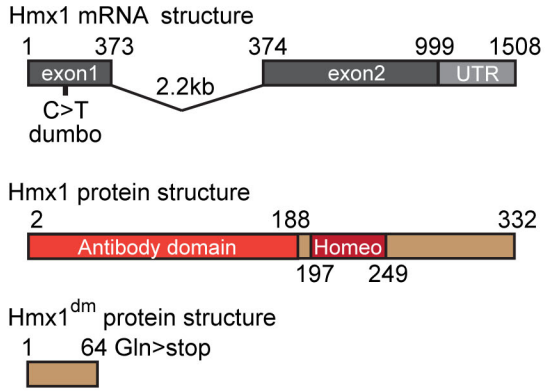
A

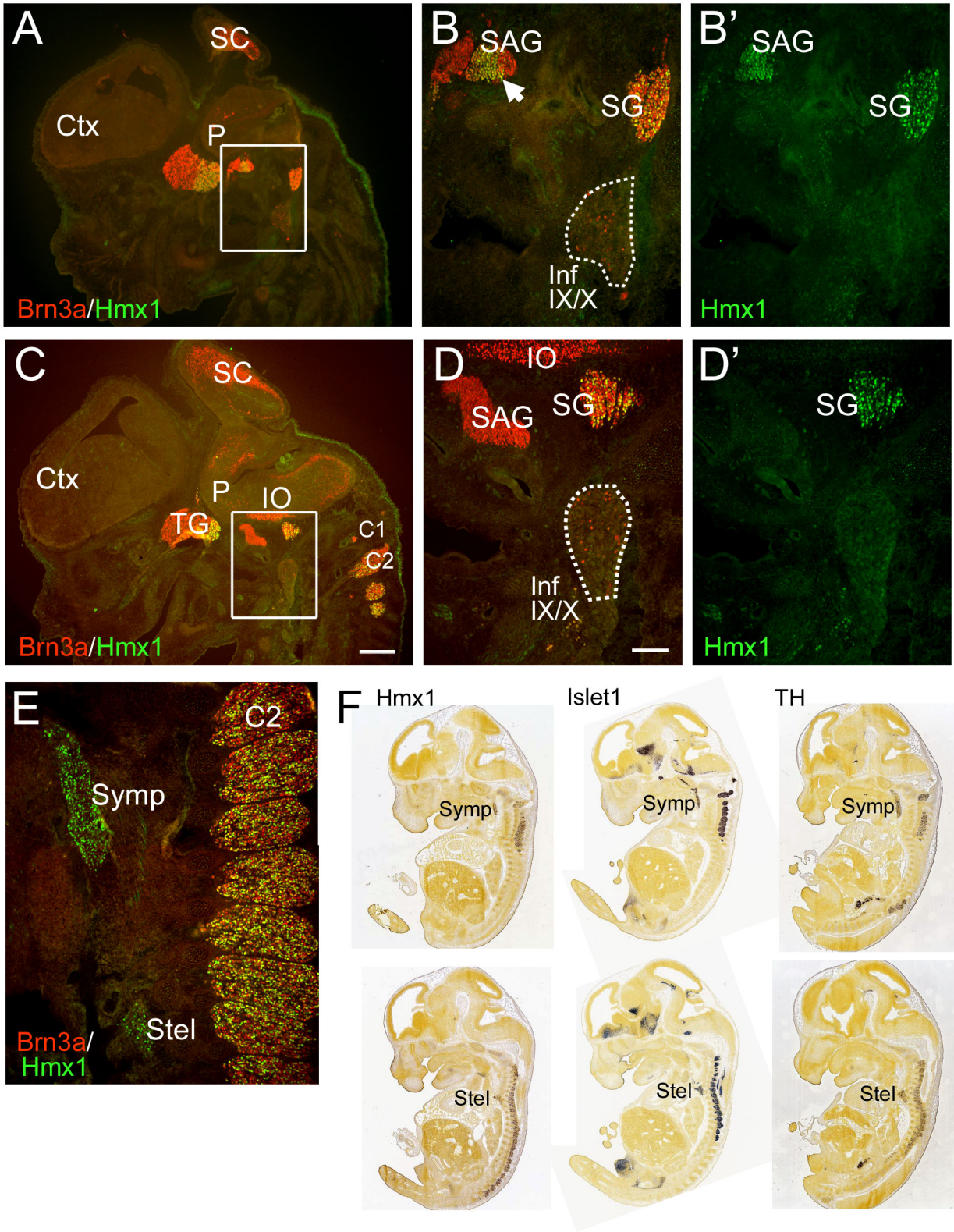


B

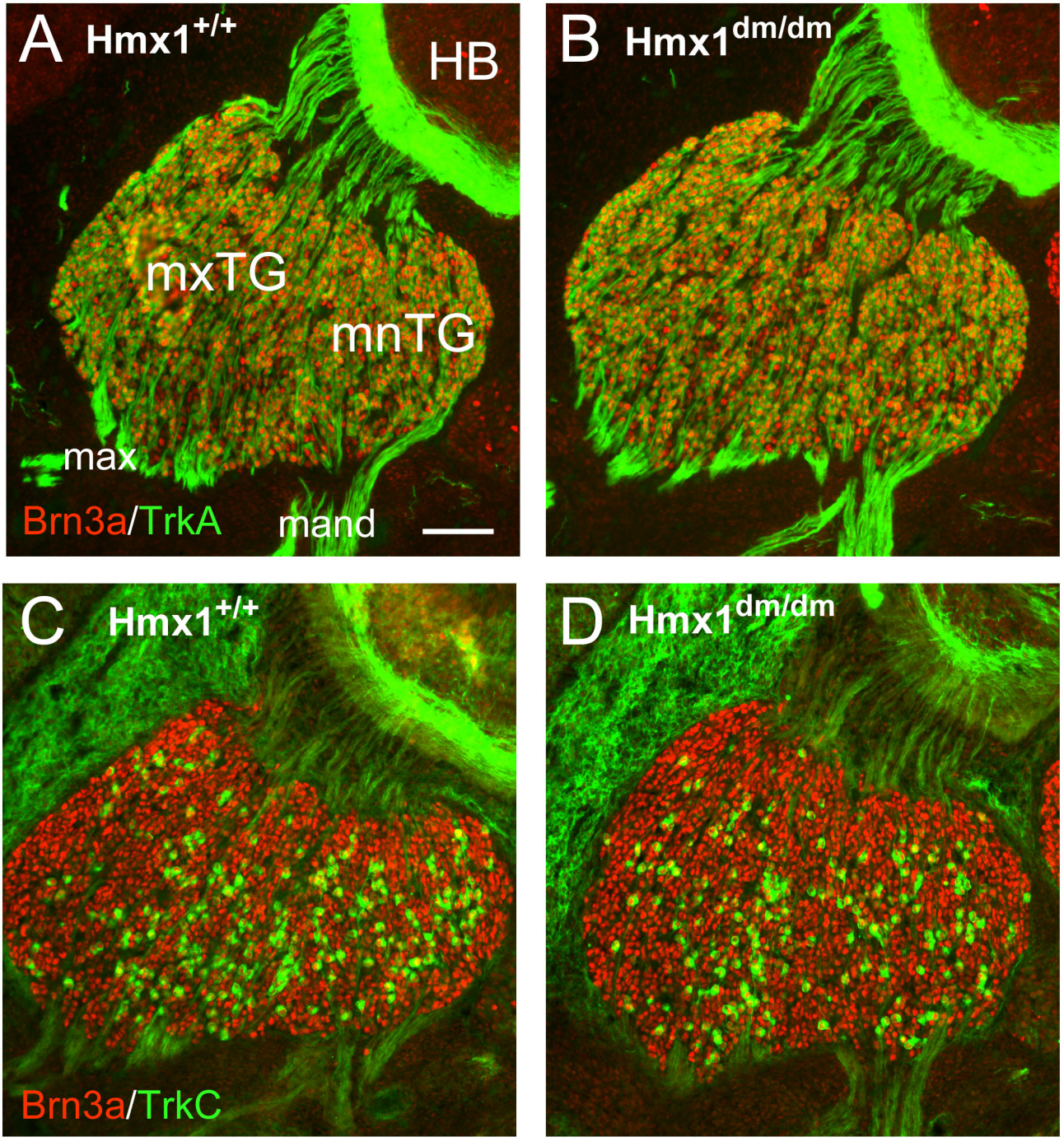
Top: Native sequence
Middle: conserved bases
Bottom: GC-optimized sequence

```
         v10        v20        v30        v40        v50        v60        v70        v80        v90        v100
ATGCCGGATGAGCTGACCGAGCCCGGGCGCGCCACACCAGCTCGCGCCTCCTTCCTCATCGAGAACCTGCTAGCAGCCGAGGCCAAGGGCGCGGGGC
ATGCC GA GA CTGAC GAGCC GG  G GC AC CCAGC  G GCC  CTC TTCCT ATCGAGAA CTGCT GC GCCGAGGCCAA GG GC GG C
ATGCCCGACGAACTGACAGAGCCAGGCAGGGCTACTCCAGCAAGGGCCAGCTCATTCCTGATCGAGAATCTGCTGGCCGCCGAGGCCAAAGGTGCCGGCC
         ^10        ^20        ^30        ^40        ^50        ^60        ^70        ^80        ^90        ^100
         v110       v120       v130       v140       v150       v160       v170       v180       v190       v200
GCTCAACCCAGGGCGATGGCGTCCGCGAGGAAGAGGAAGAGGACGACGACGACCCCGAGGACGAGGATCCGGAGCAGGCGCGACGACGACTACAGCGGCG
