

## **I. Biographical Data**



**Martin P. Mintchev**

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***Present Position:*** Professor, Department of Electrical and Computer Engineering

## **II. Professional Record**

### **A. Academic Record**

#### ***Undergraduate/Graduate***

***(Combined Degree):*** B.Sc./M.Sc. in Electronics Engineering (Honors), 1987, Technical University – Sofia, Bulgaria;

***Graduate:*** Ph.D. in Electrical Engineering, 1994, University of Alberta, Canada;

#### ***Post-Doctoral***

***Training:*** Experimental Surgery, 1994, Surgical-Medical Research Institute, University of Alberta, Edmonton, Canada;

#### ***Professional***

***Engineer:*** Association of Professional Engineers, Geophysicists and Geologists of Alberta (APEGGA), 1998.

***Fellowship:*** Fellow of the American Institute for Medical and Biological Engineering, 2007

***Specialized Courses:*** New Millennium in Gastroenterology, 1999, Mayo Clinic;

Gastroenterology for the 21<sup>st</sup> Century, 2001, Mayo Clinic;

Micro/Nano-Fabrication Training and Design Course, 2002, NanoFab Laboratory, University of Alberta, Edmonton.

## **B. Academic and Industry Appointments**

2018	Director and Vice President (Technology), eMosquito Inc, Calgary, Alberta
2015	Chief Scientific Officer and Director, M Pharmaceutical Inc
2015	Co-Founder and first President and CEO of M Pharmaceutical Inc (now Callitas Health), publicly traded biomedical technology company (CSE:LILY);
2006 – present	President and CEO, EatLittle, Inc., Calgary, Alberta ( <a href="http://www.eatlittle.com">http://www.eatlittle.com</a> )
2004 – present	Adjunct Professor of Medicine, Faculty of Medicine, University of Calgary
2001 – present	Professor (tenured), Department of Electrical and Computer Engineering, University of Calgary;
1999 - 2001	Associate Professor (tenured), Department of Electrical and Computer Engineering, University of Calgary;
1998 – present	Adjunct Professor of Surgery (Division of Surgical Research), University of Alberta, Edmonton, Alberta, Canada;
1997 - present	Director, Low Frequency Instrumentation Laboratory, University of Calgary;
1997 – 1999	Assistant Professor (tenure-track), Department of Electrical and Computer Engineering, University of Calgary, Alberta, Canada (junior Whitaker Chair in Biomedical Instrumentation);
1995 - 1997:	Assistant Professor, Department of Electrical and Computer Engineering/Department of Surgery, University of Alberta, Edmonton, Canada;
1995 - 1997:	System Administrator and Network Facilitator, Department of Surgery, University of Alberta, Edmonton, Canada.
1994:	Postdoctoral Fellow (Experimental Surgery), Surgical-Medical Research Institute, University of Alberta, Edmonton, Canada;
1991 - 1994:	Research and Teaching Assistant, and Ph.D. Student, Department of Electrical Engineering, University of Alberta, Edmonton, Canada.
1990 - 1991:	Visiting Scientist, Department of Electrical Engineering/Department of Surgery, University of Alberta, Edmonton, Canada.

- 1990: Visiting Scientist, GI Research Unit, University of London, Great Britain.
- 1988 - 1990: Research Engineer and Ph.D. Candidate, Higher Institute of Mechanical and Electrical Engineering, Sofia, Bulgaria.
- 1987 - 1988: Design Engineer, Institute of Medical Electronics, Sofia, Bulgaria.

### **C. Administrative Responsibilities**

#### **Industry and Entrepreneurship**

- 2018 Director and President, eMosquito Inc, Calgary, Alberta
- 2015 Chief Scientific Officer, M Pharmaceutical Inc., Vancouver, B.C.
- 2006-present President and CEO, EatLittle Inc, Calgary, Alberta
- 2015 President and CEO, M Pharmaceutical Inc., Vancouver, B.C.
- 1995-1997 System Administrator and Network Facilitator, Department of Surgery, Faculty of Medicine, University of Alberta, Edmonton, Alberta, Canada

#### **Academic**

##### ***Department:***

- 2018-present Scholarship Committee, Department of Electrical and Computer Engineering;
- 2016-present Graduate Studies Committee, Department of Electrical and Computer Engineering;
- 2015-present Planning Committee, Department of Electrical and Computer Engineering;
- 2012-2014 Undergraduate Studies Committee, Department of Electrical and Computer Engineering;
- 2009-2012 Graduate Studies Committee; Department of Electrical and Computer Engineering;
- 2008-2009 Research Space Committee and Seminar Committee; Department of ECE;
- 2006-2007 Striking Committee; Department of Electrical and Computer Engineering;
- 2005-2006 Budget Committee, Department of Electrical and Computer Engineering;
- 2004-2005 TUCFA Representative, Department of Electrical and Computer Engineering;
- 2003-2004 Planning Committee, Department of Electrical and Computer Engineering;
- 2003-2004 Research Space Committee, Department of Electrical and Computer Engineering;

- 2000-2003 Budget Committee, Department of Electrical and Computer Engineering;
- 2001-2003 Graduate Studies Committee, Department of Electrical and Computer Engineering;
- 2000 Planning Committee, Department of Electrical and Computer Engineering;
- 1999-2000 Chair, Committee on Computer Operations, Department of Electrical and Computer Engineering;
- 2000-2001 Chair, Committee on Computer Operations, Department of Electrical and Computer Engineering;
- 1999-2000 Member of the Hiring Committee for 22 new positions in the Department of ECE;
- 1998-present Budget Committee, Department of ECE;

***Faculty:***

- 2018-present Schulich School of Engineering Tenure Committee;
- 2014-2018 Schulich School of Engineering Appeals Committee;
- 2010-present Faculty of Medicine Representative;
- 2008-2012 Research Committee, Schulich School of Engineering
- 1997-present Member, Engineering Faculty Council;
- 2002-present Member, Research and Graduate Studies Committee, Faculty of Engineering;
- 1998-2002 Member, Undergraduate Programme in Biomedical Engineering Steering Committee, University of Calgary;
- 1999-2006 Faculty of Graduate Studies Scholarship Committee;

***University:***

- 2016-present TUCFA Representative, Schulich School of Engineering;
- 2012-present Member, University of Calgary Scholarship Committee;
- 2008-2012 Member, Admissions Interview Group, Faculty of Medicine;
- 2007-2008 Member, University Scholarship Committee;
- 2004-2006 Member, University Scholarship Committee;

- 2001-2003 Member, General Faculties Council, University of Calgary;  
 1999-2000 University Research Grants Committee, University of Calgary;

***National:***

- 2002-2005 Member, Natural Sciences and Engineering Research Council of Canada Grant Selection Committee 335 “Electromagnetics and Electrical Engineering”.  
 2007-present Fellow, American Institute for Medical and Biological Engineering, Washington, DC 2009  
 Member, National Science Foundation EFRI Panel (Washington, DC)  
 2010-2011 Distinguished Lecturer, IEEE

**D. Professional Certification and Memberships in Learned Societies.**

- (i) Professional Engineer, Association of Professional Engineers, Geologists and Geophysicists of Alberta;  
 (ii) Biomedical Engineering Society – USA;  
 (iii) American Gastroenterological Association – USA;  
 (iv) Association of the Academic Staff, University of Calgary.  
 (v) International E.G.G. Society;  
 (vi) American Motility Society – USA;  
 (vii) Senior Member (IEEE);  
 (viii) IEEE Society of Engineers in Medicine and Biology; (ix) IEEE Society of Measurement and Instrumentation.  
 (x) Fellow, American Institute for Medical and Biological Engineering, Washington, DC

**E. Awards, Distinctions and Fellowships.**

- 2010: Distinguished Lecturer, IEEE Sensors Society  
 2007: Fellow, American Institute for Medical and Biological Engineering, Washington, DC  
 2004: Student Union Teaching Excellence Award (nominated), University of Calgary;  
 2002: ITHEA International Prize for most original research contribution to the International Journal of Information Theories and Applications;  
 2002: Student Union Teaching Excellence Award (nominated), University of Calgary;  
 2001: Honorary Professor, International Medical Association (Bulgaria);  
 1999: Faculty of Engineering Research Award (Electrical and Computer Engineering);  
 1998: Canada Foundation for Innovation Researcher;

1998: Student Union Teaching Excellence Award, University of Calgary;

1997: Teacher of the Year Award for 4th Year Electrical and Computer Engineering, University of Calgary (Honorable Mention);

1997: Petro Canada Young Innovator Award, Alberta, Canada;

1994: Post-doctoral Fellowship, Gastrointestinal Motility Laboratory, Department of Surgery, University of Alberta, Edmonton, Alberta, Canada;

1990: British Council Research Visitor Award, United Kingdom (University of London).

### **F. Media Exposure.**

Numerous interviews and media exposure:

TV Stations: CBC, CTV, City TV, Global TV Network

Radio Stations: CBC, NPR

Newspapers and News Agencies: Calgary Herald, Calgary Sun, Edmonton Journal, Montreal Gazette, Toronto Sun, Globe and Mail, The Canadian Press, Huffington Post, US News and World Report, The Money Times, Medical News Today, The Times of India, Bloomberg Business Week, Financial Post, Los Angeles Times, Chicago Tribune, etc.

