

prises transferring the cell concentration agent to the lower receptacle in the housing. The method further comprises forming a liquid mixture comprising the isolated cell concentration agent and the hydrogel, wherein the cell extractant is released into the mixture. The method further comprises detecting a biological analyte. Optionally, the biological analyte can be detected at two or more discrete time points. In some embodiments, detecting a biological analyte comprises detecting a live cell. In some embodiments, detecting a biological analyte comprises using a detection system. In some embodiments, detecting a biological analyte comprises quantifying the analyte. In some embodiments, detecting a biological analyte comprises detecting ATP from a cell. In some embodiments, detecting a biological analyte comprises detecting the cell by genetic or immunological methods. In some embodiments, the method further comprises the steps of providing a somatic cell extractant and contacting the somatic cell extractant with cells from the sample.

**[0010]** In another aspect, the present disclosure provides a method of detecting cells in a sample. The method comprises providing a sample suspected of containing cells; a detection article comprising a housing with an opening configured to receive the sample, an upper receptacle containing a cell concentration agent, and a lower receptacle containing a hydrogel comprising a cell extractant; means for isolating the cell concentration agent from at least a portion of the liquid sample; and means for transferring the cell concentration agent from the upper receptacle to the lower receptacle in the housing. The method further comprises contacting in a liquid medium the sample and the cell concentration agent in the upper receptacle of the housing. The method further comprises isolating and transferring the cell concentration agent to the lower receptacle of the housing. The method further comprises forming a liquid mixture comprising the isolated cell concentration agent and the hydrogel, wherein the cell extractant is released into the mixture. The method further comprises detecting a biological analyte. Optionally, the biological analyte can be detected at two or more discrete time points. In some embodiments, detecting a biological analyte comprises detecting a live cell. In some embodiments, detecting a biological analyte comprises using a detection system. In some embodiments, detecting a biological analyte comprises quantifying the analyte. In some embodiments, detecting a biological analyte comprises detecting ATP from a cell. In some embodiments, detecting a biological analyte comprises detecting the cell by genetic or immunological methods. In some embodiments, the method further comprises the steps of providing a somatic cell extractant and contacting the somatic cell extractant with cells from the sample.

**[0011]** In another aspect, the present disclosure provides a unitary sample preparation and detection device. The device comprises a housing comprising at least two receptacles with a passageway therebetween. An upper receptacle of the housing comprises an opening configured to receive a sample and a cell concentration agent disposed therein. A lower receptacle of the housing comprises a detection reagent disposed therein. The device further comprises means for isolating the upper receptacle from the lower receptacle. The device further comprises means for transferring the cell concentration agent from the upper receptacle to the lower receptacle. In some embodiments, the means for isolating the first and lower receptacles is the means for transferring the cell concentration agent from the upper receptacle to the lower receptacle. In some embodiments, the housing further comprises a fran-

gible seal between the two isolated receptacles. In some embodiments, the upper receptacle comprises a taper region. In some embodiments, the device further comprises a hydrogel comprising a cell extractant. In some embodiments, the housing further comprises a third receptacle. In some embodiments, the device further comprises a sample acquisition device. In some embodiments, the detection reagent comprises a reagent for detecting ATP. In some embodiments, the device further comprises a hydrogel comprising a detection reagent.

**[0012]** In another aspect, the present disclosure provides a unitary sample preparation and detection device. The device comprises a housing comprising at least two isolated receptacles with a passageway therebetween and a piston configured to fit the passageway. An upper receptacle in the housing comprises an opening configured to receive a sample and a cell concentration agent disposed therein. A lower receptacle of the housing comprises a detection reagent disposed therein. In some embodiments, the housing further comprises a frangible seal between the two isolated receptacles. In some embodiments, the upper receptacle comprises a tapered inner wall. In some embodiments, the device further comprises a hydrogel comprising a cell extractant. In some embodiments, the housing further comprises a third isolated receptacle. In some embodiments, the device further comprises a sample acquisition device. In some embodiments, the detection reagent comprises a reagent for detecting ATP. In some embodiments, the device further comprises a slow-release composition comprising a detection reagent.

**[0013]** In another aspect, the present disclosure provides a unitary sample preparation and detection device. The device comprises a housing comprising at least two isolated receptacles with a passageway therebetween. An upper receptacle of the housing comprises an opening configured to receive a sample and a cell concentration agent disposed therein. A lower receptacle comprises a detection reagent disposed therein. The device further comprises a valve configured to control the passage of material from the upper receptacle to the lower receptacle. In some embodiments, the upper receptacle comprises a tapered inner wall. In some embodiments, the device further comprises a hydrogel comprising a cell extractant. In some embodiments, the housing further comprises a third isolated receptacle. In some embodiments, the device further comprises a sample acquisition device. In some embodiments, the detection reagent comprises a reagent for detecting ATP. In some embodiments, the device further comprises a slow-release composition comprising a detection reagent.

**[0014]** In another aspect, the present disclosure provides a kit comprising a housing comprising at least two isolated receptacles with a passageway therebetween and means for transferring the cell concentration agent from an upper receptacle to a lower receptacle. The upper receptacle of the housing comprises an opening configured to receive a sample. The lower receptacle comprises a detection reagent disposed therein. The kit further comprises a cell concentration agent. In some embodiments, the cell concentration agent is disposed in the upper receptacle of the housing. In some embodiments, the kit further comprises hydrogel comprising a microbial cell extractant. In some embodiments, the kit further comprises a somatic cell extractant. In some embodiments, the kit further comprises a sample acquisition device.

**[0015]** In another aspect, the present disclosure provides a kit comprising a housing comprising at least two isolated