**Supplementary file 1. Sequences of all DNA strands used.** *Strand* $0\_{A}$ *is 5’-labeled with Cy5, all other strands have a 5’-terminal phosphate. Solid underlines highlight hairpin loops, information domains are indicated by dashed underlines.*

|  |  |
| --- | --- |
| **Name** | **Sequence (5’ to 3’)** |
| $$0\_{A}$$ | GCA G CG TTAATTCCCG CGCCTAT CGGGAATGTAACGC AGTGGGTAATAATGA CGATAGCCGTTCG GGAAAAG CGAACGGT ATCG |
| $$1\_{A}$$ | GCA G CG TTAATTCCCG CGCCTAT CGGGAATGTAACGC AAAAGAAGAGAAAGA CGATAGCCGTTCG GGAAAAG CGAACGGT ATCG |
| $$0\_{B}$$ | GCA G CGAT ACCGTTCG CTTTTCC CGAACGGCTATCGC AGTGGGTAATAATGA GCG A ACTGTCG GTGCTTG CGACAGT GTCGC |
| $$1\_{B}$$ | GCA G CGAT ACCGTTCG CTTTTCC CGAACGGCTATCGC AAAAGAAGAGAAAGA GCG A ACTGTCG GTGCTTG CGACAGT GTCGC |
| $$0\_{C}$$ | GCA G GCGAC ACTGTCG CAAGCAC CGACAGT T CGCC AGTGGGTAATAATGA GCGG TTCCTTGC GGAGTAG GCAAGGAATCCGC |
| $$1\_{C}$$ | GCA G GCGAC ACTGTCG CAAGCAC CGACAGT T CGCC AAAAGAAGAGAAAGA GCGG TTCCTTGC GGAGTAG GCAAGGAATCCGC |
| $$0\_{D}$$ | GCA G GCGGATTCCTTGC CTACTCC GCAAGGAATC GCC AGTGGGTAATAATGA CGTTACATTCCCG ATAGGCG CGGGAATTAA CG |
| $$1\_{D}$$ | GCA G GCGGATTCCTTGC CTACTCC GCAAGGAATC GCC AAAAGAAGAGAAAGA CGTTACATTCCCG ATAGGCG CGGGAATTAA CG |
| $$\overline{0}\_{A}$$ | GCT G CGC ATTAACGCG CTTGTCC CGCGTTAATTGCGC TCATTATTACCCACT CGCT CTCGGCTG TTTTGCC CAGCCGAGCAGCG |
| $$\overline{1}\_{A}$$ | GCT G CGC ATTAACGCG CTTGTCC CGCGTTAATTGCGC TCTTTCTCTTCTTTT CGCT CTCGGCTG TTTTGCC CAGCCGAGCAGCG |
| $$\overline{0}\_{B}$$ | GCT G CGTT GCATTGGC GATCAAA GCCAATGCGAACGC TCATTATTACCCACT CGCAATTAACGCG GGACAAG CGCGTTAAT GCG |
| $$\overline{1}\_{B}$$ | GCT G CGTT GCATTGGC GATCAAA GCCAATGCGAACGC TCTTTCTCTTCTTTT CGCAATTAACGCG GGACAAG CGCGTTAAT GCG |
| $$\overline{0}\_{C}$$ | GCT G GTTGGAGAAGGCG AACAGCA CGCCTTC CCAACC TCATTATTACCCACT CGTTCGCATTGGC TTTGATC GCCAATGCAA CG |
| $$\overline{1}\_{C}$$ | GCT G GTTGGAGAAGGCG AACAGCA CGCCTTC CCAACC TCTTTCTCTTCTTTT CGTTCGCATTGGC TTTGATC GCCAATGCAA CG |
| $$\overline{0}\_{D}$$ | GCT G CGCTGCTCGGCTG GGCAAAA CAGCCGAG AGCGC TCATTATTACCCACT GTTGG GAAGGCG TGCTGTT CGCCTTCTCCAAC |
| $$\overline{1}\_{D}$$ | GCT G CGCTGCTCGGCTG GGCAAAA CAGCCGAG AGCGC TCTTTCTCTTCTTTT GTTGG GAAGGCG TGCTGTT CGCCTTCTCCAAC |