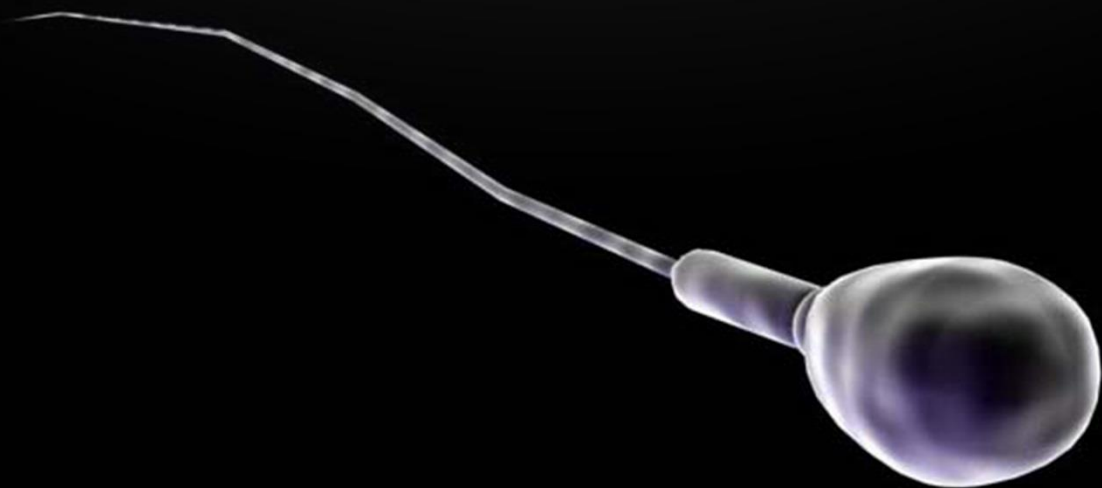


THE 2016 REPRODUCTIVE HEALTH SUMMIT

ABSTRACTS



19TH - 21ST APRIL
LONDON, UK

EuroSciCon 

In an academic setting there will be plenty of discussion and debate, as well as presentations from international speakers regarding global challenges in this field.

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Invited Speakers Abstracts

DPY19L2-dependent globozoospermia: from molecular pathogeny to clinical management

Globozoospermia is a severe teratozoospermia leading to complete male infertility. Sperm are acrosomeless and thus are unable to cross the zona pellucida. We have showed that >70% of cases of globozoospermia of type I are due to a deletion or a mutation of the DPY19L2 gene. Using sperm from both patients and KO animal model, we investigated the molecular pathogeny of this condition. We demonstrated that globozoospermic sperm present numerous defects including absence of acrosome, inability to activate oocyte when injected by ICSI and DNA damages. These results should be taken into account for clinical management of this male infertility

Oocyte vitrification in infertility management: changes in our practice

Dr Pierre Boyer, Hôpital Saint Joseph, Marseille, France

IVF got media attention in 1978 thanks to the birth of the first baby conceived using this technique. Subsequently, it underwent tremendous development and advances in both clinical and technical aspects.

Oocyte vitrification is the last advance but not the least change in our daily practice. Vitrifying a part of oocyte cohort at day 0 allows thawing oocytes gradually and creating limited number of embryos for one attempt and to multiply the transfer of single embryo, also limiting embryo freezing. Oocyte vitrification brings a dramatic change in the management of IVF cycles.

The role of kisspeptins in regulating the mammalian reproductive axis

Professor William Colledge, University of Cambridge, Cambridge, United Kingdom

Kisspeptin neuropeptides are encoded by the Kiss1 gene and directly stimulate GnRH secretion via the G-protein coupled receptor, GPR54. Kiss1 or Gpr54 mutant mice are sterile and have underdeveloped gonads and low gonadotrophic hormone levels caused by a failure to secrete GnRH. To understanding how the reproductive axis is co-ordinated with other physiological processes we have used conditional viral tracing with a genetically modified virus (Ba2001) to define afferent neuronal inputs to Kiss1 neurons. We have identified several neuronal populations that are probably physiologically relevant in controlling the reproductive axis.

