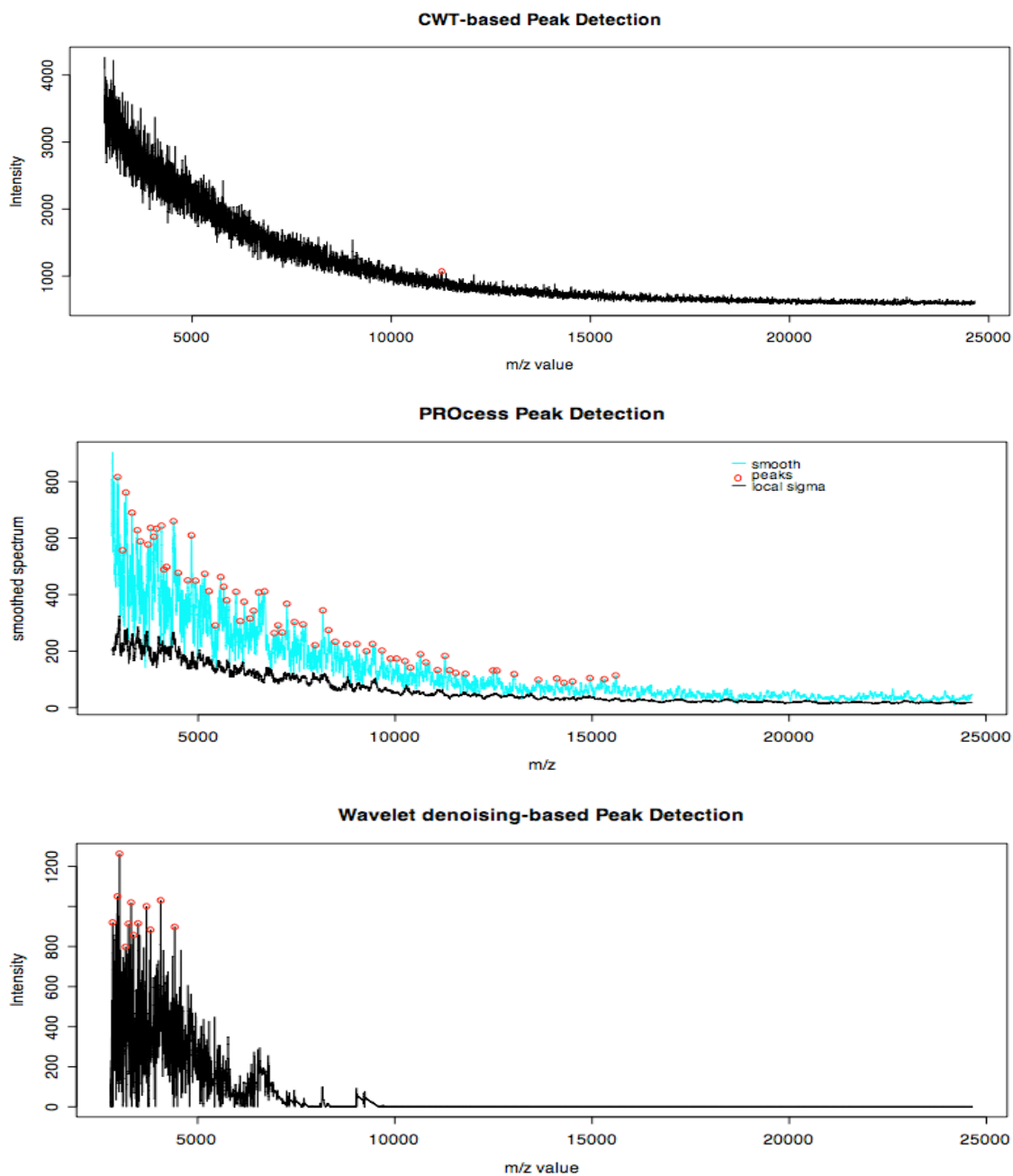


## Supplement Material

Du P., Warren A.K., and Lin S.M., Improved Peak Detection in Mass Spectrometry Spectrum by incorporating Continuous Wavelet Transform-based Pattern Matching, Submitted, 2006

