Functional DNAzymes Organized into 2D Arrays

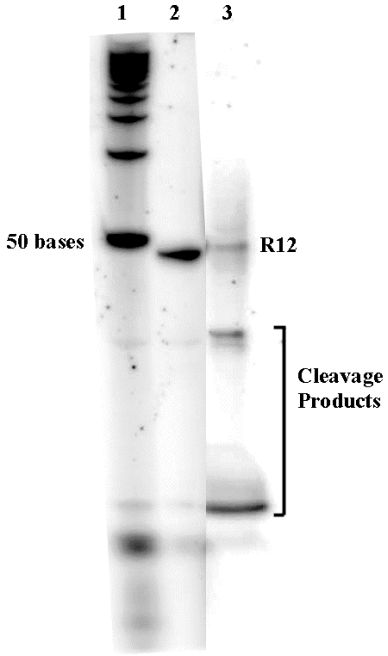
Alejandra V. Garibotti, Scott M. Knudsen,[§] Andrew D. Ellington[§] and Nadrian C. Seeman*

SUPPLEMENTARY MATERIAL

This supplementary material contains two parts. The first part shows sample cleavages of the DNAzymes R12 and its modification S4/C4. The second part shows the sequences of the five tiles used in this study.

Cleavage of R12

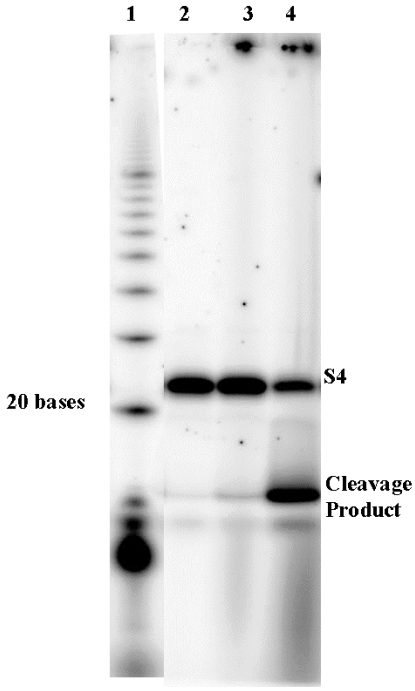
Conditions: Buffer A containing: 50 mM HEPES, pH 7, 500 mM NaCl, 50 mM $MgCl_2$ 5 mM EDTA; Fast annealing; DNA traces, Denaturing 20 % gel.



Lane 1: 50 base marker
Lane 2: R12 control
Lane 3: R12 in the presence of 30 μM $CuCl_2$ showing the cleavage products. The cleavage yield relative to the 14-mer product is approximately 33%.

Cleavage of S4/C4.

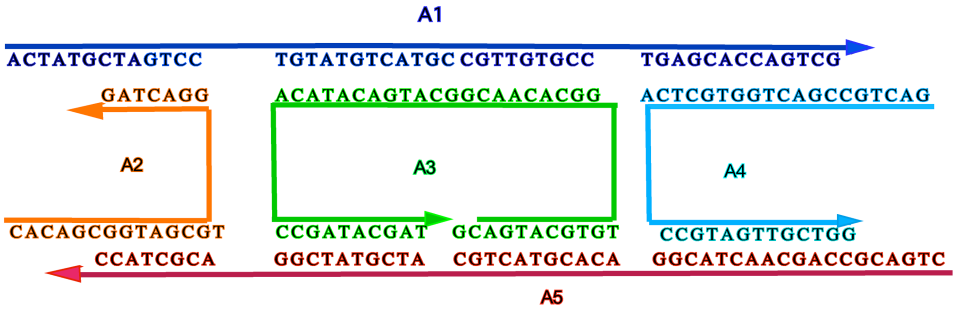
Conditions: Buffer A containing: 50 mM HEPES, pH 7, 500 mM NaCl, 50 mM $MgCl_2$ 5 mM EDTA; Fast annealing; Denaturing 20 % gel.