Role of beta Defensins in sperm function

Professor Julia Dorin, University of Edinburgh, Queen's Medical Research Institute, Edinburgh, Scotland, United Kingdom

β -defensin peptides are a large family of antimicrobial peptides. Although they kill microbes in vitro and interact with immune cells, the precise role of these genes in vivo remains uncertain. Despite their inducible presence at mucosal surfaces, their main site of expression is the epididymis. Recent evidence suggests that a major function of these peptides is in sperm maturation. My lab has shown that homozygous deletion of a cluster of nine β -defensin genes in the mouse results in profound infertility and the sperm are prematurely activated; increased fragility; reduced motility and increased intracellular calcium. Determining which of the nine genes are responsible for the phenotype and the relevance to human sperm function is important for future work on male infertility.

The obese patient and Assisted Conception

Tarek El-Toukhy, MBBCh MSc MD MRCOG, Consultant Gynaecologist and sub-specialist in Reproductive Medicine and Surgery, Assisted Conception Unit and PGD Centre, London, UK

The worldwide obesity epidemic underlines the importance of establishing reliably the reproductive health burden caused by increased BMI. Obesity contributes to worse outcomes following treatment using assisted reproductive technology (ART), including lower pregnancy and live birth rates and a higher miscarriage rate. This could be mediated through a detrimental effect on oocyte and embryo

quality. Endometrial changes also play a significant role. Endocrine changes associated with obesity, including hyperandrogenism and insulin resistance, as well as changes in local levels of hormones and growth factors are thought to underlie the relationship between raised BMI and adverse ART outcomes. The presentation will explore this relationship.

Profiling signaling proteins in human spermatozoa: biomarker identification for sperm quality evaluation.

Professor, Margarida Fardilha, University of Aveiro, Aveiro, Portugal

In this study we unraveled human spermatozoa signaling pathways and correlated the activity of sperm signaling proteins with clinical data. Thirty seven semen samples were used and basic semen parameters, sperm DNA fragmentation and the expression levels of 75 protein kinases and the phosphorylation/cleavage patterns of 18 signaling proteins were evaluated to determine the correlation between semen basic parameters and the expression and activity of signaling proteins. We have contributed towards establishing a biomarker "fingerprint" to assess sperm quality based on molecular parameters.

Glycosylation of seminal plasma proteins and its impact on male fertility

Dr Miroslawa Ferens-Sieczkowska, Department of Chemistry and Immunochemistry, Wrocław Medical University, Wrocław, Poland

Glycosylation is the most common posttranslational modification of proteins, important for cell-cell communication, including gamete recognition. Protein-carbohydrate cross-talk is engaged also in time and site regulation of the sperm activation. We compared the N-glycome of seminal plasma in the samples representing different groups of infertile subjects with the fertile controls. Among over 80 glycans identified structures, some are unique for seminal plasma. Quantitative difference in the content of such oligosaccharides was found among the samples representing different clinical status of the subjects. Also the expression of particular glycoepitopes in individual glycoproteins of individual subjects occurred associated with their clinical status.

Environmental toxicant exposure induced dysregulation of ovarian function

Dr. Hayley Furlong, McMaster University, Hamilton, Canada

We postulate that autophagy is a common novel pathway central to impaired ovarian follicle development that could explain low dose effects of chemical induced ovarian toxicity and subfertility. The objective of our most recent study was to determine if chloroquine, a well-known inhibitor of autophagy, could inhibit cigarette smoke-induced autophagy in the ovary.

Sperm non-coding RNAs can program embryo and offspring development

Dr Tod Fullston, University of Adelaide, Discipline of Obstetrics & Gynaecology, The Robinson Research Institute, Adelaide, Australia

Obesity and related comorbidities are increasingly globally prevalent. We and others have previously demonstrated that a paternal high fat diet (HFD) can program up to two generations of mice for reproductive and metabolic disturbances. We now demonstrate that a paternal HFD also shifts the sperm microRNA profile. Some of these microRNAs were altered by the HFD, are sperm specific, and are amongst the most abundant sperm microRNAs. Experimentally validated, developmentally important mRNA targets (Oct4, Sox2) of a sperm specific microRNA have altered expression in zygotes sired by HFD males. This suggests sperm microRNAs can act as agents of paternal programming.

