

Noha Ahmed Al-Sayed Mousa, MBBCh, M.Sc., Ph.D.

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## Education

### Ph.D. Medical Science- Women Health

Nov 2010

Faculty of Medicine, [University of Toronto](#), Canada

Dissertation:” *Modulation of Intracrine Estrogen in Menopausal Women: Implications for Women’s Reproductive Health and Breast Cancer Risk*”.

Supervisor: Professor [Robert Casper](#) Supervisory Committee (Professors Steven Narod, Theodore Brown, Eleftherios Diamandis, and Aaron Wheeler)

### M.Sc. Obstetrics and Gynecology

Jun 2004

Faculty of Medicine, Assiut University, Egypt.

Grade: “Very Good” (*Ranked 1<sup>st</sup> class*, class size: 4 residents)

### MBBCh

Apr 2000

Faculty of Medicine, [Assiut University](#), Egypt.

Graduation Grade: “Excellence with *Honors*” & “*First Class Honors*”

(*Ranked 1<sup>st</sup> class*, class size: 208 students, Total 88.9% over 6 years of the study).

## Professional and Academic Appointments

Assistant Professor of Obstetrics and Gynecology

Jan 2019- Present

Department of Clinical Sciences, College of Medicine., [University of Sharjah](#), Sharjah, UAE

Assistant Professor, Biomedical Sciences (Adjunct)

Dec 2014- Jun 2018

Zewail University of Science and Technology, Cairo, Egypt

Apr 2004–Nov 2014

Assistant Lecturer of Obstetrics and Gynecology (Tenure)

Department of Obstetrics and Gynecology, Women Health Hospital, Assiut University, Egypt

Obstetrician and Gynecologist (Consultant- A)

July 2016-Present

Women’s Health Clinic (independent practice), Assiut, Egypt

CIHR Health Professional Fellow

Sep 2008-Jul 2010

Canadian Institute of Health Research, Canada

PhD Candidate

[Lunenfeld-Tanenbaum Research Institute](#) and

Sep 2006-Nov 2010

[Institute of Medical Science](#), Faculty of Medicine, U of Toronto, Canada

- Clinical Fellow of Obstetrics and Gynecology  
[Mature Women's Health and Menopause Unit](#),  
 Department of Obstetrics and Gynecology, [Mount Sinai Hospital](#),  
 University of Toronto, Canada (Director: Prof. Wendy Wolfman) Jul 2009–Jun 2010
- Resident of Obstetrics and Gynecology  
 Department of Obstetrics and Gynecology, Faculty of Medicine,  
 Assiut University Hospital, Assiut University, Egypt. Mar 2001-Apr 2004
- Intern of Medicine and Surgery  
 Assiut University Hospitals, Assiut University, Egypt. Mar 2000–Mar 2001

## **Fellowships and Awards**

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### **Fellowships and Scholarships**

- CIHR Health Professional Fellowship (\$55,000/year for 3 years) 2008-2010  
[Canadian Institute of Health Research \(CIHR\)](#), Canada.
- Bisby Fellowship Prize (\$5000/year for 3 years), CIHR. 2008-2010  
 Awarded to the *highest-ranking candidate* in the CIHR Health Professional Fellowship Competition.
- Ontario Graduate Scholarship (\$15,000) 2008-2009  
 Ministry of Training, Colleges and Universities, Ontario, Canada.
- Ontario Graduate Scholarship (\$15,000) 2007-2008  
 Ministry of Training, Colleges and Universities, Ontario, Canada.
- University of Toronto Open Fellowship (\$5000) 2006-2007  
 University of Toronto, Canada.

