Male reproductive development and function are regulated by genetically-programmed pathways that are initiated *in utero* and proceed throughout adulthood. These pathways are influenced by a range of intrinsic and environmental factors. Therefore, integrating genetics, endocrinology, neurobiology, psychology and toxicology is necessary to fully appreciate male fertility, sexual health and pathology. With this goal in mind, the theme of this year’s ASA annual meeting is: “Of Genes and Hormones: State-of-the-Art Reproductive and Sexual Development”.

Together with the Program and Abstract Review Committee, we developed a diverse program that addresses both customary and novel aspects of andrology. Our goal was to challenge and excite meeting participants in a manner that was enriching to both clinical and basic andrologists. Our program fostered lively discussion, encouraged innovative hypotheses, and, hopefully, facilitated new collaborations.

The meeting opened with the Emil Steinberger Memorial Lecture entitled “Genetic and Environmental Origins of Testis Cancer” delivered by Leendert Loosjenga PhD from Erasmus MC, University Medical Center Rotterdam in the Netherlands. Dr. Loosjenga discussed recent developments in testicular germ cell tumour research, including environmental and genetic mechanisms, pathobiology and clinical implications. This lecture complemented the meeting theme, and crossed basic and clinical boundaries to appeal to all ASA delegates.

We were delighted that the 2011 AUA Lectureship went to Peter Schlegel MD from the New York Weill/Cornell Medical Center, who spoke on his observations on hormonal abnormalities and fertility
treatment for men with testicular failure, and addressed basic and translational gaps in the field.

The recipient of the 2011 Women in Andrology Lectureship was Sylvie Breton PhD from the Massachusetts General Hospital. Her talk was entitled “Acquisition of Male Infertility: Novel Roles of the Epididymal Epithelium”. For the first time, the International Lecture was delivered by an African scientist, Christiaan de Jager PhD from the University of Pretoria in South Africa. His lecture entitled “Endocrine Disruption and Semen Quality in Developing Nations” stimulated a thought-provoking assessment of the consequences and international challenges of environmental contaminants on male reproductive function. The EEA Exchange Lecture, entitled “Gonadotropin Function in Health and Disease” was delivered by Ilpo Huhtaniemi MD PhD from Imperial College London in the UK.

Three other lectures addressed diverse aspects of andrology research. Shuk-Mei Ho PhD from the University of Cincinnati spoke on establishing a relationship between in utero estrogen exposure and the risk of prostate cancer. Peter Chan MD from the McGill University in Montréal presented research on the impact of cancer on male fertility strategies to conserve reproductive potential. Eric Prossnitz PhD from the University of New Mexico presented his ideas on non-genomic steroid signaling via non-traditional receptors.

Five symposia continued the theme of the meeting with speakers from around the world. Symposium I “Ensuring Reproductive Health and Function” featured Budhan Pukazhenthi DVM PhD, Arthur (Bud) Burnett, II MD and Laura Niedernhofer MD PhD. Symposium II “Determinants of Sexuality: Clinical Implications” had Monika Ward PhD, Carole Ober PhD and Eric Vilain MD PhD. Symposium III “Sperm Competence and Fertilization” included George Gerton PhD, John Schimenti PhD and Kirk Lo MD. Symposium IV “Novel Influences on Male Reproductive Development” featured Katja Teerds PhD, Jacques Tremblay PhD, Carole Yauk PhD and Alexander Travis VMD PhD.
Numerous attendees remained until the last day of the meeting to attend Symposium V “Mechanisms of Aging and Dysfunction” with Humphrey Yao PhD, Mario Ascoli PhD and Barry Zirkin PhD.

An important feature of the annual meeting were the platform sessions composed of selected abstracts submitted by ASA delegates. There were two simultaneous sessions, each with six speakers: Oral Session I “Regulating Male Health and Fertility” and Oral Session II “Spermatogenesis and Sperm Function”. Two poster sessions rounded out the meeting. These poster sessions permitted delegates to share their most recent research. The posters were also particularly exciting for the trainee award candidates.

The ASA Annual Meeting was also associated with a several satellite events. This year, the XXIst North American Testis Workshop, entitled “Testicular Determinants of Reproductive Success” preceded the ASA Annual Conference. The ASA Program Committee worked with Dr. John McCarrey, Chair of the Testis Workshop, to develop distinct yet complimentary programs. In addition, Drs John Mulhall and Allen Seftel organized an ASA Special Symposium, “The Science of Men’s Health: Androgens and Peyronie’s Disease”, held prior to the official debut of the Annual Meeting. The Andrology Laboratory Committee, chaired by Dr. Dean Morbeck, again offered the highly popular, hands-on “Sperm Morphology and Quality Control Workshop”. The Laboratory Science Forum Luncheon, chaired by Dean Karabinus PhD, was held during this workshop and featured Rupert Amann PhD, who spoke on the weaknesses of typical semen analysis.

