CLAIMS

What is claimed is:

~~1. A method, comprising:~~

~~moving a valve to a first position to fluidly connect a first reagent reservoir containing a first reagent to a flow cell;~~

~~flowing the first reagent from the first reagent reservoir into the flow cell to perform a biochemical reaction;~~

~~moving the valve to a second position to fluidly connect gas to the flow cell;~~

~~flowing the gas to the flow cell to expel at least a portion of the first reagent from the biochemical reaction from the flow cell;~~

~~moving the valve to a third position to fluidly connect a buffer reagent reservoir containing a buffer reagent to the flow cell;~~

~~flowing the buffer reagent into the flow cell;~~

~~moving the valve to the second position to fluidly connect the gas to the flow cell;~~

~~flowing the gas to the flow cell to expel at least a portion of the buffer reagent from the flow cell;~~

~~moving the valve to the third position to fluidly connect the buffer reagent reservoir to the flow cell;~~

~~flowing the buffer reagent into the flow cell; and~~

~~moving the valve to a fourth position to fluidly connect a second reagent reservoir containing a second reagent to the flow cell.~~

~~2. The method of claim 1, wherein moving the valve to the first position includes actuating a first valve to fluidly connect the first reagent reservoir and moving the valve to the second position includes actuating a second valve to fluidly connect the gas to the flow cell.~~

~~3. The method of any of the preceding claims, further comprising pressurizing the buffer reagent reservoir.~~

~~4. The method of any of the preceding claims, wherein each of the flowing the gas to the flow cell includes flowing the gas through a reagent reservoir that is substantially empty.~~

~~5. The method of any of the preceding claims, wherein each of flowing the gas to the flow cell includes flowing the gas through a fluidic line coupled between a gas source and the flow cell.~~

~~6. The method of any of the preceding claims, wherein each of flowing the gas to the flow cell includes flowing the gas through a manifold of a reagent cartridge, the reagent cartridge carrying the first reagent reservoir, the buffer reagent reservoir, and the second reagent reservoir.~~

~~7~~1. An apparatus, comprising:

a fluidics cartridge receivable within a cartridge receptacle of a system and adapted to carry a flow cell, the fluidics cartridge comprising:

a first reagent reservoir containing a first reagent and a buffer reagent reservoir containing a buffer reagent;

a valve; and

a body comprising fluidic lines and an inlet port, the inlet port adapted to be coupled to a gas source, the body carrying the first reagent reservoir, the buffer reagent reservoir, and the valve, the fluidic lines fluidly coupling the inlet port, the first reagent reservoir, the buffer reagent reservoir, the valve, and the flow cell,

wherein the valve is movable:

to a first position to fluidly connect the first reagent reservoir to the flow cell to flow the first reagent from the first reagent reservoir into the flow cell to perform a biochemical reaction;

to a second position to fluidly connect the gas source to the flow cell to flow gas into the flow cell to expel at least a portion of the first reagent from the biochemical reaction from the flow cell; and

to a third position to fluidly connect the buffer reagent reservoir to the flow cell to flow the buffer reagent into the flow cell.

~~8~~2. The apparatus of claim ~~7~~1, further comprising a second reagent reservoir containing a second reagent, wherein the fluidic lines fluidly couple the inlet port, the second reagent reservoir, the valve, and the flow cell, and wherein the valve is further movable:

to the second position to fluidly connect the gas source to the flow cell to flow gas into the flow cell to expel at least a portion of the buffer reagent from the flow cell;

to the third position to fluidly connect the buffer reagent reservoir to the flow cell to flow the buffer reagent into the flow cell; and

to a fourth position to fluidly connect the second reagent reservoir to the flow cell.

~~9~~3. The apparatus of any of claims ~~7~~ 1 or ~~8~~2, wherein the buffer reagent reservoir is pressurized via the gas source.

~~10~~4. The apparatus of ~~any of~~ claim~~s~~ ~~7~~1, ~~8, or 9,~~ wherein the apparatus further ~~comprising~~ comprises a second reagent reservoir, or the apparatus of claim 2 or claim 3, wherein in the second position and when the second reagent reservoir does not substantially contain fluid, the gas source is fluidly connected to the flow cell through the second reagent reservoir.

~~11~~5. The apparatus of any of claims ~~7~~1, ~~8~~2, or ~~9~~3, wherein one of the fluidic lines directly fluidly couples the inlet port and the flow cell.

~~12~~6. The apparatus of any of claims ~~7~~1, ~~8~~2, ~~9~~3, ~~10~~4, or ~~11~~5, wherein the gas source comprises a compressed-gas cartridge.

~~13~~7. The apparatus of any of claims ~~7~~1, ~~8~~2, ~~9~~3, ~~10~~4, or ~~11~~5, wherein the fluidics cartridge comprises a manifold, the manifold including the inlet port, the fluidic lines coupling the manifold, the valve, and the buffer reagent reservoir.

