

# Carlo C. Maley

## Curriculum Vitae

Prepared: 1/25/16

Position: Associate Professor  
Biodesign Institute  
School of Life Sciences  
Arizona State University

Associate Director, Centre for Evolution and Cancer  
Institute for Cancer Research, London

Director, Center for Evolution and Cancer  
Helen Diller Family Comprehensive Cancer Center  
<http://cancer.ucsf.edu/evolution>  
University of California San Francisco

Research Professor  
Norton Thoracic Institute  
St. Joseph's Hospital and Medical Center

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### EDUCATION:

1987-91	Oberlin College, Oberlin, OH	B.A.	Summa Cum Laude, Computer Science & Psychology
1991-93	University of Oxford	M.Sc.	Zoology
1993-98	Massachusetts Institute of Technology (Rodney Brooks at MIT and Michael Donoghue at Harvard)	Ph.D.	Computer Science
1998	Harvard University	Postdoc	Organismal and Evolutionary Biology
1998-2000	University of New Mexico	Postdoc	Computer Science

### PRINCIPAL POSITIONS HELD:

2000-05	Fred Hutchinson Cancer Research Center	Staff Scientist	Human Biology
2005-10	The Wistar Institute	Assistant Professor	Oncogenesis

2010-15	University of California, San Francisco	Adjunct Associate Professor	Surgery
2011-now	University of California, San Francisco	Director	Center for Evolution and Cancer
2014-now	Institute for Cancer Research, London	Associate Director	Centre for Evolution and Cancer
2015-now	St. Joseph's Hospital and Medical Center	Research Professor	Norton Thoracic Institute
2015-now	Arizona State University	Associate Professor	School of Life Sciences

**OTHER POSITIONS HELD CONCURRENTLY:**

2005-10	University of Pennsylvania	Member,	Genomics & Computational Biology Graduate Group,
2007-10	University of Pennsylvania	Member	Cellular and Molecular Biology Graduate Group

**HONORS AND AWARDS:** *[All inclusive, most recent last]*

1991	Graduated Oberlin College <i>summa cum laude</i>
1991-1993	Marshall Scholarship
2000-2001	Alfred P. Sloan Fellowship in Computational and Molecular Biology
2001	NIGMS Fellowship Award (declined)
2001-2006	NCI Howard Temin Award (K01)
2003	AACR Rodger C. Haggitt Award
2008	First winner of the Landon AACR Innovator Award for Cancer Prevention Research
2013-2014	Fellow of the Berlin Institute for Advanced Study (Wissenschaftskolleg zu Berlin)

**KEYWORDS/AREAS OF INTEREST:**

Cancer, somatic evolution, neoplastic progression, therapeutic resistance, cancer prevention, genomics, evolutionary biology, computational biology, agent-based modeling, Barrett's esophagus, acute myeloid leukemia, translational medicine.

**PROFESSIONAL ACTIVITIES****PROFESSIONAL ORGANIZATIONS**Memberships

2002-now	American Association for Cancer Research
2001-now	Society for the Study of Evolution

Service to Professional Organizations

2005-2006	American Association for Cancer Research	Task Force on Cancer
Prevention		
2007	AACR Frontiers of Cancer Prevention Research	Session Chair
2008	AACR Frontiers of Cancer Prevention Research	Session Chair
2009	AACR Annual meeting	Session Chair
2010	AACR Annual Meeting	Session Chair
2010	AACR Frontiers of Cancer Prevention Research	Program Committee
2011	National Breast Cancer Coalition	Summit on Metastasis
Prevention		
2011-2015	National Evolutionary Synthesis Center	Advisory Board

**SERVICE TO PROFESSIONAL PUBLICATIONS:**

2008-now	Editorial Board, Cancer Prevention Research
2011-now	Senior Editor, Evolution, Medicine and Public Health
2011-now	Editorial Board, Journal of Evolutionary Medicine
2011-now	Editorial Board, Frontiers in Computational Physiology and Medicine
2013-now	Editorial Board, Cancer Research

