



Fig. S1. *Neurod1*^{Atoh7/Atoh7} mice have similar M-cone cell defects as found in *Neurod1*-null retinas. (A-D) Immunostaining of retinal flatmounts with anti-S-Op sin antibody from P30 (A,B) wild-type and (C,D) *Neurod1*^{Atoh7HA/Atoh7HA}. V, ventral retinas; D, dorsal retinas.

A.

Atoh7-binding peak in Nrnx3

>chr12:90280146-90280471 (softmasked)

CAGAGAAGAGTTACTACTGATTCTCCTTGGGATTCTCCTTTTGGAGTCTGGCAGGATCTCTGGGGCAGGGAGAGTCCATAAGGAGAAAAGGATGCTTACAAGC
TGGGCTCCCCTGAAAAGTGTAGGATGACATGTGCTGGTCCACTGGCC**CAGCTGCCAGATGAT**GGGAACAGGGAT**CAGCTG**TGACCTAATTATGAGTCT
GGTAAACCTGCACCTGTCTCCTTTCATTTTCCGGCTCATTGACCACCCAGAGGGGAAAATGGATGAGATTCTACTCAAGTCATCCCTGCCACTAC**CATGTG**
GTCAAGTCCACAGGCCAATGATATTC

B.

Mouse Jul. 2007(+)	090280146	CAGAGAAGAGTTACA---CTGATTCTCCTTGGGATTCTCCTTTTGGAGTCT	090280192
Rat Nov. 2004(+)	112599821	CGGAGAAGAGTTACA--CTGATTCTCCTTGGGATTCTCCTTTGGGCCT	112599867
Rhesus Jan. 2006(+)	141678807	TAGAAAAGAGTTGC-TTTCTGGGTCCCCTTGGGCCTGCTGCTGCTGGTCCG	141678855
Horse Jan. 2007(+)	023130542	CAGAGAAGAGTTGCATCGCTGGGCCTCCTTGGGTCTGCTGCTGCTGTTT	023130591
Dog May 2005(+)	054194720	CAGATAAAAGTTGCATTGCTGGGTCTCC-TGGGGCGGCTGCTGCTTTTCT	054194768
Chicken May 2006(+)	042108194	CAGA-----	042108197
Human Mar. 2006(+)	078027146	CAGAAAAGAGTTGCATTGCTGGGTCCCCTTGGACCTGCTGCTGCCGGTCCG	078027195

Mouse Jul. 2007(+)	090280193	GGCAGGATCTCTGGGGCAGGGAGAGTCCATAAGGAGAAAAGGATGCTTACA	090280242
Rat Nov. 2004(+)	112599868	GGCAGGATCTTTGGGGCAAGGAGAGTCCATAAGGAGAAAAGGATGCTTACA	112599917
Rhesus Jan. 2006(+)	141678856	GCTGGGGAG-----AATTATAAAGAAGAAAAGGCCATTTTCA	141678891
Horse Jan. 2007(+)	023130592	GCTAGGAGCTTTGGAGAGGGG--CAAGATAACGAAGAAAAGGATGTTTCA	023130639
Dog May 2005(+)	054194769	CCTAGGAGCTTTGCGGAGGGGT-TACTGTATAGAAGAAAAGATGTTTCA	054194817
Chicken May 2006(+)	042108198	GCCAGGGAACAAAGAG-----GTAAAGGGGAGAGGGAA-----G	042108231
Human Mar. 2006(+)	078027196	GCTGGGAAG-----AGTTATAAAGAAGAAAAGGACATTTTCA	078027231

