



The Good Doctor

McGill's **Seang Lin Tan** is changing lives—one family at a time.

GLOBAL PLAYERS

The world's most generous givers

STEPHEN LEWIS

The voice of a continent

DAN LEVY

MTV's red-hot host

JOELLE BERDUGO ADLER

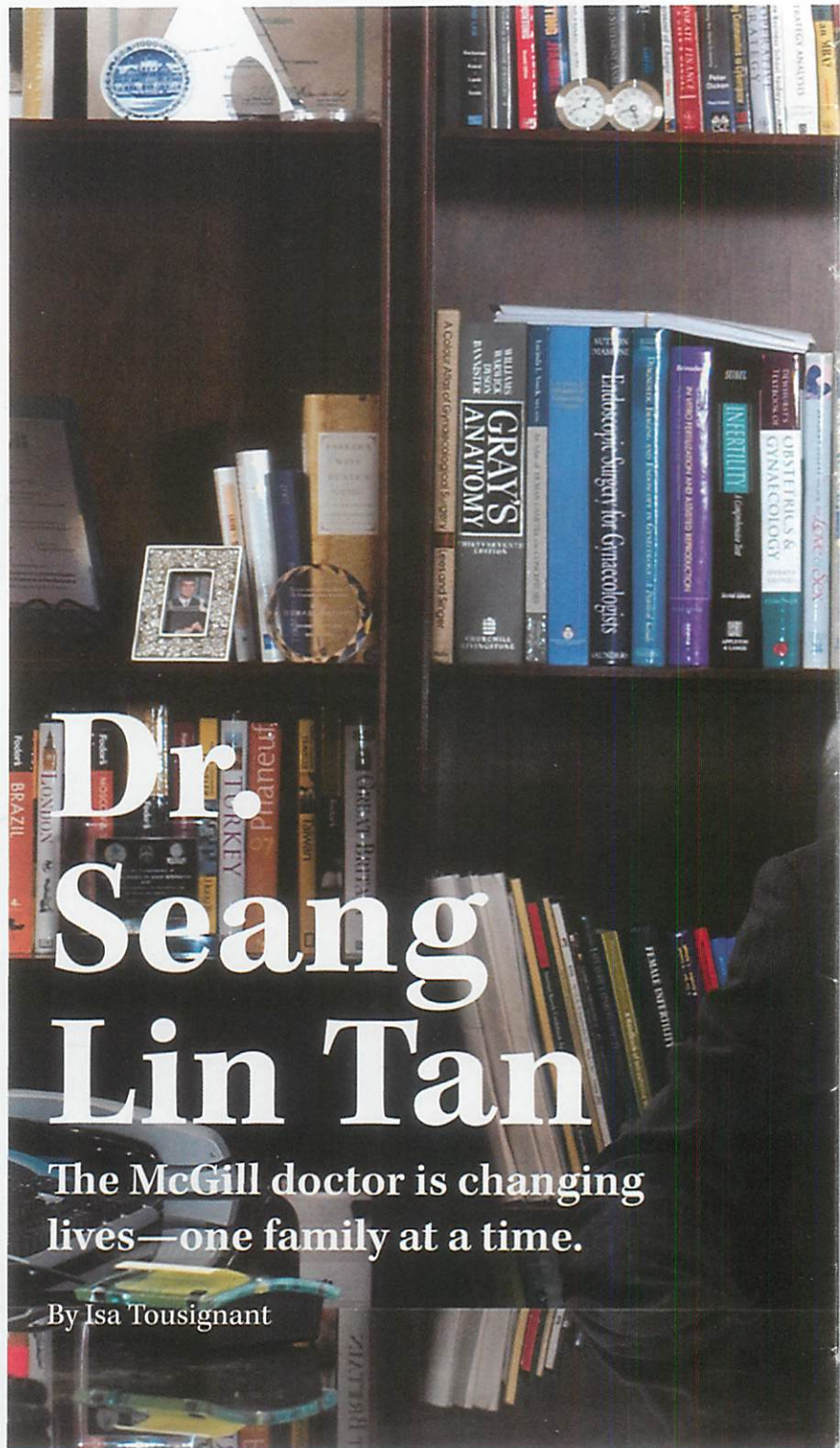
ONEXONE visionary

Every summer in Montreal there is a Twins Parade. One day a year, twins, triplets, and in fact any equation of multiples are invited to take to the streets en masse and march through the downtown core during the Just For Laughs comedy festival. Considering the proliferation of twin births, due in part to today's increased use of fertility treatments, how will the parade look by, say, 2020?

"It is true that we transfer several fertilized eggs [embryos] per attempt of in-vitro fertilization (IVF) and the risk of multiple births is higher," explains Dr. Seang Lin Tan, chairman of the Department of Obstetrics and Gynecology at McGill University, obstetrician and gynecologist in chief at the McGill University Health Centre, and a pioneer in the simplification of IVF. "But there's been a move to transfer fewer embryos over the last 10 or 20 years. In North America, between the early 1990s and the early 2000s, pregnancy rates have increased from 35 to 60 percent, while multiple births have declined from 35 to 30 percent."

Tan began his foray into the field of obstetrics and gynecology more or less by happenstance. "When I was young, my first ambition was to be a lawyer," he says, smiling from behind his desk in the Royal Victoria Hospital, home to the McGill Reproductive Centre (MRC). "In fact, I had a Commonwealth scholarship to study law at Cambridge when I was young in Malaysia, but at that time there were racial problems in the country, and there was some suspicion that we might be moving toward an Islamic legal system, so my dad said, 'Look, you should therefore study medicine. There's no point in studying English law and then coming back to practice Islamic law.' So I went into medicine."

It was a field in which he excelled. In 1980, a young Seang Lin Tan earned himself the Howard Eddey Gold Medal for surgery at the Royal Australasian College of Surgeons. In 1983, he received the prestigious MRCOG Gold Medal from the Royal College of Obstetricians and



Dr. Seang Lin Tan

The McGill doctor is changing lives—one family at a time.

By Isa Tousignant

Gynaecologists in the U.K, which was followed by a one-year fellowship in 1984 at the University of London. At that point in his life he was still counting on permanently returning to work in Singapore, but plans changed when his wife, Grace, began a Ph.D. in management studies at Oxford in 1987. Tan began a fellowship in the Assisted Conception Unit of the King's College School of Medicine and Dentistry under



the tutelage of three of the major pioneers in reproductive medicine: Robert Edwards, inventor of IVF and progenitor of Louise Brown, the world's first IVF (or "test-tube") baby; Howard Jacobs, president of the British Fertility Society; and Stuart Campbell, president of the International Society of Ultrasound in Obstetrics and Gynecology. For

almost two years, he undertook the laborious commute of three hours each way between Oxford and London so that he could learn from the best in the field.