### **G. Areas of Research.**

Electronic Microsystems, Electronic Design, Embedded Electronic Systems; Microelectronics, Electronic Systems and Robotics, Human-Machine Interaction, Internet of Things, Experimental Surgery, Biomedical Systems, Medical Devices, Biomedical Instrumentation, Medical Electronics, Medical Sensors and Actuators, MEMS, Gastroenterology, Oilfield Instrumentation, Inertial Navigation Systems, Digital Signal and Image Processing.

## **III. Educational Activities**

### **A. Instruction.**

2001 - present                      Professor (tenured), Department of Electrical and Computer Engineering, University of Calgary.

1999 – 2001                        Associate Professor (tenured), Department of Electrical and Computer Engineering, University of Calgary.

1997 - 1999:                        Assistant Professor, Department of Electrical and Computer Engineering, University of Calgary;

***Full Courses (lectures, labs, tutorials):***

ENEL 469 (Analog Integrated Electronics, 3<sup>d</sup> year, average class size 60 students); Teaching Evaluations above 5.5/7;

ENGG 325 (Electric Circuits, 2<sup>nd</sup> year, average class size 110 students); Teaching Evaluations above 5.5/7;

ENEL 463 (Electronic Devices and Circuits, 3<sup>d</sup> year, average class size 90 students); Teaching Evaluations above 5.5/7;

ENEL 569 (Electronic Systems and Applications, 4<sup>th</sup> year, average class size 25 students); Teaching Evaluations (5-year average): above 6/7

ENEL 565 (Digital Integrated Electronics, 4<sup>th</sup> year, average class size 40 students); Teaching Evaluations (2-year average): above 5.5/7

ENEL 341 (Electric Circuits I, 2<sup>nd</sup> year, average class size 85 students); Teaching Evaluations: (2-year average): above 5.5/7

ENEL 623 (Biomedical Systems and Applications, graduate course, developed by Martin Mintchev in 1999, average class size 10 students);

***Partial Courses/Reading Courses/Seminar Courses:***

ENEL 361 (Electronic Materials, lab instruction only);

ENEL 619.19 (Three-Dimensional Parametric Computer Modelling of Internal Organs; reading course)

ENEL 619.24 (Non-linear Digital Processing of MR Images with Metal Implant Distortions, reading course);

ENEL 619.23 (Practical Electronic Design, reading course, graduate level);

ENEL 519.23 (Practical Electronic Design, reading course, undergrad level);

ENEL 605/607 (Graduate Research Seminar, average class size 55 students);

1995 – 1997: Assistant Professor, Department of Electrical and Computer Engineering, University of Alberta.

***Full Courses (lectures and labs):***

EE 445 (C/C++ Programming for Engineers, developed by Martin Mintchev in 1995, average class size 70 students);

Teaching Evaluations: well above the average for the Department and the Faculty;

EE 498 (Network Programming for Engineers, developed by Martin Mintchev in 1996, class size 5);

EE 499 (Undergraduate Project Course)

1991 – 1994: Teaching Assistant, Department of Electrical and Computer Engineering, University of Alberta (labs only).

*Courses:* Control Systems I and Control Systems II; Digital Filter Design; Digital Signal Processing.

***Teaching at foreign institutions:***

2013 Graduate Student Examiner, Faculty of Computer Science, Free University of Bolzano, Bolzano, Italy;

2003-2005 Graduate Student Examiner, Department of Electronics, Technical University of Sofia, Bulgaria;

1989-1990: Teaching Assistant (labs only), Department of Electronics, Technical University (Sofia, Bulgaria)

*Courses:* Medical Electronics.

***International Workshops:***

1. Reliability of percent distribution of power of the electrogastrogram in recognizing gastric electrical uncoupling. Fifth Int. Workshop on Electrogastrography, Washington, D.C., May 1997.
2. Computer assessment of gastric electrical abnormalities from electrogastrograms. Fourth Int. Workshop on Electrogastrography, San Francisco, CA, May 1996.
3. Comparison of cutaneous and internal gastric electrical activity in normal man: a quantitative assessment. Third Int. Workshop on Electrogastrography, San Diego, CA, May 1995.

***Invited Lectures***

- (1) Leakfree Pipelines. Oil Sands Trade Show and Conference, Fort McMurray, Alberta, Canada, October, 2017.
- (2) Leakless Pipelines: Science Fiction or Reality? Global Petroleum Show, Calgary, Alberta, June 2017;
- (3) Investors Presentation for M Pharmaceutical Inc, New York, July 2015 (Wall Street, New York, Sponsored by M Pharmaceutical Inc);
- (4) The Electronic Mosquito – a minimally-invasive electronic microsystem for glucose monitoring. Vancouver, BC, Canada, Corporate Presentation for M Pharmaceutical, Inc, February, 2015 (Sponsored by M Pharmaceutical Inc, resulted in over \$1M investments);
- (5) Advanced Methods in Electronic System Design. Free University of Bozen/Bolzano, Bolzano, Alto Adige, Italy, November 2013, (Sponsored by the Free University of Bozen/Bolzano);
- (6) Self-Stabilizing Capsule Endoscopy for Non-Invasive Colon Cancer Screening. Pontifica Universidad y Catolica de Chile, Santiago, August, 2011 (Sponsored by the IEEE Sensors Society);



- (7) Neural Gastrointestinal Electrical Stimulation. Wingate Institute of Neurogastroenterology, Royal London Hospital, London, UK, November 2010 (Sponsored by the IEEE Sensors Society);
- (8) Functional Gastrointestinal Stimulation. Official Opening of the Centre for Digestive Motility Disorders, June 2008 (Sponsored by the Centre for Digestive Motility Disorders, Calgary, AB);
- (9) Electronic Mosquito - a MEMS sampling and drug delivery device for the treatment of diabetes. International MEMS Meeting, Puebla, Mexico, October 2007 (Sponsored by the Organizers);
- (10) Creating a MEMS infrastructure at the University of Calgary, Alberta, Canada. International MEMS Meeting, Puebla, Mexico, October 2007 (Sponsored by the Organizers);
- (11) Functional Neural Gastric Electrical Stimulation. SUMMIT Institute for Continuing Medical Education, San Francisco, USA, September 16, 2005 (Sponsored by the SUMMIT Institute);
- (12) Electronic Mosquito: A micro-electromechanical system for blood sampling and analysis. George Washington University, Washington, DC, May 28, 2004 (Sponsored by GWU);
- (13) Neural Gastrointestinal Stimulation (NGES) utilizing implantable microsystems. McMaster University, Hamilton, ON, June, 2003 (Sponsored by McMaster University);
- (14) Sequential Functional Gastrointestinal Stimulation. 11<sup>th</sup> Int. Workshop on Electrogastrography, Orlando, FL, May 22, 2003 (Sponsored by the IEGGS);
- (15) Low-Frequency Instrumentation: Biomedical and Environmental Projects. University of Twente, Enschede, Holland, December 20, 2001 (Sponsored by the University of Twente);
- (16) Microprocessor Control of Gastrointestinal Motility. 11<sup>th</sup> Assembly of the International Medical Association (Bulgaria), Varna, Bulgaria, May 25-27, 2001;
- (17) Miniature Pressure/Force Sensor for the Gastrointestinal Tract. Monterrey IEEE Symposium, Monterrey, Mexico, October 12-13, 2000 (Sponsored by the Symposium);
- (18) Functional Gastric Electrical Stimulation. Vanderbilt University, Department of Surgery, August 1999 (Sponsored by Vanderbilt University);
- (19) Gastric Electrical Activity. Vanderbilt University, Department of Physics and Astronomy, August 1999 (Sponsored by Vanderbilt University);
- (20) Gastric Electrical Activity: from Measurement to Processing and from Modelling to Control. University of Rochester (N.Y.), Department of Gastroenterology, July 1999 (Sponsored by the University of Rochester).
- (21) Microprocessor-Based Real-Time Functional Control of Internal Organs – Science Fiction or Reality? IEEE International Conference On Systems, Man and Cybernetics, La Jolla, California, USA, Oct.13, 1998 (Sponsored by the Natural Sciences and Engineering Research Council of Canada).

- (22) Gastric Electrical Activity: from Measurement to Processing and from Modelling to Control. GI Research Group, University of Calgary, October 1997 (Sponsored by the GI Research group).
- (23) Comparative Metrics in Procedure-Oriented and Object-Oriented Engineering Programming. Department of Electrical and Computer Engineering, University of Alberta, March 1997 (Sponsored by the Department of ECE, University of Alberta).
- (24) Cyber E.G.Gs. A New Electronic Journal on Electrogastrography. XV Int. Symposium on Gastrointestinal Motility, Rome, Italy, October 1995 (Co-sponsored by the University of Alberta Travel Grant and the Secretariat of the Symposium).
- (25) How to Record and Analyze Human Electrogastrograms. Johns Hopkins School of Medicine, Baltimore, Maryland, May 1994 (Sponsored by JHSM).
- (26) Diagnostic Significance of EGG. University of Tennessee, Memphis, TN, September 1993 (Sponsored by the UT-Memphis).
- (27) Electrogastrography - the Diagnostic Approach. University of Indiana (UIPUI), Indianapolis, IN, September 1993 (Sponsored by UIPUI).
- (28) Electrical Signals From the Stomach. University of Indiana (UIPUI), Indianapolis, IN, September 1993 (Sponsored by UIPUI).
- (29) Modelling of the Electrical Field Produced by Human Stomach. University of Surrey, Department of Physics, Surrey, United Kingdom, April 1990 (Sponsor: British Council).
- (30) Electrical Signals from the Stomach. Gastrointestinal Science Unit, London Hospital, University of London, United Kingdom, April 1990 (Sponsor: British Council).

