

CLAIMS

1. A method comprising:
 - placing at least a portion of a blood sample within a sample chamber;
 - acquiring microscopic images of the portion of the blood sample;
 - 5 identifying, within the microscopic image, candidates of a given entity within the blood sample;
 - validating at least some of the candidates as being the given entity, by performing further analysis of the candidates;
 - comparing a count of the candidates of the given entity to a count of the validated
 - 10 candidates of the given entity; and
 - invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample, at least partially based upon a relationship between the count of candidates and the count of validated candidates.
2. The method according to claim 1, wherein:
 - 15 identifying, within the microscopic image, candidates of a given entity within the blood sample comprises identifying, within the microscopic image, platelet candidates within the blood sample;
 - validating at least some of the candidates as being the given entity, by performing further analysis of the candidates comprises validating at least some of the platelet candidates as being
 - 20 platelets, by performing further analysis of the candidates; and
 - invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample, comprises invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample at least partially based upon a relationship between the count of platelet candidates and the count of validated platelet
 - 25 candidates.
3. The method according to claim 1, wherein:
 - identifying, within the microscopic image, candidates of a given entity within the blood sample comprises identifying, within the microscopic image, white blood cell candidates within the blood sample;
 - 30 validating at least some of the candidates as being the given entity, by performing further analysis of the candidates comprises validating at least some of the white blood cell candidates as being white blood cells, by performing further analysis of the candidates; and

invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample, comprises invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample at least partially based upon a relationship between the count of white blood cell candidates and the count of validated white blood cell candidates.

4. The method according to any one of claims 1-3, wherein invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample comprises invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample based a ratio of the count of validated candidates to the count of candidates exceeding a maximum threshold.

5. The method according to any one of claims 1-3, wherein invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample comprises invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample based a ratio of the count of validated candidates to the count of candidates being less than minimum threshold.

6. A method comprising:
placing at least a portion of a blood sample within a sample chamber;
acquiring microscopic images of the portion of the blood sample;
identifying, within the microscopic image, white blood cell candidates within the blood sample;
validating at least some of the white blood cell candidates as being given types of white blood cells, by performing further analysis of the white blood cell candidates;
comparing a count of the white blood cell candidates to a count of the white blood cell candidates validated as being the given types of white blood cells; and
invalidating at least the portion of the sample from being used for performing at least some measurements upon the sample, at least partially based upon a relationship between the count of the white blood cell candidates and the count of the white blood cell candidates validated as being given types of white blood cells.

7. A method comprising:
staining at least a portion of a blood sample with a fluorescent stain;

identifying stained cells within the blood sample, by acquiring a plurality of fluorescent microscope images of the portion of the blood sample using a microscopy unit, by illuminating the portion of the sample with a light source that emits light at a given spectral band;

identifying one or more fluorescent regions that are visible within a microscopic image that
5 that is acquired under lighting by the light source, other than the stained cells; and

determining a characteristic of the light source, based upon the identified fluorescent regions.

8. The method according to claim 7, wherein determining the characteristic of the light source, based upon the identified fluorescent regions comprises determining whether a spatial
10 distribution of the illumination by the fluorescent light source has changed since a previous measurement.

9. The method according to claim 7, wherein determining the characteristic of the light source, based upon the identified fluorescent regions comprises determining whether a spatial
15 uniformity of the illumination by the fluorescent light source has changed since a previous measurement.

10. The method according to claim 7, wherein determining the characteristic of the light source, based upon the identified fluorescent regions comprises determining whether a spatial
location of the illumination by the fluorescent light source has changed since a previous measurement.

20 11. The method according to claim 7, wherein determining the characteristic of the light source, based upon the identified fluorescent regions comprises determining whether vignette effects of the illumination by the fluorescent light source has changed since a previous measurement.

12. The method according to claim 7, wherein determining the characteristic of the light
25 source, based upon the identified fluorescent regions comprises determining whether a spectral distribution of the illumination by the fluorescent light source has changed since a previous measurement.

13. The method according to claim 7, wherein determining the characteristic of the light source, based upon the identified fluorescent regions comprises determining whether an intensity
30 of the illumination by the fluorescent light source has changed since a previous measurement.