Other special events ensured that there was something for every type of delegate. Everyone – trainees and non-trainees alike - was encouraged to attend the Trainee Forum and Mixer. The Mentoring Luncheon, sponsored by the Diversity and Trainee Affairs Committees addressed “Diversity and Sustaining Career Success in Andrology” with guest speaker, Donna Vogel MD PhD, Director of the Professional Development Office at Johns Hopkins Medical Institutions. This
meeting marked the 20th anniversary of the Women in Andrology. Chair Moira O’Bryan PhD arranged a special celebratory luncheon to highlight the contributions of WIA to the ASA.

Although this meeting was exceptionally jam-packed, all ASA delegates were encouraged to take advantage of, Montréal, a vibrant, multi-cultural and cosmopolitan city. The local arrangements were carried out by Drs Vassilios Papadopoulos and Bernard Robaire.

**Meeting Attendance:** 283 (highest registration rate since 2004) and 117 abstract submissions

**ASA President:** Paul Turek MD

**Meeting Sponsors:** ISA, NIH, Auxilium, Slate Pharmaceuticals, Lalor Foundation, Abbott, Lilly, AUA, Pfizer and Fertility Solutions

**Meeting Exhibitors:** AMS, Coloplast, CW Sturgeon - Fertility Technologies Resources, Inc., Prevention Genetics, SCSA, IVF and Auxilium

**Program Committee:** John Amroy MD, Arthur (Bud) Burnett MD, Gail Cornwall PhD, Patricia Cuasnicu PhD, Janice Evans PhD, Barry Hinton PhD, Marie-Claude Hofmann PhD, Kate Loveland PhD, Sally Perreault Darney PhD, Budhan Pukazhenthi DVM PhD, Bernard Robaire PhD, Mark Sigman MD, Jay Sandlow MD and Pablo Visconti PhD

**Abstract Reviewers:** John Amory MD, Susan Benoff PhD, Terry Brown PhD, Doug Carrell PhD Doug Colvard MD, Gail Cornwall PhD, Ina Dobrinski DVM PhD, Wayne Hellstrom MD, Barry Hinton PhD, Pierre Leclerc PhD, Kirk Lo MD, Kate Loveland PhD, Jeff Lysiak PhD, Joel Marmar MD, Robert Oates MD, Christian O’Flaherty PhD, Budhan Pukazhenthi DVM PhD, Jacquetta Trasler MD PhD, Jacques Tremblay PhD, Paul Turek MD and Pablo Visconti PhD

**ASA Executive Office:** WJ Weiser & Associates, Inc.
2011 ISA awardees:

- Dr. Jingwen Wu (Department of Histology & Embryology, School of Medicine, Shanghai Jiaotong University, China).
- Dr. Adam Koppers (Anatomy and Developmental Biology, Monash University, Australia).
- Dr. Juliana Perobelli (University of Campinas, Brazil).

Abstract # 36
MICRORNA−184 DOWNREGULATION OF NUCLEAR RECEPTOR COREPRESSOR2 (NCOR2) IN MAMMALIAN SPERMATOGENESIS

Jingwen Wu MD, PhD, Yanqin Hu bachelor's degree, Qiangsu Guo bachelor's degree, Chen Xu PhD, MD

Department of Histology & Embryology, School of Medicine, Shanghai Jiaotong University

Attention has been gradually paid on the role of small RNAs in posttranscription regulation during spermatogenesis. microRNAs is a kind of small RNAs which play important roles in reproduction, development, ageing and death principally at posttranscriptional levels. It was showed that microRNA−184 (miR−184) was mainly distributed in testis and brain, and the expression level in testis was much higher than that in brain. However, it is not clear the relationship between miR−184 and mammalian spermatogenesis up till now. To investigate the role and molecular mechanisms of miR−184 during spermatogenesis: 1) In situ hybridization (ISH) was applied to detect the localization of miR−184 in adult mouse testis; 2) Flow cytometry and MTS assay were performed to determine cell cycle change and cell viability in GC−1spg with miR−184 over−expressed; 3) Dual−luciferase reporter assay and Western−blot were used to measure whether nuclear receptor corepressor 2 (NCOR2) was the target gene of miR−184. The ISH results showed that miR−184 was mainly restricted in the cytoplasm of spermatogonia, preleptotene spermatocyte, pachytene spermatocyte and round spermatids. The elongating, elongated and mature spermatids did not show any positive signals. Flow cytometry assay revealed that miR−184 overexpression resulted in significantly lower number of cells in the G1 phase (38.7%, P<0.001) and significantly higher number of cells in the S/G/M2 phase (61.3%, P<0.001) compared with the negative control. MTS assay showed that the relative cell number was significantly increased with overexpression of miR−184 at 24h and 48h after GC−1spg transfected with pre−miR−184 (P<0.05). While at 72h after transfection there was no significance. Dual−luciferase reporter assay showed that pre−miR−184 decreased the expression of the luciferase construct containing the 3’UTR of NCOR2 mRNA. However, cotransfection of pre−miR−184 with the mutant luciferase construct (miR−184 seed match in the 3’UTR of NCOR2 mRNA was mutated) did not decrease luciferase activity. Western−blot showed that the expression of NCOR2 protein was decreased in GC−1spg overexpressed with miR−184. These results showed that the distribution of miR−184 was mainly restricted in the testis germ cells, miR−184 could stimulate GC−1spg proliferation and NCOR2 was the target gene of miR−184. It suggested that miR−184 could be involved in the posttranscription regulation of mRNAs such as NCOR2 in mammalian spermatogenesis.
INTRODUCTION and OBJECTIVES: Mammalian fertilization is a series of complex events in both the male and female reproductive tracts, many of which are yet to be fully understood. CRISPs are a group of 3 proteins found in mammals (4 in the mouse) which show a strong expression bias in the male reproductive organs. Whilst the functions of most CRISPs are yet to be elucidated, mouse CRISP2 is a known regulator of the ion channel, ryanodine receptor. CRISP4 is most abundantly produced by the principal cells of the epididymis and is secreted into the lumen, where it adheres to sperm during epididymal transit. This study was performed to explore the possibility that CRISP4 is also an ion channel regulator and to examine the targets and functional role of CRISP4 ion channel regulation in mouse spermatozoa.

