

Supplementary information

Pathogen-specific DNA sensing with engineered zinc finger proteins immobilized on polymer chip

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Target 1 Stx2_233/stx2_268

5'-GAC **GGC TTG ATG TCT ATC AGG CGC GTT TTG ACC ATC TTC** GGG TTTT CCC **GAA GAT GGT**
CAA AAC GCG CCT GAT AGA CATCAA GCC GTC-3'

Target 2 Stx2_525/stx2_560

5'-GAC TGC **ATC CAG AGC AGT TCT GCG TTT TGT CAC TGT CAC** GGG TTTT CCC **GTG ACA**
GTG ACA AAA GCG AGA ACT GCT CTG GAT GCA GTC-3'

Target 3 Stx2_1093/stx2_1128

5'-GAC **AAG TGG CCG GGA AAG AAT ACT GGA CCA GTC GCT GGA** CCC TTTT GGG **TCC AGC**
GAC TGG TCC AGT ATT CTT TCC CGG CCA CTT GTC-3'

Hairpin oligonucleotide of Zif268/PBSII site, used as an irrelevant control:

5'-GGC TTT **CCA CAC CGC CCA CGC** GGG TTTT CCC **GCG TGG GCG GTG TGG AAA** GCC-3'

Fig. S1 Sequences of hairpin target DNA oligonucleotides for stx2 ZFP pairs with ZFP binding sites shown in bold.

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1  atgaagtgta  tattatttaa  atgggtactg  tgectgttac  tgggtttttc  ttcggtatcc
61  tattccccggg  aattttacgat  agacttttcg  actcaacaaa  gttatgtctc  ttcgtttaa
121 agtatacgga  cagagatatc  gacccctctt  gaacatatat  ctcagggggac  cacatcggtg
181 tctgttatta  accacacccc  accgggcagt  ttttttgctg  tggatatatc  agggcttgat
241 gtctatcagg  cgcgttttga  ccatcttcgt  ctgattattg  agcaaaataa  tttatatgtg
301 gccgggttcg  ttaatacggc  aacaaatact  ttctaccgtt  tttcagattt  tacacatata
361 tcagtgcctg  atgtgacaac  ggtttccatg  acaacggaca  gcagttatac  cactctgcaa
421 cgtgtcgcag  cgctggaacg  ttccggaatg  caaatcagtc  gtcactcact  ggtttcatca
481 tatctggcgt  taatggagtt  cagtggtaat  acaatgacca  gagatgcatac  cagagcagtt
541 ctgcgttttg  tcaactgtcac  agcagaagcc  ttacgcttca  ggcagataca  gagagaattt
601 cgtcaggcac  tgtctgaaac  tgctcctgtg  tatacgatga  cgccgggaga  tgtggacctc
661 actctgaact  gggggcgaa  cagcaatgtg  cttccggagt  atcggggaga  ggatggtgtc
721 agagtgggga  gaatatcctt  taataatata  tcagcgatac  tgagtactgt  ggcggttata
781 ctgaattgcc  atcatcaggg  ggcgcgttct  gttcgcgccg  tgaatgaaga  gagtcaacca
841 gaatgtcaga  taactggcga  caggcccgtt  ataaaaataa  acaatacatt  atgggaaagt
901 aatacagcag  cagcgtttct  gaacagaaag  tcacagtttt  tatatacaac  gggtaaataa
961 aggagttaag  tatgaagaag  atgtttatgg  cggttttatt  tgcattagtt  tctgttaatg
1021 caatggcggc  ggattgctgt  aaaggtaaaa  ttgagttttc  caagtataat  gagaatgata
1081 cattcacagt  aaagtggcc  gggaaagaat  actggaccag  tcgctggaat  ctgcaaccgt
1141 tactgcaaag  tgctcagctg  acaggaatga  ctgtcacaat  caaatccagt  acctgtgaat
1201 caggctccgg  atttgctgaa  gtgcagttta  attttgaatg  a

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Fig. S2 Location of target regions of *stx2* ZFP pairs in *stx2* gene (1241 bp). Target sites are highlighted for *stx2*_233/*stx2*_268 (yellow), *stx2*_525/*stx2*_560 (cyan), and *stx2*_1093/*stx2*_1128 (light green).