### **B. Graduate and Undergraduate Supervision**

2018-present	Ms. Ingrid Silva (Ph.D.); Topic: “Wireless Communication in Horizontal Drilling” (Sponsored by NSERC);
2018-present	Mr. Jonas Texeira (M.Sc.); Topic: Microfluidic Enhancement of the Wrist-based Electronic Mosquito” (Sponsored by NSERC);
2017-present	Mr. Nathan Ursenbach (M.Sc.); Topic: “Real-Time Error Compensation using IDA” (Sponsored by Compass Engineering Inc)
2016-2018	Mr. Thiago Valentin (M.Sc.); Topic: “Wireless Downhole Communication” (Sponsored by NSERC);
2015-2017	Mr. Martin Berka (M.Sc.); Topic: “In-Plane SMA Actuator for Minimally-Invasive Blood Extraction” (Sponsored by Johnson and Johnson);

- 2012-2017 Mr. Joseph Wang (Ph.D.); Topic: “Electronic Mosquito” (Sponsored by NSERC and Johnson and Johnson);
- 2013-2016 Mr. Michael Poscente (M.Sc./M.D.); Topic: Transluminal Intra-gastric Impedance Gastrography` (Sponsored by NSERC);
- 2011-2014 Ms. Leticia Angulo (M.Sc.); Topic: Automatic Assessment of the Quality of Colonoscopies; (Sponsored by NSERC);
- 2012-2015 Mr. Robin Wang (M.Sc.); Topic: “INS-Based Navigation in Horizontal Drilling” (Sponsored by NSERC and PetroJet Canada);
- 2013-2015 Ms. Qian Lu (M.Sc); Topic: “Advanced Acoustic Systems for Gastroesophageal Reflux Studies” (sponsored by NSERC and the GI Motility Lab in Edmonton);
- 2009-2013 Mr. Tristan Jones (M.Sc./M.D.); Topic: “Embedded Glucose Sensor for a Feedback-Controlled Electronic Mosquito” (sponsored by NSERC);
- 2009-2013 Mr. Dobromir Filip (Ph.D.); Topic: “Self-Stabilizing Capsule Endoscope for Colonic Imaging” (Sponsored by Sandhill Scientific, Denver, Co.);
- 2008-2013 Mr. Gavin Gao (Ph.D.); Topic: “Longitudinal ultrasonic sensor for GERD monitoring” (Sponsored by Sandhill Scientific, Denver, Co);
- 2008-2010 Mr. Alvaro Arriegada (M.Sc); Topic: “Feedback-Controlled Multichannel Implantable Neurostimulator for the Gastrointestinal Tract” (Sponsored by NSERC and the GI Motility Laboratory, Edmonton);
- 2006-2009 Mr. Geoffrey Thomas (M.Sc.), Topic: “Electronic Mosquito – a semi-invasive microsystem for glucose monitoring” (Sponsored by NSERC);
- 2005-2007 Mr. Michael Lam (M.Sc.); Topic: “Aided Magnetic Navigation for the Control of Swallowable Microsystem Capsule in the Gastrointestinal Tract” (Sponsored by Sandhill Scientific, Denver, Co);
- 2018-present Mr. Isaac Parsons (Undergraduate); Topic: “Dynamic Error Compensation in Inertial Navigation Systems”; (Sponsored by NSERC);
- 2017-present Mr. Robert Wilkes (Undergraduate); Topic: “Sole-based Electronic Mosquito” (Sponsored by NSERC);
- 2007-2010 Mr. Alex Jurkov (Undergraduate); Topic: “Real-time instrumentation for oil-field navigation” (Sponsored by NSERC);
- 2007-2010 Ms. Stephanie Lemon (Undergraduate); Topic: “Clinical applications of human electrogastrography” (Sponsored by the Gastrointestinal Motility Laboratory, Edmonton);

- 2005 Ms Joanna Wu (Undergraduate); Topic: “Transcutaneous Power Transfer for Implantable Gastrointestinal Neurostimulators” (Sponsored by NSERC Undergraduate Scholarship);
- 2005 Mr. Billy Wu (Undergraduate); Topic: “Aided Magnetic Levitation for Capsule Endoscopy” (Sponsored by NSERC Undergraduate Scholarship);
- 2004-2008 Mr. Justin Cloutier (M.Sc.); Topic: “Controlled Motion in the Downhole Assembly as an Avenue to Reduce Navigation Errors in Horizontal Drilling”, (Sponsored by NSERC, Imperial Oil, and the Alberta Energy Research Institute);
- 2004-2006 Ms. Jennifer Hogan (M.Sc.); Topic: “Multichannel High-Resolution Optical Esophageal Manometry” (Sponsored by NSERC, AI, and iCore Scholarships);
- 2004-2005 Mr. Efraim Pecht (Ph.D.); Topic: “Methods to Reduce Errors in Azimuth Monitoring in MWD Processes”, (Sponsored by NSERC and the Alberta Energy Research Institute);
- 2003-2005 Mr. Denis Onen (M.Sc.); Topic: “Programmable Functional Neurostimulator”, (Sponsored by NSERC and the Department of Clinical Neurosciences, University of Calgary);
- 2004-2008 Mr. Ilian Tchervensky (M.Sc.); Topic: “Optimal Wavelet Transform for Biomedical Signals” (Sponsored by NSERC and the Gastrointestinal Motility Laboratory, University of Alberta Hospitals, Edmonton);
- 2002-2005 Mr. Georgio Gattiker (Ph.D.); Topic: “Electronic Mosquito – A Semi-Invasive Microsystem for Blood Sampling and Analysis” (Sponsored by NSERC);
- 2002-2006 Mr. Jose Guillaumin Gonzalez (Ph.D.); Topic: “Integrated Esophageal Catheter” (sponsored by NSERC, the Gastrointestinal Motility Laboratory, Edmonton, and Sandhill Scientific);
- 2003-2005 Mr. Ray Jui (M.Sc.); Topic: “Microelectronic Capsule for Monitoring Bolus Transit in Human Esophagus”, (Sponsored by NSERC, Gastrointestinal Motility Laboratory, Edmonton, and Sandhill Scientific);
- 2003-2005 Mr. Ehsan Jalilian (M.Sc.); Topic: “Implantable Gastrointestinal Stimulator” (Sponsored by NSERC);
- 2002-2004 Mr. Yves Pauchard (M.Sc.); Topic: “Compensation of Magnetic Susceptibility Difference Artifacts in MRI” (sponsored by the Alberta Software Engineering Research Consortium)
- 2002-2004 Mr. Renato Cintra (Ph.D.); Topic: “Wavelets in Electrogastrography” (University of Pernambuco, Brazil);

- 2002-2006 Mr. Charles Newton Price (M.Sc.); Topic: "Chaos Analysis of Electrogastrographic Signals" (sponsored by NSERC);
- 2001-2003 Mr. Adrian Ledroz (M.Sc.); Topic: "Implementation of gyroscope-based navigation system for Measurement-While-Drilling processes for the oil industry" (sponsored by Phoenix Technology and the Alberta Energy Institute);
- 2001 Ms Catherine Gooi (student intern from the University of Pennsylvania, USA); Topic: "Real-Time Emission Monitoring and Control"
- 2000-2003 Mr. Yu Lin (M.Sc.); Topic: "VLSI Design of Implantable Microprocessor Stimulator for Functional Recreation of Gastrointestinal Motility" (Co-sponsored by the Research Enhancement Envelope International, and the Alberta Software Engineering Research Consortium);
- 2000-2002 Mr. Simon Zhao (M.Sc.); Topic: "Integrated Web-Based System for Remote Education and Training in Electrogastrography" (Sponsored by the Alberta Software Engineering Research Consortium);
- 2000-2002 Mr. Enrique Leon (M.Sc.); Topic: "Sensor Validation and Neural Network Robustness in Emission Monitoring Systems for Stationary Internal Combustion Engines" (Sponsored by the Government of Mexico and REM Technology, B.C.);
- 2000 Mr. Jean-Yves Carre (student intern from the Universite d'Orleans, France); Topic: "Study of the dynamics of the level of chaos in electrogastrograms" (Sponsored by the Natural Sciences and Engineering Research Council of Canada);
- 1999-2001 Mr. Gabriel Cuenca (M.Sc.); Topic: "Automatic control of air-fuel dynamics based on real-time emission gas monitoring." (Co-sponsored by Spartan Control and Alberta Software Engineering Research Consortium);
- 1998-2000 Mr. Peter Rashev (M.Sc); Topic: "Microprocessor-based reconstruction of gastrointestinal mechanical activity" (Whitaker Scholarship, \$7,500 p.a.; Faculty of Graduate Studies Scholarship, \$3,000; University of Calgary Scholarship, \$12,750 p.a.);
- 1998-2002 Mr. Aboelmagd Noureldin (Ph.D.); Topic: "Real-Time Azimuth Monitoring for MWD Processes" (International Downhole Equipment Scholarship, \$12,000 p.a.; University of Calgary Scholarship, \$10,500 p.a.; Killam Memorial Scholarship, 23,100\$/year);
- 1997-2000 Mr. Jamie Guay (M.Sc); Topic: "Automatic Control of Insulin Infusion";
- 1999 Mr. Guillaume Bacher (student intern from the Universite d'Orleans, France); Topic: "Miniature fiberoptic pressure sensor for gastrointestinal measurements";