PGD for aneuploidy

Darren K Griffin, Professor of Genetics, School of Biosciences, University of Kent, Canterbury, UK

The talk will chronicle the chromosomal aspects of PGS and PGS from its early beginnings, to clinical applications in the last 25+ years. The rise, fall and rise again of PGS will be covered from a scientific perspective with many a cautionary tale along the way, and the presentation will conclude with the implementation of novel technologies (such as Karyomapping) for universal PGD

Prenatal stress, anxiety and depression and the development of the fetus and the child

Professor Vivette Glover, Imperial College London, The Hammersmith Hospital, London, United Kingdom

Mental health is the most neglected aspect of maternity care. Anxiety and depression are as common during pregnancy as postnatally, and can have long lasting effects on fetal development, by fetal programming. There is an increased risk of a wide range of emotional, behavioural and cognitive problems in the child. Most children are not affected and those that are can be affected in different ways. This depends, at least in part, on the particular genetic vulnerabilities of each child, as well as the quality of the postnatal care.

We are starting to understand some of the biological mechanisms that underlie fetal programming. The function of the placenta, for example, changes in response to maternal anxiety and depression. Improving the quality of antenatal mental health care will improve the health of the next generation

Location, location, location: spatial programming of gonadotrophin hormone receptor signalling

Dr Aylin Hanyaloglu, Imperial College London, Hammersmith Campus, London, United Kingdom

An archetypal view of G protein-coupled receptor signalling depicts cell surface receptors activating specific G-protein signal pathways. How such linear signals are translated into the diverse physiological roles of this superfamily of receptors has driven our current understanding of the complexity in these receptor-signalling systems. How the cell decodes such complexity, however, is unknown. One mechanism that regulates both signal specificity and diversity is membrane trafficking. Our studies with the gonadotrophin hormone receptors provide an unprecedented view of how receptor signalling can be spatially controlled. Disruption in membrane trafficking reprograms gonadotropin hormone action, with pathophysiological consequences such as recurrent miscarriage.

HIV Mother to Child Transmission - Where are we in 2016?

Dr Aseel Hegazi, St Georges University Hospital, London, United Kingdom

Every year, globally, an estimated 1.4 million women living with HIV become pregnant. Untreated, they have a significant chance of transmitting the virus to their children during pregnancy, labour, delivery or breastfeeding. Can we achieve the WHO goal of eliminating HIV mother to child transmission?

Reproduction without sex. What does technology have to offer?

Professor Joyce Harper, University College London, London, United Kingdom

Since the birth of Louise Brown in 1978, assisted reproductive technology (ART) has become a global multi billion-dollar business. Countries have their own rules and regulations regarding what ART treatments are allowed. As a result, cross border reproductive care (CBRC) has seen patients travel to different countries to access treatment which may be illegal, more expensive or have a long waiting list in their country. And access to the internet has enabled patients to 'shop online' for ART treatments. Four controversial ART treatments are egg freezing, gamete donation, surrogacy and preimplantation genetic diagnosis (PGD). But maybe in the near future, artificial gametes, artificial wombs and genome editing may override the need for these treatments. It may be that we develop a reproductive and genetic classism as only the rich can afford such treatments. The current and future technologies need discussion as they bring in ethical, social and legal issues.

Organizing responsible international gamete use

Dr. Pim Janssens, Rijnstate, Arnhem, Netherlands

The present international use of donor gametes and cross border reproductive care, enabled by nowadays internet and transportation facilities necessitate considering how gamete donation can be organized responsibly in the international sphere. A major issue in this respect is the number of offspring for a sperm donor that should be allowable. The issue, debated by an international working group, can be approached from genetic, psychosocial, ethical and operational points of view. Although no easy consensus on specific figures could be reached the group came to recommend that counting offspring should be done in terms of families rather than in individual children per donor, that the acceptable number of families per donor should be somewhere in between 10-100 and that prospective parents should be provided clear information on the policy of their sperm bank with respect to the distribution of gametes, counting of offspring and limits of families or offspring per donor applied.

