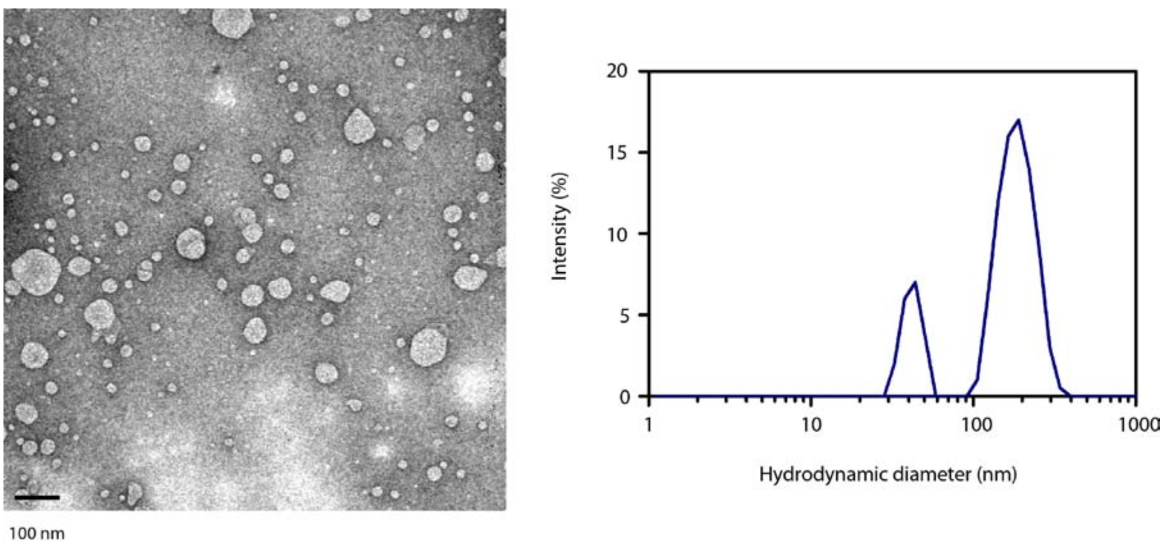


**Figure S14. Stability of DNA Origami Block Nanostructures in $Mg^{2+}$-free buffer (10 mM HEPES, 150 mM NaCl, pH 7.6).** Left: TEM images of DNA origami blocks after 24 hrs of incubation. Middle: TEM images of DNA origami blocks after 72 hrs of incubation. Right: Agarose gel analysis of DNA origami blocks after 72 hrs of incubation in $Mg^{2+}$-free buffer**.** (2 % Agarose gel with 11 mM $Mg^{2+}$)

Amicon 100K Filter (Millipore) was used for buffer exchange. To 100 µl of solution containing DNA origami after folding (with 100 nM staple strands and 10 nM scaffold strand) 400 µl of Mg2+-free buffer was added. The solution was centrifuged at 13000 g for 6 min. The centrifugal steps were repeated 3 times with fresh Mg2+-free buffer added in every step. The final solution (~30 µl) was used for TEM imaging and gel electrophoresis after 72 hrs of incubation at room temperature.

