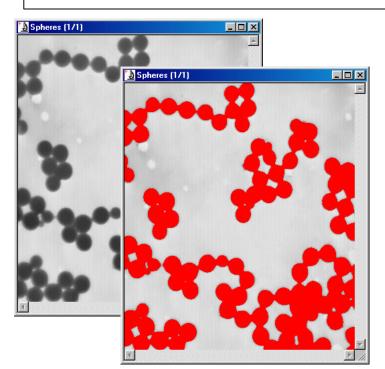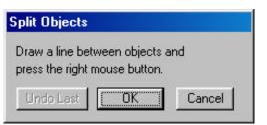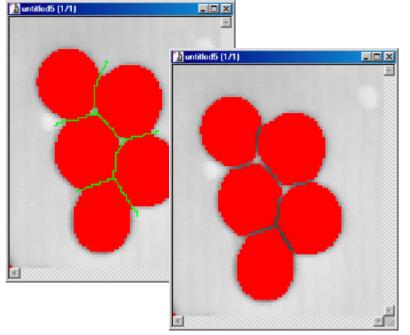# Image-Pro® PLUS
The Proven Solution™

Object Separation
Manual Split, Watershed Split, and Cluster Analysis

It is often difficult to obtain an accurate count of the number of individual small objects in an image when some are overlapping or clumped into groups. Unfortunately, there are no ideal tools that perfectly separate all objects in every type of image. To help count overlapping or clustered objects, Image-Pro gives you several options. The user can manually separate objects by drawing lines between the objects. An Auto Split command, a Watershed Split command, and a Cluster Analysis command are also available.
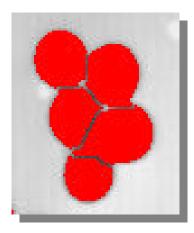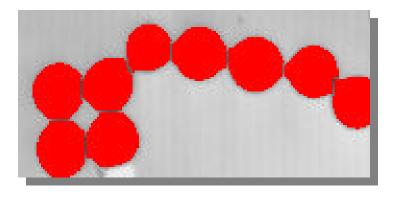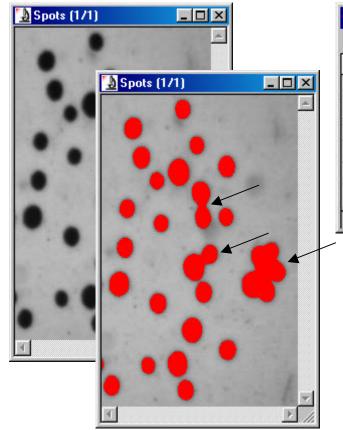

Split Objects: This option lets you manually separate objects by drawing division lines between them. After separation, the measurement data sheet will be updated to reflect the additional object(s) and the measurements of the original (undivided) object will be adjusted to reflect the changes.

Watershed Split: This option allows you to automatically analyze every counted object and split clusters using the Watershed separation technique. The Watershed method erodes objects until they disappear, then dilates them back, but does not allow them to touch. The measurement data is then automatically updated.

Cluster Analysis: For this option, Image-Pro examines all of the counted objects, identifies objects that are clusters of single objects, and estimates the number of individual objects within each of the clusters. This option works best when the counted objects include both the clusters you want to analyze and several typical single objects.

Cluster Information

File

Typical object area in:	pixels
Original count	24
Single objects	21
Clusters	3
Objects in clusters	10
Total objects	31
Typical object area	257.9048

In this example, Image-Pro identified 3 clusters (arrows) containing a total of 10 objects. The original object count was 24 and has been updated to 31 after cluster analysis.