SSMR NEWS

September *Society for the Study of Male Reproduction* 2005

President's Message

This has been an exciting and successful year for the SSMR and its membership! The past year has been noteworthy, with rapid advancements in basic research and medicine making this one of the most exciting subspecialty areas in Urology.

Dolores Lamb, PhD

The current Vice-President of SSMR, Jon Pryor, and his team of reporters summarized the highlights of the spring meeting of the recent annual American Urological Association meeting in San Antonio, Texas, focusing on the sessions of particular interest to those working in the area of the male reproduction and sexual dysfunction. Their reports of meeting highlights are among the most popular sections of our newsletter.

Peter Chan served as SSMR program chair for the Scientific Session at the SSMR during the afternoon of Saturday, May 21. I presented the first basic science topic on "Molecular Basis of Spermatoxicity," which provided an overview of the targets of gonadotoxicity (endocrine pathways, proliferative, differentiative and signal transduction pathways) and the mechanism of toxicity, as well as the biological modifiers that impact individual responses to toxic insults. This was followed by Susan Benoff's discussion of the "Biochemical Basis of Spermatotoxicity," focusing mainly on heavy metals and ion channels. These studies provided the basis for the clinically relevant lectures that followed, which included targeted talks on endocrine disruptors (Rebecca Sokol), chemotherapy (Marvin Meistrich), and drug (Larry Lipshultz) effects on male reproduction. Chan's effort to develop this program on our behalf was apparent as evidenced by a successful, interesting and clinically useful session.

Bob Brannigan is organizing the 2006 SSMR Scientific Session to be held in Atlanta, Ga. This session will focus on the genital tract, from both the surgical and basic science perspectives. This upcoming meeting addresses topics not previously covered in our meeting and promises to be interesting and practical for the practicing urologist. Details will follow in the spring newsletter, which will be sent prior to the 2006 annual AUA meeting. The program is designed to appeal to those in urologic practice and research. Please encourage your urological colleagues and trainees who may not be members of the SSMR to attend this Scientific Session. It is open to anyone registered to attend the AUA and should appeal to many with a variety of interests.

The SSMR Banquet was decidedly different this year, as we relaxed, drank margaritas and beer, and ate Mexican food at La Margarita Restaurant in the Mexican Market area of San Antonio. Edmund Sabanegh and I hosted this banquet on Saturday night, following the Scientific Session. We enjoyed fajitas and other grilled meats, tacos, beans, rice and good company that night. It definitely was a new experience for many of our members and a memorable, fun night for all. I want to thank Ed for all of his hard work to create this festive night for us to enjoy.

Ajay Nangia continues to be responsible for the SSMR Traveling Fellowship Program. This is an important activity for the SSMR, as our future depends upon the continuous training of young urologists and researchers whose careers focus on male reproductive health. His efforts resulted in a truly outstanding educational event that fostered many young urologists in developing male reproductive medical careers. Ajay spent much of the meeting shepherding these trainees from breakfasts to sessions to courses, and ensuring attendance. We all are indebted to Ajay for this effort and I know from my discussions with the trainees that the experience was enjoyed by all of the trainees. If you are involved in resident or research fellowship training, please encourage your trainees to apply for this outstanding program.

The financial pressures on the Society continue to be challenging. Many of the traditional sources of income that provide all of our educational programs have diminished. Accordingly, the executive committee appointed Harris Nagler to be in charge of fundraising for the Society. If you have any ideas or sources of funding, please contact Harris to coordinate efforts. Everyone's help is needed and deeply appreciated.

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Finally, I would like to personally thank Craig Niederberger, our past president, and Bob Oates, who preceded him. Both of these individuals committed their time and effort to continue to improve our Society as evidenced by our successful program, educational and scientific efforts. All of our past presidents continue to work extraordinarily hard for our Society and we are grateful for their efforts on our behalf. That said, one of my goals for the current year is to promote and develop some of our younger members and encourage their participation at all levels of our Society because, ultimately, they are our future.

Summer is nearly over and I hope your summer was wonderful. I look forward to continued dynamic advances in our field. Most importantly, our executive committee is working with you and for you to ensure that the SSMR continues to provide us with state-of-the-art updates in our field and to ensure we continue to be at the frontiers of male reproductive science and medicine.

2005 ASRM Events of Interest

ASRM Annual Meeting
October 15-19, 2005
Montreal, Quebec

SUNDAY, OCTOBER 16, 2005

Postgraduate Program (Course #16): Sperm Quandries
Faculty:
Craig S. Niederberger, MD, FACS, Chair
Robert E. Brannigan, MD
Dolores J. Lamb, PhD

MONDAY, OCTOBER 17, 2005

10:45 a.m. – 12:00 p.m. **Interactive Sessions**
Diagnosis and Treatment of Endocrine Developmental Disorders in the Male
Society for Male Reproduction and Urology
Chair: Rebecca Z. Sokol, MD, MPH
Presenters:
Stuart S. Howards, MD
Michael K. Skinner, MD
Rebecca Z. Sokol, MD, MPH

10:45 a.m. – 12:00 p.m. **Concurrent Sessions**
Society for Male Reproduction and Urology, (SMRU) Traveling Scholars Abstracts

12:15 p.m. – 1:15 p.m. **Round Table Luncheons**

- Varicoceles and ART (M21)
- Sperm Retrieval in Non-Obstructive Azoospermia (M22)
- Genetic Evaluation of the Infertile Male (M23)
- Preservation of Male Fertility in Cancer Patients (M24)
- Testing of Sperm DNA Integrity in Human Assisted Reproduction: The Latest Evidence (M25)
- How to Upgrade Male Fertility to Lower the Grade of Assisted Reproduction Required (M26)
- Effect of Sperm Source on ART Outcomes (M27)
- Sperm Retrieval Techniques for Reproductive Specialists (M71)

1:30 p.m. – 2:15 p.m. **Plenary Session**
American Urological Association/ Bruce Stewart Memorial Lecture
"Drug Discovery and Development: A New Era?"
Kenneth Watson, MD, MBA

3:45 p.m. – 5:00 p.m. **Concurrent Sessions**
The Society for Male Reproduction and Urology Abstracts

5:15 p.m. – 6:30 p.m. **Concurrent Sessions**
The Society for Male Reproduction and Urology Abstracts

6:30 p.m. – 7:00 p.m. **Business Meeting**
Society for Male Reproduction and Urology

TUESDAY, OCTOBER 18, 2005

12:15 p.m. – 1:15 p.m. **Roundtable Luncheons**

- Cryopreservation of Testicular Samples for ICSI: Surgical & Laboratory Techniques (T22)
- Complementary and Alternative Medicine in Andrology: An Evidence-Based Analysis (T23)
- Options for Parenting for Men Who Have had a Vasectomy (T24)
- Medications that Impair Male Reproduction (T25)
- Semen Retrieval in Patients with Neurogenic Anejaculation (T26)
- Sperm Processing and Reproductive Options in the Neurologically Impaired Patient (T27)
- Azoospermia: Evaluation and Methods of Sperm Extraction (T28)
- Legal Aspects of Postmortem Reproduction (T48)
- New Horizons: Semen Analysis and Preparation Techniques (T62)
- Microsurgical Techniques for Vasoepididymostomy (T70)
- Medical, Legal and Ethical Issues in Treating Reproductive Dys function in HIV Positive Males (T76)

