LSG LIFE SCIENCE GROUP

Application Note

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Maintenance of viability and CAR expression in CD19-CAR Jurkat and T Cells using LSG CellShip® Transport Medium

Engineered immune cells, including CAR-T cells, require preservation of viability, recovery, and surface marker expression during transport and short-term storage to ensure functionality. While CAR-T therapies are widely used in cancer immunotherapy, transport still largely depends on cold-chain logistics and cryoprotectants, which can increase costs, complicate handling, and potentially impact sensitive cell populations. Because CAR-modified T cells are particularly susceptible to environmental stress, there is growing interest in ambient-temperature transport solutions.

CellShip® is a xeno-free cell transport medium designed to maintain cell stability during ambient-temperature transport. In collaboration with University Hospital LMU Munich (Dr. Hänel), this short study evaluated CellShip's ability to preserve viability and CAR expression in CD19-CAR Jurkat cells and human CD19-CAR T cells during short-term storage at ambient temperature.

CD19-CAR Jurkat Cells

- Jurkat cells were transduced to express a CD19-targeting CAR.
- Cells were stored in CellShip for 72 h at:
  - ambient temperature
  - 4°C
- Following storage, cells were re-cultured for 72 h at 37°C in complete medium.
- Viability and cell counts were measured using Trypan Blue exclusion.
- CAR expression was analysed by flow cytometry using PE-conjugated FMC63 idiotype antibody.

Jurkat cell line expressing a CD-19-CAR receptor

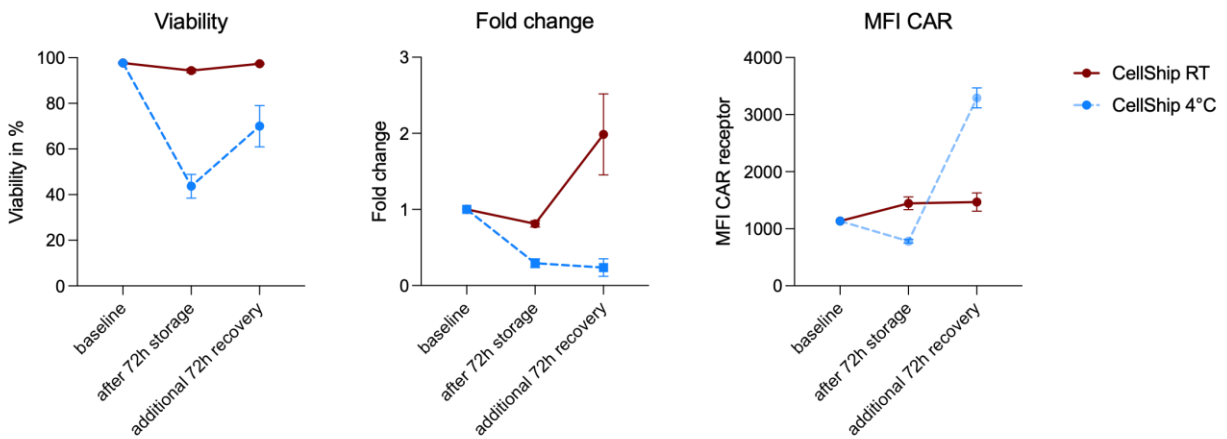

Figure 1: Viability assessment, fold change for cell growth and CAR expression of JURKAT CD19-CAR T cells. Baseline= pre cellship storage

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CD19-CAR T Cells

- Human CD19-CAR T cells were stored in CellShip® at ambient temperature for 48 h.
- Control cells were cultured in TexMACS medium + IL-7/15 at 37°C.
- Viability, cell counts, and CAR expression were evaluated as above.

Human T cells expressing a CD19-CAR receptor

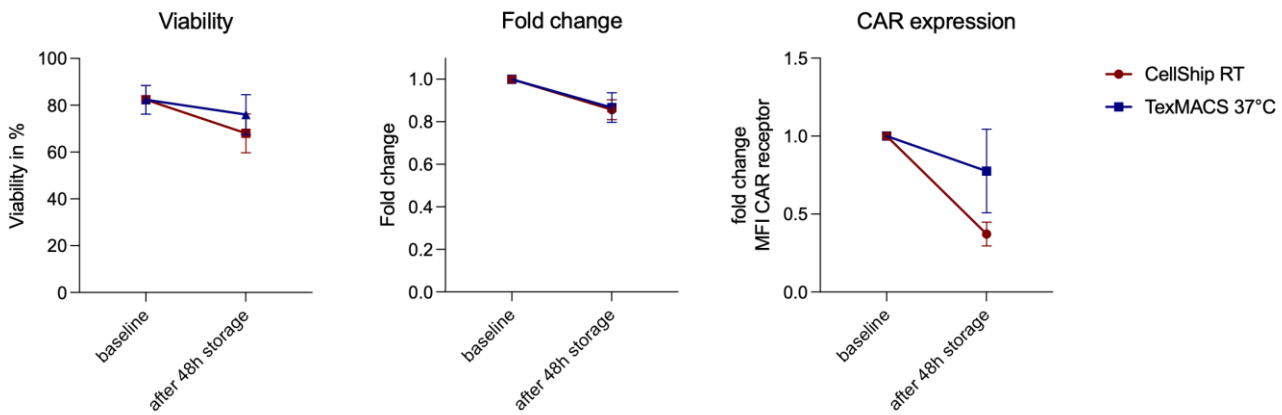

Figure 2: Viability assessment, fold change of cell proliferation and CAR expression of human CD19-CAR T cells. Baseline= pre cellship storage

Conclusion

These findings demonstrate that Cellship® supports the short-term storage and transport of CAR-engineered immune cells at ambient temperature while preserving viability and detectable CAR expression. Importantly, ambient-temperature storage provided improved outcomes compared with 4˚C storage for CD19-CAR Jurkat cells, suggesting that avoidance of cold stress may benefit sensitive engineered cell populations. Human CD19-CAR T cells also maintained high viability following storage in cellship, although reduced CAR expression was observed this may only be temporary. Although further investigation is needed, these results support the use of Cellship® as a practical xeno-free solution for ambient transport of engineered immune cells in research and cell therapy workflows.