

1. NAME: Mark Daley
RANK: Associate Professor
DATE TENURED: 1 July 2008

2. EDUCATION *University of Western Ontario, London, Ontario, Canada.*
Ph.D. Computer Science, 2003
M.Sc. Neuroscience, 2012
B.Sc.(Hons) Computer Science and Mathematics, 1999

Berklee College of Music, Boston MA.
Composition & Film Scoring, 1994-1995

3. EMPLOYMENT HISTORY *Associate Professor (tenured)* **Department of Computer Science**
University of Western Ontario **2008–Present**

Associate Professor (cross appointment) **Department of Biology**
University of Western Ontario **2008–Present**

Principal Investigator **The Brain and Mind Institute**
University of Western Ontario **2011–Present**

SHARCNET Site Leader (Western) **SHARCNET**
SHARCNET @ University of Western Ontario **2005–2012**
Ontario

Undergraduate Chair **Department of Computer Science**
University of Western Ontario **2008–2009**

SHARCNET Director **SHARCNET**
SHARCNET **2008–2010**

Assistant Professor (tenure-track) & **Department of Computer Science**
SHARCNET Research Chair
University of Western Ontario **2004-2008**

Assistant Professor (cross appointment) **Department of Biology**
University of Western Ontario **2005-2008**

Chair, SHARCNET Site Leader **SHARCNET**
Committee
SHARCNET **2006-2007**

Adjunct Professor **Department of Computer Science**

University of Saskatchewan	2005–
<i>Assistant Professor</i>	Department of Computer Science
University of Saskatchewan	2003-2005
Associate Member	Department of Biomedical
	Engineering
University of Saskatchewan	2003–2005
Associate Member	Department of Biochemistry
University of Saskatchewan	2004–2005
<i>Lecturer</i>	Department of Computer Science
University of Western Ontario	2000-2001

4. HONOURS AND AWARDS
- 2011 Invited host scientist for the gala dinner of the Royal Canadian Institute for the Advancement of Science.
 - 2011 USC Teaching Honour Roll Award of Excellence recipient (Instructor, CS 2208a, CS 4482a)
 - 2010 Nominee for the Outstanding Young Computer Science Researcher Prize from the Canadian Association for Computer Science.
 - 2009 USC Teaching Honour Roll Award of Excellence recipient (Instructor, CS 4482a)
 - 2008 USC Teaching Honour Roll Award of Excellence recipient (Instructor, CS 4482a)
 - 2007 USC Teaching Honour Roll Award of Excellence recipient (Instructor, CS 482a)
 - 2007 Faculty of Science nominee for The Marilyn Robinson Teaching Award.
 - 2006 USC / Bank of Nova Scotia Award of Excellence in Undergraduate Teaching (nominee) (Instructor, CS 482a).
 - 2006 USC Teaching Honour Roll Award of Excellence recipient (Instructor, CS 482a)
 - 2005 USC Teaching Honour Roll Award of Excellence recipient (Instructor, CS 438a)
 - 2005 USC Teaching Honour Roll Award of Excellence recipient (Instructor, CS 036b)
 - 2003 Graduate Student Teaching Award nominee (TA 488b) - University of Western Ontario
 - 2002 Natural Sciences and Engineering Research Council PGS B scholarship
 - 2002 Graduate Tuition Scholarship - UWO
 - 2001 Graduate Tuition Scholarship - UWO
 - 2001 Graduate Student Teaching Award (nominee) x 2 (Lecturer 027b & TA 208a)
 - 2000 Graduate Student Teaching Award (nominee) (Lecturer 212b)
 - 2000 Special University Scholarship & Graduate Tuition Scholarship - UWO
 - 2000 Natural Sciences and Engineering Research Council PGS A scholarship
 - 1999 Special University Scholarship - UWO

5. TEACHING – A)
UNDERGRADUATE
COURSES TAUGHT
- 2011-2012, University of Western Ontario, 20 students, CS 4482a (Game Engine Development: Real-time rendering and physical simulation). Overall Effectiveness Evaluation: 7.0/7.0
 - 2011-2012, University of Western Ontario, 49 students, CS 2208a (Computer

Organization). Overall Effectiveness Evaluation: 6.6/7.0

- 2009-2010, University of Western Ontario, 26 students, CS 4482a (Game Engine Development: Real-time rendering and physical simulation). Overall Effectiveness Evaluation: 6.7/7.0
- 2008-2009, University of Western Ontario, 8 students, CS 4482a (Game Engine Development: Real-time rendering and physical simulation). Overall Effectiveness Evaluation: 6.8/7.0
- 2008-2009, University of Western Ontario, 3 students, CS 4480a (Video Game Development Project).
- 2007-2008, University of Western Ontario, 8 students, CS 482a (Game Engine Development: Real-time rendering and physical simulation). Overall Effectiveness Evaluation: 6.8/7.0
- 2006-2007, University of Western Ontario, 4 students, CS 461b (Bioinformatics Tools and Applications)
- 2006-2007, University of Western Ontario, 6 students, CS 482a (Game Engine Development: Real-time rendering and physical simulation). Overall Effectiveness Evaluation: 6.8/7.0
- 2006-2007, University of Western Ontario, 3 students, CS 480y (Game project)
- 2005-2006, University of Western Ontario, 15 students, CS 438a (Real-time graphics and Physical Simulation). Overall Effectiveness Evaluation: 7.0/7.0
- 2004-2005, University of Western Ontario, 85 students, CS 036b (Computer Science Fundamentals I). Overall Effectiveness Evaluation: 6.9/7
- 2003-2004, University of Saskatchewan, 12 students, CMPT 416/CMPT 810 (Advanced Algorithms). Overall Quality of Instruction: 1 (**NOTE:** The University of Saskatchewan evaluation system is oriented oppositely to that used at UWO. Evaluation is on a scale from 1 (Excellent) to 5 (Poor)).
- 2003-2004, University of Saskatchewan, 15 students, BINFO 200 (Introduction to Bioinformatics). Overall Quality of Instruction: 2 (**NOTE:** The University of Saskatchewan evaluation system is oriented oppositely to that used at UWO. Evaluation is on a scale from 1 (Excellent) to 5 (Poor)).
- 2000-2001, University of Western Ontario, 124 students, CS 027b (Data Structures & Alg.). Overall Effectiveness Evaluation: 6.2/7
- 2000-2001, University of Western Ontario, 202 students, CS 212b (Software Eng.). Overall Effectiveness Evaluation: 5.9/7