- 1998 Mr. Arnaud Girard (student intern from the Universite d'Orleans, France); Topic: "Non-linear manipulations in the reference channel of adaptive compensators";
- 1989-1990 Mr. Vladimir Tsekov (M.Sc., Sofia Technical University); Topic: "Multichannel System for Amplification, Acquisition, and Processing of Biological Data";
- 1988-1989 Ms. Tsetska Turpenova (M.Sc., Sofia Technical University); Topic: "Computer Modelling of Gastric Electrical Activity";
- 1988-1989 Mr. Ventseslav Alexandrov (M.Sc., Sofia Technical University); Topic: "Methods and Algorithms for Signal Processing and Analysis of Infralowfrequency Signals from the Gastrointestinal Tract"

### **C. Postdoctoral Fellow Trainees**

- 2018-present Dr. Joseph Wang, Ph.D.; Topic: "The Electronic Mosquito" (Sponsored by Johnson and Johnson/Alberta Diabetes Institute);
- 2006 Dr. Andrea Pruteanu-Citu, MD; Topic: "Obesity and Retrograde Neural Gastric Electrical Stimulation" (Sponsored by St. Jude Medical);
- 2005-2006 Dr. Kevin Liu, DVM; Topic: "Chronic Experimental Studies of Neural Gastrointestinal Stimulation on Large Animal Models" (Sponsored by St Jude Medical)
- 2004-2007 Dr. Emil Neshev, MD; Topic: "Acute Experimental Studies of Neural Gastrointestinal Electrical Stimulation on Large Animal Models" (Sponsored by NSERC and St Jude Medical);
- 2002-2003 Dr. Meiguo Gao (Beijing Institute of Technology); Topic: "Wavelets in Electrogastrography" (Scholarship by the Government of PR of China);
- 1998-2000 Dr. Manuel Amaris, M.D. (Postdoctoral Fellow); Topic: "Clinical Cutaneous Electrogastrography" (Gastrointestinal Motility Laboratory Scholarship, \$30,000 p.a.);
- 1997-1998 Dr. Claudia Sanmiguel, M.D. (Postdoctoral Fellow); Topic: "Quantification of Electrogastrograms for Clinical Use" (Gastrointestinal Motility Laboratory Scholarship, \$36,000 p.a.);

## **IV Scholarly Activities**

### **A. Research Support:**

- 2018-present Compass Engineering "Inertial Navigation System for Downhole Directional Drilling";  
*Amount:* C\$40,000/year for 2 years;

- 2012-present NSERC Operating Grant “Advanced Methods for Oilfield and Biomedical Instrumentation”;  
**Amount:** C\$ 42,000/year
- 2015-present Johnson and Johnson Grant “In-Plane SMA Actuator for Minimally Invasive Blood Extraction”;  
**Amount:** C\$50,000/year
- 2012-2015 NSERC Discovery Acceleration Award “Advanced Methods for Oilfield and Biomedical Instrumentation”;  
**Amount:** C\$ 40,000/year
- 2003-present Industrial Grant “Projects in Gastrointestinal Motility”; Gastrointestinal Motility Laboratory, Edmonton  
**Amount:** C\$24,000/year
- 2015 Industrial Grant “Inertial Measurement Navigation”, PetroJet Canada, Calgary  
**Amount:** C\$32,000/year
- 2004-2013 Industrial Grant “Methods and Systems for Assessing Gastrointestinal Motility”, Sandhill Scientific, Denver, Co. (accompanied by licensing agreement for 4 technologies);  
**Amount:** 75,000 USD/year
- 2002-2012 NSERC Operating Grant “Advanced Methods for Oilfield and Biomedical Instrumentation”;  
**Amount:** C\$ 48,000/year
- 2005 Industrial Grant “Neuro-Gastrointestinal Stimulation”, St. Jude Medical, CA, (accompanied by licensing option agreement for 4 technologies);  
**Amount:** 180,000 USD
- 2004 Fabrication Grant “Battery Re-Charger for Implantable Neurostimulators”, Canadian Microelectronic Corporation;  
**Amount:** C\$ 6,000 (in kind)
- 2004 Fabrication Grant “CMOS Imager for Optical Impedance Measurements in Human Esophagus”, Canadian Microelectronic Corporation; **Amount:** C\$ 6,000 (in kind)
- 2003 Fabrication Grant “MicraGems e-Mosquito”, Canadian Microelectronic Corporation;  
**Amount:** C\$ 6,000 (in kind)
- 2003 Fabrication Grant “MUMPS e-Mosquito”, Canadian Microelectronic Corporation;  
**Amount:** C\$ 6,000 (in kind)

- 2003-2006 NSERC Collaborative Health Research Proposal “Implantable Microsystem for Functional Stimulation of Impaired Colonic Motility”  
**Amount:** C\$ 81,000/year
- 2002-2005 Canada Foundation for Innovation Infrastructure Grant “Facility for Study of Effectiveness of Collaborative, Distributed Software Development” (Principle Investigator, 5 other researchers)  
**Amount:** C\$ 262,000
- 2001-2003 REM Technology Industrial Grant “Development of Real-Time Sensor Validation Systems for Stationary Internal Combustion Engines.  
**Amount:** C\$8,400/year
- 2001-2003 Phoenix Technology Industrial Grant “Development of Fiberoptic Gyroscope Based Systems for MWD”.  
**Amount:** C\$27,000/year
- 2000-2001 STEP Programme for Summer Student Employment, Provincial Government of Alberta.  
**Amount:** C\$3,000/year
- 2000 Zassi Medical Evolutions (USA). Support for Research and Development in the Area of Real-Time Recording of Colonic Motility.  
**Amount:** 4,500\$
- 2000-2001 Research Excellence Envelope (International Graduate Student)  
**Amount:** C\$4,200/year for 2 years;
- 2000-2001 Canada-European Union Collaborative Grant in Software Engineering (Principle Investigator: G. Succi, Team Leader for U of C: M.P. Mintchev, 12 researchers);  
**Amount:** C\$198,000
- 2000-2003 Alberta Science and Research Authority, "Alberta Software Engineering Research Consortium", (Principle Investigator: P.Sorenson, 10 researchers)  
**Amount:** C\$600,000/year (38,000\$ individual operating grant for the first year)
- 2000-2001 Alberta Oil Sands Research Authority, “A New Measurement-While-Drilling Surveying Technique Employing the Technology of Fiber Optic Gyroscope in Strapdown Navigation System”.  
**Amount:** C\$53,000
- 1999-2000 Spartan Control Industrial Grant "Real-time Control of Gas Emissions in Internal Combustion Engines".  
**Amount:** C\$8,400;
- 1999 University of Calgary Travel Grant  
**Amount:** C\$1,280;



- 1999 SCP Programme for Summer Student Employment (Federal Government of Canada)  
**Amount:** C\$7,200
- 1999 Alberta Heritage Foundation for Medical Research Travel Grant  
**Amount:** C\$700;
- 1999: Equipment Grant in Microelectronics, Canada Microelectronic Corporation (Principal Investigator: J. W. Haslett, 8 researchers)  
**Amount:** C\$80,000;
- 1998-2002: NSERC Operating Grant “Computer Reconstruction of Gastric Electrical and Mechanical Activity”.  
**Amount:** C\$ 20,700/year for 4 years;
- 1998-2001: Canada Foundation for Innovation “Embedded Hardware-Software Biomedical System for the Acquisition and Analysis of Gastrointestinal Signals” (Principal Investigator: M. P. Mintchev, 4 researchers).  
**Amount:** C\$188,500
- 1998-2000 Micronet Short Term Research and Development Program “Real-time Monitoring of Azimuth for Measurement-While-Drilling Processes Using Sets of Fiber Optic Gyroscopes” (in collaboration with International Downhole Equipment, Ltd., Edmonton).  
**Amount:** C\$12,000/year for 2 years;
- 1998-2000: Research Excellence Envelope (Provincial Government of Alberta).  
**Amount:** C\$ 25,000/year for 1 year;
- 1998-2001 “Real-time Azimuth Tracking in Measurement-While-Drilling Processes”; International Downhole Equipment, Inc.  
**Amount:** C\$ 12,000/year for 3 years;
- 1997-2000: Whitaker Foundation Special Opportunities Grant (new faculty member portion);  
**Amount:** C\$ 20,000/year for 3 years;
- 1998: Canada Microelectronic Corporation Equipment Grant (Principal Investigator: J.W. Haslett, 8 researchers)  
**Amount:** C\$79,000
- 1997-1999: Petro Canada Young Investigator Grant Award “Electrogastrographic effects of gastric electrical stimulation”.  
**Amount:** C\$ 20,000;
- 1997-1999: University of Calgary StartUp Grant “Non-linear adaptive filtering of biomedical signals in non-ideal noise environments”.  
**Amount:** C\$ 10,000;

- 1996 “Quantification of Electrogastrograms”, Janssen Pharmaceutical, (Principal Investigators: M. P. Mintchev and K. L. Bowes); *Amount: C\$ 2,500;*
- 1995 Central Research Fund Travel Grant, University of Alberta. *Amount: C\$ 1,500;*
- 1994 “Design and Testing of 2 Multichannel GI Motility Systems”, UAH Capital Equipment Grant, *Amount: C\$ 30,000.*

### **B. Invited Keynote Addresses**

Graduate Studies at the University of Calgary. Monterrey Technological Institute, Monterrey, Mexico, October 2000 (sponsored by the IEEE at Monterrey Tech.)

