CLAIMS

1. A protein transfer system, comprising:

at least one base configured to receive one or more consumable protein transfer stacks;

at least one lid configured to cover the at least one base, at least one lid comprising one or more electrodes for supplying current to the one or more consumable protein transfer stacks;

at least one voltage source configured to supply the current to the one or more consumable protein transfer stacks;

one or more processors; and

one or more hardware storage devices storing instructions that are executable by the one or more processors to configure the protein transfer system to control operation of the one or more voltage sources.

2. The protein transfer system of claim 1, further comprising a user interface element configured to display information related to operation of the protein transfer system and/or receive user input for facilitating control of the voltage source.

3. The protein transfer system of claim 1, comprising two bases.

4. The protein transfer system of claim 3, wherein each base is configured to house one regular consumable protein transfer stack or two mini consumable protein transfer stacks.

5. The protein transfer system of claim 3, comprising a separate lid for each of the two bases, each of the lids being configured to cover a corresponding base.

6. The protein transfer system of claim 3, wherein the protein transfer system is configured to independently control voltage, program method, starting time, ending time, cooling system control, and/or other protein transfer parameters for the two bases.

7. The protein transfer system of claim 1, wherein the at least one voltage source is configured to independently supply voltage to multiple lids.

8. The protein transfer system of claim 1, wherein the one or more electrodes comprise one or more cathode plates and one or more anode contacts.

9. The protein transfer system of claim 8, further comprising a cooling system, the cooling system comprising:

at least one heat sink in thermal communication with a corresponding cathode plate of a corresponding lid;

at least one air inlet;

at least one air outlet; and

at least one fan configured to draw air through the at least one air inlet and direct the air along an air-cooling path that extends through the at least one heat sink and toward the at least one air outlet.

10. The protein transfer system of claim 9, wherein the air inlet and/or the air outlet is/are arranged on the lid.

11. The protein transfer system of claim 9, wherein the instructions are executable by the one or more processors to configure the fan to operate during a protein transfer operation.

12. The protein transfer system of claim 11, wherein the instructions are executable by the one or more processors to configure the fan to cause a temperature associated with the at least one base to approach or achieve a predetermined target temperature or temperature curve during the protein transfer operation.

13. The protein transfer system of claim 9, wherein the instructions are executable by the one or more processors to configure the fan to automatically begin operating at a predetermined time point during a protein transfer operation.

14. The protein transfer system of claim 9, wherein the protein transfer system comprises multiple cooling systems each independently associated with a separate base of the protein transfer system.

15. The protein transfer system of claim 8, wherein the lid comprises one or more compression features configured to secure over at least a portion of a perimeter edge of a

consumable protein transfer stack when the lid is closed over the consumable protein transfer stack.

16. The protein transfer system of claim 15, wherein the one or more cathode plates is/are configured to translate in at least one dimension relative to the one or more compression features.

17. The protein transfer system of claim 16, wherein the one or more cathode plates are configured to translate from a disengaged position to an engaged position, and vice versa.

18. The protein transfer system of claim 1, wherein the instructions are executable by the one or more processors to configure the protein transfer system to perform a consumable detection operation, the consumable detection operation comprising:

closing a consumable detection current path, the consumable detection current path including the one or more electrodes for directing current through the one or more consumable protein transfer stacks, the consumable detection current path further including a dummy load configured to restrict current flow through the consumable detection current path;

applying a consumable detection voltage to the consumable detection current path;

measuring a consumable resistance resulting from the consumable detection voltage being applied to the consumable detection current path;

determining whether the consumable resistance satisfies a consumable detection condition; and

in response to determining that the consumable resistance satisfies the one or more consumable detection conditions, opening the consumable detection current path and closing a protein transfer current path, the protein transfer current path including the one or more electrodes for directing current through the one or more consumable protein transfer stacks, the protein transfer current path omitting the dummy load.

19. The protein transfer system of claim 18, wherein the instructions are executable by the one or more processors to further configure the protein transfer system to, in response to determining that the consumable resistance satisfies the consumable detection condition, apply a protein transfer voltage to the protein transfer current path to facilitate protein transfer within the one or more consumable protein transfer stacks.

20. The protein transfer system of claim 19, wherein the protein transfer voltage is higher than the consumable detection voltage.