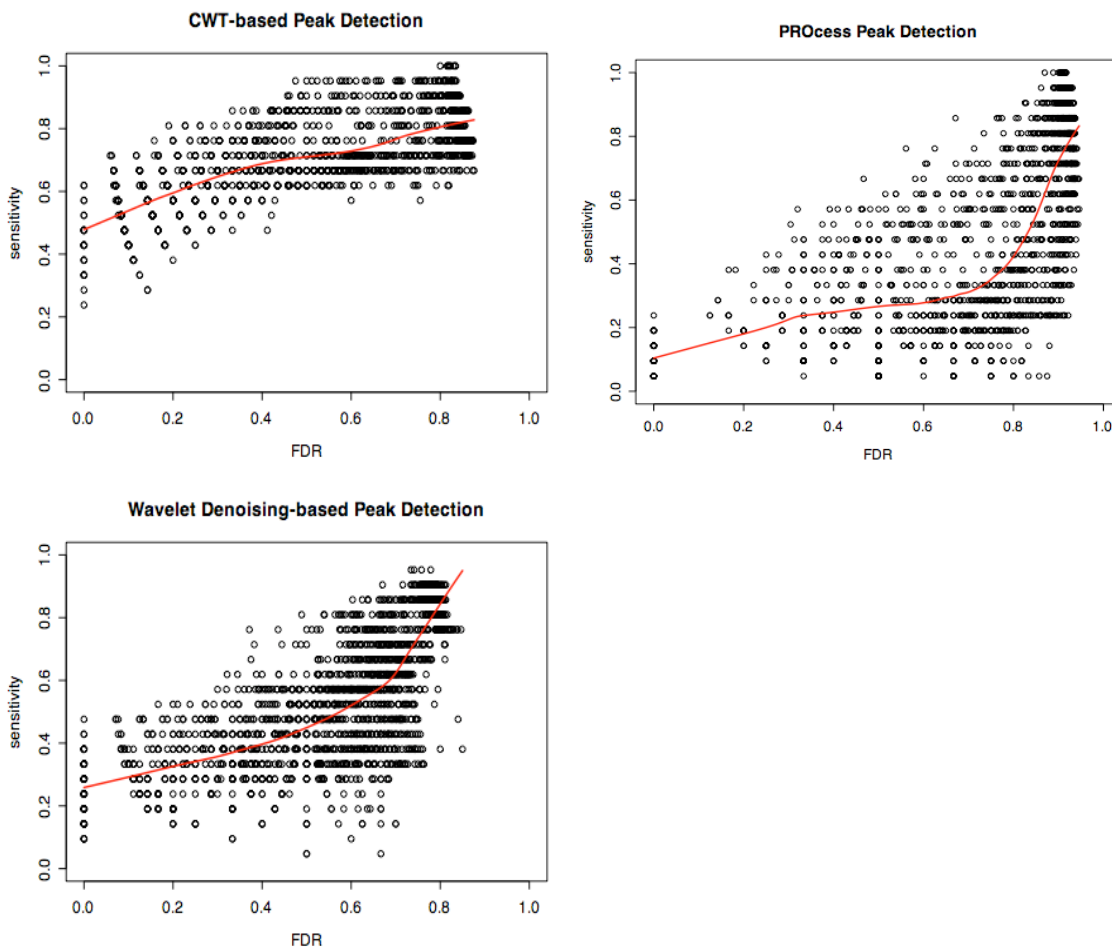
### Peak detection results of blank data:



Supplement Figure 1. Comparison of peak detection results of a blank SELDI-TOF spectrum

Supplement Figure 1 shows the peak detection results of three algorithms (with default settings) on a blank spectrum, which contains nothing but spike and random noise. The CWT-based peak detection algorithm detected one false peak at  $m/z = 11268.34$ . The SNR of this peak is 3.3, which is slightly above the default SNR threshold of 3. Both PROcess and Wavelet denoising-based peak detection algorithms reported much more false-positive peaks. One reason is that their baseline removal is not complete, especially for the wavelet denoising-based method.