METHODS: In this study, we have characterized the ion channel regulatory activity of recombinant CRISP4 protein using electrophysiology, cell assays and fertility analysis of knock−out mouse models.

RESULTS: Through patch−clamping electrophysiology of testicular sperm, the addition of recombinant CRISP4 CRISP domain was shown to inhibit the transient receptor potential (TRP) ion channel TRPM8. The identification of an interaction between TRPM8 and CRISP4 was confirmed using stably−transfected CHO cell lines. A CRISP4 KO mouse model was generated. Although the males were fertile, they exhibited a subtle infertility phenotype characterized by a reduced ability to undergo the progesterone−induced acrosome reaction. This data was further emphasized by the ability of TRPM8 agonists, icillin and menthol, to inhibit the acrosome reaction in mouse spermatozoa that could be prevented by the addition of recombinant CRISP4 CRISP domain.

CONCLUSION: We have demonstrated that CRISP4 is a regulator of TRPM8 in mouse spermatozoa. Due to its expression and localization pattern it is an important protein in sperm epididymal maturation and may play a critical role in ion signaling pathways involved in sperm capacitation and acrosome reaction.
Abstract # 68
PREPUBERTAL ANTIANDROGEN EXPOSURE AFFECTS SPERM QUALITY AND STORAGE IN ADULT RATS

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¹STATE UNIVERSITY OF CAMPINAS; ²State University of Campinas; ³University of São Paulo; ⁴Sao Paulo State University

The epididymis is an important organ in the male reproductive system in which sperm acquires motility and fertility capacity. During prepuberty, this organ presents important morphological and functional changes resulting in the regional differentiation of the duct, with distinct morphology, function and gene and protein expression profiles. Besides, prepuberty is a developmental window in which the animal is particularly susceptible to endocrine disrupters as the endogenous hormone levels are low and, therefore, allowing an efficient interference of xenobiotics with the endocrine system. This work aimed to evaluate the impact of antiandrogen exposure, during prepuberty, on the epididymal function, focusing on sperm quality.

Male Wistar rats, 21 days old, were allocated into 2 groups: F (n=20), that received orally daily doses of flutamide (Sigma Aldrich – 25 mg/Kg), and C (n=20), that received the vehicle (corn oil). The treatment occurred from postnatal day (PND) 21 to 44. On PND50, 10 animals per group were killed and reproductive organs weight and serum sexual hormone levels were evaluated. The other animals were killed on PND80 and reproductive organs weights, daily sperm production (DSP), epididymal sperm transit time, sperm motility, serum sexual hormonal levels, sexual behavior and reproductive performance after natural mating were evaluated. Statistical analyses were performed using Student’s “t”test and Mann−Whitney test (p<0.05). There was a significant reduction in the epididymis, prostate, vas deferens and seminal vesicle weights in F on PND50, when compared to C. On PND80, only seminal vesicle weight remained low in F. Sexual hormone levels in both ages and DSP were similar between the groups. However, sperm transit time on epididymal caput/corpus and cauda were accelerated in F and sperm motility was reduced in this group, compared to C, indicating a possible impairment of epididymal functions. There was no significant difference between the groups in sexual behavior, probably due to the normal serum testosterone levels. Reproductive performance after natural mating was also similar between C and F groups, but it should be noticed that rats, compared to humans, present a higher reproductive efficiency. These results show a decreased sperm quality and storage, suggesting impairment in epididymal function in adult rats after antiandrogen exposure during prepuberty. Funding: CNPq, FAPESP.

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