- 2000-2001, University of Western Ontario, 22 students, CS 212y (Software Eng.). Overall Effectiveness Evaluation: 5.4/7

B) GRADUATE
COURSES TAUGHT

- 2009-2010, University of Western Ontario, 4 students, CS9875 (Computational Sound & Music)
- 2007-2008, University of Western Ontario, 10 students, CS 834a (Synthetic Biology).
- 2007-2008, University of Western Ontario, 3 students, Biology 534a (Synthetic Biology).
- 2007-2008, University of Western Ontario, 4 students, CS 611a (Real-time graphics and Physical simulation).
- 2006-2007, University of Western Ontario, 3 students, CS 661b (Bioinformatics Tools and Applications). Overall Effectiveness Evaluation: 5.0/5.
- 2006-2007, University of Western Ontario, 12 students, CS 833a (The Unknowable). Overall Effectiveness Evaluation: 4.88/5.
- 2005-2006, University of Western Ontario, 6 students, CS 611a (Real-time graphics and Physical simulation). Overall Effectiveness Evaluation: 5.00/5.
- 2005-2006, University of Western Ontario, 7 students, CS 625a (Parallel Algorithms & High-Performance Computing). Overall Effectiveness Evaluation: 5.00/5.
- 2004-2005, University of Western Ontario, 12 students, CS 625b (Parallel Algorithms & High-Performance Computing). Overall Effectiveness Evaluation: 4.86/5

C) GRADUATE &
POSTDOCTORAL
SUPERVISION

- Andrew Kope, Department of Computer Science, University of Western Ontario, 2012-
- Céline Gravelines, Department of Computer Science, University of Western Ontario, 2012-
- Mehrsa Golestaneh, Department of Computer Science, University of Western Ontario, 2012-
- Casey Wood, Department of Computer Science, University of Western Ontario, 2012-
- Jinhui Qin, Department of Computer Science, University of Western Ontario, Postdoctoral fellow (half-time), 2012-
- Mike Burrell (with Jamie Andrews), Department of Computer Science, University of Western Ontario, Ph.D., 2006- (in progress).

- Beth Locke, Department of Computer Science, University of Western Ontario, Ph.D., 2006– (in progress).
- Jenna Cameron, Department of Computer Science, University of Western Ontario, MSc., 2009– (in progress).
- Franziska Biegler, Department of Computer Science, University of Western Ontario, Ph.D., 2005–2009.
- Kalpana Mahalingham, Department of Computer Science, University of Western Ontario, Postdoctoral fellow, 2008–2009.
- Mike Burrell, Department of Computer Science, University of Western Ontario, MSc., 2004–2005. *Computational Modelling of RNA editing in kinetoplastids.*
- Jeff Smith, Department of Computer Science, University of Saskatchewan, Ph.D., 2004–2011.
- Geoff Wozniak (with Stephen Watt), Department of Computer Science, University of Western Ontario, Ph.D., 2004–2008. *Structuring Data via Behavioural Synthesis.*
- Cameron Barber, Coursework MSc project, University of Western Ontario, 2005–2006. *Efficient terrain rendering with weight finite automata.*

Advisory Committees:

- Emma Mullen, Department of Biology, University of Western Ontario, 2011–Present.
- Kevin Green, Faculty of Science, University of Ontario Institute of Technology, 2011–Present.
- Christina Castellani, Department of Biology, University of Western Ontario, 2011–Present.
- Susan Eitutus, Department of Biology, University of Western Ontario, 2011–Present
- Tristan Martel, Department of Geography, University of Western Ontario, 2011–Present.
- Raihan Uddin, Department of Biology, University of Western Ontario, 2010–Present
- Sujit Maiti, Department of Biology, University of Western Ontario, 2010–Present.
- Shilpi Goel, Department of Biology, University of Western Ontario, 2007–2008.
- Elena Losseva, Department of Computer Science, University of Western Ontario. 2004–2006.
- Manuela Haias, Department of Mathematics, University of Saskatchewan, MSc. Candidate. 2004–2005
- Matthew Bainbridge, Department of Computer Science, University of Saskatchewan, MSc. Candidate. 2003–2005.

- Christopher Lewis, Department of Computer Science, University of Saskatchewan, Ph.D. Candidate. 2003–
- Chenhong Zhang, Department of Computer Science, University of Saskatchewan, MSc. Candidate. 2003-2004.