1:30 p.m. – 2:15 p.m. **Plenary Session**
CFAS John Collins Lecture
"Sperm DNA Damage and Male Infertility"
Armand S. Zini, MD

3:45 p.m. – 5:00 p.m. **Concurrent Sessions**
Male Reproduction and Urology Abstracts
Concurrent Sessions
Male Factor: ART Abstracts

5:15 p.m. – 6:30 p.m. **ASRM Symposium**
Male Reproduction and Urology Abstracts/Lecture:
"Evolution of Ejaculatory Dysfunction Treatment-A Shocking Story"

WEDNESDAY, OCTOBER 19, 2005

10:45 a.m. –12:00 p.m. **Interactive Sessions**
Making Sense of Sperm Morphology
Society for Male Reproduction and Urology
Chair: Mark Sigman, MD
Presenters:
Nancy L. Brackett, PhD
William E. Roudebush, PhD

12:15 p.m. – 1:15 p.m. **Roundtable Luncheons**

- A Comprehensive Approach to Genetics and Male Reproduction (W20)
- Nutrition and Male Infertility (W21)
- Sperm Extraction for ICSI-Tricks of the Trade (W22)
- Rapid Ejaculation: Diagnosis and Treatment Options (W23)
- Sperm Retrieval for ART (W24)
- Toward a Goal of Consistent Sperm Morphology Assessment (W50)

3:00 p.m. – 4:15 p.m. **Concurrent Sessions**
Male Reproduction and Urology Abstracts

4:30 p.m. – 5:45 p.m. **Symposium**
Sexuality 101: A Physician's Guide to Assessment and Treatment of Male and Female Sexual Disorders
Chair: Paula Amato, MD
Presenters:
Sheryl A. Kingsberg, PhD
John Mulhall, MD

4:30 p.m. – 5:45 p.m. **Concurrent Sessions**
Male Reproduction and Urology Abstracts/Lecture:
"Male Biological Clock"

2005 SSMR Program: Spermatotoxicity

Saturday, May 21 | Program Chair: Peter Chan, MD

The 2005 SSMR Program, entitled "Spermatotoxicity", was chaired by Peter Chan, MD, from the University of Toronto. Speakers included Dolores J. Lamb, PhD, Susan Benoff, PhD, Gunalpala Shetty, PhD, Marvin L. Meistrich, PhD, Rebecca Z. Sokol, MD, Randall B. Meacham, MD, Mark Sigman, MD, and Armand Zini, MD.

The program began with Dr. Niederberger, President of the SSMR, introducing and thanking Gregory Broderick, MD, President of the Sexual Medicine Society (SMS) of North America, for the SMS's financial support of the SSMR Male Health Traveling Fellowship program. Dr. Broderick spoke next, acknowledging the collaboration between the two groups and encouraging SSMR members to attend the SMS Annual Meeting November 17-20, 2005 in. New York.

Dr. Chan was then introduced. He provided an overview of the course, which included the following objectives:

1. Describe the biochemical and molecular principles of spermatotoxicity.
2. Outline the negative fertility impact of various medical therapies on male reproduction.
3. Provide fertility counseling to men who had previously received or who are about to receive radiation and chemotherapy.
4. Recall the potential reproductive benefits of commonly used diet supplements.
5. Recognize the potential impact of various recreational and performance enhancing drugs, heat, and environmental toxins on male fertility.

Each of the "Spermatotoxicity" program talks is summarized in the pages that follow.

"Update on the Molecular /Biological Basis of Spermatotoxicity"
Dolores J. Lamb, PhD
Baylor College of Medicine

Dr. Lamb's talk commenced with an overview of the concept of endocrine disruptors and their potential targets. By definition, "endocrine disruptors" are chemicals with steroid disruption activity, including compounds such as phytoestrogens. She detailed the fact that endocrine pathways are quite complex, and for many receptors ("orphan receptors"), no corresponding ligand has been identified. This issue complicates the search for detrimental molecules with negative impact. Nonetheless, endocrine disrupting molecules can have profound effects on the development and function of the reproductive tract.

Dr. Lamb next detailed the mechanisms of steroid action, which are characterized by diffusion into the target cell, movement to the nucleus, and effect on transcription. She stressed, though, that the picture is really more complex than this – growth factors, cytokines, and phosphorylation changes can each impact the various endocrine pathways. Furthermore, complex and highly integrated signal transduction pathways can engage in "crosstalk" and thus also regulate the response to steroid stimulation. As a result, the effect of a particular hormone or disruptor can and does vary from one tissue to the next. Co-activators and co-repressors, which enhance or inhibit steroid activity, respectively, also affect the

ultimate impact of steroid hormones on a particular tissue. Hence, the notion of tissue-specific receptor activity for a given ligand has been demonstrated, and this arises from a balance between the effects of co-repressors and co-activators

She next addressed the topic of "DNA damaging agents." These agents can be either endogenous or exogenous. Reactive oxygen species (ROS) are an example of a class of molecules which may damage DNA and which may arise from either endogenous (mitochondria, peroxisomes) or exogenous (hyperoxia, radiation, xenobiotics) sources. Both classes of ROS can have the same end outcome – significant DNA and protein damage. This DNA damage can then lead to a variety of changes, including abnormal hydrolysis of bases, methylation, and base mismatches. Ultimately, aberrant gene transcription and apoptosis may ensue. Dr. Lamb explained that certain chemotherapeutic agents can cause double stranded DNA breaks, again with the potential for profoundly negative effects in terms of transcription and translation.

Dr. Lamb next explained that cells, including those in reproductive tissues, are continuously sustaining damage from a variety of sources, including x-rays, free radicals, and UV light. Many different repair processes are ongoing in a particular cell at a given time, based on the type and nature of the damage. At a certain threshold, the cumulative impact of this damage can lead to cessation of growth, cancer, or cell death. She noted that there is significant biological variation in response to DNA damage. This was well detailed in a complex illustration of mismatch repair pathways. She explained the all humans are *not* the same in terms of their response. In sum, it is hard to predict how a single individual will respond to DNA damage.

She concluded her talk by stating that cellular and DNA damage can arise from endogenous or exogenous sources. Endocrine disruptors can influence and alter the development and function of the reproductive system. Cell specific and tissue specific effects are often seen, making the ultimate impact of these damaging molecules difficult to predict. Furthermore, DNA damage elicits a series of complex cellular and molecular responses within a given organism, making the final biological response to the insult difficult to predict as well.

"Update on the Biochemical Basis of Spermatotoxicy"
Susan Benoff, PhD
North Shore-Long Island Jewish Research Institute

Dr. Benoff began her talk by noting that when considering spermatotoxicity, potentially confounding variables, such as female factor issues, environmental exposures, etc. must be taken into consideration. She next focused on the role of heavy metals, specifically lead and cadmium, as agents capable of inducing spermatotoxicity. She reviewed numerous environmental sources of lead and cadmium exposure, and she showed that seminal and blood levels often do not correlate. Given this fact, reproductive tissue analysis for measurement of concentration of these agents is vitally important. She next detailed eloquent studies evaluating different types of patients for their levels of various metals, including zinc, lead, and cadmium.

Dr. Benoff next discussed the fact that the interaction between metals is very important. She explained that elevated cadmium levels in isolation are not a significantly negative predictor for reproductive potential. However, she and her colleague, Dr. Joel Marmar, have demonstrated markedly elevated cadmium testicular tissue levels in many patients with varicoceles. Elevated cadmium levels do not have much effect by themselves, but elevated cadmium levels in the presence of varicoceles lead to profoundly negative consequences. She explained that some organisms harbor a genetically derived sensitivity to particular metals, and as a result they cannot effectively maintain calcium homeostasis. This can ultimately have detrimental impact on sperm calcium channels—leading to impaired sperm function with reduced pregnancy and birth rates.