### **C. Publications**

#### **PEER-REVIEWED PAPERS (published or in print, Italics indicate student):**

1. Yadid-Pecht O, Mintchev MP. (2017). Materializing Innovation in Information and Communication Technologies In Academia Through Entrepreneurship And Commercialization. *International Journal of Information Models and Analyses*. 6(1): 55-67.
2. *Poscente MD, Mintchev MP. (2017). Enhanced electrogastrography: A realistic way to salvage a promise that was never kept?. World Journal of Gastroenterology. 23(25): 4517-4528.*
3. *Wang G, Poscente MD, Park SS, Andrews CN, Yadid-Pecht O, Mintchev MP. (2017). Wearable Microsystem for Minimally Invasive, Pseudo-Continuous Blood Glucose Monitoring: The eMosquito. IEEE Transactions on Biomedical Circuits and Systems. 11(5): 979-987.*
4. *Lu Q, Zhang L, Zhao C, Jin H, Wang B, Yadid-Pecht O, Sadowski DC, Mintchev MP (2015). Catheter-based acoustic interrogation device for real-time monitoring of the dynamics of the lower esophageal sphincter: in vitro and pilot canine studies, Physiological Measurement, 36 (12), 247180.*
5. *Li T, Yuan G, Lan H, Mintchev M (2015). Design and Algorithm Verification of a Gyroscope-Based Inertial Navigation System for Small-Diameter Spaces in Multilateral Horizontal Drilling Applications, Micromachines, 6 (12), 1946-1970.*
6. *Wang G, Poscente M.D., Park S.S., Yadid-Pecht O., Mintchev M. P., Characterization of a CuffBased SMA Actuator. International Journal of Information Theories and Applications, Vol. 22(1), 3-22, 2015*
7. *Poscente, M. D., Wang, G., Filip, D., Ninova, P., Muench, G., Yadid-Pecht, O., Mintchev M. P., & Andrews, C. N. (2014). Transcutaneous Intraluminal Impedance Measurement for Minimally Invasive Monitoring of Gastric Motility: Validation in Acute Canine Models. Gastroenterology Research and Practice, 11/2014; 2014:1-9. DOI:10.1155/2014/691532*

8. Lu Q, Yadid-Pecht O, Sadowski DC, Mintchev MP. (2014) A Catheter-Based Acoustic Interrogation Device for Monitoring Motility Dynamics of the Lower Esophageal Sphincter, *Sensors*, 14(8):14700-14711, 2014
9. Wang Z, Li T, McDougall M, McCormack D, Mintchev M.P. (2014). Wireless data transmission options in rotary in-drilling alignment(R-IDA) setups for multilateral oil drilling applications. *International Journal "Information Theories and Applications"*, Vol. 21(2), pp.154-163
10. Poscente, M. D., Wang, G., Filip, D., Ninova, P., Yadid-Pecht, O., Andrews, C. N., & Mintchev, M. P. (2014). Real-time gastric motility monitoring using transcutaneous intraluminal impedance measurements (TIIM). *Physiological Measurement*, 35(2),217-23.
11. Wang, G., & Mintchev, M. P. (2013). Development of Wearable Semi-invasive Blood Sampling Devices for Continuous Glucose Monitoring: A Survey. *Engineering*, 5(5A),42-6.
12. Yadid-Pecht, O., & Mintchev, M. P. (2013). Pseudobezoars: Technology Progress and New Prospects as a Medical Platform. *Engineering*, 5(5B), 10-15.
13. Lu, Q., Yadid-Pecht, O., Sadowski, D., & Mintchev, M. P. (2013). Acoustic and Intraluminal Ultrasonic Technologies in the Diagnosis of Diseases in Gastrointestinal Tract: A Review. *Engineering*, 5(5A), 73-79.
14. Wang Z, Poscente M, Filip D, Dimanchev M, Mintchev MP. (2013) Rotary in-drilling alignment using an autonomous MEMS-based inertial measurement unit for measurement-while-drilling processes. *IEEE Instrumentation and Measurement Magazine* 12/2013; 16(6):26-34.
15. Mintchev MP. Gastric electrical stimulation for the treatment of obesity: from entrainment to bezoars-a functional review. (2013) *ISRN Gastroenterol*. 2013;2013:434706.
16. Filip D, Yadid-Pecht O, Muench G, Mintchev MP, Andrews CN. Suture marker lesion detection in the colon by self-stabilizing and unmodified capsule endoscopes: pilot study in acute canine models. (2013) *Gastrointest Endosc*. 2013 Feb;77(2):272-9.
17. Angulo-Rodriguez, L., Gao, X., Filip, D., Andrews, C. N., & Mintchev, M. P. (2012). Automated system for quantifying the level of preparation in colonoscopy. *ITHEA Journal*, 12(1):226-235.
18. Filip D, Gao X, Angulo-Rodríguez L, Mintchev MP, Devlin SM, Rostom A, Rosen W, Andrews CN. Colometer: a real-time quality feedback system for screening colonoscopy. (2012) *World J Gastroenterol*. 2012 Aug 28;18(32):4270-7.
19. Gao X, Sadowski DC, Mintchev MP. Intraluminal ultrasonic probe for volumetric monitoring of liquid gastroesophageal reflux. *Physiol Meas*. 2012 Mar;33(3):487-501.
20. Mintchev P, Arriagada A, Mintchev MP, Andrews CN. Evaluation of tined endoscopically placed mucosal leads for temporary gastric neurostimulation. *Neuromodulation*. 2012 May-Jun;15(3):21922;

21. Deneva MG, Yadid-Pecht O, Fattouche M, Mintchev MP. Utilization of Temporary Controllable Gastric Pseudobezoars for the Treatment of Obesity. *Current Obesity Reviews* 2012, 1(2), pp. 6874;
22. Filip D, Yadid-Pecht O, Andrews C, Mintchev MP. Self-Stabilizing Capsule Endoscopy: Pilot Study of Acute Animal Models. *IEEE Trans on Medical Imaging*, 2011, Dec; 30(12):2115-25;
23. Filip D, Yadid-Pecht O, Andrews CN, Mintchev MP. Design, Implementation and Testing of a Miniature Self-Stabilizing Capsule Endoscope with Wireless Information Transmission Capabilities. *Int J Inf Technol & Knowledge*; 5(1):3-24, 2011.
24. Arriagada A, Jurkov AS, Neshev E, Muench G, Mintchev MP and Andrews CA. Comparative Gastric Motility Study of Enterra™ Therapy and Neural Gastric Electrical Stimulation in an Acute Canine Model. *Neurogastroenterology and Motility* 2011;23(3):271-8, e122
25. Arriagada AJ, Jurkov AS, Neshev E, Muench G, Andrews CA and Mintchev MP. Design, implementation and testing of an implantable impedance-based feedback-controlled neural gastric stimulator. *Physiological Measurement* 2011, 32(8):1103-15
26. Jurkov AS, Cloutier J, Pecht E, Mintchev MP. Experimental Feasibility of the In-Drilling Alignment Method for Inertial Navigation in Measurement-While-Drilling. *IEEE Trans on Instrumentation and Measurement* 2011; 60(3): 1080-1090
27. Mintchev MP, Deneva MG, Aminkov BI, Fattouche M, Yadid-Pecht O, Bray RC. Pilot study of temporary controllable gastric pseudobezoars for dynamic non-invasive gastric volume reduction. *Physiol Meas.* 2010 Feb;31(2):131-44.
28. Koenig JB, Martin CE, Dobson H, Mintchev MP. Use of multichannel electrogastrography for noninvasive assessment of gastric myoelectrical activity in dogs. *Am J Vet Res.* 2009 Jan;70(1):1115.
29. Lam M, Mintchev M., Diamagnetically stabilized levitation control of an intraluminal magnetic capsule. *Physiol Meas.* 2009 Aug;30(8):763-77
30. Aelen P, Jurkov A, Aulanier A, Mintchev MP. Pilot acute study of feedback-controlled retrograde peristalsis invoked by neural gastric electrical stimulation. *Physiol Meas.* 2009 Mar;30(3):309-22.
31. Koenig JB, Martin CE, Nykamp SG, Mintchev MP. Use of multichannel electrointestino-graphy for noninvasive assessment of myoelectrical activity in the cecum and large colon of horses. *Am J Vet Res.* 2008 Jun;69(6):709-15.
32. Sanmiguel CP, Hagiike M, Mintchev MP, Cruz RD, Phillips EH, Cunneen SA, Conklin JL, Soffer EE. Effect of electrical stimulation of the LES on LES pressure in a canine model. *Am J Physiol Gastrointest Liver Physiol.* 2008 Aug;295(2):G389-94.
33. Aelen P, Neshev E, Cholette M, Crisanti K, Mitchell P, Debru E, Church N, Mintchev MP. Manipulation of food intake and weight dynamics using retrograde neural gastric electrical stimulation in a chronic canine model. *Neurogastroenterol Motil.* 2008 Apr;20(4):358-68. Epub 2007 Nov 20.
34. Jalilian E, Neshev E, Onen D, and Mintchev MP. Implantable Neural Electrical Stimulator for External Control of Gastrointestinal Motility. *Med Eng Phys.* 2007, 29(2); 238-52;
35. Gonzalez-Guillaumin JL, Sadowski DC, Kaler KV, Mintchev MP. Ingestible capsule for impedance and pH monitoring in the esophagus. *IEEE Trans Biomed Eng.* 2007 Dec;54(12):2231-6.

