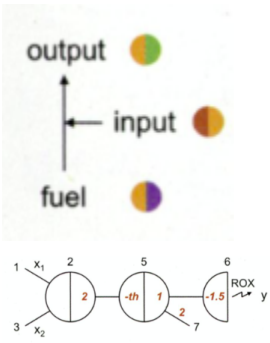
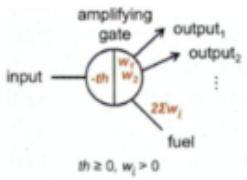
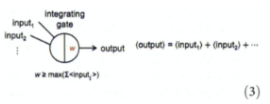
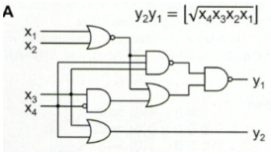
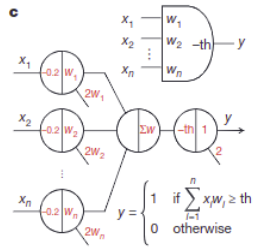
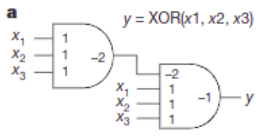
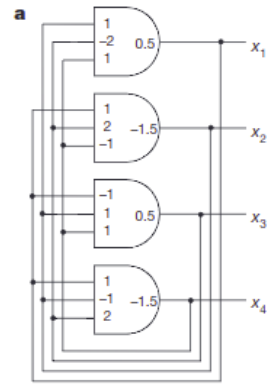
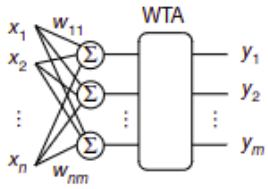
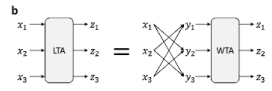
Table

Gate	Name	Goal	Input	Output	Reference
	Catalyst based reaction	Reversible reaction used as AND/OR gate depending on threshold. Threshold = 0.6 (OR gate), Threshold = 1.2 (AND gate).	X1, x2	y1	Ref 1, Ref 4, fig 5
	Amplification gate	Uses a catalyst to displace multiple strands with a single input. First input displaces strand and produces output, then input is displaced.	x1	Y1, y2, y3..	Ref 1, fig 1
	Integration gate	Takes multiple inputs and produces a cumulative sum of inputs.	X1, x2, x3…	y1	Ref 1
	Floor of four-bit	Computes the floor of the square root of a four-bit binary input.	X1, x2, x3, x4	Y1, y2	Ref 1
	Threshold gate	A linear threshold gate and its equivalent seesaw construction.	X1, x2, x3	y1	Ref 2
	Three-bit XOR function	For negative weights use dual rail.	X1, x2, x3	y1	Ref 2, fig 2, fig 3

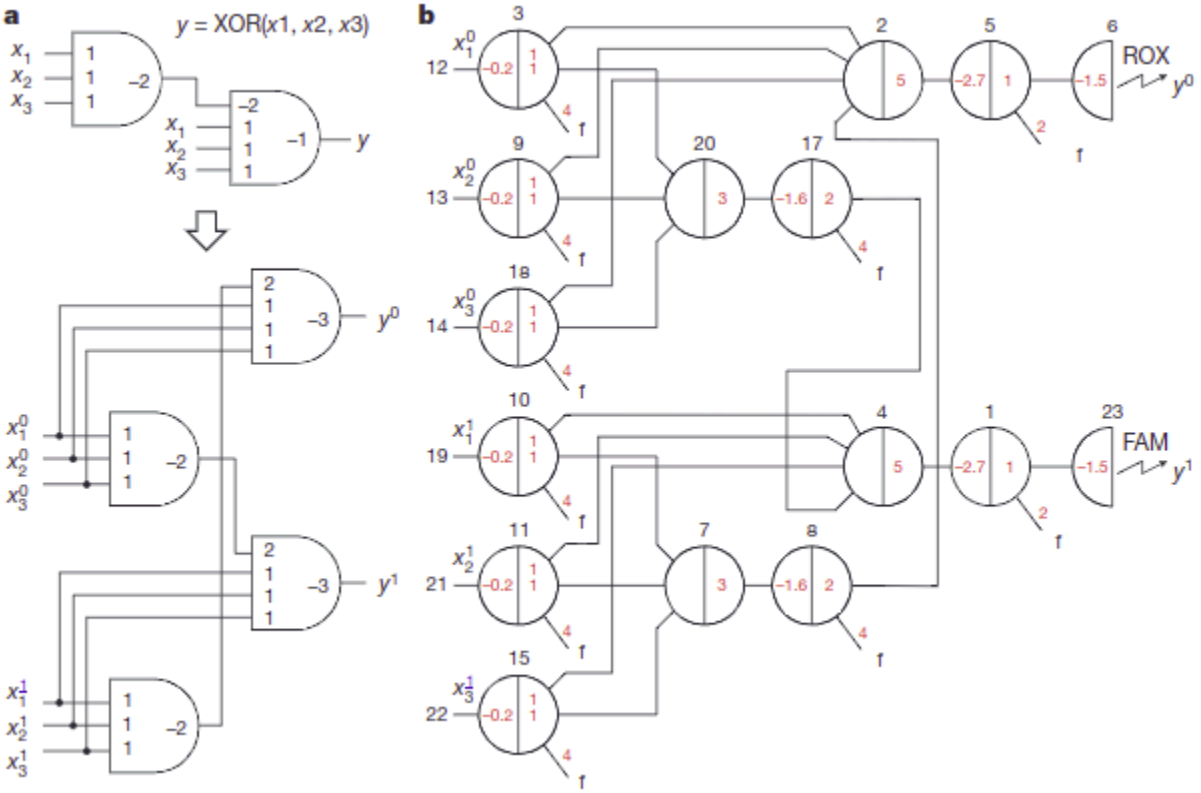
	A four-neuron Hopfield associative memory	A recurrent neural network that stores patterns as stable states and retrieves closest stored memory when presented with a distorted version.	?, ?, x3, x4	X1, x2, x3, x4	Ref 2, fig 4
	Fluorophore ROX	Report the signal	x1	ROX	Ref 2
	WTA: Winner take all	Competitive architecture where out is only the dominant signal	{x1… ..xn}	Only major signal	Ref 3
	LTA: Losser take all	Competitive architecture where out is only the weak signal	{x1,... .xn}	Only weak signal	Ref 5