2005-now Ad hoc referee for Nature (1 paper in the past 5 years), Nature Reviews Cancer (2 papers in the past 5 years), New England Journal of Medicine (1 paper in the past 5 years), Journal of Clinical Investigations (3 papers in the past 5 years), PNAS (3 papers in the past 5 years), Gastroenterology (9 papers in the past 5 years), PLoS Medicine (2 papers in the past 5 years), PLoS Computational Biology (4 papers in the past 5 years), PLoS Biology (1 paper in the past 5 years), Genetics (2 papers in the past 5 years), Advances in Complex Systems (1 paper in the past 5 years), Molecular Biology and Evolution (1 paper in the past 5 years), In Silico Biology (1 paper in the past 5 years), IEE Proc. Systems Biology (1 paper in the past 5 years), Gut (2 papers in the past 5 years), Diseases of the Esophagus (2 papers in the past 5 years), Artificial Life (1 paper in the past 5 years), Journal of Theoretical Biology (1 paper in the past 5 years), Integrative and Comparative Biology (1 paper in the past 5 years), Cancer Informatics (1 paper in the past 5 years), Journal of the Royal Society Interface (1 paper in the past 5 years), Biology Direct (1 paper in the past 5 years), Journal of Cellular Physiology (2 papers in the past 5 years), Physical Biology (1 paper in the past 5 years), Cancer Research (2 papers in the past 5 years), Cancer Prevention Research (1 paper in the past 5 years), Oncogene (1 paper in the past 5 years), Physical Review Letters (1 paper in the past 5 years), Cell Proliferation (1 paper in the past 5 years), Evolutionary Applications (2 papers in the past 5 years)

**INVITED PRESENTATIONS** *[last 5 years]*

## INTERNATIONAL

Symposium on Evolution and Cancer, Champalimaud Foundation, Lisbon, Portugal, 2014 (invited talk)

Gert Riethmüller Symposium, Munich, Germany, 2014 (invited talk)

Wissenschaftskolleg zu Berlin, Berlin, Germany, 2014 (invited talk)

Annual Meeting of the German, Austrian and Swiss Societies for Hematology and Medical Oncology, Vienna, Austria, 2013 (invited talk)

Institute for Cancer Research, London, England, 2013 (invited talk)  
National Cancer Research Institute Cancer Conference, Liverpool, England, 2012 (invited talk)  
Cancer Research UK, London, England, 2012 (invited talk)  
Cancer as a Microevolutionary Process Workshop, Wilton Park, England, 2011 (invited talk)  
Unanswered Questions in Tumour Monitoring, Cambridge Research Institute Annual  
International Symposium, Cambridge, England, 2010 (invited talk)  
Evolution and Medicine Symposium 2009, Lausanne, Switzerland, 2009 (invited talk)  
Workshop on Evolution: Foundations, Fundamentals, and Disease, Hong Kong  
University of Science and Technology, Hong Kong, China, 2009 (invited  
talk)  
Evolution and Medicine Symposium, Toulouse, France, 2009 (invited talk)  
Biochemical Society Focused Meeting on Barrett's metaplasia, Bath, England, 2009  
(invited talk)