During the last portion of her talk, Dr. Benoff discussed the need to further define the impact of various agents on reproduction. She spoke of the positive impact of zinc on reproduction, the neutral effect of cadmium (outside of the setting of varicocele) on reproduction, and the negative effect of lead on reproduction. Her studies are providing thresholds for normalcy for various chemicals. More work in this regard is essential.

She stressed that in order to gain a full understanding of a particular agent's effect on fertility; it is helpful to look at separate patient populations, as she did with cadmium levels in varicocele patients.

Question and Answer Session:

Several questions ensued, including one regarding the use of Finasteride 1 mg every day for 5 years and the potential impact on spermatogenesis and fertility.

Dr. Lamb responded that the predominant active androgen for spermatogenesis is testosterone. Given that finasteride blocks the conversion of testosterone to dihydrotestosterone, spermatogenesis is not typically affected, in contrast to the impact that finasteride exerts on benign prostatic hyperplasia.

"Common Medications and Drugs:
How Do They Affect Male Fertility"
Larry I. Lipshultz, MD
Baylor College of Medicine

Dr. Lipshultz discussed medications that can negatively affect fertility. He pointed out that several topics would not be covered in his talk, so as to avoid overlap with other speakers. Agents that he spoke about included chemotherapeutic agents, antibiotics, recreational drugs, hormones, antihypertensive medications, and psychotropic agents.

Dr. Lipshultz noted that for men of reproductive age, testicular cancer and Hodgkin's lymphoma are the most common conditions which require the administration of *chemotherapeutic agents.* Patients receiving these agents often become azoospermic after 8-12 weeks of therapy, and recovery of spermatogenesis is variable. Fifteen to thirty percent will remain azoospermic, thus sperm cryopreservation prior to the initiation of chemotherapy is critical. At Baylor, patients are discouraged from attempting to achieve conception for two years after chemotherapy cessation to allow for recovery of spermatogenesis and minimize the genetic risk to offspring.

Regarding *antibiotics*, he noted that *nitrofurantoin* has an undeservedly bad reputation. Animal studies have shown that very high doses can cause maturation arrest in experimental subjects. No impairment in spermatogenesis in humans at clinical levels has been demonstrated. *Erythromycin* has been shown to decrease motility, but only in animal studies.

Recreational and illicit drugs were detailed next. This includes alcohol, tobacco, cocaine, marijuana, and opiates. *Tobacco* has been shown to cause oxidative damage, an increase in sperm aneuploidy, testicular atrophy, and increases in prolactin and estrogen. He stated that the mechanism by which tobacco impairs fertility is not known, and he presented a summary slide of Dr. Zavos' study demonstrating a seminal fluid factor which

impairs sperm motility. He noted that most IVF programs insist on smoking cessation in men at least 3 months prior to semen collection. *Marijuana* was discussed next—it leads to numerous detrimental changes, including a decrease in sperm concentration, motility, morphology, and an increase in seminal WBC's. Spermatogenesis effects are also seen, with impairment in mitosis and meiosis. *Cocaine* can also cause numerous harmful changes, including a decrease in sperm concentration, motility, and morphology. Hyperprolactinemia, decreased testicular blood flow, and an increase in testicular apoptosis may also result from cocaine use. Opiates, such as heroin and methadone, can cause a decrease in libido and lead to erectile dysfunction.

Hormonal agents, such as *testosterone* and *anabolic steroids* can impair spermatogenesis at both physiologic and pharmacologic levels. This likely arises, at least in part, due to inhibition of the GnRH pulse. Abnormally low intratesticular testosterone levels may result, leading to impaired spermatogenesis. Over time, irreversible damage, including severe testicular atrophy, may ensue. Administration of hCG after discontinuation of testosterone may help restore spermatogenesis in many of these patients.

Antihypertension agents have also been implicated in fertility impairment. *Spironolactone* leads to decreased testosterone production, with potential negative impact on libido, erections, and spermatogenesis. *Calcium channel blockers* may interfere with the acrosome reaction and thus impair fertilization, although a 1997 study showed no apparent impact in both IVF and non-IVF cycles. Dr. Lipshultz recommends consideration of antihypertensive medication change in couples experiencing possible male factor infertility.

Psychotropic agents can impair both libido, erectile function, and also lead to delayed ejaculation. Hyperprolactinemia can also result, leading to a drop in GnRH secretion, decreased testosterone levels, and impaired spermatogenesis.

"Impact of Chemotherapeutic Agents on Male Infertility"
Gunapala Shetty, PhD, and Marvin L. Meistrich, PhD
University of Texas, M.D. Anderson Cancer Center

Dr. Shetty presented a comprehensive overview of chemotherapy and radiation therapy. Patients may suffer loss of sperm production as a result of these treatment modalities. Recovery may be early or late. Dr. Shetty singled out Hodgkin's disease and detailed the efforts to search for alternative therapies to minimize gonadal toxicity. In this condition, recovery of spermatogenesis depends largely on the cumulative dose of cyclophosphamide therapy administered.

Dr. Shetty next discussed the role of hormone treatment (GnRH antagonist) given before and after cytotoxic therapy as a means to preserve spermatogenesis. Only 1/7 clinical trials showed a protective effect. Additionally, several nonhormonal approaches have been studied, but no studies have demonstrated their effectiveness.

Gamete cryopreservation via semen collection prior to treatment remains an essential aspect of reproductive potential preservation. Dr. Shetty touched on several additional interesting points:
-No increased risk of genetic disease is seen among offspring of male childhood cancer survivors treated with chemotherapy or radiation therapy.
-No increased risk of genetic disease is seen among children conceived > 1 year after completion of chemotherapy in the father.

"Spermatotoxicity of Recreational and Body-building Drugs"
Randall B. Meacham, MD
University of Colorado at Denver and Health Sciences Center

Dr. Meacham began his talk by discussing the *abuse of testosterone*, including oral agents (methylated forms of testosterone) and esterified forms (testosterone cypionate and testosterone enanthate). These medications can lead to improved muscle mass and enhanced athletic performance, but these gains come with a price. Impaired spermatogenesis may result.

He next cited a study where participants were given 600 mg IM of testosterone per week, and triceps and quadriceps measurements were taken. Interestingly, the study subjects taking testosterone therapy without an accompanying exercise regimen were noted to have nearly identical outcomes (triceps and quadriceps measurements) as those taking testosterone therapy with an accompanying exercise regimen.

Dr. Meacham discussed that the normal intratesticular testosterone levels are 20-40 times higher than periphery serum levels. Exogenous testosterone leads to a drop in LH production, markedly decreased intratesticular testosterone levels, and a profoundly hypogonadal state in that milieu. This often leads to impaired spermatogenesis, which may be permanent.

The topic of *recreational drugs* was addressed next. *Cocaine* is used widely among young adults, including 30% of men ages 26-34 years old. This is a significant problem from a reproductive health perspective, because in animal studies cocaine use leads to impaired semen parameters, including concentration, motility, and morphology. Germ cell apoptosis is also increased. *Marijuana* is also commonly abused, and its use may lead to decreased ejaculate volume, sperm concentration, and motility. *Tobacco* use has detrimental effects, but the overall impact is not entirely clear. Over 60 toxins are found in cigarette smoke. Tobacco use is associated with decreased count, motility, and morphology.

