one optical property for the plurality of experimental units, determining the presence or absence of a biological entity of interest, such as a eukaryotic cell or bacterial cell, in at least one of the plurality of experimental units.

In some examples, the analysis of the time-dependent profiles of the at least one optical property for the plurality of experimental units comprises a comparison across the time-dependent profiles of the at least one optical property for the plurality of experimental units. In certain examples, the method further comprises: if the time-dependent profiles of the at least one optical property of two or more of the plurality of experimental units are determined to be sufficiently similar, transferring some of the plurality of cells from only one of the two or more experimental units to a target location, or from a smaller subset of the two or more experimental units each to a respective target location.

In some examples, the analysis of the time-dependent profiles of the at least one optical property for the plurality of experimental units comprises identifying one or more features of the time-dependent profiles. The one or more features can comprise one or more of: the intensity of the optical property at particular time points, the ratio of the intensity of the at least one optical property at different wavelengths, and the rate of change of the at least one optical property with time.

In some examples, the method further comprises: based on the analysis of the time-dependent profiles of the at least one optical property for the plurality of experimental units, transferring some of the plurality of cells from at least one of the plurality of experimental units to at least one target location.

In some examples, the method further comprises: if the time-dependent profiles of the at least one optical property of two of the plurality of experimental units are determined to be sufficiently dissimilar, transferring some of the plurality of cells from each of the two experimental units to a respective target location.

In some examples, the at least one optical property of the indicator comprises fluorescence. In some examples, the indicator is capable of emitting fluorescence signals of different wavelength at different redox states. In some examples, the indicator is resazurin. In some examples, the indicator is pH sensitive.

In some examples, providing the at least one cell comprises loading into each of the plurality of experimental units only one cell.

In some examples, the device is a microfabricated device having a top surface defining an array of microwells as experimental units. Each microwell of the plurality of microwells can have a diameter of about 25 μm to about 500 μm. The surface density of the plurality of microwells can be at least 750 microwells per cm^2.

In another aspect, the present disclosure provides a method of using a device comprising a plurality of microscale experimental units. The method comprises: in each of a plurality of experimental units, providing at least one cell and an indicator capable of producing an optical signal; incubating the device at predetermined conditions for a duration of time to grow a plurality of cells from the at least one cell in each of the plurality of experimental units; measuring at least one optical property of the contents of each of the plurality of experimental units during or after the incubation; analyzing the measured at least one optical property for each of the plurality of experimental units; and based on the analysis, selecting some of the plurality of cells in one or more of the plurality of experimental units.

In some examples, measuring at least one optical property comprises measuring the at least one optical property of the contents of each of the plurality of experimental units at multiple time points during the incubation.

In some examples, analyzing the measured at least one optical property for each of the plurality of experimental units comprises a comparison among the at least one optical property of each of the plurality of experimental units measured at a same time point.

In some examples, analyzing the measured at least one optical property for each of the plurality of experimental units comprises a comparison among the at least one optical property of each of the plurality of experimental units measured at multiple time points.

In some examples, the method further comprises: if the measured at least one optical property of two or more of the plurality of experimental units are determined to meet a similarity threshold, transferring some of the plurality of cells from only one of the two or more experimental units to a target location, or from a smaller subset of the two or more experimental units each to a respective target location.

In some examples, analyzing the measured at least one optical property for each of the plurality of experimental units comprises calculating the ratio of the intensity of the at least one optical property measured at a same time at different wavelengths.