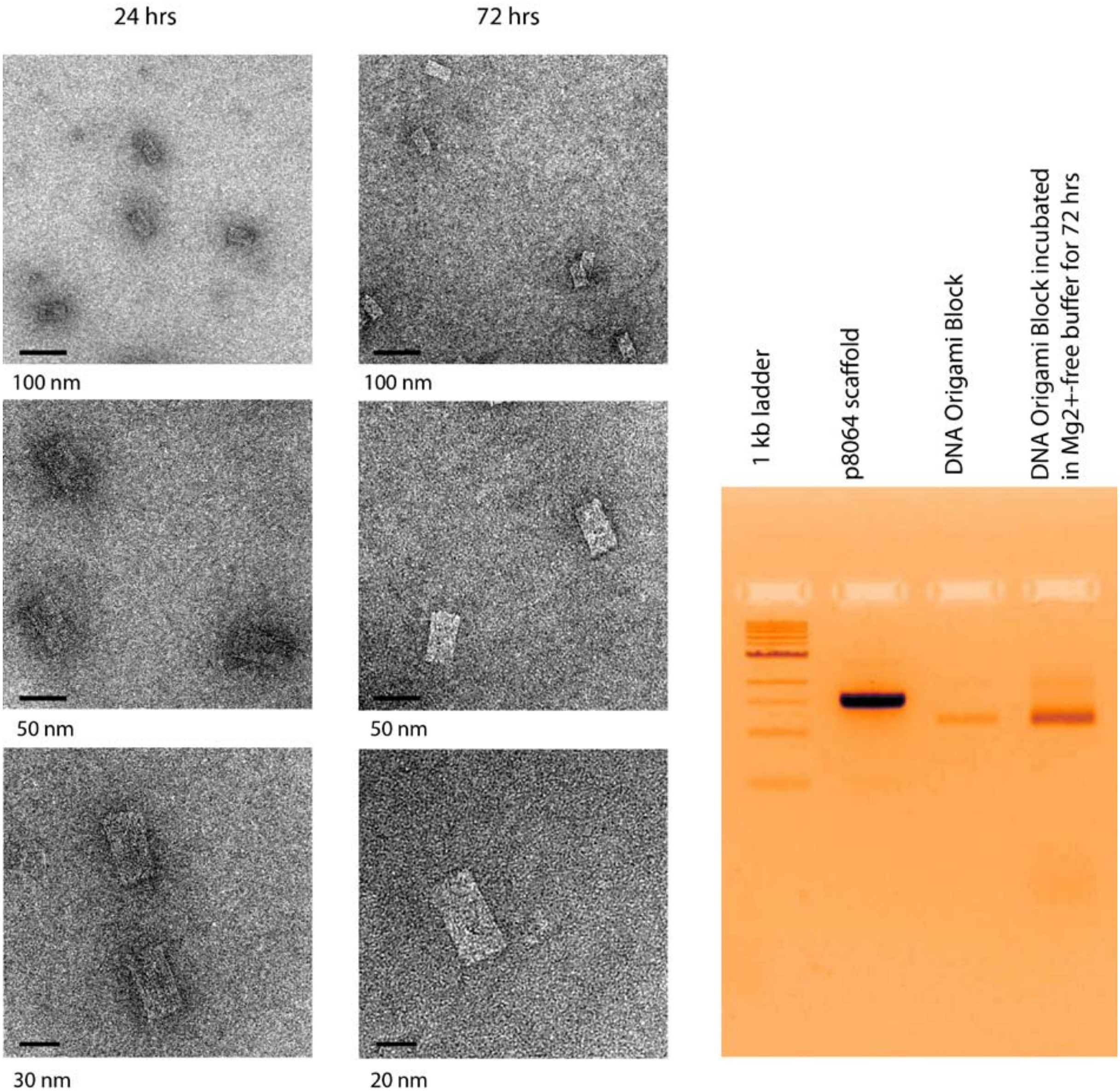


**Table S1. Staple sequences for DNA Origami Block Assembly and Polymerization**

| | Unmodified Staples |
|---|---|
| | |
| Oligo1 | GCCCCCGAAAAAGGGATTGACGCTAGAGCCAGTAGAAGTATTAATTTT |
| Oligo2 | GTCAAAGCCCTTCTGCAGGAAAACACCTTGGAGCCGTCTTGCGGA |
| Oligo3 | AGCCCGAGATAGGGTATCATGGTGCGTTGCGTTGAGTGT |
| Oligo4 | AAATCCCTTGTTATCCTGCCTAATGGTGCTGCCGGTGCCGCATCCCTT |
| Oligo5 | TCACCGCATTAATTCATAGCTGCAGTTGA |
| Oligo6 | AGGCCGATTAAAGGGAGAAAGGAGCCTACATTCATTCTGGCAGCAGAA |
| Oligo7 | CTCGTTAGAATCAGAGGTAGCGGTCATTGCAAACCTGAAAACATCGCC |
| Oligo8 | GACGAGCACGCCGCGCCTGGTAATATATTTTTGAATGTCG |
| Oligo9 | GAGACGGGCAACAGCTGATTCGCGCCCGCTT |
| Oligo10 | AGTCTGTCTGAGGATTCAGCAAATTCAAAATTTACCTTTTTTACATTT |
| Oligo11 | GCAATACTATAGATTACTGAACCTCTGAATAATTCGCCTGGATGAAAC |
| Oligo12 | TCCAGTCACGATCCAGCGCAAAAATGGGTA |
| Oligo13 | TTAATGAAGCAGCCAGGGCCAGAATCCGCCGGAGGTGTCCCGGACTTG |
| Oligo14 | CGGCCTTGTTAATGCGGTTCCAGTTTGGAACA |
| Oligo15 | CCAGTAATTTTAGAGCAGGAAGGGAAGAAAGCTTTTAGACAGTAAAAG |
| Oligo16 | GATAGAAGGCGAAAAAGGGCGCTGGCAAGTCGGGAGCTCGTTGTA |
| Oligo17 | ATACGTGGCTATTAAAGCGTAACCACCACACCCGTATAACACATCACT |
| Oligo18 | AATTCGTATGAGTGTTCCGCTACAGGGGCCCT |
| Oligo19 | TGTGAAATTATAAATCGAGAGAGTTGCAGCAATTTTCTTTCAGCTGCA |
| Oligo20 | GATAAAACAGTAACAGATTTGCACTGAGTGAAGCTGATGCTAATTTCA |
| Oligo21 | ATTAAAAATAACGGATGGAAGGGCTATTAACTTAGGTTTGAAATA |
| Oligo22 | GGATCCCCCGTCGGTGGCCCTGCGGAAGATGC |
| Oligo23 | TCTTCGCGACGGCTGGGCGCGGTTGTCCGTTTACAGGCGGTCATTTGC |
| Oligo24 | CACTGCGCACTGTTGTGCCATCTGGTCAG |
| Oligo25 | AATACATTCATCACGCTGGAAATACGGGCGCTACCGTCTATCAAGGGA |
| Oligo26 | AACAACTATCTTTGATCCGCCAGCCACGCTGCGAACGTGGACTCCAAC |
| Oligo27 | GGAAGGTTTAGAAGAACTCAAACTGTACTATGGTTGCTTT |
| Oligo28 | TGCATCAGGGGAAACCTAACTCACCTGGCCCTAAAAGAAT |
| Oligo29 | AAAAGTTTATGTAAATTAACCTTGGCTTAATTAAAGTACCAGAAACCA |
| Oligo30 | ACAAAGAAACCTCCGGTTAATTTTTACCAGTACCAGACGAAATAATAT |
| Oligo31 | ATCATATTCAAAATCACGATAGCTCTGTTTAGAATGCAGATTATCAAC |
| Oligo32 | AAGGTTTGTAAAGTTAAACGAGCAGAAACA |
| Oligo33 | ACACTGGTAAAGCCGCTTTCGTCTGAGAGATAAATCGGCGAAGTTGGG |
| Oligo34 | GCAATTCAGTTGGCAAAGCGCTATTAGTCTTT |
| Oligo35 | GAATATACAGAGGTGACCACGCTGCAAT |
| Oligo36 | AGAAACAATACCGAATAAAGCATACGCTCAAAATTAACAAACAGG |
| Oligo37 | GAATACCAAACTGATAAAACCCTCCAATATTATAGTAATAGTGCTTTC |
| Oligo38 | GGCAGCACGGGTACCGATCAACAGCTCACTAT |
| Oligo39 | ACCAGCTTTCCGTGAGCACTCTGTGAGTGAGCTGTCGTGCTCACCAGT |
| Oligo40 | AACAATTTGAGAATATGAGAATCGCGCACTCAGCTACAATAGTTACAA |
| Oligo41 | AAACATCAATTCTGTTAAAGCCATTTTCATTAAATCAACAATCCA |
| Oligo42 | CAGCAACCGGTGGAGCCGGAAAAAGGTTTCAG |
| Oligo43 | TAGAACGTCCGGAAACGACTTTCTGATCGGTGTCTGGTGCTTTGAGGG |
| Oligo44 | TGATTGCGCTCTCACGCCACGGGACGTTG |

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|---|---|
| Oligo45 | ATAACTATGAGTAACACTACCATAGAAAAATCCGAACCACCCAACAGA |
| Oligo46 | CCTTTTTAACCACCAGTTATACTTCAAATATCGCCCTAAAGCGTAAGA |
| Oligo47 | ATTTATCCTGATTATCAGAGGTGGAATTGA |
| Oligo48 | GATGAAGGCTTTGCTCAGCCGGGTCGCCTGTGCCTCCTCATTTCCTG |
| Oligo49 | TCTTCTGATGCACCCATCGAGAACATTGAGCGAGCTATCTAACGTAGA |
| Oligo50 | CCGACCGTTGAAGCCTCGTAGGAAAACTGAACGTAAGCAGTTAAGACT |
| Oligo51 | AATAAACATTTTAGCGAAATCAGAAAAAACAGGAAACCGATAATAACG |
| Oligo52 | GCGGATCCGCCATTCGCCAATTGATGGGCG |
| Oligo53 | CGCCAGCAGCACCGCTCGGGCCTCTCCGTGGGGCTTTCATACGTTAAT |
| Oligo54 | GAAAAAGCTAGATTAAGCCCGAATAGAGGAAC |
| Oligo55 | AGTAATAACATTTGAAAATATATGGTAAAACAGAACGTTATTAGACTT |
| Oligo56 | GTAAAGTAAGAAAACAATCGTCGTTAGAACTTATCATTAATAGAT |
| Oligo57 | AACAACATCTGAGCAAATCCTTGATGTTTGGAAAGGAGCGGGAGCACT |
| Oligo58 | CTTTCAGAGCAAGAATGACGCTGAGCTTGATG |
| Oligo59 | TAACCTCACAGCGTGGCAAACGCGGCGGTATGGTCATAAAGTGCCCCC |
| Oligo60 | ATCAATAAATAGCAATCTAATATCAGTTTATTTTACCATTAGCGACAG |
| Oligo61 | CCCATCCTAAGAAAAACCCTGATATGGTTATTAGAGCACTGTAG |
| Oligo62 | TAAAACGAGCCATCAAGTCACGTTTATTAAAA |
| Oligo63 | TAACGCCATGTAGCCAAACAAACGCCGGTTGATCTGGAGCATTAATGC |
| Oligo64 | GCTGCGCGGGATAGAAATAATTTTTTGTT |
| Oligo65 | TGCTATTTCCTAAATTACAGTAGGCTTCTGTAAAAATTAAACATCGGG |
| Oligo66 | GGAGGTTTGTGATAAACAAATTCTCCCTTAGAAAGAAGATATTGCTTT |
| Oligo67 | AGGCAAAGAAACTTAAAAGGGATACGTTCCGGTGCTGGTCCCACGCA |
| Oligo68 | AATAAACATAGCACCATTGTCACAACCCTCAGTCAGACGAGGGTCAGT |
| Oligo69 | AATAAGAAATTTGGGATACCAGCGCTCCCTCAATAAATCCTACAGGAG |
| Oligo70 | ATGAAAATAAGGTGAAACCGATTGATCACCGGCAGTCTCTTTCCAGTA |
| Oligo71 | CATCGTAGAACGGTAATCGTGACAATATGA |
| Oligo72 | GACGACGACCTGAGAGTAATCAGATGTAGGTAAATTTTTAAATTAAGC |
| Oligo73 | AATAACATTATAGAAGGCCCCTGTACGCGAAG |
| Oligo74 | ACAATGAATCGGCTGTCCAAGTACCCATATTTATTTTAGTAAATCCAA |
| Oligo75 | CCCTTTTTAATTTACCGTTTTTAACGCTCATAATGGTTGGGTTAT |
| Oligo76 | ATAGGAACCGGCCAGTGCTTATCCGAGTACTA |
| Oligo77 | GGCCTTCCGGGTTTTCGGAAGGGCCCGTGGTGATTTCTGCCCTTTAGT |
| Oligo78 | AAATACATGAGGCAGGAGCCACCATATTATTCGAACCGCCTGTACCGT |
| Oligo79 | CCTTATTACAAACAAGAGCCGCCTGAGACTAGTACCGCAAACTAC |
| Oligo80 | GAATACCCGGAAAGCGAACCAGAGCGGGGTTTGGAATAGGGCCCTCAT |
| Oligo81 | AAATCAGCCTTTTGCGAGTCAAATCCGTGGGG |
| Oligo82 | ATTTTGTTAGGATAAAAAGATTCAATTCTACTCAAATGGTCCATATAA |
| Oligo83 | CTAGCATCGGAGACGGAGAAGCAAATCGG |
| Oligo84 | ATCACCAGGCCATATTAGAGGGTAAAGCAAGCGAGCATGTGACAAAAG |
| Oligo85 | CTTGAGCCACGATTTTGGAGAATTTCATTACCACAAGAAACGACAATA |
| Oligo86 | ATTCATTAAGCAGCCTTTACAGTACTAAGAAC |
| Oligo87 | GAATCGATACCGTGCAACCGTAATAACTGTTGCCAGTCACGAACGGA |
| Oligo88 | AATCAAGTCACCCTCATGAAACATGGAGTGAGAAAGGAGCGTTAAAGG |
| Oligo89 | CGCGTTTTGGAGGTTTCCTCAAGAATTTTGCTCTTGCTTTCGATATAT |
| Oligo90 | CCTTATTATATAGCCCTGCTCAGTCCAGACGTGATACCGAGACAATGA |
| Oligo91 | TATTCAATATATTTTCATTTCGCAACTAAA |