Analysis of biochemical markers of human seminal plasma in the context of the diagnosis of male infertility

Dr. Ewa Kratz, Department of Chemistry and Immunochemistry, Wrocław Medical University, Wrocław, Poland

To determine fertility status of the individual patient, there is the need for tests and diagnostic methods and identification of factors influencing positively or negatively the reproductive potential of couple trying to have offspring. On the physiological condition and the ability of sperm to fertilize may affect the previously little explored seminal plasma biochemical parameters. The determination of these parameters contributed also to increasing knowledge on the relationship between biochemical markers present in seminal plasma and the pathophysiological state of ejaculate, and allowed a better understanding the biochemical mechanisms associated with males reproductive potential.

The impact of cervical pre-invasive disease and its treatment on reproduction

Dr Maria Kyrgiou, IRDB - Department of Surgery and Cancer, Imperial College London, West London Gynaecological Cancer Centre, Queen Charlotte's & Chelsea-Hammersmith Hospital, Imperial Healthcare NHS Trust, London, United Kingdom

Local conservative treatment for cervical pre-invasive and early invasive disease has been associated with adverse sequelae in future reproduction. The underlying mechanism is unclear; hypotheses include immunomodulation relating to HPV infection affecting parturition pathways, and 'mechanical weakness' secondary to loss of cervical tissue. The role of different intrinsic (innate immune system) and extrinsic (vaginal microbiome) factors will be explored.

Men and their fertility

Professor Sheena Lewis, Centre for Public Health, Queen's University Belfast, Northern Ireland, United Kingdom

In the 30years of IVF, men have been largely ignored. All they were asked for was a sperm. It is now time to include them in the couple's fertility pathway by more accurate male tests of their sperm quality, their treatment choices based on scientific information and advice on male lifestyle changes that could improve the couple's fertility as well as just focusing on their female partners. A novel, man friendly approach to fertility treatment will be proposed.

Interaction of vaginal microbiota with the pregnant host

Dr David A MacIntyre, Imperial College, Hammersmith Hospital Campus, London, UK

Vaginal microbiota play an important role in reproductive health outcomes. During pregnancy, ascending infection from the vagina is thought to be a major cause of infection-induced preterm birth. During delivery, exposure of the neonate to vaginal bacteria is an important source of pioneering microbiota for the neonatal gut microbiome thus implicating it in long-term health outcomes. This talk will describe our recent efforts to characterise vaginal microbiota-maternal host interactions in women at risk of poor pregnancy outcomes including preterm birth and premature rupture of the fetal membranes.

Seminal Plasma Proteins: Double Edged-Sword

Professor Puttaswamy Manjunath, Department of Medicine, University of Montreal, Canada

The most commonly used protective agents to conserve mammalian sperm contain egg yolk and/or milk. This basic constituent of sperm preservation media (diluters or extenders) has remained the same since the practice of artificial insemination was introduced. Until recently, the scientific basis for sperm protection by extender components remained a mystery. Pioneering works emanating from my laboratory have indicated that there is interplay among sperm, seminal plasma proteins, and extender components. Semen contains proteins, which are essential for sperm fertility yet they are detrimental to sperm storage when present in excess quantity. The sequestration of these detrimental proteins by extender components seems to be the basis of sperm protection and it could be the rational to develop synthetic extenders.

Endometrial window of implantation marked by a cellular organelle – a non-invasive approach

Dr. U. Thomas Meier, Albert Einstein College of Medicine, Bronx, United States

Accurate dating of the endometrial window of implantation (WOI) is important for artificial reproductive technologies (ART), especially for timing of embryo transfer (ET) to enhance success rates of in vitro fertilization (IVF) cycles through personalized ET. We identified molecular markers of nucleolar channel systems (NCSs) of endometrial epithelial cells and show these intranuclear organelles to be bona fide markers of the WOI. In a non- or minimally-invasive method, we now identify NCSs in cells from uterine secretions. As collection of uterine secretions is compatible with same-day ET, our approach opens the door to personalized ET.

