volumes of rinse liquid are used to physically displace the large puddles of reagents, which are covered with oil. This rinsing procedure produces large volumes of waste liquid, which may be hazardous waste.

OVERVIEW OF TECHNOLOGY

[0007a] In a first aspect of the present disclosure, there is provided an automated slide processing apparatus (100) for dispensing liquids onto one or more microscope slides (156), comprising: a plurality of reservoir wells (180); and a reagent pipette assembly (175) including a reagent pipette (204) movable between at least one loading position (213) for obtaining reagent from one of the reservoir wells (180) and at least one dispense position for dispensing reagent onto one of the microscope slides (156); characterized in that the automated slide processing apparatus (100) further comprise: a carousel (177) including the plurality of reservoir wells (180); a wash pipette assembly (176) configured to wash the plurality of reservoir wells (180); and a drive mechanism (184) coupled to the carousel (177) and configured to rotate the carousel (177) to position the reservoir wells (180) relative to the reagent pipette assembly (175) and/or the wash pipette assembly (176), wherein the reagent pipette assembly (175) is movable between a filling position for obtaining reagent from a container (211) at a filling station (209) and a dispensing position for filling one or more of the reservoir wells (180) with reagent from the filling station (209).

[0007b] In a second aspect of the present disclosure, there is provided a method of dispensing liquid onto a microscope slide (156), the method comprising: sequentially delivering reagents to a plurality of reservoir wells (180) of a carousel (177) to produce reagent mixtures, wherein the carousel (177) is rotatable to sequentially position the reservoir wells (180) at a wash position; at least partially filling a reagent pipette (204) with one of the reagent mixtures from one of the reservoir wells (180) while at least one of the reservoir wells (180) is located at the wash position; after at least partially filling the reagent pipette (204) with reagent, robotically moving the reagent pipette (204) toward the microscope slide (156) and dispensing the reagent onto the microscope slide (156); and washing at least one of the reservoir wells (180) when the at least one reservoir well (180) is located at the wash position, wherein the reagent pipette assembly (175) is movable between a filling position for obtaining reagent from a container (211) at a filling station (209) and a dispensing position for filling one or more of the reservoir wells (180) with reagent from the filling station (209).

[0008] Some embodiments of the technology are directed to an automated slide processing apparatus for dispensing liquids onto one or more microscope slides. The automated slide processing apparatus can comprise, in one embodiment, a carousel that includes a plurality of

reservoir wells and a reagent pipette assembly that includes a reagent pipette movable between at least one loading position for obtaining reagent from one of the reservoir wells and at least one dispense position for dispensing reagent onto one of the microscope slides. In some arrangements, the automated slide processing apparatus can also include a wash pipette assembly configured to wash the plurality of reservoir wells and a drive mechanism coupled to the carousel and configured to rotate the carousel to position the reservoir wells relative to the reagent pipette assembly and/or the wash pipette assembly.

[0009] At least some of the embodiments of the automated slide processing apparatus can include a filling station including a plurality of containers holding reagents and a plurality of slide processing stations. The reagent pipette assembly, for example, can be movable through an internal chamber of the automated slide processing apparatus to transport reagents obtained at the filling station to the carousel and to dispense reagent mixtures from the carousel onto one of the microscope slides. In another embodiment, the reagent pipette assembly is movable between a filling position for obtaining reagent from the containers at the filling station and a dispensing position for filling one or more of the reservoir wells with reagent from the filling station. In some embodiments, the automated slide processing apparatus has a mixing mode in which the reagent pipette assembly mixes reagents within one or more of the reservoir wells and dispenses the reagent mixtures onto the microscope slides. In other embodiments, the wash pipette assembly mixes reagents within one of the reservoir wells.

