

Counting Yeast using Cellometer™ Auto M10

Summary

This application note provides some details on enhanced counting capability provided by Cellometer™ Auto M10. Higher magnification images generated by Auto M10 enables more detailed analysis for heterogeneous populations with cells smaller than 5 μm . Cells which differ in size and morphology are identified and counted.

Introduction to Cellometer™ Auto T4 and Auto M10

Cellometer™ Auto T4 and Auto M10 are imaging instruments that acquire cell data from multiple locations of Cellometer™ disposable counting chambers. They are connected to a computer via USB 2.0 cable. Auto T4 and Auto M10 software automatically analyze acquired cell images and measure cell concentration and viability.

Simplicity and compact size make these systems an attractive product for automating cell counting operation. By using convenient cell type settings, the user can perform cell counting with high level of repeatability and accuracy. High quality disposable counting chambers, made of plastic materials, allow easy handling and disposal. Minimal sample amounts are used for counting to a total number much higher than hand-count, thus reducing counting error. Crisp and intuitive graphic user interface assists simple operation.

Brief Descriptions of Cellometer™ Auto T4 and Auto M10

Model #	Description	Most Suitable Cell Size
Auto T4	Cellometer™ automatic cell counter, two counting locations, standard magnification.	$\geq 5 \mu\text{m}$
Auto M10	Cellometer™ automatic cell counter, four counting locations, higher magnification.	2 – 12 μm

Counting Yeast

Auto M10 provides sufficient resolution for the Cellometer™ software de-cluster function. It is activated for clumpy cells. As shown in Fig. 1 (b), green outlines around individual cells indicate the success of de-cluster.

Procedure:

1. Prepare yeast sample.
2. Dilute samples with PBS at different dilution factors.
3. Pipette 20 μ l of solution into sample introduction port of a disposable counting chamber.
4. Insert loaded counting chamber into Auto M10.
5. Run Auto M10 software to obtain cell concentration results.

