

# Zwitterionic Liquid

## ~ A Novel Bio-friendly Solvent ~

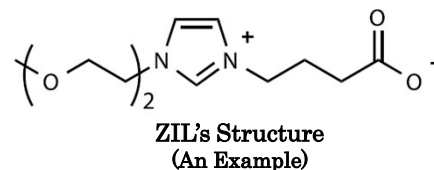
### KEY INVENTION

This is the invention related to **Zwitterionic Liquid (ZIL)** which is a solvent with the following advantages.

- Lower cell cytotoxicity than that of DMSO or existing solvents.
- Available to be chemically prepared in a large scale.
- No animal-derived material is included.
- Usable for cell cryopreservation.

(Zebrafish Embryos)

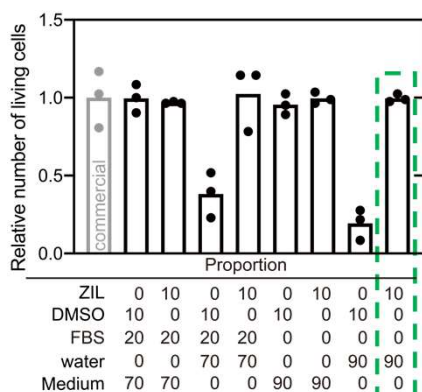
- Imperfectly formed due to the DMSO's toxicity in 5% DMSOaq.
- Normally formed in 5% ZILaq.



### CELL CRYOPRESERVATION

[Comparison with Current Technologies]

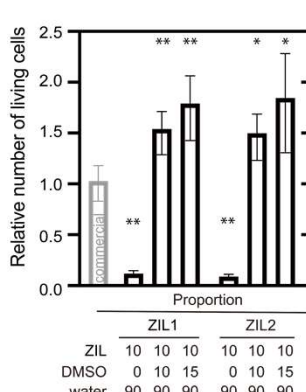
Human Normal Fibroblast



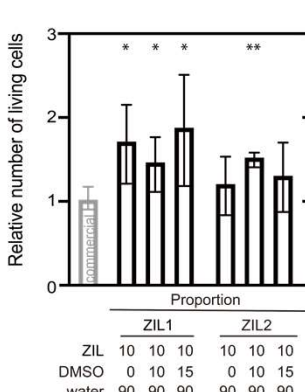
An aqueous solution of ZIL (OE<sub>2</sub>imC<sub>3</sub>C) showed a good efficacy similar to that by commercially available product including FBS.

[Cryopreservation of Cells not applicable to Cold Storage]

K562



OVMANA

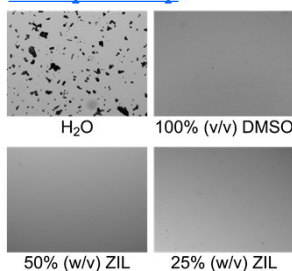


The cells difficult to be cryopreserved by existing methods got able to be cryopreserved by the combination of ZIL with DMSO.

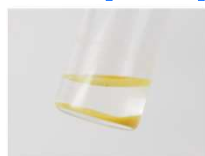
### SOLVENT for PRODUCTS hardly soluble in WATER

[Comparison with Current Technologies]

a. Cisplatin aq.

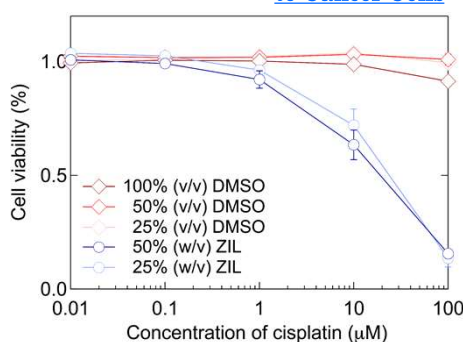


b. 1% Cisplatin aq.



c. Administration of Cisplatin aq.

to Cancer Cells



- Cisplatin is dissolved in DMSO aq.
- However, Cisplatin is made deactivated by DMSO.
- Cisplatin is dissolved in ZIL aq. without any deactivation.

d. Dissolubility of Products

hardly soluble in Water

	ZIL(wt%) in aqueous solution			Water	DMSO
	50	25	5		
Zoledronic acid monohydrate	sol	sol	sol	insol	insol
Insulin	sol	insol	insol	insol	insol

Products hardly soluble in water got able to be dissolved in water by the addition of ZIL.

### APPLICATION expected

- Application as a solvent for cryopreservation of egg cells or cell spheroids
- Application for screening methods of existing drug candidates hardly soluble in water
- Application as a solvent for administration of drugs hardly soluble in water

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**Related Patent**

Title of Invention:

Agent for Promoting Undifferentiation and Cryoprotective Agent using Aprotic Zwitterion

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