Thesis Examinations:

- Examiner, MSc. defense, Tahmina Tahsin, Department of Computer Science, University of Western Ontario, 2011.
- Examiner, MSc. defense, Syeed Ibn Faiz, Department of Computer Science, University of Western Ontario, 2011.
- Examiner, Ph.D. defense, Aria Shahingohar, Department of Electrical Engineering, University of Western Ontario, 2010.
- Examiner, Ph.D. defense, Wei Pan, Department of Computer Science, University of Western Ontario, 2010.
- Examiner, MSc. defense, Shima Khoshraftar, Department of Computer Science, University of Western Ontario, 2010.
- Examiner, Ph.D. defense, Mark Held, Department of Biology, University of Western Ontario, 2010.
- Examiner, M.Eng. defense, Jean-Michel Filion. Department of Electrical Engineering, University of Western Ontario. 2010.
- Opponent, Ph.D. thesis, Vladimir Rogojin. Department of Computer Science, Åbo Akademi University, Finland. 2009.
- Examiner, MSc. defense, Afroza Rahman, Department of Computer Science, University of Western Ontario, 2009.
- Examiner, Ph.D. defense, Bogumil Karas, Department of Biology, University of Western Ontario, 2009.
- Examiner, Ph.D. defense, Sarah Rosloski, Department of Biology, University of Western Ontario, 2009.
- Examiner, Ph.D. defense, Liviu Tinta, Department of Computer Science, University of Western Ontario, 2009.
- Examiner, MSc. defense, Gavan Acton, Department of Computer Science, University of Western Ontario, 2009.
- Examiner, MSc. defense, Ronghai Tu, Department of Computer Science, University of Western Ontario, 2009.
- Examiner, MSc. defense, Yan Zeng, Department of Computer Science, University of Western Ontario, 2008.
- Examiner, MSc. defense, Sherif Mahmoud Gaber Moursi, Department of Computer Science, University of Western Ontario, 2007.
- Examiner, MSc. defense, Christine Bailey, Department of Computer Science, University of Western Ontario, 2007.
- Examiner, Ph.D. defense, Dwayne Smith, Department of Mathematics, University of Western Ontario, 2007.

- Examiner, MSc. defense, Ryan Demopoulos, Department of Computer Science, University of Western Ontario, 2007.
- Examiner, Ph.D. defense, Qufei Wang, Department of Computer Science, University of Western Ontario, 2006.
- Examiner, MSc. defense, Weimung Li, Department of Computer Science, University of Western Ontario, 2006.
- Examiner, MSc. defense, Gang Du, Department of Computer Science, University of Western Ontario, 2006.
- Examiner, MSc. defense, Micah Galiza, Department of Computer Science, University of Western Ontario, 2006.
- Examiner, MSc. defense, James Miller, Department of Computer Science, University of Western Ontario, 2006.
- Examiner, Ph.D. defense, Nic Santean, Department of Computer Science, University of Western Ontario, 2006.
- Examiner, MSc. defense, Donald Yantzi, Department of Computer Science, University of Western Ontario, 2005.
- Examiner, MSc. defense, Yaqing Zhang, Department of Computer Science, University of Western Ontario, 2005.
- Examiner, MSc. defense, Ben Huang, Department of Computer Science, University of Western Ontario, 2005.
- Examiner, MSc. defense, Chenhong Zhang, Department of Computer Science, University of Saskatchewan, 2005.
- Examiner, MSc. defense, Matthew Bainbridge, Department of Computer Science, University of Saskatchewan, 2004.

OTHER
SUPERVISION

Research Assistants

- Ladan Ashrafi, Department of Computer Science, University of Western Ontario, Summer 2007.
- Irene Pylepenko, Department of Computer Science, University of Western Ontario, 2006–2007.
- Beth Locke, Department of Computer Science, University of Western Ontario, 2004–2006.
- Milos Kral, Department of Computer Science, University of Western Ontario, 2005–2006.

NSERC USRAs

- Andrew Kope, Department of Computer Science, University of Western Ontario, Summer 2012.
- Mike Ghesquiere, Department of Computer Science, University of Western Ontario, Summer 2012.
- Jenna Cameron, Department of Computer Science, University of Western Ontario, Summer 2009.

- Jenna Cameron, Department of Computer Science, University of Western Ontario, Summer 2008.
- Beth Locke, Department of Computer Science, University of Western Ontario, Summer 2006.
- Beth Locke, Department of Computer Science, University of Western Ontario, Summer 2005.

Honours Theses Supervised

- Naji Sharjari, *Graph theory and machine learning in fMRI data*. Sharif University of Technology, Iran. 2011–2012.
- Casey Wood, *Temporal Graph Theoretic methods in the analysis of resting-state fMRI data*. Summer 2011.
- Jenna Cameron, *Brownian Dynamics simulation of supercoiled DNA*. 2008–2009.
- Ladan Ashrafi, *Monte Carlo simulation of supercoiled DNA*. 2007–2008.
- Irene Pylypenko, *454 sequence assembly of ciliate micronuclear genomes*. 2007–2008.
- Alisha Jamal (with Kathleen Hill), *Electron Microscopic investigation of macronuclear chromosome topology in three ciliate clades*. 2007–2008 (Biology 499)
- Russ Dickson (with Greg Gloor), *Protein structure prediction from mutual information*. 2007–2008.
- Chris Simpson, *Fusion gene finder*. 2007–2008.
- Jonathan Sen (with Shiva Singh), *Human gene copy number variation*. 2007–2008.
- Yongik Chung (with Bob Mercer), *Protein engineering via constraint satisfaction*. 2007–2008.
- Phil Moretti, *Scanning viral genes with FPGAs*. 2006–2007.
- Josh Lawrence & David Allison & Shea Wilks (Faculty of Engineering Science), *Isometric HL2 modpack*. 2006–2007.
- John Schram, *BioComputational Framework for the Removal of Integrated Retro-viral elements*. 2006–2007.
- Jonathen Sen, *Gene chip analysis of ethanol-treated mouse brain* (with Shiva Singh). 2006–2007
- Kawaljeet Singh Sidhu, *Mutual Information in Bioinformatics*. 2005–2006.
- Beth Locke, *Formal model of the histone code*. 2005–2006.
- Dennis Man, *Combinatorics on genes*. 2005–2006.
- Trinh Han, *Visual gene descrambler*. 2005–2006.
- Ronghai Tu, *Biolab workflow analysis*. 2005–2006.
- Noman Shihadah, *Biolab workflow analysis*. 2005–2006.
- Wenyan Qin, *Computational modelling of genome reconstruction in D. radiodurans*. 2004–2005.

