CLAIMS

1. A method comprising:

preparing a blood sample for analysis by:

depositing the blood sample within a sample chamber; and

placing the sample chamber, with the blood sample deposited therein, within a microscopy unit;

acquiring one or more microscopic images of the sample chamber with the blood sample deposited therein, using a microscope of the microscopy unit;

based upon the one or more images, determining an amount of one or more cell types within the sample chamber that had already settled within the sample chamber, prior to acquisition of the one or more microscopic images; and

determining a characteristic of the sample, at least partially in response thereto.

2. The method according to claim 1, wherein preparing the blood sample for analysis further comprises staining the blood sample with one or more stains.

3. The method according to claim 1, wherein:

determining an amount of one or more cell types within the sample chamber that had already settled within the sample chamber, prior to acquisition of the one or more microscopic images comprises determining whether more than a threshold amount of red blood cells within the sample chamber had already settled within the sample chamber, prior to acquisition of the one or more microscopic images, and

determining the characteristic of the sample comprises, in response to determining that more than the threshold amount of red blood cells within the sample chamber had already settled within the sample chamber prior to acquisition of the one or more microscopic images, invalidating the at least a portion of the sample from being used for performing at least some measurements upon the sample.

4. The method according to claim 1, further comprising:

subsequent to placing the sample chamber, with the blood sample deposited therein, within the microscopy unit, allowing the one or more cell types within the sample chamber to form a monolayer of cells;

acquiring a set of one or more additional microscopic images of the monolayer of cells; and

performing one or more measurements upon the sample, by analyzing the set of one or more additional microscopic images.

5. The method according to claim 1, further comprising determining an indication of how long the blood sample has been in the sample chamber prior to acquisition of the one or more microscopic images, based upon the amount of the one or more cell types that had already settled within the sample chamber, prior to acquisition of the one or more microscopic images.

6. The method according to any one of claims 1-5,

further comprising performing one or more measurements upon the sample,

wherein determining the amount of the one or more cell types within the sample chamber that had already settled within the sample chamber, prior to acquisition of the one or more microscopic images comprises determining whether more than a threshold amount of red blood cells within the sample chamber had already settled within the sample chamber, prior to acquisition of the one or more microscopic images, and

wherein performing one or more measurements upon the sample comprises, in response to determining that more than the threshold amount of red blood cells within the sample chamber had already settled within the sample chamber, prior to acquisition of the one or more microscopic images, calibrating the measurements.

7. The method according to claim 6, wherein preparing the blood sample for analysis further comprises staining the blood sample with one or more stains, wherein calibrating the measurements comprises calibrating the measurements to account for an amount of staining that entities within the blood sample underwent as indicated by more than the threshold amount of red blood cells within the sample chamber having already settled within the sample chamber, prior to acquisition of the one or more microscopic images.

~~8. A method comprising:~~

~~placing a portion of a blood sample within a sample chamber;~~

~~acquiring microscopic images of red blood cells within the blood sample, while the red blood cells within the blood sample are settling within the sample chamber;~~

~~determining a settling dynamics characteristic of the blood sample by analyzing the images; and~~

~~generating an output in response thereto.~~

~~9. The method according to claim 8, wherein placing the portion of the blood sample within the sample chamber comprises placing an undiluted portion of a blood sample within the sample~~

chamber and acquiring microscopic images of red blood cells within the blood sample comprises acquiring microscopic images of red blood cells within the undiluted blood sample.

10. The method according to claim 8, wherein determining the settling-dynamics characteristic of the blood sample by analyzing the images comprises determining the settling-dynamics characteristic of the blood sample in real-time with respect to the settling of the red blood cells within the blood sample.

11. The method according to claim 8, wherein determining the settling-dynamics characteristic of the blood sample by analyzing the images comprises determining the settling-dynamics characteristic of the blood sample, while the red blood cells within the blood sample are still settling.

12. The method according to claim 8, wherein determining the settling-dynamics characteristic of the blood sample by analyzing the images comprises determining a sedimentation rate of red blood cells in the blood sample by analyzing the images.

13. 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 images, at least one type of entity selected from the group consisting of: echinocytes, spherocytes, and crenate red blood cells;

measuring a count of the selected type of entity; and

determining an indication of an age of the portion of the sample, at least partially based upon the count.