"A few years later, Professors Edwards, Jacobs, and Campbell and I cofounded the London Women's Clinic," Tan recounts. "In 1994, I was offered chairmanship of the

departments of obstetrics and gynecology at both the University of British Columbia and McGill University. I decided to join McGill, and since my arrival in 1995, my career has been devoted to helping women become pregnant because I think this is a very important issue. Many people think that infertility is not as deserving of care as other medical conditions. However, the World Health Organization considers infertility to be a disease like any other. For infertile patients, the pain and suffering they feel is the same as people with any other health problem. The desire to have a child is a natural human urge, without which the human race would have become extinct a long, long time ago."

Most people either know someone who has had recourse for fertility treatments, or have taken that route themselves. It begs the question: is infertility a greater problem today than it has been in the past?

"Yes, it is, and there are a few reasons," answers Tan. "First and foremost, women are getting older before they want to have babies. A few generations ago, women tended to have children in their late teens and early 20s. And even

in the late 1960s and early 1970s, the average age at which North American women had their first child was 21 or 22 years old. Today, many women don't try to have a child until their late 20s, and many, especially those who go on to university and pursue a career, may not even contemplate having a child until their mid-30s."

He sighs. "Unfortunately, many people read stories about movie stars having babies in their late 30s and 40s, and everything is fine, but fertility is like any biological variable. It declines at different speeds in different people. Some women may be 38 years old, but their ovaries could respond as if they're 30. Or they could respond as if they're 45."

However, Tan and his team at the MRC, which he founded in 1996 and has directed ever since, are not easily discouraged. They have their eyes set on solutions, and they are evidently remarkably creative thinkers.

Building on their success rate with IVF—they have among the highest international success rates, with a clinical pregnancy rate of over 60 percent per cycle started in women under 35 years of age—the MRC has become

Julie Snyder

The Quebec television star speaks out on her personal struggle with infertility.

There may not be a more iconic figure in Quebec than Julie Snyder. Synonymous with success, she has an accomplished television career, crowned by her present gig as host of the French Canadian version of *Deal or No Deal, Le Banquier*. And, on top of that, she is beautiful, healthy, and happily married to one of Quebec's most successful men. The fact that she and her husband, media tycoon Pierre Karl Péladeau, struggled through five years of fruitless efforts before finally having their first child three years ago just goes to show that fertility issues can affect anyone.

"I always joke that I would mop

the floor of the McGill Reproductive Centre if that could help them," laughs the affable Snyder, who has been a patient of Dr. Seang Lin Tan's since the couple began trying for their second child, a little girl, expected in October. "We turned to McGill after various attempts in the States, but it was becoming increasingly expensive and inconvenient to fly to New York all the time. McGill is right in our backyard, and it turns out they're pioneers in fertility research. I'm always surprised that the best center in Quebec is in an English university—you would think



Photo by Jocelyn Michel

known as a pioneer in the use of two revolutionary fertility treatments.

The first type of treatment is a simplified form of IVF called in-vitro maturation (IVM), where no fertility drugs are given to mature a woman's eggs; rather, immature eggs are collected from her ovaries and ripened in the laboratory using a special culture medium developed by Tan's team. This eliminates the risk of adverse side effects from fertility drugs and also lowers the cost of treatment. The MRC has reported a 35 percent clinical pregnancy rate per cycle in women under 35 using IVM, lower than its IVF rate of over 60 percent, but as good as the standard IVF rates achieved by many other centers.

The second treatment is a new rapid-freezing process for human eggs called McGill Cryoleaf Vitrification, which has changed lives and hope for couples facing even greater challenges than general infertility.

"Today, there is an increasing number of cancer survivors who want children," explains Tan, "but they can't because the cancer treatment affects the ovaries and either makes them less fertile or completely infertile. In North

America alone, there are 600,000 new female cancer cases a year, out of which about 50,000 are between the ages of 18 and 40. So these people are now finding they cannot have children.

"To preserve their fertility, the only recommended way is to perform IVF and to freeze the embryos, but this requires a male partner."

As Tan explains it, human eggs are not easy to freeze, because they are the largest cells in the body and contain a lot of water. The most commonly used slow-freezing method involves lowering the temperature gradually, causing ice crystals to form that can damage the egg when it thaws. The survival rate of slow-frozen eggs is between 30 and 65 percent. "The chance of having a baby using the slow-freezing method is small, and it is still considered experimental," says Tan. Because of this, the MRC is only one of several medical centers around the world that has been researching rapid freezing, or vitrification. The MRC is the first in Canada, and among the first in the world, to perform the vitrification of eggs, and now the center has one of the highest vitrification success rates in the world.

The survival rate of thawed eggs is 85 to 90 percent and the clinical pregnancy and birth rates per cycle at McGill using vitrified eggs are 45 and 40 percent, respectively. These rates are as good as, or better than, those achieved by other centers using only fresh eggs.

"So far, we have vitrified eggs for well over 100 patients with various cancers—breast cancer, blood cancer, gastrointestinal cancer, brain tumors, and others. We see patients from throughout North America, and our fertility preservation program also helps young patients afflicted by other conditions that can produce premature menopause or sterility such as Turner syndrome, lupus, autoimmune disease, multiple sclerosis, and severe endometriosis," says the proud doctor.

"In some cancer patients, where there is no time to perform

the province would make it a priority to fund research at the Université de Montréal as well."

Snyder is vocal to the point of activism on the subject of infertility because she's tired of the subject remaining taboo. And at a time when one in eight couples face fertility problems, it's certainly an outdated attitude. "No one likes to think of themselves as unable to bear children," says Snyder. "It makes you feel less than human."

