Claims

1. A system comprising:

a plurality of flow paths to fluidically connect with a flow cell to support analytes of interest when the flow cell is mounted in the system;

a flow path selector valve coupled to the flow paths, the flow path selector valve to select between the flow paths;

a pump to fluidically connect with the flow cell when the flow cell is mounted in the system and to displace fluids through one of the flow paths selected by the flow path selector valve during an analysis operation; and

control circuitry operatively coupled to the flow path selector valve, the control circuitry having one or more processors and a memory to store computer-executable instructions which, when executed by the one or more processors, control the one or more processors to command the flow path selector valve to select the selected flow path, wherein the plurality of flow paths comprise a first flow path coupled to a first channel of the flow cell and a second flow path coupled to a second channel of the flow cell and wherein the flow path selector valve is adjustable between a first state in which the flow path selector valve selects the first flow path, a second state in which the flow path selector valve selects the second flow path, and a third state in which the flow path selector valve selects both the first flow path and the second flow path.

2. The system of claim 1, wherein the flow path selector valve is further fluidically coupled to a bypass line that bypasses the flow cell when the flow cell is mounted in the system, and wherein the flow path selector valve is further adjustable into a fourth state in which the flow path selector valve selects the bypass line rather than the flow paths.

3. The system of claim 1, wherein, during the analysis operation the control circuitry automatically commands the flow path selector valve to select the selected flow path based upon an analysis protocol.

4. The system of claim 1, further comprising a reagent selector valve positioned fluidically upstream of the flow path selector valve and to select a reagent from a plurality of reagents and to direct the selected reagent to an inlet of the flow path selector valve.

5. The system of claim 1, comprising one or more manifolds to fluidically connect the flow cell with the flow path selector valve when the flow cell is mounted in the system, wherein the one or more manifolds are fluidically interposed between the flow path selector valve and the flow cell when the flow cell is mounted in the system.

6. The system of claim 1, wherein the pump comprises a syringe pump located fluidically downstream of the flow cell.

7. A system comprising:

a reagent selector valve to select a reagent from a plurality of reagents in accordance with an analysis protocol;

a flow cell to support analytes of interest;

a flow path selector valve fluidically interposed between the reagent selector valve and the flow cell, the flow path selector valve to select a flow path through the

flow cell from a plurality of flow paths through the flow cell, and to direct the selected reagent through the selected flow path in accordance with the analysis protocol;

a pump that is fluidically connected with the flow cell, the pump to displace the selected reagent through the selected flow path in accordance with the analysis protocol; and

control circuitry operatively coupled to the flow path selector valve, the control circuitry having one or more processors and a memory to store computer-executable instructions which, when executed by the one or more processors, control the one or more processors to cause the flow path selector valve to select the selected flow path, wherein:

the plurality of flow paths comprise a first flow path through one channel of the flow cell and a second flow path through a second channel of the flow cell,

the flow path selector valve comprises at least one moveable portion,

and the at least one moveable portion is moveable into a first position that selects the first flow path but not the second flow path, a second position that selects the second flow path but not the first flow path, and a third position that selects both the first and second flow paths.

8. The system of claim 7, wherein the flow path selector valve is further fluidically connected with a bypass line that bypasses the flow cell, and wherein the at least one moveable portion is further moveable into a fourth position that selects the bypass line rather than a flow path through the flow cell.

9. The system of claim 7, comprising one or more manifolds fluidically coupled between the selector valve and the flow cell to engage the flow cell with the selector valve when the flow cell is mounted in a sequencing system.

10. A method comprising:

controlling, using control circuitry, a flow path selector valve fluidly upstream of a flow cell to select one or more flow paths through the flow cell from a plurality of flow paths through the flow cell; and

pumping, using a pump, a reagent through the one or more selected flow paths in accordance with an analysis protocol, wherein the plurality of flow paths comprises a first flow path through one channel of the flow cell and a second flow path through a second channel of the flow cell, wherein the second flow path is different from the first flow path, and wherein the flow path selector valve is adjustable between a first state in which the flow path selector valve selects the first flow path, a second state in which the flow path selector valve selects the second flow path, and a third state in which the flow path selector valve selects both the first flow path and the second flow path.

11. The method of claim 10, further comprising controlling a reagent selector valve fluidically connected with the flow path selector valve, the reagent selector valve to select different reagents from a plurality of reagents for displacement through the flow path selector valve and the flow cell in accordance with the analysis protocol, wherein the flow path selector valve is fluidically interposed between the reagent selector valve and the flow cell.

12. The method of claim 11, further comprising commanding changes in positions of the flow path selector valve, the reagent selector valve, or the flow path

selector valve and the reagent selector valve during successive cycles of the analysis protocol.

13. The method of claim 10, further comprising commanding the flow path selector valve to select a bypass line that bypasses the flow cell rather than a flow path through the flow cell.

14. The method of claim 10, further comprising mounting the flow cell in a sequencing system to fluidically connect the flow cell with a plurality of manifolds fluidically interposed between the flow path selector valve and the flow cell to fluidically connect the flow cell with the flow path selector valve, wherein the mounting of the flow cell is performed prior to displacing the reagent.

15. The method of claim 10, wherein the pump is positioned downstream of the flow cell.

16. The method of claim 15, wherein the pump comprises a syringe pump.

17. The method of claim 10 further comprising:

commanding the flow path selector valve into the third state such that the flow path selector valve selects both the first flow path and the second flow path; and

pumping, using the pump, the reagent through both the first flow path and the second flow path by simultaneously:

pumping, using the pump, a first portion of the reagent through the first flow path and the first channel of the flow cell; and

pumping, using the pump, a second portion of the reagent through the second flow path and the second channel of the flow cell.

18. A method comprising:

controlling a flow path selector valve fluidly upstream of a flow cell to select a flow path through the flow cell from a plurality of flow paths through the flow cell;

displacing a reagent through the selected flow path in accordance with an analysis protocol, wherein the plurality of flow paths comprises a first flow path through one channel of the flow cell, a second flow path through a second channel of the flow cell, and a third flow path that includes both the first and the second flow paths, wherein the second flow path is different from the first flow path;

controlling the flow path selector valve to select the third flow path; and

displacing the reagent through the third flow path by simultaneously:

displacing a first portion of the reagent through the first flow path and the first channel of the flow cell; and

displacing a second portion of the reagent through the second flow path and the second channel of the flow cell.