G    ACCCAGGG GA GGCGT  G GAGGAAGA GA GAGGACGA GACGACCC GAGGACGAGGA CC GAGCAGGC  GA GACG CT CAGCGG G
GAAGTACCCAGGGAGACGGCGTGAGGGAGGAAGAAGAGGAGGACGATGACGACCCAGAGGACGAGGACCCCGAGCAGGCTAGAAGACGCCTCCAGCGGAG
         ^110       ^120       ^130       ^140       ^150       ^160       ^170       ^180       ^190       ^200
         v210       v220       v230       v240       v250       v260       v270       v280       v290       v300
GCGACAGCAGCGCGCGGGCAGCGGGCCGGGCGGGGAGGCGAGGGCCCGGGCACTGGGCCTAGGGCCCCGGCCGCCTCCTGGGCCCGGCCCGCCCTTCGCG
GCG CAGCAG G GC GGC   GG CC GG GGGGA GC AGGGCC G GC CTGGGCCT GG CCC GGCC CC CC GGGCC GG CC CCCTTCGC
GCGCCAGCAGAGAGCCGGCTCAGGTCCTGGGGGGGAAGCAAGGGCCAGAGCTCTGGGCCTGGGACCCAGGCCCCCCCCAGGGCCTGGACCCCCCTTCGCA
         ^210       ^220       ^230       ^240       ^250       ^260       ^270       ^280       ^290       ^300
         v310       v320       v330       v340       v350       v360       v370       v380       v390       v400