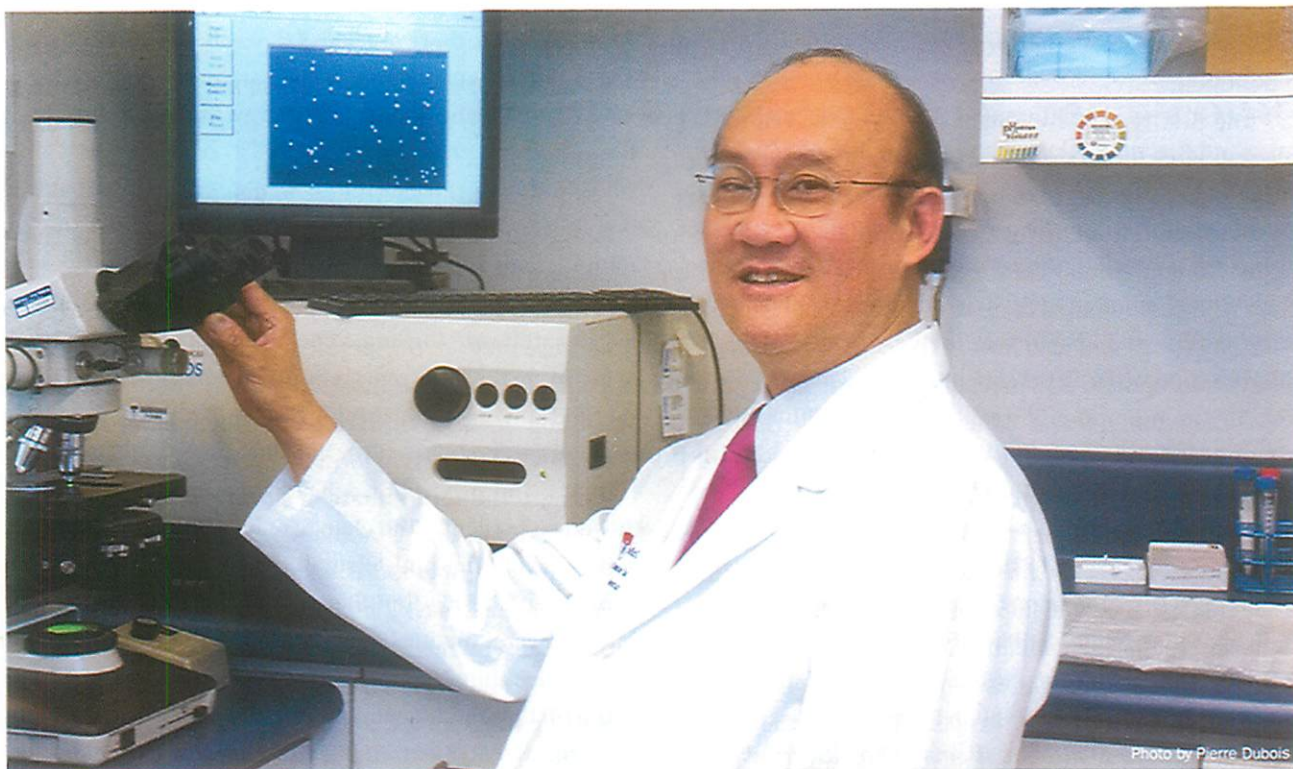
Recently, Snyder's tried time and time again to be heard by Quebec health minister Philippe Couillard to plead with him to have fertility treatments accepted by health care (as they are in countries such as Sweden, France, Belgium, Australia, and Denmark). Minister Couillard had yet to grant Snyder an audience by print time, despite months of trying.

"It's hard to believe—not only will the

Quebec government fund vasectomies and tube tying, it will fund a reversal of the procedures if the patients eventually change their minds. Meanwhile, couples who are completely certain from day one that they want to be parents, but who can't because of problems of fertility, have absolutely no support."

According to Tan, director of the McGill Reproductive Centre, awareness is key in changing the way the government sees this issue. He credits Snyder and her husband for using their fame to bring invaluable exposure to the McGill Reproductive Centre. And there is no doubt the relationship has been reciprocal.

"Yes, really, meeting Dr. Tan has changed my life," Snyder says. "The center is such a human place. There is so much concern for the well-being of their patients, not just on a medical level, but in terms of morale, everything."



IVF, or where hormones should not be given, we perform IVM and then freeze the mature eggs. We've produced the first four babies born in the world using this technique."

Over the last decade, Tan's team has chalked up a number of other major accomplishments, including the world's first air-transport IVF pregnancy, the first successful PGD (genetic diagnosis of embryos) birth in Canada, the first IVM twin birth in the world, the world's first IVM/PGD pregnancy, and the first IVF egg donation pregnancy in North America.

These successes are causes for joy, but there is a price tag attached. The MRC charges Canadian residents \$5,500 per cycle or \$10,900 for three cycles, plus medication for IVF treatment, while IVM is slightly less at \$4,500 per cycle or \$8,900 for three cycles. Although these costs are low compared with the prohibitive average of \$20,000 per pro-

cedure charged in the U.S., the fact remains that these are solutions reserved for a prosperous few.

"It is surprising," Tan laments. "In Canada, we pay for women to have abortions. We pay for women to have sterilization. We pay for men to have sterilization. Now, I'm not against these procedures, but I think it's ironic that

we would pay for procedures that prevent pregnancy, but we won't help people to have a child. Canada is facing, basically, a negative population growth rate. A country needs a birth rate of 2.1 to maintain its population; in Canada, it's 1.6 and, in Quebec, only 1.5. If we don't do something about this, 50 years from now, 100 years from now, the idea of a large family will be out the window." **LM**

Little Miracles Fund

Tan and his staff are painfully aware of the heart-break suffered by many who cannot afford the cost of fertility treatments—so, to mark the tenth anniversary of the McGill Reproductive Centre in 2006, they founded the Little Miracles Fund. The main focus of the fund has been to provide financial assistance to cancer patients who wish to preserve their fertility. Because many of these victims are so young, they are frequently not able to cope financially with the cost of fertility preservation; additionally, there is insufficient time to save up the necessary funds before they must start chemotherapy. However, because there is such great need, the role of the fund has expanded this year to provide financial assistance to other patients who cannot afford to pay for fertility treatments.

The McGill Reproductive Centre's 3rd Annual Little Miracles Gala will be held October 2, 2008, at the Mount Royal Centre in Montreal. For more information, visit the McGill Reproductive Centre's website at www.mcgillivf.com.

SEANG LIN TAN, MBBS, FRCOG, FACOG, MMed(O&G), MBA
SELECTED AWARDS AND HONORS

Howard Eddy Gold Medal, Royal Australasian College of Surgeons, Australia

MRCOG Gold Medal, Royal College of Obstetricians and Gynaecologists, London, U.K.

Benjamin Henry Sheares Memorial Lecturer and Gold Medalist, Obstetrical and Gynaecological Society

1998 Exchange Speaker Award

Canadian Fertility and Andrology Society (CFAS)/European Society of Human Reproduction & Embryology (ESHRE) "Clinical Applications of Color Doppler and Three-Dimensional Ultrasound in Infertility Treatment", Tours, France. 1999

RESOLVE Award

National Infertility Association of the United States

For outstanding contribution in Obstetrics and Gynecology in the field of ultrasound in infertility. 1999

Arts and Trade Medal –Carrefour des communautés du Québec for work in medicine, commitment to community building and improving intercultural relations, Montreal, Quebec, Canada

Canadians for Health Research (CHR) , Researcher of the Month (May 2006)

Singapore Lecture Gold Medal

Royal College of Obstetricians and Gynecologists (UK) 2008

Infertility Awareness Association of Canada (IAAC)

Appointed as First Honorary Member of the Board of Directors 2010

Orator of the 8th College of Obstetricians and Gynaecologists of Singapore ,Gold Medallion Lectureship 2011

Visiting Academician, The Singapore Academy of Medicine 2011.