[0010] The drive mechanism, for example, can be configured to sequentially rotate the reservoir wells underneath a wash pipette of the wash pipette assembly and/or the reagent pipette of het reagent pipette assembly. In one embodiment, the reagent pipette assembly has a reagent load state for obtaining reagent from the reservoir wells while the wash pipette assembly, for

CLAIMS

~~What is claimed is:~~

1. An automated slide processing apparatus (100) for dispensing liquids onto one or more microscope slides (156), comprising:

a ~~carousel including a~~ plurality of reservoir wells (180); and

a reagent pipette assembly (175) including a reagent pipette (204) movable between at least one loading position (213) for obtaining reagent from one of the reservoir wells (180) and at least one dispense position for dispensing reagent onto one of the microscope slides (156);

characterized in that the automated slide processing apparatus (100) further comprise:

a carousel (177) including the plurality of reservoir wells (180);

a wash pipette assembly (176) configured to wash the plurality of reservoir wells (180); and

a drive mechanism (184) coupled to the carousel (177) and configured to rotate the carousel (177) to position the reservoir wells (180) relative to the reagent pipette assembly (175) and/or the wash pipette assembly (176).

wherein the reagent pipette assembly (175) is movable between a filling position for obtaining reagent from a container (211) at a filling station (209) and a dispensing position for filling one or more of the reservoir wells (180) with reagent from the filling station (209).

2. The automated slide processing apparatus (100) of claim 1, ~~wherein further comprising: a~~ the filling station (209) ~~including~~ includes a plurality of containers (211) holding reagents; and

wherein the automated slide processing apparatus (100) further comprises:

a plurality of slide processing stations;

wherein the reagent pipette assembly (175) is movable through an internal chamber of the automated slide processing apparatus (100) to transport reagent obtained at the filling station (209) to the carousel (177) and to dispense reagent mixtures from the carousel (177) onto one of microscope slides (156) which are at the slide processing stations.

3. The automated slide processing apparatus (100) of claim 1, wherein the drive mechanism (184) is configured to sequentially rotate the reservoir wells (180) underneath a wash pipette (213) of the wash pipette assembly (176).

4. The automated slide processing apparatus of claim 1, wherein the reagent pipette assembly has a reagent load state for obtaining reagent from the one of the reservoir wells while the wash pipette assembly delivers wash liquid to another one of the reagent wells.

~~5.~~4. The automated slide processing apparatus (100) of claim 1, wherein the reagent pipette assembly (175) is configured to fill the reagent pipette (204) with reagent from any one of the reservoir wells (180).

~~6.~~5. The automated slide processing apparatus (100) of claim 1, further comprising a controller (144) communicatively coupled to the drive mechanism (184) and configured to command the drive mechanism (184) such that the drive mechanism (184) sequentially moves each of the reservoir wells (180) to a washing position for washing by the wash pipette assembly (176).

~~7.~~6. The automated slide processing apparatus (100) of claim 65, wherein the controller (144) stores and executes instructions for commanding the reagent pipette assembly (175) to fill the reservoir wells (180) with reagent from reagent containers (211).

~~8.~~7. The automated slide processing apparatus of (100) claim 1, further comprising a controller (144) having mixing instructions that are executable to command the reagent pipette assembly (175) such that the reagent pipette assembly (175) delivers at least two reagents to one of the reservoir wells (180) to produce a reagent mixture.

~~9.~~8. The automated slide processing apparatus (100) of claim ~~8~~7, wherein the controller (144) has mixed reagent dispense instructions that are executable to command the reagent pipette assembly (175) to dispense the reagent mixture onto a specimen.

~~10. The automated slide processing apparatus of claim 1, wherein the reagent pipette assembly is movable between a filling position for obtaining reagent from a container at a filling station and a dispensing position for filling one or more of the reservoir wells with reagent from the filling station.~~

~~11.~~9. The automated slide processing apparatus (100) of claim 1, wherein the wash pipette assembly (176) is fluidically coupled to a vacuum source (237), and the wash pipette assembly (176) draws liquid from one of the reservoir wells (180) when the vacuum source (237) draws a vacuum.