"Impact of Environmental Toxins on Male Fertility"
Rebecca Z. Sokol, MD, MPH
University of California Keck School of Medicine

Dr. Sokol began her talk with a review of the history of reproductive toxicology. She noted that the field has roots in the era of the Roman Empire, whose downfall may have been caused by widespread lead toxicity. In 1975, the first study detailing the reproductive toxicity of lead in men was published. In 1977, W. Horton, a clinician, surveyed men he cared for in the community setting. He observed that the longer men worked in a particular factory making DBCP (dibromochloropropane), the higher the risk of infertility. These astute observations lead to the implication of DBCP as a potent gonadotoxin and earned Horton acclaim as one of the fathers of modern reproductive toxicology.

Dr. Sokol next detailed how toxicants can impact offspring development. Negative effects can be seen at several levels, including fertilization, embryo development, puberty, and reproductive efficiency.

The "Endocrine Disruptor Theory" was then discussed, specifically in the context of declining sperm counts noted in work by Carlsen. This work has sparked a major debate on the topic. Unfortunately, much of the work on the issue of "declining sperm counts" suffers from problems with study design and statistical methods. In particular, many of these studies have not accounted for age, ethnicity, and fertility status of the study subjects. Dr. Sokol reviewed a recent study revealing geographical differences in semen quality, with NY>MN>CA when comparing sperm concentration. Dr. Sokol explained that exposure to environmental, agri-

cultural, and occupational chemicals, as well as air pollution, may account, at least in part, for these regional differences in sperm concentration.

The issue of lead toxicity was next addressed. Lead is the most well documented reproductive toxicant in the world. It is widely present in plastic, mirrors, paint, transmissions, gas, and soil. Numerous routes of exposure exist, including inhalational, oral, and transdermal absorption. A dose response effect is seen, and age at time of exposure and duration of exposure influence the ultimate clinical impact. Some studies reveal a negative impact on fertility, while others suggest no significant impact. Several studies are ongoing.

Pesticides, herbicides, fungicides, and insecticides were then discussed. DBCP, an irreversible toxin, is the best studied in this class. Dr. Sokol reviewed Larry I. Lipshultz, MD's work on this agent. Ortho-para DDE is another toxicant, causes abnormalities in developing and pubertal rats. Alachlor, an agent used widely in agriculture, is also implicated as a reproductive toxicant. It is suspected of causing the relatively decreased sperm concentrations for men from Missouri compared to those from Minnesota.

Many industrial chemicals, including polycyclic aromatic hydrocarbons, PCB's (estrogenic activity), and air pollutants (ozone, CO, NO2, SO2, Particulate matter < 10 microns in diameter) are all implicated as reproductive toxicants as well.

Dr. Sokol next discussed one of her own studies in which ozone was found to have a negative effect on spermatogenesis at all time points studied. She added that there is likely a physiologic reason for this, although the exact pathophysiology is not entirely understood at this time. She next summarized her talk by noting that chemicals can alter the normal development and function of the male reproductive tract. The data on the issue of "worldwide declining sperm counts" is still inconclusive. Clinicians should take an active interest in thoroughly evaluating patients' exposure history, in an effort to uncover possible exposure to reproductive toxicants. In addition to identification, the clinician should characterize the extent of exposure, assess the degree of risk, and actively initiate a plan to control or prevent additional exposure.

She closed with a story of a glassblower whom she cared for in the past. He had oligospermia, and during the course of history-taking Dr. Sokol learned that he was a glassblower. The patient noted that "It is as though my loins are on fire," indicating the degree of heat exposure he sustained on a regular basis during glass blowing. With removal of this harmful exposure, he soon improved to a near normal sperm count and shortly thereafter initiated a pregnancy with his wife with natural means.

Question and Answer Session:

During the ensuing question and answer session, one of the audience members asked Dr. Sokol to specify jobs with higher than normal levels of exposure to lead and other reproductive toxicants. Dr. Sokol responded that agricultural workers are certainly at higher risk. Short order cooks are also at risk due to heat exposure, and she encourages these men to wear loose-fitting pants and to go outside when they can to cool down. Finally, she noted that individuals restoring homes have risk of exposure to old lead-based paint.

"Role of Nutraceuticals and Phytoestrogens on Male Fertility"
Mark Sigman, MD
Brown University

Dr. Sigman's talk provided an overview of vitamins, minerals, herbs, and other botanical agents that may be taken by patients to improve reproductive or overall health. Many of these agents, although widely used, have not been well studied. This fact is particularly true regarding the impact of many of these agents on reproductive function. Additionally, contrary to popular belief, "more" is not always "better" when regarding these chemicals.

Dr. Sigman next discussed carnitine. He noted that carnitine has a wide range of known metabolic functions, but its role in sperm physiology remains unproven. He next reviewed several pertinent studies. Three of the studies were placebo-controlled. One of the studies, published in 2003, showed a small improvement in sperm concentration and motility with carnitine therapy, after outliers thrown out of the data analysis. Two other studies showed no benefit to carnitine therapy, including one in which Dr. Sigman was an investigator.

He next discussed the issue of cofactors-substances which may be important to maintaining normal reproductive health. Zinc and folate are two examples of such chemicals which he cited, and zinc is certainly present in high levels in semen and prostate fluid. Other potentially important cofactors include Vitamin B12, which has an important role in RNA and DNA synthesis, as well as in cell division.

Reactive oxygen species (ROS) have been widely discussed in the literature. These molecules are essential for sperm capacitation, the acrosome reaction, and fertilization. However, at excessive levels, ROS can cause sperm damage and impair sperm function. Antioxidants have been widely discussed in the literature as treatment for excessive ROS levels. Some of these agents include: selenium, vitamin E, vitamin C, glutathione, and coenzyme Q. He noted that selenium deficiency can cause midpiece instability and sperm damage. The data on antioxidant therapies and their ultimate impact on semen parameters are conflicting, and at this time it is impossible to draw definitive conclusions. We do know, however, that some ROS are needed for normal fertility.

Herbal treatments were next addressed. Ginseng and pygeum are commonly used herbal remedies purported to assist reproductive health. The mechanism of action for these and many other herbal agents is not known. Most of the published studies are small and uncontrolled. Clearly, more work needs to be done to define the role of herbal therapies in reproduction health.

Phytoestrogens have been linked to reproductive impairment. Observational studies have revealed that sheep grazing on high-phytoestrogen content clover were infertile. Furthermore, animal studies demonstrated that high phytoestrogen intake causes severe fertility impairment in rats. While physiologic doses seem to have limited if any impact on reproductive health in humans, commercial mixtures with high phytoestrogen content have potential to cause harm.

In summary, Dr. Sigman recommends routine multivitamin supplementation and a well-balanced diet for his patients. The role for most of the above-mentioned agents is unclear at this time.

"Impact of Heat on Male Fertility"
Armand Zini, MD
McGill University

Dr. Zini addressed the issue of heat and infertility. He noted that the temperature of the testis is 2-4 degrees less than core body temperature. He next detailed the countercurrent heat transfer mechanism of the scrotum. He summarized the literature on the impact of hyperthermia on testicular function, both in terms of experimental and clinical data. Specifically, animal studies reveal that heat induces germinal epithelial apoptosis, particularly at the levels of primary spermatocytes. This is

reflected in decreased fertility seen typically 30 days after the application of heat. Numerous animal and human studies reveal that men with varicoceles have higher temperatures than men without varicoceles.