### **Awards**

- *Women Health Hospital Recognition of Service*
- “*Role Model Physician*”, Recognition Certificate 2018 and  
 Women's Health Hospital, Assiut University 2014
- Mentorship of Medical Students (5000LE) 2014  
 Faculty of Medicine Grants Unit, Assiut University
- Research Paper Prize (750LE), 2012  
 Assiut University, Egypt

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- Institute of Medical Science Entry Award (\$5000) Sep 2006  
Institute of Medical Science, Faculty of Medicine, U of Toronto, Canada
  - Egyptian Medical Syndicate Award for Graduation with Excellence Mar 2001
  - First Class Honor Award for the highest cumulative Grade over the six years Feb 2000  
of the medical school, Faculty of Medicine, Assiut University, Egypt.
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### Reviewer:

- Journal of Reproductive Sciences, published by SAGE (IF 2.5)
- Journal of Drug Development and Industrial Pharmacy, published by Informa Pharmaceutical Science (IF 2.29)
- Journal of Lab on a Chip, published by the Royal Society of Chemistry (IF 5.9)

### Publications

**h-index: 9 (Scopus)/ 11 (Google Scholar)**

#### **Book Chapters**

- 1- **Mousa NA** (corresponding), Shazly S, Nassr A. *Clinical Applications of Stem Cells in Women's Reproductive Health*. In: El-Badri (ed.). *Advances in Stem Cell Therapy: Bench to Bedside*. Nov 2016; Springer, ISBN 978-3-319-29149-9.
- 2- Chen J, Elsayed M, Wei Y, **Mousa NA** (corresponding). *Advances in Micro and Nano Technologies for Stem Cell Based Clinical Applications*. In: El-Badri (ed.). *Advances in Stem Cell Therapy: Bench to Bedside*. Nov 2016; Springer, ISBN 978-3-319-29149-9.

#### **Patents**

1. **Mousa NA**, Khalil SM, Elbadri NE. "Biomimetic Amniotic Niche for Stem Cells". Filed Jun 2015. Published as WO2016206703A2, European Patent # EP3313984A2, and as US Patent # US20180291324A1 (Oct 2018).
2. **Mousa NA**, Casper RF, Wheeler A, Abdelgawad M, Mais J. US 2010/0213074. "Method of Hormone Extraction Using Digital Microfluidics". Filed Feb 2009, ***Granted*** Jun 2012 as US Patent # 8202736 B2. (published also as CA2753617A1, EP2401288A1, and WO2010096928A1)
3. Casper RF, Mitwally MFM, **Mousa NA**, Crystal P. Methods for Detecting Abnormalities in Breast Tissue Using Aromatase Inhibitors. Provisional Application, Sep 2007. Published 2009 as PCT/CA2008/001651 (WO/2009/036566).

**Peer Reviewed Journal Articles****Published Articles**

1. Nasr M, Farghaly M, Elsaba T, El-Mokhtaar M, Abdelkareem A, Fakhry H, **Mousa NA** (corresponding). Resistance of Primary Breast Cancer Cells with Enhanced Stem Cell Features to Sex Hormonal Stimulation and Suppression. *International Journal of Biochemistry and Cell Biology*. December 2018,105: 84-93 (IF: 3.2)
2. Khalil S, El-Badri N, El-Mokhtaar M, Habib D, Farghaly M, **Mousa NA**(corresponding). A cost-effective method to assemble biomimetic 3D cell culture platform. *PloS one 11.12 2016: e016711*.(IF: 2.7)
3. **Mousa NA**, Abou-Taleb HA, Orabi H. Stem cell applications for pathologies of the urinary bladder. *Review World Journal of Stem Cells*. 2015;7(5):815-822. (IF:4.3)
4. Crystal P, **Mousa NA**, Casper RF. In response to letter to the editor. *J Menopause 2013;20:2(240)*. (IF:2.6)
5. **Mousa NA**, Eiada R, Crystal P, Nayot D and Casper RF. The Effect of Acute Aromatase Inhibition on Breast Parenchymal Enhancement in Magnetic Resonance Imaging.*J Menopause 2012;19(4):420-5 Apr;19(4):420-5*.(IF:2.6)
6. Bedaiwy M, Abdelaleem M, Hussein M, **Mousa NA**, Brunengraber L, Casper RF.Hormonal, follicular and endometrial dynamics in letrozole-treated versus natural cycles in patients undergoing controlled ovarian stimulation. *J Reproductive Biology and Endocrinology 2011;9:83*. (IF= 2.8)
7. **Mousa NA**, Jebrail MJ, Yang H, Abdelgawad M, Metalnikov P, Chen J, Wheeler A, Casper R. Droplet-Scale Estrogen Assays in Breast Tissue, Blood, and Serum. *J Science Translational Medicine, Science Journals (AAAS) 20091:1ra2*.(Cover STM) *Highlighted in Reuters, Forbes, Washington Post, Associated Press, Global TV, and other press worldwide*. (IF: 16.7), also won the “2012 Heinrich Emanuel Merck Award for Analytical Science” awarded to PhD co-supervisor Dr. Aaron Wheeler (Value: €15,000).
8. **Mousa NA**, Casper RF. Menopausal estrogen deprivation activates steroid sensitive stem cells (3SC) and local estrogen biosynthesis: A model for breast cancer development. *J Bioscience Hypotheses*.2009;2 (4), pp. 252-256.(IF: 3.36)
9. **Mousa NA**, Crystal P, Wolfman WL, Bedaiwy MA, Casper RF. Aromatase inhibitors and mammographic breast density in postmenopausal women receiving hormone replacement therapy. *J Menopause 2008;15(5):875-884*.(IF: 2.6)
10. **Mousa NA**, Bedaiwy MA, Casper RF. Aromatase inhibitors in the treatment of severe endometriosis not responding to surgical menopause. *Obstetrics & Gynecology (The Green Journal) 2007;109:1421-1423*.(IF: 4.9)
11. Bedaiwy MA, **Mousa NA**, Casper RF. Aromatase inhibitors: potential reproductive implications. *Review Journal of Minimally Invasive Gynecology 2009; 16 (5)*(IF: 3.06)
12. Bedaiwy MA, **Mousa NA**, Casper RF. Aromatase inhibitors prevent the estrogen rise associated with the flare effect of gonadotropins in patients treated with GnRH agonists. *Fertility Sterility 2009;91 (4 SUPPL.)*, pp. 1574-1577 (IF: 4.8)
13. Bedaiwy MA, Shoukry M, **Mousa NA**, Claessens EA, Esfandiari N, Gotleib L, Casper RF. Letrozole Co-Treatment in infertile women 40 years old and over receiving controlled ovarian stimulation and intrauterine insemination. *Fertility Sterility 2009; 91 (6)*, (IF: 4.8)

