INVITED SESSION
SESSION 36: STATE OF ART OF FROZEN EMBRYO TRANSFER CYCLES
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O-109 How many frozen embryos are enough?
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The first pregnancy resulting from a transfer of a thawed slow-cooled human embryo was reported in 1983. However, at these early stages, the embryos with the best morphological classification were still transferred fresh, given their relatively lower pregnancy rates following cryopreservation. The low efficiency was the main reason why embryo cryopreservation was initially perceived merely as an ancillary treatment following a failed fresh embryo transfer only in women with either an excessive ovarian response or at high risk for multiple pregnancies. However, human embryo cryopreservation programmes have seen a considerable increase in terms of pregnancy rates over time, especially as slow-freezing has been gradually replaced by vitrification. Conversely to slow-freezing, vitrification protocols have been optimized extensively as their use became increasingly widespread with reassuring safety data already available, even though the first report of a successful human live-birth was reported only in 2001.

The primary objective of ovarian stimulation is assisted reproductive technologies (ART) is to increase the number of oocytes retrieved and the number of available embryos, enabling the selection of the best embryo for transfer. The generalized use of exogenous gonadotropins has led to a substantial increase in pregnancy rates, from 3-10% (using no or minimal stimulation) to 20-50%. Several studies have addressed whether there is an optimal number of oocytes following ovarian stimulation, suggesting an independent relationship between the number of oocytes and livebirth rates (LBR). In particular, two large registry analyses demonstrated that fresh LBR either reach a plateau or even decline when more than 20 oocytes are retrieved, whilst a further increase in the number of oocytes may only contribute to a rise in the risk of ovarian hyperstimulation syndrome. However, these studies are limited by the fact that they only analyzed the results of the fresh transfer, not accounting for the potential benefit of the transfer of supernumerary embryos in subsequent frozen-thawed cycles. Cumulative LBR, in such case, is defined as the first live born in the fresh or in one of the subsequent frozen cycles following a single ovarian stimulation ART treatment. Using the number of women who have at least one livebirth as the numerator highlights the outcome for which couples seek treatment, delivering a figure that is more meaningful to patients and also more appropriate for making economic and political decisions in terms of efficacy and cost. Regarding the relationship between the number of oocytes retrieved and cumulative LBR, two recent large studies showed a positive association between the number of oocytes
retained and cumulative LBR, advocating that the cumulative chances of having a livebirth were higher with an increasing ovarian response. During this presentation, a critical appraisal of the ongoing literature on this topic will occur attempting to answer the question "how many frozen embryos are enough?", accounting for the family project planning of the couple and the delicate balance between ART safety and quality.