## NATIONAL

Second International Biannual Evolution and Cancer Conference, San Francisco, CA  
2013 (introductory plenary talk)  
Biological Mechanisms of Evolution, Gordon Research Conference, Easton, MA 2013  
(invited talk)  
Evolution and Comparative Oncology Minisymposium, U. Utah, Salt Lake City, UT  
2013 (invited talk)  
AACR 2013 Annual Conference, Washington DC 2013 (invited seminars, session chair)  
Evolutionary Medicine Distinguished Seminar, Arizona State U., Tempe AZ (invited  
seminar)  
Lineberger Cancer Center, U. North Carolina, Chapel Hill, NC 2013 (invited seminar)  
Ecology and Evolutionary Biology Departmental Seminar, Yale U., New Haven, CT  
2012 (invited seminar)  
Pathology Departmental Seminar, U. Pennsylvania, Philadelphia, PA 2012 (invited talk)  
Evolutionary Medicine Seminar Series, U. Michigan, Ann Arbor, MI 2012 (invited  
seminar)  
Evolutionary Medicine Summer School, Bar Harbor, ME, 2012 (invited talks)  
Radiation Oncology Seminar Series, Johns Hopkins, Baltimore, MD (invited talk)  
Biology Seminar Series, Johns Hopkins, Baltimore, MD (invited talk)  
Physical Sciences Oncology Seminar Series, Arizona State U., Tempe, AZ, 2012 (invited  
seminar)  
Hem/Onc research talks, Mayo Clinic, Scottsdale, AZ, 2012 (invited talk)  
Special Seminar, Translational Genomics Research Institute, Phoenix, AZ, 2012 (invited  
talk)  
AACR Basic Science of Cancer, San Francisco, CA, 2011 (invited talk)  
First International Biannual Evolution and Cancer Conference, San Francisco, CA, 2011  
(introductory talk)  
Workshop on the Physics of Tumor Heterogeneity, Princeton, NJ 2011 (invited talk)  
Frontiers in Science symposium, Loyola University, Chicago, IL 2011 (keynote speech)  
Glioma Ecosystem Opportunity Workshop, La Jolla, CA, 2011 (invited talk)  
Integrating Mathematical Modeling into Cancer Prevention Seminar Series, National  
Cancer Institute, Rockville, MD, 2010 (invited talk)  
AACR Frontiers in Cancer Prevention Conference, Philadelphia, PA, 2010 (invited talk)

Evolution 2010, annual meeting of the Society for the Study of Evolution, Portland, OR, 2010 (contributed talk)

Cancer as a Dynamical System, The Beyond Center for Fundamental Concepts in Science, Arizona State University, Phoenix, AZ, 2010 (invited talk)

BEACON workshop, National Cancer Institute, Bethesda, MD, 2010 (invited talk)

AACR Annual meeting, Symposium on Differentiation in Cancer and Cell Fate Reprogramming, Washington DC, 2010 (session chair)

Arizona State University, Tempe, AZ, 2010 (invited talk)

Gordon conference on DNA Damage, Mutation and Cancer, Ventura, CA, 2010 (invited talk)

NCI Think Tank: Rethinking the Role of Infectious Agents in Cancer, Washington DC, 2010 (invited talk)

Rare Events in Biology symposium, Princeton University, Princeton, NJ, 2010 (invited talk)

Research Career Development Seminar Series, Massachusetts General Hospital, Boston, MA, 2010 (invited talk)

Physical Sciences Oncology Center, Princeton, NJ, 2009 (invited talk)

H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, 2009 (invited talk)

1st International Workshop on Relapse after Allogeneic Hematopoietic Cell Transplantation, NIH, Bethesda, MD, 2009 (invited talk)

Hawaii Cancer Research Center, Honolulu, HI, 2009 (invited talk)

Scripps Research Institute, La Jolla, CA, 2009 (invited talk)

AACR Annual Meeting, Denver, CO, 2009 (session chair)

AMC professional advancement series session, AACR Annual Meeting, Denver, CO, 2009 (invited talk)

University of Colorado at Denver Medical School, Denver, CO, 2009 (invited talk)

Memorial Sloan Kettering, NYC, NY, 2009 (invited talk)

NCI executive committee retreat, Bethesda, MD, 2009 (invited talk)

Glaxo Smith Klein, Collegeville, PA, 2009 (invited talk)

#### REGIONAL AND OTHER INVITED PRESENTATIONS

Tumor Heterogeneity Symposium, Stanford University, Palo Alto, CA 2014 (plenary talk)

Novartis Oncology, Emeryville, CA, 2013 (invited seminar)

Evolutionary Medicine Symposium, Stanford U., Palo Alto, CA, 2012 (invited talk)