36. *Onen D, Neshev E, Jalilian E, Mintchev MP*. Parametric Study of Neural Gastric Electrical Stimulation. *IEEE Transactions on Biomedical Engineering*; 2007; 54(3): 429-435;
37. *Pecht E, and Mintchev MP*. Observability Analysis of INS Alignment in Horizontal Drilling. *IEEE Transactions on Instrumentation and Measurement*, 56(5), pp 1935-1945, 2007.
38. *Pecht E, and Mintchev MP*. Modeling of Observability During In-Drilling Alignment for Horizontal Directional Drilling. *IEEE Transactions on Instrumentation and Measurement*, 56(5), pp 1946-1954, 2007.
39. *Gonzalez-Guillaumin JL, Sadowski DC, Yadid-Pecht O, Kaler KVIS and Mintchev MP*. Multichannel pressure, bolus transit, and pH esophageal catheter, *IEEE Sensors Journal*, 6 (3): 796803, 2006.
40. *Tchervensky IV, De Sobral Cintra RJ, Neshev E, Dimitrov VS, Sadowski DC, and Mintchev MP*. Center-specific multichannel electrogastrographic testing utilizing wavelet-based decomposition. *Physiological Measurements*, 27, 569-584, 2006.
41. *Neshev E, Onen D, Jalilian E, and Mintchev MP*. Pre-Pyloric Neural Electrical Stimulation Produces Cholinergically-Mediated Reverse Peristalsis in Acute Canine Model of Microprocessor-Invoked Gastric Motility for the Treatment of Obesity. *Obesity Surgery*, April; 16(4):510-20, 2006;
42. *Gattiker G, Kaler KVIS, and Mintchev MP*. Electronic Mosquito: Designing a Semi-Invasive Microsystem for Blood Sampling, Analysis and Drug Delivery Applications. *Journal of Microsystem Technology*, vol. 12, pp. 44-51, 2005.
43. *Pauchard Y, Smith MR and Mintchev MP*. Improving Geometric Accuracy in the Presence of Susceptibility Difference Artifacts Produced by Metallic Implants in Magnetic Resonance Imaging. *IEEE Transactions on Medical Imaging*, 24(10): 1387-1399, 2005;
44. *Ledroz AG, Pecht E, Cramer D and Mintchev MP*. FOG-Based Navigation in Downhole Environment During Horizontal Drilling Utilizing a Complete Inertial Measurement Unit. *IEEE Trans Instrumentation and Measurement*, 54(5), 1997-2006, 2005.
45. *Newton-Price C, Westwick D, and Mintchev MP*. Analysis of Gastric Electrical Uncoupling Using Recurrence Quantification Analysis. *Digestive Diseases and Sciences*, 50(5):885-92, 2005.
46. *De Sobral Cintra RJ, Tchervensky IV, Dimitrov V, and Mintchev MP*. Wavelet analysis in a canine model of gastric electrical uncoupling. *Physiological Measurement*, 25: pp. 1355-1369, 2004.
47. *Noureldin A, Irvine-Halliday D, and Mintchev MP*. Measurement-while-drilling surveying of highly-inclined and horizontal well sections utilizing single-axis gyro sensing system. *Meas. Sci. Technol.* 15: pp.2426-2434, 2004.
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49. *Noureldin A, Irvine-Halliday D, and Mintchev MP*. Improving Wellbore Surveying Accuracy of Horizontal Wells by Utilizing Dual-Axis Optical Gyro System. *Survey Review*, 37(292), 469-89, 2004.

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51. *LaFrenz J, Gattiker G, Kaler KVIS, and Mintchev MP.* Starting from Scratch: Creating an Information Technology Infrastructure for MEMS-Related Research and Development. *International Journal of Information Theories and Applications*, 10(3), 330-6, 2003.
52. *Amaris MA, Sanmiguel CP, Sadowski D, Bowes KL, and Mintchev MP.* Electrical Activity from the Colon Overlaps with Normal Gastric Electrical Activity in Cutaneous Recordings. *Digestive Diseases and Sciences*, 47(11), pp. 2480-2485, 2002.
53. *Rashev PZ, Bowes KL, and Mintchev MP.* Three-dimensional object-oriented modeling of the stomach for the purpose of microprocessor-controlled functional stimulation. *IEEE Transactions on ITB*, 6(4), pp. 296-309, 2002.
54. *Newton Price C, and Mintchev MP.* Quantitative Evaluation of the Dynamics of External Factors Influencing Canine Gastric Electrical Activity Before and After Uncoupling. *Medical Engineering and Technology*, 26(6), 239-46, 2002.
55. *Noureldin A, Irvine-Halliday D, and Mintchev MP.* Accuracy Limitations of FOG-based Continuous Measurement-While-Drilling Surveying Instruments for Horizontal Wells. *IEEE Transactions on Instrumentation and Measurement*, 51(6), pp. 1177-91, 2002.
56. *Rachev PZ, Amaris M, Bowes KL and Mintchev MP.* Microprocessor-controlled Colonic Peristalsis: Dynamic Parametric Modeling in Dogs. *Digestive Diseases and Sciences*, 47(5); 103448, 2002.
57. *Amaris M, Rashev PZ, Mintchev MP, and Bowes KL.* Microprocessor-controlled movement of solid colonic content using sequential neural electrical stimulation. *Gut* 50(4): 475-479, 2002;
58. *Shoarinejad A, Karunanayake D, Newton Price C., and Mintchev MP.* Software-Controlled Electromechanical Model of Functional Gastric Stimulation. *International Journal of Information Theories and Applications*, 9(3), 108-20, 2002.
59. *Noureldin A, Irvine-Halliday D, Tabler H and Mintchev MP.* A new technique for reducing the Angle Random Walk at the output of fiber optic gyroscopes during alignment processes of Inertial Navigation Systems. *Journal of Optical Engineering*, 40(10),pp 2097-2106, 2001.
60. *Zhao S, Succi G, and Mintchev MP.* Tele-Electrogastrography. *International Journal of Information Theories and Applications*, 8(1), 30-40, 2001.
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64. *Noureldin A*, Irvine-Halliday D, Tabler H and Mintchev MP. Quantitative Study of the Applicability of Fiber Optic Gyroscopes for Azimuth Monitoring in Horizontal Drilling. *Journal of the SPE*, 5(4):363-70, 2000;
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66. *Cyca D*, *Komierowski R*, *Kapil S*, *Man D*, *Succi G*, and Mintchev MP. Application of the Concurrent Versions System (CVS) in the Design and Implementation of an Embedded Multichannel Data Acquisition and Analysis System for Gastrointestinal Signals. *International Journal of Information Theories and Applications*, 7(1), 14-23, 2000.
67. Mintchev MP, *Sanmiguel CP*, *Amaris M*, and Bowes KL. Microprocessor-controlled movement of solid gastric content using sequential neural electrical stimulation. *Gastroenterology*, 118:258-63, 2000.
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69. *Rashev PZ*, Mintchev MP and Bowes KL. Application of Object-Oriented Programming Paradigm in Three-Dimensional Computer Modeling of Mechanically Active Gastrointestinal Tissues. *IEEE Transactions on Information Technology in Biomedicine* 4(3), 248-57, 2000.
70. Mintchev MP, *Girard A*, and Bowes KL. Nonlinear adaptive noise compensation in electrogastrograms recorded from healthy dogs. *IEEE Transactions on BME*, 47(2), 239-48, 2000.
71. Mintchev MP and Succi G. Comparative Metrics in Procedure-Oriented and Object-Oriented Software Implementations of a Simple Single-Input-Single-Output Digital Process Control Problem in Educational Environment. *International Journal of Information Theories and Applications*, 6(2), 77-84, 1999.
72. *Brandon T*, Mintchev MP, and Tabler H. Adaptive Compensation of the Mud Pump Noise in a Measurement-While-Drilling System. *Journal of the SPE*, 4(2), 128-133, 1999.
73. Mintchev MP, *Sanmiguel CP*, and Bowes KL. Electrogastrographic impact of multisite functional gastric electrical stimulation. *Medical Engineering and Technology*, 23(1), 5-9, 1999.