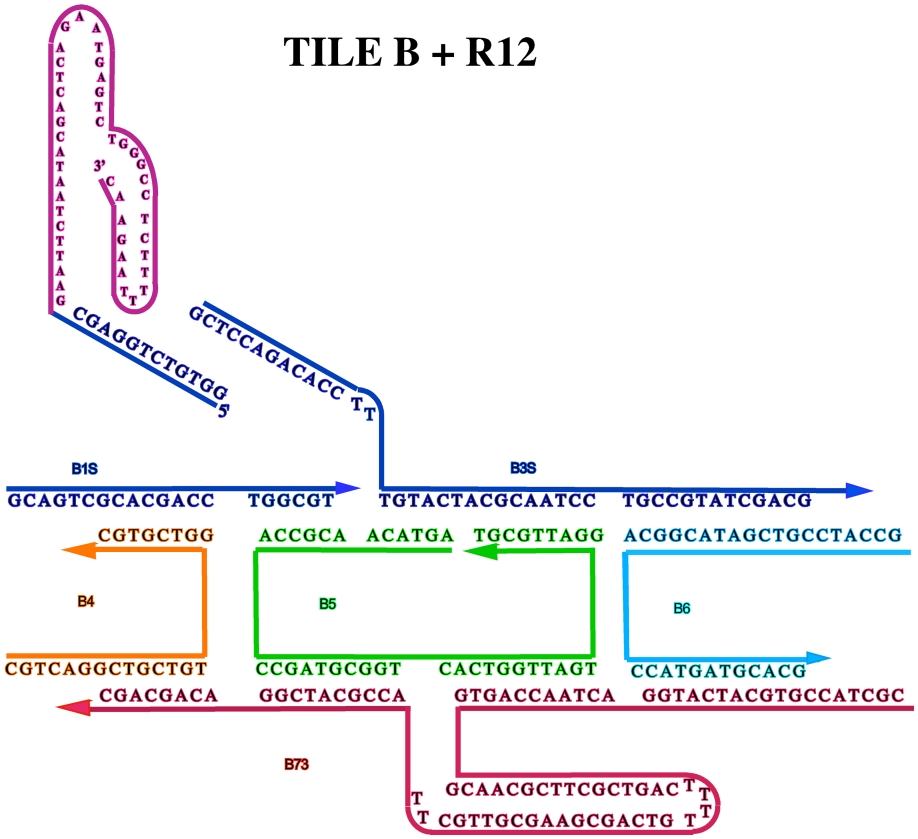
Lane 1: 10 base marker
Lane 2: Control containing C4 (5 μM) and traces of S4*.
Lane 3: C4 (5 μM), traces of S4*, $CuCl_2$ 10 μM, the cleavage yield is very low.
Lane 4: C4 (5 μM), traces of S4*, $CuCl_2$ 30 μM; the cleavage yield is ~ 70%.