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|---|---|
| Oligo92 | CGGAGAGGACATTTCGAATA |
| Oligo93 | AGGAGGTTACATAAAGACGGAATAAGAGAGATAATTTGCCTTTATCCT |
| Oligo94 | GATATTCACGCAGTAAAAATTCAACAAAGTCATTTATCCGATTAGT |
| Oligo95 | CTGTAATATCATTTTTAAGGTAAAGGTGAGAG |
| Oligo96 | TCAACGCAAAAATTCGTATGTACCGCGGATTGTCTGCCAGCGGAAACC |
| Oligo97 | GCCTTGAGAGGCTCCAAATAGAAAGCAACGGCGTATCATCGAGGCGCA |
| Oligo98 | TGTACTGTTTATCAGAAACAACTCTTTTTCCCAAGCGCACTGACC |
| Oligo99 | AGCGTCATAACAGCTTTAGTAAATTAAAATACAAAACACTGGTGTACA |
| Oligo100 | TTGTACCACCAGACCGATGTTTTACCTAAATG |
| Oligo101 | AATAAAGCATTAGAGATTAATTGCAATGACCATGCGGAATTTTTGCAA |
| Oligo102 | CGCGAGCGCTCAACGAAGCAAATTCAAAT |
| Oligo103 | AGAACCGCTTGCCTTTGAACCGCCATCAATAGTGTTAGCATACCGAAG |
| Oligo104 | GATATAAGGCGTTTGCCATCTCATCGGAAATT |
| Oligo105 | TGTTTAGCCCGTTCTAAGAAAGGCGTCAATCACATTAAATCGCGTCT |
| Oligo106 | AACACTGAGGAGATTTTACAGAGGTGAATAAGGTGAATTACCTTATGC |
| Oligo107 | AACGCCTGCGATTATAATGAGGAACCAAATCACTCATTATACCAGTCA |
| Oligo108 | AGTTAGCGAATACACTGTAATGCCAGTAATCTAATCTACG |
| Oligo109 | GTACGGTTGAATCCCCCTCAAAGACGACGATAAAAAC |
| Oligo110 | TCGTCTTTACCAGGCGATGTACCGGAATTACC |
| Oligo111 | CAAAAAAATAACAGTGTCGGAACCCCCTCAGATAATCAGTAGCAAGGC |
| Oligo112 | GTATCGGGTAATAAGTAAGAGGCACCCTCAAGCGTCAGCAGCAAA |
| Oligo113 | AAAGCGAAAAAACATTGATAAGTGCACTTTCA |
| Oligo114 | AGGTCAGGCTCAGAGCTGGCATCAAAAGGGTGGCTGATAAAAACAAGA |
| Oligo115 | CCGCTTTTTAATCATTGCTTGCCCTGACGAGAGCCGGAACGCCTGATA |
| Oligo116 | TCGGTCGAGAACTGGACGTAACAAAGCTGCGGAACCGAGAAACAA |
| Oligo117 | CAACAACCGGAAGAAATGACAAGAACCGGATAAGATGAACCATCTTTG |
| Oligo118 | ATCGCGTTACGGAACACCCTCGTTTAGACCT |
| Oligo119 | AGATTAAGCATCAGTTTACGAGGCATAGTAAGCGAGAGGCCGTCATAA |
| Oligo120 | GGTAGGAACAACGGAACCCAACCCTCAG |
| Oligo121 | CTTTAAATATCATAAACATTATTACAGGTA |
| Oligo122 | AGTACAACGTTTCGTCGTTTCAGCGAAAGTATTTTTAACGTTGGCCTT |
| Oligo123 | ACCCCCAGTAGCATTCTGTATGGGGAAGGATTTTTGATGATCATTAAA |
| Oligo124 | GGCAAAAGTAACGATCTAAAGATGAGAGGGTT |
| Oligo125 | ATATTCATGTCTGGAAATGCTGTATGAAAAGGATAAAGCTCTTTATT |
| Oligo126 | GACGGTCAATCATAAGTCATTCAGCTTTGAGGTGCAGGGACTTTAATT |
| Oligo127 | AACTTTGAAAGAGGACTTCATTACGTTTCCATCGCATAACCGAGGTGA |
| Oligo128 | GACCAGGCGCATAGGCTGGCTCCAACGAAAGA |
| Oligo129 | CAAAATAGAGCAACACCAGTTCAGCGAAAGACCTCCAAC |
| Oligo130 | TCATCAAGACTACGAAAGCGCGCCTAGTTTTC |
| Oligo131 | GATTTTACTGAGGCTACTAAAGATTCAACAACCAGTACCACCCTC |
| Oligo132 | GGACGTTGATCGCCCATAAACGGGGAATTTTCCACAGACATGTATCAC |
| Oligo133 | TTAATAAAACGAACTATTAATTCGGGCACCAAAATTTTTG |
| Oligo134 | GAAAGATTAGGAAGCCAAAACGAGTGAATATAGTTTCATTCAATAACC |
| Oligo135 | TGGGCGCCAGGGTGGTGCGGTCCAGCCTGGGGGCTCACAAGTGCCTGT |
| Oligo136 | CGTCGGCCACCGAGGAACGGTACGCCAG |
| Oligo137 | TACAAACAATCAGTGATGAAATGGGGCGAGAATTGACGGG |
| Oligo138 | GGTTACCTTCGGCCAAAGTGTAAACGCTGGTTGGTTCCGAAATCGGCA |