CTCGGCTGCGGAGGTACAACGCGGTGGTACCCACGGGTGCACGGCGGCTACGGAGGTGGTCTAAGTCCTGACACAAGCGACCGGGACTCTCCGGAGACCG
CT GGCTG GG GGTAC AC CGGTGGTACCC  G GT CACGG GGCTACGG GG GG CT    CC GACAC   CGACCGGGA TC CC GA AC G
CTGGGCTGTGGTGGTACCACCCGGTGGTACCCCAGAGTCCACGGAGGCTACGGGGGGGGGCCTCTCCCCCGACACTTCCGACCGGGATTCCCCAGAAACAG
         ^310       ^320       ^330       ^340       ^350       ^360       ^370       ^380       ^390       ^400
         v410       v420       v430       v440       v450       v460       v470       v480       v490       v500
GCGAGGAGATGGGCCGCGCAGAGAGCGCCTGGCCGCGGTGCCCCGGGCCGGGAACCGTTCCGCGGGAGGTGACGACGCAGGGCCCGGCGACCGGCGGGGA
GCGAGGA ATGGGCCG GCAGAG  CGC TGGCC CG TGCCC GG CC GG AC GT CC  G GAGGTGAC AC CAGGG CC GC ACCGGCGG GA
GCGAGGAAATGGGCCGGGCAGAGTCCGCTTGGCCTCGCTGCCCAGGCCCAGGCACTGTGCCAAGAGAGGTGACAACCCAGGGGCCAGCAACCGGCGGCGA
         ^410       ^420       ^430       ^440       ^450       ^460       ^470       ^480       ^490       ^500