SEANG LIN TAN, MBBS, FRCOG, FACOG, MMed (O&G), MBA

PRIX ET DISTINCTIONS CHOISIES

Médaille d'or Howard Eddy, Collège royal des chirurgiens d'Australasie, Australie

Médaille d'or MRCOG, Collège royal des obstétriciens et gynécologues, Londres, Royaume-Uni

Maître de conférences et médaillé d'or Benjamin Henry Sheares, Société d'obstétrique et de gynécologie

Prix Exchange Speaker 1998

Société canadienne de fertilité et d'androgologie (SCFA) Société européenne de reproduction humaine et d'embryologie (ESHRE) "Clinical Applications of Color Doppler and Three-Dimensional Ultrasound in Infertility Treatment", Tours, France. 1999

Prix RESOLVE

Association nationale d'infertilité des États-Unis

Pour une contribution exceptionnelle en obstétrique et gynécologie dans le domaine de l'échographie de l'infertilité. 1999

Médaille des Arts et du Commerce - Carrefour des communautés du Québec pour les réalisations en médecine, l'engagement envers le développement communautaire et l'amélioration des relations interculturelles, Montréal, Québec, Canada 2003

Canadiens pour la recherche médicale (CRM), chercheur du mois (mai 2006)

Médaille d'or, Conférence de Singapour

Collège royal des obstétriciens et gynécologues (R.-U.) 2008

Association canadienne de sensibilisation à l'infertilité (ACSI)

Nommé premier membre honoraire du conseil d'administration 2010

Orateur du huitième Collège des obstétriciens et gynécologues de Singapour, médaillon d'or du maître de conférences 2011

Académicien invité de l'Académie de médecine de Singapour 2011.

DR. SEANG LIN TAN, MBBS, FRCOG, FRCSC, FACOG, MMed(O&G), MBA

**James Edmund Dodds Chair in Obstetrics and Gynecology
Professor in Obstetrics and Gynecology, McGill University
Obstetrician and Gynecologist in Chief, McGill University Health Centre
Medical Director, Montreal Reproductive Centre**

Dr. Tan's teacher and mentor was Dr. Robert Edwards, 2010 Nobel-Laureate in Medicine. With Dr. Edwards, Dr. Tan was the Co-Founder and Medical Director of The London Women's Clinic, The University of London, U.K., before being appointed Chairman of the Department of Obstetrics and Gynecology at McGill University from 1994 to 2010.

While Chairman at McGill, Dr. Tan led the team that achieved the following "Firsts":

Première grossesse réussie après DGP pour les translocations chromosomiques sur les embryons provenant d'ovocytes in vitro arrivés à maturité.

First successful pregnancy following PGD for chromosome translocation on embryos generated from in-vitro matured oocytes.

La première naissance au Canada par MIV (FIV sans stimulation hormonale).

The first IVM (IVF without hormonal stimulation) birth in Canada.

La naissance des premiers jumeaux par MIV au monde.

The first IVM twin birth in the world.

La première grossesse au monde par MIV/DGP (diagnostic génétique des embryons).

The world's first IVM/PGD (genetic diagnosis of embryos) pregnancy.

La première grossesse par MIV provenant de don d'ovocytes en Amérique du Nord.

The first IVM egg donation pregnancy in North America.

Les quatre premiers bébés nés au Canada à partir d'ovocytes congelés préalablement (ovules).

The first four babies born in Canada from previously frozen oocyte (egg).

Les quatre premiers bébés nés par MIV de vitrification d'ovocytes au monde.

The first four babies born in the world from IVM oocyte vitrification.

Le premier bébé né à partir d'une série de vitrification d'ovocytes combinés avec le DGP au monde.

The first baby born in the world from serial oocyte vitrification combined with PGD.

La première naissance par diagnostic génétique pré-implantatoire (DGP) réussie au Canada.

The first successful pre-implantation genetic diagnosis (PGD) birth in Canada.

Le premier programme de transport FIV aérien en Amérique du Nord

The first air-transport IVF programme in North America

La première grossesse par transport FIV aérien au monde.

The world's first air-transport IVF pregnancy

DR SEANG LIN TAN, MBBS, FRCOG, FRCSC, FACOG, MMed (O&G), MBA

**Chaire James Edmund Dodds en obstétrique et gynécologie
Professeur titulaire en obstétrique et gynécologie, Université McGill,
Directeur médical, Centre de reproduction de Montréal
Obstétricien et gynécologue en chef, Centre universitaire de santé McGill**

Le professeur et mentor du Dr Tan était le Dr Robert Edwards, lauréat du Prix Nobel de médecine 2010. Avec le Dr Edwards, le Dr Tan a été le co-fondateur et directeur médical de la Clinique des femmes de Londres, Université de Londres, Royaume-Uni, avant d'être nommé président du Département d'obstétrique et de gynécologie de l'Université McGill. Tandis qu'il était président à l'Université McGill, le Dr Tan a dirigé l'équipe qui a réalisé les « premières » énumérées ci-dessus.

SELECTED PUBLICATIONS

Tan SL, Hague WM, Becker F, Jacobs HS. Autoimmune Premature Ovarian Failure with Polyendocrinopathy and Spontaneous Recovery of Ovarian Follicular Activity. *Fertility & Sterility*, 1986; 45:421-424.

Adams J, **Tan SL**, Wheeler MJ, Morris D, Jacobs HS, Franks S. Uterine growth in the follicular phase of spontaneous ovulatory cycles and during luteinizing hormone-releasing hormone-induced cycles in women with normal or polycystic ovaries. *Fertility and Sterility*, 1988; 49:52-55.

Tan SL, Pampiglione J, Steer C, Balen A, Mills C, Campbell S. Transvaginal peritoneal oocyte and sperm transfer for the treatment of nontubal infertility. *Fertility and Sterility*, 1992; 57:850-853. *Year Book of Obstetrics and Gynecology*, 1993; 476-477. *Year Book of Infertility*, 1993; 188-189. (Abstracted and published in *Obstetrics and Gynecology Digest*).

Steer CV, Campbell S, **Tan SL**, Crayford T, Mills C, Mason BA, Collins WP. The use of transvaginal color flow imaging after in vitro fertilization to identify optimum uterine conditions before embryo transfer. *Fertility and Sterility*, 1992; 57:372-376. (Abstracted and published in *Fertility Digest*).