~~14~~8. The apparatus of claim ~~13~~7, wherein the gas source comprises a compressed-gas cartridge, further comprising a plug and a piercing mechanism, a receptacle of the manifold comprising a first portion and a second portion, the piercing mechanism disposed within the first portion and is adapted to pierce the compressed-gas cartridge to allow gas to flow into the manifold, the plug being coupled to the manifold adjacent the second portion.

~~15~~9. The apparatus of any of claims ~~7~~1, ~~8~~2, ~~9~~3, ~~10~~4, ~~11~~5, ~~12~~6, ~~13~~7, or ~~14~~8, wherein the inlet port comprises an interface adapted to be sealingly engaged by the system when the fluidics cartridge is received within the cartridge receptacle to fluidly couple the inlet port and the gas source of the system.

~~16~~10. The apparatus of any of claims ~~7~~1, ~~8~~2, ~~9~~3, ~~10~~4, ~~11~~5, ~~12~~6, ~~13~~7, or ~~14~~8, wherein the inlet port comprises walls that extend from a base, the walls having a first portion and a second portion, the first portion coupled to the base, the second portion forming an interface that is adapted to couple with the gas source, the base defining outlets fluidly coupled to the reservoirs.

~~17~~11. The apparatus of any of claims ~~7~~ 1 – ~~16~~10, wherein the body comprises the reservoirs.

~~18~~12. An apparatus, comprising:

a system, including:

a valve drive assembly;

a cartridge receptacle; and

one or more processors, the one or more processors coupled to the valve drive assembly,

a reagent cartridge receivable within the cartridge receptacle, the reagent cartridge comprising:

a reagent reservoir;

a flow cell;

a valve; and

fluidic lines, one or more of the fluidic lines fluidly coupling the reagent reservoir, the flow cell, and the valve; and

a gas source, wherein the one or more processors is adapted to cause the valve drive assembly to actuate the valve between a first position flowing reagent to the flow cell and a second position flowing gas to the flow cell.

~~19~~13. The apparatus of claim ~~18~~12, wherein the gas source is to be fluidly coupled to the valve and to the reagent reservoir to pressurize the reagent reservoir.

~~20~~14. The apparatus of any of claims ~~18~~ 12 or ~~19~~13, further comprising a second reagent reservoir and wherein flowing gas to the flow cell includes flowing gas through the second reagent reservoir to the flow cell.

~~21~~15. The apparatus of any of claims ~~18~~12, ~~19~~13, or ~~20~~14, further comprising a regulator, the regulator coupled between the gas source and the reagent reservoir.

~~22~~16. The apparatus of claims ~~18~~12, ~~19~~13, ~~20~~14, or ~~21~~15, wherein the reagent cartridge comprises a manifold, the manifold being coupled to the gas source, the fluidic lines coupling the manifold and the reagent cartridge.

~~23~~17. The apparatus of claim ~~22~~16, wherein the manifold includes an inlet port and the system includes the gas source, the inlet port adapted to be fluidly coupled with the gas source.

~~24~~18. The apparatus of claim ~~22~~16, wherein the manifold comprises a receptacle adapted to receive the gas source.

~~25~~19. The apparatus of any claims ~~18~~12, ~~19~~13, ~~20~~14, ~~21~~15, ~~22~~16, ~~23~~17, or ~~24~~18, wherein the reagent cartridge contains the reagent.

~~26. A method, comprising:~~

~~moving a valve to a first position to fluidly connect a first reagent reservoir containing a first reagent to a flow cell;~~

~~flowing the first reagent from the first reagent reservoir to the flow cell to perform a biochemical reaction;~~

~~moving the valve to a second position to fluidly connect gas to the flow cell;~~

~~flowing the gas into the flow cell to expel at least a portion of the first reagent from the biochemical reaction from the flow cell;~~

~~moving the valve to a third position to fluidly connect a buffer reagent reservoir containing a buffer reagent to the flow cell; and~~

~~flowing the buffer reagent into the flow cell.~~

~~27. The method of claim 26, wherein moving the valve to the first position includes actuating a first valve to fluidly connect the first reagent reservoir, moving the valve to the second position includes actuating a second valve to fluidly connect the gas to the flow cell, and moving the valve to the third position includes actuating a third valve to fluidly connect the buffer reagent reservoir to the flow cell.~~

~~28. The method of any of claims 26 or 27, further comprising pressurizing the buffer reagent reservoir.~~

~~29. The method of any of claims 26, 27, or 28, wherein flowing the gas to the flow cell includes flowing the gas through a manifold of a reagent cartridge, the~~

~~reagent cartridge carrying the first reagent reservoir and the buffer reagent reservoir.~~

~~30. The method of any of claims 26, 27, 28, or 29, wherein flowing the gas to the flow cell includes flowing the gas from a compressed-gas cartridge.~~

~~31. The method of claim 30, wherein the compressed-gas cartridge is carried by a reagent cartridge.~~

~~32. The method of any of claims 26, 27, 28, 29, 30, or 31, wherein flowing the gas to the flow cell comprises piercing a compressed-gas cartridge with a piercing mechanism disposed within a receptacle of a reagent cartridge, the receptacle receiving the compressed-gas cartridge.~~