CLAIMS

~~What is claimed is:~~

1. An apparatus for processing a liquid sample in a sample tube, comprising

a base;

a receptacle for receiving a sample tube;

a heating portion coupled to the base to selectively apply heat to the receptacle;

a shaking portion coupled to the base and supporting the receptacle, the shaking portion selectively agitating the receptacle with respect to the base; and

a magnetizing portion coupled to the base ~~and movable~~, wherein the magnetizing portion comprises:

a first magnet holder having a first axis, the first magnet holder rotatably coupled to the base for rotation about the first axis;

a first plurality of magnets fixedly coupled to the first magnet holder; and

a magnet drive mechanism selectively driving the first magnet holder between a first axial orientation and a second axial orientation to selectively change a magnetic field with respect to the receptacle.

2. The apparatus of claim 1, wherein the heating portion comprises a resistive heater.

3. The apparatus of claim 1, wherein the heating portion is coupled to the shaking portion for movement with the shaking portion.

4. The apparatus of claim 1, wherein the heating portion is coupled to the receptacle.

5. The apparatus of claim 4, wherein the heating portion comprises a resistive film heater.

6. The apparatus of claim 1, wherein the receptacle includes an aperture for receiving the magnetizing portion.

~~7. The apparatus of claim 1, wherein the magnetizing portion comprises~~

~~a first magnet holder having a first axis, the first magnet holder rotatably coupled to the base for rotation about the first axis,~~

~~a first plurality of magnets fixedly coupled to the first magnet holder, and~~

~~a magnet drive mechanism selectively driving the first magnet holder between a first axial orientation and a second axial orientation.~~

7~~8~~. The apparatus of any one of claims ~~7~~1-6, wherein the first plurality of magnets are arranged with magnetic poles oriented substantially perpendicular to the first axis.

8~~9~~. The apparatus of claim ~~8~~7, wherein adjacent magnets of the first plurality of magnets have a substantially similar polar orientation.

9~~10~~. The apparatus of claim ~~8~~7, wherein adjacent magnets of the first plurality of magnets have substantially opposed polar orientations.

10~~11~~. The apparatus of any one of claims ~~7-10~~1-9, wherein the magnetizing portion further comprises

a second magnet holder having a second axis, the second magnet holder rotatably coupled to the base for rotation about the second axis, and

a second plurality of magnets fixedly coupled to the second magnet holder, the magnet drive mechanism selectively driving the second magnet holder between a third axial orientation and a fourth axial orientation.

11~~12~~. The apparatus of claim 1, wherein the shaking portion is operable to rotate the receptacle with respect to the base in an orbital motion.

12~~13~~. The apparatus of claim ~~12~~11, wherein the shaking portion comprises

a platform, and

a platform drive assembly including a platform drive motor coupled to the base and an orbital drive coupled to the platform.

13~~14~~. The apparatus of claim ~~13~~12, further comprising a controller for selectively controlling the platform drive assembly, heating portion, and magnet drive assembly, the

controller including logic to prevent operation of the magnet drive assembly during operation of the platform drive motor.

14~~15~~. The apparatus of claim ~~14~~13, further comprising a magnet position sensor for measuring a position of the magnetizing portion relative to the base and generating a first signal, the controller receiving the first signal and selectively operating the platform drive assembly based in part upon the first signal.