Microfluidics for male fertility

Dr. Reza Nosrati, Department of Mechanical and Industrial Engineering, University of Toronto, Canada

The global burden of infertility is high, affecting more than 70 million couples worldwide. Semen analysis and sperm selection are cornerstones of male infertility diagnosis and treatment. However, current semen analysis technologies are costly and conventional sperm selection approaches are far from the natural process in vivo. To address these limitations, we use microfluidic technologies to: 1) develop scalable approaches for male fertility testing; 2) understand the swimming behaviour of sperm close to surfaces; and 3) develop rapid clinical technologies for selection of sperm with high DNA integrity.

Impact of phthalate exposure on pregnancy outcomes, children's health and neurodevelopment

Dr Kinga Polanska, Nofer Institute of Occupational Medicine, Department of Environmental Epidemiology, Lodz, Poland

The objective of this study was to evaluate the impact of phthalate exposure on pregnancy outcomes and children's health. Phthalate exposure was determined by measuring phthalate metabolites in the urine from third trimester of pregnancy. The following measures were considered: gestational age, birth outcomes, children's health and neurodevelopment. Pregnancy duration was inversely associated with MEP ($\beta=-0.2$; $p=0.04$), head circumference with MOiNP ($\beta=-$

0.1;p=0.05) and child motor development with 3OH-MnBP($\beta=-2.3$;p<0.05), 5OH-MEHP($\beta=-1.2$;p<0.05), and oxo-MEHP($\beta=-1.8$;p<0.05). We showed that higher urine concentrations of MBzP increased the risk of child food allergy(OR=4.2;p<0.05). The study findings underscore the importance of policies and public health interventions aiming at reduction of phthalate exposure.

Metformin - friend or foe of the Polycystic Ovary

Dr Suman Rice, IMBE/Cell Biology and Genetics Research Centre, St George's University of London, London, United Kingdom

Polycystic ovary syndrome (PCOS) is one of the most prevalent endocrine disorders in women. It is diagnosed by hyperandrogenemia, oligo/anovulation &/or polycystic ovaries, and is associated with insulin resistance & hyperinsulinaemia. It is estimated to have an annual medical cost of \$4 billion in the US, with a similar prevalence in the UK. With increasing rates of obesity the number of women diagnosed with PCOS is likely to rise.

Metformin, an insulin sensitiser, is widely prescribed in PCOS. It can however, decrease hyperandrogenemia and improve menstrual cycles without major changes of insulin sensitivity. Could metformin act directly on the ovary?

Are environmental endocrine-disrupting chemicals threatening male fertility? The direct impact of selected organochlorine compounds in sperm function

Dr. Renata S. Tavares, Biology of Reproduction and Stem Cell Research Group, Center for Neuroscience and Cell Biology (CNC), University of Coimbra, Coimbra, Portugal

Exposure to endocrine-disrupting chemicals (EDCs) has been associated with decreased sperm quality and increased anomalies in male reproductive organs over the past decades. Both human and animal populations are continuously exposed to ubiquitous synthetic and natural-occurring EDCs through diet, dermal contact and/or inhalation, therefore potentially compromising male reproductive health. Although EDC effects are likely induced via multiple genomic-based pathways, their non-genomic effects may also be relevant. Furthermore, spermatozoa are transcriptionally inactive cells that can come in direct contact with EDCs in reproductive fluids and secretions and are therefore a good model to address non-genomic effects. This talk will particularly focus on persistent organochlorine compounds relevant to mammalian exposure and their putative effects on important functional sperm parameters that accurately reflect sperm fertilizing ability.

Day 1:

Day 2:

Oral Presentation Abstracts

Oral presentations will be added after the submission deadline

PREGNANCY TERMINATION FOR FETAL ABNORMALITY: DO COPING STRATEGIES PREDICT PERINATAL GRIEF AND POSTTRAUMATIC GROWTH?