14. The method according to claim 13, further comprising measuring a parameter of the sample by analyzing the microscopic images, wherein measuring the parameter of the sample comprises performing a measurement upon the microscopic images and calibrating the measurement based upon the determined indication of the age of the portion of the sample.

15. The method according to claim 13, further comprising measuring a parameter of the sample by performing optical density measurements upon a second portion of the blood sample, wherein measuring the parameter of the sample comprises calibrating the optical density measurements based upon the determined indication of the age of the portion of the sample.

16. The method according to claim 13, wherein identifying the at least one type of entity comprises identifying echinocytes.

17. The method according to claim 13, wherein identifying the at least one type of entity comprises identifying spherocytes.

18. The method according to claim 13, wherein identifying the at least one type of entity comprises identifying crenate red blood cells.

19. A method comprising:

placing at least a portion of a blood sample within a sample chamber that is a cavity that includes a base surface;

allowing the cells in the cell suspension to settle on the base surface of the carrier to form a monolayer of cells on the base surface of the carrier;

acquiring at least one microscope image of at least a portion of the monolayer of cells;

identifying, within the microscopic image, hemolyzed red blood cells;

measuring a count of the identified hemolyzed red blood cells; and

generating an output, based upon the count of the identified hemolyzed red blood cells.

20. The method according to claim 19, further comprising, based upon the count of the identified hemolyzed red blood cells, estimating a total count of hemolyzed red blood cells within the blood sample that is greater than the count of the identified hemolyzed red blood cells, wherein generating the output comprises generating an indication of the estimated total count of hemolyzed red blood cells to a user.

21. The method according to claim 19 or claim 20, wherein generating the output comprises invalidating the portion of the sample from being used for performing at least some measurements upon the sample, at least partially based upon the count of the identified hemolyzed red blood cells passing a threshold.

22. The method according to claim 21, wherein invalidating the sample from being used for performing at least some measurements upon the sample comprises, based upon the count of the identified hemolyzed red blood cells, estimating a total count of hemolyzed red blood cells within the sample that is greater than the count of the identified hemolyzed red blood cells.

23. The method according to claim 19 or claim 20, further comprising staining the blood sample, wherein identifying the at least partially hemolyzed red blood cells comprises distinguishing the hemolyzed red blood cells from non-hemolyzed red blood cells by identifying red blood cells that are stained by the stain as being hemolyzed.

~~24. The method according to claim 23, wherein staining the blood sample comprises staining the blood sample with a Hoechst reagent.~~

~~25. The method according to claim 23, wherein acquiring at least one microscope image of at least a portion of the monolayer of cells comprises acquiring at least one brightfield microscope image of at least a portion of the monolayer of cells, and wherein identifying red blood cells that are stained by the stain comprises identifying red blood cells having an outline that is visible within the brightfield microscope image and having an interior that is similar to a background of the brightfield microscope image.~~

~~26. The method according to claim 23, wherein acquiring at least one microscope image of at least a portion of the monolayer of cells comprises acquiring at least one fluorescent microscope image of at least a portion of the monolayer of cells, and wherein identifying red blood cells that are stained by the stain comprises identifying red blood cells that appear as bright circles within the image.~~

~~27. A method comprising:~~

~~placing a biological sample into a sample chamber that has a plurality of regions, each of which define respective different heights;~~

~~measuring a parameter that is indictive of light transmission through the sample chamber at respective regions; and~~

~~using a computer processor:~~

~~normalizing the parameter as measured at the respective regions with respect to each other;~~

~~detecting that there is a bubble within the sample chamber, at least partially in response thereto; and~~

~~performing an action in response to detecting that there is a bubble within the sample chamber.~~

~~28. A method comprising:~~

~~placing a blood sample into a sample chamber that has a plurality of regions, each of which define respective different heights;~~

~~measuring a parameter that is indictive of light transmission through the sample chamber at respective regions; and~~

~~using a computer processor:~~

based upon an absolute value of the parameter at the selected regions, calculating hemoglobin concentration within the blood sample;

normalizing the parameter as measured at the respective regions with respect to each other; and

validating the calculated hemoglobin concentration based upon the normalized parameter.