

KRISTIN RAE SWANSON

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VISION

My research lab has served to pioneer the burgeoning field of Mathematical Neuro-oncology generating excellent data to support new approaches to personalize treatment choices and thus improve the lives of brain cancer patients. We achieve this through the development of patient-specific mathematical models ideally applied to routinely acquired clinical imaging data to generate accurate predictions of disease course and response to therapy in individual patients that can be used inform novel therapy design.

EDUCATION

Postdoc	MATHEMATICAL AND COMPUTATIONAL MEDICINE University of California, San Francisco, CA	1999-2000
PhD	MATHEMATICAL BIOLOGY University of Washington, Seattle, WA ADVISOR: Professor J. D. Murray, FRS THESIS: "Mathematical Modeling of the Growth and Control of Tumors"	JUNE 1999
MS	MATHEMATICAL BIOLOGY University of Washington, Seattle, WA	JUNE 1998
BS	MATHEMATICS (MINOR: PHYSICS) Tulane University, New Orleans, LA Magna Cum Laude with University & Departmental Honors	MAY 1996

PROFESSIONAL EXPERIENCE

Professor of Neurological Surgery Vice Chair of Research, Neurological Surgery Department Member, Robert H. Lurie Comprehensive Cancer Center Member, Northwestern University Brain Tumor Institute Neurological Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL	2012 — PRESENT
Affiliate Professor of Applied Mathematics Applied Mathematics, University of Washington, Seattle, WA	2012 -- PRESENT
James D. Murray Endowed Chair of Applied Mathematics in Neuropathology Associate Research Professor of Pathology (Neuropathology) Assistant Research Professor of Pathology (Neuropathology) Shaw Professorship in Investigative Neuropathology Pathology (Neuropathology), University of Washington School of Medicine	2011 — 2012 2008 — 2012 2002 — 2008 2004 — 2005
Adjunct Associate Research Professor of Applied Mathematics Adjunct Assistant Research Professor of Applied Mathematics Applied Mathematics, University of Washington	2008 — PRESENT 2002 — 2008
Affiliate Investigator of Computational Biology Computational Biology Program, Fred Hutchinson Cancer Research Center	2009 — PRESENT
Acting Instructor / Senior Fellow / NSF Fellow Pathology (Neuropathology) and Applied Mathematics, University of Washington, Seattle, WA	2000 — 2002
NSF Mathematical Sciences Postdoctoral Fellow Medicine, University of California, San Francisco, CA	1999 — 2000
NSF Mathematical Biology Graduate Research Fellow / Boeing Research Fellow / Graduate Research Associate/ Teaching Assistant Applied Mathematics, University of Washington, Seattle, WA	1996 — 1999

CURRENT RESEARCH FUNDING

- 8/05/2009 **NIH/NINDS R01 Research Grant** (PI) – R01 NS060752
 - 7/31/2014 “Novel Tools for Evaluation and Prediction of Radiotherapy Response in Individual Glioma Patients”
 PI: *K. R. Swanson*
- 9/01/2009 **NIH/NCI Physical Sciences Oncology Center** (PI Project 3) – U54 CA143970
 - 8/31/2014 “The Physical Microenvironment in Cancer Biology and Therapy”
Project 3: “Clinical Imaging and the Tumor Physical Microenvironment”
 PD: *R. Gatenby* (Moffitt Cancer Center)
 PI of Project 3: *K. R. Swanson*
- 10/01/2009 **James S. McDonnell Foundation Planning Award** (PI)
 - 9/30/2011 “Brain Oncology Network of Knowledge (BONK)”
 PI: *K. R. Swanson*
- 9/01/2010 **NIH/NINDS R56 Grant** (Co-Investigator) – R56 NS066992
 - 8/31/2012 “The Role of Myosin II in Glioma Invasion”
 Total Costs (UW subcontract): \$18,552
 MPi: *S. Rosenfeld & P. Canoll* (Columbia University)
- 6/01/2011 **James S. McDonnell Foundation Collaborative Activity Award** (PI)
 - 5/31/2014 “BONK: Predicting and Controlling Glioma Recurrence: The Role of Heterogeneity and Microenvironment”
 PI: *K. R. Swanson*, Co-PIs: *P. Canoll* (Columbia), *A. Anderson* (Moffitt)
- 6/01/2011 **NSF Research Coordination Network Incubator Award** (Collaborator/Member)
 - 5/31/2012 “Interdisciplinary Communication Laboratory for Undergraduate Biology (iCLUB)”
 MPi: *H. Gaff, J. Alonzo* (Old Dominion)
- 9/30/2011 **NIH/NCI R01 Grant** (MPI) R01 CA 16437
 - 9/29/2016 “Patient-specific predictive modeling that integrates advanced cancer imaging”
 MPi: *K. R. Swanson, P. Kinahan* (Radiology, University of Washington)
- 7/01/2012 **NIH R01 Grant** (Consultant)
 - 6/30/2017 “Convection-enhanced delivery in glioblastoma”
 PI: *J. Bruce* (Neurosurgery, Columbia University)
- 7/01/2012 **Phase II Irving Institute Grant for Collaborative and Multidisciplinary Pilot Research (CaMPR)** (Consulting Investigator)
 - 6/31/2013 “Improving imaging biomarkers for brain tumor resection.”
 MPi: *E. Hillman, P. Canoll, G. McKhann* (Columbia)

PENDING RESEARCH FUNDING

- 12/01/2010 **NIH U01 Grant** (MPI) To be resubmitted Winter 2011
 - 11/31/2015 “Regulatory Networks Governing Glioblastoma Proliferation and Invasion”
 MPi: *F. White* (MIT), *P. Canoll* (Columbia), *K. R. Swanson*
- 9/1/2012 **NIH Transformative R01 Grant** (MPI)
 - 8/31/2017 “Drug delivery to brain tumors using biodegradable microfluidic needle arrays”
 MPi: *A. Folch* (UW), *K. R. Swanson, R. Rostomily* (UW), *J. Shear* (MD Anderson), *A. Khademhosseini* (Harvard)
- 9/01/2010 **NIH/NINDS R01 Grant** (Co-Investigator) –
 - 8/31/2012 “The Role of Myosin II in Glioma Invasion”
 MPi: *S. Rosenfeld* (Cleveland Clinic) & *P. Canoll* (Columbia University)

PAST RESEARCH FUNDING

- 11/14/2011 **Planning Grants for Collaborative and Multidisciplinary Pilot Research (CaMPR)**
 - 3/14/2012 (Consulting Investigator)
 “Uncovering the hemodynamic signature of glioma with ultra-fast multispectral optimal imaging”
 MPIs: *E. Hillman, P. Canoll, G. McKhann (Columbia)*
- 9/01/2010 **NIH/NCI U54 Physical Sciences Oncology Center Pilot Grant (PI)**
 - 8/31/2011 “In Silico Investigation of Novel Anti-angiogenic Therapeutic Strategies for Gliomas”
 PI: *K. R. Swanson*
- 1/01/10 **Brain Tumor Funders’ Collaborative Award (PI)**
 -12/31/10 “Patient-specific metrics of treatment response”
 PI: *K. R. Swanson*
- 8/15/2005 **James F. McDonnell Foundation 21st Century Research Award (PI)**
 - 12/1/2010 “Dynamics of Glioma Growth and Invasion”
 PI: *K. R. Swanson*
- 5/10/2004 **NIH/NCI Program Project Grant (Co-Investigator) – P01 CA42045**
 - 2/28/2010 “Molecular Imaging of Cancer and Its Response to Therapy”
 PI: *K. Krohn (Radiology, University of Washington)*
- 12/1/2008 **Ivy Foundation (co-PI)**
 - 11/30/2009 “Quantitatively Connect *In Vivo* Behavior with Protein Expression in Malignant Gliomas”
 Co-PI’s: *J. Zhang / K. R. Swanson*
- 2/1/2008 **University of Washington-Fred Hutchison Cancer Research Center**
 - 1/31/2009 **Cancer Consortium Molecular Diagnostics Pilot Award (PI)**
 “An Innovative Means to Connect *In Vivo* Behavior with Protein Expression in Malignant Gliomas”
 PI: *K. R. Swanson*
- 5/1/2003 **Dana Foundation Program in Brain and Immuno-Imaging Grant (PI)**
 - 9/1/2006 “Integration of MR and PET Imaging Characteristics with Mathematical Modeling to Define the Extent of Invasion of Gliomas”
 PI: *K. R. Swanson*
- 9/1/2001 **NIH K01 Award (Consultant)**
 - 8/31/2006 “MRI/MRSI and Molecular Analysis of Low Grade Gliomas”
 PI: *T. McKnight (Magnetic Resonance Sciences Center, UCSF)*
- 11/01/2004 **University of Washington-Fred Hutchison Cancer Research Center**
 - 12/31/2005 **Cancer Consortium Pilot Award (PI)**
 “Glioma Growth, Invasion and Angiogenesis: Integrating Mathematical Modeling and Imaging”
 PI: *K. R. Swanson*
- 9/1/2002 **French Ministry of Science Grant (Investigator)**
 - 8/31/2005 “Interaction Between the Functional Brain and Glioma Growth: A Modeling of the Static and Temporal Metabolic, Electrophysiological and Hemodynamic Parameters”
 PI: *R. Costalat (Université Pierre et Marie Curie, Paris)*

