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Retinoic acid temporally orchestrates colonization of the gut by vagal neural crest cells

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2 **Retinoic acid temporally orchestrates colonization of the gut by vagal**  
3 **neural crest cells**

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13 Running head: Retinoic acid temporally regulates ENS formation

14 **Key words:**

15 Retinoic Acid, neural crest, meis3, zebrafish, enteric nervous system

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18 **Summary**

19 The enteric nervous system arises from neural crest cells that migrate as chains into and  
20 along the primitive gut, subsequently differentiating into enteric neurons and glia. Little is  
21 known about the mechanisms governing neural crest migration en route to and along the  
22 gut *in vivo*. Here, we report that Retinoic Acid (RA) temporally controls zebrafish enteric  
23 neural crest cell chain migration. *In vivo* imaging reveals that RA loss severely

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