14. The method according to any one of claims 7-13, further comprising determining a parameter of the blood sample by performing measurements upon the stained cells and normalizing the measurements based upon the determined characteristic of the light source.
15. The method according to any one of claims 7-13, further comprising invalidating at least some measurements from being performed upon the blood sample, based upon the determined characteristic of the light source.
16. The method according to any one of claims 7-13, wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying intercellular regions within the blood sample.
17. The method according to any one of claims 7-13, wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying one or more fluorescent regions of the microscopy unit.
18. The method according to any one of claims 7-13, wherein acquiring the plurality of fluorescent microscope images of the portion of the blood sample comprises acquiring the plurality of fluorescent microscope images of the portion of the blood sample while the blood sample is housed in a sample carrier and wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying one or more fluorescent regions of the sample carrier.
19. The method according to any one of claims 7-13, wherein the sample carrier comprises glass and plastic layers that are coupled to each other via a pressure-sensitive adhesive that fluoresces, and wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying the pressure-sensitive adhesive.
20. A method comprising:
staining at least a portion of a blood sample with a fluorescent stain;
identifying stained cells within the blood sample, by acquiring a plurality of fluorescent microscope images of the portion of the blood sample, by illuminating the portion of the sample with a light source that emits light at a given spectral band;
identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source, other than the stained cells; and

normalizing fluorescence of the stained cells, based upon the identified fluorescent regions.

21. The method according to claim 20, wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying intercellular regions within the blood sample.

5 22. The method according to claim 20, wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying one or more fluorescent regions of the microscopy unit.

23. The method according to claim 20, wherein acquiring the plurality of fluorescent
10 microscope images of the portion of the blood sample comprises acquiring the plurality of fluorescent microscope images of the portion of the blood sample while the blood sample is housed in a sample carrier and wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying one or more fluorescent regions of the sample carrier.

15 24. The method according to claim 20, wherein the sample carrier comprises glass and plastic layers that are coupled to each other via a pressure-sensitive adhesive that fluoresces, and wherein identifying one or more fluorescent regions that are visible within a microscopic image that that is acquired under lighting by the light source other than the stained cells comprises identifying the pressure-sensitive adhesive.

20 25. A method comprising:
identifying entities within a blood sample, by acquiring a plurality of brightfield microscope images of at least a portion of the blood sample, by illuminating the portion of the blood sample with light from a brightfield light source;

25 analyzing brightfield regions of light emitted by the brightfield light source in an absence of a blood sample; and

determining a characteristic of the brightfield light source, based upon analyzing the brightfield regions of light.

26. The method according to claim 25, wherein determining the characteristic of the light source, based upon the identified brightfield regions comprises determining whether a spatial
30 distribution of the illumination by the brightfield light source has changed since a previous measurement.

27. The method according to claim 25, wherein determining the characteristic of the light source comprises determining whether a spatial uniformity of the illumination by the brightfield light source has changed since a previous measurement.
28. The method according to claim 25, wherein determining the characteristic of the light source comprises determining whether a spatial location of the illumination by the brightfield light source has changed since a previous measurement.
29. The method according to claim 25, wherein determining the characteristic of the light source comprises determining whether vignette effects of the illumination by the brightfield light source has changed since a previous measurement.
30. The method according to claim 25, wherein determining the characteristic of the light source comprises determining whether a spectral distribution of the illumination by the brightfield light source has changed since a previous measurement.
31. The method according to claim 25, wherein determining the characteristic of the light source comprises determining whether an intensity of the illumination by the brightfield light source has changed since a previous measurement.
32. The method according to any one of claims 25-31, wherein analyzing brightfield regions of light emitted by the brightfield light source in an absence of a blood sample comprises periodically analyzing brightfield regions of light emitted by the brightfield light source in the absence of the blood sample at fixed intervals of time.
33. The method according to any one of claims 25-31, wherein analyzing brightfield regions of light emitted by the brightfield light source in an absence of a blood sample comprises analyzing brightfield regions of light emitted by the brightfield light source subsequent to a given number of blood sample having been imaged using the brightfield light source.
34. The method according to any one of claims 25-31, further comprising determining a parameter of the blood sample by performing measurements upon the entities within the blood sample and normalizing the measurements based upon the determined characteristic of the brightfield light source.
35. The method according to any one of claims 25-31, further comprising invalidating at least some measurements from being performed upon the blood sample, based upon the determined characteristic of the brightfield light source.
36. A method comprising:

- staining portions of respective blood samples with at least one type of fluorescent stain;
using a microscopy unit, acquiring fluorescent microscopic images of the portions of the respective blood samples, by illuminating the portion of the sample with a plurality of light sources, each of which emits light at a respective spectral band;
- 5 detecting that there is an error in at least some of the microscopic images; and
 classifying a source of the error, by:
- in response to detecting that the error was introduced from a given point in time,
 identifying the fluorescent stain as being the source of the error;
- in response to detecting that the error gradually increased over time, identifying dirt
10 within the microscopy unit as being the source of the error; and
- in response to detecting that the error is present only in images acquired under
 illumination by a given one of the light sources, identifying the given one of the light
 sources as being the source of the error.