What is claimed is:

1. A system for freezing and/or vitrifying biological specimen (17), the system comprising

an encasement (40) arranged to accommodate a cryogenic liquid (C), and

a second compartment (3), wherein the second compartment comprises a lower reservoir (12) suitable and/or arranged to accommodate a cryogenic liquid (C),

wherein the second compartment (3) comprises a support (4) for a recipient vessel (16) suitable and/or arranged for accommodating one or more biological specimen (17),

wherein the system further comprises a recipient vessel (16) suitable and/or arranged for accommodating one or more biological specimen (17),

wherein the second compartment (3) comprises a second overflow rim (6) arranged to create, within the second compartment (3), an overflow compartment (7), wherein the second overflow rim (6) is arranged to allow the cryogenic liquid (C) to flow from the lower reservoir (12) within the second compartment into the overflow compartment (7) if the level height of the cryogenic liquid (C) in the lower reservoir (12) exceeds the height of the second overflow rim (6).

2. The system according to claim 1, wherein the height of the second overflow rim (6) aligns with the height of the support (4) for the recipient vessel (16).

3. The system according to claim 1 or 2, wherein the system further comprises a third compartment (8) arranged below the second compartment (3), which third compartment (8) is in fluid communication with the second compartment (3) and/or the overflow compartment (7), and is suitable and/or arranged to accommodate a cryogenic liquid (C).

4. The system according to any one of claims 1 - 3, wherein the system further comprises

a) a filling nozzle (25) for the cryogenic liquid (C) which is suitable and/or arranged for filling the cryogenic liquid (C) directly into the second compartment (3) and/or the overflow compartment (7), and/or

b) a control nozzle (27) with an opening, wherein the height of the opening of the control nozzle aligns with the height of the second overflow rim (6) of the second compartment (3).

5. The system according to any one of claims 1 - 4, wherein the support (4) for the recipient vessel (16) comprises one or more cavities (10) on its upper side that are suitable and/or arranged to accommodate the one or more wells or vials (9) of the recipient vessel (16) suitable and/or arranged for accommodating biological specimen,
optionally, wherein the one or more cavities (10) are arranged to be essentially form-locking with at least part of the one or more wells or vials (9) of the recipient vessel (16).

6. The system according to any one of claims 1 - 5, wherein the support (4) for the recipient vessel

a) comprises a material that has a wicking effect on the cryogenic liquid,
b) comprises a material that has an open-cell sponge-like structure,
c) comprises a material that maintains elastic deformability at a temperature below -70 °C and/or in the presence of the cryogenic liquid (C), and/or
d) has an absolute height of between ≥ 5 and ≤ 50 mm.

7. The system according to any one of claims 1 - 6, wherein the support (4) for the recipient vessel comprises a material selected from the group consisting of

- melamine (1,3,5-Triazine-2,4,6-triamine) or melamine resin,
- polyurethane, and/or
- cross linked polyolefin foam

8. The system according to any one of claims 3 - 7, wherein the third compartment (8) comprises a material that has at least one of the following properties:

a) a wicking effect on the cryogenic liquid,
b) an open-cell sponge-like structure,
c) maintains elastic deformability at a temperature below -70 °C and/or in the presence of the cryogenic liquid, and/or

d) comprises a material selected from the group consisting of
   - melamine (1,3,5-Triazine-2,4,6-triamine) or melamine resin,
   - polyurethane, and/or
   - cross linked polyolefin foam.

9. The system according to any one of claims 1 - 8, wherein the cryogenic liquid (C) is selected from the group consisting of

- liquid nitrogen,
- liquid helium,
- liquid argon,
- liquid oxygen,
- a mixture of dry ice and an organic solvent.

10. The system according to any one of claims 1 – 9, which system further comprises pipetting means (22, 33) for dispensing biological specimen into one or more wells or vials (9) of the recipient vessel (16).

11. The system according to any one of claims 1 - 10, which system further comprises ventilation means (30, 32, 34, 36, 37, 38, and/or 39) to generate a warm gas current along the pipette tips (22) of the pipetting means (33),
wherein such ventilation means comprise at least one element selected from the group consisting of

- deflector plate (30)
- air suction port (32)
- air input port (34)
- flat air nozzle (36)
- tube heating device (37)
- air pump (38)
- warm water bath (39).

12. The system according to any one of claims 1 - 11, wherein the support (4) for the recipient vessel is arranged on one or more spacers (24).

13. The system according to any one of claims 1 - 12, wherein the recipient vessel (16) comprises one or more wells or vials (9) suitable and/or arranged for accommodating biological specimen, or wherein
the recipient vessel (16) is a microtiter plate or an array of vials corresponding to a 6, 24, 96, or 384 microtiter plate layout.

14. A method for freezing and/or vitrifying biological specimen (17), said method comprising the steps of

a) placing a recipient vessel (16) suitable and/or arranged for accommodating one or more biological specimen (17) on a support (4), the support (4) being arranged in a system according to any one of claims 1 – 13
b) before or after step a), dispensing one or more biological specimen (17) into one or more wells or vials (9) of the recipient vessel (16), and
c) before or after step a) or b), filling a cryogenic liquid (C) into the system according to any one of claims 1 – 13,

optionally wherein the method further comprises the step of adding one or more cryoprotective agents to the biological specimen before step b).

15. A method of storing biological specimen frozen and/or vitrified with a method according to claim 14, the method comprising the steps of

a) keeping the recipient vessel (16) which accommodates one or more frozen and/or vitrified biological specimen (17) within the system according to any one of claims 1 – 13,
b) optionally, positioning a lid (14) on top of the system according to any one of claims 1 – 13, and

c) optionally, replenishing cryogenic liquid (C) into the system according to any one of claims 1 – 13.