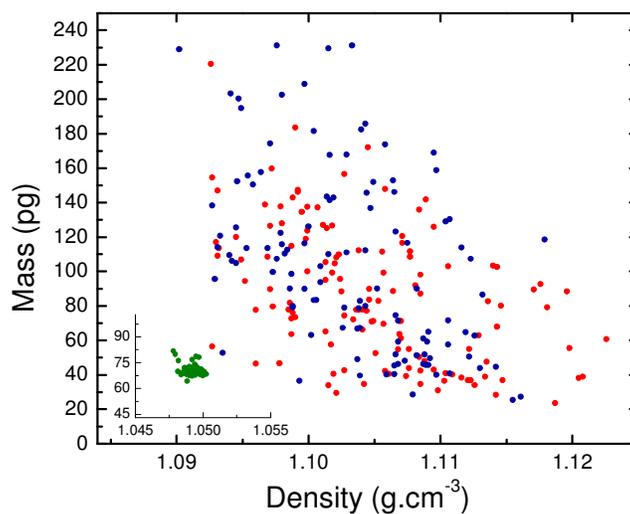


Supplementary Data

Supplementary Movie 1 – Two consecutive measurements of yeast cells, each in medium and PBS:Percoll.

Supplementary Movie 2 – The demonstration of inertial trapping in the columned SMR using a polystyrene bead.



Supplementary Figure 1 – Density and mass of *S. cerevisiae* cells. The plot is the same as Figure 4, but distinguishes the two different samples. The measured densities were $\rho = 1.1049 \pm 0.0068 \text{ g}\cdot\text{cm}^{-3}$, CV = 0.62% for the sample measured 2h after the culture was started (red, n=132) and $\rho = 1.1033 \pm 0.0061 \text{ g}\cdot\text{cm}^{-3}$, CV = 0.56% for the sample measured 3h after the culture was started (blue, n=112). **Inset plot** Density and mass of 5 μm polystyrene beads measured in the same conditions as the cells. Scales are the same as the main plot.