Projects Supervised:

- *Efficient generation of maximal codes for use in DNA computing.* French foreign exchange student. Co-Supervised Yann Hemon. University of Saskatchewan. Summer 2003.
- *Computational enumeration of DNA-compliant codes.* CS 690 Independent Study. Co-supervised MSc student Zhu Li. University of Western Ontario. Summer 2002.
- *DNA sequence homology matching using ab initio secondary structure prediction.* Supervised three NSERC summer students: Geoff Wozniak, Rachael Bevan and Mark Sumner. University of Western Ontario. Summer 2001.

6. PUBLICATIONS – SUMMARY

- Articles in Peer-reviewed Journals: 28
- Articles in Peer-reviewed Conference Proceedings: 26 (+ 9 abstracts/extended abstracts)

See details below for contributions in other categories. Names of co-authors who were under my supervision at the time of submission are listed in bold.

BOOKS

- 2005 **Proceedings of the 11th International Conference on DNA computing**, (*Mark Daley Lila Kari Ian McQuillan Alessandra Carbone, Niles Pierce, eds.*), The University of Western Ontario, 2005.
- 2000 **Pre-proceedings of the Fifth International Conference on Implementation and Application of Automata**, (*Mark Eramian Mark Daley, Sheng Yu, eds.*), The University of Western Ontario, 2000.

REFEREED ARTICLES AND BOOK CHAPTERS

- 2012 **Computational nature of gene assembly in ciliates in The Handbook of Natural Computing** (R. Brijder, M. Daley, T. Harju, N. Jonoska, I. Petre, G. Rozenberg), *Chapter in Computational nature of gene assembly in ciliates*, Springer, volume To Appear, 2012.
- 2012 **Relativized codes** (Mark Daley, Helmut Jrgensen, Lila Kari, Kalpana Mahalingam), *In Theoretical Computer Science*, volume 429, 2012.
- 2012 **One-reversal counter machines and multihead automata: Revisited** (Ehsan Chiniforooshan, Mark Daley, Oscar H. Ibarra, Lila Kari, Shinnosuke Seki), *In Theoretical Computer Science*, volume to appear, 2012.
- 2012 **Algorithmic decomposition of shuffle on words** (Franziska Biegler, Mark Daley, Ian McQuillan), *In Theoretical Computer Science*, volume to appear, 2012.
- 2011 **Theoretical and computational properties of transpositions** (Mark Daley, Ian McQuillan, Jim McQuillan, Kalpana Mahalingam), *In Natural Computing*, volume 10, 2011.

- 2011 **The impact of constructural encodings on the creative richness of music composition tools** (Jeff Smith, David Mould, Mark Daley), *In Digital Creativity*, volume Accepted, 2011.
- 2011 **Segmentation of epithelium in H&E stained odontogenic cysts** (M. Eramian, M. Daley, D. Neilson, T. Daley), *In Journal of Microscopy*, Blackwell Publishing Ltd, volume 244, 2011.
- 2011 Review of Networks of the brain. (Mark Daley, Jody C. Culham), *In Canadian Psychology/Psychologie canadienne*, US: Educational Publishing Foundation, volume 52, 2011.
- 2011 **Orthogonal Shuffle on Trajectories** (Mark Daley, Lila Kari, Shinnosuke Seki, Petr Sosk), *In Int. J. Found. Comput. Sci.*, volume 22, 2011.
- 2010 **Orthogonal Concatenation: Language Equations and State Complexity** (M. Daley, M. Domaratzki, K. Salomaa), *In Journal of Universal Computer Science*, volume 16, 2010.
- 2010 **Modelling programmed frameshifting with frameshift machines** (Mark Daley, Ian McQuillan), *In Natural Computing*, 2010.
- 2010 **A relation by palindromic subwords** (Mark Daley, Kalpana Mahalingam), *In Natural Computing*, volume 9, 2010.
- 2009 **On the Operational Orthogonality of Languages** (Mark Daley, Michael Domaratzki, Kai Salomaa), *In Journal of Computer and System Science*, volume to appear, 2009.
- 2009 **Constructures: supporting human ingenuity in software** (Jeff Smith, David Mould, Mark Daley), *In Digital Creativity*, Routledge, volume 20, 2009.
- 2009 **Template-Guided Recombination: From Theory to Laboratory** (Mark Daley, Michael Domaratzki), *In Algorithmic Bioprocesses*, 2009.
- 2009 **On the uniqueness of shuffle on words and finite languages** (Franziska Biegler, Mark Daley, Markus Holzer, Ian McQuillan), *In Theor. Comput. Sci.*, volume 410, 2009.
- 2008 **Computation by Annotation: Modelling Epigenetic Regulation** (Franziska Biegler, Mark Daley, M. Elizabeth O. Locke), *In Int. J. Found. Comput. Sci.*, volume 19, 2008.
- 2008 **The bag automaton: a model of nondeterministic storage** (Mark Daley, Mark Eramian, Ian McQuillan), *In J. Autom. Lang. Comb.*, Otto-von-Guericke-Universitat, volume 13, 2008.
- 2007 **On codes defined by bio-operations** (Mark Daley, Michael Domaratzki), *In Theor. Comput. Sci.*, volume 378, 2007.
- 2007 **Regulated RNA rewriting: Modelling RNA editing with guided insertion** (Franziska Biegler, Michael J. Burrell, Mark Daley), *In Theor. Comput. Sci.*, volume 387, 2007.
- 2007 **Intra-Molecular Template-Guided Recombination** (Mark Daley, Michael Domaratzki, Alexis Morris), *In Int. J. Found. Comput. Sci.*, volume 18, 2007.