Tile Sequences

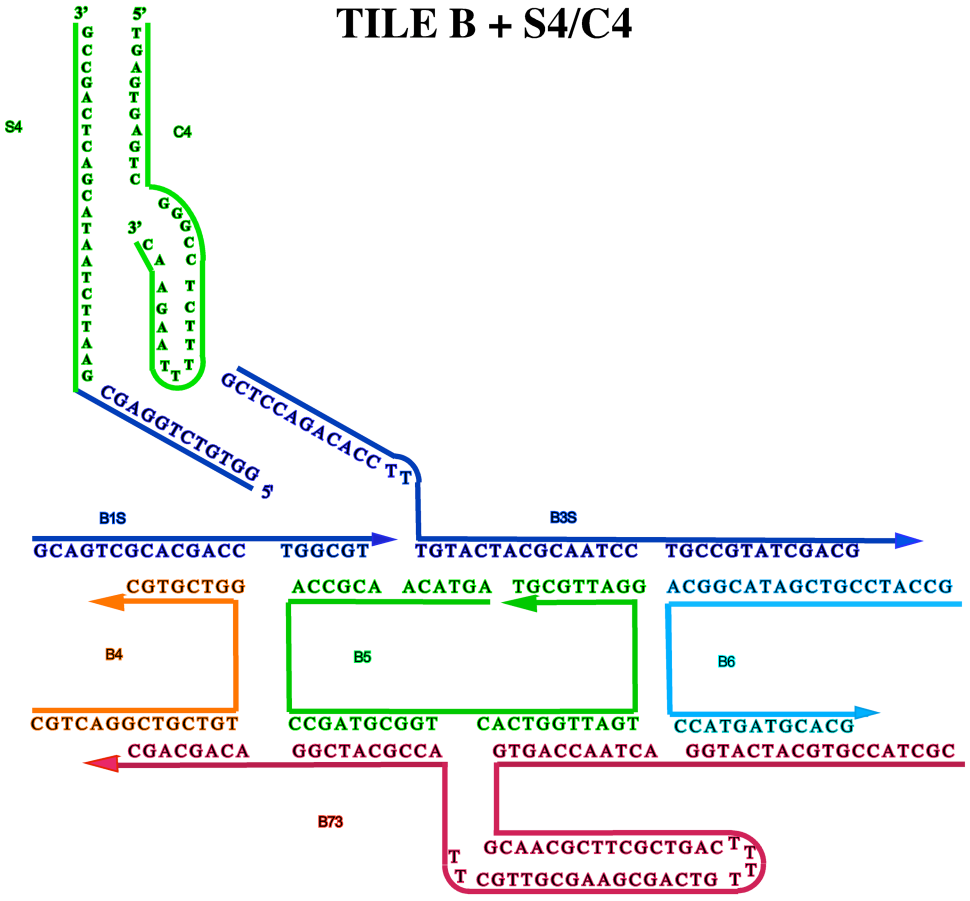
TILE A



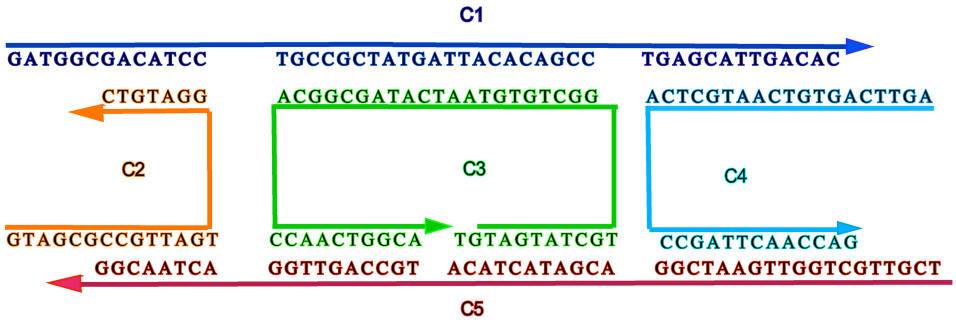
TILE B + R12



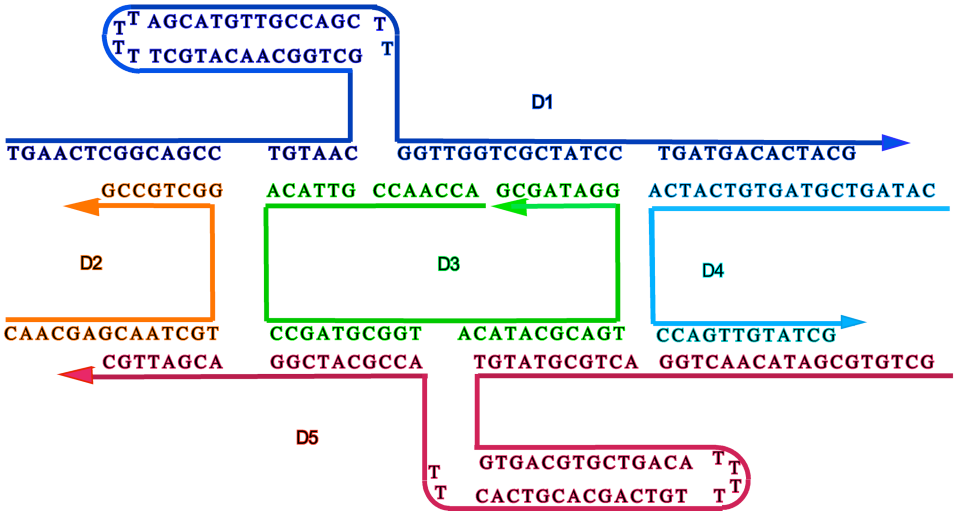
TILE B + S4/C4



TILE C



TILE D


TT AGCATGTTGCCAGC T
TT TCGTACAACGGTCG T
D1
TGAACTCGGCAGCC TGTAAC GGTTGGTCGCTATCC TGATGACACTACG
GCCGTCGG ACATTG CCAACCA GCGATAGG ACTACTGTGATGCTGATAC
D2
D3
D4
CAACGAGCAATCGT CCGATGCGGT ACATACGCAGT CCAGTTGTATCG
CGTTAGCA GGCTACGCCA TGTATGCGTCA GGTCAACATAGCGTGTCG
D5
T GTGACGTGCTGACA TT
T CACTGCACGACTGT TT