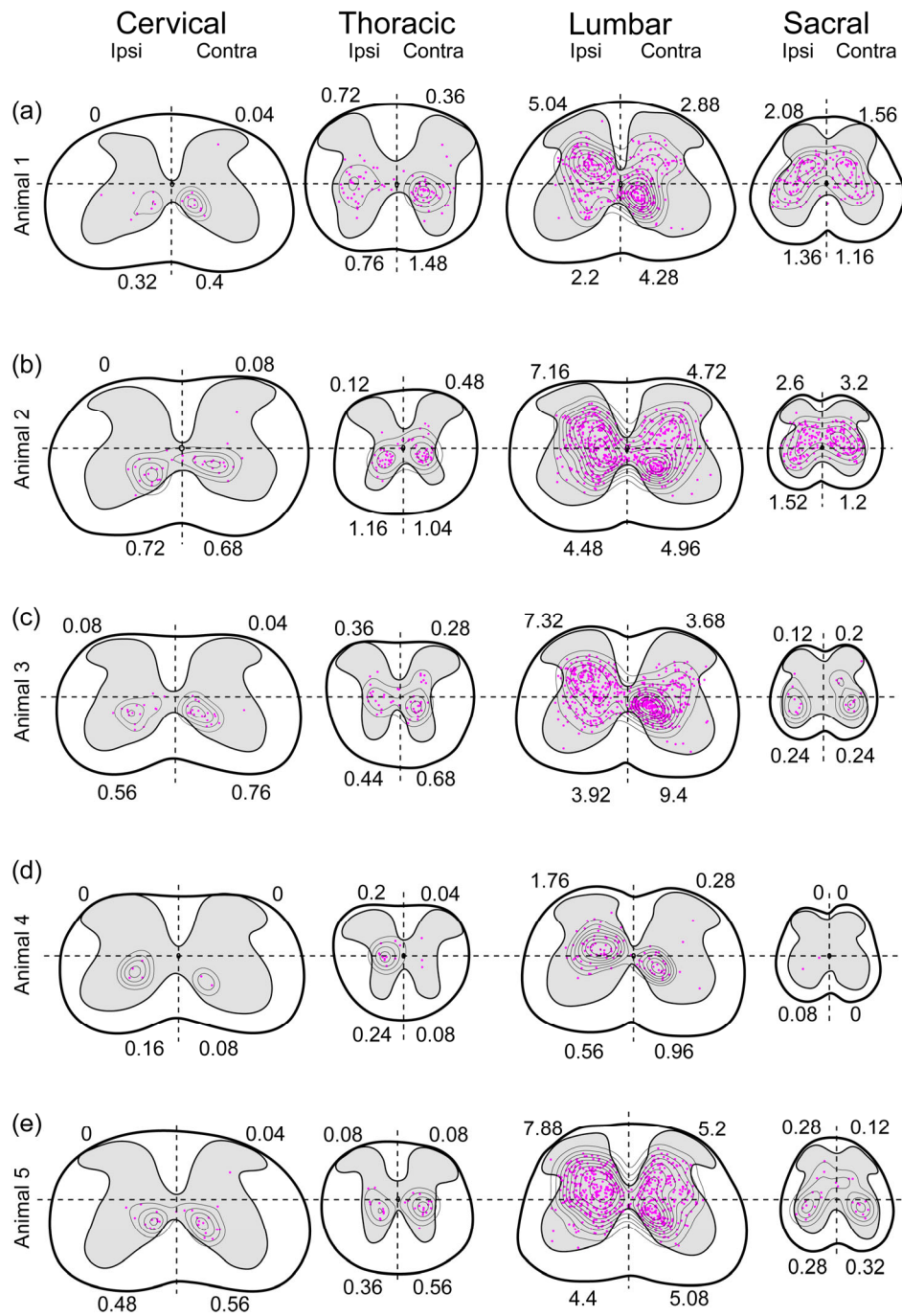


**Figure S1 – Analysis of injection sites in all *Dmrt3-Cre*<sup>+</sup> animals**

**(a-b)**, Animal 1 received two injections of both AAV helper and rabies viruses and hence estimated starter cells (GFP<sup>+</sup>; mCherry<sup>+</sup>) were found at two separate locations, at L5 and L6. **(c)**, in Animal 2, estimated starter cells were found at sacral level 1 and a few estimated starter cells were also found on the contralateral side. **(d)**, in Animal 3, estimated starter cells were found at L5. **(e)**, in Animal 4, estimated starter cells were