         v510       v520       v530       v540       v550       v560       v570       v580       v590       v600
GGAGGCGGCGGAGTTGGCCGAGGCTCCAGCGGTGGCGGCGGCGGCGACAGGGGAGGCGCGCGGTGGCCGCAGGAAGAAGACGCGCACGGTCTTCTCGCGC
 GAGGC GC GAG TGGC GA GC CCAGC GTGGC GC GC GC ACAGG GAGGC CGCGGTGGCCG  G AAGAAGAC CG AC GT TT TC CGC
AGAGGCCGCAGAGCTGGCTGAAGCCCCAGCCGTGGCCGCAGCCGCTACAGGCGAGGCCCGCGGTGGCCGGCGAAAGAAGACCCGGACCGTGTTTTCTCGC
         ^510       ^520       ^530       ^540       ^550       ^560       ^570       ^580       ^590       ^600
         v610       v620       v630       v640       v650       v660       v670       v680       v690       v700
AGCCAGGTCTTCCAGCTCGAGTCCACTTTCGATCTGAAGCGCTACCTGAGCAGCGCAGAGCGCGCGGGCCTCGCCGCCTCGCTGCAGCTCACGGAGACGC
   CAGGT TTCCAGCT GAG   ACTTTCGATCTGAA CGCTACCTGAGCAGCGC GAG G GC GG CT GC GC    CT CAGCTCAC GA AC C
TCTCAGGTGTTCCAGCTGGAGAGTACTTTCGATCTGAAACGCTACCTGAGCAGCGCCGAGAGAGCTGGACTGGCTGCTAGTCTCCAGCTCACAGAAACCC