FELLOWSHIPS, SCHOLARSHIPS, GRANTS AND OTHER HONORS

- 2011 **Best Abstract for Western Regional Society for Nuclear Medicine Annual Meeting**
- 2011 – 2012 **James. D. Murray Endowed Chair of Applied Mathematics in Neuropathology**
- 2010 **Awarded Best Clinical Investigation of 2009 – Journal of Nuclear Medicine**
- 2009 **William E. Schiesser Endowed Lecture – Lehigh University**

- 2009 **Finalist – Hoshino Award – World Federation of Neuro-Oncology**
- 2008 **Undergraduate Research Mentor of the Year, University of Washington**
- 2007 **Nominated for Paul Marks Prize in Cancer Research**
- 2005-2010 **James F. McDonnell Foundation 21st Century Research Award**
- 2004-2005 **Shaw Professorship in Investigative Neuropathology**
- 2001 **Burroughs Wellcome Fund Career Awards at the Scientific Interface Finalist**
- 1999-2002 **NSF Mathematical Sciences Postdoctoral Research Fellowship**
- 1999 **Landahl/Busenberg Travel Grant**
- 1998 **NSF Mathematical Biology Training Grant**
Program in Mathematics and Molecular Biology Fellowship Alternate
- 1997 **Boeing Research Fellowship**
- 1996 **Kappa Kappa Gamma Prize in Mathematics (1st in graduating class – Math)**
Elsie Field Dupre Memorial Prize in Physics (1st in graduating class – Physics)
Tulane University Senior Scholar in Mathematics
Tulane University Outstanding Senior Mathematics Major
National Physical Sciences Consortium Fellowship Alternate
- 1995 **Mortar Board National Senior Honor Society**
Newcomb College Daisy Chain Commencement Honor
Martha Gilmore Robinson Honorary Scholarship
- 1994 **Viola V. Knapp Honorary Scholarship**
- 1993 **Florence Kerwin Honorary Scholarship**
Student Initiated - Newcomb Fellows Research Grant
- 1992-1996 **Tulane University Dean's List / Honors Program**

PUBLICATIONS**PATENTS FILED**

- “Method and system for characterizing tumors”
K. R. Swanson, E. C. Alvord, Jr, J. D. Murray, R. Rockne
File date: 2/19/2010
Application #: US 12/709,367

THESES

1. **K. R. Swanson**. Mathematical Modeling of the Growth and Control of Tumors, PhD Dissertation, University of Washington, 1999
2. **K. R. Swanson**. Turing Model of Pattern Formation with Periodic Conditions, Undergraduate Honors Thesis, Tulane University, 1996

BOOKS

1. J. M. Gottman, J. D. Murray, C. C. Swanson, R. Tyson, **K. R. Swanson**. The Mathematics of Marriage: Dynamic Nonlinear Models, MIT Press (Bradford Books): Cambridge, 2003

ARTICLES – PEER REVIEWED

1. J. D. Murray, **K. R. Swanson**: On the Mechanochemical Theory of Biological Pattern Formation with Applications to Wound Healing and Angiogenesis. In: *On Growth and Form: Spatio-temporal Patterning in Biology*, edited by Drs. M. A. J. Chaplain, J. McLauchlan, G. D. Singh, Wiley (London), 1999, pp. 251-285
2. **K. R. Swanson**, E. C. Alvord Jr, J. D. Murray: A Quantitative Model for Differential Motility of Gliomas in Grey and White Matter. *Cell Proliferation*, 2000, 33: 317-329
3. **K. R. Swanson**, J.D. Murray, D. Lin, L. D. True, K. Buhler, R. Vessella: A quantitative model for the dynamics of serum prostate-specific antigen as a marker for cancerous growth: an explanation for a medical anomaly. *American Journal of Pathology*, 158(6): 2195-9, 2001
4. **K. R. Swanson**, E. C. Alvord Jr, J. D. Murray: Virtual Brain Tumors (Gliomas) Enhance the Reality of Medical Imaging and Highlights Inadequacies of Current Therapy. *British Journal of Cancer*, 86:14-18, 2002 [Selected to be featured in the 2003 Yearbook of Oncology, Elsevier Science]

5. J. M. Gottman, C. Swanson, **K. R. Swanson**: A General Systems Theory of Marriage: Nonlinear Difference Equation Modeling of Marital Interactions. *Personality and Social Psychology Review*, 6(4): 326-340, 2002
6. **K. R. Swanson**, E. C. Alvord Jr, J. D. Murray: Quantifying Efficacy of Chemotherapy of Brain Tumors (Gliomas) with Homogeneous and Heterogeneous Drug Delivery. *Acta Biotheoretica*, 50(4): 223-237, 2002
7. **K. R. Swanson**, L. D. True, J. D. Murray: On the use of quantitative modeling to help understand PSA dynamics and other medical problems. *American Journal of Clinical Pathology*, 119(1):14-7, 2003
8. E. Mandonnet, J-Y Delattre, M-L Tanguy, **K. R. Swanson**, A. F. Carpentier, H. Duffau, P. Cornu, R. Van Effenterre, E. C. Alvord, Jr., L. Capelle: Continuous growth of mean diameter in a subset of WHO grade II gliomas. *Annals of Neurology*, 53:524 – 528, 2003
9. J. M. Gottman, R. Levenson, C. Swanson, **K. R. Swanson**, R. Tyson, D. Yoshimoto: Observing Gay, Lesbian and Heterosexual Couples' Relationships: Mathematical Modeling of Conflict Interaction. *Journal of Homosexuality*, 45(1):65-91, 2003
10. **K. R. Swanson**, E. C. Alvord Jr, J. D. Murray: Virtual Resection of Gliomas: Effect of Extent of Resection on Recurrence. *Mathematical and Computer Modelling*, 37(11):1177-1190, 2003 [Special Issue: "Modeling and Simulation of Tumor Development, Treatment, and Control"]
11. **K. R. Swanson**: Clinical Application of a Mathematical Model for Glioma Growth and Invasion. In: *Mathematical Modelling and Computing in Biology and Medicine*, V. Capasso (ed.), Milan Research Center for Industrial and Applied Mathematics, Progetto Leonardo, pp. 629-636, 2003
12. **K. R. Swanson**, C. Bridge, J. D. Murray, E. C. Alvord Jr.: Virtual and Real Brain Tumors: Using Mathematical Modeling to Quantify Glioma Growth and Invasion. *Journal of the Neurological Sciences*, 216(1):1-10, 2003
13. J. M. Gottman, K. Ryan, C. Swanson, **K. R. Swanson**: Proximal change experiments with couples: a methodology for empirically building a science of effective interventions for changing couples' interaction. *Journal of Family Communication*, 5(3), 163-190, 2005
14. **K. R. Swanson**, E. C. Alvord Jr., J. D. Murray: Dynamics of a Model for Brain Tumors Reveals a Small Window for Therapeutic Intervention, *Discrete and Continuous Dynamical Systems - Series B*, 4(1):289—295, 2004
15. A. M. Spence, M. Muzi, D. A. Mankoff, S. Finbarr O'Sullivan, J. M. Link, T. K. Lewellen, B. Lewellen, P. Phan, S. Minoshima, **K. R. Swanson**, K. A. Krohn. FDG-PET Imaging of Gliomas at Delayed Intervals: Improved Distinction Between Tumor and Normal Gray Matter, *Journal of Nuclear Medicine*, 45: 1653-1659, 2004
16. S. Palfi, **K. R. Swanson**, S. De Bouard, F. Chretien, R. Oliveira, C. Le Guerinel, J. M. Kros, M. Peschanski, R. Gherardi, C. Christov. Oligodendroglial phenotype and 1p/19q loss in gliomas are associated with low invasiveness in an organotypic brain slice invasion assay. *British Journal of Cancer*, 91, 745 - 752, 2004
17. **K. R. Swanson**: Anatomic Determinants of Tumor Growth: Integrating Quantitative Modeling and Imaging. *Proceedings of the American Society for Neuroradiology* 2004
18. A. M. Spence, D. A. Mankoff, M. Muzi, **K. R. Swanson**: Nuclear Imaging of Gliomas. in Barnett GH, ed. *High-Grade Gliomas: Diagnosis and Treatment*, Humana Press Inc, Totowa, NJ, 2005
19. H. Hatzikirou, A. Deutsch, C. Schaller, M. Simon, **K. R. Swanson**: Mathematical Modelling of Glioblastoma Tumour Development: A Review. *Mathematical Models and Methods in Applied Sciences*, 15(11), 1779-1794, November 2005.
20. S. Jbabdi, E. Mandonnet, H. Duffau, L. Capelle, **K. R. Swanson**, M. Pelegriani-Issac, R. Guillevin, H. Benali: Diffusion Tensor Imaging Allows Anisotropic Growth Simulations of Low-Grade Gliomas. *Magnetic Resonance in Medicine*, 54:616–624, 2005
21. **K. R. Swanson**, H. L. P. Harpold, L. D. True: Prostate Specific Antigen: A Clinical and Mathematical Conundrum. *American Journal of Clinical Pathology*, 125 (3): 331-333, 2006
22. H. L. P. Harpold, P. Vicini, **K. R. Swanson**: Kinetic Modeling of FLT-PET to Generate Parametric Maps of Proliferation. *Journal of Undergraduate Research in Bioengineering*, 6(1):49-68, 2006
23. H. L. P. Harpold, E. C. Alvord, Jr., **K. R. Swanson**: The Evolution of Mathematical Modeling of Glioma Growth and Invasion. *Journal of Neuropathology and Experimental Neurology*, 66(1):1-9, 2007