Mouse Jul. 2007(+)	090280243	AGCTGGGCTCCCCTGGAAAAGTGTAGGATGACATGTGCTGGTCCACT---	090280289
Rat Nov. 2004(+)	112599918	AGCTGGGCTCCCCTGGAAAAGTGTAGGATGG CATGTG TTGGTCCACT---	112599964
Rhesus Jan. 2006(+)	141678892	AGCTAAGCTCCCCTGGAAAAGTGGTAGGATGGCATGAGCTGGTCCACA---	141678938
Horse Jan. 2007(+)	023130640	AGCTGGGCGCTACTGGAAAAGTGGTGGATGG CATGTG CTGGTCCATT---	023130686
Dog May 2005(+)	054194818	AGCTGGGCACCCCTGGAAAATGGTTGGATAG CATGTG CTGGTCCACT---	054194864
Chicken May 2006(+)	042108232	AGCTGGCTGCCCT---AAACCTGAGAGAGCTGTGAGCCACCCTGCTCGG	042108277
Human Mar. 2006(+)	078027232	AGCTAAGCTCTCCTGGAACTGGTAGGATGGCTGAGCTGGTCCACA---	078027278

Mouse Jul. 2007(+)	090280290	-----GGCCC CAGCTGCCAGATG ATGGGAACAGGGAT CAGCTGT	090280328
Rat Nov. 2004(+)	112599965	-----GGCCC CAGCTGCCAGATG ATGGGAACAGGGAT CAGCTGT	112600003
Rhesus Jan. 2006(+)	141678939	-----GGCCC CAGCTGCCAGATG ATGGGAATGGGAT CAGCTGT	141678977
Horse Jan. 2007(+)	023130687	-----GGCCC CAGCTGCCACATG ATGGGATGGGAT CAGCTGT	023130725
Dog May 2005(+)	054194865	-----GGCCC CAGCTGCCAGATG ATGGGATGGGAT CAGCTGT	054194903
Chicken May 2006(+)	042108278	CAGGGCAGGAAGGCAC CAGCTGT CAGCTG ATCCAAACAGAGAT CAGCTGT	042108327
Human Mar. 2006(+)	078027279	-----GGCCC CAGCTGCCAGATG ATGGGAATGGGAT CAGCTGT	078027317

Fig. S2. Evolutionarily conserved *Nrnx3*^{347E} peak sequence. (A) DNA sequence of chr12:90280146-90280471 (Mouse Genome, Jul 2007, VISTA). (B) Evolutionary conservation of this sequence among mouse, rat, rhesus, horse, dog, human and chicken. Note that the E-box sequences are highlighted in red.

(A)	Range selected	F value	p value	P value for comparison of Atoh7 ^{-/-} and other groups			P value for comparison of 2 Neurod1 ^{Atoh7} groups	
	Log sc td-s	Across all groups	Differences across all groups	Atoh7 ^{G/G} vs Atoh7 ^{+G}	Atoh7 ^{G/G} vs Atoh7 ^{G/G} :Neurod1 ^{Atoh7/+}	Atoh7 ^{G/G} vs Atoh7 ^{+G} :Neurod1 ^{Atoh7/Atoh7}	Atoh7 ^{G/G} :Neurod1 ^{Atoh7/+}	Atoh7 ^{+G} :Neurod1 ^{Atoh7/Atoh7}
ERG wave								
a-wave @6ms	0 to 3	1.7	0.2*	0.04*	0.28*	0.38		0.9
b-wave @110ms	-3 to 3	3.9	0.032*	0.008*	0.035*	0.61		0.18
b-wave, peak to trough	-3 to 3	4.66	0.019*	0.004*	0.034*	0.55		0.18
pSTR @ 110 ms	-5.9 to -3	4.43	0.022*	0.004*	0.033*	0.36		0.28
nSTR @ 200 ms	-6.2 to -3	6.2	0.007*	0.001*	0.375	0.051*		0.25

(B)				P-value for Atoh7 ^{+G} vs Atoh7 ^{G/G} :Neurod1 ^{Atoh7/+}	P value for Atoh7 ^{+G} vs Atoh7 ^{+G} :Neurod1 ^{Atoh7/Atoh7}
a-wave @6ms	0 to 3			0.32	0.35
b-wave @110ms	-3 to 3			0.6	0.06 ⁺
b-wave, peak to trough	-3 to 3			0.41	0.04*
pSTR @ 110 ms	-5.9 to -3			0.418	0.074 ⁺
nSTR @ 200 ms	-6.2 to -3			0.013*	0.19

* significant at p<.05 or better

⁺ nearly significant at P<.05