

Letter to the Editor, “Osterix Regulates Tooth Root Formation in a Site-specific Manner”

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To the Editor:

In the article titled “Osterix Regulates Tooth Root Formation in a Site-specific Manner” (Kim et al. 2015), the authors provided solid evidence that Osterix controls root but not crown dentin. These findings concur with our recent discovery that Osterix is not required for tooth germ and crown formation but is essential for root formation using conventional and conditional Osterix knockout approaches (Zhang et al. 2015), challenging the current belief that dentin formation in crown and root uses the same regulatory mechanisms.

Kim et al. claimed that the cause of the root phenotype is due to a site-specific role of Osterix in the root. Apparently, this view cannot address the fact that there is no apparent crown phenotype while *Osx* is expressed in the crown (Kim et al. 2015). Furthermore, our data clearly showed the expression of *OSX* in both crown and root regions (Appendix Fig. 1). Thus, we reason that there must be other factors that can compensate for Osterix function in crown but not in root, which agrees with studies on *Nfic*. As shown in Appendix Figure 2, *Nfic* was expressed in both crown and root odontoblasts. *Nfic* conventional knockout mice displayed “rootless” teeth with limited impact on the tooth crown (Steele-Perkins et al. 2003; Park et al. 2007; Lee et al. 2009; Zhang et al. 2015), indicating that *Nfic* is essential for root formation but its function can be compensated for by other factors in crown.

Regardless of this difference, the current finding will stimulate further exploration in root biology.

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A supplemental appendix to this article is published electronically only at <http://jdr.sagepub.com/supplemental>.

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