- 2006 **Useful Templates and Iterated Template-Guided DNA Recombination in Ciliates** (Mark Daley, Ian McQuillan), *In Theory Comput. Syst.*, volume 39, 2006.
- 2005 **Template-guided DNA recombination** (Mark Daley, Ian McQuillan), *In Theor. Comput. Sci.*, volume 330, 2005.
- 2005 **Formal modelling of viral gene compression** (Mark Daley, Ian McQuillan), *In Int. J. Found. Comput. Sci.*, volume 16, 2005.
- 2004 **Families of languages defined by ciliate bio-operations** (Mark Daley, Lila Kari, Ian McQuillan), *In Theor. Comput. Sci.*, Elsevier Science Publishers Ltd., volume 320, 2004.
- 2003 **Closure and decidability properties of some language classes with respect to ciliate bio-operations** (Mark Daley, Oscar H. Ibarra, Lila Kari), *In Theor. Comput. Sci.*, volume 306, 2003.
- 2003 **The ld and dlad Bio-Operations on Formal Languages** (Mark Daley, Oscar H. Ibarra, Lila Kari, Ian McQuillan, Koji Nakano), *In Journal of Automata, Languages and Combinatorics*, volume 8, 2003.
- 2002 **DNA computing: Models and implementations** (Mark Daley, Lila Kari), *In Comments on Theoretical Biology*, volume 7, 2002.

REFEREED CONFERENCE PAPERS

- 2012 **Curriculum Initiative on Parallel and Distributed Computing at the University of Western Ontario** (Mark Moreno Maza, Hanan Lutfiyya, Mike Katchabaw, Mark Daley), *In Proceedings of EduPar-12*, 2012.
- 2012 **Temporal topological transformation in dynamic MEG-derived graph sequences** (Andrew Kope, Mark Daley), *In 18th International Conference on Biomagnetism (BIOMAG 2012)*, 2012.
- 2012 **A gene network for worker sterility in the honey bee** (E. Mullen, M. Daley, G. Thompson), 2012.
- 2012 **A gene network for worker sterility in the honey bee** (E. Mullen, M. Daley, G. Thompson), 2012.
- 2011 **A selective impairment of auditory perception of motion direction in peripheral space: A case study** (L Thaler, J Paciocco, M Daley, G Lesniak, D.W. Purcell, M.A. Goodale, J.C. Culham), *In Society for Neuroscience*, 2011.
- 2011 **Optimal graph metrics for whole-brain resting state fMRI** (Mark Daley, Bruce Morton, Jody Culham), *In Society for Neuroscience*, 2011.
- 2011 **One-Reversal Counter Machines and Multihead Automata: Revisited** (Ehsan Chiniforooshan, Mark Daley, Oscar H. Ibarra, Lila Kari, Shinnosuke Seki), *In SOFSEM*, 2011.
- 2011 **Grappling with Garantuan Graphs of Neural Functional Connectivity.** (Mark Daley, Jody Culham), *In Applied Mathematics, Modeling and Computational Science conference*, 2011.

- 2009 **On the Shuffle Automaton Size for Words** (Franziska Biegler, Mark Daley, Ian McQuillan), *In Descriptive Complexity of Formal Systems (DCFS 2009)*, volume abs/0907.5111, 2009.
- 2008 **Methylated DNA Sequence Alignment** (M.E.O. Locke, Mark Daley), *In ISMB 2008, Poster P56*, 2008.
- 2008 **A topological mechanism for gene descrambling in stichotrichous ciliates** (Mark Daley, McQuillan, Nicholas Stover), *In ISMB 2008, Poster T48*, 2008.
- 2008 **State Complexity of Orthogonal Catenation** (Michael Domaratzki Kai Salomaa Mark Daley), *In Descriptive Complexity of Formal Systems (DCFS 2008)*, 2008.
- 2008 **State complexity of orthogonal catenation** (Mark Daley, Michael Domaratzki, Kai Salomaa), *In Descriptive Complexity of Formal Systems (DCFS 2008)*, volume abs/0904.3366, 2008.
- 2008 **A Useful Bounded Resource Functional Language** (Michael J. Burrell, James H. Andrews, Mark Daley), *In SOFSEM*, 2008.
- 2008 **No Going Back: An Interactive Visualization Application for Trailblazing on the Web** (Christopher Power, Ian McQuillan, Helen Petrie, Peter Kennaugh, Mark Daley, Geoff Wozniak), *In IV*, 2008.
- 2008 **On the Processing Power of Protozoa** (Mark Daley), *In CiE*, 2008.
- 2007 **On the Operational Orthogonality of Languages** (Mike Domaratzki Mark Daley, Kai Salomaa.), *In Theory and Application of Language Equations (TALE 2007) (Alexander Okhotin Michal Kunc, ed.)*, Turku Centre for Computer Science, 2007.
- 2007 **Dynamic Abstract Data Types: a “don’t ask, don’t tell” policy for data abstraction** (Mark Daley Geoff Wozniak, Stephen Watt), *In The International Lisp Conference (ILC 2007)*, 2007.
- 2007 **Mathematics of gene descrambling** (Mark Daley), *In FASEB conference on Ciliate Biology, Tucson, AZ*, 2007.
- 2006 **Regulated RNA Rewriting: guided Insertion from RNA editing in kinetoplastids** (Mike Burrell Franziska Biegler, Mark Daley.), *In Descriptive Complexity of Formal Systems (DCFS 2006)*, 2006.
- 2006 **Iterated TGR Languages: Membership Problem and Effective Closure Properties** (Ian McQuillan, Kai Salomaa, Mark Daley), *In COCOON*, 2006.
- 2006 **Voronoi diagrams, vectors and the visually impaired** (Christopher Power, Dawn Gill, Mark Daley), *In CHI Extended Abstracts*, 2006.
- 2005 **On Computational Properties of Template-Guided DNA Recombination** (Mark Daley, Ian McQuillan), *In DNA*, 2005.
- 2005 **Frameshift machines: translation as transduction.** (Mark Daley, Ian McQuillan.), *In CIRAS 2005 (third international conference on computational intelligence, robotics and autonomous systems)*, Elsevier, volume ISSN 02196131, 2005.

