CLAIMS

1. A multichannel pipette comprising:

a proximal section having a handle;

a distal section configured to reversibly engage a plurality of pipette tips;

a first actuator disposed in the proximal section; and

a second actuator disposed in the proximal section operable to control a dispensing function of the multichannel pipette,

wherein the first actuator is operable to control an aspiration function and the second actuator is operable to control the dispensing function.

2. The multichannel pipette of claim 1, further comprising a third actuator disposed in the proximal section configured to cause a pipette tip attached to the distal section of the multichannel pipette to disengage when the third actuator is actuated.

3. The multichannel pipette of claim 2, further comprising a plurality of gripper mechanisms disposed in the distal section, each gripper mechanism being configured to reversibly grip a plunger disposed within a lumen of a pipette tip, the plunger having an engagement section for engaging the gripper mechanism and a lumen section disposed within a lumen of a pipette tip.

4. The multichannel pipette of claim 3, further comprising a lock button disposed in the proximal section operably connected to a lock mechanism configured to control locking of the plurality of gripper mechanisms, wherein the lock button is operable to cause the lock mechanism to transition from a first unlocked configuration to a second locked configuration, wherein when the lock mechanism is in the first configuration the plurality of gripper mechanisms are open and configured to receive the engagement section of the plunger, and when the lock mechanism is in the second configuration the plurality of gripper mechanisms are closed and configured to be in grasping engagement with the engagement section of the plunger.

5. The multichannel pipette of claim 4, wherein each of the plurality of gripper mechanisms comprises:

a gripper jaw, the gripper jaw comprising a jaw opening for receiving and retaining the engagement section; and

a gripping sleeve positioned around the gripper jaw and configured to exert an inward force on the gripper jaw to cause the gripper jaw to exert an inward force on the engagement section of the plunger to retain the engagement section of the plunger within the gripper jaw when the lock mechanism is in the second locked configuration.

6. The multichannel pipette of claim 5, wherein the lock button is operable to cause the gripping sleeve to move distally with respect to the gripper jaw to exert the inward force on the gripper jaw.

7. The multichannel pipette of claim 6, wherein the third actuator is operable to cause the gripping sleeve to move proximally with respect to the gripper jaw to retract the inward force on the gripper jaw.

8. The multichannel pipette of claim 7, wherein the first actuator comprises a button disposed at the proximal end of an elongated shaft, and wherein the second actuator comprises a button disposed at the proximal end of an elongated shaft.

9. The multichannel pipette of claim 8, wherein the lock button is disposed at the distal end of a shaft, and wherein the shaft of the lock button and the shaft of the second actuator are parallel and wherein the lock button and the shaft of the lock button translate with the button of the second actuator and the shaft of the second actuator when the second actuator is moved from the first depressed position to the second undepressed position or from the second undepressed position to the first depressed position.

10. The multichannel pipette of claim 9, wherein the lock mechanism comprises a push plate in reversible contact with a proximal end of the gripping sleeve, and wherein the lock button is operable to cause the push plate to move the gripping sleeve distally with respect to the gripper jaw.

11. The multichannel pipette of claim 10, wherein the third actuator is operable to cause a tip ejection sleeve to move distally with respect to the gripper jaw and contact a proximal end of a pipette tip disposed circumferentially around the gripper jaw to disengage the pipette tip.

12. The multichannel pipette of claim 11, wherein the first actuator is configured to transition from the first undepressed position to the second depressed position while the lock mechanism is in the second configuration and engaged with the engagement section of the plunger causes the plunger to move proximally with respect to the gripper jaw thereby aspirating fluid into the pipette tip via a suction force generated by proximal movement of the lumen section within the lumen of the pipette tip.

13. The multichannel pipette of claim 12, wherein the second actuator is configured to transition from the second undepressed position to the first depressed position while the lock mechanism is in the second configuration and engaged with the engagement section of the plunger causes the plunger to move distally with respect to the gripper jaw thereby dispensing fluid from the pipette tip via a displacement force generated by distal movement of the lumen section within the lumen of the pipette tip.

14. The multichannel pipette of claim 3, wherein the multichannel pipette comprises 2, 3, 4, 5, 6, 7, 8 or more gripper mechanisms.

15. The multichannel pipette of any one of the preceding claims, further comprising a tip interface disposed circumferentially about each gripper jaw, the tip interface including a retention platform configured to engage tabs of the retention interface of a pipette tip to secure the pipette tip to the pipette.

16. The multichannel pipette of any one of the preceding claims, further comprising a tip ejection sleeve disposed about the tip interface operable to move distally with respect to the tip interface when the third actuator is actuated and displace the attachment interface of the pipette tip to remove the pipette tip from the pipette.

17. The multichannel pipette of any one the preceding claims, further comprising an electrode disposed in the distal section, wherein the electrode is electrically coupled to each gripper jaw of the plurality of gripper mechanisms.

18. The multichannel pipette of claim 17, wherein each gripper jaw is composed of an electrically conductive material and operable to allow an electrical pulse applied to the electrode to pass through the electrode, through each gripper jaw, through the plunger of the pipette tip, through a sample contained with the lumen of the pipette tip, and through a second electrode disposed adjacent a distal end of the pipette tip, thereby electroporating cells contained within the sample.

19. An electroporation system comprising:
a multichannel pipette of any one of claims 1-18;
a pipette tip;
a pipette docking assembly; and
a pulse generator.

20. A method of transfecting a cell with a payload, comprising:
providing an electroporation system of claim 19;
providing the cell;
providing the payload;
introducing the cell and the payload into the pipette tip; and
electroporating the cell by operating the electroporation system.