         ^610       ^620       ^630       ^640       ^650       ^660       ^670       ^680       ^690       ^700
         v710       v720       v730       v740       v750       v760       v770       v780       v790       v800
AGGTCAAGATCTGGTTTCAGAACCGCCGCAACAAGTGGAAGCGGCAGCTGGCAGCGGAGCTGGAGGCGGCCAGCCTGTCCCCGCCGGGTGCGCAGCGCCT
AGGTCAA AT TGGTT CAGAACCG  G AA AAGTGGAAG G CAGCTGGCAGC GA CTGGA GC GC   CCTGTCCCC CC GGTGC CAG G CT
AGGTCAAAATTTGGTTCCAGAACCGGAGGAATAAGTGGAAGAGACAGCTGGCAGCAGAACTGGAAGCTGCTTCCCTGTCCCCACCAGGTGCACAGAGGCT
         ^710       ^720       ^730       ^740       ^750       ^760       ^770       ^780       ^790       ^800
         v810       v820       v830       v840       v850       v860       v870       v880       v890       v900
GGTCCGCGTGCCGGTGCTCTACCACGAGAGTCCCCCGGCCGCCGCGGGGCCCGCGCTGCCTTTCCCGCTGGCGCCGCCCGCACCCGCACCGCCGCCGCCG
GGT CG GTGCC GTGCT TACCA GAG   CC CC GCCGCCGC GG CC GC CTGCC TT CC CT GC CC CC GC CC GC CC CC CC CC
