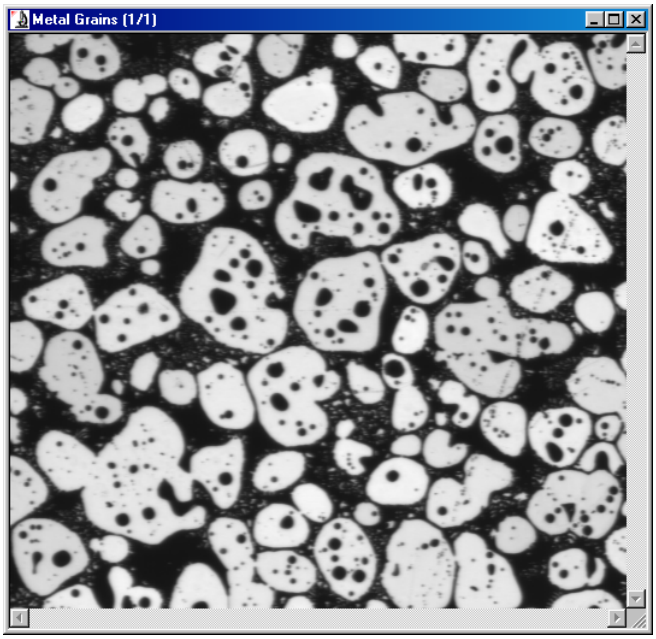
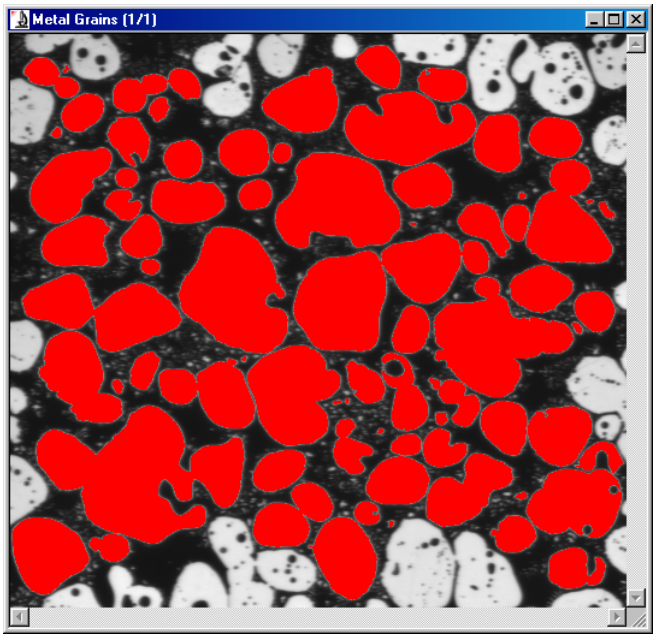
Image-Pro® PLUS
The Proven Solution™

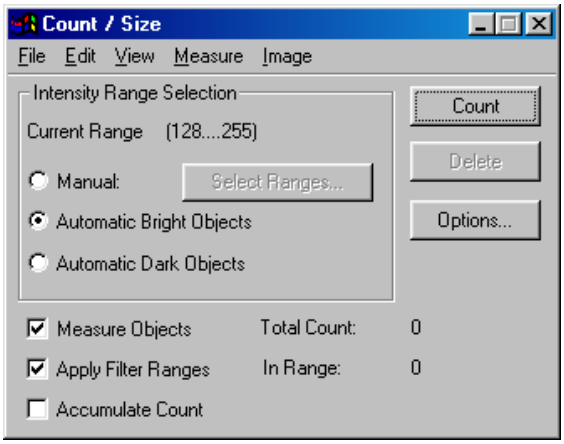
Measuring Population Density

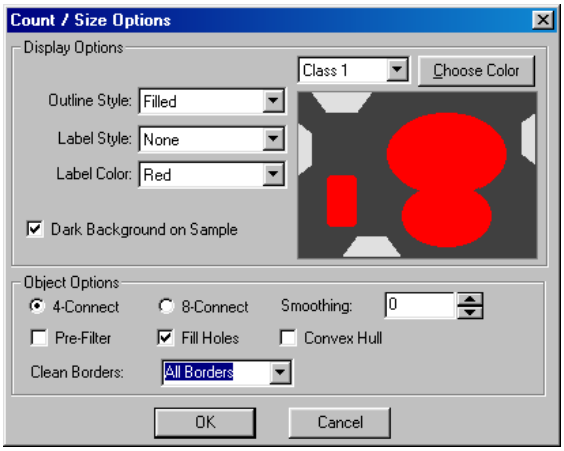


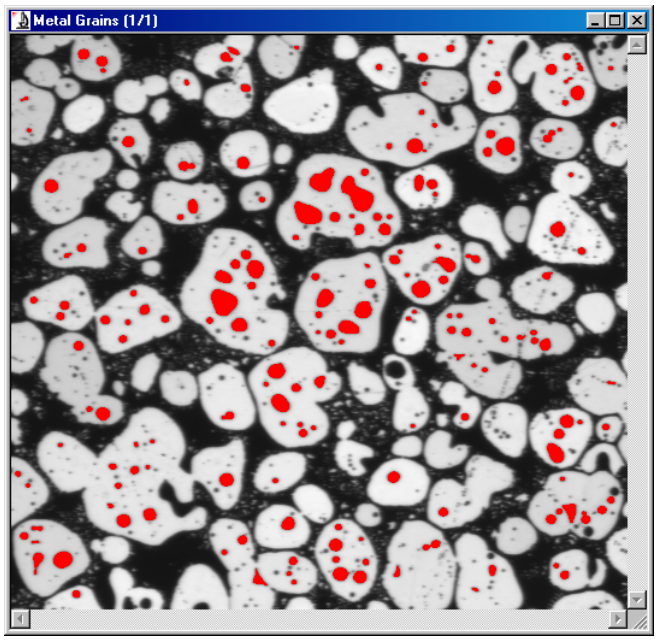
Population Density is the measurement of the number of objects per unit of area. In this image of Metal Grains, the user wants to measure the number of black "holes" contained within each of the white regions. Image-Pro's Population Density command is used to overlay a set of previously stored outlines onto the current image and calculate the object density within the outlines. This procedure involves three steps:
Step 1 -The outlines of the regions to be measured are created and saved to a file.
Step 2 -The individual objects within all the regions to be measured are counted.
Step 3 -The Population Density command is called.

