



**Figure S4:** Intracellular pyruvate concentration during fermentation. The pyruvate concentration in the *ldhA* cells does not account for the unbalanced carbon (Table 1) which would be equivalent to about 55 mol per 10<sup>17</sup> cells of pyruvate if all carbon was in this pool. As expected, the pyruvate pool size grows at the onset of fermentation for both WT and *ldhA* cells. The detection limit for this assay is equivalent to 0.75 mol per 10<sup>17</sup> cells. Error bars represent plus and minus one s.d. from the mean of triplicates.