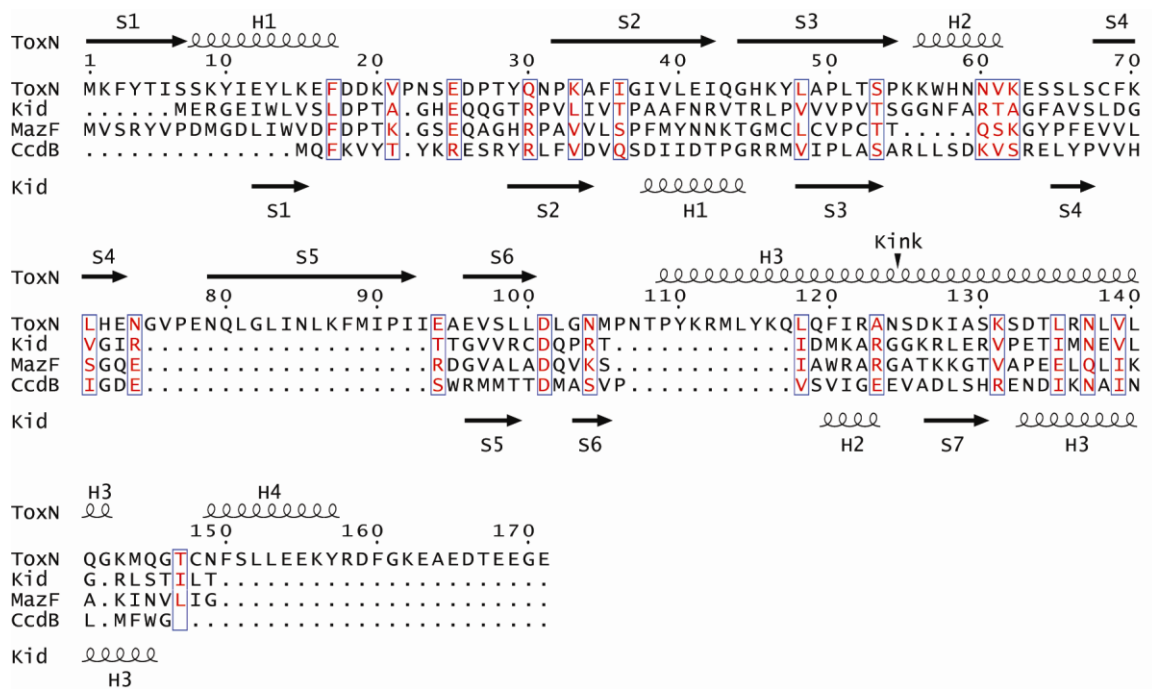


Supplementary information

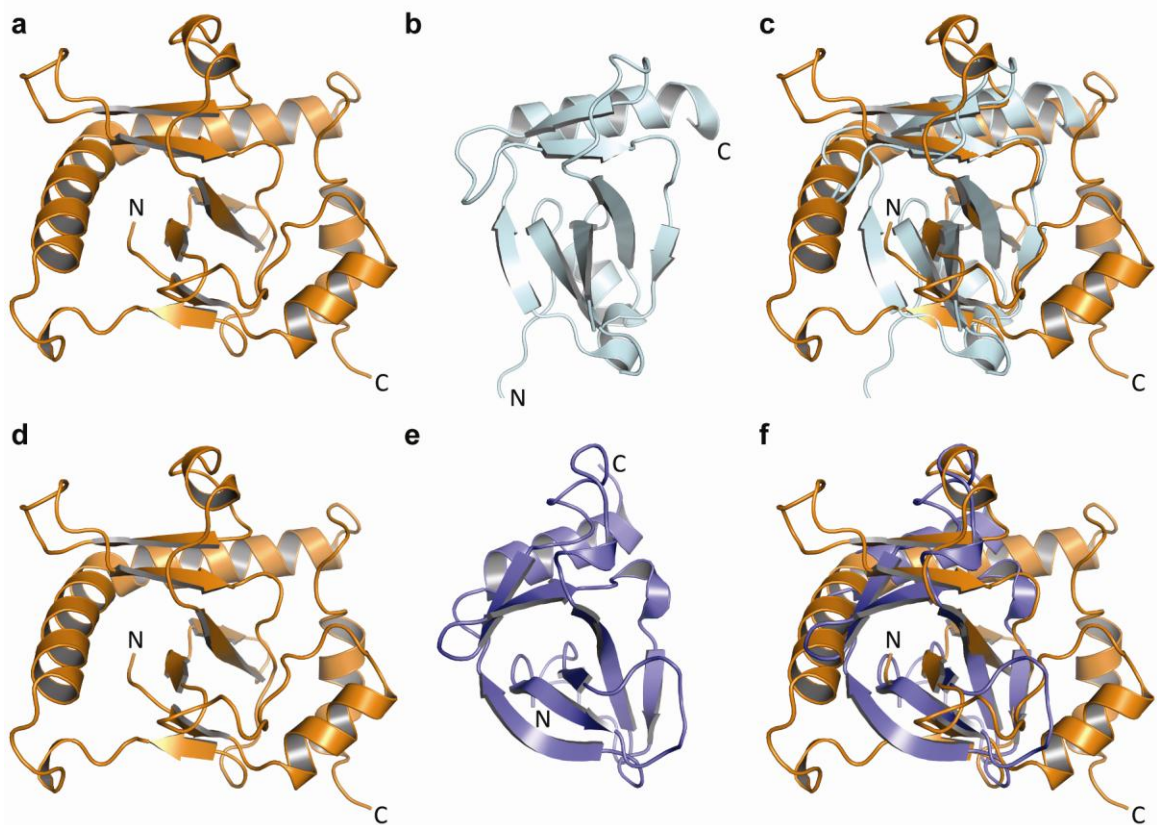
A processed non-coding RNA regulates an altruistic bacterial antiviral system