14. Bedaiwy MA, **Mousa NA**, Forman R, Casper RF. Follicular phase dynamics with aromatase inhibitor and follicle stimulating hormone co-treatment. *J Clinical Endocrinology Metabolism* 2007; 92(3):825-33. (IF:5.7)
15. Bedaiwy MA, Forman R, **Mousa NA**, Casper RF. Cost effectiveness of aromatase inhibition co-treatment for controlled ovarian stimulation. *J Human Reproduction*. 2006 Nov; 21(11):2838-44. (IF= 4.9)
16. **Mousa NA**, Bedaiwy MA, Casper RF. Biological and reproductive implications of stem cell research and therapeutics: prospects in the Middle East. *Review. MEFS J*. 2006: 11 (3):145-151.

#### Conference (Posters, Short Papers, and Oral Presentations):

1. **S. Al-Mofty**, H. Gouda, I. El-Sheribiny, N. Mousa (co-corresponding). Synthesis and primary characterization of human amniotic nanofibrous membrane. The 6<sup>th</sup> Nano Today Conference sponsored by *the Nano Today Journal*. June 16-20<sup>th</sup>, 2019 Lisbon, Portugal
2. M Nasr, M Farghaly, T. Elsaba, El-Mokhtaar, A Abdelkareem, H Fakhry, **N Mousa**(corresponding). Response of Primary Breast Cancer Stem Cells to Long-Term Exposure to Reproductive Hormones and Their Antagonists: A Pre-Clinical Model for A BCSCs Hormonopredictive Assay. 51st Miami Winter Symposium: Stem Cells – Today’s Research Tomorrow’s Therapies. Florida, USA, Jan 2018 (my student M Nasr (undergraduate) was Awarded the International Union of Biochemistry and Molecular Biology Travel Fellowship value ~ 3000 USD to present this work).
3. M Nasr, M Farghaly, T. Elsaba, M El-Mokhtaar, A Abdelkareem, H Fakhry, **N Mousa**(corresponding). Effect of Long-term Hormonal Modulation on Cancer Stem Cell Culture Model of Human Invasive Ductal Breast Cancer. Science Operation Leaders National Competition, Cairo, Feb 2017. (*Best Poster Award*).
4. M Nasr, M Farghaly, N El-Badri, T. Elsaba, M El-Mokhtaar, A Abdelkareem, H Fakhry, **N Mousa** (corresponding). Long-term Effect of Steroidal Hormones and Their Antagonists on A Cancer Stem Cell Culture Model of Human Invasive Ductal Breast Cancer. World Stem Cell Summit, Florida, USA, 2016. (Accepted/not published).
5. S Al-Mofty, N El-Badri, A Altayeb, O Ahmed, M Elsayed, A Wahbi, H Ali, M Abdelgawad, **N Mousa** (corresponding). All In One Lab-On-Chip Platform For Tissue Processing, And Cell Sample Preparation. MicroTAS 2016: The 20th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Dublin, Ireland, Oct 2016.
6. N El-Badri, S Khalil, M El-Mokhtar, D Habib, M Farghaly, R Ayman, S Al-Mofty, M Eldosoky, **N Mousa** (corresponding). A Cost-Effective Method to Assemble Biomimetic 3D Stem Cell Culture Platforms. The International Society for Stem Cell Research (ISSR), San Francisco, USA, Jun 2016.
7. **N Mousa** (corresponding), S Khalil, N El-Badri. A Biomimetic Platform as a Niche for Stem Cell Culture Applications. “World Stem Cell Summit”, Atlanta, USA, Dec 2015. (Accepted/not published)
8. A Aaliya, E Haggag, A Atwa, A Aboushanab, S Nasr, A Altayeb, N El-badri, **N Mousa** (corresponding). A Biomimetic Microfluidic Platform for Pancreatic Islets Studies. International Student Conference (ISC-Egypt17), Cairo University, Oct 2015.
9. **N Mousa** (corresponding), S Mohamed, N El-Badri. Amniotic Membrane Based Scaffold for Cell Applications. Industry Academia Collaboration Conference (IAC), Mar 2015, Cairo