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|---|---|
| Oligo139 | TCGCAAGACTTTGCCCGAAA |
| Oligo140 | CCGTAAAAGTGTTCAGGCACTCAATGCGGCGGCAGCACGCTTCCACAC |
| Oligo141 | GAATCTTATCAAATATAACAACGCCATAAATCTTACCTTTCGTCAGAT |
| Oligo142 | GCTTTCCGGTTGGGCGGAATTTGTCGTCGCTGGAACGTGCAGCATCAG |
| Oligo143 | CGGAAACGCAGAGCCTAACCCACAGTATTAAACTTTCCTTTTCGAGCC |
| Oligo144 | GGTCATTGCAGTATCGTCGGATTCTTCGCTATAGGCGATTAAACGTAC |
| Oligo145 | AGCCACCACAGCACCGGCCGCCACAAGACACCGTGGCAACAGCAAGAA |
| Oligo146 | CATTAGATGTAGCTATGAGTAATGAAAGCCCCAATTGTAACAACATTA |
| Oligo147 | CAGTTGATTCCAATACTAAATCAAAAAGGAATGAGATTTAGGAATACC |
| Oligo148 | AATTGTGTGCCCAATATAAAGGAATGCCTATTCCCGTATAGCATTGAC |
| Oligo149 | GGATAGCGTCCCAATTGCGGATGGTAGCATTAATTAGCAAGAACCCTC |
| Oligo150 | GTTACTTAAACACCAGCATCGGAAGTCACCCTAAAATCTC |
| Oligo151 | AAGAAGTTTTGCCAGATAACGCCAAAATCAGGGCGGATTGAATTGCTC |
| Oligo152 | GGTTTAATTTCAACTTGCGGGATCCGAG |
| Oligo153 | AATGCGCGAGTTACAAATCCTGATAAACATAGTAGGTCTGTAAATAAG |
| Oligo154 | AGAGTCCACACAGACAATCCAGAAAATCAATATATCTTTAGAATTATC |
| Oligo155 | ACAAAGTTAGTCCTGAGCGCCCAAGCGTTATATAAGGCGTAGAGACTA |
| Oligo156 | TCAATTACGTTCAGCTTATCATATTAGCAAGCAACCTCCCCGTCAAAA |
| Oligo157 | TGCCTGAGATCTAAAATCTGGTCATCAATATAAATCGCGCTATTCATT |
| Oligo158 | GCCAGAATAAAAGAACAAAAGGGCATTAGACGTTGTTTAAGACTTGCG |
| Oligo159 | GCGAGGCGCCGGAATCATAATACGTCAATAGTGA |
| Oligo160 | AATAGATAACCAGAAGGGAAGCGCGACATTCATTATCACCCATAGCCC |
| Oligo161 | ATTTCTTAACATGGCTAGGATTAGCCACCACCTTTTCGGTGTCACCGA |
| Oligo162 | CGTACTCACATCGGCAGGAACCGCCCAAAGACTGGCATGAATAGCCGA |
| | |
| | **Staples for Cholesterol labeling** |
| | (Anchor sequences for cholesterol labeling were shown with orange color) |
| Oligo1 | CATTCTCCTATTACTACCTTTAAACATCAATTCTGTTAAAGCCATTT |
| Oligo2 | TCATTAAATCAACAATCCA |
| Oligo3 | CATTCTCCTATTACTACCTTCAGCAACCGGTGGAGCCGGAAAAAGGTTTCAG |
| Oligo4 | CATTCTCCTATTACTACCTTTTGTACTGTTTATCAGAAACAACTCTT |
| Oligo5 | TTTCCCAAGCGCACTGACC |
| Oligo6 | CATTCTCCTATTACTACCTTGTACCACCAGACCGATGTTTTACCTAAATG |
| Oligo7 | CATTCTCCTATTACTACCTTTACAAAGAAACCTCCGGTTAATTTTTACC |
| Oligo8 | AGTACCAGACGAAATAATAT |
| Oligo9 | CATTCTCCTATTACTACCTTAAGGTTTGTAAAGTTAAACGAGCAGAAACA |
| Oligo10 | CATTCTCCTATTACTACCTTTCGCGTTTTGGAGGTTTCCTCAAGAATTT |
| Oligo11 | TGCTCTTGCTTTCGATATAT |
| Oligo12 | CATTCTCCTATTACTACCTTTATTCAATATATTTTCATTTCGCAACTAAA |
| | |
| | **Staples for dye labeling** |
| | (Anchor sequences for dye labeling were shown with green color) |
| Oligo1 | GAGACGGGCAACAGCTGATTCGCGCCCGCTTCATCAACCATATCAACTTCC |
| Oligo2 | ATTTATCCTGATTATCAGAGGTGGAATTGACATCAACCATATCAACTTCC |
| Oligo3 | GCGGATCCGCCATTCGCCAATTGATGGGCGCATCAACCATATCAACTTCC |
| Oligo4 | GATATAAGGCGTTTGCCATCTCATCGGAAATTCATCAACCATATCAACTTCC |
| Oligo5 | GGCAAAAGTAACGATCTAAAGATGAGAGGGTTCATCAACCATATCAACTTCC |