Tan SL, Balen A, Hussein EL, Mills C, Campbell S, Yovich J, Jacobs HS. A prospective randomized study of the optimum timing of human chorionic gonadotropin administration after pituitary desensitization in in vitro fertilization. *Fertility and Sterility*, 1992; 57:1259-1264. *Year Book of Infertility*, 1993; 222-223. (Abstracted and published in *Fertility Digest*)

Tan SL, Kingsland C, Campbell S, Mills C, Bradfield J, Alexander N, Yovich J, Jacobs HS. The long protocol of administration of gonadotropin-releasing hormone agonist is superior to the short protocol for ovarian stimulation for in vitro fertilization. *Fertility and Sterility*, 1992; 57:810-814. *Year Book of Infertility*, 1993; 219-220. (Abstracted and published in *Fertility Digest*)

Hussein EL, **Tan SL**. Successful in vitro fertilization and embryo transfer after treatment of invasive carcinoma of the breast. *Fertility and Sterility*, 1992; 58:194-196.

Steer CV, Mills C, **Tan SL**, Campbell S, Edwards RG. The cumulative embryo score: a predictive embryo scoring technique to select the optimal number of embryos to transfer in an in-vitro fertilization and embryo transfer programme. *Human Reproduction*, 1992; 7:117-119. (Abstracted and published in *Fertility Digest*)

Hussein EL, **Tan SL**. Successful in vitro fertilization and embryo transfer after treatment of invasive carcinoma of the breast. *Fertility and Sterility*, 1992; 58:194-196.

Steer CV, Mills C, **Tan SL**, Campbell S, Edwards RG. The cumulative embryo score: a predictive embryo scoring technique to select the optimal number of embryos to transfer in an in-vitro fertilization and embryo transfer programme. *Human Reproduction*, 1992; 7:117-119. (Abstracted and published in *Fertility Digest*)

Tan SL, Doyle P, Campbell S, Beral V, Rizk B, Brinsden P, Mason B, Edwards RG. Obstetric outcome of in vitro fertilization pregnancies compared with normally conceived pregnancies. *American Journal of Obstetrics and Gynecology*, 1992; 167: 778-84. *Year Book of Infertility*, 1993; 233-234.

Hussein EL, Balen AH, **Tan SL**. A prospective study comparing the outcome of oocytes retrieved in the aspirate with those retrieved in the flush during transvaginal ultrasound directed oocyte recovery for in-vitro fertilization. *British Journal of Obstetrics and Gynaecology*, 1992; 99:841-844

MacDougall MJ, Tan SL, Balen A, Jacobs HS. A controlled study comparing patients with and without polycystic ovaries undergoing in-vitro fertilization. *Human Reproduction*, 1993; 8:233-237.

Balen AH, Tan SL, Jacobs HS. Hypersecretion of luteinising hormone: a significant cause of infertility and miscarriage. *British Journal of Obstetrics and Gynaecology*, 1993; 100:1082-1089. (Abstracted and published in *Obstetrics and Gynecology Digest*)

Balen AH, Tan SL, MacDougall J, Jacobs HS. Miscarriage rates following in-vitro fertilization are increased in women with polycystic ovaries and reduced by pituitary desensitization with buserelin. *Human Reproduction*, 1993; 8:959-964.

Balen AH, MacDougall J, Tan SL. The influence of the number of embryos transferred in 1060 in-vitro fertilization pregnancies on miscarriage rates and pregnancy outcome. *Human Reproduction*, 1993; 8:1324-1328.

MacDougall MJ, Tan SL, Hall V, Mason BA, Jacobs HS. Comparison of natural with clomiphene-citrate stimulated cycles in in vitro fertilization: a prospective randomised trial. *Fertility and Sterility*, 1994; 61:1052-1057. *Year Book of Infertility and Reproductive Endocrinology*, 1995; 201.

Tan SL, Maconochie N, Doyle P, Campbell S, Balen A, Bekir J, Brinsden P, Edwards RG, Jacobs HS. Cumulative conception and live-birth rates after in vitro fertilization with and without the use of long, short, and ultrashort regimens of the gonadotropin-releasing hormone agonist buserelin. *American Journal of Obstetrics and Gynecology*, 1994; 171:513-520.

Brinsden P, Wada I, Tan SL, Balen A, Jacobs HS. Diagnosis, prevention and management of ovarian hyperstimulation syndrome. *British Journal of Obstetrics and Gynaecology*, 1995; 102:767-772.

Shaker AG, Pitroff R, Zaidi J, Bekir J, Kyei-Mensah A, Tan SL. Administration of progestogens to hasten pituitary desensitization after the use of gonadotropin-releasing hormone agonist in in vitro fertilization – a prospective randomized study. *Fertility and Sterility*, 1995; 64:791-795.

Zaidi J, Tan SL, Campbell S. Blood flow changes in the ovarian stroma and follicular wall during the normal menstrual cycle. *Human Reproduction Update*, 1995. Published on CD ROM only, 1/2: Item 8.

Zaidi J, Campbell S, Pitroff R, Kyei-Mensah A, Shaker A, Jacobs HS, Tan SL. Ovarian stromal blood flow in women with polycystic ovaries – a possible new marker for diagnosis? *Human Reproduction*, 1995; 10:1992-96.

Zaidi J, Jurkovic D, Campbell S, Okokon E, Tan SL. Circadian variation in uterine artery blood flow indices during the follicular phase of the menstrual cycle. *Ultrasound in Obstetrics and Gynecology*, 1995; 5:406-410

Zaidi J, Pitroff R, Shaker A, Kyei-Mensah A, Campbell S, Tan SL. Assessment of uterine artery blood flow on the day of human chorionic gonadotrophin administration by transvaginal color Doppler ultrasound in an in vitro fertilization program. *Fertility and Sterility*, 1996; 65:377-381.

Kyei-Mensah A, Zaidi J, Pitroff R, Shaker A, Campbell S, Tan SL. Transvaginal three-dimensional ultrasound: accuracy of follicular volume measurements. *Fertility and Sterility*, 1996; 65:371-376.

Awonuga AO, Dean N, Zaidi J, Pitroff R, Bekir J, Campbell S, Tan SL. Outcome of Frozen Embryo Replacement Cycles Following Elective Cryopreservation of All Embryos in Women at Risk of Developing Ovarian Hyperstimulation Syndrome. *Journal of Assisted Reproduction and Genetics*, 1996; 13:293-297.

Awonuga AO, Pitroff R, Zaidi J, Dean N, Jacobs HS, **Tan SL**. Elective Cryopreservation of All Embryos in Women at Risk of Developing Ovarian Hyperstimulation Syndrome May Not Prevent the Condition but Reduces the Live Birth Rate. *Journal of Assisted Reproduction and Genetics*, 1996; 13:401-406.

Tan SL, Zaidi J, Campbell S, Doyle P, Collins W. Blood flow changes in the ovarian and uterine arteries during the normal menstrual cycle. *American Journal of Obstetrics and Gynecology*, 1996; 175:625-631.

Kyei-Mensah A, Maconochie N, Zaidi J, Pitroff R, Campbell S, **Tan SL**. Transvaginal three-dimensional ultrasound: reproducibility of ovarian and endometrial volume measurements. *Fertility and Sterility*, 1996; 66:718-722.