24. K. A. Krohn, F. O'Sullivan, J. Crowley, J. Eary, H. M. Linden, J. M. Link, D. Mankoff, M. Muzi, J. G. Rajendran, A. M. Spence, **K. R. Swanson**. Challenges in Clinical Studies with Multiple Imaging Probes. *Nuclear Medicine and Biology*, 34:879-85, 2007
25. **K. R. Swanson**: A Mathematical Analysis of Glioma Growth and Invasion *In Vitro*. *Mathematical and Computer Modeling*, 47:638-48, 2008, doi:10.1016/j.mcm.2007.02.024
26. R. Rockne, E. C. Alvord, Jr, J. K. Rockhill, **K. R. Swanson**. Modeling Radiotherapy Effect in Glioma Patients. *Journal of Mathematical Biology*, 2008 doi:10.1007/s00285-008-0219-6
27. R. Rockne, E. C. Alvord, Jr, M. Szeto, S. Gu, G. Chakraborty, **K. R. Swanson**. Modeling Glioma Growth and Invasion. Chapter in Edited Book: Selected Topics on Cancer Modelling: Genesis – Evolution – Immune Competition - Therapy. Nicola Bellomo, Mark Chaplain, and Elena De Angelis Eds., ISBN 0817647120, Sept 25, 2008
28. R. Rockne, E. C. Alvord, Jr, P. J. Reed, **K. R. Swanson**. Modeling the growth and invasion of gliomas, from simple to complex: the Goldie Locks paradigm. Chapter in Edited Book: BIOMAT 2007 - International Symposium on Mathematical and Computational Biology. World Scientific Co. Pte. Ltd., 2008
29. **K. R. Swanson**, R. Rostomily, E. C. Alvord, Jr.: Predicting Survival of Patients with Glioblastoma by Combining a Mathematical Model and Pre-operative MR imaging Characteristics: A Proof of Principle. *British Journal of Cancer*, 98, 113-9, 2008, doi:10.1038/sj.bjc.6604125
30. **K. R. Swanson**, H. L. P. Harpold, D. L. Peacock, R. Rockne, C. Pennington, L. Kilbride, R. Grant, J. Wardlaw, E. C. Alvord, Jr. Velocity of Radial Expansion of Contrast-Enhancing Gliomas and Effectiveness of X-Irradiation in Individual Patients: A Proof of Principle. *Clinical Oncology*, 20:301-8, 2008
31. A. M. Spence, M. Muzi, **K. R. Swanson**, F. O'Sullivan, J. K. Rockhill, J. G. Rajendran, T. Ch. Adamsen, J. M. Link, P. E. Swanson, K. J. Yagle, R. C. Rostomily, D. L. Silbergeld, K. A. Krohn. Regional Hypoxia in Glioblastoma Multiforme Quantified with [F-18]-Fluoromisonidazole (FMISO) PET before Radiotherapy: Correlation with Time to Progression and Survival. *Clinical Cancer Research*, 14(9):2623-30, 2008
32. **K. R. Swanson**, G. Chakraborty, C. Wang, R. Rockne, H. L. P. Harpold, M. Muzi, T. C. Adamsen, K. A. Krohn, A. M. Spence. Complementary but Distinct Roles for Magnetic Resonance Imaging and [18F]-fluoromisonidazole PET in the Assessment of Human Glioblastomas. *Journal of Nuclear Medicine*, 50(1):36-44, 2009 - **Awarded Journal of Nuclear Medicine Best Clinical Investigation of 2009**
33. P. Hinow, P. Gerlee, L. J. McCawley, V. Quaranta, M. Ciobanu, S. Wang, J. M. Graham, B. P. Ayati, J. Claridge, **K. R. Swanson**, M. Loveless, A. R. A. Anderson: A spatial model of tumor-host interaction: application of chemotherapy. *Mathematical Biosciences and Engineering*, 6(3):521-46, 2009
34. M. Szeto, G. Chakraborty, J. Hadley, R. Rockne, M. Muzi, E. C. Alvord Jr, K. A. Krohn, A. M. Spence, **K. R. Swanson**. Quantitative metrics of net proliferation and invasion link biological aggressiveness assessed by MRI with hypoxia assessed by FMISO-PET in glioblastomas. *Cancer Research*, 69(10):4502-9, 2009
35. M. Assefa, R. Rockne, M. Szeto, **K. R. Swanson**. Mathematical Modeling of Glioma Proliferation and Diffusion. *Ethnicity and Disease*, 19(2) Supplement 3:60-1, 2009
36. C.H. Wang, J. K. Rockhill, M. Mrugala, D. L Peacock, A. Lai, K. Jusenius, J. M. Wardlaw, T. Cloughesy, A. M. Spence, R. Rockne, E. C. Alvord, Jr, **K. R. Swanson**. Prognostic Significance of Growth Kinetics in Glioblastoma: Novel Insights from Combining Serial MR Imaging with a Bio-mathematical Model for Glioma Growth and Invasion. *Cancer Research*, 69:9133-9140, 2009
37. G. Chakraborty, R. Sodt, S. Massey, S. Gu, R. Rockne, E. C. Alvord, Jr., **K. R. Swanson**. Bridging from Multi-scale Modeling to Practical Clinical Applications in the Study of Human Gliomas. Chapter in Edited Book: Multi-Scale Cancer Modeling. Editors: T.S.Deisboeck, G. Stamatakos. Chapman & Hall, 2010 ISBN 9781439814406
38. R. Rockne, J. K. Rockhill, I. Kalet, E. C. Alvord, Jr, **K. R. Swanson**. Predicting Efficacy of Radiotherapy in Individual Patients with Gliomas. *Physics in Medicine and Biology*, 55:3271-3285, 2010 - **Awarded Top 10 Best Publication in PMB for 2010; Finalist for Roberts' Prize from Institute of Physics and Engineering in Medicine**