C. Lafarge, K. Mitchell, P. Fox

Caroline Lafarge, School of Psychology, Social Work & Human Sciences, University of West London, Paragon, Boston Manor Road, Brentford, TW8 9GA, E: caroline.lafarge@uwl.ac.uk

Background - Pregnancy termination for fetal abnormality (TFA) represents 2% of all terminations in England and Wales. This number has increased in recent years (3,099 in 2014 vs. 2,085 in 2009, Department of Health, 2010-2015) due to technological developments in prenatal diagnosis and increased maternal age, which have led to more fetal abnormalities being identified. TFA can have negative psychological consequences for women, including depression, posttraumatic stress disorder and complicated grief (Kersting et al., 2007, 2009; Korenromp et al., 2009). However, little is known of women's coping processes when dealing with TFA despite evidence of a relationship between coping and psychological adjustment (Carver & Connor-Smith, 2010; Lazarus & Folkman, 1984). Similarly, although research indicates that some individuals experience positive growth as a result of trauma (Tedeschi & Calhoun, 2004) no research has been conducted on potential positive psychological outcomes following TFA.

Aims - The objective of the study was to gain insights into women's coping strategies when dealing with TFA and examine the relationship between coping and psychological adjustment as defined by perinatal grief and posttraumatic growth.

Methods - A quantitative retrospective study was conducted between February and May 2014. Participants were recruited from a support organisation and completed the Brief COPE, the Short Perinatal Grief Scale and the Posttraumatic Growth Inventory. Data were collected online from 161 participants, and analysed using multiple regression analyses.

Results - Despite mainly using adaptive coping strategies, women's levels of grief were high and, for some, distress persisted long after the termination. Only moderate levels of growth were observed. A relationship between coping and psychological adjustment was evidenced. In particular, coping strategies such as 'acceptance' and 'positive reframing' were closely associated with lower levels of grief, whilst 'self-blame' and 'behavioural disengagement' related to higher grief levels. Similarly, 'positive reframing' was a significant predictor of posttraumatic growth.

Implications - The study has several practical implications including: the need to identify women at risk of poor psychological adjustment and the need for a truly women-centred care. Furthermore, coping strategies such as 'acceptance' and 'positive reframing' appear particularly relevant as potential protective factors against distress and foundation for growth. Interventions such as Cognitive Behavioural Therapy or Acceptance and Commitment Therapy may be beneficial for women.

Day 3:

Poster Presentation Abstracts

Poster abstracts will be finalised weeks before the event

AUDITING THE MOST COMMON EMERGENCY PRESENTATIONS IN EARLY PREGNANCY

C Tanti, M Brincat

(Address: 282, Redentur, F.S. Caruana street Birkirkara. BKR 1239)

Background

Early pregnancy emergencies are varied and can be a threat to both mother and foetus. Around 20-30 patients /day are seen at the Gynaecology Emergency Department. The aim of this study was to determine the most common emergencies in early pregnancy in Malta in the year 2014.

Methodology

A retrospective study was done to analyse the early pregnancy admissions for the period covering 1st January 2014 to 31st December 2014. The data collected included all those patients of child bearing age who presented to the Obstetrics Emergency department with bleeding, abdominal pain, nausea and vomiting and had a positive HIT test.

Results

A total of 318 patients were admitted. The most common presentation was vaginal bleeding with a total of 142 cases (44.7%), 29 (9.1%) of which had miscarriage. A total of 119 patients (37.4%) presented with abdominal pain, 44 of which pain localised to the iliac fossae. However, only six of them were diagnosed with ectopic pregnancy (1.88%) by transvaginal ultrasound. 25 patients (7.86%) were admitted for hyperemesis gravidarum requiring observation and hydration. The remaining 10% of cases were benign and were only admitted for monitoring.

Discussion

Vaginal bleeding and abdominal pain are common emergency presentations in early pregnancy. However, the incidence of serious pathologies is relatively low compared to more benign conditions. Differentiation between the two needs to be done at an early stage.

Key messages for recommendations

Early identification of urgent cases

Assessment of risk factors from an early stage

Ultrasound service available for 24 hours.

INFLUENCE OF OBESOGENIC DIET IN EARLY LIFE ON OVIDUCTAL MORPHOLOGY IN A MOUSE MODEL

R Mallah, L Dearden, NC Penfold, SE Ozanne, CE Aiken

Rana Mallah, Trinity College, Cambridge, CB2 1TQ, E: rm711@cam.ac.uk

Introduction: Exposure to an obesogenic (high fat/high sugar) diet during both development *in utero* and postnatally has profound consequences for health in later life. The reproductive tract tissues, and the oviducts in particular, are highly sensitive to this programming. Offspring ovarian reserve is decreased, and para-ovarian adipose mass is increased, by maternal obesogenic diet during pregnancy. In this study we sought to determine whether the morphology of the oviduct in early reproductive life is affected by maternal obesogenic diet during pregnancy, and whether weaning the offspring onto the same obesogenic diet could exacerbate this effect.