- 2004 **Viral Gene Compression: Complexity and Verification** (Mark Daley, Ian McQuillan), *In CIAA*, 2004.
- 2004 **On Codes Defined by Bio-Operations** (Mark Daley, Michael Domaratzki), *In Developments in Language Theory*, 2004.
- 2003 **Bag Automata and Stochastic Retrieval of Biomolecules in Solution** (Mark Daley, Mark G. Eramian, Ian McQuillan), *In CIAA*, 2003.
- 2002 **Some Properties of Ciliate Bio-operations** (Mark Daley, Lila Kari), *In Developments in Language Theory*, 2002.
- 1999 **Circular Contextual Insertions/Deletions with Applications to Biomolecular Computation** (Mark Daley, Lila Kari, Greg Gloor, Rani Siromoney), *In SPIRE/CRIWG*, 1999.
- 1999 **How to Compute with DNA** (Lila Kari, Mark Daley, Greg Gloor, Rani Siromoney, Laura F. Landweber), *In FSTTCS*, 1999.

REFEREED WORKSHOP PAPERS

- 2008 **Adaptive libraries and Interactive Code Generation for Common Lisp** (Mark Daley Geoff Wozniak, Stephen Watt), *In 5th European Lisp Workshop at ECOOP 2008*, 2008.
- 2007 **Theoretical and computational properties of transpositions** (Ian McQuillan Mark Daley, Jim McQuillan.), *In Workshop on Language Theory in Biocomputing, UC 2007*, 2007.
- 2007 **Computation by annotation: modelling epigenetic regulation.** (Mark Daley Franziska Biegler, M. Elizabeth O. Locke), *In Workshop on Language Theory in Biocomputing, UC 2007*, 2007.
- 2006 **Prediction of Tactile Targets** (Dawn Gill Helmut Jrgensen Mark Daley, Christopher Power), *In Proceedings of Workshop on Accessible Media (WAM 2006)*, 2006.
- 2003 **Template-guided DNA recombination** (Mark Daley, Ian Mcquillan), *In Fifth International Workshop, Descriptive Complexity of Formal Systems (E Csuhaj-Varju, C Kintala, D Wotschke, Gy Vazil, eds.)*, 2003.

OTHER PUBLICATIONS

- 2012 **Optimizing voxel scale graph theoretical analysis of fMRI-derived resting state functional connectivity** (Mark Daley), Master's thesis, The University of Western Ontario, 2012.
- 2003 **Computational modelling of genetic processes in stichotrichous ciliates** (Mark Daley), PhD thesis, The University of Western Ontario, 2003.
- 2001 **Review of Quantum Computing and Quantum Information** (Mark Daley), SIGSAM Journal, v. 35(10), pp. 14-15, 2001.

WORKSHOPS

- Life Sciences Software Workshop. IBM Canada, Markham, Ontario, 2005
- Mark Daley and Benet Devereux. Gamow codes and frameshift codes, Workshop on Codes and Related Structures, London, 2000

TECHNICAL
REPORTS

- Mark Daley, Lila Kari, and Ian McQuillan. Families of languages defined by ciliate bio-operations. Technical Report 2004-a, Theory & Formal Bioinformatics Group, University of Saskatchewan, 2004.
- Mark Daley and Ian McQuillan. Iterative Template-Guided DNA Recombination in Ciliates. 2003. Technical Report #602, University of Western Ontario.
- Mark Daley. Branch Flow Analysis: A tool for detecting plagiarism in Assembly Language code. University of Western Ontario Technical Note (publication suppressed), 2000
- Mark Daley. The Search for a Practical ‘Ultimate Laptop’: A Comparison of Biomolecular, Quantum and Electronic Computing. University of Western Ontario Technical Report #543, 1999