39. M. Assefa, R. Rockne, E. C. Alvord Jr., G. Chakraborty, **K. R. Swanson**. A Bio-Mathematical Analysis of the Velocity of Glioma Growth Before and After Contrast-Enhancement. *Ethnicity and Disease*. In Press
40. L-E. Bohman, **K. R. Swanson**, J. Moore, R. Rockne, C. Mandigo, T. Hankinson, M. Assanah, P. Canoll, J. N. Bruce. Preoperative MRI Characteristics of Glioblastoma Multiforme: Implications for Understanding Glioma Ontogeny. *Neurosurgery*, 67(5):1319-27, 2010
41. D. Basanta, J. G. Scott, R. Rockne, **K. R. Swanson**, A. R. A. Anderson: The role of IDH1 mutated tumour cells in secondary glioblastomas: an evolutionary game theoretical view. *Physical Biology*, 8(1);, 2011 - **Top 3% of downloaded articles across all Institute of Physics Journals for 2011**
42. S. Gu, G. Chakraborty, K. Champley, A. Alessio, J. Claridge, R. Rockne, M. Muzi, K. A. Krohn, A. M. Spence, E. C. Alvord Jr, A. R. A. Anderson, P. Kinahan, **K. R. Swanson**. Applying A Patient-Specific Bio-Mathematical Model of Glioma Growth to Develop Virtual [18F]-FMISO PET Images. *Mathematics in Medicine and Biology*, 29(1): 31-48. doi:10.1093/imammb/dqr002
43. J. Scott, D. Basanta, P. Chinnaiyan, P. Canoll, **K. R. Swanson**, A. R. A. Anderson. Production of 2-HG by IDH-1 mutated gliomas: an evolutionary alternative to the Warburg shift? *Neuro-Oncology*, 13(12):1262-4,2011 doi: 10.1093/neuonc/nor083
44. **K. R. Swanson**, R. Rockne, J. Claridge, M. A. J. Chaplain, E. C. Alvord, Jr, A. R. A. Anderson. Quantifying the role of angiogenesis in malignant progression of gliomas: In silico modeling integrates imaging and histology. *Cancer Research*, 71(24):7366-7375, Dec 15, 2011 doi: 10.1158/0008-5472.CAN-11-1399
45. E. A. Stoll, B. A. Habibi, A. M. Mikheev, J. Lusiene, S. C. Massey, **K. R. Swanson**, R. C. Rostomily, P. J. Horner. An increased mitotic rate partially compensates for decreased neural stem cell number, survival and differentiation in aged mouse subventricular zone. *Stem Cell*, 29(12):2005-17, Dec 2011
46. S. Ivkovic, C. Beadle, S. C. Massey, **K. R. Swanson**, P. Canoll, S. S. Rosenfeld. Direct Inhibition of Myosin II Effectively Blocks Glioma Invasion In The Presence Of Multiple Motogens. *Molecular Biology of the Cell*, 23:533-42, Feb 2012, doi:10.1091/mbc.E11-01-0039
47. S. Massey, M. Assanah, K. Lopez, P. Canoll, **K. R. Swanson**. Progenitor cell recruitment drives aggressive glioma growth: mathematical and experimental modeling. *Journal of the Royal Society Interface*, 9(73):1757-66, Aug 2012 doi: 10.1098/rsif.2012.0030
48. R. Sodt, R. Rockne, M. L. Neal, I. Kalet, **K. R. Swanson**. Quantifying the role of anisotropic invasion in human glioblastoma. In Press
49. C. Holdsworth, D. Corwin, R. D. Stewart, R. Rockne, A. D. Trister, **K. R. Swanson**, M. Philips. Adaptive IMRT using a multiobjective evolutionary algorithm integrated with a diffusion-invasion model of glioblastoma. *Physics in Medicine and Biology*, In Press
50. M. L. Neal, A. D. Trister, T. Cloke, R. Sodt, S. Ahn, A. L. Baldock, C. Bridge, A. Lai, T. Cloughesy, M. M. Mrugala, J. K. Rockhill, R. Rockne, **K. R. Swanson**. Discriminating survival outcomes in patients with glioblastoma using a simulation-based, patient-specific response metric. *PLOS One*, In Press

ARTICLES – UNDER REVIEW

51. A. L. Baldock, R. Rockne, A. Boone, M. Neal, M. M. Mrugala, J. K. Rockhill, **K. R. Swanson**. Patient-Specific Mathematical Neuro-Oncology: Predicting Prognosis and Treatment Response in Individual Gliomas Patients.
52. E. C. Alvord, Jr, R. Rockne, J. K. Rockhill, M. M. Mrugala, R. Rostomily, A. Lai, T. Cloughesy, J. M. Wardlaw, A. M. Spence, **K. R. Swanson**. Know thy enemy: Paradoxes to be exploited in the war against glioblastoma.
53. A. L. Baldock, S. Ahn, R. Rockne, M. Neal, D. Corwin, H. Malone, V. Ebaina, A. Sonabend, M. M. Mrugala, J. K. Rockhill, R. Rostomily, D. L. Silbergeld, A. Lai, T. Cloughesy, G. McKhann, J. Bruce, P. Canoll, **K. R. Swanson**. Patient-specific metrics of invasiveness reveal significant prognostic benefit of extensive resection in a subset of less diffuse malignant gliomas

ARTICLES – IN FINAL PREPARATION

1. R. Rockne, M. Neal, A. D. Trister, J. K. Rockhill, M. Mrugala, **K. R. Swanson**. Patient-specific mathematical neuro-oncology: a case study of a patient-specific, 4D simulation of glioma growth and response to radiation therapy.

2. A. Hawkins-Daarud, E. C. Alvord, Jr, **K. R. Swanson**. Combining a Mathematical Model and MR Imaging Characteristics to Predict the Course of an Untreated Glioblastoma: A Novel Case Study with Histopathological Validation.
3. M. Szeto, S. Ahn, J. K. Rockhill, M. Mrugala, R. Rockne, E. C. Alvord, Jr, **K. R. Swanson**. Heterogeneity of Biological Aggressiveness of Glioblastomas: A Spatial Analysis
4. E. C. Alvord, Jr., **K. R. Swanson**: The Adult Human Pyramidal Tract: A Mathematical Analysis of Wallerian Degeneration following Massive Supra-Medullary Stroke.
5. **K. R. Swanson**, M. Roudier, L. True, R. Vessella: A Biomathematical Analysis of PSA and Tumor Dynamics: Correlations with Clinical and Autopsy Data.
6. S. Pardakhtim et al. Segmentation of Glioma on Magnetic Resonance Imaging: Accuracy of a Semi-Automated Method
7. J. Hadlock, C. Murthy, A. Hawkins-Daarud, **K. R. Swanson**. A Spatial Analysis of Hypoxia: Using MRI and [18F]-Fluoromisonidazole PET to Predict the Location of Radiation Therapy Resistance in Glioblastoma Multiforme
8. A. L. Baldock, K. Yagle, J. Scott, A. Trister, M. Mrugala, R. Rockne, **K. R. Swanson**. Quantifying the Distinctive Growth Patterns of IDH1-mutated Gliomas
9. A. L. Baldock, R. Rockne, P. Canoll, D. Born, K. Yagle, **K. R. Swanson**. Cystic Gliomas are Quantitatively Less Biologically Aggressive.
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LETTERS TO THE EDITOR

1. **K. R. Swanson**, E. C. Alvord, Jr: Using Mathematical Modeling to Predict Survival of Low Grade Gliomas. *Annals of Neurology*, 61(5): 496, 2007

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1. J. A. Sonnen, C. D. Keene, **K. R. Swanson**, J. Zhang, C. M. Shaw, T. J. Montine: Ellsworth "Buster" Alvord, Jr (1923-2010) Obituary. *Brain Pathology*, 20(5): 993-4, 2010

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 93. M. L. Neal, A. D. Trister, S. Ahn, C. Bridge, J. Lange, A. Baldock, R. Rockne, M. Mrugala, J. K. Rockhill, A. Lai, T. Cloughesy, **K. R. Swanson**. A Response Metric Based on a Minimal Model of Glioblastoma Growth is Prognostic for Time to Progression and Overall Survival. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC)
 94. A. Baldock, S. Ahn, R. Rockne, M. Neal, D. Corwin, K. Clark-Swanson, G. Sterin, A. D. Trister, H. Malone, V. Ebiana, A. M. Sonabend, M. Mrugala, J. K. Rockhill, D. L. Silbergeld, A. Lai, T. Cloughesy, G. M. McKhann, J. N. Bruce, R. Rostomily, P. Canoll, **K. R. Swanson**. Patient-specific invasiveness metric predicts benefit of resection in human gliomas. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC)
 95. A. Hawkins-Daarud, R. Rockne, **K. R. Swanson**. Interpreting Intensity Modulation on T2/FLAIR Imaging of Gliomas: Deconvolving MR imaging changes from treatment effect through mathematical modeling. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC)
 96. A. Hawkins-Daarud, A. Baldock, C. Bridge, D. Corwin, J. Rockhill, M. Mrugala, R. Rockne, **K. R. Swanson**. Revealing the diffuse extent of gliomas to enable surgical and radiotherapy treatment design: Insights from a Patient-Specific Mathematical Model and an Untreated Glioblastoma. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC)
 97. A. L. Baldock, K. Yagle. S. Ahn, D. Born, P. Swanson, R. Rockne, **K. R. Swanson**. Invasion and Proliferation Kinetics Predict IDH-1 Mutation in Contrast-Enhancing Gliomas. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC) ***Platform Presentation**
 98. D. M. Corwin, C. Holdsworth, R. D. Stewart, R. Rockne, **K. R. Swanson**. Virtual clinical trials: Implications for spatially optimizing radiotherapy using a patient-specific model of glioma. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC)
 99. D. M. Corwin, C. Holdsworth, R. D. Stewart, R. Rockne, **K. R. Swanson**. Reducing dose to normal tissue while improving tumor control in human glioblastomas using a patient-specific mathematical and radiotherapy optimization algorithm. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC)
 100. A. Trister, B. Bot, K. Fontes, C. Bridge, J. K. Rockhill, M. Mrugala, R. Rockne, E. Huang, **K. R. Swanson**. A novel patient-specific model of glioma growth kinetics elucidates underlying biology as measured by gene expression microarray. Annual Meeting of the Society for Neuro-Oncology, 2012 (Washington, DC)
 101. A. Trister, B. Bot, A. Hawkins-Daarud, K. Fontes, C. Bridge, J. K. Rockhill, M. Mrugala, R. Rockne, E. Huang, **K. R. Swanson**. A novel patient-specific model of glioma growth kinetics elucidates