Zaidi J, Barber J, Kyei-Mensah A, Bekir J, Campbell S, **Tan SL**. Relationship of Ovarian Stromal Blood Flow at the Baseline Ultrasound Scan to Subsequent Follicular Response in an In Vitro Fertilization Program. *Obstetrics and Gynecology*, 1996; 88: 779-784.

Murray CA, Clarke HJ, Tulandi T, **Tan SL**. Inhibitory effect of human hydrosalpingeal fluid on mouse preimplantation embryonic development is significantly reduced by the addition of lactate. *Human Reproduction*, 1997; 12: 2504-2507

Engmann L, Shaker A, White E, Bekir JS, Jacobs HS, **Tan SL**. Local side effects of subcutaneous and intramuscular urinary gonadotropins for ovarian stimulation in in vitro fertilization: A prospective randomized study. *Fertility and Sterility*, 1998; 69:836-840.

Agrawal R, Sladkevicius P, Engmann L, Conway GS, Payne N, Bekir J, **Tan SL**, Campbell S, Jacobs HS. Serum vascular endothelial growth factor concentrations and ovarian stromal blood flow are increased in women with polycystic ovaries. *Human Reproduction*, 1998; 13:651-655.

Engmann L, Shaker A, White E, Bekir JS, Jacobs HS, **Tan SL**. A prospective randomized study to assess the clinical efficacy of gonadotrophins administered subcutaneously and intramuscularly. *Human Reproduction*, 1998; 13:836-840.

Biljan MM, Mahutte NG, Dean N, Hemmings R, Bissonnette F, **Tan SL**. Pretreatment with an Oral Contraceptive is Effective in Reducing the Incidence of Functional Ovarian Cyst Formation During Pituitary Suppression by Gonadotropin-Releasing Hormone Analogues. *Journal of Assisted Reproduction and Genetics*, 1998; 15:599-604.

Biljan MM, Mahutte NG, Dean N, Hemmings R, Bissonnette F, **Tan SL**. Effects of pre-treatment with an oral contraceptive on the time required to achieve pituitary suppression with gonadotropin-releasing hormone analogues and subsequent implantation and pregnancy rates. *Fertility and Sterility*, 1998; 70:1063-1069.

Engmann L, Sladkevicius P, Agrawal R, Bekir J, Campbell S, **Tan SL**. The pattern of changes in ovarian stromal and uterine artery blood flow velocities during *in vitro* fertilization treatment and its relationship with outcome of the cycle. *Ultrasound in Obstetrics and Gynecology*, 1999; 13:26-33.

Agrawal R, Conway GS, Sladkevicius P, Payne NN, Bekir J, Campbell S, **Tan SL**, Jacobs HS. Serum vascular endothelial growth factor (VEGF) in the normal menstrual cycle: association with changes in ovarian and uterine Doppler blood flow. *Clinical Endocrinology*, 1999; 50:101-106.

Biljan MM, Mahutte NG, Tulandi T, **Tan SL**. Prospective randomized double-blind trial of the correlation between time of administration and antiestrogenic effects of clomiphene citrate on reproductive end organs. *Fertility and Sterility*, 1999; 71: 633-638.

Buckett WM, Fisch P, Dean NL, Biljan MM, **Tan SL**. In vitro fertilization and intracytoplasmic sperm injection pregnancies after successful transport of oocytes by airplane. *Fertility and Sterility*, 1999; 71:753-755.

Roberts JE, Clarke HJ, Tulandi T, **Tan SL**. Effects of Hydrosalpingeal Fluid on Murine Embryo Development and Implantation. *Journal of Assisted Reproduction and Genetics*, 1999; 16:421-424.

Chian RC, Buckett WM, Tulandi T, **Tan SL**. Prospective randomized study of human chorionic gonadotropin priming before immature oocyte retrieval in unstimulated women with polycystic ovarian syndrome. *Human Reproduction*, 2000; 15:165-170.

Biljan MM, Lapensee L, Mahutte NG, Bissonnette F, Hemmings R, **Tan SL**. Effects of functional ovarian cysts detected on the 7th day of gonadotropin-releasing hormone analog administration on the outcome of IVF treatment. *Fertility and Sterility*, 2000; 74:941-945.

Child TJ, Abdul-Jalil AK, Gulekli B, **Tan SL**. In-vitro maturation and fertilization of oocytes from unstimulated normal ovaries, polycystic ovaries, and women with polycystic ovary syndrome. *Fertility and Sterility*, 2001; 76:936-942

Child TJ, Abdul-Jalil K, **Tan SL**. Embryo morphology, cumulative embryo score, and outcome in an oocyte in vitro maturation program. *Fertility and Sterility*, 2002; 77:424-425.

Wang X, Chen H, Yin H, Kim SS, **Tan SL**, Gosden RG. Fertility after intact ovary transplantation. *Nature*, 2002; 415:385.

Tan SL, Child TJ, Gulekli B. In-Vitro Maturation and Fertilization of Oocytes from Unstimulated Ovaries: Predicting the Number of Immature Oocytes Retrieved by Early Follicular Phase Ultrasonography. *American Journal of Obstetrics & Gynecology*, 2002; 186:684-689.

Doyle P, Maconochie N, Beral V, Swerdlow AJ, **Tan SL**. Cancer incidence following treatment for infertility at a clinic in the UK. *Human Reproduction*, 2002; 17:2209-2213.

Child TJ, Phillips SJ, Abdul-Jalil AK, **Tan SL**. A Comparison of In Vitro Maturation and In Vitro Fertilization for Women with Polycystic Ovaries. *Obstetrics & Gynecology*, 2002; 100:665-670.

Gosden RG, Mullan J, Picton HM, Yin H, **Tan SL**. Current perspective on primordial follicle cryopreservation and culture for reproductive medicine. *Human Reproduction Update*, 2002; 8:105-110.

Sylvestre C, Child T, Tulandi T, **Tan SL**. A prospective study to evaluate the efficacy of two- and three-dimensional sonohysterography in women with intra-uterine lesions. *Fertility and Sterility*, 2003; 79:1222-1225

Balen AH, Laven JSE, **Tan SL**, Dewailly D. Ultrasound assessment of the polycystic ovary: international consensus definitions. *Human Reproduction Update*, 2003; 9:505-514.

Dean NL, Battersby BJ, Ao A, Gosden RG, **Tan SL**, Shoubridge EA. Prospect of preimplantation genetic diagnosis for heritable mitochondrial DNA diseases. *Molecular Human Reproduction*, 2003; 9:631-638.

Yin H, Wang X, Kim SS, Chen H, **Tan SL**, Gosden RG. Transplantation of intact rat gonads using vascular anastomosis: effects of cryopreservation, ischaemia and genotype. *Human Reproduction*, 2003; 18:1165-1172.