INVITED
PRESENTATIONS

- [1] Mark Daley. This is your Brain on Graphs. American Mathematical Society Sectional Meeting, University of South Florida. Tampa, Florida. 2012
- [2] Mark Daley. Big Graph, Little Graph; Slow graph, Fast Graph: ideas and approaches for quantifying neural functional connectivity. Rotman Research Institute, Toronto, Canada. 2012
- [3] Mark Daley. From Neurons to Nodes: Mesoscale Graphs in the Brain. Faculty of Science, University of Ontario Institute of Technology. Oshawa, Ontario. 2012
- [4] Mark Daley. Scrambling and Supercoiling in Ciliate DNA: a relationship between topology and recombination. Department of Mathematics, University of South Florida. Tampa, Florida. 2010
- [5] Mark Daley. Templates, Turing Machines and Topology: computing in ciliates. Turku Centre for Computer Science. Turku, Finland. 2009
- [6] Mark Daley. The ponderous predictive power of palindromes. Biomathematical Computing: Past, Present and Prospects. SUNY Binghamton, NY. 2008
- [7] Mark Daley. Protozoan Processing Power. *Computability in Europe '08*, Athens Greece. 2008.
- [8] Mark Daley. When thermodynamics are knot favourable. Department of Ecology & Evolution, Princeton University, 2007.
- [9] Mark Daley. Programmable graphics pipelines. Invited lecture to employees at *Big Blue Bubble, Inc.*, London, ON.
- [10] Mark Daley. Pushing the Procedural Palette: The art is in the code. Invited lecture at *Playing the gallery: an International Symposium on the art of games*. London, ON. 2007.
- [11] Mark Daley. Natural Computing: a template-guided talk. Keynote lecture at *CSBSC 2007*, 2007.
- [12] Mark Daley. Getting a Grip on the Genetic Gymnastics of Ciliates: a story of friendship and formalization. Department of Computer Science, Queen’s University, 2006.
- [13] Mark Daley. From Gauss to the Genome: Reports on a formal theory of genetics. Department of Biology, University of Windsor, 2005.

- [14] Mark Daley. Basic concepts of computing for biologists. Invited Tutorial. 11th International meeting on DNA Computing, University of Western Ontario, 2005.
- [15] Mark Daley. Developments in modelling ciliate genetics. NSF Stichotrichous Ciliate Meeting, Princeton University, 2005.
- [16] Mark Daley. Template-guided recombination and universal computation in ciliates. NSF Stichotrichous Ciliate Meeting, University of Colorado at Boulder, 2004.
- [17] Mark Daley. Modelling genetic gymnastics: The mathematical theory of gene scrambling in stichotrichous ciliates. Regional meeting of the American Mathematical Society, Binghamton, New York, 2003.
- [18] Mark Daley. Formalizing genetics: Mathematical models of genetic systems. In *1st Canadian Plant Genomics Workshop*, Saskatoon, Saskatchewan, 2003.
- [19] Mark Daley. Computational models and complexity metrics for gene unscrambling, NSF Stichotrichous Ciliate Meeting, University of Colorado at Boulder, 2003.
- [20] Mark Daley. Computational aspects of ciliate gene descrambling, NSF Hypotrichous Ciliate Meeting, University of Colorado at Boulder, 2002.

INVITED PANEL
PARTICIPATION

- [21] Technologies in Computer Game Education. *Futureplay 2006*, London, Ontario, 2006.
- [22] Software Engineering and Game Design. *Toronto Independent Games Conference 2006*, Toronto, Ontario, 2006.

CONTRIBUTED
PRESENTATIONS

- [23] Mark Daley. Towards a Model of Gene Expression, The First Canadian Working Conference on Computational Biology, Toronto, 2000

SOFTWARE
DEVELOPED

- HDCNV – in use worldwide including labs in Italy, France and India
- VoLT – in use at UWO, Rotman Research Institute and York University

7A. EXTERNAL
RESEARCH
FUNDING

IBM SOSCIP program. \approx \$240,000 awarded to M. Daley(PI), R. Cusack(co-I), A. R. McIntosh(co-I), T. Womelsdorf(co-I). “Real-time graph dynamics from fMRI, MEG and electrophysiological measurements”. September 2012–September 2014.

CIHR/NSERC Collaborative Health Research Program (CHRP), \$545,139 awarded to Rhodri Cusack(M. Daley, co-I; direct funds to me \sim \$100,000), “Assessing neonatal brain function with fMRI”. May 2012–May 2015. (Note that the success rate for this competition was 7%).

NSERC CREATE Training Program Grant, \$1,650,000 team award (M.Daley, collaborator; direct funds to me \sim \$50000). “Computational Approaches in Neuroscience – Action Control & Transformations”. July 2009–July 2014.

NSERC CRP, awarded to Gregor Reid, Greg Gloor, and M.Daley(co-I), “Functional genomic studies to identify suitable probiotic strain properties”, \$42,200. April 2008–April 2009.

NSERC Discovery Grant, “Computation in biological processes”, \$75,000 awarded to M. Daley(PI) in 2007. \$15,000 per year for April 2007-April 2012.

NSF Emerging Models and Technologies for Computation grant, \$54,000 subcontract from Princeton University awarded to Mark Daley(PI). Sept 2006–Sept 2009.

CITO SIP Grant, \$25,000 awarded to M. Katchabaw (M. Daley, co-investigator) in 2005. \$25,000 for July 2005–December 2005.

SHARCNET Research Chair, \$255,000 awarded (as salary) to M. Daley(PI) for July 2004-July 2009.

NSERC Discovery Grant, “Modelling Genetic Processes with Formal Language Theory”, \$45,000 awarded to M. Daley(PI) in 2004. \$15,000 per year for April 2004–April 2007.

7B.
INSTITUTIONAL
RESEARCH
FUNDING

UWO ADF with Bruce Morton, “Genetic and social-environmental influences on self-regulation early in development.”, \$57,690. 2012.

UWO ADF (co-applicant with 9 others, PI: Greg Gloor). “ADF Major request for Illumina MiSeq Instrument”, \$132,500. 2012.

University of Western Ontario, Faculty of Science, Postdoctoral researcher funding, \$100,000, October 2007–2009.

University of Western Ontario Start-up Grant, \$40,000, July 2004–

University of Saskatchewan Capital Equipment Grant, \$30,000, January 2004–June 2004.

University of Saskatchewan Department of Computer Science New Faculty Start-up Grant. \$20,000, July 2003–June 2004.

University of Saskatchewan President’s Grant for New Faculty. \$5,000, June 2003–June 2004.

University of Saskatchewan New Faculty Graduate Student Support Grant. \$30,000, August 2003–June 2004.