- underlying biology as measured by gene expression microarray. Markers in Cancer, October 11-13, 2012 (Hollywood, FL) ***Awarded 2012 Conquer Cancer Foundation of ASCO Merit Award**
102. D. Corwin, C. Holdsworth, R. D. Stewart, M. Philips, R. Rockne, **K. R. Swanson**. Using patient-specific IMRT optimization and a mathematical model of glioma to improve tumor control and reduce normal tissue complications. Annual Meeting of the Radiation Research Society September 30 – October 4 , 2012 (Puerto Rico)
103. R. Rockne, M. Mrugala, J. K. Rockhill, **K. R. Swanson**. Patient-specific mathematical radiation oncology. Annual Meeting of the Radiation Research Society September 30 – October 4 , 2012 (Puerto Rico)

INVITED LECTURES AND OTHER CONTRIBUTED PRESENTATIONS

- 2013 Invited Seminar – Mathematical Biology Research Training Group (Duke University)
Visiting Professor – Neurosurgery (Dartmouth – Hitchcock Medical Center, Lebanon, NH)
- 2012 Invited Symposium Lecture – Radiation Research Society (Puerto Rico)
Invited Symposium Lecture – James S McDonnell Foundation Meeting: Envisioning the Future Through a Retrospective Lens: Lessons from 15 Years of JSMF Support for Brain Cancer Research (Houston, TX)
Invited Lecture – Eastern North American Region (ENAR) of the International Biometric Society (Washington, DC)
Visiting Professor – Information Sciences in Imaging, Radiology (Stanford, Palo Alto, CA)
Invited Colloquium – Engineering Sciences and Applied Mathematics (Northwestern University)
Invited Lecture – Northwestern University Brain Tumor Institute (Chicago, IL)
Invited Symposium Lecture – Rice University's Innovations in Cellular Systems Biology (Houston, TX)
- 2011 Invited Lecture – Investigative Workshop Solid Tumor Modeling: Biological, Computational and Clinical Challenges (National Institute for Mathematical and Biological Synthesis – NimBIOS, Knoxville, TN)
Visiting Professor – Radiation Medicine Seminar (Oregon Health Sciences University, Portland, OR)
Invited Seminar – Pathology Presents Seminar (University of Washington)
Invited Symposium Lecture – American Association of Cancer Research (AACR) (Orlando, FL)
Invited MiniSymposium Lecture – International Congress of Industrial and Applied Mathematics (Vancouver, BC)
Invited Symposium Lecture – American Association of Physicists in Medicine (Vancouver, BC)
Invited Seminar – NeuroOncology (University of California, San Diego, CA)
Contributed Platform Presentation - Annual Meeting of Society for Nuclear Medicine (San Antonio, TX)
Visiting Professor – Neurosurgery Grand Rounds (Columbia University School of Medicine, NY)
Invited Seminar – Brain Tumor Program (Memorial Sloan Kettering Cancer Center, NY)
Invited Lecture – Recent Advances in Biologically Guided Radiation Therapy Symposium (University of Washington, Seattle)
Invited Seminar – Martinos Center for Biomedical Imaging, Massachusetts General Hospital and Harvard-MIT Division of Health Sciences and Technology (Boston, MA)
Invited Seminar – Northwestern University Brain Tumor Institute, Robert H. Lurie Comprehensive Cancer Center (Chicago, IL)
Invited Seminar – Neurosurgery Grand Rounds - University of Colorado (Denver, CO)
Invited Seminar – 40 Years and Counting: AWM's Celebration of Women in Mathematics Conference (Brown University, Providence, RI)
Invited Symposium Lecture – American Academy of Neurological Surgery Annual Meeting (Scottsdale, AZ)
Invited Symposium Lecture - National Cancer Research Institute Annual Meeting (Liverpool, UK)

- 2010 Invited Seminar – Undergraduate Mathematical Sciences Seminar (UW)
Invited Seminar – Neurosurgery Grand Rounds (UW)
Invited Seminar – Imaging Science Research Lecture (UW)
- 2009 Visiting Professor – William E. Schiesser Seminar, Lehigh University (Bethlehem, PA)
Invited Seminar – Computational Biology Program, Fred Hutchinson Cancer Research Center (Seattle, WA)
Invited Seminar – Integrative Mathematical Oncology Department (Moffitt Cancer Center, FL)
Invited Seminar – Pathology Presents Seminar (UW)
Invited Lecture – Centro de Investigación en Computación del IPN, National Polytechnic Institute of México (Mexico)
Invited Minisymposium Lecture – SIAM Computer Science and Engineering Annual Meeting (Miami, FL)
Invited Minisymposium Lecture (x2) – Society of Mathematical Biology Annual Meeting (Vancouver, BC)
Invited Lecture – Oregon Health Sciences University (OHSU) Blood-Brain-Barrier Consortium Annual Meeting (Gleneden Beach, Oregon)
Invited Dean's Seminar – Old Dominion University (Norfolk, VA)
Invited Keynote Lecture – BIOMAT 2009 (Brasilia, Brazil)
- 2008 Invited Lecture – Workshop on Modeling Tumour Response to Irradiation (Cross Cancer Institute, Edmonton, Alberta)
Invited Lecture – Annual Meeting of the European Society for Mathematical and Theoretical Biology (Edinburgh, UK)
Invited Lecture – Applied Physics Laboratory (UW)
Invited Lecture – Neuro-Oncology (Moffitt Cancer Research Center, Tampa, Florida)
Invited Lecture – Radiology (UWMC)
Invited Lecture – 1st Transatlantic Workshop on Multiscale Cancer Modeling (Brussels, Belgium)
- 2007 Keynote Lecture – BIOMAT 2007 (Rio de Janeiro, Brazil)
Contributed Platform Presentation – Society for Nuclear Medicine Annual Meeting (Washington, DC)
Invited Lecture – McDonnell Foundation Tango Lessons for Brain Cancer Workshop (Cordoba, Argentina)
Invited Lecture – Mathematics, University of Arizona (Tucson, AZ)
Invited Symposia Lecture – Society for Mathematical Biology (San Jose, CA)
Invited Workshop Lecturer – VICBC Workshop (Nashville, TN)
Invited Lecture – Neurology Grand Rounds (UW)
Invited Lecture – Molecular Imaging Seminar (UW)
- 2006 Invited Major Symposia Lecture – American Association for Cancer Research (AACR) Annual Meeting (Washington, DC)
Plenary Lecture – Second Young Researchers Workshop in Mathematical Biology (Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio)
Invited Plenary Lecture – Gordon Research Conference on Mathematical and Theoretical Biology (Tilton, New Hampshire)
Invited Lecture – Workshop on Mathematical Models and Problems in Cell Motility and Tumor Growth (National Center for Theoretical Sciences, Taiwan)
Minisymposia Organizer – Joint Annual Meeting of the Society for Mathematical Biology and the SIAM Conference on the Life Sciences (Raleigh, North Carolina)
- 2005 Keynote Lecture – International Conference on Mathematical and Theoretical Biology Joint Annual Meeting of the Society for Mathematical Biology and the European Society for Theoretical and Mathematical Biology (Dresden, Germany)
Symposia Organizer – “Mathematical Oncology”: American Association for the Advancement of Science (AAAS) Annual Meeting (Washington, DC)
Visiting Professor – Radiology, University of Arizona School of Medicine (Tucson, AZ)
Invited Lecture – Symposium on "Modeling in Chronic and Infectious Disease: Biology and Outcomes" at the Fred Hutchinson Cancer Research Center (Seattle, WA)