GGTGCGGGTGCCCGTGCTGTACCATGAGTCCCCTCCCGCCGCCGCAGGACCAGCCCTGCCATTTCCACTCGCCCCACCTGCCCCTGCCCCACCTCCCCCT
         ^810       ^820       ^830       ^840       ^850       ^860       ^870       ^880       ^890       ^900
         v910       v920       v930       v940       v950       v960       v970       v980
CTGCTTGGTTTCTCGGGCGCGCTTGCTTACCCGCTTGCCGCCTTCCCTGCCGCCGCCTCGGTGCCCTTCCTTCGCGCGCAGAT
CT CT GG TT    GG GC CT GC TA CC CT GC GCCTTCCCTGCCGCCGC TC GT CC TTCCT CG GC CAGAT
CTCCTGGGGTTTAGTGGTGCTCTGGCATATCCACTGGCTGCCTTCCCTGCCGCCGCATCCGTCCCTTTCCTGCGGGCTCAGAT
         ^910       ^920       ^930       ^940       ^950       ^960       ^970       ^980
```

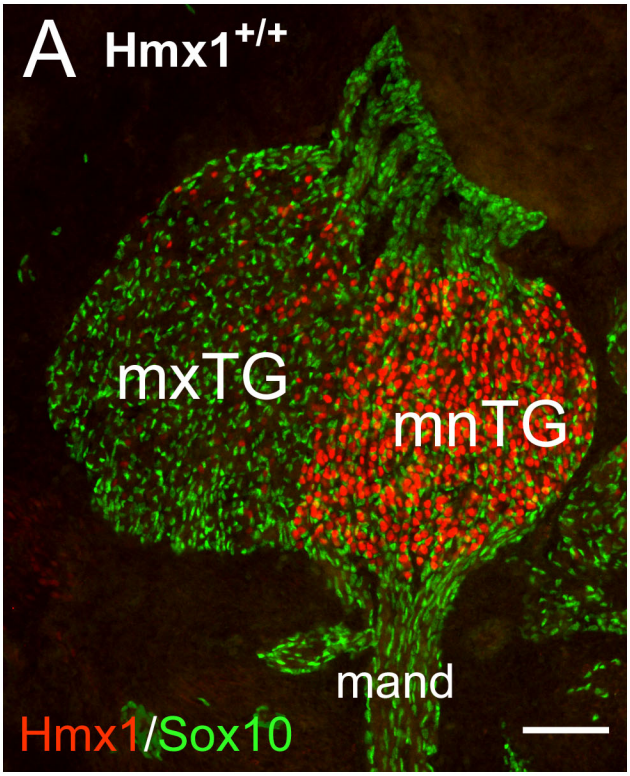
Quina et al., Figure S1

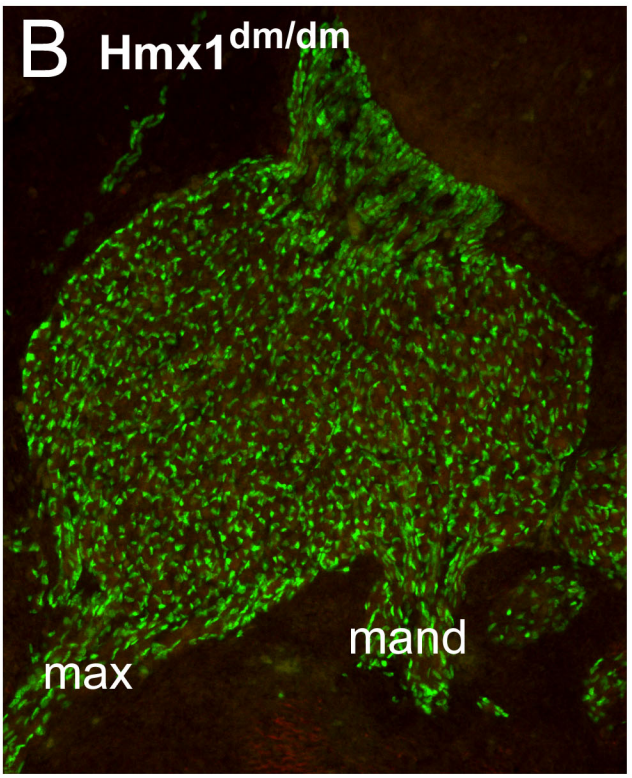


Quina et al., Figure S2

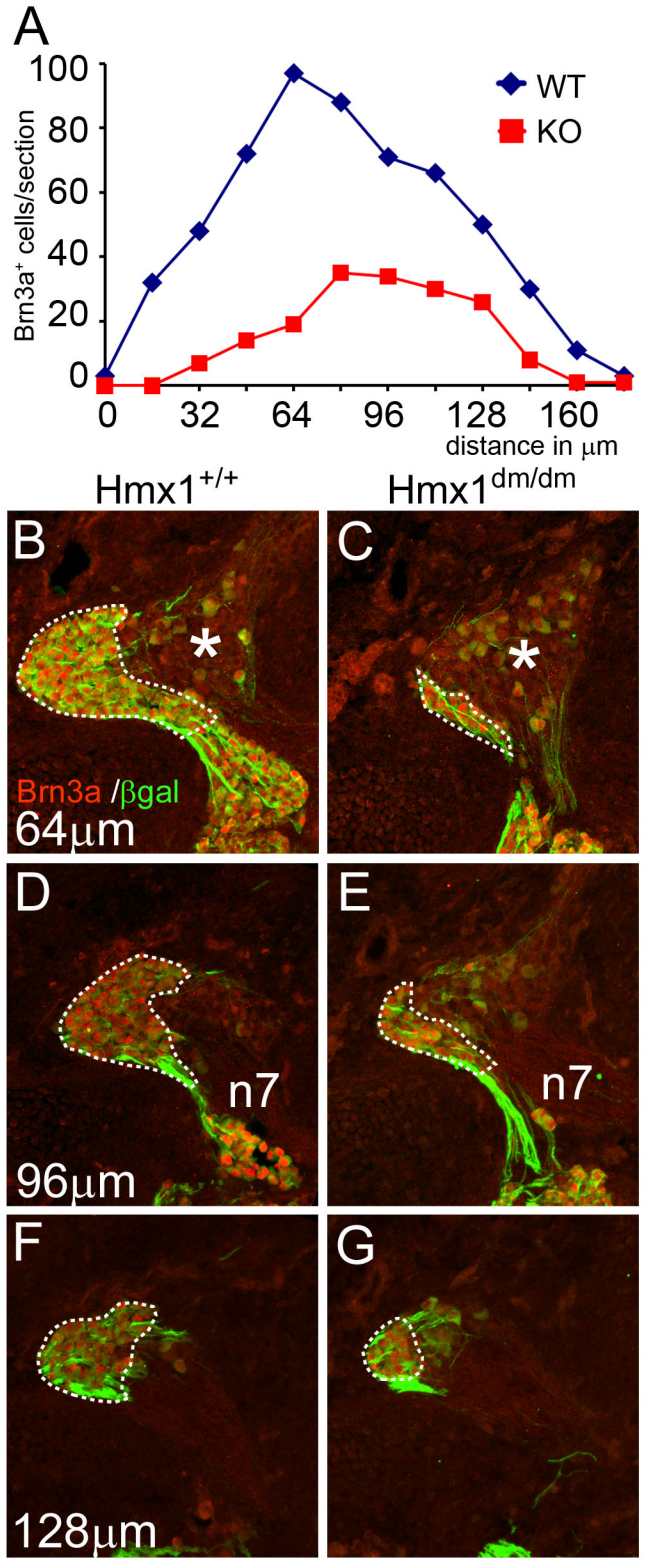


Quina et al., Figure S3





Quina et al., Figure S4



Quina et al., Figure S5