References:

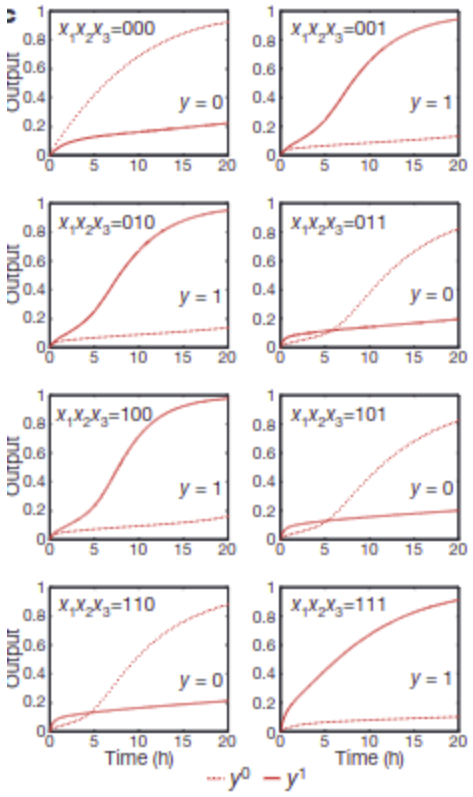
1. https://www.jstor.org/stable/pdf/27977987.pdf
2. https://www.nature.com/articles/nature10262.pdf
3. http://qianlab.caltech.edu/s41586-018-0289-6.pdf
4. https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7424055&casa_token=d-_3pOHCZHgAAAAA:IZTDykmp0aYLL0EJUDgSaIz7eWq6PCE0ymMrayuvXliQu322BTccT2WIMgkhZvEngGN5iYqs81Hr
5. https://pubs.acs.org/doi/pdf/10.1021/acssynbio.1c00318
6.

Figure:

1. 

2. 

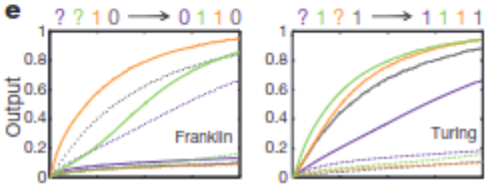
3.



d Q1: Did the scientist study neural networks?
Q2: Was the scientist British?
Q3: Was the scientist born in the 20th century?
Q4: Was the scientist a mathematician?
Answers: Yes (1), No (0), or I don't know (?)

0 1 1 0	Rosalind Franklin
1 1 1 1	Alan Turing
0 0 1 1	Claude Shannon
1 0 0 0	Santiago Ramon y Cajal

4.



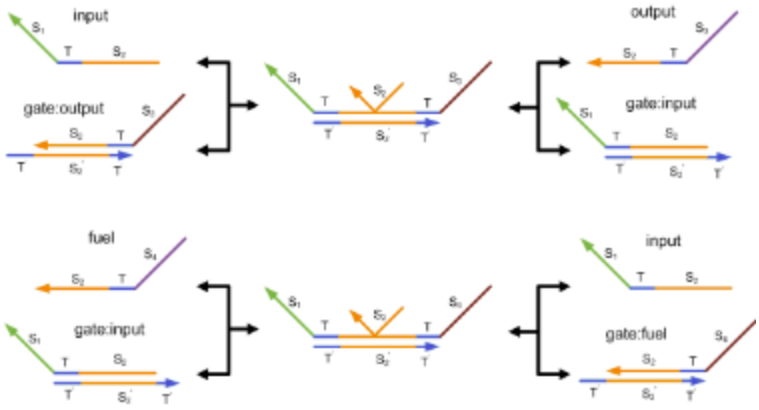


Fig. 3. The DNA gate motif reaction mechanism

5.