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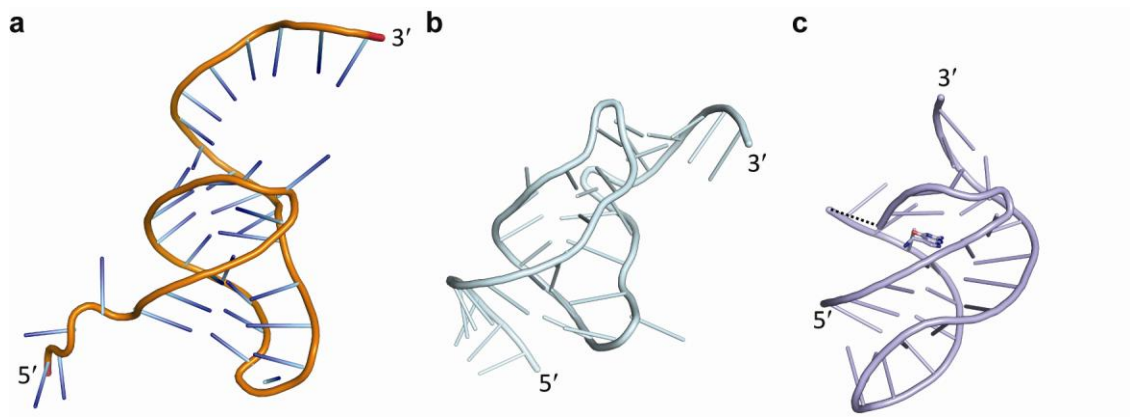
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Supplementary Figure 1 Amino acid sequence alignment of ToxN and structural homologues. The secondary structures of ToxN and Kid are drawn above and below the alignment, respectively, using loops to represent α -helices and arrows to represent β -strands. The ToxN crystal structure resolved residues 1-162 and the secondary structure description only applies to these residues; the sequence for ToxN residues 163-171 is included for completeness. Protein sequences used are NCBI entries: ToxN, ACK87011; Kid, 1M1F_B¹⁴; MazF, NP_417262¹⁹; CcdB, NP_061422³⁰.



Supplementary Figure 2 Further structural comparisons within the ToxN family **(a)** Cartoon representation of ToxN in orange. **(b)** Cartoon representation of MazF (PDB code: 1UB4¹⁹) in cyan. **(c)** Structural comparison between ToxN in orange and MazF in cyan. **(d)** as **(a)**. **(e)** Cartoon representation of CcdB (PDB code: 3HPW³⁰) in blue. **(f)** Structural comparison between ToxN in orange and CcdB in blue. **(a)**-**(f)** are shown in the same orientation.



Supplementary Figure 3 ToxI has a similar fold to two known pseudoknots. **(a)** Cartoon representation of ToxI in orange. **(b)** Cartoon representation of the vitamin B₁₂ RNA aptamer (PDB code 1ET4³²) in pale cyan. **(c)** Cartoon representation of the preQ₁ riboswitch (PDB code 3FU2³³) in purple. A grey dashed line indicates a join within the RNA strand between bases 12 and 14, as base 13 is missing from the PDB file. A preQ₁ molecule can be seen buried in a cleft of the pseudoknot. **(a)-(c)** are aligned in the same orientation, to allow comparison of the basic topologies.

Supplementary Table 1. Buried surface area within ToxIN and R.M.S.D between protomers

Native 1, I4 ₁ 32 (Å ²)			Native 2, P2 ₁ 2 ₁ 2 ₁				Selenomethionine, C2					
Protein	RNA	RNA	Chain	Protein		RNA		Chain	Protein		RNA	
	1	2 (sym)		(area, Å ²)	(R.M.S. D., Å ²)	(area, Å ²)	(R.M.S. D., Å ²)		(area, Å ²)	(R.M.S. D., Å ²)	(area, Å ²)	(R.M.S. D., Å ²)
1990	1770	1632	A	2030	0	1362	0	A	2022	0	1349	0
			B	1988	0.04	1381	0.04	B	2031	0.03	1346	0.03
			E	2024	0.04	1319	0.04	C	2011	0.03	1328	0.03
			X	2059	0.03	1501	0.03					
			Y	1975	0.04	1386	0.04					
			V	2092	0.03	1338	0.03					