Rotterdam ESHRE/ASRM-Sponsored Consensus Workshop Group. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome (PCOS). *Human Reproduction*, 2004; 19:41-47.

Child TJ, Henderson AM, **Tan SL**. The desire for multiple pregnancy in male and female infertility patients. *Human Reproduction*, 2004; 19:558-561.

Dean NL, Battersby BJ, Ao A, Gosden RG, **Tan SL**, Shoubridge EA. Prospect of preimplantation genetic diagnosis for heritable mitochondrial DNA diseases. *Molecular Human Reproduction*, 2003; 9:631-638.

Yin H, Wang X, Kim SS, Chen H, **Tan SL**, Gosden RG. Transplantation of intact rat gonads using vascular anastomosis: effects of cryopreservation, ischaemia and genotype. *Human Reproduction*, 2003; 18:1165-1172.

Rotterdam ESHRE/ASRM-Sponsored Consensus Workshop Group. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome (PCOS). *Human Reproduction*, 2004; 19:41-47.

Child TJ, Henderson AM, **Tan SL**. The desire for multiple pregnancy in male and female infertility patients. *Human Reproduction*, 2004; 19:558-561.

Gulekli B, Buckett WM, Chian RC, Child TJ, Abdul-Jalil AK, **Tan SL**. Randomized, controlled trial of priming with 10,000 IU versus 20,000 IU of human chorionic gonadotropin in women with polycystic ovary syndrome who are undergoing in vitro maturation. *Fertility and Sterility*, 2004; 82:1458-1459

Chian RC, Buckett WM, Abdul Jalil AK, Son WY, Sylvestre C, Rao D, **Tan SL**. Natural-cycle in vitro fertilization combined with in vitro maturation of immature oocytes is a potential approach in infertility treatment. *Fertility and Sterility*, 2004; 82:1675-1678.

Tan SL, Child TJ, Cheung AP, Fluker M, Yuzpe A, Casper R, Leung P, Cadesky K, Davis VJ. A Randomized, Double-Blind, Multicenter Study Comparing a Starting Dose of 100 IU or 200 IU of Recombinant Follicle Stimulating Hormone (Puregon®) in Women Undergoing Controlled Ovarian Hyperstimulation for IVF Treatment. *Journal of Assisted Reproduction and Genetics*, 2005; 22:81-88.

Buckett WM, **Tan SL**. Congenital abnormalities in children born after assisted reproductive techniques: how much is associated with the presence of infertility and how much with its treatment? *Fertility and Sterility*, 2005; 84:1318-1319.

Ao A, Jin S, Rao D, Son WY, Chian RC, **Tan SL**. First successful pregnancy outcome after preimplantation genetic diagnosis for aneuploidy screening in embryos generated from natural-cycle in vitro fertilization combined with an in vitro maturation procedure. *Fertility and Sterility*, 2006; 85:1510.e9-1510.e11.

Huang JYJ, Buckett WM, Gilbert L, **Tan SL**, Chian RC. Retrieval of immature oocytes followed by *in vitro* maturation and vitrification: A case report on a new strategy of fertility preservation in women with borderline ovarian malignancy. *Gynecologic Oncology*, 2007; 105:542-544.

Al-Sunaidi M, Tulandi T, Holzer H, Sylvestre C, Dean N, Chian RC, **Tan SL**. Repeated pregnancies and live births after in-vitro maturation treatment (case report). *Fertility and Sterility*, 2007; 87:1212.

Holzer H, Scharf E, Chian RC, Demirtas E, Buckett W, **Tan SL**. In vitro maturation of oocytes collected from unstimulated ovaries for oocyte donation. *Fertility and Sterility*, 2007; 88:62-67.

Buckett WM, Chian RC, Holzer H, Dean NL, Usher R, **Tan SL**. Obstetric Outcomes and Congenital Abnormalities After In Vitro Maturation, In Vitro Fertilization, and Intracytoplasmic Sperm Injection. *Obstetrics and Gynecology*, 2007; 110:885-891

Al-Sunaidi M, Al-Mahrizi S, **Tan SL**, Tulandi T. Age-related Changes in Antral Follicle Count among Women with and without polycystic ovaries. *Gynecologic and Obstetric Investigation*, 2007; 64:199-203.

Oktay K, Demirtas E, Son WY, Lostritto K, Chian RC, **Tan SL**. In vitro maturation of germinal vesicle oocytes recovered after premature luteinizing hormone surge: description of a novel approach to fertility preservation. *Fertility and Sterility*, 2008; 89:228.e19-228.e22.

Huang JYJ, Tulandi T, Holzer H, MacDonald S, **Tan SL**, Chian RC. Cryopreservation of ovarian tissue and *in vitro* matured oocytes in a female with mosaic Turner syndrome: Case Report. *Human Reproduction*, 2008; 23:336-339.

Huang JY, Tulandi T, Holzer H, **Tan SL**, Chian RC. Combining ovarian tissue cryobanking with retrieval of immature oocytes followed by *in vitro* maturation and vitrification: an additional strategy of fertility preservation. *Fertility and Sterility*, 2008; 89:567-572.

Gidoni Y, Holzer H, **Tan SL**, Tulandi T. Fertility preservation in non-oncologic patients. *Reproductive Biomedicine Online*, 2008; 16:792-800.

Chian RC, Huang JYJ, **Tan SL**, Lucena E, Saa A, Rojas A, Castellón LAR, Amador MIG, Sarmiento JEM. Obstetric and perinatal outcome in 200 infants conceived from vitrified oocytes. *Reproductive Biomedicine Online*, 2008; 16:608-610.

Son WY, Chung JT, Demirtas E, Holzer H, Sylvestre C, Buckett W, Chian RC, **Tan SL**. Comparison of *in-vitro* maturation cycles with and without *in-vivo* matured oocytes retrieved. *Reproductive Biomedicine Online*, 2008; 17:59-67.

Buckett WM, Chian RC, Dean NL, Sylvestre C, Holzer HEG, **Tan SL**. Pregnancy loss in pregnancies conceived after *in vitro* oocyte maturation, conventional *in vitro* fertilization, and intracytoplasmic sperm injection. *Fertility and Sterility*, 2008; 90:546-550.

Elizur SE, Chian RC, Pineau CA, Son WY, Holzer HEG, Huang JYJ, Gidoni Y, Levin D, Demirtas E, **Tan SL**. Fertility preservation treatment for young women with autoimmune disease facing treatment with gonadotoxic agents. *Rheumatology*, 2008; 47:1506-1509.

Demirtas E, Elizur SE, Holzer H, Gidoni Y, Son WY, Chian RC, **Tan SL**. Immature oocyte retrieval in the luteal phase to preserve fertility in women with cancer facing imminent gonadotoxic therapy: It is worth a try. *Reproductive Biomedicine Online*, 2008; 17:520-523.