UCSF Cancer Center Seminar series, San Francisco, CA, 2011 (invited talk)

UCSF Evolution seminar series, San Francisco, CA 2011 (invited talk)

Evolutionary Genomics Seminar Series, Stanford University, Palo Alto, CA 2011 (invited talk)

The Importance of Clonal Diversity, Nodality Inc. S. San Francisco, CA 2011 (invited talk)

#### **CME COURSES ATTENDED: N/A**

#### **GOVERNMENT and OTHER PROFESSIONAL SERVICE:**

2006	National Cancer Institute	Translational Research Working Group Roundtables I & II
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2006	National Institutes of Health	National Commission on Digestive Diseases
2008	National Cancer Institute	Barrett's Esophagus Translational Research (BETR) Working Group
2008	Santa Fe Institute	Working group for integrating evolutionary theory into cancer biology
2008	National Cancer Institute	Think Tank: Physical Sciences-Based Frontiers in Oncology: Evolution and Evolutionary Theory and Cancer
2008	National Cancer Institute	Thank Tank: Physical Sciences-Based Frontiers in Oncology: The Coding, Decoding, Transfer, and Translation of Information in Cancer
2009	National Cancer Institute	Presented to the NCI Executive Committee Retreat
2010	National Cancer Institute	Think Tank: Rethinking the Role of Infectious Agents in Cancer
2010	National Cancer Institute	Reviewer of the NCI's Division of Cancer Prevention's Chemoprevention Agent Development Research Program (CADRG)
2009-10	National Cancer Institute	NCI-F Review Committee (K99/R00 & T32's)
2011	Center for Evolution and Cancer	Organized the First International Biannual Evolution and Cancer Conference
2013	Center for Evolution and Cancer	Organized the Second International Biannual Evolution and Cancer Conference

## RESEARCH AND CREATIVE ACTIVITIES

### RESEARCH AWARDS AND GRANTS

#### CURRENT

1. R01 CA 140657-01 (Dr. C. Maley, PI) 7/1/14-5/31/19  
NIH/NCI \$225,000 direct/yr 1  
Modeling Neoplastic Progression in Barrett's Esophagus \$1,125,000 total direct/yr 1-5
  
2. R01 CA149566 (Dr. Martin Carroll, PI) 2/1/11-1/31/16  
NIH/NCI \$170,384 direct/yr 1  
Stem Cells, Differentiation and Therapeutic Resistance in AML \$851,920 total direct/yr 1-5  
Co-investigator responsible for genomic sequencing and evolutionary analysis.

3. R01 CA 170595 (Dr. Robert Gatenby, PI)	7/1/12-6/30/16
NIH/NCI	\$124,854, direct/yr 1
Application of Evolutionary Principles to Maintain Cancer Control (PQ21)	\$512,908, total direct/yr 1-4
4. P01 CA 091955-07 (Dr. Brian Reid, PI)	4/1/14-3/30/19
NIH/NCI	\$39,124 direct/yr 1
Barrett's Esophagus: Predictors of Progression	\$204,805 total direct/yr 1-5
5. R01 CA185138 (Drs. Carlo Maley and Shelley Hwang Co-PIs)	4/1/14-3/31/18
NIH/NCI	\$149,974, direct/yr 1
(PQC3) Genomic and Microenvironmental Diversity as Drivers of Metastasis in DCIS	\$605,892, total direct/yr 1-4
6. Breakthrough Award BC132057 (Drs. Carlo Maley & Shelley Hwang Co-PIs)	6/1/14-5/31/19
DoD/Breast Cancer Research Program	\$604,053, direct/yr 1
Genomic and Microenvironmental Diversity as Drivers of Progression in DCIS	\$ 2,747,623, total direct/yr 1-5