| | |
|---|---|
| Oligo6 | ACCAGCTTTCCGTGAGCACTCTGT |
| Oligo7 | GAGTGAGCTGTCGTGCTCACCAGTCATCAACCATATCAACTTCC |
| Oligo8 | TGTGAAATTATAAATCGAGAGAGT |
| Oligo9 | TGCAGCAATTTTCTTTCAGCTGCACATCAACCATATCAACTTCC |
| Oligo10 | ATACGTGGCTATTAAAGCGTAACC |
| Oligo11 | ACCACACCCGTATAACACATCACTCATCAACCATATCAACTTCC |
| Oligo12 | GATAGAAGGCGAAAAAGGGCGCT |
| Oligo13 | GGCAAGTCGGGAGCTCGTTGTACATCAACCATATCAACTTCC |
| Oligo14 | TCCAGTCACGATCCAGCGCAAAAATGGGTACATCAACCATATCAACTTCC |
| Oligo15 | GCGAGGCGCCGGAATCATAATACGTCAATAGTGACATCAACCATATCAACTTCC |
| Oligo16 | ATTCATTAAGCAGCCTTTACAGTACTAAGAACCATCAACCATATCAACTTCC |
| Oligo17 | CATCGTAGAACGGTAATCGTGACAATATGACATCAACCATATCAACTTCC |
| Oligo18 | TATTCAATATATTTTCATTTCGCAACTAAACATCAACCATATCAACTTCC |
| Oligo19 | GACCAGGCGCATAGGCTGGCTCCAACGAAAGACATCAACCATATCAACTTCC |
| Oligo20 | TCGGTCGAGAACTGGACGTAAC |
| Oligo21 | AAAGCTGCGGAACCGAGAAACAACATCAACCATATCAACTTCC |
| | |
| | **Connector Staples for dimerization (right side)** |
| | (Complementary sequences for dimerization were shown with the same colors) |
| Oligo1 | TTGATGGTTGCCCCAGCAGGCGAATACGCATGAT |
| Oligo2 | GAAGCAAATCTTTACCCTGACTATGCTAAATTTA |
| Oligo3 | GTTTCTGCGCCGTTTTCACGGTCACCGTAAGTAC |
| Oligo4 | GGCAAAGAACATCCAATAAATCATCCCGTATTGG |
| Oligo5 | TCATAACGGCAGCCTCCGGCCAGAAACTGACCTC |
| Oligo6 | AATATTTAAAAAACAGGAAGATTGCAACTATGGA |
| Oligo7 | GAAGCAAATCTTTACCCTGACTATATCATGCGTA |
| Oligo8 | TTGATGGTTGCCCCAGCAGGCGAATAAATTTAGC |
| Oligo9 | GGCAAAGAACATCCAATAAATCATGTACTTACGG |
| Oligo10 | GTTTCTGCGCCGTTTTCACGGTCACCAATACGGG |
| Oligo11 | AATATTTAAAAAACAGGAAGATTGGAGGTCAGTT |
| Oligo12 | TCATAACGGCAGCCTCCGGCCAGATCCATAGTTG |
| | |
| | **Connector Staples for dimerization (left side)** |
| | (Complementary sequences for dimerization were shown with the same colors) |
| Oligo1 | ACGTATTATTTACATTGAAATGTAACT |
| Oligo2 | ACAGAACGAGTAGTAAACCGAATACGA |
| Oligo3 | CCTGGAAATTGCGTAGAATTCTAAGGA |
| Oligo4 | CCCCTTGCGAATAATATTTCGGAGGTC |
| Oligo5 | AGTACAACATGTAATTTTATAGGCCCT |
| Oligo6 | CGCACAGAACCACCACGATAAAACACC |
| Oligo7 | ACAGAACGAGTAGTAAAAGTTACATTT |
| Oligo8 | ACGTATTATTTACATTGTCGTATTCGG |
| Oligo9 | CCCCTTGCGAATAATATTCCTTAGAAT |
| Oligo10 | CCTGGAAATTGCGTAGAGACCTCCGAA |
| Oligo11 | CGCACAGAACCACCACGAGGGCCTATA |
| Oligo12 | AGTACAACATGTAATTTGGTGTTTTAT |
| | |

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|---|---|
| | **Connector Staples for 1D polymerization** |
| | |
| Oligo1 | GAAAGCCGAATCCTGTTTGATGGTTGCCCCAGCAGG |
| Oligo2 | GCGCTTTCCAAATCGTTAACGCGT |
| Oligo3 | CATCCTCATAACGGCAGCCTCCGGCCAGAAAA |
| Oligo4 | CAGTACAACATGTAATTTTACCAGTCCCGGTTGTGTACATCGAGA |
| Oligo5 | GGGATGTGCTGCATACGCCAGCTGGCGAAAAG |
| Oligo6 | ACAACCCGGCCTCAGGAAGATGAG |
| Oligo7 | AAGCAAATATTTAAAAAACAGGAAGATTGGAA |
| Oligo8 | CAATGCCTTTTTGAGAGATCTACC |
| Oligo9 | GGCAAGGCAAAGAACATCCAATAAATCATATG |
| Oligo10 | TCATTTTTCTGCGAACGAGTAAGG |
| Oligo11 | AGTCAGAAGCAAATCTTTACCCTGAC |
| Oligo12 | AAGCATAACGCGCGGGGAGAGGTG |
| Oligo13 | AAAATGCAGATACAGGGGGT |
| Oligo14 | GGGGGTTTCTGCGCCGTTTTCACGGTCAACCG |
| Oligo15 | CGAAGCGAACGTATTATTTACATTGCGG |
| Oligo16 | CGGGGTCATTGTTTTCAGGTTTAATTTAATGGGCA |
| Oligo17 | AACGGAGAATTGAGTTAAGTA |
| Oligo18 | AGCGCCATGTTAGGCAGAGGCATTATCATTCCAGG |
| Oligo19 | AATGTGAGCGAGCCCAATAATAAGATATAAAATAT |
| Oligo20 | ACGCACAGAACCACCACCATG |
| Oligo21 | ATATATTTTAAAGAGCCGCCGCCAAACAGTTAACA |
| Oligo22 | CCCCCTTGCGAATAATAAAGG |
| Oligo23 | CTTTTGATAAGTTTTTTCACGTTGCAGCAGCGTAT |
| Oligo24 | TATAAAGACAGAACGAGTAGT |
| Oligo25 | AATAGTAACCTGCTCCAT |
| Oligo26 | AACATACGAGCGCAGATTCACCAGGTATTAACTACC |
| Oligo27 | CCTGGAAATTGCGTAGACAG |
| Oligo28 | AAACTTTTCCAACGCTAACCGCACTCCAGCCA |
| Oligo29 | CGTCTTTCTCACCAATGAAACAAAGGCTATCA |
| Oligo30 | AATCCTGAGAAGCGGTTTGCGTAT |
| Oligo31 | ATCGATAGCCCTCATTTTCGATTTAGTTTGAC |
| Oligo32 | TTTTTATAATTCGACAACTGCATCAGATGCCG |
| Oligo33 | GATAGCAACGAAATCCGCGAAATGTTTAGACT |
| Oligo34 | ACATTCAACTATTGGGCTTGAGAT |
| Oligo35 | ATTAAATCCAAAGAACGCGACATAAAAAAATC |
| | |
| | **Connector Staples for 2D polymerization** |
| | |
| Oligo1 | GAAAGCCGACAGGCAAGGCAAAGAACATCCAATAAATCATGCGAACGT |
| Oligo2 | AATCCTGAGAAGATTTAGTTTGAC |
| Oligo3 | ATTATTTACATTGAGGTCATTTTTCTGCGAACGAGTAGTGTTTTTATA |
| Oligo4 | GTATTAACTATAGTCAGAAGCAAATCTTTACCCTGACTATACCGCCTG |
| Oligo5 | ATTCGACAACTAAATGTTTAGACT |
| Oligo6 | GAAATTGCGTAGAATGCAGATACAGGGGGTAATAGTACGTATTAAATC |
| Oligo7 | CTTTTGATAAGGCAGATTCACCAG |

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|---|---|
| Oligo8 | ACATTCAACTATTTTCAGGTTTAA |
| Oligo9 | TGCCCCAGCAGGCGAAATGCCCCCTTGCGAATAATAACGGAAGCATAA |
| Oligo10 | CGCGCGGGGAGAGAGGGATAGCAACGAAATCCGCGGCATCAGATGCCG |
| Oligo11 | AACATACGAGCTTTTTTCACGTTGCAGCAGCGTACCGGGGGTTTCTGC |
| Oligo12 | GCCGTTTTCACGGTCAAAAGACAGAACGAGTAGTAAACAGGCGCTTTC |
| Oligo13 | CAAATCGTTAACGACCTGCTCCAT |
| Oligo14 | CGGGGTCATTGTTGGGCTTGAGAT |
| Oligo15 | AACAGTTAAATCCTGTTTGATGGT |
| Oligo16 | CCCTCATTTTCGCGGTTTGCGTAT |