10. O Ahmed, H Abdellah, **N Mousa**, M El-Sayed, M Abdelgawad, and N El-Badri. Tissue Dissociation Miniaturized Platform for Uterine Stem Cell Isolation and Culture, The 7th Cairo International Biomedical Engineering Conference (CIBEC), Cairo, Egypt Dec, 2014. Conference article published

in the proceedings of CIBEC, indexed in IEEEExplore vol., no., pp.178-180, 11-13 Dec. 2014. (My student O Ahmed won the 2<sup>nd</sup> Best Paper **Award**, value 300USD for this work)

11. AK Bakry, **NA Mousa** (corresponding). Severe septic complications of acute fatty liver of pregnancy: case series in Assiut Women's health hospital, 8<sup>th</sup> Conference of the Department of Obstetrics and Gynecology, *Hurgada*, Egypt, 2014. Also, published in *Faculty of 1000 Posters*, 2014.
12. O Ahmed, H Abdellah, M El-Sayed, N El-Badri, **N Mousa** (corresponding/presenter). Endometrial Tissue Dissociation Micro Platform for Primary Stem Cell Culture Research Applications. *Poster*, Ontario On Chip, *Toronto*, Canada-May 2014.
13. **Mousa NA**, Eiada R, Crystal P, Nayot D and Casper RF. Acute Aromatase Inhibition Decreases Breast Parenchymal Enhancement Observed On Magnetic Resonance Imaging in Postmenopausal Women” ObGyn Research Day, U of Toronto, Canada, 2010.
14. **Mousa NA**, Mais J. Jebraïl, H Yang, M Abdelgawad, P Metalnikov, J Chen, AR. Wheeler, and RF. Casper. Estrogen Extraction from Microdrop Clinical Samples by Digital Microfluidic ”ObGyn Research Day, U of Toronto, *Toronto*, Canada-May 2009.
15. Jebraïl M, **Mousa NA**, Yang H, Casper RF, Wheeler AR. Droplet-scale estrogen assays in breast tissue, blood, and serum. The 13th International Conference on Miniaturized Systems for Chemistry and Life Sciences MicroTAS, *Jeju*, Korea, 2009.
16. **Mousa NA**, Jebraïl MJ, Yang H, Abdelgawad M, Metalnikov P, Chen J, Wheeler A, Casper RF. Droplet-Scale Estrogen Assays in Breast Tissue, Blood, and Serum. The 5th International Conference on Microtechnologies in Medicine and Biology (MMB) Conference, *Quebec City*, Canada, Apr 2009. (*Poster-short oral presentation*)
17. **Mousa NA**, Crystal P, Wolfman WL, Bedaiwy MA, Casper RF. Aromatase Inhibitors and Mammographic Breast Density in Postmenopausal Women Receiving Hormone Replacement Therapy. The North American Menopause Society (NAMS) Meeting, Orlando, USA, *Sep 2008*.
18. **Mousa NA**, Crystal P, Wolfman WL, Bedaiwy MA, Casper RF. Aromatase inhibitors and mammographic breast density in postmenopausal women receiving aromatase inhibitors decrease breast density in postmenopausal women on estrogen and progestin therapy”. *Institute of Medical Science Research Day*, U of Toronto, *Toronto*, Canada, May 2008.
19. **Mousa NA**, Crystal P, Wolfman WL, Bedaiwy MA, Casper RF. Aromatase inhibitors and mammographic breast density in postmenopausal women receiving”. Aromatase inhibitors decrease breast density in postmenopausal women on estrogen and progestin therapy” *Obstetrics and Gynecology Research Day*, U of Toronto, Canada, May 2008.
20. M Bedawiy, **N Mousa**, R Casper. “Follicular, hormonal and endometrial dynamics in cycles treated with letrozole and recombinant FSH versus FSH alone in patients undergoing intrauterine insemination”. 53<sup>rd</sup> Annual Scientific Meeting of the Society for Gynecologic Investigation” SGI”, *Toronto*, Canada, Mar 2006.