~~12. The automated slide processing apparatus of claim 1, wherein the automated slide processing apparatus has a mixing mode in which the reagent pipette assembly mixes reagents within one of the reservoir wells and dispenses the reagent mixture onto one of the microscope slides.~~

~~13. The automated slide processing apparatus of claim 1, wherein the wash pipette assembly includes a pipette movable into each of the reservoir wells.~~

~~14.~~10. The automated slide processing apparatus (100) of claim 1, wherein the carousel (177) includes spillways (187) configured to allow reagent to flow from the reservoirs wells (180) while preventing flow of reagent between adjacent reservoir wells (180).

~~15. The automated slide processing apparatus of claim 1, wherein the carousel includes a plurality of overflow partitions, wherein each overflow partition is positioned circumferentially between adjacent reservoir wells.~~

~~16. The automated slide processing apparatus of claim 15, wherein the overflow partitions extend upwardly and radially inward from the reservoir wells.~~

~~17.~~11. The automated slide processing apparatus (100) of claim 1, wherein the carousel (177) includes a drain (183) and a plurality of spillways (187) that allow an overflow of reagent to flow from the reservoir wells (180) toward the drain (183).

~~18. The automated slide processing apparatus of claim 1, wherein the reservoir wells are angularly spaced apart from one another with respect to an axis of rotation of the carousel.~~

~~19. The automated slide processing apparatus of claim 1, wherein the reservoir wells include one or more groups of reservoir wells with uniform radial spacing relative to a center of the carousel.~~

~~20.~~12. The automated slide processing apparatus (100) of claim 1, wherein the ~~further comprising: a~~ filling station (209) ~~including~~ includes a plurality of containers (211) holding reagents; and wherein the automated slide processing apparatus (100) further comprises:

a slide processing station including

a slide holder platen (601) having a receiving region (680) configured to receive a slide (156) with a first side of the slide (156) facing the receiving region (680) and a second side facing away from the receiving region (680); and

an opposable actuator (525) positioned to hold an opposable element (810, 2012) to define a capillary gap (930) between the opposable element (810, 2012) and a slide (156) located at the receiving region (680), the opposable actuator (525) being configured to move the capillary gap (930) in a first direction along the slide (156) to move a band of liquid along the second side of the slide (156) from a first position to a second position and to decrease a width of the band of liquid in a direction substantially parallel to the first direction,

wherein the reagent pipette assembly (175) is movable through an internal chamber of the automated slide processing apparatus (100) to transport reagent obtained at the filling station (209) to the carousel (177) and to dispense reagent mixtures from the carousel (177) onto a microscope slide (156) at the slide processing station.

~~21.~~13. A method of dispensing liquid onto a microscope slide (156), the method comprising:

sequentially delivering reagents to a plurality of reservoir wells (180) of a carousel (177) to produce reagent mixtures, wherein the carousel (177) is rotatable to sequentially position the reservoir wells (180) at a wash position;

at least partially filling a reagent pipette (204) with one of the reagent mixtures from one of the reservoir wells (180) while at least one of the reservoir wells (180) is located at the wash position;

after at least partially filling the reagent pipette (204) with reagent, robotically moving the reagent pipette (204) toward the microscope slide (156) and dispensing the reagent onto the microscope slide (156); and

washing at least one of the reservoir wells (180) when the at least one reservoir well (180) is located at the wash position~~.~~,

wherein the reagent pipette assembly (175) is movable between a filling position for obtaining reagent from a container (211) at a filling station (209) and a dispensing position for filling one or more of the reservoir wells (180) with reagent from the filling station (209).

~~22.~~14. The method of claim ~~21~~13, further comprising:

rotating the carousel (177) to position one of the reservoir wells (180) containing reagent at the wash position; and

washing the reservoir well (180) at the wash position to remove the reagent.