**Table S2. Staple sequences for DNA Origami Triskelion Assembly and Polymerization**

| | Unmodified Staples |
|---|---|
| | |
| Oligo 1 | CCACTACGTGAACCAACCCTAAAAGGAACGCTGCGGGTTGCTACAGGAG |
| Oligo 2 | ATCAGGGTTTAGAGCTTGAGATACCGACGCAAGTG |
| Oligo 3 | TCCAACGTCAAAGGTCCGAAAGGCGAAAGCCAGGGGGG |
| Oligo 4 | AGACGCTTCTGTGCTGAATTAATGCCGGAGAATCAGGTGTCA |
| Oligo 5 | CCCCAAGAGTCCACTATTAAAGAATATAAATCCACGCTACCA |
| Oligo 6 | CCCAGCATCGGCAACGCCCTGCGCACGATATTTTTGAAGGGT |
| Oligo 7 | GTATCGGCCTGCCATTGAACATCGTAATCCTGATTGTTCATA |
| Oligo 8 | GCTTAGTTAAGCTACGGCCCTTTAATGGCTATTAGATTAACACCGCCAA |
| Oligo 9 | GTGTAATGAAACTCACATTAATTGTGTTATCAGCTCGAGGTC |
| Oligo 10 | GTACTATCGTAACCTGAGTAGCTCATGGTGCGCGATAACCAGAACACAG |
| Oligo 11 | AGAGGGGTGCCTAATGAGCACAACAACGGAGGCGCA |
| Oligo 12 | ACGCGCGTGGTTTTGTGTAAT |
| Oligo 13 | CGTTAGAATCAGAGCGGATCAGTGCAAATTATCTAAAGCCAGCAG |
| Oligo 14 | GCCGATTATCCTGAACTTCTTGAGC |
| Oligo 15 | CAGTGTAAAGCCTGGCGGTTTGCATGCGCCGCTACTTTTAGA |
| Oligo 16 | TTTATAGAGCTAATTGACGAGCACGTAAAGT |
| Oligo 17 | CGGAAGCATAAAGGGTGCTTGGGTGCAACAGTGCCGCAAAGC |
| Oligo 18 | TGTTTCCTGTGTGAAATCGTTGCGCGTGCCAGCTGCATAGACGGGCGAA |
| Oligo 19 | TAATATGAACGGTACGCCAGAAAAGGGAAGGGCGC |
| Oligo 20 | ACTAGCGGTCAGGGAAGAAAGCGAAAAGCACTCATTGGCGGAC |
| Oligo 21 | ACTTGCCACCACACGCGAACGTGGCGAGAAGGGAGTCGT |
| Oligo 22 | GCTATTGGGCATCCTGTTTCGGGGAAAGCCGCCGCCGC |
| Oligo 23 | CTCGGTACCGCGCTCACAATTCCATGAGCTATCGGCCA |
| Oligo 24 | CTCTAGGGGCTTTCCCACAGGAGACAGTCAACTGATAAATT |
| Oligo 25 | GGCTTACGCTAATCCCTCGTGGAC |
| Oligo 26 | CTGTAGAACCAGCGGAATTATCATTGGATTAACTGATAAACA |
| Oligo 27 | GTTGTGAATTCATGGAGTGACGTAAGCAACTCGTCAAACGACGATCTAC |
| Oligo 28 | TTCCTGGCCAACAGAGAAAATGGAAAAAACGAAGA |
| Oligo 29 | GGATGTTCTTCTGTAAGAATACGTGGGGCTTCTGA |
| Oligo 30 | ACAATATTTTTGTCTCAGGAGAAGCCGAGGCCAGT |
| Oligo 31 | AAAGGCTGGGTAGCCTTAAGTG |
| Oligo 32 | GCCAAGCGCCATCTTCTATGATGGTGGTGCGAAAAACCGTCT |
| Oligo 33 | CGATACGCCATTGGTGTTTTGAGGGGACCCGTCGGATTTGGG |
| Oligo 34 | AAGATAAGCCCTAACAACAGGTTATTTAAAATCGGATCACCC |
| Oligo 35 | GAGCAGCAAAAATATCTGGGCCGGAAACCAGACGCTGATGATTAG |
| Oligo 36 | GGGCGATCGGTGCGTAGCGCAACTGTTGTTACCTCCAGG |
| Oligo 37 | CAGGTGAGGCGGTCAGTTCTTTAAAAATACCTACATTGCGACATC |
| Oligo 38 | TCGGGCCTCTTCGCTATCGTTGTAGGTG |
| Oligo 39 | ACGGCTGGCGAAAGGGGCCAGGGTCTTGAATATAACCCATAG |
| Oligo 40 | ATAATTCGTAATTTCTCCAACAGCTTGCAGCAAGCGGTCAAA |

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|---|---|
| Oligo 41 | ACCTCAAATATCAAACCCTCAATCTGAAAAAACCGTTGCAA |
| Oligo 42 | GCCATTCGCCATTCAGGCTACCGTGCAT |
| Oligo 43 | CTGCCAGAGATGGGATCCCCGCTGGTTGTCTTTTCGGTTTGC |
| Oligo 44 | AAATCAACAGTTGATAGG |
| Oligo 45 | ACCGCTTCTGGTTCGATTAGACGTCGCTTACATAAAAT |
| Oligo 46 | GTATCGGCCTCAGGCCAT |
| Oligo 47 | TAACAACTGGCCTTAGTACGGTACATTTAGAA |
| Oligo 48 | CAGCAAACATTAAATGTGAGCGAG |
| Oligo 49 | ACCGATATCTTGATACGGATAGCAAGCCCACACCCTCA |
| Oligo 50 | ACATACAACAACCATCGCCCACGCATA |
| Oligo 51 | ACGCAATAATAACGGAATACCCAAACAAAGTTTTCCAG |
| Oligo 52 | AGCCCTTAGATACCTTTTTAATGGTTAAATAAGAATATACAAATTAC |
| Oligo 53 | TTTTCCTAACCTTGCTTCTATCAAAATCTCCTTTTGATATTGA |
| Oligo 54 | CAAATTCCATAGATTTATCAGGTCATACTGCGGAATCGTTGCAAAAGGC |
| Oligo 55 | GAGAACACCAGATATTCATTCATCTGCAGATACATAAGAGC |
| Oligo 56 | AGCAATGAGGAAGTTTCCAAGGCACCCCTTCATACCGAACACTA |
| Oligo 57 | TAAACAGATTCGGTCGCTGAGGCTTGCAGGAGAGGCTTATAA |
| Oligo 58 | AGAGAGCCACACCGGAAATGGCTGTTTTAACGGGGCAG |
| Oligo 59 | GCAAAAATAGAAAATTCATATCAACCGATTAGCGTTTCAAGTTATG |
| Oligo 60 | TAGCCGAAAGAACTGGCATGATTAAGACCGGAATACCCTCAGGGA |
| Oligo 61 | GGATTTATTGAGTAAAACAAAGAGGCGATATCATACAACGCC |
| Oligo 62 | TAAAAGGAACGAAGATCGCACTCCAGCCAGCTATT |
| Oligo 63 | CAAATATCCAGCTTTCATCGCATGTTTTAACCTGTAATTAAA |
| Oligo 64 | ACGAGCATCGATCGTCACCCT |
| Oligo 65 | GGTGAAGGACTAAAGAGGCAAAACCAGGCGAGAGGACGAGGCAAGAACG |
| Oligo 66 | TTAATTGTGCGCCGACAATGACAAGCCACCTGAGTTTGAGGGGT |
| Oligo 67 | ACCGGCAACATAACGTAGAAAAT |
| Oligo 68 | AGTAATTTATTTTGAAATATTTTTCGGTGACTGTAAGTGCCCGTAGAAA |
| Oligo 69 | CCCTTTTATAAGAGATTTTTTGTTTACACAAATTT |
| Oligo 70 | GCCGAGCTGACAAAATTATAGCGACGACAAAAGGTAAA |
| Oligo 71 | CTAACTTTGACCCCCAGCGGATTTGTGAACGAGGCGCAGA |
| Oligo 72 | AAGACTTTTTCACGGCTACGAGTTAAAGGCCGCTTTTGCGGGGAAC |
| Oligo 73 | TCTTGTAGCATTCCAGGCTCAATAGGAACCCCAG |
| Oligo 74 | AAAAGGAACAACTAAAGGATTGCTAAAGTAAATGAATTTTCACCAGAC |
| Oligo 75 | AAAAGGAACCAGTAGATCTAAGAACCTAACAAGA |
| Oligo 76 | GAGAGGTGAATTATCACCGCAAAATCAGATAGCAGCACCGTA |
| Oligo 77 | GGTTCACAATCGACACCATCCTTATTACGCAGTATGTTAGCAATAAA |
| Oligo 78 | AAACCCTAGATTTTGTACCTT |
| Oligo 79 | CAAAAGGCAGGAAGATTGTCGCTATATTCAGAGCACAGA |
| Oligo 80 | GATAAAAATTTTTAAAGAGAAAATCATACAT |
| Oligo 81 | CCTTTTGCGGGAGAAGCAAATCATAATAGTAAACG |
| Oligo 82 | TGCACATTATGACCCTGGAATTAGAAAGGTGCATT |
| Oligo 83 | ATGTGTAGGTAAAAGCTAAATC |
| Oligo 84 | GAAATCTATGGGATTATTGCGAATAATAATACACTAAAATTGTGTC |