### The sensitivity-FDR relations of 60 spectra:

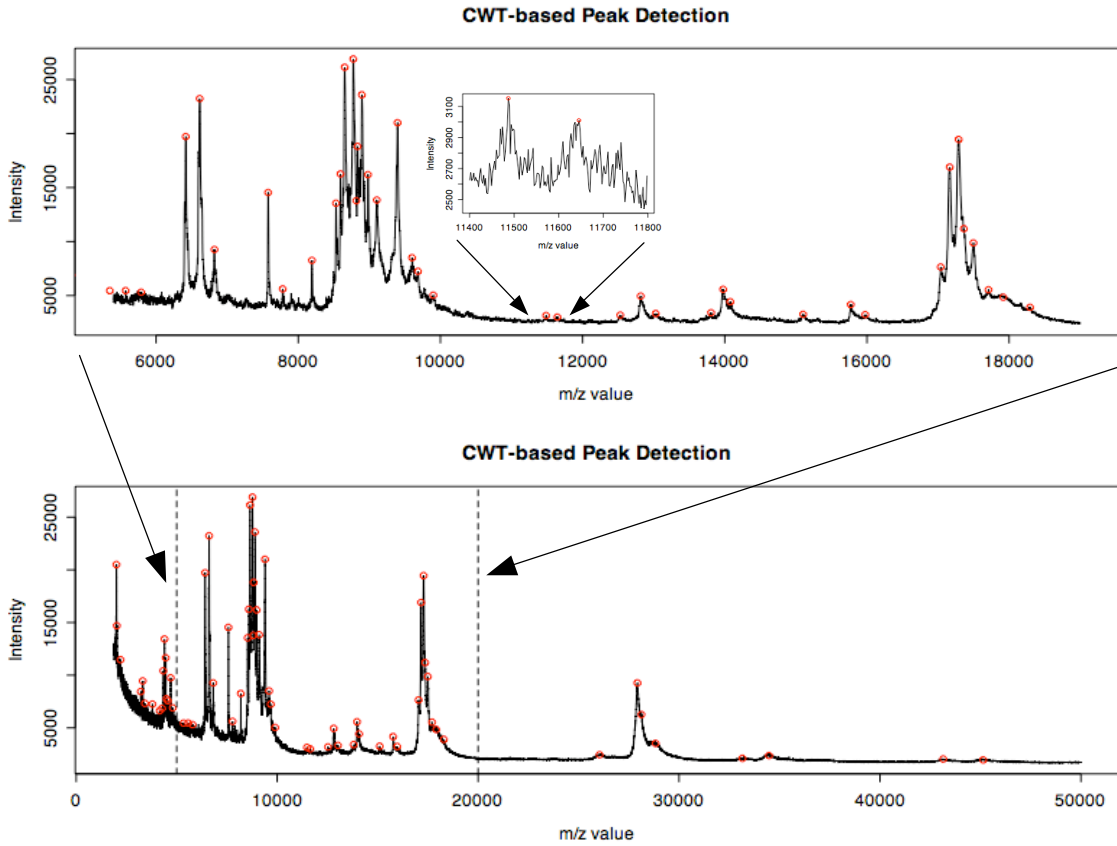


Supplement Figure 2 Sensitivity-FDR relations based on 60 spectra

Supplement Figure 2 shows the sensitivity-FDR (False Discovery Rate) relations of 60 spectra (CAMDA, 2006) at various SNR thresholds. The red lines are the fitted sensitivity-FDR curves based on all the sensitivity-FDR points. These graphs clearly show the CWT-based peak detection algorithm is much more robust under varying baselines and noise levels. Please refer to the paper for other comparisons of the three algorithms.

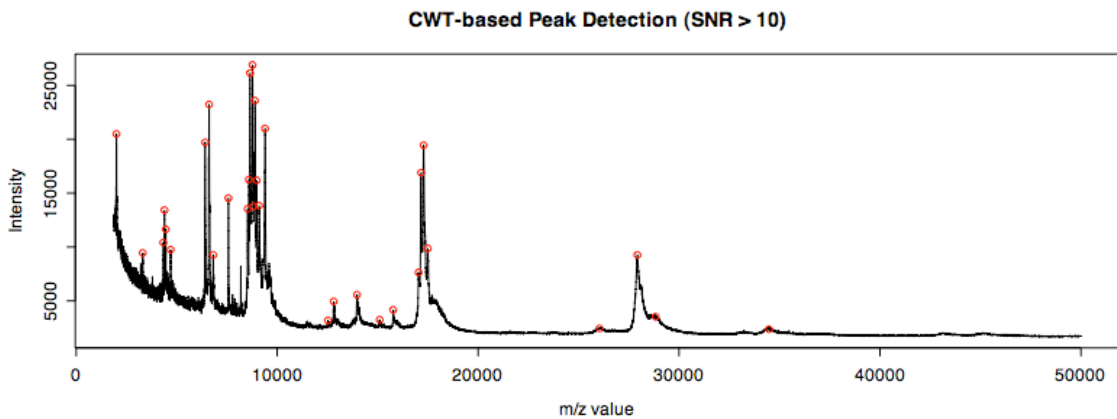
## Peak detection results of real clinical data:

