

Table S1. TNS description of 81 input scenarios with their corresponding outputs

Scenario	Wnt proteins	Shh	Noggin	Bmp4	Myogenesis	Origin of data	Remarks
1	0	0	0	0	F	Ref. 1,2,3,4	Myogenesis requires w and s or g
2	0	0	0	1	F	Ref. 5	b inhibits myogenesis (Ref. 3,6,7)
3	0	0	0	2	F	Fig. S1A; Ref. 8	b inhibits myogenesis (Ref. 3,6,7)
4	0	0	1	0	F		If $s=0$ and $w=0$, then $g=0$ (this work; Ref. 3,9). Collapses into scenario 1
5	0	0	1	1	F		If $s=0$ and $w=0$, then $g=0$ (this work; Ref. 3,9). Collapses into scenario 2
6	0	0	1	2	F		If $s=0$ and $w=0$, then $g=0$ (this work; Ref. 3,9). Collapses into scenario 3
7	0	0	2	0	F	Fig. S1B; Ref. 3	g is insufficient for myogenesis
8	0	0	2	1	F		g titrates b . Collapses into scenario 7
9	0	0	2	2	F		g and b are stoichiometric. g is insufficient for myogenesis (Figure S1C; Ref. 3)
10	0	1	0	0	F	Ref. 1	Myogenesis requires w (Ref. 2)
11	0	1	0	1	F	Ref. 10,11	Myogenesis requires w (Ref. 2)
12	0	1	0	2	F		b inhibits myogenesis (Ref. 3,6,7). Myogenesis requires w (Ref. 12)
13	0	1	1	0	F		If $w=0$, then $g=0$ (Ref. 3,9). Collapses into scenario 10
14	0	1	1	1	F	Ref. 11	If $w=0$, then $g=0$ (Ref. 3,9). Collapses into scenario 11
15	0	1	1	2	F		If $w=0$, then $g=0$ (Ref. 3,9). Collapses into scenario 12
16	0	1	2	0	F	Ref. 2,3,10	Myogenesis requires w (Ref. 2,10). g could not induce myogenesis (Ref. 3)
17	0	1	2	1	F	Ref. 2,3,10	Myogenesis requires w (Ref. 2,10). g could not induce myogenesis (Ref. 3)
18	0	1	2	2	F	Ref. 2,3,10	Myogenesis requires w (Ref. 2,10). g could not induce myogenesis (Ref. 3)
19	0	2	0	0	F	Ref. 2,3,13	Myogenesis requires w
20	0	2	0	1	F		Myogenesis requires w (Ref. 2). b inhibits myogenesis (Ref. 3,6,7)
21	0	2	0	2	F		Myogenesis requires w (Ref. 2). b inhibits myogenesis (Ref. 3,6,7)
22	0	2	1	0	F		If $w=0$, then $g=0$ (Ref. 3,9). Collapses into scenario 19
23	0	2	1	1	F		If $w=0$, then $g=0$ (Ref. 3,9). Collapses into scenario 20
24	0	2	1	2	F		If $w=0$, then $g=0$ (Ref. 3,9). Collapses into scenario 21
25	0	2	2	0	F	Ref. 2,3,9	Myogenesis requires w (Ref. 2,9). g could not induce myogenesis (Ref. 3)
26	0	2	2	1	F		Myogenesis requires w (Ref. 2,9). g titrates b , collapses into scenario 25
27	0	2	2	2	F		Myogenesis requires w (Ref. 2,9). g and b are stoichiometric
28	1	0	0	0	F	Ref. 1,2,3,4	Myogenesis requires s or g (this work; Ref. 2,3)
29	1	0	0	1	F	Ref. 5,14	Myogenesis requires s or g (this work; Ref. 2,3)
30	1	0	0	2	F	Ref. 3	Myogenesis requires s or g (this work; Ref. 2,3). b inhibits myogenesis (Ref. 3,6,7)
31	1	0	1	0	F		If $s=0$, then $g=0$ (this work). Collapses into scenario 28
32	1	0	1	1	F		If $s=0$, then $g=0$ (this work). Collapses into scenario 29
33	1	0	1	2	F		If $s=0$, then $g=0$ (this work). Collapses into scenario 30
34	1	0	2	0	T	Ref. 3	g is in excess to b . Collapses into scenario 34
35	1	0	2	1	T		
36	1	0	2	2	S		If $w=1$ and $s=1$, then $g=1$ (this work; Ref. 9). Collapses into scenario 40
37	1	1	0	0	T		If $w=1$ and $s=1$, then $g=1$ (this work; Ref. 9). Collapses into scenario 41
38	1	1	0	1	T		If $w=1$ and $s=1$, then $g=1$ (this work; Ref. 9). Collapses into scenario 42
39	1	1	0	2	F		
40	1	1	1	0	T	Ref. 1,5,15	
41	1	1	1	1	T		Normal conditions by definition