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|---|---|
| Oligo 85 | AACAGTTTCAGCGTTTTGTCGTCTTTCCAGCGTAACCAAA |
| Oligo 86 | CAAGGTAACTGAACACAAGAATTGAGCGGAAATTACCATTAG |
| Oligo 87 | CTGACATTAGACGGGAGATTACGTCAAAAATGCGCACTCGCTGTCT |
| Oligo 88 | TCAACTGAATATACATTTCAATTACCACAATA |
| Oligo 89 | CGGTCAACAAAGTACAACGGAATTATACACTACGATTAA |
| Oligo 90 | ATCAGTTGGGAATTAGAGCCAGTCACCGACGCGACATTGGTTT |
| Oligo 91 | AACGTCACCAATGAAGCGTCACATAGCCCACC |
| Oligo 92 | AAAAGGGAGAATAAAGAAATTGCGTTCTGAATTAAA |
| Oligo 93 | TTCAGTAACACAGGTTTAACGTCATCTGCGGAACAAAG |
| Oligo 94 | AAATAATACTCATATATTTTAAATGCCTGAGTAAT |
| Oligo 95 | TAAGGGACAAGAGTAATCTAGTAATGCCCAAGCGCGAAGATT |
| Oligo 96 | AGCCCTCATGAAAACAATAGATAAGTCCTGATTATTCTAGGAT |
| Oligo 97 | AAAAGAATATGTGAGTGAAAATATAGTCGTTTAGA |
| Oligo 98 | TTTCATCCAAAAGGTTGAGCCATGAGTGAGAATAGAAAAGGCTCC |
| Oligo 99 | AGTATAACAGAGAGGTCATTTTTGTCAGGATAGATTAAGAGGAAGTCA |
| Oligo 100 | AATAAATATGATAATGCTGTAGCTACAGCTTCAAAGCG |
| Oligo 101 | AGAACCGGAACGAGTAGTAACGAAAGACGGTAAAATAATAAG |
| Oligo 102 | AAAATCCACCCTCAGAGCCAGTAAAGGTAGCGCCAAAGAGCCT |
| Oligo 103 | ACCAACCGCCCCGCCAGCATTGACAGGAGTAGCCGCCAAGGCAGA |
| Oligo 104 | ACCGCGTTCCACCTTGAGTACAAGCCGTTTTTGAAGGCT |
| Oligo 105 | GCCAGTTAGATATAATTTTCATCGTAGGCAAGTACAAAATAGGGAA |
| Oligo 106 | TTCACTAACATAGACTTTACAAACAACGTTAAATTAATACCAAGTTCTT |
| Oligo 107 | AAATGCCGTCAATAGATCTTCCGGC |
| Oligo 108 | TTCAACCAATTTTTTGTTAAATCAAAAACTATATGAGC |
| Oligo 109 | TTCAAATAATTTTGTTAAAATTCGTGTACCCTTCTACTACAGGCAAGAA |
| Oligo 110 | GGCCGTAACACATTATAAGGAATTCTGAGACTCCTGATAAGT |
| Oligo 111 | AGCCTGAGTTGCTATTTTGCAAGCCTTAACGCGAGGCG |
| Oligo 112 | AGCGATAGCTTAGATTAAGGTTGGTCCAATCGCAAGACACCT |
| Oligo 113 | TCAATATACCTTTGCGAGAA |
| Oligo 114 | TTAATTCCGGAAGGACTTCAAATATCGGAAA |
| Oligo 115 | TCATTGTGAAGCTTCAGTGATGATTTCT |
| Oligo 116 | GAACCGAGGAGGGATATAAGTATACAGTACATGTACCCAACGCCCCAAA |
| Oligo 117 | GCCACCCAAGGTGTATCACCGTA |
| Oligo 118 | AACCAGAGCTGAATCAACTAACCTGTAGTTAAATTGTAAACGAAAA |
| Oligo 119 | TCATACGTTAATAAAATAGAAAGATTACCCTGGCTGAAAC |
| Oligo 120 | CTTATGAACGGAACTCGAGAGGGTTTTTAGTACCTTAC |
| Oligo 121 | CTCCCACCCTTTTTCAGCGATAGTTATCGGTTTATCAGCTTGAAAA |
| Oligo 122 | ATAAGAATGGAAAGCTCATACCCAGAGCCCCTTATTGAGG |
| Oligo 123 | GGCAGGTTCTGAATTTGGTATTCTAAGAAATCAAGATGTTGA |
| Oligo 124 | CTTGCGGGAGGTTTTGACCCAGCTGAGCGTCTACCAGAACCGAAG |
| Oligo 125 | AACTTTTTCAAAAATAGGTCTGAGAGACGTGAATTTGT |
| Oligo 126 | TTTTGCAAATCACAAAATAGAAACGCAAGAAACAGAGAGATAACCCACC |
| Oligo 127 | AAATTTAATGAAAACAATTAATTTAATGGAAGGGTTAGACAG |
| Oligo 128 | CTGAAAGAACTTAACCTCCGGCTTAGACGCTAATT |

