CLAIMS:

1. A method for analyzing a cellular image, the method comprising:

providing a sample of cells which have been tagged with a fluorophore having a range of fluorescing wavelengths;

illuminating said sample with a source of illumination;

imaging said illuminated sample over said range of fluorescing wavelengths to produce a sample image;

subtracting a calibration image from said sample image to produce a calibrated image;

representing said image as a topological curve, a height of said curve at each curve pixel representing an intensity of fluorescence at an image pixel in said calibrated image;

searching said topological curve for a pixel grouping having height above a selected height;

choosing a new height, lower than said selected height;

repeating said searching using said new height as said selected height; and

for each identified pixel grouping:

following a convex border of said topological curve away from said pixel group to an inflection point where inflexion is decreasing at a convex side; and

identifying said convex border including said pixel group as a cell in said calibrated image.

2. The method of claim 1 wherein said calibration image is formed by a method comprising:

providing said imaging system with a sample of unstained cells having a range of autofluorescing wavelengths;

illuminating said sample with a source of illumination; and

imaging said sample across a dynamic range including all of said range of fluorescing wavelengths and all of said range of autofluorescing wavelengths;

3. The method of claim 2 wherein:

a minimum photon acquisition time of said imaging system is set separately for each wavelength within said dynamic range; and

said minimum photon acquisition time is sufficient for detection of all values within said complete dynamic range.

4. The method of claim 2 wherein said dynamic range comprises all wavelengths said imaging system images.

5. The method of claim 1 further comprising:

Before obtaining said sample image, performing a calibration for chromatic aberration on said imaging system, said calibration comprising:

illuminating said sample of cells with a source of illumination;

obtaining a first image of said sample of cells from said imaging system in a first position;

moving said imaging system to a second different position relative to said sample of cells;

obtaining a second image of said sample of cells; and

when generating said sample image:

positioning said imaging system in said first position if said first image is optimized compared to said second image; and

placing said imaging system if it is not.

6. The method of claim 1 wherein said imaging system comprises a digital grayscale camera provided with a filterset based on said fluorophore.

7. The method of claim 1 wherein said imaging system comprises a High Dynamic Range Imaging (HDRI) camera.

8. The method of claim 1 wherein said imaging system generates High Dynamic Range (HDR) by exposure fusion to provide for improved contrast.

9. The method of claim 1 wherein said calibrated image is used to train a neural network.