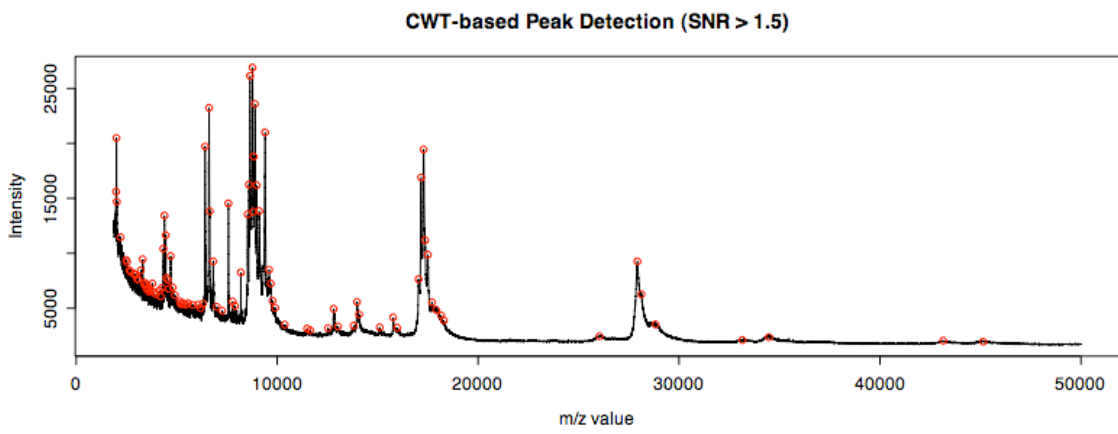
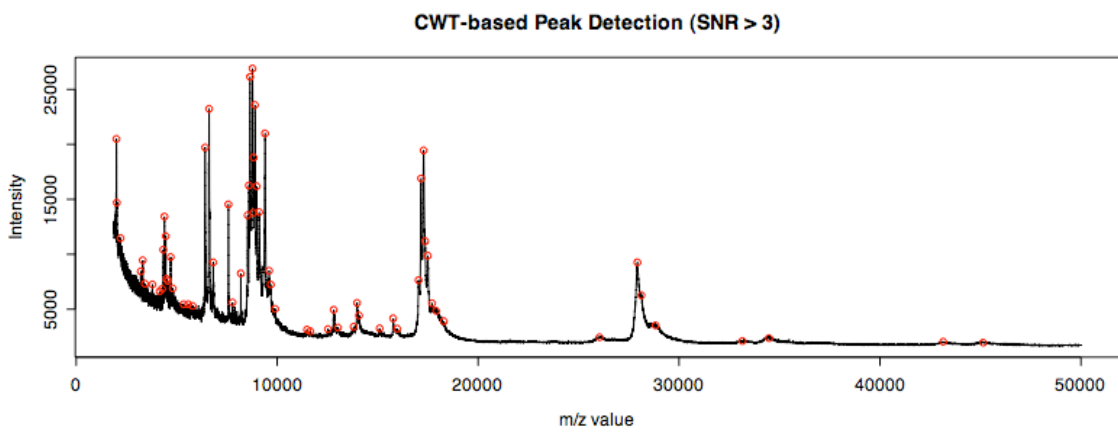
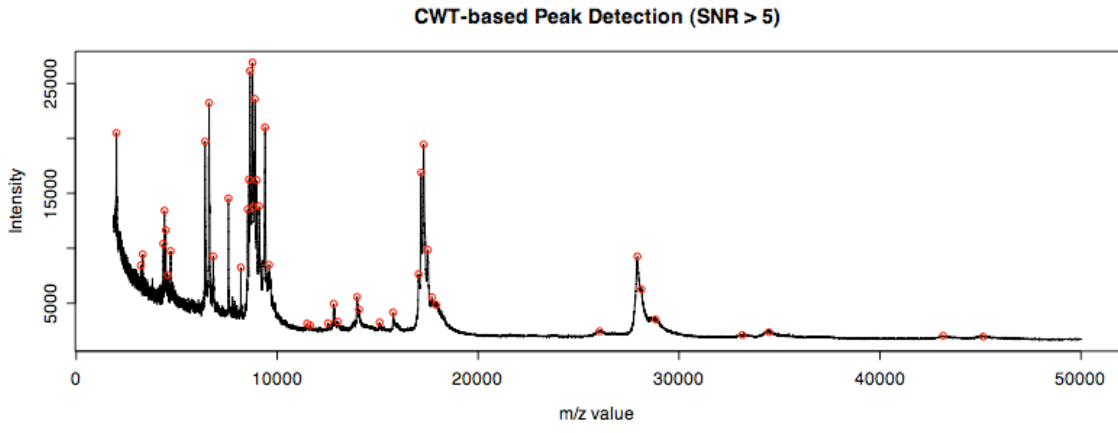
Supplement Figure 3 shows the CWT-based peak detection results (default settings) of a real clinical QC serum SELDI-TOF spectrum of the CAMDA 2006 data set as described in the paper.



Supplement Figure 3 Peak detection of real clinical data

Supplement Figure 4 shows the CWT-based peak detection results with different SNR thresholds. The data is the same as Supplement Figure 3.





Supplement Figure 4 Peak detection results with different SNR thresholds