Dr. Zini next detailed a study showing that semen parameter impairment is seen at a range of 8-56 days after the onset of a fever. The magnitude of drop in sperm concentration is related to the number of days an individual is febrile. He next briefly reviewed several interesting clinical studies. The first concluded that in evaluating sleeping position, men who sleep on their side have higher scrotal temperatures than those who sleep on their back. Regarding the boxers versus briefs debate, several studies revealed no difference in scrotal temperature, even in crossover studies. In contrast, Jung et al in 2005 concluded that scrotal temperatures are lower with boxers versus briefs, and with standing vs. sitting position. Another study revealed that tight underwear leads to a decrease in sperm concentration. In contrast, Wang et al subsequently studied 21 male volunteers who wore a tight scrotal supporter for one year, and they noted that despite a mild increase in scrotal temperature, no change in semen parameters was noted.

Additional studies focused on occupational heat. Men who drive for a living did have a degree rise in scrotal temperature, but the incidence of infertility was not higher than the control group. Other studies, though, have suggested that occupational drivers take a longer time to initiate a pregnancy than controls. Men who work around hot ovens have been found to have a 23% prevalence of infertility, double that of controls. Finally, men who routinely use laptop computers have recently been found to have a 2.7-degree rise in scrotal temperature sitting with a laptop-no fertility data has been gathered on this group yet.

Dr. Zini concluded his talk by recommending that clinicians consider the issue of heat toxicity when evaluating a man's reproductive health.
Summarized by Robert E. Brannigan, MD

Plenary Session, Sunday, May 22
State-of-the-Art
"Fertility and Cryptorchidism"
Speaker: Peter A. Lee, MD

This talk examined the fertility outcomes of patients with both unilateral (UC) and bilateral (BC) cryptorchidism. Dr. Lee noted that based upon large epidemiologic studies, most men with UC have paternity rates that are very similar to men in the general population, whereas men with BC have reduced paternity rates by about one-third. These studies have demonstrated no relationship between preoperative testicular location or volume and paternity rates. Furthermore, the time to conception was similar in men with UC and the general population. Although sperm counts in men with UC were typically lower than those of other fertile men, it did not affect paternity rates. However, men with BC had much lower sperm counts, as well as paternity rates. It appears that cryptorchid men have lower levels of inhibin B, and these studies demonstrated that there was a positive correlation between inhibin B levels and sperm counts, as well as a negative correlation between FSH and sperm counts. Finally, Dr. Lee pointed out that it has been demonstrated that the earlier the cryptorchid testis is brought down, the better the outcome. Therefore, the current recommendation is that if the testis has not descended by 6 months, it should be brought down surgically.
Summarized by Jay Sandlow, MD

Panel Discussion
"Case Studies in Infertility: Non-Azoospermic Men"
Moderator: Dr. Peter Schlegel
Panelists: Dr. Lawrence Ross, Dr. Cathy Naughton, Dr. Jeanne O'Brien

This discussion centered on some of the more common situations seen in male infertility, including low motility, pyospermia, and DNA abnormalities. A review of DNA integrity and damage was presented, along with some of the lab tests utilized to detect this. One of the more common tests, sperm chromatin structure assay (SCSA) was discussed, as well as the treatment for DNA abnormalities. It was agreed upon by the panel that all underlying causes of male infertility, such as varicocele or gonadotoxin exposure, could affect DNA integrity as well and should be treated. The next part of the discussion was regarding the finding of round cells on semen analysis. Since it is impossible to distinguish between immature germ cells and white blood cells on light microscopy, most samples that show elevated WBC's are likely to be germ cells. The only true way to differentiate between the two types of cells is with special stains or monoclonal antibodies. However, if pyospermia is confirmed, the evaluation should be centered around the source of infection/inflammation. The panel agreed that specific infections should be treated. However, there was some discussion about the treatment of negative cultures, with the options being either anti-inflammatories vs. empiric antibiotic treatment. Next, the causes of isolated asthenospermia were discussed. These can be due to artifactual, epididymal, genetic, or infectious causes, as well as antisperm antibodies. It may also be seen in varicoceles or with partial obstruction. As with other causes of infertility, the panel recommended treating the underlying problems. Finally, a case regarding the evaluation and management of varicoceles was presented, with respect to the necessary work up (ultrasound, DNA testing), as well as factors affecting treatment decisions (female age, costs, risks). The panel agreed that routine ultrasound is not necessary for the diagnosis of varicoceles, except in the case of a difficult physical exam, and that DNA testing is also not a routine diagnostic test. In regards to treatment, in the absence of female factors, varicocele treatment tends to be cost-effective and relatively low risk. However, in the presence of significant female factor, treatment of varicocele is not always indicated.
Summarized by Jay Sandlow, MD

Plenary Session, Monday, May 23
State-of-the-Art
"IVF and ICSI: Outcomes, Risks, and Costs"
Speaker: Larry I. Lipshultz, MD

Dr. Lipshultz provided a succinct yet thorough overview of IVF and intracytoplasmic sperm injection, focusing on outcomes, costs and risks.

Beginning by noting that no institutional review board process approved the genesis of the ICSI, Dr. Lipshultz surmised that the unregulated origin of a procedure in such common use today was likely due to the near accidental roots of the technique. Dr. Lipshultz then reviewed the indications for ICSI, including obstructive and non- obstructive azoospermia, severe oligoasthenospermia and unexplained infertility. ICSI is quite prevalent, with more than 45,000 procedures performed in 2002, rivaling IVF alone. Dr. Lipshultz discussed the well-established relationship between maternal age and ICSI outcomes.

Referencing an analysis performed by Neumann in 1994 (Neumann PJ et al., N Engl J Med. 1994 Jul 28;331(4):239-43,) Dr. Lipshultz cited the cost per live birth for vasovasostomy to be approximately $30,000, that

of varicocelectomy $42,000 and $152,000 for microepididymal sperm aspiration coupled with ICSI. Dr. Lipshultz emphasized that surgical correction when feasible remains the most cost effective option for reproduction.

Dr. Lipshultz reviewed the risks of ICSI, including multiple gestation, citing the 20-fold increase of twins and 400-fold increase in higher multiples, the 2-fold increase in major birth defects computed by Hansen (Hansen M et al., N Engl J Med. 2002 Mar 7;346(10):725-30,) a meta-analysis by the same source that revealed in two thirds of studies a 25% or greater risk of major birth defects (Hansen M et al., Hum Reprod. 2005 Feb;20(2):328-38,) and a recent report by Bonduelle observing that ICSI children are more likely to have significant childhood illness, surgery or medical therapy requiring hospital admission (Bonduelle M et al., Hum Reprod. 2005 Feb;20(2):413-9.) Reviewing the literature, Dr. Lipshultz concluded that at present ICSI does not appear to affect the psychological well-being and cognitive development of offspring until age 5, but cautioned that further studies are needed.