PAST

1. RSG-09-163-01-CNE (Dr. C. Maley, PI)	7/1/09-6/30/13
AMERICAN CANCER SOCIETY	\$144,745 direct/yr 1
Stem Cells, Mutation Rates and NSAIDs in Barrett's Esophagus	\$593,080 total direct/yr 1-4
2. P01 CA 091955-07 (Dr. Brian Reid, PI)	8/13/07-6/30/12
NIH/NCI	\$77,881 direct/yr 1
Barrett's Esophagus: Predictors of Progression	\$339,555 total direct/yr 1-4
Leader of Project 3 Genetic Instability and co-leader of the Biostatistics and Evolutionary Analysis Core	
3. N/A (Dr. C. Maley, PI)	3/1/12-2/28/13
Bonnie J. Addario Lung Cancer Foundation	\$50,000 direct/yr 1
Within-tumor genetic diversity in lung cancer	\$50,000 total direct/yr 1
4. U54 CA 143803 (Dr. R. Austin, PI)	9/1/11-8/31/12
NIH/NCI	\$42,071 direct/yr 1
Pilot: A single cell genealogy assay to measure somatic evolution	\$42,071 total direct/yr 1
5. N/A (Dr. C. Maley, PI)	1/1/09-12/31/10
MARTHA W. ROGERS CHARITABLE TRUST	\$12,500 direct/yr 1
The Effects of Therapy on Cancer Stem Cells in AML Patients	\$25,000 total direct/yr 1-2
6. R03 CA 137811-01 (Dr. C. Maley, PI)	9/17/08-8/31/10
NIH/NCI	\$50,000 direct/yr 1
An Intra-Neoplasm Genetic Diversity Assay	\$100,000 total direct/yr 1-2
7. 08-06-27-MALE (Dr. C. Maley, PI)	7/1/08-6/30/10

AMERICAN ASSOCIATION FOR CANCER RESEARCH Genetic Diversity within Intra-Epithelial Neoplasms and Cancer Prevention	\$50,000 direct/yr 1 \$100,000 total direct/yrs 1-2
8. R01 CA 119224-03 (Dr. G. Luebeck, PI) NIH/NCI MSM Scales of Carcinogenesis: Cells, Crypts and Cancer Co-investigator.	9/1/05-8/31/09 \$14,334 direct/yr 1 \$51,403 total direct/yrs 1-4
9. N/A (Dr. C. Maley, PI) PHARMACEUTICAL RESEARCH & MANUFACTURERS OF AMERICA FOUNDATION Development of Microsatellite and Methylation Assays for Phylogenetics	2/1/07-1/30/09 \$30,000 direct/yr 1 \$60,000 total directs/yrs 1-2
10. P30 DK050306 (Dr. A. Rustgi, PI) UNIVERSITY OF PENNSYLVANIA PILOT PROJECT Center for Molecular Studies in Digestive and Liver Diseases Pilot project: Organotypic Tissue Culture of Barrett's Esophagus Pilot project PI.	7/1/06-6/30/07 \$10,000 direct/yr 1 \$10,000 total direct/yr 1
11. N/A (Dr. C. Maley, PI) MCLEAN CONTRIBUTIONSHIP Description: Purchase of high performance computing cluster for simulations and genomic analysis	4/1/06-2/28/07 \$20,895 total direct/yr 1
12. K01 CA89267 (Dr. C. Maley, PI) NIH/NCI Evolutionary dynamics of Barrett's esophagus neoplasia	4/1/01-3/31/06 \$146,750 direct/yr 1 \$704,055 total direct/yrs 1-5

