Supplemental fig. 1 – Comparison of the localization of *Met* and *Isl1* in the brainstem at E13. a-c, *Isl1* riboprobes were used to detect *Isl1* expression on adjacent sections of those used in fig. 1. The *Isl1*$^{+}$ structures were compared with those in Chemoarchitectonic Atlas of the Developing Mouse Brain (Jacobowitz and Abbott 1997). d-f are the same sections shown in fig. 1 a-c. Arrows denote *Met*-expressing neurons that are positioned comparably to the *Isl1*$^{+}$ motor neurons. Scale bar = 30 μm. Corresponding planes of sections from an E13 brain in sagittal view are shown on the cartoon drawing on the right. Section 1 = a and d; section 2 = b and e; section 3 = c and e. g, Very weak signal for the *Met* transcript was detected in a limited number of neurons in the area containing the nucleus of trochlear nerve (nIV). Scale bar = 30 μm and 10 μm for the box.

Supplemental fig. 2 – Peripherin expression overlaps with tdTomato-labeled cranial motor nuclei in *Isl1cre/Rosa-tdTomato*$^{fx/+}$. Immunostaining using an antibody against peripherin was performed on sections adjacent to those used in fig. 2. a, d, and g are tdTomato fluorescence expressed under the control of Isl1$^{cre}$ in 3 successive sections. The level of the section is indicated on the bottom in a cartoon showing a sagittal view of the E16 mouse brain. a is at plane 1; d at plane 2; g at plane 3. b, e, and h are immunostaining using anti-peripherin. c, f, and i are overlapping images of tdTomato fluorescence and anti-peripherine. Peripherin immunoreactivity was seen overlapping with tdTomato$^{+}$ cranial motor nuclei at E16. Scale bar = 20 μm.

Supplemental fig. 3 – No detectable MET immunoreactivity in dtTomato labeled neurons residing in nIII, nVI, nV, and nVI. Micrographs show MET immunofluorescence in a series of coronal sections harvested from *Isl1cre/Rosa-tdTomato*$^{fx/+}$ mice at E13. (a, d, and g), endogenous tdTomato fluorescence, expressed under the control of Isl1$^{cre}$ at 3 successive levels; (b, e, and h), MET immunostaining on the same sections; (c, f, and i), overlay of tdTomato and MET immunofluorescence. Arrowhead in “a” indicates the

spinal trigeminal nerve (V) labeled with tdTomato. Arrowhead in b points to the same region depicted in a, showing no MET immunoreactivity. Arrows indicate tdTomato$^{+}$ neurons that are MET$^{-}$ within the boundaries of nVI, nIV, and nIII. Doubled arrowheads denote a MET-expressing region in superior colliculus that was also seen by *Met* in situ hybridization (fig. 1c, asterisk). Scale bar=30 μm.

Supplemental fig. 4 – Pax2 expression in some MET$^{+}$ neurons. a, double immunofluorescence staining with anti-MET and anti-Pax2 on E13 coronal sections. V4, 4$^{th}$ ventricle. The approximate location of the section shown is indicated on the cartoon on the right. b, higher magnification of boxed region in a. Arrows denote some cells that are both Pax2$^{+}$ and MET$^{+}$. Scale bar, A = 10 μm; B = 5 μm.

Supplemental fig. 5 - Expression of *Hgf* in E10 limb bud. a, schematic drawing of the relative locations of two *Hgf* DIG-riboprobes used for staining. Identical labeling patterns were found with both probes. For consistency, we used probe #1 in this report. b, as a positive control, the ISH probes detect *Hgf* mRNA in the E10 limb buds.