- Invited Lecture – Barrow Neurological Institute (Phoenix, AZ)
Invited Lecture – Mathematics, Arizona State University (Tempe, AZ)
Invited Lecture – Cancer Dynamics Workshop, University of Michigan (Ann Arbor, MI)
Invited Lecture – Matematica e Cultura 2005 International Conference (Venice, Italy)
Invited Lecture – Applied Mathematics, University of Washington (Seattle, WA)
Invited Lecture – Epidemiology and Preventive Medicine, University of Maryland School of Medicine (College Park, MD)
Invited Lecture – Applied Mathematics, University of Waterloo (Waterloo, Canada)
Invited Lecture – Centre for Mathematical Medicine, Fields Institute (Toronto, Canada)
Invited Lecture – NeuroSurgery Grand Rounds, University of Washington (Seattle, WA)
Invited Lecture – Canadian Mathematical Society Winter Meeting (Victoria, BC, Canada)
Invited Lecture – MITACS Cancer Modeling Workshop (Banff, Canada)
Invited Lecture – Center for Mathematical Medicine Cancer Modeling Workshop (Toronto, Canada)
- 2004 Invited Symposia Lecture – American Association for the Advancement of Science (AAAS) Annual Meeting (Seattle, WA)
Invited Symposia Lecture – Neuroradiology Education and Research (NER) Foundation Symposium 2004: “Integration of Imaging Strategies in Neuroradiology” and 42nd Annual American Society for Neuroradiology Annual Meeting (Seattle, WA)
Invited Lecture – NeuroOncology, Pitie-Salpetriere Hospital (Paris, France)
Invited Lecture – Workshop on Mathematical Oncology, Fields Institute (Toronto, Canada)
Invited Lecture – Bioengineering, University of Washington (Seattle, WA)
Invited Lecture – Applied Mathematics, University of Washington (Seattle, WA)
Invited Lecture – Neuropathology Research-in-Progress (Seattle, WA)
Contributed Platform Presentation –Growth & Death in the CNS International Conference (St. Moritz, Switzerland)
- 2003 Keynote Lecture – European Union International Conference on “Linking Mathematical and Biological Models in Cancer Research” (Magdeburg, Germany)
Invited Lecture – NeuroOncology Colloquia at the Pitie-Salpetriere Hospital (Paris, France)
Society for Nuclear Medicine Annual Meeting (New Orleans, LA)
Invited Lecture – Neurosurgery Grand Rounds (Harborview Medical Center, Seattle, WA)
Invited Lecture – Neuropathology Research-in-Progress Seminar (Harborview Medical Center, Seattle, WA)
Invited Lecture – Society for Mathematical Biology (Dundee, Scotland)
Invited Lecture – Washington State University, Mathematics (Pullman, WA)
- 2002 Society for Neuro-Oncology (San Diego, CA)
Canadian Association of Neuropathology – Oral Contribution (Vancouver, BC)
International Congress of Neuropathology (Helsinki, Finland)
Mathematical Modeling & Computing in Biology and Medicine Conference (Milan, Italy)
Invited Lecture – Applied Mathematics – University of Washington (Seattle, WA)
Invited Lecture – Steele Laboratory – Harvard Medical School (Boston, MA)
Life Sciences Meeting of Society for Industrial and Applied Mathematics (Boston, MA)
- 2001 Invited Lecture – Biostatistics – Fred Hutchison Cancer Research Center (Seattle, WA)
Keynote Lecture at International Conference – Using Mathematical Modelling and Computer Simulation to Improve Cancer Therapy (Corsica, France)
Annual Society for Mathematical Biology Meeting (Hilo, HI)
Invited Lecture – Molecular Imaging Laboratory – University of Washington (Seattle, WA)
Invited Lecture – International Brain Tumor Modeling Workshop (Edinburgh, Scotland)
- 2000 Invited Lecture – Neuro-Oncology Research – University of Washington (Seattle, WA)
Invited Lecture – Applied Mathematics – University of Washington (Seattle, WA)
Annual Society for Industrial and Applied Math Meeting (Rio Grande, Puerto Rico)
Using Mathematical Modeling and Computer Simulation to Improve Cancer Therapy (Corsica, France)
Invited Lecture – Math Modeling Journal Club – University of California (San Francisco, CA)
Invited Lecture – Biomedical Engineering – Washington University (St. Louis, MO)

- Invited Lecture – Courant Institute of Mathematical Sciences – New York University (NY)
Invited Lecture – Information Technology – Merck and Company (Rahway, NJ)
Invited Lecture – Quantitative Modeling – Physiome Sciences, Inc (Princeton, NJ)
Invited Lecture – Engineering Sciences & Applied Mathematics – Northwestern (Evanston, IL)
Invited Lecture – Quantitative Modeling – Entelos, Inc. (Menlo Park, CA)
 1999 Invited Lecture – Neurology Grand Rounds – University of Washington (Seattle, WA)
Contributed Platform Presentation – Theory and Mathematics in Biology and Medicine 99
 (Amsterdam, The Netherlands)
Invited Lecture – Neuropathology Grand Rounds – Harborview Medical Center (Seattle, WA)
 Brain Awareness Week Open House – University of Washington (Seattle, WA)
 1998 Zoology – University of Washington (Seattle, WA)
 Applied Mathematics – University of Washington (Seattle, WA)
 Pattern Formation– Institute for Mathematics and It's Application (Minneapolis, MN)
 Gordon Research Conference, Theoretical Biology and Biomathematics (Tilton, NH)
 1996 Honors Thesis Defense – Mathematics, Tulane University (New Orleans, LA)
 1995 Research Experience for Undergraduates – Carnegie Mellon University (Pittsburgh, PA)

PROFESSIONAL MEMBERSHIPS

- American Association for Cancer Research (AACR)
 Society for Mathematical Biology (SMB), Board of Directors
 Society for Neuro-Oncology (SNO)
 Society for Nuclear Medicine (SNM)
 Women in Cancer Research (AACR-WICR)
 Fred Hutchinson/University of Washington Cancer Consortium
 - Program in Neuro-Oncology
 - Program in Imaging
 European Society for Theoretical and Mathematical Biology (ESTMB)
 Centre for Mathematical Medicine (Fields Institute, Toronto, Canada)
 Center for the Development of a Virtual Tumor (CViT.org)
 Institute of Translational Health Sciences (ITHS)
 Founding member of the National Science Foundation sponsored RCN-UBE Incubator: Interdisciplinary
 Communication Laboratory for Undergraduate Biology (iCLUB)

ACADEMIC SERVICE

- Scientific Advisory Committee, Annual Meeting of the Society for Mathematical Biology** 2012
 Knoxville, TN
**External Scientific Advisory Board, Moffitt Cancer Center Bankhead-Coley
 Team Science Award** 2011- PRESENT
Review Editorial Board of Frontiers in Computational Physiology and Medicine 2011- PRESENT
Grant Reviewer, Italian Association for Cancer Research (AIRC) 2011
Grant Review Panelist, National Science Foundation 2011
 Mathematical Biology and the Computational Mathematics
Grant Review Panelist, National Institutes of Health Study Section 2011
 Modeling and Biological Systems (MABS)
Grant Review Panelist, National Science Foundation 2010
 RTG (Research Training Groups) component of the EMSW21 -
 Enhancing the Mathematical Sciences Workforce in the 21st Century
Grant Reviewer, French Insitut National du Cancer 2010
Grant Reviewer, French National Research Agency (ANR) 2009
**Scientific Advisory Board, Vanderbilt University component of
 NCI's Tumor Microenvironment Network (TMEN)** 2007-2011
 Vanderbilt University, Nashville, Tennessee
Elected Member, Council on Research and Graduate Education 2007-2010
 University of Washington School of Medicine
Board of Directors, The Society for Mathematical Biology 2007-2010

Scientific Committee, Mathematics and Medicine Workshop CIRM, Marseilles (Luminy), France	FEBRUARY 2009
Chair and Organizer, Modeling Cancer and Angiogenesis Workshop Mathematical Biosciences Institute, Ohio State University	2008-2009
Scientific Committee, Annual Meeting of the Society for Mathematical Biology Toronto, Canada	2008
Panelist, National Science Foundation Grant Review Panel	2006
Grant Reviewer, National Natural Sciences and Engineering Research Council of Canada (NSERC)	2006
Organizing Committee, MITACS/CMM Cancer Modeling Workshop Workshop on Growth and Control of Tumours - Current Problems and Future Challenges BIRS, Banff, Canada	OCTOBER 2005
Chair, Mathematical Oncology Symposium AAAS Annual Meeting, Washington, DC	FEBRUARY 2005
Graduate and Professional Student Senator University of Washington, Seattle, WA	OCTOBER 1998 TO JUNE 1999
Mortar Board Senior Honor Society Treasurer Tulane University, New Orleans, LA	MARCH 1995 TO MARCH 1996