**External Research Funding**

<i>Project Title</i>	<i>Funding Organization</i>	<i>Budget</i>	<i>Role in Project</i>
Investigating the hemostatic properties of a biomaterial derived from by-products of fetal delivery	University of Sharjah Seed Grant, 2019	40,000 AED over 2 years	PI
Non-surgical diagnosis of endometriosis: Incorporating clinical, hormonal and biomechanical factors into an integrated model "	Science and Technology Development Fund (STDF), Cairo, Egypt 2014	1 million EGP over 2 years	Co-Investigator, local hormonal endometriotic tissue studies using mass spectrometry. (declined after awarded due to change of Institute)
<i>Center of Excellence</i> of Stem Cell Research and Regenerative Medicine	Science and Technology Fund, Egypt 2013	10 million EGP over 3 years	Co-investigator, cancer stem cells and biotechnology stem cell research
Tissue Engineering of Genito-Urinary Organs Using Cell Sheet Technology	Faculty of Medicine Grant Office, Assiut University Mar 2013	30,000 EGP	Co-Investigator
Establishing Microfluidics Application Research Unit	Science and Technology Development Fund(STDF), 2012	4,958,000 EGP	Team Member
Can Aromatase Inhibitors Reduce Breast Density, a Biomarker of Breast Cancer Risk, in Postmenopausal Women Taking Hormone Therapy?	Canadian Breast Cancer Foundation, Canada 2009-2012	\$449,889 over 3 years	Primary author of grant and team member
Can Aromatase Inhibitors Improve the Diagnostic Sensitivity and Specificity of Breast MRI?	Canadian Foundation for Women Health 2008-2009	\$13,500	Primary author of grant and co-investigator

**Professional Licensure**

Consultant (A) Obstetrician Gynecologist Register # 54484, Syndicate of Egyptian Physicians, Egypt	Mar 2018 - present
Private Clinic of Obstetrics and Gynecology Register # 44093, Syndicate of Egyptian Physicians Register # 2281, Department of Health, Assiut	2016/2017- present
Clinical Fellow Register # 91832, <u>College of Physicians and Surgeons of Ontario(CPSO)</u> , Ontario, Canada	Jul 2009- Jun 2010
Specialist Obstetrician Gynecologist Register# 10635, Syndicate of Egyptian Physicians, Egypt	Dec 2005- 2018

Physician

Mar 2001- present

Register # 141223, Ministry of Health, Egypt

**Teaching Experience****Department of Obstetrics and Gynecology, Assiut University:**

- I have significant experience in clinical teaching of undergraduate medical students and training of residents in tutorials, clinical rounds, bedside rotations, ER and supervision in operative theater training. I had special interest in training junior fellows on office hysteroscope.
- I developed a structured “clinical shadowing program” at Assiut School of Medicine, based on motivating volunteer academic clinicians. Medical students were linked in a one to one training module to experienced clinical mentors. Additionally, through an online module, task-based learning was applied to engage students in self-learning of clinical skills often overlooked in the regular curriculum.