University of Saskatchewan Proposal Development Award. \$990, September 2003–November 2003.

8. OTHER
SCHOLARLY AND
PROFESSIONAL
ACTIVITIES

Review panel membership for major grant programs

2012 Early Researcher Award Review Panel Member (Ontario Ministry of Economic Development and Innovation).
2012 CFI/FRQS Leading Edge Fund & New Initiatives Fund (LEF/NIF) award review panel membership.
2012 Invited to sit on NSF Computational Biology Panel (declined due to timing conflict)

Program Committees:

2014 Unconventional Computation and Natural Computation (UCNC 2014), co-chair.
2013 Computability in Europe Natural Computing Workshop, co-chair.
2013 Member of Program Committee for High Performance Computing Symposium (HPCS 2013).
2012 Genome Canada Computational Biology & Bioinformatics Task Force Member.
2011 Member of Program Committee for the Workshop on Non-Classical Models of Automata and Applications (NCMA 2011).
2010 Member of Program Committee for the Conference on Implementations and Applications of Automata. (CIAA 2010)
2008 Member of Program Committee for the 14th International Meeting on DNA Computing.
2008 Member of Program Committee for FBTC 2008 (From Biology to Concurrency and back).
2007 Member of Program Committee for the 13th International Meeting on DNA computing. (11 papers)
2007 Member of Technical Program Committee for 2nd International Conference on Bio inspired Models of Network, Information and Computing Systems.
2007 Member of Program Committee for *Language theory in biocomputing* workshop at Unconventional Computing 2007. (3 papers)

Conference Organization:

2014 Unconventional Computation and Natural Computation (UCNC 2014), co-chair, organizing committee.
2011 Steering Committee member for Genome Canada Science and Industry Advisory Committee bioinformatics/computational biology workshop.
2011 Organizer for Subtle Technologies' The Art and Science of Brain Imaging.
2006 Member of organizing committee for GSOC (Genetics Society of Canada) 2006 conference.
2005 Vice Chair of Organizing committee for 11th International Meeting on DNA computing
2005 Chair of Biocomputing session at HPCS 2005.
2000 Conference assistant for CIAA 2000 & HCAT 2000

Other:

2012–2013 Volunteer Science Enrichment Teacher, Kindergarten class, Stoney Creek

Public School, London, Ontario.
2005 Notes developed for Computer Science 482 (Video Game Engine Programming)
sold to Microsoft Corporation.

Refereeing: Regular referee for several journals including *Journal of Neurophysiology*, *Journal of Cognitive Neuroscience*, *Theoretical Computer Science*, *Natural Computing*, *Nucleic Acids Research*, *PLoS Biology*, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, *Journal of Theoretical Biology* and others.

Grant reviewer for NSERC, CIHR, CFI and the U.S. Air Force Office of Scientific Research.

External reviewer for Daniela Genova, Tenure & Promotion to Associate Professor, University of North Florida.

REGIONAL & NATIONAL ADMINISTRATIVE WORK 2012– Member, Scientific Advisory Board, *Southern Ontario Smart Computing Innovation Platform(SOSCIP)* Consortium.
2006–2007 Member, Management Advisory Committee, *SHARCNET*

UNIVERSITY ADMINISTRATIVE DUTIES 2013 Chair, Organizing Committee for DAPS Industry Problem solving workshop, Faculty of Science, *University of Western Ontario*.
2012–2013 Member, Annual Performance Evaluation Committee, Department of Computer Science, *University of Western Ontario*.
2012–2013 Member, Appointments Committee, Department of Computer Science, *University of Western Ontario*.
2011–2012 co-chair, Departmental Infrastructure Committee, Department of Computer Science, *University of Western Ontario*.
2011–2012 Member, Search committee for molecular evolution faculty candidate, Department of Biology, *University of Western Ontario*.
2011–2012 Member, ad hoc Discrete Mathematics Committee, Department of Computer Science, *University of Western Ontario*.
2010–2011 Member, Search committee for bioinformatics faculty candidate, Department of Biology, *University of Western Ontario*.
2009–2013 Member, Curriculum Committee, Department of Computer Science, *University of Western Ontario*.
2009–2010 Member, Appointments Committee, Department of Computer Science, *University of Western Ontario*.
2008–2009 Member, Executive Committee, Department of Computer Science, *University of Western Ontario*.
2008–2009 Member, Educational Policy Committee, *University of Western Ontario*.
2008–2009 Chair, Undergraduate Committee, *University of Western Ontario*.
2008–2009 Chair, Curriculum Committee, *University of Western Ontario*.
2008– Member, Discrete math revamp subcommittee of CC, *University of Western Ontario*.

2008– Member, Parallelism subcommittee of CC, *University of Western Ontario*.
2007–2008 Member of Graduate Executive Committee, *University of Western Ontario*.
2006–2008 Member, Curriculum Committee, *University of Western Ontario*
2006–2007 Member of Appointments Committee, *University of Western Ontario*
2006 Consultant to Appointments Committee, Department of Chemistry, *University of Western Ontario*.
2006 Consultant to Appointments Committee, Department of Earth Science, *University of Western Ontario*.
2005–2006 Member of Appointments Committee, *University of Western Ontario*
2004–2005 Member of Graduate Executive Committee, *University of Western Ontario*
2004 Member of Curriculum Design Committee for interdisciplinary program in Health Sciences, *University of Saskatchewan*.
2004 Member of Graduate Curriculum Revision Committee, *University of Saskatchewan*
2003 Member of University Level NSERC PGS Awards Committee, *University of Saskatchewan*
2003–2004 Member of Graduate Committee, *University of Saskatchewan*
2000–2002 Member of Graduate Committee Executive, *University of Western Ontario*