**PEER REVIEWED PUBLICATIONS:** *[All inclusive. Numbered. List publications in chronological order (oldest first).]*

1. **Maley, C.C.**, Caswell, H.: Implementing *i*-state configuration models for population-dynamics - an object-oriented programming approach. *Ecological Modelling* 68:75-89, 1993.
2. **Maley, C.C.**: A model of the effects of dispersal distance on the evolution of virulence in parasites. In Brooks, R., Maes, P. (Eds.) *Artificial Life IV*, MIT Press, Cambridge, MA, 1994, pp. 152-159.
3. **Maley, C.C.**: The computational completeness of Ray's Tierran assembly language. In Langton, C. G. (Ed.) *Artificial Life III*, Addison-Wesley, Reading, MA, 1994, pp. 503-514.
4. **Maley, C.C.**: The coevolution of mutation rates. In Moran, M., Merelo, C. (Eds.) *Advances in Artificial Life*, Springer-Verlag, Berlin, 1995, pp. 219-233.
5. **Maley, C.**: Mutation rates as adaptations. *J Theor Biol* 186:339-348, 1997.
6. **Maley, C.C.**: DNA computation: theory, practice, and prospects. *Evol Comput* 6:201-229, 1998.



7. **Maley, C.C.:** Models of evolutionary ecology and the validation problem. In Adami, C., Belew, R. K., Kitano, H., Taylor, C. E. (Eds.) *Artificial Life VI*, MIT Press, Cambridge, MA, 1998, pp. 423-427.
8. **Maley, C.C.:** Four steps toward open-ended evolution. In Banzhaf, W., Daida, J., Eiben, A. E., Garzon, M. H., Honavar, V., Jakiela, M., Smith, R. E. (Eds.) *Genetic and Evolutionary Computation*, Morgan Kaufmann Publishers, San Francisco, CA, 1999, pp. 1336-1343.
9. **Maley, C. C.:** Comparing causal factors in the diversification of species. *InterJournal of Complex Systems BArticle*, 2000, p. 241.
10. **Maley, C. C., Forrest, S.:** Modeling the role of neutral and selective mutations in cancer in Bedau, M., McCaskill, J., Packard, N., Rasmussen, S. (Eds.) *Artificial Life 7*, MIT Press, Cambridge, MA, 2000, pp. 395-404.
11. **Maley, C.C., Forrest, S.:** Exploring the relationship between neutral and selective mutations in cancer. *Artif Life* 6:325-345, 2000.
12. Robeck, H.E., **Maley, C.C.**, Donoghue, M.J.: Taxonomy and temporal diversity patterns. *Paleobiology* 26:171-187, 2000.
13. **Maley, C.C.**, Tapscott, S.J.: Selective instability: maternal effort and the evolution of gene activation and deactivation rates. *Artif Life* 9:317-326, 2003.
14. **Maley, C. C., Reid, B. J., Forrest, S.:** Cancer prevention strategies that address the evolution of neoplastic cells: Simulating benign cell boosters and selection for chemosensitivity. *Cancer Epidemiology, Biomarkers and Prevention*, 13:1375-84, 2004.
15. **Maley, C.C.**, Galipeau, P.C., Li, X., Sanchez, C.A., Paulson, T.G., Reid, B.J.: Selectively advantageous mutations and hitchhikers in neoplasms: p16 lesions are selected in Barrett's esophagus. *Cancer Res* 64:3414-3427, 2004.
16. **Maley, C.C.**, Galipeau, P.C., Li, X., Sanchez, C.A., Paulson, T.G., Blount, P.L., Reid, B.J.: The combination of genetic instability and clonal expansion predicts progression to esophageal adenocarcinoma. *Cancer Res* 64:7629-7633, 2004.
17. Hornick, J.L., Blount, P.L., Sanchez, C.A., Cowan, D.S., Ayub, K., **Maley, C.C.**, Reid, B.J., Odze, R.D.: Biologic properties of columnar epithelium underneath reepithelialized squamous mucosa in Barrett's esophagus. *Am J Surg Pathol* 29:372-380, 2005.
18. Wongsurawat, V.J., Finley, J.C., Galipeau, P.C., Sanchez, C.A., **Maley, C.C.**, Li, X., Blount, P.L., Odze, R.D., Rabinovitch, P.S. and Reid, B.J.: Genetic mechanisms of TP53 loss of heterozygosity in Barrett's esophagus: Implications for biomarker validation. *Cancer Epidemiology, Biomarkers and Prevention*, 15:509-516, 2006.
19. **Maley, C.C.**, Galipeau, P.C., Finley, J.C., Wongsurawat, V.J., Li, X., Sanchez, C.A., Paulson, T.G., Blount, P.L., Risques, R., Rabinovitch, P.S. and Reid, B.J.: Genetic clonal diversity predicts progression to esophageal adenocarcinoma. *Nature Genetics*, 38:468-473, 2006.
20. Chao, D.L., **Maley, C.C.**, Wu, X., Farrow, D.C., Galipeau, P.C., Sanchez, C.A., Paulson, T.G., Rabinovitch, P.S., Reid, B.J., Spitz, M.R., and Vaughan, T.L.: Mutagen sensitivity and neoplastic progression in patients with Barrett's esophagus: A prospective analysis. *Cancer Epidemiology, Biomarkers and Prevention*, 15:1935-40, 2006. PMID: PMC2567488
21. Merlo, L., Pepper, J., Reid, B.J., **Maley, C.C.:** Cancer as an evolutionary and ecological process. **Nature Reviews Cancer**, 6:924-35, 2006.
22. Galipeau, P.C., Li X., Blount, P.L., **Maley, C.C.**, Sanchez, C.A., Odze, R.D., Ayub, K., Rabinovitch, P.S., Vaughan, T.V., Reid, B.J.: NSAIDs modulate CDKN2A, TP53, and DNA content risk for progression to esophageal adenocarcinoma. *PLoS Medicine*. 4(2):e67, 2007. PMID: PMC1808095
23. Srivastava, A., Hornick, J.L., Li, X., Blount, P.L., Sanchez, C.A., Cowan, D.S., Ayub, K.,