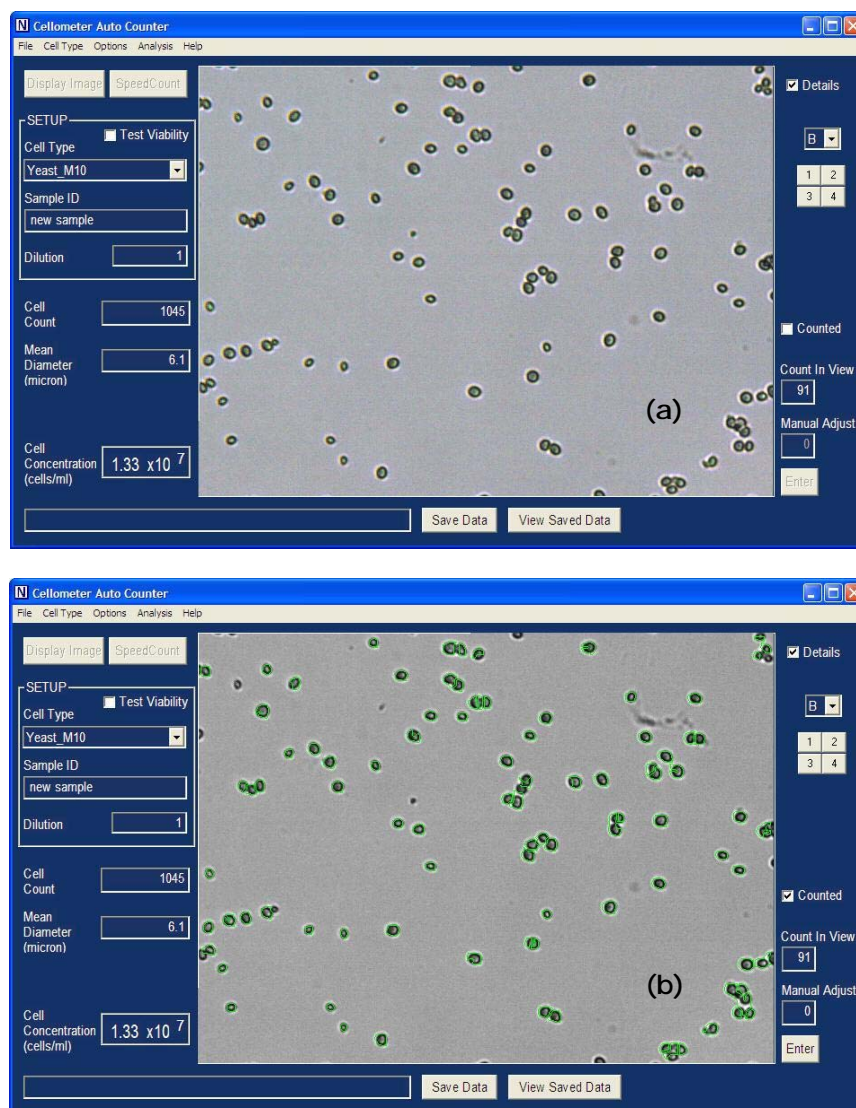


Figure 1. Cellometer™ images of yeast cells, (a) yeast cells, and (b) counted yeast cells.

Plot Yeast Concentration versus Sample Dilution

Table 1 and Figure 2 show data from a set of yeast dilution measurements. A total of 5 two-fold dilutions are used to generate the plot. The result shows excellent linearity for concentration versus sample dilution.

date time	cell type	sample name	total cell count	mean diameter	concentration
6/21/2007 15:25	Yeast_M10	Yeast -1	1324	5.5	4.62E+07
6/21/2007 15:23	Yeast_M10	Yeast -2	1087	5.5	2.53E+07
6/21/2007 15:21	Yeast_M10	Yeast -3	1482	6	1.30E+07
6/21/2007 15:19	Yeast_M10	Yeast -4	716	5.3	6.23E+06
6/21/2007 15:32	Yeast_M10	Yeast -5	355	6.5	3.12E+06
6/21/2007 15:35	Yeast_M10	Yeast -6	191	5.6	1.67E+06

Table 1. Measured yeast concentrations using the Auto M10.

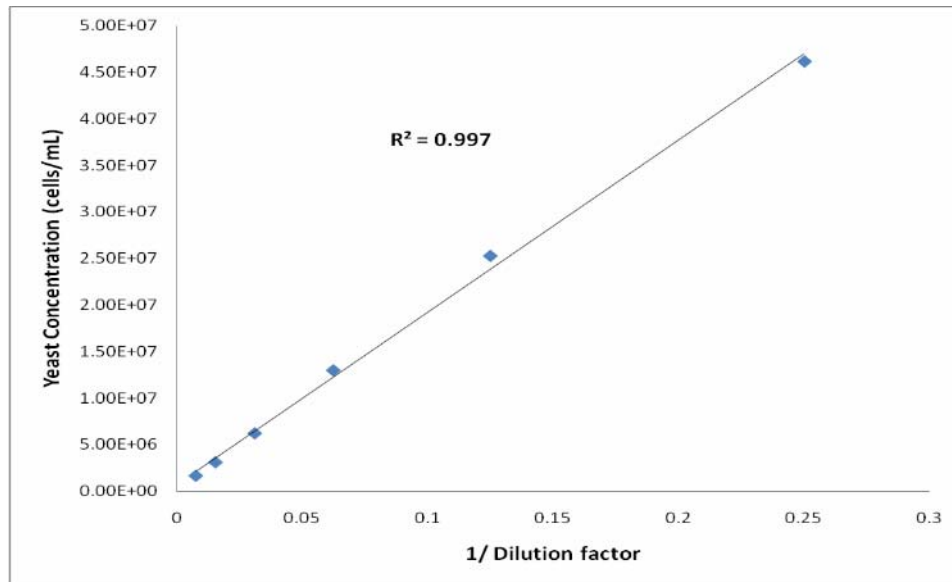


Figure 2. Graph of measured yeast concentrations at various sample dilution factors.