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Reply to Letter to the Editor

Sir,

Our paper describes 'a novel 3D wavelet-based filter for visualizing features in noisy biological data'. The first sentence of the Comment by Hendriks and Knowles (HK) states incorrectly that we use the filter to detect lines. They compare the performance of our filter to various line detection and noise reduction filters, using a single 2D test image consisting of three lines embedded in Gaussian noise, with SNR values of 8, 2 and 0.5. They conclude that some of these other filters are better at detecting lines in synthetic 2D images than our filter.

We do not dispute their conclusion, but we do make the following comments: (i) Except for the demonstrative (*synthetic*) 3D example in Fig. 2 of our manuscript, all of the data that we analyzed consisted of 3D *noisy biological data*. Real images differ from synthetic images. It probably would have been more relevant if they compared the different filters using real 3D data. Conclusions drawn from synthetic data may not necessarily apply to real data; and (ii) HK (Results and Discussion) state that 'none of the methods work particularly well for very high noise levels. Moss *et al*. show a better result at SNR = 0.5 on their 3D test image'. This was one of the main points of our paper.

There is no single filter that can be applied to every data set. Edge detection requires edge detection filters, line detection requires line detection filters, etc. Our filter was developed to visualize objects with a characteristic size in noisy 3D data. The examples in our paper from optical and electron microscopy demonstrate that the filter works well for noisy 3D biological data. We can only be pleased that HK demonstrated that our filter functions (not too poorly) in a regime for which it was not designed.

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