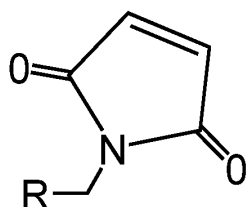


WHAT IS CLAIMED IS:

1 1. A method for distinguishing dead cells from live cells in a cell sample,
2 the method comprising
3 contacting the cell sample with a labelling compound of Formula I:
4



5 wherein R is a label, or a label attached through a linker,
6 under conditions whereby the labelling compound binds free thiol groups on
7 cell surface proteins on dead cells and live cells and preferentially crosses cell membranes of
8 dead cells and binds free thiol groups on intracellular proteins in the dead cells; and
9 detecting the label in the cell sample, thereby distinguishing dead cells from
10 live cells in the cell sample by detecting increased labelling of the dead cells, as compared to
11 live cells.
12

1 2. The method of claim 1, wherein the method further comprises labelling
2 intracellular targets in the cells after the step of contacting the cell sample with the labelling
3 compound.

1 3. The method of claim 2, wherein the step of labelling intracellular
2 targets includes fixing and permeabilizing the cells.

1 4. The method of claim 2 or claim 3, wherein the method further
2 comprises labelling extra cellular targets.

1 5. The method of any of the preceding claims, wherein the label is a
2 direct label.

1 6. The method of claim 5, wherein the direct label is a fluorescent label.

1 7. The method of any of the preceding claims, wherein the conditions
2 include a pH of between about 6.5 and about 7.5.

1 8. The method of any of the preceding claims, wherein the labeling of
2 dead cells is at least about 20 times the labeling of live cells.

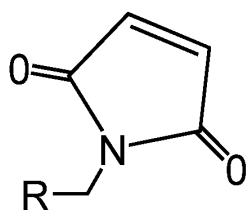
1 9. The method of any of the preceding claims, wherein the step of
2 contacting includes incubating the cell sample with the labelling compound for between
3 about 10 and about 60 minutes.

1 10. The method of any of the preceding claims, wherein the step of
2 detecting the label in the cell sample is carried out using a flow cytometer.

1 11. The method of any of the preceding claims, wherein the cell sample is
2 a blood cell sample.

1 12. The method of any of the preceding claims, wherein the cell sample is
2 from a human.

1 13. A kit for distinguishing dead cells from live cells in a cell sample, the
2 kit comprising
3 a container comprising a labelling compound of Formula I:



4 wherein R is a label, or a label attached through a linker,
5 one or more containers comprising reagents for fixing and permeabilizing cells
6 in the sample, and
7 instructions on how to distinguish dead cells from live cells in a cell sample
8 using the labelling compound.
9

1 14. The kit of claim 13, wherein the label is a direct label.

1 15. The kit of claim 14, wherein the direct label is a fluorescent label.

1 16. The kit of any of claims 13 to 15, wherein the labelling compound is in
2 dry form.

1 17. The kit of any of claims 13 to 16, which is suitable for distinguishing
2 dead cells from live cells in a cell sample using a flow cytometer.

1 18. The kit of any of claims 13 to 17, further comprising labelled binding
2 agents for detecting intracellular and/or extra cellular targets in the cell sample.