- Maley, C.C.**, Reid, B.J., and Odze R.D.: Extent of low-grade dysplasia Is a risk factor for the development of esophageal adenocarcinoma in Barrett's esophagus. *Am. J. Gastro.* 102:483-493, 2007.
24. Lai, L.A., Paulson T.G., Li X., Sanchez C.A., **Maley C.**, Odze R.D., Reid B.J., Rabinovitch, P.S.: Increasing genomic instability during premalignant neoplastic progression revealed through high resolution array-CGH. *Genes, Chromosomes and Cancer.* 46:532-542, 2007.
  25. Pepper, J., Sprouffske, K., **Maley, C.C.**: Cell Differentiation Patterns Suppress Somatic Evolution. *PLoS Computational Biology*, 3:e250, 2007. Highlighted in Nature Online (<http://www.nature.com/news/2007/070917/full/news070917-11.html>) PMID: PMC2134960
  26. Chao. D.L., Eck, T., Brash, D., **Maley, C.C.**, Luebeck, E.G.: Pre-neoplastic lesion growth driven by the death of adjacent normal stem cells. *PNAS* 105:15034-15039, 2008. PMID: PMC2567488
  27. Li X., Galipeau, P.C., Sanchez, C.A., Blount, P.L., **Maley, C.C.**, Arnaudo, J., Peiffer, D.A., Pokholok, D., Gunderson, K.L., Reid, B.J.: SNP-based Genome-wide Chromosome Copy Change, LOH, and Aneuploidy in Barrett's Esophagus Neoplastic Progression. *Cancer Prevention Research* 1:413-423, 2008. PMID: PMC2882787
  28. Liu, Z., Venkatesh, S.S., **Maley, C.C.**: Sequence space coverage, entropy of genomes and the potential to detect non-human DNA in human samples. *BMC Genomics*, 9:509, 2008. PMID: PMC2628393
  29. Paulson, T.G., **Maley, C.C.**, Chao, D., Li, X., Li, X., Zhang, G., Sanchez, C.A. Odze, R., Vaughan, T., Blount, P., Ayub, K., Reid, B.J.: Copy number alterations in Barrett's esophagus and esophageal adenocarcinoma. *Clinical Cancer Research* 15:3305-14, 2009. PMID: PMC2684570
  30. Pepper, J.W., Findlay, C.S., Kassen, R., Spencer, S.L., and **Maley, C.C.**: Cancer research meets evolutionary biology. *Evolutionary Applications* 2:62-70, 2009.
  31. Merlo, L.M.F., Shah, N.A., Li, X., Blount, P., Vaughan, T.L., Reid, B.J., **Maley, C.C.**: A comprehensive survey of clonal diversity measures in Barrett's esophagus as biomarkers of progression to esophageal adenocarcinoma. *Cancer Prevention Research* 3:1388-1397, 2010. PMID: PMC3004782
  32. Lai, L.A., Kostadinov, R., Barrett, M.T., Peiffer, D.A., Pokholok, D., Odze, R.D., Sanchez, C.A., **Maley, C.C.**, Reid, B.J., Gunderson, K., Rabinovitch, P.S.: Deletion at Fragile Sites is a Common and Early Event in Barrett's Esophagus. *Mol Cancer Res.* 8:1084-94, 2010. PMID: PMC3100793
  33. Chen, J., Sprouffske, K., Huang, Q., **Maley C.C.**: Solving the puzzle of metastasis: The evolution of cell migration in neoplasms. *PLoS ONE*, 6:e17933, 2011. PMID: PMC3083389
  34. Aktipis, C.A., **Maley, C.C.**, Pepper, J.W.: Dispersal evolution in neoplasms: The role of deregulated metabolism in the evolution of cell motility. *Cancer Prevention Research* 5, 266-275 2011. PMID: PMC3273626
  35. Sprouffske, K., Pepper, J. W. & **Maley, C. C.**: Accurate reconstruction of the temporal order of mutations in neoplastic progression. *Cancer Prevention Research* 4:1135-1144, 2011. PMID: 3131446
  36. Aktipis, C.A., Kwan, V.S.Y., Johnson, K.A., Neuberg, S.L., **Maley, C.C.**: Overlooking evolution: A systematic analysis of cancer relapse and therapeutic resistance research. *PLoS ONE*, 6(11):e26100, 2011.