REVIEWER AND EDITORIAL BOARD MEMBERSHIP

Reviewer For:	Journal of Theoretical Biology
Acta Biotheoretica	Journal of Theoretical Medicine
Acta Neuropathologica	Mathematics in Medicine and Biology
Applied Mathematics Letters	
Bulletin of Mathematical Biology	Mathematical Biosciences
Cancer Detection and Prevention	Medical Image Analysis
Cancer Letters	Microvascular Research
Cancer Research	Nature Reviews Cancer
	Nonlinear Dynamics, Psychology and Life Sciences
Clinical Cancer Research	Physical Review E
Computer Vision and Image Understanding	
Cell Proliferation	PLOS Computational Biology
Journal of Clinical Oncology	PLOS One
Journal of Nonlinear Science	
Journal of the Royal Society Interface	Transactions on Medical Imaging

Editorial Board Member for:

Journal of Computational Surgery and Dual Training
Frontiers in Computational Physiology and Medicine
Frontiers in Molecular and Cellular Oncology

IN THE NEWS

Modelling predicts radiotherapy response

June 2010 *MedicalPhysicsWeb*

<http://medicalphysicsweb.org/cws/article/research/42904>

Modeling Plus MRI Data Characterize Brain Tumors in Patients

December 2009 *NCI Physical Sciences in Oncology Research News*

http://physics.cancer.gov/news/2009/dec/po_news_c.asp

UW researchers discover groundbreaking approach to predicting life expectancy among patients with malignant brain tumors by Clare Hagerty

November 30, 2009 *University of Washington Health and Medicine News*

<http://uwnews.org/article.asp?articleID=53947>

The Amgen Scholars Program: Encouraging a new generation of biomedical researchers

By Robert Roseth – August 6, 2009 *University Week*

<http://uwnews.org/uweek/article.aspx?id=51343>

Radiation Options & Advances for Brain Cancer Patients

An interview with Dr. Jason Rockhill discussing advances in radiation therapy in the treatment of gliomas and the role of the Swanson Lab's research – February 12, 2009 **Patient power**
<http://www.patientpower.info/listenguestdetails.asp?Guest=945Rockhill,%20M.D.,%20Ph.D.&ID=R&n=Jason%20K.&In=Rockhill,%20M.D.,%20Ph.D.>

Researcher outsmarts brain tumors with math by Jean Enerson

December 2008 Healthlinks Special on **NBC KING 5**

http://www.king5.com/health/stories/NW_122408HEB_brain_tumors_KS.223c0bb.html

Can Mathematics Treat Cancer? by Chen Sai

November 13, 2008 Issue of **Life Week Magazine**

[Life Week] is China's best Newsweek Magazine, sponsored by China Publishing Group. [Life Week] publishes weekly, with 200 thousand circulation, all over China, including HK and Taiwan.

<http://www.lifeweek.com.cn/2008-12-08/0002423302.shtml>

Comparing Invasive Species to Metastatic Cancers Inspires New Insights for Modelers by Mike

Martin - January 8, 2008

<http://jnci.oxfordjournals.org/cgi/content/full/100/2/88>

Can Math Cure Cancer? by Robert Langreth, Senior Editor

October 27, 2008 Issue of **Forbes Magazine**

<http://www.forbes.com/forbes/2008/1027/074.html>

Glint of Hope Compels Brain Cancer Clinical Trials (Against a Dim Prognosis)

Fall 2008 Issue of University of Washington Medical Center **Neuro-Oncology Consult**,

http://www.pathology.washington.edu/research/labs/swanson/text/UWMCCConsultFall08_BrainCancer.pdf

Modeling Cancer Biology by Kristin Cobb, PhD

Spring 2007 Issue of **Biomedical Computation Review**

<http://biomedicalcomputationreview.org/3/2/4.pdf>

The Right Equation: Mathematicians Work to Predict Tumor Growth

Journal of the National Cancer Institute 2005 97(13):952-953; doi:10.1093/jnci/dji195

<http://jnci.oxfordjournals.org/cgi/content/full/97/13/952>

Mathematical Modeling of Cancer

SIAM News, Volume 37, Number 1, Jan/February 2004

<http://www.siam.org/pdf/news/203.pdf>

TEACHING SUMMARY

UNDERGRADUATE

Bioengineering Research/Capstone Design (BIOEN 480)

Co-supervised bioengineering senior on capstone project: Winter 2005, Spring 2005

Research Mentoring (AMATH 499, PATH 499 or CSE 499)

Average of 3 students per quarter (8 credit hours per quarter) since 2003

Undergraduate Mathematical Sciences Seminar (Math 498)

Contributed 1 hour lecture: Winter 2005, Winter 2010

GRADUATE

Bioengineering Seminar Series (BIOEN 501):

Contributed 1 hour lecture Spring 2004

Applied Math Seminar Series (AMATH 501):

Regular contributions since 2003

Neuroanatomic Pathology (PATH 571, MSTP Course)

Contributed 1.5 hour lecture Spring 2005

Environmental Pathology (PATH 555):

Contributed 2 hour lecture Spring 2005

Modeling and Computation in the Biomedical Sciences Proseminar (PATH 501)

Course director and designer - 10 weekly hour long lectures – Spring 2007

Virtual Human Research Seminar

Contributed 1 hour lecture Spring 2007

Pathology Presents Graduate Seminar (PATH 520)
 Contributed 1 hour lecture – Winter 2009, Summer 2009
 Cellular Biology (PATH 507)
 Contributed 1 hour lecture Winter 2010

MEDICAL STUDENT/RESIDENT

Neurosurgery Grand Rounds: Regular contributions since 2003
 Neuropathology Research in Progress: Regular contributions since 2003
 Neuropathology Journal Club: Regular contributions since 2003
 Imaging Sciences Research Seminar (Radiology)
 Contributed 1 hour lecture Fall 2010
 Independent Study in Medical Science (HUBIO 599) Spring 2004
 Pathology Resident Didactics – *Intro to Biostatistics*
 Designed mini-course and contributed 4 one hour lectures - Winter 2005

STUDENT SUPERVISION AND MENTORING**HIGH SCHOOL STUDENTS:**

<i>Mahlet Assefa</i>	High School Student – Graduated 2010 <u>Awards:</u> NIH STEP-UP Fellow <u>Currently:</u> Undergraduate Student – Yale University	2008 – 2010
<i>Tyler Rockhill</i>	High School Student – Graduated 2011 <u>Currently:</u> Undergraduate Student – University of Portland	2009 – Present
<i>April Baldock</i>	High School Student	2011 – Present

UNDERGRADUATE STUDENTS:

<i>Carly A. Bridge</i>	<u>Major:</u> Neurobiology <u>Awards:</u> Mary Gates Fellow <u>Currently:</u> ND, 2009 – Bastyr	2001 – 2004
<i>Hana L. P. Harpold</i>	<u>Major:</u> Bioengineering <u>Currently:</u> MD, 2010 - University of Washington Pediatrics Residency at University of Chicago	2003 – 2007
<i>Sariah Khormae</i>	<u>Major:</u> Neurobiology <u>Awards:</u> Mary Gates Fellow UW Presidential Scholar <u>Currently:</u> Marshall Scholar MD/PhD student at Cambridge University	2003 – 2005
<i>Stephanie Nissen</i>	<u>Major:</u> Bioengineering <u>Awards:</u> Mary Gates Fellow <u>Currently:</u> Graduate Student – Genetics – UCSD	2003 – 2004
<i>Patrick Reed</i>	<u>Major:</u> Biochemistry & Applied Math <u>Awards:</u> Mary Gates Fellow <u>Currently:</u> Graduate Student – University of Chicago	2004 – 2007
<i>Melissa Cowan</i>	<u>Major:</u> Applied Mathematics <u>Awards:</u> Mary Gates Fellow <u>Currently:</u> Graduate Student – Electrical Engineering – UW	2004 – 2005
<i>Nikhil Joshi</i>	<u>Major:</u> Bioengineering	2004 – 2006
<i>Gargi Chakraborty</i>	<u>Major:</u> Biochemistry & Neurobiology <u>Awards:</u> Mary Gates Fellow Research for Advanced Undergraduates Fellow NSF VIGRE Fellow MS, Applied Mathematics, 2010 – University of Washington	2005 – 2010
<i>Courtney Mitchell</i>	<u>Currently:</u> Software Developer at Boeing <u>Major:</u> Applied Mathematics	2005 – 2005
<i>Danielle Peacock</i>	<u>Major:</u> Biochemistry <u>Currently:</u> Graduate Student – Integrated Program in Biomedical Sciences University of Tennessee Health Sciences Center	2005 – 2006
<i>Christina Wang</i>	<u>Major:</u> Bioengineering <u>Currently:</u> Medical Student – University of Washington	2005 – 2009

