CLAIMS

1. A diagnosis kit configured to detect whether or not an extraneous organism exists in a red blood cell by using a biological specimen containing the red blood cell, and a stain solution capable of staining nucleic acid, the kit comprising:

a base plate;

at least one diagnosis plate disposed at the base plate, the at least one diagnosis plate including

a first chamber configured to store the stain solution and to have the biological specimen injected into the stain solution, the first chamber having a wall surface having a through-hole provided therein,

a channel having one end -hole and another end opposite to the one end, the one end of the channel being connected to the first chamber via the through-hole, the channel being configured to extract the red blood cell from the biological specimen and the stain solution, and

a test plate connected to the another end of the channel, and configured to receive the extracted red blood cell, and

a target-substance path provided in the channel for having the red blood cell pass through the target-substance path and for capturing a white blood cell; and

a second chamber provided in the base plate, and connected with the test plate for collecting a part of the biological specimen and a part of the stain solution.

2. The diagnosis kit according to claim 1,

wherein the at least one diagnosis plate comprises a plurality of diagnosis plates, and

wherein the second chamber is connected with the test plate of each of the plurality of diagnosis plates for collecting the part of the biological specimen and the part of the stain solution from each of the plurality of diagnosis plates.

3. The diagnosis kit according to claim 1, wherein a part of the through-hole has a hydrophobic treatment performed thereto.

~~4. The diagnosis kit according to claim 1, wherein the diagnosis plate further includes a target-substance path provided in the channel for having the red blood cell pass through the target-substance path.~~

~~5~~4. The diagnosis kit according to claim~~4~~ 1, wherein the target-substance path includes a non-target substance trap having at least one of a fibrous material and a porous material, and being capable of capturing ~~a~~ the white blood cell.

~~6~~5. The diagnosis kit according to claim~~5~~ 4, wherein the fibrous material mainly containing silicon oxide.

~~7~~6. The diagnosis kit according to claim~~4~~ 1, wherein the target-substance path includes a non-target substance capturing probe capable of catching ~~a~~ the white blood cell.

~~8~~7. The diagnosis kit according to claim~~4~~ 1, wherein the target-substance path includes a permeable plate having one or more slits provided therein.

~~9~~8. The diagnosis kit according to claim ~~8~~ 7, wherein the one or more slits elongate in a longitudinal direction, and have a length not larger than 7 μm in a direction perpendicular to the longitudinal direction.

~~10~~9. The diagnosis kit according to claim 1, wherein the channel has a height not larger than 7 μm at a portion where the channel and the test plate are connected.

~~11~~10. The diagnosis kit according to claim 1, wherein the diagnosis plate further includes a liquid blocking structure disposed near a joint portion where the another end of the channel and the test plate are connected, the a liquid blocking structure being configured to collect the red blood cell.

~~12~~11. The diagnosis kit according to claim 1, wherein the test plate has a plurality of cavities provided therein for having the extracted red blood cell placed therein.

~~13~~12. The diagnosis kit according to claim ~~12~~ 11,

wherein the channel extends in a predetermined direction from the one end toward the another end,

wherein each of the plurality of cavities has an opening opened to an upper surface of the test plate, a flat bottom surface, and an inner wall extending from the bottom surface to the opening,

wherein each of the plurality of cavities flaring from the bottom surface toward the opening, and

wherein a slope of a portion of the inner wall in the predetermined

direction is gentler than a slope of a portion of the inner wall of each of the cavities in a direction opposite to the predetermined direction.

~~14~~13. The diagnosis kit according to claim ~~12~~ 11, wherein each of the plurality of cavities has a recess provided in the bottom surface thereof, the recess having a flat bottom.

~~15~~14. The diagnosis kit according to claim ~~14~~ 13, wherein a depth of the recess is not larger than 10 μm.

~~16~~15. A diagnosis method ~~of using a diagnosis kit,~~ comprising:

preparing the diagnosis kit according to any one of claims 1 to ~~15~~14;

preparing the biological specimen and the stain solution placed in the first chamber of the diagnosis kit; and

moving the red blood cell, by a centrifugal force, from the first chamber to the test plate through the channel connected with the first chamber.

~~17~~16. A diagnosis method ~~of using a diagnosis kit,~~ comprising:

preparing the diagnosis kit according to any one of claims 1 to ~~15~~14;

preparing the biological specimen and the stain solution placed in the first chamber of the diagnosis kit; and

moving the red blood cell from the first chamber to the test plate through the channel by producing a difference in pressure between the first chamber and the channel.

~~18~~17. A diagnosis method ~~of using a diagnosis kit,~~ comprising:

preparing the diagnosis kit according to any one of claims 1 to ~~15~~14;

preparing the biological specimen and the stain solution placed in the first chamber of the diagnosis kit;

moving the red blood cell from the first chamber to the test plate through the channel;

causing the extraneous organism in the red blood cell to generate fluorescence by irradiating the moved red blood cell with light having an excitation wavelength through one of a first surface and a second surface opposite the first surface of the test plate after said moving of the red blood cell from the first chamber to the test plate through the channel; and

measuring an intensity of the fluorescence through one of the first surface and the second surface of the test plate.

~~19~~18. The diagnosis method according to claim ~~18~~ 17, wherein said measuring of the intensity of the fluorescence comprises measuring the intensity of the fluorescence through a fluorescence plate capable of blocking a light having the excitation wavelength.

~~20~~19. The diagnosis method according to claim ~~18~~ 17, wherein said measuring of the intensity of the fluorescence comprises measuring the intensity of the fluorescence while rotating the diagnosis kit.