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76. *Sanmiguel CP*, Mintchev MP and Bowes KL. Electrogastrography: A non-invasive technique to evaluate gastric electrical activity. *Canadian Journal of Gastroenterology*; 12 (6):423-430, 1998;
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80. Mintchev MP and Bowes KL. Comparative quantification of gastric electrical activity and electrogastrograms. *Medical & Biological Engineering & Computing*, 36, 96-100, 1998.
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93. *Mintchev MP*, Kingma YJ, Bowes KL. Accuracy of cutaneous recordings of gastric electrical activity. *Gastroenterology*, 104: 1373-80, 1993.
94. Stamboliev IB and *Mintchev MP*. Contrast scale map of amplitude-compressed biological signals in specified frequency windows. *Bioautomation*, 9:70-7, 1991.
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#### BOOK CHAPTERS AND TEXTBOOKS:

1. Wang G, *Poscente MD, Filip D*, Andrews CN, *Mintchev MP*. Capsule-Based Measurements of Gastrointestinal Impedance. In: *Handbook of Biochips*, Springer Science & Business Media, New York, 2015
2. *Mintchev MP*. Sampling Theorem and Aliasing in Biomedical Signal Processing. In: *Encyclopedia of Biomedical Engineering*, John Wiley, 2006
3. *Mintchev MP* and Bowes KL. Capabilities and Limitations of Electrogastrograms. In: *Electrogastrography. Principles and applications*. (McCallum R.W. and Chen J., Eds). Raven Press N.Y., 1994.

#### PEER-REVIEWED CONFERENCE PAPERS:

- (1) R. Wilkes, G. Wang, C. Huang, O. Yadid-Pecht and M. P. Mintchev, (2018) "Minimally Invasive Pseudo-continuous Blood Glucose Monitoring: Results from In-Vitro and In-Vivo Testing of the eTac," *2018 IEEE International Symposium on Circuits and Systems (ISCAS)*, Florence, Italy, pp. 1-4; doi: 10.1109/ISCAS.2018.8351511
- (2) N. Vastarey, R. J Turner, M. P. Mintchev, O. Yadid-Pecht. (2016). Functionalized Micro-Fluidic Component. *Proceedings of the IEEE-NIH Special Topics Conference on Healthcare Innovations and Point-of-Care*. IEEE-NIH Special Topics Conference on Healthcare Innovations and Point-of-Care Technologies, Cancun, Mexico (311-315)

- (3) *Berka MJ, Wang G, Yadid-Pecht O, Mintchev MP.* (2016). MEMS actuator for splinter-like skin penetration in glucose-sensing applications: Design and demonstration. Proceedings of IEEE SENSORS, 2016. 17<sup>th</sup> Int IEEE Conference on Electronics, Circuits and Systems (ICECS), Orlando, United States (20-23)
- (4) *Marchand C, Wang G, Bathe O, Yadid-Pecht O, Mintchev MP.* (2016). Autonomous In-Situ Blood Glucose Monitoring: Results from In Vitro Testing. Proceedings of the 37th IEEE EMBS International Conference. IEEE EMBS International Conference, Orlando, United States
- (5) *Wang G, Poscente MD, Park SS, Andrews CN, Yadid-Pecht O, Mintchev MP,* (2016). Minimally Invasive Pseudo-Continuous Blood Glucose Monitoring: Results from In-Vitro and In-Vivo Testing of the e-Mosquito. Proceedings of the 2016 IEEE ISCAS. IEEE ISCAS, Montreal, Canada (321324)
- (6) *Wang G, Poscente MD, Park SS, Andrews CN, Yadid-Pecht O, Mintchev MP.* (2016). Testing the e-Mosquito: A Minimally-Invasive Glucose Monitoring Systems for Diabetics. Proceedings of the IEEE ISSCC. IEEE ISSCC, San Francisco, United States
- (7) *Filip D, Eggermont M, Nagel J, Andrews CN, Yadid-Pecht O, Mintchev MP.* Electronic Stool (eStool): A Novel Self-Stabilizing Video Capsule Endoscope for Reliable Non-Invasive Colonic Imaging. In: Proceedings of the ASME 2011 International Mechanical Engineering Congress & Exposition, November 7-11, Denver, CO, USA, 2011;
- (8) *Filip D, Yadid-Pecht O, Mintchev MP.* Progress in Self-Stabilizing Capsules for Imaging of the Large Intestine. In: Proc. of the 17<sup>th</sup> Int IEEE Conf on Electronics, Circuits and Systems (ISECS), Dec 12-15, Athens, Greece, 2010;
- (9) *Gao X, Sadowski DC, Mintchev MP.* Pilot study of longitudinal ultrasonic sensor for dynamic volumetric assessment of gastroesophageal reflux. In: Proc of the 32 IEEE EMBS Int Conference, Buenos Aires, Argentina, Sept 2010.
- (10) *Jurkov A, Arriegada A, Mintchev M.* Implantable Functional Gastrointestinal Neurostimulation. In: Proc. of the 31 IEEE EMBS Int Conference, Minneapolis, MN, USA, Sept 2009 (invited).
- (11) *Lam M, and Mintchev MP.* Diamagnetically-Stabilized Levitation Control of an Intraluminal Magnetic Capsule. In: Proc. of the 30th IEEE EMBS Int Conference, Vancouver, Canada, August, 2008.
- (12) *Aelen P, Aulanier A-L, and Mintchev MP.* Feedback Control of Retrograde Peristalsis Using Neural Gastric Electrical Stimulation. In: Proc. of the 30th IEEE EMBS Int Conference, Vancouver, Canada, August, 2008.
- (13) *Dzhurkov AS, Cloutier J, and Mintchev MP.* Mathematical Model and Simulation of a Pneumatic Apparatus for In-Drilling Alignment of an Inertial Navigation Unit during Horizontal Well Drilling. In: Proceedings of the 5th Int Conference on Information Research and Applications, Varna, Bulgaria, June 25-July 1, 2007.

- (14) *Hogan J* and *Mintchev MP*. Method and Apparatus for Intra-esophageal Cough Detection. In: Proc. of the 28th IEEE EMBS Int Conference, New York, N.Y., August, 2006.
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#### PUBLISHED PEER-REVIEWED ABSTRACTS:

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**CUMULATIVE SCIENCE CITATION INDEX (excluding self-citations):**

1993-2015      Over 2000

**Scientometric Indices of Research Productivity:**

2018    h-index > 25 (Google Scholar).  
 2018    g-index > 40  
 2018    i10-index > 60

## **D. Technology Transfer**

### *Consulting:*

2017-present	SciMed Consulting (as an expert witness in court);
2015-2016	M Pharmaceutical (Canada and USA)
2010-2017	Intromedics (South Korea)
2006-2017	APEGGA (Alberta);
2006-2017	Gastrointestinal Motility Laboratory (Edmonton);
2007-2008	Zassi Medical Evolutions (Amelia Island, FLA);
2006-present	Hong Kong Research Council
2005	SUMMIT Institute, San Francisco (CA, USA)
2004	Alberta Ingenuity (Edmonton)
2004	St Jude Medical (CA, USA)
2002-2003	SinCan Inc. (Calgary)
2003	Alberta Ingenuity (Edmonton)
2002	QED Electronics (Calgary)
2001	Spartan Controls (Calgary)
2000	Zassi Medical Evolutions (Amelia Island, FLA);
2000	Private Colleges Accreditation Board, Edmonton, Alberta
1999-2000	Vision Sciences, New York, N.Y.;
1995	Department of Anesthesia, University of Alberta Hospital; Community Health and Well Being Society, Edmonton, Alberta;

### *Issued Patents:*

- (1) Mintchev MP and Bowes KL. Gastric Electrical Pacemaker. (US 6,243,607, June 5, 2001).
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- (16) Mintchev, Martin P, Orly Yadid-Pecht and Michel Fattouche. "Bezoar forming units for weight control." U.S. Patent 9,066,877, issued June 30, 2015.
- (17) Mintchev, Martin P, Orly Yadid-Pecht. "Electronic device for weight control." U.S. Patent 9,084,663, issued July 21, 2015.
- (18) Mintchev, M. P., & Yadid-Pecht, O. (2007). "Controlled degradation of expandable polymers in gastric volume reduction treatment." *European Patent No. EP 1807127*, Munich, Germany: European Patent Office.
- (19) Mintchev, M., Yadid-Pecht, O., & Fattouche, M. (2010). "Ingestible Implement for Weight Control." *European Patent No. EP 2004106*. Munich, Germany: European Patent Office.
- (20) Mintchev, M., Yadid-Pecht, O., & Fattouche, M. (2012). "Device for delivery of a substance." *European Patent No. EP 2121107*. Munich, Germany: European Patent Office.
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- (22) Mintchev, Martin P., and Billy T. Wu. "Magnetic levitation of an intraluminal microelectronic capsule." U.S. Patent 8,235,055, issued August 7, 2012.
- (23) Mintchev, Martin P., and Billy T. Wu. "Magnetic levitation of an intraluminal microelectronic capsule." U.S. Patent 8,939,154, issued January 27, 2015;

- (24) Mintchev, Martin, Orly Yadid-Pecht, and Michel Fattouche. "Ingestible implement for weight control." U.S. Patent 9,579,227, issued February 28, 2017.
- (25) Gao, Xuexin, Daniel C. Sadowski, and Martin P. Mintchev. "Methods and apparatuses for monitoring gastroesophageal reflux volume with ultrasonic catheter." U.S. Patent 9,585,633, issued March 7, 2017.
- (26) Mintchev, Martin P. "Feedback controlled gastro-intestinal stimulation." U.S. Patent 9,707,392, issued July 18, 2017.