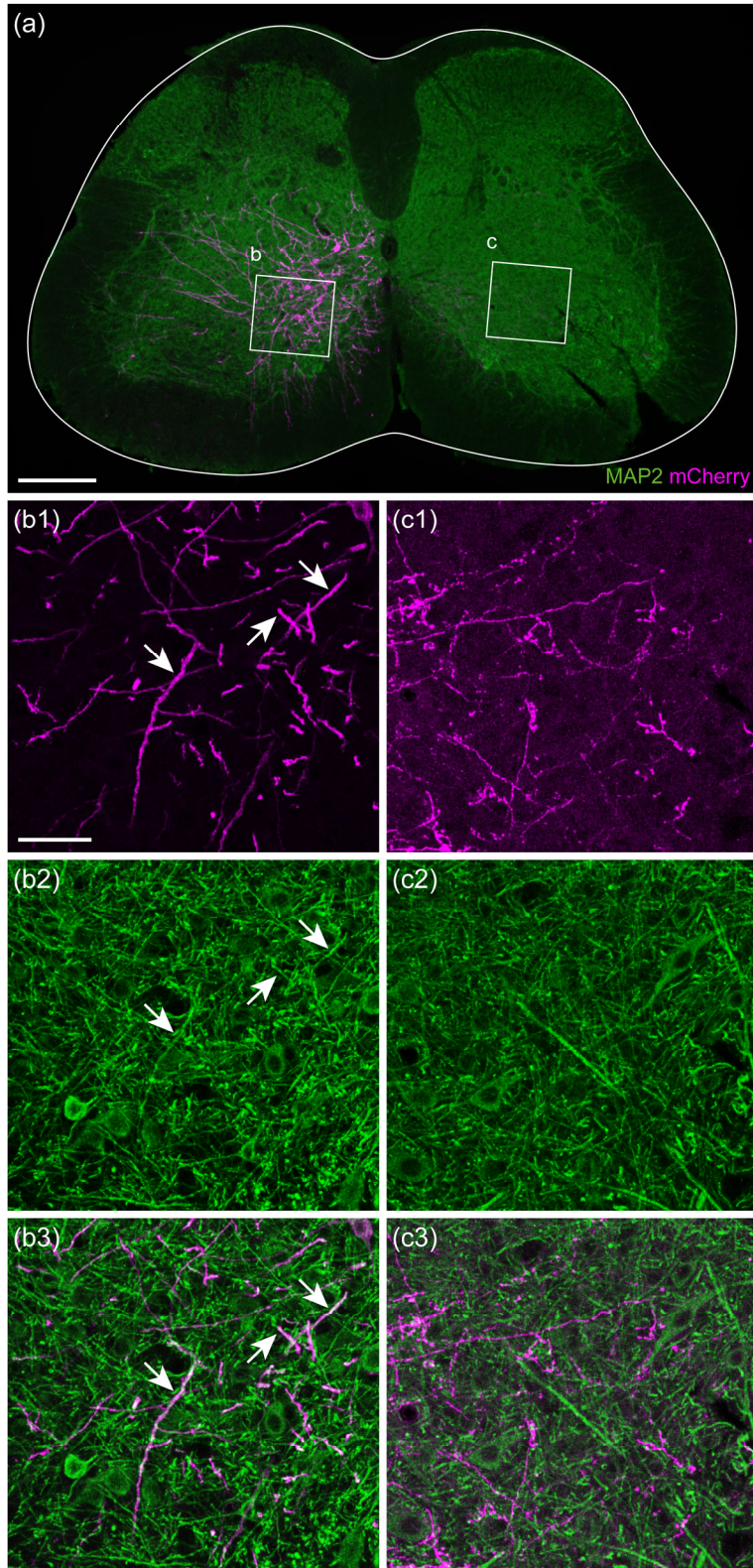
found at L5. **(f)**, in Animal 5, estimated starter cells were found at L5. Arrows indicate estimated starter cells. Scale bar 500  $\mu\text{m}$  for all panels, 77  $\mu\text{m}$  for all enlargements.



**Figure S2 – Similar patterns of traced cells location in the spinal cord of all *Dmrt3Cre+* animals**

(a-e), Location of traced neurons at different axial levels with density curves for each *Dmrt3-Cre+* animal. Each drawing shows the combined plots of 25 20- $\mu$ m-sections, except for animal 2 where each plot was based on 12 40- $\mu$ m-sections. The number in

each quadrant represents the average number of traced cells per section in that quadrant. For animal 2, the numbers were calculated as cells per 25  $\mu\text{m}$  of tissue. (c) is the same data as shown in Figure 2 (b1-e1), repeated for comparison.



**Figure S3 – Dmrt3 neurons do not send commissural dendrites**



**(a)**, Lumbar spinal cord from *Dmrt3*Cre<sup>+</sup> animal injected unilaterally with an AAV8-hsyn-DIO-hM3d-mCherry virus and immunostained against MAP2, a dendritic marker.

**(b1-b3)**, Ipsilateral projection from *Dmrt3* neurons, many of which expressing MAP2 (arrows). **(c1-c3)**, Contralateral projections from *Dmrt3* neurons do not express MAP2.

Scale bar in (a) is 250µm and in magnification (b) 50µm, also applies to (c).