In his final topic, Dr. Lipshultz reviewed possible genetic effects of ICSI, beginning by discussing a report by Krausz citing Y-chromosomal deletions in 11% of patients with azoospermia and 6% with severe oligospermia (Krausz C et al., Int J Androl. 2003 Apr;26(2):70-5.) Significantly, AZFb deletions have not been associated with sperm found in the testis, demonstrating surgical relevance for Y- chromosomal microdeletion testing. Dr. Lipshultz then reviewed congenital bilateral absence of the vas deferens and its relationship to genetic mutations of the CFTR gene, noting that all affected offspring will carry a genetic defect, and discussed his own meta- analysis of Klinefelter's syndrome, with sperm retrieval rates of 30 to 60%, and fertilization rates exceeding 50%, emphasizing that karyotypic analysis is of great utility in these patients. Dr. Lipshultz concluded with a review of genomic imprinting disorders including Angelman's and Beckwith-Wiedemann's syndromes.

Dr. Lipshultz's "take home messages" were that the use of IVF/ICSI for male factor infertility is increasing, that treating male factor infertility directly is more cost effective than ICSI with the latter's attendant risks including multiple gestation and congenital abnormalities, that patients with nonobstructive azoospermia and oligospermia with sperm density less than 5 million/cc benefit from karyotypic and Y-chromosomal analyses, and that patients with vasal agenesis or unexplained epididymal obstruction benefit from CFTR testing to exclude a cystic fibrosis gene mutation. Finally, Dr. Lipshultz concluded, "patients need to be counseled that even with advanced genetic testing, there is no guarantee of a perfect baby."

Summarized by Craig S. Niederberger, MD

Post-Graduate Course, Monday, May 23
"Tissue Engineering and Stem Cells in Urology"
Chair: Anthony Atala, MD
Faculty: Dolores Lamb, PhD

Dr. Atala's presentation was an impressive array of successful applications of tissue engineering to the development of tissues for bladder augmentation, hypospadias repair and a wide range of other applications in clinical urology. Beginning with development of scaffolding material for the cells to attach and grow, complex tissue organizations were realized when these were transplanted into animal models or in some cases human patients. Dolores Lamb presented an overview of stem cells in urology. Individuals who are candidates for chemotherapy are often rendered infertile, albeit cured of their cancer. While adults may have the option to preserve their fertility through sperm banking, this is not possible for children. Accordingly, there is significant interest in the development of adult testicular stem cells for rejuvenation of spermatogenesis. Embryonic stem cells also offer great promise for the treatment of many degenerative diseases and aging, but in the United States basic research is hindered by current government regulations. Despite these caveats, the field of regenerative medicine is advancing rapidly and applications in clinical urology are expected to continue to develop over the next decade.

Summarized by Dolores Lamb, PhD

Endocrine Forum, Monday, May 23
"PSA: A Clinical Dilemma"
Co-Chairs: Larry Lipshultz, MD; Abe Morgentaler, MD
Faculty: William Catalona, MD; Alan Partin, MD; Ian Thompson, MD; Paul Lange, MD

The first lecture by William Catalona focused on the clinical problem of PSA – namely, how does the urologist use the information obtained in the total and free PSA assays, the interpretation of PSA doubling time and age related changes in circulating PSA concentrations. Alan Partin reported on the use of nomograms to interpret and predict prostate cancer stage, grade and prognosis. Ian Thompson's presentation focused on his report published in the New England Journal of Medicine questioning whether virtually all men over the age of 40 have some sub clinical evidence of prostate cancer. Finally, Paul Lange's lecture discussed whether PSA is still a useful clinical test for urologists today. It was a provocative and well-attended session for a standing room only crowd of interested urologists.

Summarized by Dolores Lamb, PhD

Post-Graduate Course, Tuesday, May 24
"Evaluation and Management of the Infertile Male: What's New and What's Important?"
Chair: Marc Goldstein, MD
Faculty: Dominick J. Carbone, MD; Jon L. Pryor, MD

The first talk, by Mark Goldstein, was why evaluate the Infertile Male in the Era of Art? There is a 37 time higher incidence of testis cancer in infertile than fertile men and a 30-100 time higher incidence of genetic abnormalities. Therefore, men need to be evaluated, not just for infertility, but because infertility may be a sign or symptom affecting their overall health. Varicoceles, if present can have an adverse effect on Leydig cell function resulting in low testosterone levels later in life which can result in decreased libido, energy levels, erectile function and osteopenia/osteoporosis. Finally, couples prefer naturally conceived babies.

Anatomy and physiology was the next topic. Key anatomic and physiologic points to remember include the following: (1) Blood supply to the testicle arises from the testicular, the deferential and the cremasteric artery; during inguinal varicocelectomy, the surgeon must remember that there may be 2 or 3 arterial branches at this level. (2) Testicular biopsy should be carried out in the medial or lateral surface of the upper pole, where risk of vascular injury is minimal. (3) Optimal qualitative and quantitative spermatogenesis requires the presence of both testosterone and FSH.

Evaluation of the infertile male was then discussed. The emphasis was that all men from infertile couples need to be evaluated by a detailed history (there are so many questions it's best to have a questionnaire), a targeted physical examination, and two semen analyses. If there are symptoms of an endocrinopathy, oligospermia, or an abnormal scrotal exam,

a hormone evaluation is also obtained. Antisperm antibodies can be obtained if there is decreased sperm motility (asthenospermia), sperm agglutination or clumping, an abnormal post-coital test, or idiopathic infertility. There are other tests that can be performed for sperm function, such as the sperm penetration assay, but these are not widespread and in many cases are still in the investigation phase. We then discussed the workup of azoospermia, which is from ejaculatory dysfunction, blockage, or hypogonadism. In all cases make sure a hormone evaluation is obtained. Get a TRUS if you suspect ejaculatory duct obstruction (e.g. pain on ejaculation and/or low ejaculatory volume). If the patient has congenital bilateral absence of the vas deferens, have the patient and spouse tested for CFTR gene mutations, including the 5T allele. If the patient has severe oligospermia (less than 5 million sperm/ml) or azoospermia from testicular failure, get a karyotype and microdeletion of the Y chromosome. If hypogonadotropic hypogonadism is suspected, get a MRI of the pituitary/hypothalamus.

The next lecture was an overall schema on how to categorize patients for treatment. Patients can be placed into one of four categories: normal, specific problem, idiopathic (minor or moderate) or idiopathic (severe) or a non-treatable problem. If the workup of the male appears normal, then focus on the female. Treat specific problems like a varicocele. If idiopathic (minor or moderate) try empirical therapy. If severe or a non-treatable problem, do IVF with ICSI, or adopt or pursue donor IUI.

We then discussed specific medical therapy of endocrinopathies, infections, and ejaculatory dysfunction. It was pointed out that some medications, such as metoclopromide, phenothiazines, and some antidepressants can elevate prolactin levels. Mild elevations of prolactin do not cause infertility and should not be treated. Hypogonadotropic hypogonadism is typically treated with hCG 1500 IU q MWF for six months and if no improvement, add hMG 75IU q MWF. Finally, when treating ejaculatory dysfunction from RPLND or diabetes with sympathomimetics (e.g. imipramine or pseudoephedrine), limit the drugs to ten days to two weeks around ovulation as they cause tachyphylaxis. In addition, if one drug doesn't work, try another sympathomimetic, as it has been clearly shown that patients may respond to one drug and not another.