<i>Jeffrey Jacobs</i>	<u>Major:</u>	Biology	2005 – 2007
<i>Lily Chau</i>	<u>Major:</u>	Psychology	2005 – 2006
<i>Mindy Szeto</i>	<u>Major:</u>	Biochemistry, Sociology & Biology	2005 – 2010
	<u>Awards:</u>	Mary Gates Fellow (2006, 2008) Amgen Research Scholar (2008) Washington Research Foundation Fellowship (2008) NSF VIGRE Undergraduate Research Fellow (2009)	
<i>Stanley Gu</i>	<u>Major:</u>	Bioengineering	2006 – 2010
	<u>Awards:</u>	Mary Gates Fellow NSF VIGRE Undergraduate Research Fellow (2008, 2009) MS Bioengineering (2010)	
	<u>Currently:</u>	Pfizer	
<i>Huo Shin John Tsui</i>	<u>Major:</u>	Biostatistics	2006
<i>Kevin Do</i>	<u>Major:</u>	Sociology BS (2010)	2006 – 2010
<i>Rita Sodt</i>	<u>Major:</u>	Computer Science	2006 – 2011
	<u>Awards:</u>	Mary Gates Fellow (2008, 2010) Levinson Emerging Scholars Award (2008) Goldwater Scholarship UW Nominee (2008) Amgen Scholar (2009) BS (2010)	
	<u>Currently:</u>	Graduate Student – Computer Science – Univ of Washington	
<i>Ivan Vulovic</i>	<u>Major:</u>	Computer Science	2006 – 2007
	<u>Currently:</u>	Microsoft	
<i>Julia Moore</i>	<u>Major:</u>	Molecular & Cellular Bio / Applied Math BS (2009)	2007 – 2009
	<u>Awards:</u>	Mary Gates Fellow Amgen Research Scholar NSF VIGRE Fellow Goldwater Scholar	
	<u>Currently:</u>	Graduate Student – UC Davis	
<i>Jennifer Hadley</i>	<u>Major:</u>	Bioengineering	2007
	<u>Awards:</u>	Amgen Research Scholar	
	<u>Currently:</u>	Medical Student at University of Alabama – Birmingham	
<i>Susan Massey</i>	<u>Major:</u>	Mathematics BS(2010)	2007 – Present
	<u>Awards:</u>	Amgen Research Scholar AMA Trjitzinsky Award Boeing/OMA Research Scholar McNair Scholar NSF VIGRE Graduate Fellow Individually awarded NSF Graduate Fellowship	
	<u>Currently:</u>	Graduate Student – Applied Mathematics – Univ of Washington	
<i>Shokouh Pardakhtim</i>	<u>Major:</u>	Mathematics / Pre-Med (2010)	2007 – 2010
	<u>Awards:</u>	STAR Scholar NSF VIGRE Fellow McNair Scholar	
<i>Jennifer Beers</i>	<u>Major:</u>	Post-Bac/Pre-Med (2010)	2007 – 2010
	<u>Currently:</u>	Medical Student at University of Washington School of Medicine	
<i>Chunyan Zhou</i>	<u>Major:</u>	Biology (2009)	2007 – 2009
	<u>Currently:</u>	Grad Student – Environmental Toxicology – Univ of Washington	
<i>Harkirat Sohi</i>	<u>Major:</u>	Applied Mathematics (MS, 2010)	2008 – 2009
	<u>Awards:</u>	NSF VIGRE Fellow NASA Research Grant	
<i>Brent Sandona</i>	<u>Major:</u>	Computer Engineering	2008 – 2010
<i>Brad Peterson</i>	<u>Major:</u>	Biochemistry	2008 – 2010
<i>Larissa Miller</i>	<u>Major:</u>	Pre-Bioengineering	2008 – 2009
<i>Amanda Ly</i>	<u>Major:</u>	Chemical Engineering	2008 – 2009
<i>Addie Boone</i>	<u>Major:</u>	Medical Anthropology/Biochemistry	2009 – 2011

	<u>Currently:</u>	Medical Student at Northwestern University School of Medicine	
<i>Samantha Ryder</i>	<u>Major:</u>	Geography/ Pre-Med	2009
<i>Pratyusha Banik</i>	<u>Major:</u>	Biochemistry	2009
<i>Jin Stedje</i>	<u>Major:</u>	Applied Math & Music at MIT	2009
<i>Anne Baldock</i>	<u>Major:</u>	Neurobiology	2009 – Present
	<u>Currently:</u>	Research Scientist (Swanson Lab UW)	
<i>Liz Hanley</i>	<u>Major:</u>	Bioengineering	2009 – 2010
<i>Zinnia Xu</i>	<u>Major:</u>	Bioengineering	2009 – 2010
<i>Kristin DeVleming</i>	<u>Major:</u>	Applied Computational Mathematical Sciences	2009
<i>Gina Tran</i>	<u>Major:</u>	Undeclared	2009
<i>Tyler Cloke</i>	<u>Major:</u>	Computer Science and Engineering	2009 – Present
<i>Greg Sterin</i>	<u>Major:</u>	Computer Science and Engineering	2010 – 2011
<i>Christine Scullywest</i>	<u>Major:</u>	Premed	2010
<i>Misbah Uraizee</i>	<u>Major:</u>	Biology & Mathematics at Yale	2010
<i>Jason Uanon</i>	<u>Major:</u>	Mathematics/Computer Science and Engineering	2010
<i>Alex Kim</i>	<u>Major:</u>	Neurobiology	2010 – Present
<i>Sam Sussman</i>	<u>Major:</u>	Neurobiology	2010 – Present
<i>Dillon Eng</i>	<u>Major:</u>	Mechanical Engineering at Rice University	2010
<i>Jessica Forbes</i>	<u>Major:</u>	Mathematics at Carroll College	2010
	<u>Awards:</u>	Amgen Research Summer Scholar	
<i>Theresa Kurtz</i>	<u>Major:</u>	Neuroscience/Math at Rochester University	2011
	<u>Awards:</u>	Amgen Research Summer Scholar	
<i>Evan Leon</i>	<u>Major:</u>	Computer Science and Engineering	2011 – Present
	<u>Awards:</u>	NASA Summer Research Scholar	
<i>Jordan Lange</i>	<u>Major:</u>	Computer Science Engineering	2011 – Present
<i>Aaron Nash</i>	<u>Major:</u>	Computer Science Engineering	2011 – Present
<i>Kellie Fontes</i>	<u>Major:</u>		2011 – Present
<i>Chantal Murphy</i>	<u>Major:</u>		2011 – Present
<i>Michael Fisher</i>	<u>Major:</u>		2011 – Present

GRADUATE STUDENTS:

<i>Erin Stretton</i>	<u>Currently:</u>	PhD student - INRIA	MS (2005)
<i>Russell Rockne</i>	<u>Currently:</u>	Research Scientist Pathology & PhD student - UW	MS (2006) PhD (In Process)
<i>Jihyoun Jeon</i>	<u>Currently:</u>	Postdoctoral Fellow – Fred Hutchinson Cancer Center	PhD (2007)
<i>Jonathan Claridge</i>	<u>Awards:</u>	NSF VIGRE Graduate Fellow	2006 – 2007, PhD (2011)
<i>Gargi Chakraborty</i>	<u>Currently:</u>	Boeing Research Analyst	MS (2010)
<i>Misha Kutzman</i>			MS (2010)
<i>Susan Massey</i>	<u>Awards:</u>	NSF Graduate Fellow (Individually-awarded)	MS (2011) PhD (In Process)
<i>Sunyoung Ahn</i>	<u>Currently:</u>	Research Scientist (Swanson Lab)	MS (2011)
<i>David Corwin</i>	<u>Currently:</u>	Research Scientist (Swanson Lab)	MS (2011)
<i>Keith Curtis</i>			MS (In Process)
<i>Dillon Eng</i>			MS (In Process)
<i>Josh Jacobs</i>			PhD (In Process)

POSTDOCTORAL FELLOWS:

<i>Maxwell Neal, PhD</i>			2010 – Present
<i>Kirsten Fagnan, PhD</i>			2010 – 2011
<i>Andrea Hawkins-Daarud, PhD</i>	<u>Awards:</u>	NSF Postdoctoral Fellow	2011 – Present
<i>Andrew Trister, MD, PhD</i>		Radiation Oncology Resident	2010 – Present

MEDICAL STUDENTS AND RESIDENTS:

<i>H. Sawyer Gillespie</i>		Medical Student	2003 – 2004
<i>Andrew Trister, MD, PhD</i>		Radiation Oncology Resident	2010 – Present