42	1	1	1	2	F	Ref. 3,6	
43	1	1	2	0	T	Ref. 3	
44	1	1	2	1	T		<i>g</i> titrates <i>b</i> . Collapses into scenario 43
45	1	1	2	2	S		
46	1	2	0	0	T		If $w=1$ and $s=2$, then $g=2$ (Ref. 9). Collapses into scenario 52
47	1	2	0	1	T		If $w=1$ and $s=2$, then $g=2$ (Ref. 9). Collapses into scenario 53
48	1	2	0	2	S		If $w=1$ and $s=2$, then $g=2$ (Ref. 9). Collapses into scenario 54
49	1	2	1	0	T		If $w=1$ and $s=2$, then $g=2$ (Ref. 9). Collapses into scenario 52
50	1	2	1	1	T		If $w=1$ and $s=2$, then $g=2$ (Ref. 9). Collapses into scenario 53
51	1	2	1	2	S		If $w=1$ and $s=2$, then $g=2$ (Ref. 9). Collapses into scenario 54
52	1	2	2	0	T	Ref. 2,5,9,10,14,16	
53	1	2	2	1	T		<i>g</i> titrates <i>b</i> . Collapses into scenario 52
54	1	2	2	2	S		
55	2	0	0	0	F	Ref. 2,3	w is insufficient for myogenesis (Ref. 2)
56	2	0	0	1	F	Fig. 4	w is insufficient for myogenesis (Ref. 2). <i>b</i> inhibits myogenesis (Ref. 3,6,7)
57	2	0	0	2	F	Fig. S1C	w is insufficient for myogenesis (Ref. 2). <i>b</i> inhibits myogenesis (Ref. 3,6,7)
58	2	0	1	0	F		If $s=0$, then $g=0$ (this work). Collapses into scenario 55
59	2	0	1	1	F	Fig. 4	If $s=0$, then $g=0$ (this work). Collapses into scenario 56
60	2	0	1	2	F		If $s=0$, then $g=0$ (this work). Collapses into scenario 57
61	2	0	2	0	T	Fig. S1B	
62	2	0	2	1	T		<i>g</i> titrates <i>b</i> . Collapses into scenario 61
63	2	0	2	2	S		
64	2	1	0	0	T		If $w=2$ and $s=1$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 70
65	2	1	0	1	T		If $w=2$ and $s=1$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 71
66	2	1	0	2	S		If $w=2$ and $s=1$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 72
67	2	1	1	0	T		If $w=2$ and $s=1$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 70
68	2	1	1	1	T		If $w=2$ and $s=1$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 71
69	2	1	1	2	S		If $w=2$ and $s=1$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 72
70	2	1	2	0	T	Fig. S2	
71	2	1	2	1	T		<i>g</i> titrates <i>b</i> . Collapses into scenario 70
72	2	1	2	2	S		
73	2	2	0	0	T		If $w=2$ and $s=2$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 79
74	2	2	0	1	T		If $w=2$ and $s=2$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 80
75	2	2	0	2	S		If $w=2$ and $s=2$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 81
76	2	2	1	0	T		If $w=2$ and $s=2$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 79
77	2	2	1	1	T		If $w=2$ and $s=2$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 80
78	2	2	1	2	S		If $w=2$ and $s=2$, then $g=2$ (Ref. 3,9; Fig. S2). Collapses into scenario 81
79	2	2	2	0	T	Ref. 2,3,13	
80	2	2	2	1	T		<i>g</i> titrates <i>b</i> . Collapses into scenario 79
81	2	2	2	2	S		

T, true, myogenesis; F, false, no myogenesis; S, stoichiometric high concentrations of both noggin and Bmp4. The information provided in columns 'Origin of data' and 'Remarks' was partially obtained from our experiments which phrased the term 'collapse'. This is discussed further in the text (The Shh-noggin correlation hypothesis). References: 1 (Münsterberg and Lassar, 1995); 2 (Münsterberg et al., 1995); 3 (Reshef et al., 1998); 4 (Galli et al., 2004); 5 (Pownall et al., 1996); 6 (Pourquié et al., 1996); 7 (Tonegawa and Takahashi, 1998); 8 (Linker et al., 2003); 9 (Hirsinger et al., 1997); 10 (Dietrich et al., 1997); 11 (Schmidt et al., 2004); 12 (Aoyama and Asamoto, 1988); 13 (Maroto et al., 1997); 14 (Borycki et al., 1998); 15 (Pourquié et al., 1995); 16 (Johnson et al., 1994).