Step 1 -The outlines of the sites to be measured were created by performing an Automatic Bright Object Count. The Fill Holes and All Borders (Clean) options were chosen. Save Outlines was activated from the Count/Size window's File menu and the outlines of the white regions were saved to a file.

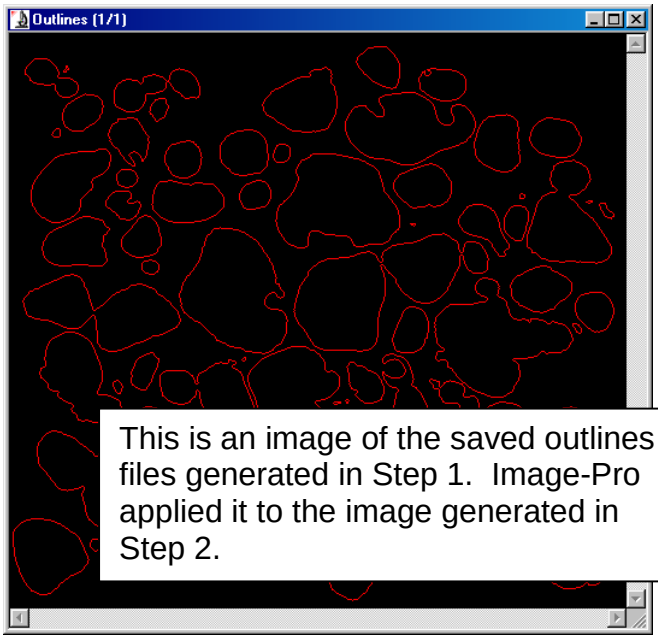








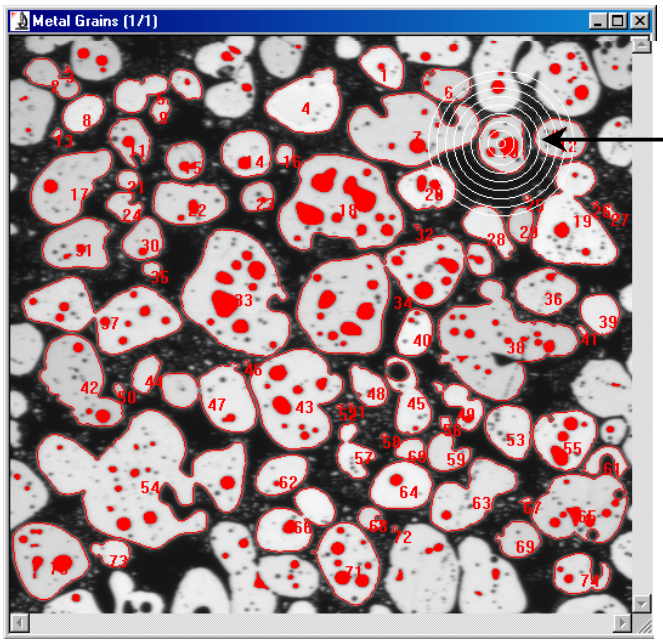
Step 2 -The individual objects within the areas to be measured were counted. Using the original image, an Automatic Dark Object Count was done. (The dark background can be eliminated in this example by an area range exclusion or by choosing the All Borders option.



This is an image of the saved outlines files generated in Step 1. Image-Pro applied it to the image generated in Step 2.

Step 3 -The Population Density command was called from the Count/Size window's Measure menu and the user was prompted to open the previously saved outlines file.

The outlines (from Step 1) were automatically superimposed over the small black objects counted in Step 2. The object density within the outlines was calculated and the results displayed in the Population Density window.



Site # 10 contains 3 Objects

Population Density

File

Locate the site Scroll to the site

Site #	Objects	Area	Raw Density	Cor.Density
1	1	936	.00106837	.00077788
2	0	775	0	-.0002904
3	0	17	0	-.0002904
4	0	2379	0	-.0002904
5	1	1370	.00072992	.00043943
6	1	876	.00114155	.00085105
7	4	4412	.00090661	.00061612
8	0	801	0	-.0002904
9	0	226	0	-.0002904
10	3	1521	.00197238	.00168189
11	1	909	.00110011	.00080961
12	1	1148	.00174672	.00145623
13	0	0	0	-.0002904
14	1	1288	.00077639	.00048590
15	1	783	.00127713	.00098664
16	0	196	0	-.0002904
17	1	2595	.00038535	.00009486
18	11	5917	.00185905	.00156855
19	3	3758	.00079829	.00050780
20	3	1383	.00216919	.00187870
21	0	234	0	-.0002904
22	2	1759	.0011370	.00084651
23	1	529	.00189035	.00159986
24	0	497	0	-.0002904

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