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EDITORIAL

Refining Our Standards

This issue of *The Plant Cell* includes two Letters to the Editor addressing the quantitative analysis of transcript levels by real-time RT-PCR (qRT-PCR). **Gutierrez et al. (pages 1734–1735)** discuss the importance of systematic validation of reference genes for qRT-PCR analyses, and **Udvardi et al. (pages 1736–1737)** present ''Eleven Golden Rules of Quantitative RT-PCR.'' Over the past 2 years, *The Plant Cell* has taken steps to remove ''semiquantitative'' RT-PCR from the pages of the journal, deeming ''semiquantitative'' to be essentially ''nonquantitative.'' We require that all PCR analysis on which quantitative conclusions are drawn should be verified as properly quantitative, which usually excludes gels stained with ethidium bromide. The reason for this requirement is that we wish the data published in *The Plant Cell* to be reliable and reproducible. In fact, in many cases, the use of rigorous quantitative methods to assess transcript or DNA levels by PCR provides more significant differences than ''semiquantitative'' methods because ethidium bromide staining saturates at low levels of DNA, and PCR amplification of DNA through sufficient cycles for clear bands to be visible is usually no longer quantitative with respect to the amount of input DNA.

We recognize that many authors contributing to *The Plant Cell* may already resent the standards we require for qRT-PCR. These same authors may be further unsettled by the letters of Udvardi et al. and Gutierrez et al., viewing them merely as attempts to raise expectations and criteria for publishing in the journal yet higher. However, the standards for articles published in *The Plant Cell* and the recommendations in these letters are not intended to set bars to publication, but rather to provide assistance and guidance for scientists (authors and readers) to get the most out of the data. Both letters are aimed at helping researchers at all levels ensure that their data are meaningful and interpretable as well as robust and reproducible. They do a good job of explaining why the failure to meet these standards can compromise the accuracy and reliability of expression data. I hope that the readership will find these letters as useful as did the Editorial Board of *The Plant Cell* and that authors will use these recommendations to ensure that the journal continues to publish the very best work in the field of plant biology.

Cathie Martin
Editor in Chief
cathie.martin@bbsrc.ac.uk

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