Methods: Female C57BL/6 mice were exposed to either maternal obesogenic (high fat/high sugar) or maternal control diet in utero and during lactation, then weaned onto either obesogenic or control diet (n=6-8 per group). Offspring were sacrificed at 12 weeks (in early reproductive life). Total offspring fat mass was calculated from fasting body-weight and TD-NMR scanning to determine lean mass. Whole oviducts and para-ovarian fat biopsies were fixed and sectioned, then stained with H&E. A stringent unbiased stereology protocol was developed and validated to ensure reproducible determinations of cell and organ mass by a single blinded observer.

Results: Total adipose mass was increased by both offspring ($p<0.001$) and maternal ($p<0.01$) obesogenic diet. Adipose cell size was significantly increased by offspring obesogenic diet ($p<0.001$) and by maternal obesogenic diet, although this effect did not reach significance ($p=0.06$). There were no differences in size or morphology of the proximal oviduct (isthmus) with either offspring or maternal obesogenic diet. However, the distal oviduct (ampulla and fimbriae) was significantly dilated ($p<0.05$) with more epithelial invaginations ($p<0.05$) in offspring exposed to obesogenic diet compared to controls. There was no significant effect of maternal obesogenic diet on distal oviductal area.

Conclusions: Dilation of the distal, but not the proximal oviduct in early adulthood occurs in response to exposure to an obesogenic diet during early post-weaning, but not in utero life. The distal oviduct is a key site involved in successful reproduction, with important roles in gamete maturation, fertilisation, and cleavage of the early embryo. Dilation of the distal tube has been linked to infertility in human populations. An abnormal distal tubal morphology could have significant effects on reproductive success following exposure to a suboptimal early post-natal environment. This is a particularly important finding in view of global trends towards increased childhood obesity.

DOES HIGH GLUCOSE IMPAIR SPERMATOGENESIS AND SPERM FUNCTION IN VITRO?

R.S. Tavares^{1,2,*}, J. Portela^{1,*}, M.I. Sousa¹, P.C. Mota^{1,2}, J. Ramalho-Santos^{1,3}, S. Amaral^{1,2}, #

¹Biology of Reproduction and Stem Cell Group, Center for Neuroscience and Cell Biology, University of Coimbra, 3004-504 Coimbra;

²Institute for Interdisciplinary Research, University of Coimbra, 3030-789 Coimbra;

³Department of Life Sciences, University of Coimbra, 3000-456 Coimbra, Portugal.

corresponding author: scgamaral@gmail.com

Diabetes mellitus (DM) is a degenerative disease representing one of the greatest concerns to modern global health, and worryingly with its incidence increasing worldwide at epidemic rates. DM is associated with the emergence of a variety of clinical complications, including reproductive dysfunction.

Given the extension and multifactorial nature of diabetes-induced physiological changes, it remains unclear what are the mechanisms that may contribute for the reproductive dysfunction described in male diabetic patients.

Considering that hyperglycemia has been described as a major effector of the disease pathophysiology, two different in vitro approaches were used to address the isolated effect of high glucose conditions on sperm function and spermatogenesis, thus avoiding other in vivo confounding players.

A complete and integrated analysis, through a diversity of important indicators of spermatozoa functionality (motility, viability, capacitation status, acrosomal integrity, mitochondrial superoxide production and mitochondrial membrane potential) suggests that high glucose concentrations do not seem to directly affect spermatozoa, at least in vitro.

Organ culture experiments, mimicking the spermatogenic process, determined that high glucose levels increase Sertoli cell number while decreasing tubular luminal area, therefore suggesting an impairment of this somatic cell type with hub importance in spermatogenic control.

Taken together, this study suggests that high glucose levels per se seems to influence the male reproductive system only at the spermatogenesis level, stressing the importance of other factors involved in the disease.

* These authors contributed equally to the work