Next, we discussed surgical therapy of male infertility. 35-40% of infertile men have varicoceles and 10-20% have obstructions. Therefore, over 50% of male infertility are surgically correctable. Microsurgical approaches allow sparing the testicular artery and lymphatics during varicocelectomy, thus virtually eliminating hydrocele and testicular atrophy as complications. Microsurgical repair of vasal obstructions now has patency rates over 90% and pregnancy rates of 80% up to 15 years after obstruction. Repair of epididymal obstructions using new microsurgical intussusception techniques yield patency rates of over 80% and pregnancy rates of 40% in the best of hands. Reversal of vasectomy frequently requires vasoepididymostomy and therefore reversals should be only be done by surgeons who are expert at vasoepididymostomy. Surgical treatment of male infertility is more cost effective than IVF and has comparable or better pregnancy rates. In addition, surgical treatment of male infertility will often upgrade couples from nothing to IVF/ICSI using ejaculated instead of testicular sperm, or from IVF to IUI, or IUI to a naturally conceived pregnancy.

Empiric therapy for male infertility was the next topic. Empiric therapy for male infertility may be divided into hormonal and non-hormonal treatments. Of the former, androgen supplementation, testosterone rebound therapy, gonadotropins, and GnRH therapy are not recommended for idiopathic infertility. Aromatase inhibitors, such as testolactone or anastrozole, may have some benefit in men with impaired testosterone to estradiol ratios. Therapy with clomiphene citrate remains controversial, though it may have some benefit in men with a low normal FSH level. Careful monitoring of individuals on clomiphene is required. Finally, nonhormonal treatments, including kallikreins, bromocriptine, pentoxifylline, and carnitine, have not been shown to be beneficial in randomized, double-blind, placebo controlled trials.

The urologist's role in assisted reproduction includes recognizing appropriate patients to refer for ART and to optimize sperm quality prior to ART. With regards to the latter, numerous studies demonstrate that varicocele repair prior to ART can upgrade sperm quality so that lower cost procedures, such as stimulated IUI, may be pursued rather than ICSI. With regards to the former, relatively clear cut cases best treated with ICSI include failure of conventional IVF, anti-sperm antibodies, and globozospermia. Finally, it is critical that specific patients (see below) undergo appropriate genetic screening prior to ICSI.

Basic genetics of infertility was then discussed. The talk centered on Klinefelters, CBAVD, and microdeletions of the Y chromosome. It was concluded that with IVF and ICSI, we can propagate genetic diseases, both those that cause infertility and other diseases. Even though there is no "cure" for genetic problems, patients want to know if they have a genetic cause for infertility and if it can be passed on to any of their progeny. If a man has less than 5 million sperm per ml, get a karyotype and test for microdeletions of the Y chromosome. If the patient has CBAVD or idiopathic epididymal obstruction, test for CFTR gene mutations.

Sperm acquisition was the next topic. In obstructive azoospermia, microsurgical epididymal sperm aspiration may be the procedure of choice, as it results in a high retrieval rate and allows for cryopreservation. Percutaneous procedures may be utilized if the patient is opposed to open surgery or if only one IVF cycle is anticipated. For patients with non-obstructive azoospermia, microsurgical testicular sperm extraction with tissue preparation in a reproductive center represents the optimal choice.

The "Dos and Don'ts of Infertility" was a lecture to remind urologists of absolutes when treating infertility patients. Both the male and female of infertile couples need to be evaluated. The male should have a history and physical examination and two semen analyses. Don't indiscriminately get other tests (e.g. scrotal U.S. or TRUS). Biopsy all azoospermic males, but do so only if you can harvest/freeze sperm at the same time for possible future use in IVF/ICSI. Don't do a vasogram at the time of testicular biopsy. Don't treat an infertility patient with testosterone- it's a contraceptive. Finally, practice the 3 C's: close follow-up, collaboration with the obstetrician/gynecologist and andrology lab, and good communication.

Coding for male infertility was the last topic of the course. Never use infertility as a diagnostic code. Infertility is a symptom, not a disease. Use the code for the etiology, physical findings, or pain, such as varicocele (456.4); testicular atrophy (608.3); epididymal cyst (222.3); or sperm granuloma of the vas deferens (608.4) for reversal patients (if present). Dictate your own detailed operative report. If a microscope is used, say so and indicate what magnifications were used. Code for all procedures, e.g. when coding for a testis biopsy to rule-out obstruction: testis biopsy—54505, microsurgical exploration of epididymis—54820 (if you inspected the epididymis under the operating microscope to look for dilated tubules), and code for sperm identification from testicular tissue—89264 (if you look at the tissue yourself under a 400X bench microscope to look for sperm).

Summarized by Jon L. Pryor, MD

AUA Infertility Session, Tuesday, May 24

A number of varied topics of clinical\relevance were covered in the Moderated Poster session on Tuesday afternoon at the AUA. A group from Israel headed by Dr. Igael Madgar reported that viable sperm can be retrieved up to 36 hours after death, questioning the 24-hour window proposed by prior investigators. Zini, Jarvi, and others from Toronto reported on 11 men with recurrent varicoceles and orchalgia. At a mean of 12 months postoperatively, 6 men had complete resolution of pain, while 4 were markedly improved. Fuchs reported that vasovasostomy performed for intravasal azoospermia with watery fluid in the vas had sperm return to the ejaculate postoperatively. Lo and Jarvi investigated the effect of duration of obstruction on vasectomy reversal results; there was no time after vasectomy when vasoepididymostomy may not be required and little effect of obstructive interval on patency rates. Weiss and Li reported on the successful use of a transcutaneous jet to deliver local anesthesia for vasectomy. Turek et al. described the effect of scrotal hyperthermia delivered by hot tubs or Jacuzzis on sperm production. They found profound and variable effects on semen parameters in different men that appeared to be more dramatic in smokers. In a provocative study, Herwig et al. from Austria investigated the effects of a homocysteine-lowering diet of folate, pyridoxine, and vitamin B12 on testicular function. Their preliminary suggested that such a diet may increase testicular blood flow, sperm quality and production. In a related study, an inverse relationship between serum homocysteine levels and semen parameters was also observed by the same group from Innsbruck. Investigators from Winston-Salem suggested the use of frequent ejaculation to assist in attaining azoospermia for men with persistent non-motile spermatozoa in the ejaculate after vasectomy. A study from Turkey suggested that neither ejaculate volume nor seminal vesicle dilation predicted the diagnosis of ejaculatory duct obstruction. Another study from Toronto suggested that hand-motion analysis and stereoscopic visual acuity were accurate, objective predictors of microsurgical skill. Lin, Brannigan and coworkers reported on the benefit of varicocelectomy for 17 men with isolated teratospermia. In a provocative review, Agarwal and associates suggested that % normal sperm morphology was more predictive than sperm motility and concentration for discriminating fertile men from infertility patients. Iwamoto and colleagues from Japan, in another population-based study, showed dramatic variability in semen parameters between individuals as well as intra-individual variability. Carbone reported on the adverse effect of exogenous testosterone on male fertility, a well-recognized relationship that appears to often be neglected in the treatment of aging men. Another study from Toronto reported that 60% of men with excessive sperm DNA fragmentation levels (>60% DFI) had identifiable causes for excess DNA breaks, including infection, partial obstruction. In an interesting electrophysiologic study, scientists from Turkey showed that an inguinal hernia alone may adversely affect the genitofemoral nerve, not just postoperative scar tissue after hernia repair.
Summarized by Peter N. Schlegel, MD