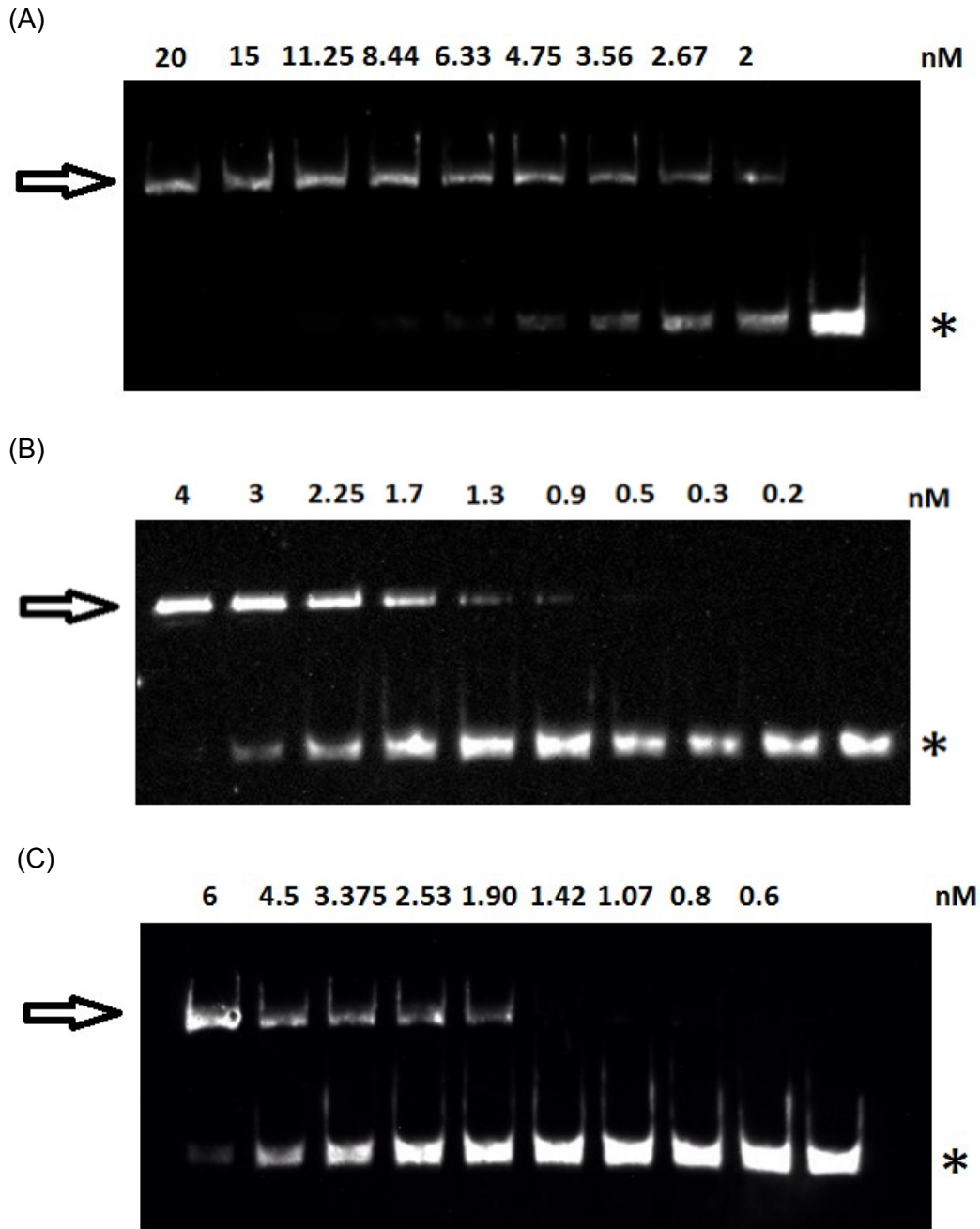


Fig. S3 Illustration of EMSA (electromobility shift assay) of engineered zinc finger proteins (ZFPs) to target different sequences within *stx2* gene. Exemplary data are shown for (a) *Stx2_233*, (b) *Stx2_268*, and (c) *Stx2_525*. The ZFP concentrations (nM) are given at the top. Top bands indicate the ZFP and DNA complex and the bottom bands show free DNA.

Table. S1 Binding motifs identified by the Bind-n-Seq for ZFP stx2_560, stx2_1093, and stx2_1128.

	Motifs	Seed	Enrichment	Protein cont.	Salt cont.
Stx2_560	GTGACAGTGACAAAACGC				
		ACAAAAA	0.157	50 nM	50 mM
Stx2_1093	AAGTGGCCGGGAAAGAAT				
		CTTTCCCGCC	26.432	500 nM	100 mM
Stx2_1128	ACTGGACCAAGTCGCTGGA				
		AGTTGGTCG	4.345	50 nM	1 mM