Son WY, Chung JT, Herrero B, Dean N, Demirtas E, Holzer H, Elizur S, Chian RC, **Tan SL**. Selection of the optimal day for oocyte retrieval based on the diameter of the dominant follicle in hCG-primed *in vitro* maturation cycles. *Human Reproduction*, 2008; 23:2680-2

Gidoni YS, Takefman J, Holzer HEG, Elizur SE, Son WY, Chian RC, **Tan SL**. Cryopreservation of a mother's oocytes for possible future use by her daughter with Turner

Tulandi T, Huang JYJ, **Tan SL**. Preservation of Female Fertility: An Essential Progress. *Obstetrics and Gynecology*, 2008; 112:1160-1172.

Elizur SE, Chian RC, Holzer HEG, Gidoni Y, Tulandi T, **Tan SL**. Cryopreservation of oocytes in a young woman with severe and symptomatic endometriosis: A new indication for fertility preservation. *Fertility and Sterility*, 2009; 91: 293. e1-293.e3.

Lau NM, Huang JYJ, MacDonald S, Elizur S, Gidoni Y, Holzer H, Dean NL, Son WY, Chian RC, Tulandi T, **Tan SL**. Feasibility of fertility preservation in young females with Turner syndrome. *Reproductive Biomedicine Online*, 2009; 18:290-295. NOMINATED FOR PRESENTATION AT THE ROYAN AWARD CONFERENCE, 2010.

Chian RC, Gilbert L, Huang JYJ, Demirtas E, Holzer H, Benjamin A, Buckett WM, Tulandi T, **Tan SL**. Live birth after vitrification of *in vitro* matured human oocytes. *Fertility and Sterility*, 2009; 91:372-376. NOMINATED FOR THE ROYAN AWARD, 2010.

Deveault C, Qian JH, Chebaro W, Ao A, Gilbert L, Mehio A, Khan R, **Tan SL**, Wischmeijer A, Coullin P, Xing X, Slim R. *NLRP7* mutations in women with diploid androgenetic and triploid moles: mechanism of mole formation. *Human Molecular Genetics*, 2009; 18:888-897.

Chian RC, Huang JYJ, Gilbert L, Son WY, Holzer H, Cui SJ, Buckett WM, Tulandi T, **Tan SL**. Obstetric outcomes following vitrification of *in vitro* and *in vivo* matured oocytes. *Fertility and Sterility*, 2009; 91:2391-2398. NOMINATED FOR THE ROYAN AWARD, 2010.

Elizur SE, Tulandi T, Meterissian S, Huang JYJ, Levin D, **Tan SL**. Fertility Preservation for Young Women with Rectal Cancer – A Combined Approach from One Referral Centre. *Journal of Gastrointestinal Surgery*. 2009; 13:1111-1115.

Elizur SE, Son WY, Yap R, Gidoni Y, Levin D, Demirtas E, **Tan SL**. Comparison of low-dose human menopausal gonadotropin and micronized 17 β -estradiol in in vitro maturation cycles with thin endometrial lining *Fertility and Sterility*. 2009; 92:907-912.

Huang JYJ, Chian RC, Gilbert L, Fleiszer D, Holzer H, Demirtas E, Elizur SE, Gidoni Y, Levin D, Son WY, **Tan SL**. Retrieval of immature oocytes from unstimulated ovaries followed by in vitro maturation and vitrification: A novel strategy of fertility preservation for breast cancer patients. *American Journal of Surgery*. 2010; 200:177-183.

Agdi M, Zarei A, Al-Sannan B, Tulandi T, **Tan SL**. Effects of ovarian puncture for in vitro maturation on subsequent in vitro fertilization cycle in women with polycystic ovaries. *Fertility and Sterility*. 2010; 94:381-383.

Shalom-Paz E, Almog B, Shehata F, Huang J, Holzer H, Chian RC, Son WY, **Tan SL**. Fertility preservation for breast-cancer patients using IVM followed by oocyte or embryo vitrification. *Reproductive Biomedicine Online*. 2010; 21:566-571.

Ata B, Seyhan A, Reinblatt SL, Shalom-Paz E, Krishnamurthy S, **Tan SL**. Comparison of automated and manual follicle monitoring in an unrestricted population of 100 women undergoing controlled ovarian stimulation for IVF. *Human Reproduction*. 2011; 26:127-133.

Almog B, Shehata F, Shalom-Paz E, **Tan SL**, Tulandi T. Age-related normogram for antral follicle count: McGill reference guide *Fertility and Sterility*. 2011; 95:663-666.

Son WY, Chung JT, Chan PTK, **Tan SL**. Live birth after ICSI of micro-TESE-retrieved spermatozoa into in vitro-matured oocytes. *Journal of Andrology*. 2011; 32:23-25.

Ao A, X Yun Zang, **Tan SL**. First successful pregnancy following PGD for chromosome translocation on embryos generated from in-vitro matured oocytes: a case report. *Reproductive BioMedicine Online* 2011.

LÀ OÙ LES MIRACLES PRENNENT VIE WHERE HAPPEN

Un chef de file mondial pour l'amélioration, la préservation et le traitement de la fertilité, offrant l'excellence clinique et scientifique dans un cadre personnalisé et axé sur le patient

- Notre taux de réussite pour la FIV est l'un des plus élevés au monde, avec un taux de grossesse clinique de 60 % par cycle chez les femmes de 35 ans et moins
- Pionniers et experts de réputation internationale dans le domaine des techniques de procréation assistée
- Préservation de la fertilité : vitrification des ovules
- Fécondation in vitro (FIV)
- Maturation in vitro (MIV)
- Services complets offerts sur place (y compris un soutien psychologique)
- HCG et DGP (tests de dépistage génétique)
- Thérapies visant à améliorer la fécondité (incluant acupuncture, Pilates, yoga, massothérapie, conseils nutritionnels, réflexologie, méditation, exercices thérapeutiques)
- Suivi médical
- Traitements de fertilité pour hommes et femmes



A global leader in fertility enhancement, preservation and treatment offering clinical and scientific excellence in a personalized, patient-focused setting

- Our team has achieved one of the highest IVF pregnancy rates in the world of over 60%/cycle in women up to 35 years old
- Internationally recognized pioneers and developers of assisted reproductive technology
- Fertility preservation: egg freezing
- In Vitro Fertilization
- In Vitro Maturation (IVM)
- Comprehensive services on site (including psychological counseling)
- CGH and PGD (Genetic Screening Tests)
- Fertility enhancement therapy (including acupuncture, pilates, yoga, massotherapy, nutritional counseling, reflexology, meditation, exercise therapy)
- Follow up care
- Fertility treatments for men and women



Centre de reproduction de Montréal
Montreal Reproductive Centre