

Figure 1S shows the 1800-800 cm<sup>-1</sup> range of the mean extracted spectra from the GV and MII oocytes presented in Figure 1g and 2g. The color scheme matches that of the clusters presented in Figures 1f and 2 f. The mean extracted spectra of the lipid deposits in the GV oocytes (top) clearly show the ester carbonyl bands confirming that the changes observed in the CH stretching region are indeed mainly from lipid. The MII oocyte has much greater concentration of lipid as evinced by the intensity of the ester carbonyl compared to that of the GV oocytes.