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|---|---|
| Oligo 129 | TTCAGAATCATAATTACTAGAAAATAGTATAT |
| Oligo 130 | TTTAGTTATCAATAGATGATGACATTATCATTTGTGCTAATACATTTGA |
| Oligo 131 | CTATTTCTGCGGTAGCATGCATGTCTCGATGAACGGTAAGAGCAAG |
| Oligo 132 | CCCATCAAAATAGAGAGTACCTTTAATTGCAGCAAAGCGGATTGCTGA |
| Oligo 133 | AAAAGTTTGACGCATCAACGGTTGAAGTCTGGAGCAAACGAAC |
| Oligo 134 | AAACCCGAAACAAACTCCAACAGGCGGATGGAAGT |
| Oligo 135 | TGATATTCATTGAATCCAACCAAAAAGCAATACCAAAACTGAGTA |
| Oligo 136 | ACGCGCAAATGGGGCGCCCAAAAAGTGAGAAAGGCCTTGCAA |
| Oligo 137 | CAGTTCACGTTTTAATTCGGTTGGGAAGATTTAGGTTTGACA |
| Oligo 138 | GAGAAAAATCTTATACCAGTCAGGCAAATTGGGCTTGAGATGGTTTGGC |
| Oligo 139 | AGGCGAACTCGATTTTAAGAACTAATTTCGACGAGAGGT |
| Oligo 140 | GCCGAAAAGCTGTGTACAGAGAATTTTTTCACGTTGCTTTCGA |
| Oligo 141 | GCGCAAGAGAAGGATTGAAACATAGTTAGACGTTACAACTTTC |
| Oligo 142 | TTTGCTGCCCGGAATAATCCTCATTGATACAGCGTAATC |
| Oligo 143 | GATAAAGCCTTCACAAACAAATTCGCCACCAGAACCACCACCTTG |
| Oligo 144 | GCGGCAGTCCAGACGATTGGCCAGAGCCGACCCTCAAAC |
| Oligo 145 | TATCCACCCTCCCTTCGGCATGATTAAGCCCAATATAAGAAA |
| Oligo 146 | CTGGATAAGGGGGTATCCAATCTTTATT |
| Oligo 147 | TAGCGTGTACTGGTATTTCGAGTAGCGACAGAATGCCATCT |
| Oligo 148 | ACCATTGAGAATCGCCATATTTAATGCGTTAAACACCGTCTT |
| Oligo 149 | GTAGCAGAGGCATTTTCGAGCCAGTTGCCAGGCGTCCATTTA |
| Oligo 150 | GTTTAATAAGAGAATATAAAGTACGAGGCTTTCATAAACCAT |
| Oligo 151 | CGATGTCCAGACGACGACAATAAATAACCCTCAACTAAAGTT |
| Oligo 152 | TCACAACATGTTCAGCTAATGCTAGTAACGCCAATAC |
| Oligo 153 | AACTGACCAATTAGCCGATCATCGCCTGATAAACACTCATAACGA |
| Oligo 154 | CCCATCCTAATTTACGAGCATGTATAAATCAGTGGTAA |
| Oligo 155 | TTATGCCTTTAACCATCCCAGTAGCACCATTATTCATTAAGGAA |
| Oligo 156 | AACATGTAATTTAGAAAAGCCTGTTTAGATTA |
| Oligo 157 | GTAATTCCGATAAACCCTCAAATGCTTACCACATTCGTTTACTAAATCA |
| Oligo 158 | CGCCTGTTTATCAGTATTAAGAGGACAGATGATGCGCGACCTGCTC |
| Oligo 159 | AAAATAATATCCCCCTGCCTAATAATTT |
| Oligo 160 | CCAATCAATAATCGATCGAGAACAAGACGCGCGTTATCCGGA |
| Oligo 161 | GGGCGCTGGCTAACGTGCTTTCTA |
| | |
| | **Staples for Cholesterol Labeling** |
| | (Anchor sequences for cholesterol labeling were shown with orange color) |
| Oligo 1 | CATTCTCCTATTACTACCCCTGAAAAGTTTGACGCTCAACCCCCGACGATGGC |
| Oligo 2 | CATTCTCCTATTACTACCTCCTTAAATCTATACGAATATGAC |
| Oligo 3 | CATTCTCCTATTACTACCTTACATCTCGCGCACATCAAGGAA |
| Oligo 4 | CATTCTCCTATTACTACCGGTTGTAAAGCCTTTCATTTGGTC |
| Oligo 5 | CATTCTCCTATTACTACCCATGTTACCTTTGAACATAGGCAAAT |
| | |
| | **Staples for Dye Labeling** |
| | (Anchor sequences for cholesterol labeling were shown with orange color) |

| | |
|---|---|
| Oligo 1 | ACTTAGCAATGAAGTGTTTTCCTCTACCACCTACAT |
| Oligo 2 | GAGTAAAGATAAAGTACGAGCTTCCTCTACCACCTACAT |
| Oligo 3 | AGTGAAGTATACTAATAAGTTGGCTTCCTCTACCACCTACAT |
| Oligo 4 | CAGTTAATATTCGCGTCGACGACATTCCTCTACCACCTACAT |
| Oligo 5 | CTAGTAACACACCCTCACAGAACCTTCCTCTACCACCTACAT |
| Oligo 6 | ACAGATTAATTGAGAAGAGTTCCTCTACCACCTACAT |
| Oligo 7 | AGATGTCTGGCTTAGAGCTTCCTCTACCACCTACAT |
| Oligo 8 | CAATTGCCCTAACTTTAATTCCTCTACCACCTACAT |
| | |
| | **Connector Staples for Trimer Formation** |
| | |
| Oligo 1 | GTTCCAGTTTGGAAGAGATAGGGTTGAGTGCG |
| Oligo 2 | TGGCCCTGAGAGAGTGATTGCCCTTCACCGGC |
| Oligo 3 | GTCGGGAAACCTGTCTCACTGCCCGCTTTCGA |
| Oligo 4 | CACATAAATCATCATGGTCATATC |
| Oligo 5 | TCCCGCCAAACGGCTGACGCATTA |
| Oligo 6 | GTCAACCTTATGACAAAA |
| Oligo 7 | TTCAACCGTTCTAGATCACCATCAATATGAGA |
| Oligo 8 | TAAGTTGGGTAACGGATGTGCTGCAAGGCGAA |
| Oligo 9 | CGGATTGACCGTAACTCCGTGGGAACAAACAA |
| Oligo 10 | TAGCTATCTTAGGAAACCGAGGGG |
| Oligo 11 | GCGCTAATATCAATGAAATAGCAT |
| Oligo 12 | GCGACAAAGTCAGAGGGTAATTTA |
| Oligo 13 | TAACATAAAAACAGCAGCCTTTACAGAGAGTG |
| Oligo 14 | TCCCAATCCAAATAAAACAGCCATATTATTTT |
| Oligo 15 | TTACCAACGCTAACACAATTTTATCCTGAAGC |
| Oligo 16 | CCAATAGCAAAGCGAACCTCCCCA |
| Oligo 17 | GGTATTAAACAATCATTACCGCCC |
| Oligo 18 | TTCCTTATCATTCCAAGAATT |
| | |
| | **Connector Staples for Polymerization** |
| | |
| Oligo 1 | AAATCAAGTTTTTTGGGGTTC |
| Oligo 2 | AGGTGCCGTAAGGAGCGGGCGCGT |
| Oligo 3 | GTCTGTCCATCACGAGGCCACCGAGTAAAAAT |
| Oligo 4 | CAATATTACCGCCATGCTGGTAATATCCAGTT |
| Oligo 5 | ACCAGTAATAAAAGAGATTCACCAGTCACAAT |
| Oligo 6 | ATTCTGATTATCAGATGATGGCAT |
| Oligo 7 | TTCATCAATACCATTAAAAATATT |
| Oligo 8 | GAACGAACCACATCACCTTGCTTT |
| Oligo 9 | ATCTAAAATATCTTAAGGAATTGAGGAAGGGA |
| Oligo 10 | AAATCCTTTGCCCGAATTCGACAACTCGTACC |
| Oligo 11 | TATTTGCACGTAAAAACCTACCATATCAAAAA |
| Oligo 12 | AAAACAATAACGGATTCGCCTGCG |

| | |
|---|---|
| Oligo 13 | TGCTTTGAATTACATTTAACAAAA |
| Oligo 14 | TCATTTGAATATCCTTGAAAACGA |
| Oligo 15 | AATGCTGATGCAAAGTTATATAACTATATGCT |
| Oligo 16 | GTGATAAATAAGGCGTTTGAAATACCGACCTA |
| Oligo 17 | AACAGTAGGGCTTAAGTATAAAGCCAACGCCG |

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