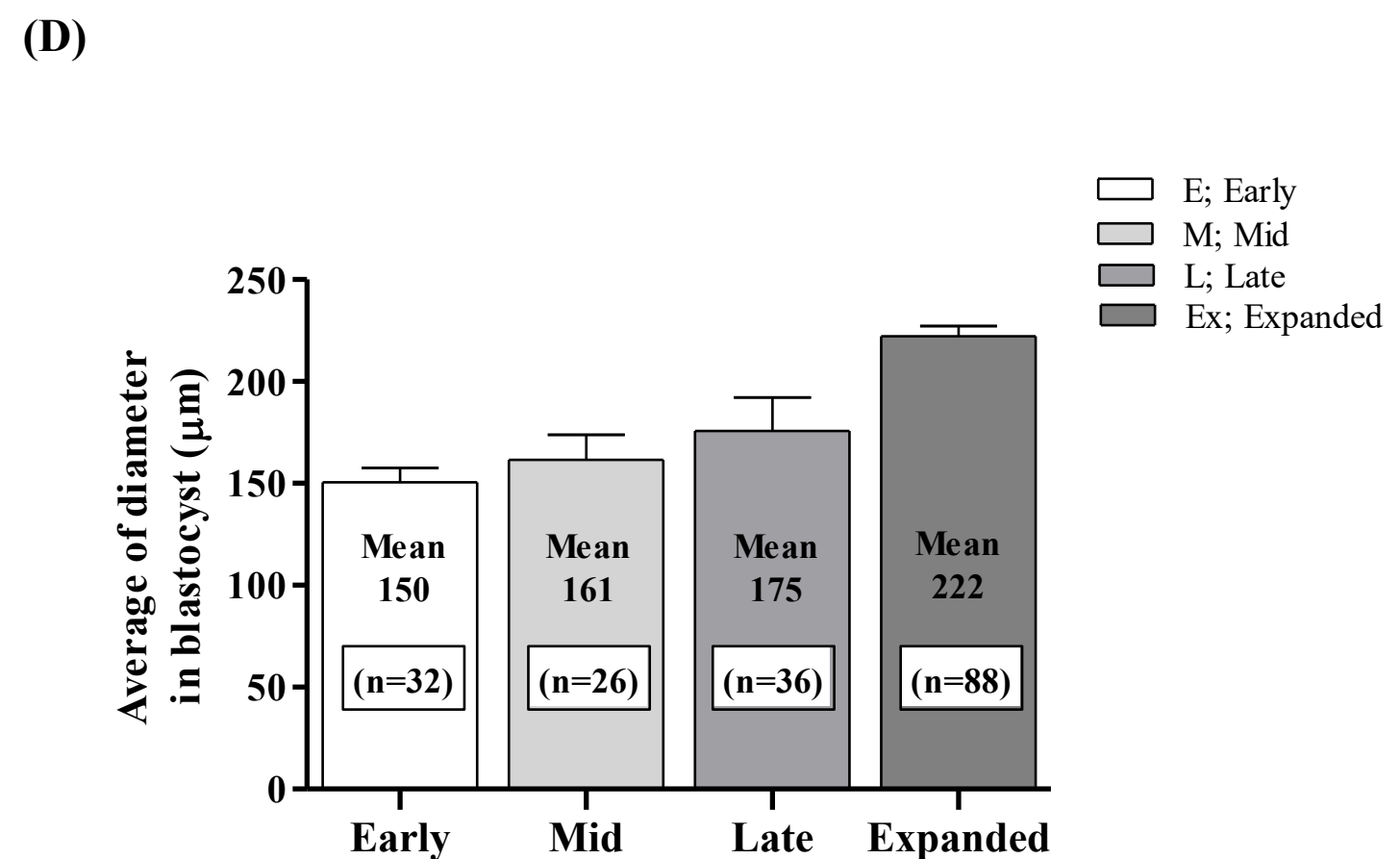
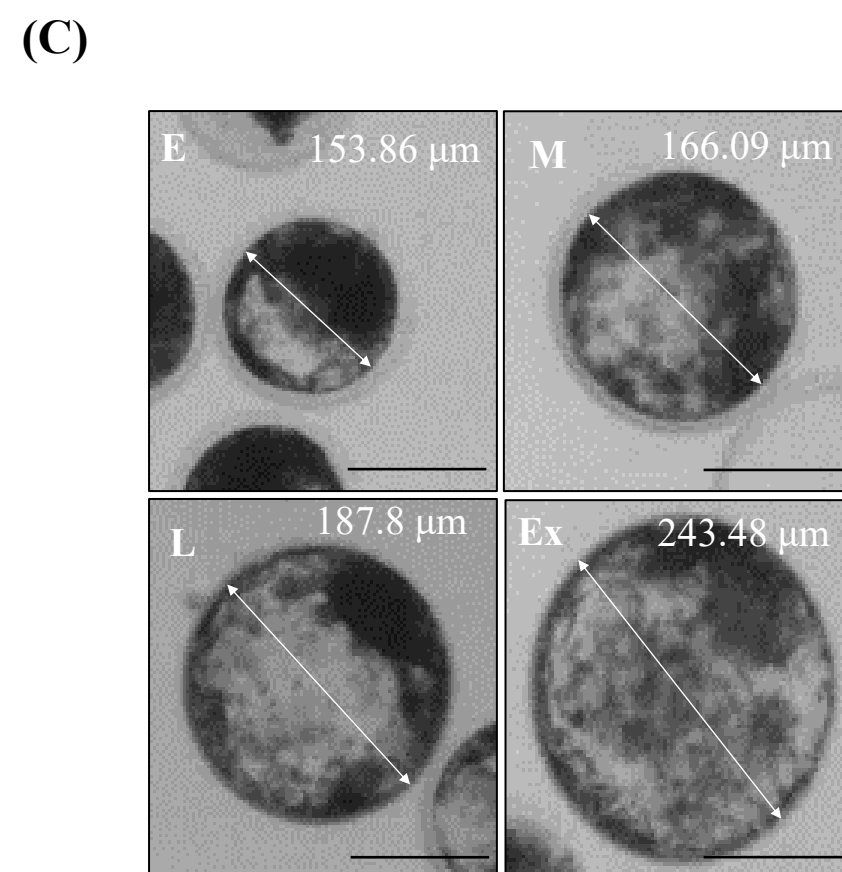
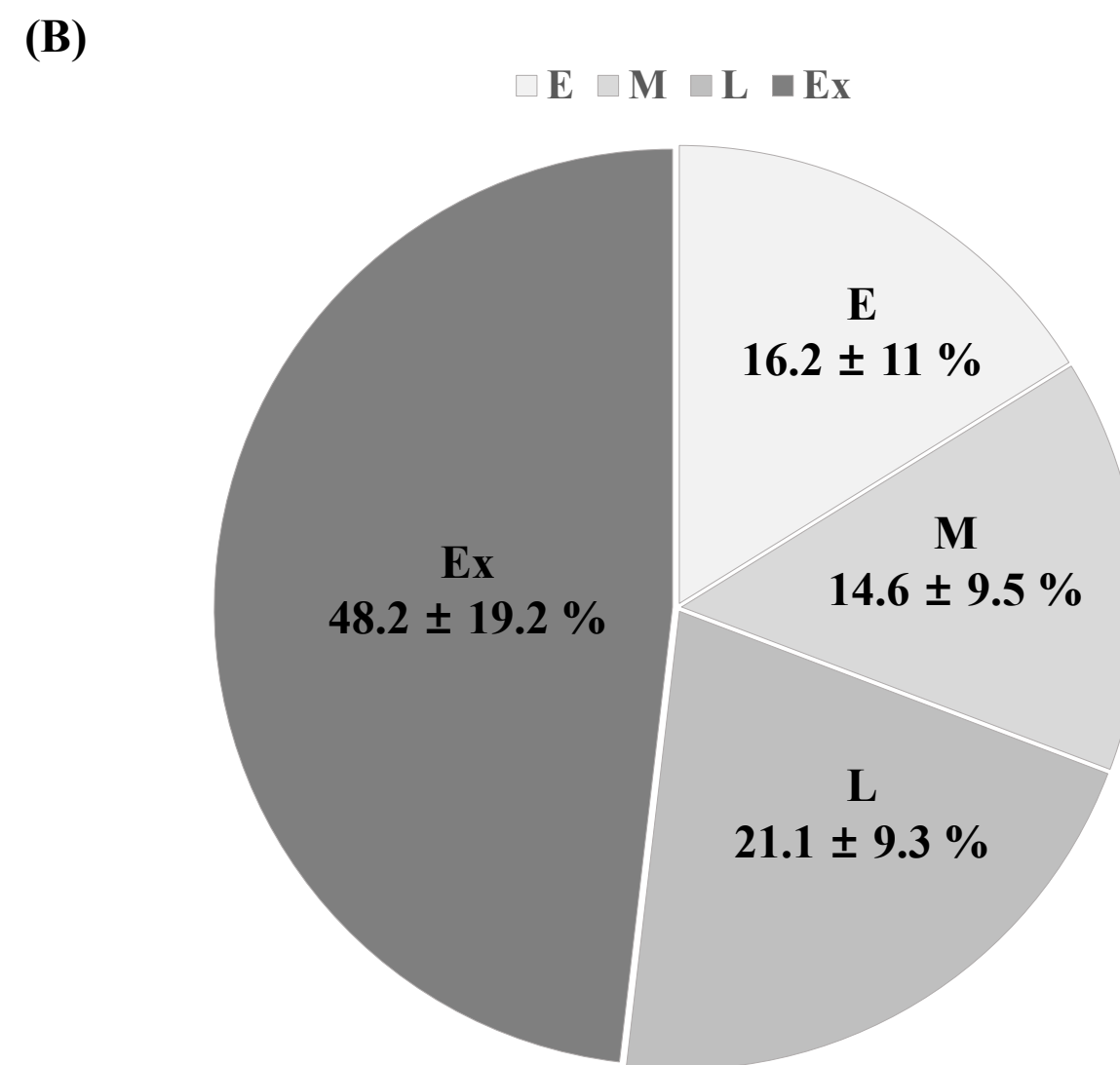
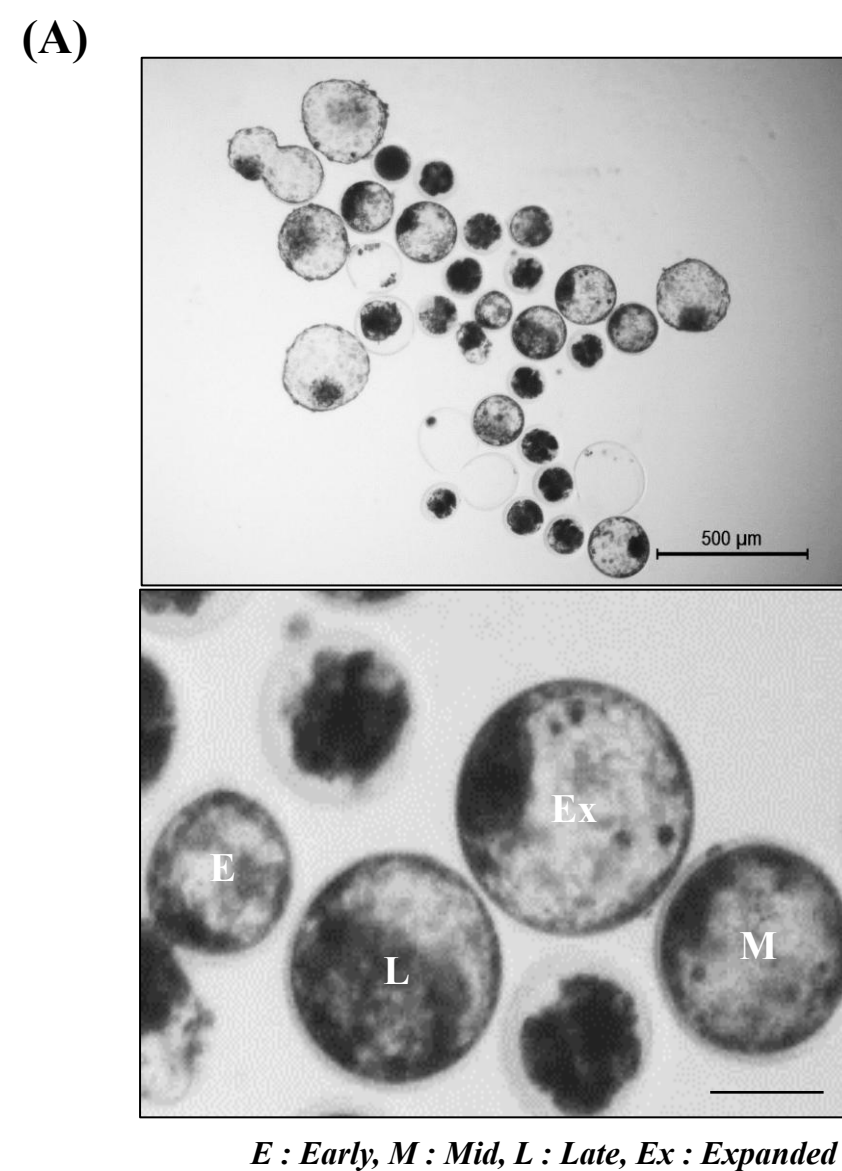
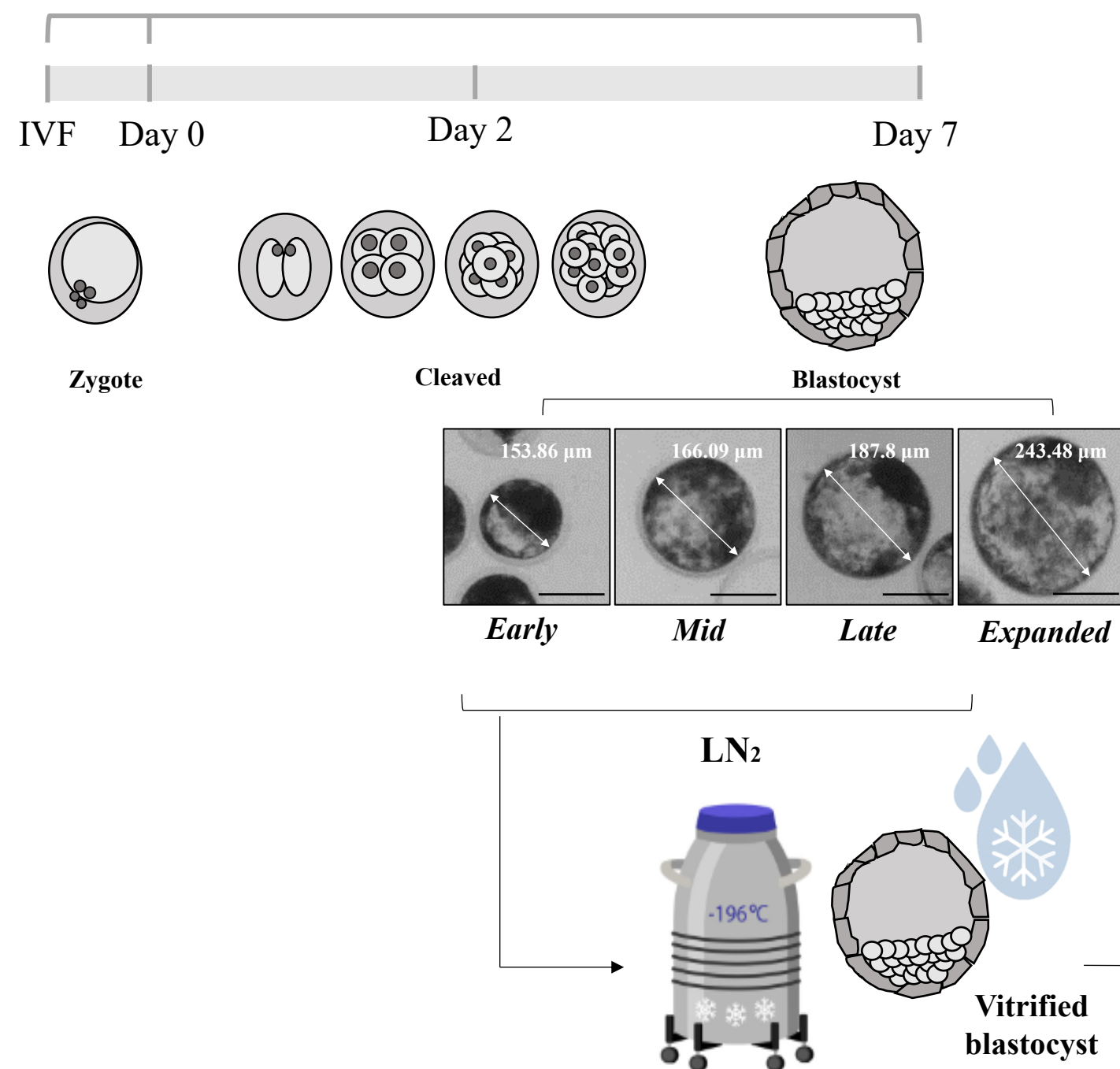


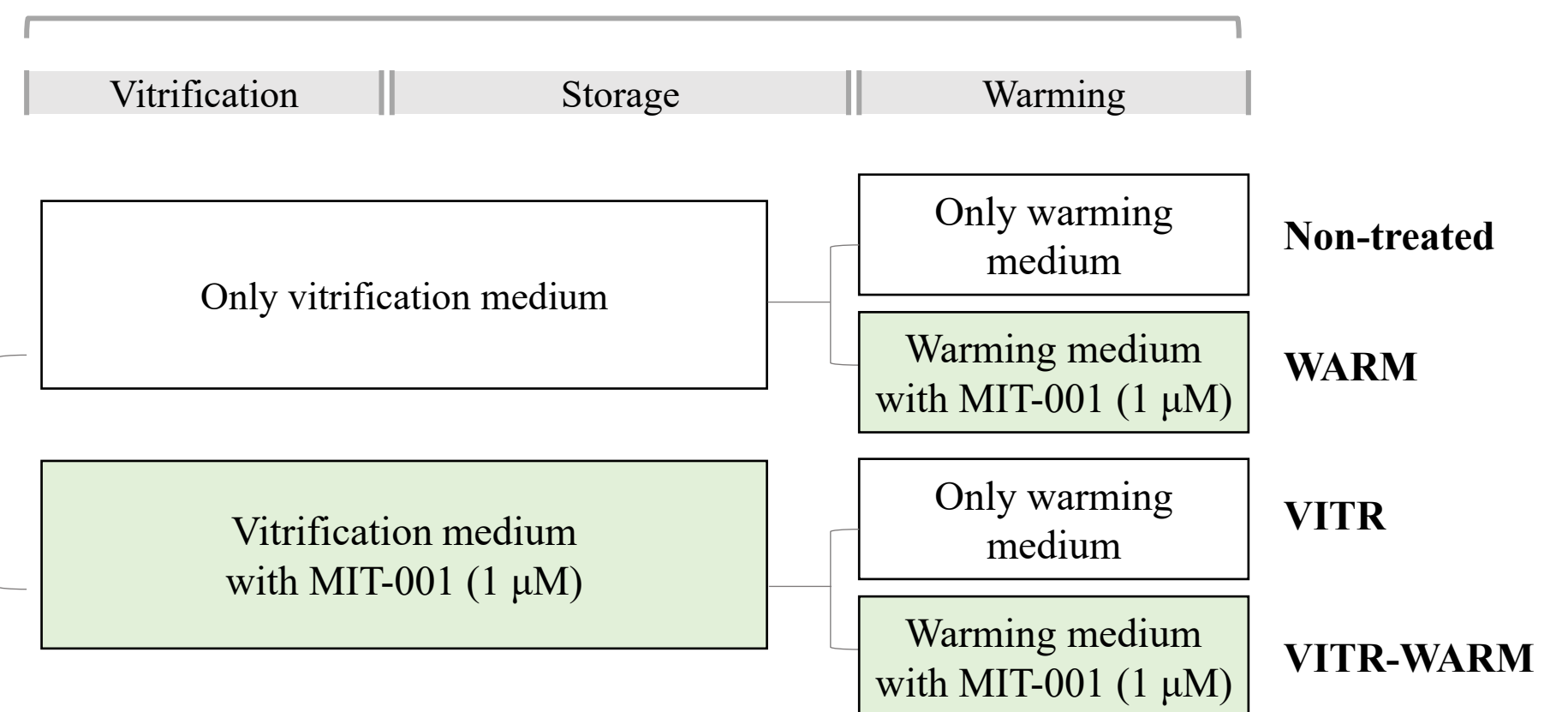


Supplementary Figure 1. Analysis of the diameter of bovine blastocysts developed *in vitro* before cryopreservation based on the degree of expansion. (A) Representative images of the blastocysts obtained after 7 days of IVC. Abbreviation: E-Early blastocyst, M-Mid blastocyst, L-Late blastocyst, Ex-Expanded blastocyst. (B) Circular graph according to different stages of blastocyst development. (C and D) Blastocyst development stages classified by blastocyst diameter. Early: The blastocoel occupies more than half of the total volume and contains cells indicating the formation of an inner cell mass. Mid: A true blastocyst with slight expansion and some thinning of the zona pellucida. Late: A more expanded blastocyst with a well-defined inner cell mass, trophectoderm, and thinner zona pellucida. Expanded: A fully expanded blastocyst with a very thin zona pellucida and clearly visible inner cell mass and trophectoderm. Scale bar=100 µm.

In vitro production (IVP) progression



Vitrification–warming progression



Supplementary Figure 2. Experimental design showed the vitrification and warming protocols with/without MIT-001 in bovine blastocysts. Scale bar=100 μm.