In vitro maturation (IVM) of oocytes is a promising technique that has the potential advantages of reducing treatments costs and averting the side effects of gonadotropin stimulation for IVF. However, currently the efficiency of IVM of oocytes as a technology to assist clinical infertility treatment remains poor because of the reduced developmental potential of oocytes after IVM.

Our overall objective is to improve the IVM success rate. We hypothesize that the products encoded by genes significantly regulated during the final stages of in vivo maturation might be critical for oocyte developmental potential. In this regard, we have recently utilized a genomic approach to identify all regulated genes during the final oocyte maturation in human material.

The resultant databases complemented by in vivo and in vitro preliminary experiments provide unprecedented insight into the processes and pathways involved in oocyte maturation, and enabled us to select, promising targets, suspected to be critical for intrafollicular events yielding highly competent oocytes. We assume that the addition of these proteins might have beneficial effects on the IVM process.

The gene library and preliminary results of the potential beneficial effect of selected targets on oocyte maturation and improving IVM will be presented.