

Young scientists' congress in Brussels

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On January 16–17, 2015, at The Hotel in Brussels, 245 participants gathered for an international conference on fertility preservation, endorsed by the ISFP. This congress, entitled “Freezing of oocytes, embryos and ovarian tissue: focus on fertility management and fertility preservation” was organized by Marie-Madeleine Dolmans and Jacques Donnez, experts in the field.

The 2-day meeting brought together an internationally recognized cadre of leaders in the field of cryopreservation and fertility preservation who presented their views and engaged in debates on key issues in this rapidly evolving and promising area of reproductive medicine. Apart from 12 keynote plenary lectures, each providing insight into specialized and truly challenging aspects of this field, an innovative element of this congress was oral presentations by selected young scientists (under 40 years of age), interposed between the keynote lectures in plenary sessions providing a unique opportunity to share results of their fascinating research and their latest findings. Hence, the congress was very much focused on the work of young upcoming scientists, which also gave the gathering its dynamic and captivating character. Twenty abstracts were selected from among more than 50 submitted, and these young presenters received free registration to the congress,

as well as a travel grant and two paid nights at the conference venue.

On Friday morning, a warm welcome by the organizers was followed by an instructive session on the oocyte, with an exciting opening lecture by David Albertini (USA), illustrating the complexity of this unique and largest cell of the human body. The next session saw two experts in the field, Christiani Amorim (Belgium) and Mary Zelinski (USA), present updates on their research into the transplantable artificial ovary and in vitro maturation of follicles, respectively.

Later that morning, we had the opportunity to listen to Aaron Hsueh (USA) explain the role of Akt and Hippo signaling pathways and their impact on follicular activation in ovarian tissue. He demonstrated how, by combining Hippo signaling disruption (ovarian fragmentation) with Akt stimulation (treatment with PTEN inhibitors and PI3 kinase stimulators), they were able to achieve growth of secondary follicles to the preovulatory stage, achieving two live births after ovarian tissue transplantation in patients suffering from premature ovarian failure.

The last keynote lecture of the morning was given by Dror Meirow (Israel) on how to prevent follicular damage due to chemotherapy. This captivating talk reviewed the known mechanisms of activation and growth of the dormant follicle pool induced by chemotherapy and provided insights into the latest pharmacological agents, like PI3K pathway inhibitors and AMH, that could potentially prevent this damage.

The sessions after lunch were dedicated to oocytes and embryos. Laura Rienzi (Italy), internationally recognized authority in the field of human clinical embryology and research, shared her expertise on oocyte vitrification. She emphasized that as a result of high oocyte survival, embryo development, clinical pregnancy, and live birth rates, oocyte vitrification had become a real alternative to embryo freezing in IVF programs, constituting a legitimate option for fertility preservation in

Capsule Summary of meeting held in January of 2015 on Freezing of oocytes, embryos and ovarian tissue: focus on fertility management and fertility preservation.

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cancer patients. She also touched on the topic of oocyte vitrification for social reasons. This compelling lecture gave way to yet another: embryo selection to improve IVF outcomes. Carmen Rubio Lluesa from Valencia presented the results of the first RCT to validate the strategy of culture and selection of embryos in an integrated time-lapse monitoring system demonstrating an improvement in reproductive outcome. She also shared more than 3 years of clinical experience with aCGH arrays for aneuploidy screening of cleavage-stage and blastocyst biopsies as a co-adjutant technique to improve reproductive outcome in IVF patients at high risk of aneuploidy. The last keynote lecture of the day was by William Schoolcraft from the USA. In this engaging lecture, he presented several prospective RCTs showing the potential benefits of blastocyst-stage biopsy with comprehensive chromosomal screening (CCS) and frozen embryo transfer, compared to 3-day embryo biopsy, as alluded to in the previous lecture.

On Saturday, January 17, Claus Andersen (Denmark) opened the meeting with his objective review of the question: *ovarian tissue vitrification versus slow freezing: where are we in 2015?* The important take-home message from this lecture was that for the moment, there is not enough proof of the superiority of vitrification to change our practice in a clinical setting. M-M. Dolmans from Belgium then gave us a comprehensive overview of the results and risks of ovarian tissue transplantation. At that time, the number of 37 published live births worldwide after ovarian tissue transplantation was presented. She also shared the findings of a very recent large-scale experimental study using sensitive PCR techniques proving the absence of malignant cells in ovarian tissue from sarcoma patients.

The next session saw two preeminent experts in the field, Hamish Wallace (UK) and Jacques Donnez (Belgium), tackle the specific issues of prepubertal ovarian tissue. Prof. Wallace spoke of ovarian tissue cryopreservation in children and adolescents as an experimental procedure at present and defended use of the Edinburgh selection criteria for ovarian tissue cryo-

preservation in girls and young women with cancer, based on follow-up of ovarian status in their series. Jacques Donnez, on the other hand, argued that ovarian tissue cryopreservation is no longer experimental in prepubertal girls and stressed a number of histological differences, explaining that an extensive primordial follicle pool persists in prepubertal tissue after 6 months of xenografting, in contrast to adult tissue, where massive activation of follicles occurs.

In the last session on stem cells, Evelyn Telfer (UK) presented an objective review of ovarian stem cells. According to the latest research by her team, a population of cells isolated from the ovary is able to develop into follicle-like structures when cultured in bovine ovary, but the true nature of these structures is yet to be determined. In the final keynote lecture, Gerald Schatten (USA) wrapped up the proceedings with a humorous review lecture on pluripotent stem cells (PSCs) and their capacity to differentiate into spermatozoa.

All 20 presentations by the selected young scientists delivered in between the keynote lectures were of a high scientific level and touched upon the different topics presented by the experts. Worthy of note was the announcement of the first clinical pregnancy following in vitro maturation of ex vivo-harvested oocytes at UZ Brussel, and this represents one of the papers presented at the meeting that are published in this special issue of JARG at the invitation of the meeting organizers and the editor-in-chief.

Bart Fauser expertly summed up the findings and conclusions of the congress, calling for guidelines to be established for fertility preservation options and noting areas of much-needed research that must be achieved to move the field forward.

All in all, this congress was an outright success, generating thought-provoking and lively debate on the hottest topics by leading authorities in the field of cryopreservation and fertility preservation and offering young scientists a unique experience that they will never forget.