5th Annual SSMR/SMSNA Traveling Fellowship Program

The 5th annual traveling fellowship program took place at the AUA in San Antonio and was a great success. This year was the first combined fellowship with the Sexual Medicine Society of North America (SMSNA), and hence, the change in the name of the fellowship to reflect this association. These awards are designed to expose young urology residents to the field of sexual medicine, including male infertility and erectile dysfunction, and allow them to participate in many of the events at the AUA. Ten participants from various institutions were selected. The fellows who participated this year were:

Theodore Brisson, MD	Mayo – Jacksonville, Fla.
Brian J. DeCastro, MD	Madigan Army Medical Center – Tacoma, Wash.
Angelo R. DeRosalia, MD	SUNY Downstate Medical Center – Brooklyn, N.Y.
Ryan E Frankel, MD	University of Massachusetts Medical School – Worcester, Mass.
Dan B. French, MD	University of Texas – San Antonio, Texas
Neil S. Kansal, MD	George Washington University – Washington, D.C.
Todd J. Lehrfeld, MD	SUNY Downstate Medical Center – Brooklyn, N.Y.
Zachary R. Mucher, MD	University of Texas Southwestern Medical Center – Dallas, Texas
Alan Shindel, MD	Washington University School of Medicine – St. Louis, Mo.
Amberly K. Windisch, MD	University of Kentucky – Lexington, Ky.

The SMSNA, under the presidency of Dr. Broderick, was very gracious in contributing $6,000 toward the fellowship fund, and this was presented to Dr. Niederberger at the start of the SSMR meeting. The residents attended the SSMR and SMSNA society meetings as well as the SSMR banquet and SMSNA luncheon. A career development breakfast was held on the Monday of the AUA. Some of the active members of our society and the residents found this useful for their future aspirations. All the residents were able to attend the postgraduate course held by Dr. Pryor et al., as well as some of the plenary sessions and scientific program.

The residents found the travel award to be very useful and productive in teaching them aspects of sexual medicine that many were not exposed to in their residencies thus far. They were able to meet many members of the societies and, we hope, establish some connections for their future careers in this field.

At the executive meeting it was decided by the Board to make the residents trainee members of the SSMR this year, and we hope that they will remain members in the future.

Plans for next year's travel fellowship will include more involvement with the SMSNA (e.g. the fellow selection process; more representation at the career development breakfast).

Thank you to everyone for helping the residents experience the field of sexual medicine. We look forward to another successful meeting next year in Atlanta.

Ajay Nangia

SSMR Board of Directors

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Men's Health Traveling Fellowship Program 2006

Dear Urology Residency Directors, SSMR and SMSNA Members:

The Society for the Study of Male Reproduction (SSMR) and the Society for Sexual Medicine of North America (SMSNA) are proud to announce the Sixth Annual Traveling Fellowship Program with the SSMR and the second combined award for the two societies. This will take place in conjunction with the 2006 AUA meeting in Atlanta, Ga.

The SSMR and SMSNA, AUA-affiliated subspecialty societies, have a mission to promote the advancement of the science and treatment of male reproduction and sexual disorders through education of practitioners, public education, and informational exchange of research and new advances through meetings. The SSMR and SMSNA are committed to cultivating interest in sexual medicine treatment careers in trainees.

Our first combined program at last year's AUA was a huge success, and we wish to build upon that success. Our goal is to present residents in training with the opportunity, while attending the AUA meeting, to have a more intensive exposure to male sexual medicine issues. The Fellowship Program will include attendance at the SSMR and SMSNA educational programs and complimentary SSMR banquet participation and SMSNA lunch. Fellows will also attend an AUA post-graduate course in male infertility, erectile dysfunction and the infertility podium and poster sessions, as well as a symposium with fellowship directors and junior faculty members on how to prepare for a future successful career as a male sexual medicine specialist. The program will allow significant contact between Fellows and leaders in the field.

Preference will be given to those in earlier years of training. This does not mean, however, that senior residents and fellows cannot apply. Their applications will be considered along with the others. Participants accepted into the program are expected to take part in all components. This means that attendance at the meeting from Thursday afternoon until Wednesday evening will be required.

Meeting expenses covered by the program include airfare, hotel accommodations, SSMR and SMSNA meeting and banquet, tuition for the post-graduate course, and all special lectures. The maximum stipend will be $1,000 per Fellow. Overages are the responsibility of the Fellow or the home institution.

An application is attached, which needs to be completed by the applicant and signed by the director of the training program, assuring commitment from the Chief to allow full attendance of the Fellowship program, should the applicant be accepted. The applicant should solicit a letter of recommendation from a mentor of his/her choice. **Applications are due by January 15, 2006.** The awards will be announced by February 15, 2006.

We hope you will consider supporting this program through the application of trainees in your program. We look forward to another successful Men's Health Traveling Fellowship!

Sincerely,

Ajay Kumar Nangia, MD
Dartmouth Hitchcock Medical Center
Section of Urology
One Medical Center Dr.
Lebanon, NH 03756

Mark Your Calendars!

"Reproductive Medicine 2005 –
Expanding the Borders and Meeting New Challenges"
Conjoint Meeting of the
American Society for Reproductive Medicine
61st Annual Meeting
and the
Canadian Fertility and Andrology Society
51st Annual Meeting
October 15-19, 2005
Palais de Congrès
Montreal, Quebec, Canada
Contact: ASRM
Phone: (205) 978-5000
Fax: (205) 978-5005
E-mail: asrm@asrm.org
Website: http://www.asrm.org/Professionals/Meetings/annualmeeting.html

ASA 31st Annual Conference
April 8 - 11, 2006
Hyatt Regency Chicago on the Riverwalk
Chicago, Illinois
ASA Annual Meeting
April 8 - 11, 2006
Andrology Lab Workshop
April 8, 2006
Postgraduate Course
April 8, 2006

American Urological Association
Annual Meeting
May 18 – 25, 2006
Atlanta, Georgia

SSMR Meeting at the
AUA Annual Meeting
May 20, 2005
Atlanta, Georgia
1:00 p.m. – 5:00 p.m.

Society for the Study of Male Reproduction
1111 N. Plaza Drive, Suite 550 ♦ Schaumburg, IL 60173
Phone: 847-517-7225 ♦ Fax: 847-517-7229 ♦ Email: ssmr@wjweiser.com ♦ Website: www.ssmr.org

SSMR

1111 N. Plaza Drive, Suite 550
Schaumburg, IL 60173-4950

Application for the Men's Health Traveling Fellowship Program 2006

Thursday, May 18 – Wednesday, May 24, 2006
Atlanta, Georgia

Please Print or Type.

Name:_____Degree(s):_____

Work Address:_____

City:_____State:_____Zip:_____

Home Address:_____

City:_____State:_____Zip:_____

Work Phone:_____Home Phone:_____

Fax:_____E-mail:_____

Current Position (resident/PGY year, post-doc):_____

Institution/Department:_____

Please attach the following:

1. Curriculum vitae
2. Personal statement (1 page or less)
3. Letter of recommendation from Chairman or selected mentor.

Signature of applicant:_____

Chairman signature: By signing below, I am supporting the application of the above-named member of our department as a Traveling Fellow of the SSMR and SMSNA. I understand that attendance at the AUA meeting will be subsidized by the award to a maximum of $1,000, and that attendance of the Fellow at all Traveling Fellowship functions is expected, as outlined in the attached schedule.

Signature of Department Chairman:_____

Send completed applications to:

Ajay Kumar Nangia, MD
Dartmouth Hitchcock Medical Center
Section of Urology
One Medical Center Dr.
Lebanon, NH 03756

Deadline: January 15, 2006