*Licensing and Technology Transfer:*

- 1993 International Downhole Equipment Ltd., Edmonton (Licensing option via Industry Liaison Office, University of Alberta) for Patent (2);
- 2000 Phoenix Technology Inc., Calgary (Licensing option via University Technologies International), for Patents (4, 5);
- 2004 Sandhill Scientific, Denver, CO, USA (Licensing via University Technologies International), for Patents (11, 12).
- 2005 St Jude Medical, CA, USA (Licensing option via University Technologies International), for Patents (1), (3) and (6);
- 2006 Electronic Dietary Foods/EatLittle, Inc. for Patents (12-21).
- 2014 M Pharmaceutical Inc. for Patents (1, 3, 6-9, 12-21, 24, 26);
- 2018 Compass Engineering for Patent (10).

**V. Service Activities:**

**A. University Service:**

- 2012-2015 Chair, Departmental Committee on Electronics, Circuits and Systems;
- 2008-2011 Member, Schulich School of Engineering Research Committee;
- 2005-2008 Member, University of Calgary Scholarship Committee;
- 2005-2009 Member, Departmental Graduate Studies Committee;
- 2005-2007 Member, Departmental Appeals Committee;
- 2004-2005 TUCFA Representative (Department of ECE);
- 2000-2002 Member, General Faculties Council, University of Calgary;

- 2003-2004 Planning Committee, Department of Electrical and Computer Engineering;
- 2003-2004 Research Space Committee, Department of Electrical and Computer Engineering;
- 2000-2003 Budget Committee, Department of Electrical and Computer Engineering;
- 2001-2003 Graduate Studies Committee, Department of Electrical and Computer Engineering;
- 2000 Planning Committee, Department of Electrical and Computer Engineering;
- 1999-2000 Chair, Computer Operations Committee, Department of Electrical and Computer Engineering;
- 1998-1999 Ad-hoc Departmental Software Engineering Committee;
- 1998 Departmental Advisory Committee for Faculty Position 719;
- 1997-2000 Departmental Undergraduate Curriculum Committee, Faculty of Engineering, University of Calgary;
- 1999-2000 Library coordinator, Department of Electrical and Computer Engineering;
- 1999-2000 Member of the Hiring Committee for 22 new positions in the Department of ECE;
- 1999-2001 Faculty of Graduate Studies Scholarship Committee;
- 1999-2000 University Research Grants Committee, University of Calgary
- 1999-2001 Member, Undergraduate Programme in Biomedical Engineering Steering Committee, University of Calgary;
- 1998 Tenure Review Committee, University of Calgary MacKimmie Library;
- 1994-1997 Standing Committee on Computing and Networking, Faculty of Medicine, University of Alberta.

***PARTICIPATION IN EXAMINATION COMMITTEES:***

- 1987-1990 Member, M.Sc. State Examination Committee, Department of Electronics, Technical University, Sofia;
- 1998 M.Sc. Final Examination Committee, University of Calgary  
Student: Ms. Weifang Yang;
- 1998 2 Ph.D. Candidacy Examination Committees, University of Calgary;  
Students: Mr. Naga Mudigonda (Electrical and Computer Engineering)

Mr. Ning Luo (Geomatics Engineering)

- 1999 2 M.Sc. Final Examination Committees, University of Calgary;  
Students: Mr. Chad Dreveny (Electrical and Computer Engineering)  
Mr. Remi Gurski (Electrical and Computer Engineering)
- 2000 External Member, M.Sc. State Examination Committee, Department of Electronics,  
Technical University, Sofia.
- 2000 2 M.Sc. Final Examination Committees:  
Students: Mr. Peter Rashev (University of Calgary);  
Mr. Jamie Guay (University of Alberta).
- 2001 M.Sc. Final Examination Committee:  
Student: Mr. Gabriel Cuenca (University of Calgary)
- 2002 Ph.D. Final Examination Committee:  
Student: Mr. Aboelmagd Nouredin (University of Calgary)
- 2002 2 M.Sc. Final Examination Committees:  
Students: Mr. Simon Zhao (University of Calgary)  
Mr. Enrique Leon (University of Calgary)
- 2003 M.Sc. Final Examination Committee:  
Student: Mr. Yu Lin (University of Calgary)
- 2003 Ph.D. Candidacy Examination Committee:  
Student: Mr. Yahia Ghalab (University of Calgary)
- 2003 M.Sc. Final Examination Committee:  
Student: Mr. Adrian Ledroz (University of Calgary)
- 2004 Ph.D. Candidacy Examination Committees:  
Students: Mr. Jose Gonzalez; Mr. Giorgio Gattiker; Ms. Youlan Li (University of Calgary);
- 2004 M.Sc. Final Examination Committee:  
Student: Mr. Yves Pauchard (University of Calgary);
- 2005 M.Sc. Final Examination Committee:  
Student: Ray Jui (University of Calgary);
- Ph.D. Final Examination Committee:  
Students: Efraim Pecht  
Giorgio Gattiker (University of Calgary);
- 2005-present Member of numerous M.Sc. and Ph.D. examination committees (too many to list)

**B. Professional Service:*****NATIONAL/INTERNATIONAL COMMITTEES/SOCIETIES***

IEEE Sensors Society Distinguished Lecturer (2010)  
 IEEE ISCAS Sensors Committee (member);  
 Biomedical Engineering Society – USA;  
 American Gastroenterological Association – USA;  
 International E.G.G. Society;  
 American Motility Society – USA;  
 IEEE (Senior Member);  
 IEEE Society of Engineers in Medicine and Biology;  
 IEEE Society of Measurement and Instrumentation;  
 Micronet Centres of Excellence  
 Natural Sciences and Engineering Council of Canada National Grant Selection Committee 335  
 “Electromagnetics and Electrical Systems Engineering”

***BOARD MEMBERSHIPS:***

2018-present Board of Directors, EMosquito Inc, Calgary, AB;  
 2017-present Board of Directors, TDM Partnership, Calgary, AB  
 2015 Board of Directors, M Pharmaceutical Inc, Vancouver, B.C. (public company)  
 2005-present Board of Directors, EatLittle Inc, Calgary, Alberta;  
 1999-2000 Board of Directors, Science Alberta School, Calgary, Alberta;  
 2000-2001 Industry Advisory Board, Alberta Software Engineering Research Consortium; 2003-present  
 International Task Force on Gastroparesis (International Research Board).

***ORGANIZATION OF RESEARCH FORUMS:***

2005-present Program Committee member, iTech (Int Conference on Information Technologies),  
 2004-5 Member, Sensors Committee, IEEE International Symposium on Circuits and Systems (ISCAS), 2004-2005;  
 2004 Program Committee member, IEEE Int Conference on Electronic Circuits and Systems (ICECS), Tel Aviv, Israel, December 2004,  
 2004 Program Committee member, 29<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Varna, Bulgaria, June 2004;  
 2003 Session Chair, 4<sup>th</sup> International IEEE Int. Conference on Industrial Automation, Montreal, Canada, May, 2003;  
 2003 Program Committee member, 28<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Varna, Bulgaria, June, 2003;  
 2002 Program Committee member, 27<sup>th</sup> Int. Conference on Information and Communication



- Technologies and Programming, Primorsko, Bulgaria, June, 2003;
- 2002 Session Chair, 27<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Primorsko, Bulgaria, June, 2002;
- 2001 Local Arrangements Chair, IEEE Int. Symposium on Computational Intelligence in Robotics and Automation, Banff, Alberta, August, 2001;
- 2001 Program Committee member, 26<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Sofia, Bulgaria, June, 2001;
- 2001 Session Chair, 26<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Sofia, Bulgaria, June, 2001;
- 2000 Session Chair, 25<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Sofia, Bulgaria, June, 2001;
- 2000 Program Committee member, 25<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Sofia, Bulgaria, June, 2001;
- 2000 Technical Committee member, Canadian Conference in Electrical and Computer Engineering, Halifax, Nova Scotia, March, 2000;
- 1999 Session Chair, 24<sup>th</sup> Int. Conference on Information and Communication Technologies and Programming, Plovdiv, Bulgaria, June, 1999;
- 1999 Session Chair, IEEE Canadian Conference in Electrical and Computer Engineering, Edmonton, Alberta, March, 1999;
- 1999 Program Committee Member, IEEE Canadian Conference in Electrical and Computer Engineering, Edmonton, Alberta, March, 1999.
- 1998 Session Chair, IEEE Conference on Systems, Man and Cybernetics, San Diego, California, June, 1998.

***JOURNAL REVIEWS:***

- (i) Annals of Biomedical Engineering;
- (ii) Oxford University Press;
- (iii) Gastroenterology;
- (iv) Gut (British Medical Journal Group);
- (v) American Journal of Physiology;
- (vi) IEEE Transactions on Biomedical Engineering;
- (vii) IEEE Transactions on Information Technology in Biomedicine
- (viii) Medical and Biological Engineering and Computing;
- (ix) Bulletin of Mathematical Biology;
- (x) IEEE Transactions on Instrumentation and Measurement;

- xi) Digestive Diseases and Sciences;
- (xii) Neurogastroenterology and Motility.

### **References:**

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