**Biomedical Sciences Program, Zewail University of Science and Technology:**

I developed, coordinated, or taught the following courses:

1. Senior Thesis Project course, Fall 2017, Spring 2018
2. Clinical Sciences- Course developer and coordinator, Spring 2016 & 2017
3. Stem Cells and Regenerative Medicine-Teaching faculty. Fall 2015& 2016
4. Biostatistics- Teaching faculty, Fall, 2016
5. Experimental Design and Data Analysis- Course coordinator, Spring 2016
6. Functional Genomics and Systems Biology- Course coordinator, Fall, 2015
7. Human Research Ethics-Teaching Faculty, Fall, 2015 & 2016
8. Human Physiology, Course developer and coordinator -Spring 2015
9. Reproductive Biology- Teaching faculty, Spring 2015
10. Reproductive Human Anatomy-Teaching faculty: Spring 2016 and 2017

**Mentoring and Supervisory Experience:** Over the past 6 years, I mentored 13 medical and biomedical students in different projects which resulted in significant development of their research skills and distinctive outcomes. I adopt a strategy of building confidence and capacity of young students who showed utmost receptivity at their early university years.

**Academic Committees**

Medicine Concentration Curriculum Committee	2015-2016
Zewail University of Science and Technology, Egypt	
Research Ethics Day Committee- Coordinator	June 2008
Royal College Clinician Investigator Program and Department of Bioethics, U of Toronto.	

**External Invited Talks:**

1. Egyptian Student Association, University of Toronto, *Toronto*, Canada, Jun 2014: “Challenging Young Minds: Research Training Models”.
2. Alexandria University Obstetrics and Gynecology Annual Conference, *Alexandria*, Egypt, 2011. Management of Estrogen in Menopause: The Paradox of the Good and the Bad.
3. Martin Prosperity Institute, Biodiscovery Toronto Technology Showcase, *Toronto*, Canada, Nov 2009: “A Quantitative Assay for Hormones in Micro-drop Clinical Samples”
4. Venture Sinai Women Meeting, *Toronto*, Nov 2009: “Estrogen: The good, The Bad, The Unexpected”.

**International Exams**

Membership of the Royal College of Obstetricians & Gynecologists Exam, UK ( <i>MRCOG Part I</i> )	2012
Medical Council of Canada Qualifying Exam 1 ( <i>MCCQE1</i> )	2005
Medical Council of Canada Evaluating Exam ( <i>MCCEE</i> )	2006
TOEFL- Computer based (Score 267, Essay 5.5)	2005
TOEFL TSE (Score 55)	2005

**Professional Development**

- Advanced laparoscopy hands on training workshops Feb-2014  
Women's Health Hospital, Assiut U, Egypt
- Microarray Tutorial and Hands on Training Apr 2008  
UHN Microarray Center, Toronto, Canada
- Mature Women's Health Care: How to Grow Old Better. Apr 2008  
Mount Sinai Hospital and Faculty of Medicine, Toronto, Canada
- Academic Communication Skills Sep 2007  
School of Graduate Studies, University of Toronto, Canada (12 hours)
- University Teacher Training Program May 2004  
Faculty of Education, Assiut University, Egypt (teaching methods training 60 hrs).

**Community and volunteer activities**

Founder and Secretary General: Health Care Reform Egypt(HRE) A national NGO aimed at improvement of medical education in Egypt. Examples of successful programs	2011-2015
<ul style="list-style-type: none"> <li>• Mentor-Student Research Link</li> <li>• Clinical Shadowing Program</li> <li>• Patient Information Kiosks</li> </ul>	
Judge- CIHR Synapse Program Canadian Institute of Health Research (CIHR), Canada	2007- 2011
Secretary of the Volunteer Executive Committee True Davidson Acres Home for Aged, Toronto, Canada	2004- 2007