37. Martens, E.A., Kostadinov, R., **Maley, C.C.**, Hallatschek, O.: Spatial Structure Increases the Waiting Time for Cancer. *New Journal of Physics, Focus Issue "Physics of Cancer"* 13:115014, 2011. PMID: PMC3375912
38. Merlo, L.M.F., Kosoff, R.E., Gardiner, K.L., **Maley, C.C.**: An in vitro co-culture model of esophageal cells identifies ascorbic acid as a modulator of cell competition. *BMC Cancer*, 11:461, 2011. PMID: PMC3213018
39. Kosoff, R.E., Gardiner, K.L., Merlo, L.M.F., Pavlov, K., Rustgi, A.K., **Maley, C.C.**: Development and Characterization of an Organotypic Model of Barrett's Esophagus. *Journal of Cellular Physiology*. 2012. **227**(6): p. 2654-2659. PMID: PMC3352665
40. Greaves, M. & **Maley, C.C.**: Clonal evolution in cancer. *Nature*. 481:306-313, 2012. PMID: PMC3367003
41. Sprouffske, K., Merlo, L.M.F., Gerrish, P.J., **Maley, C.C.**, Sniegowski, P.D.: Cancer in light of experimental evolution. *Current Biology*, 22:R762-71, 2012. PMID: PMC3457634
42. Roche, B., Hochberg, M.E., Caulin, A.F., **Maley, C.C.**, Gatenby, R.A., Missé, D., Thomas, F.: Natural resistance to cancers: a Darwinian hypothesis to explain Peto's paradox. *BMC Cancer*. 12:387, 2012. PMID: PMC3488527
43. Sprouffske, K., Aktipis, C.A., Radich, J.P., Carroll, M., Nedelcu, A.M., **Maley, C.C.**: An evolutionary explanation for the presence of cancer non-stem cells in neoplasms. *Evolutionary Applications*, 6: 92-101, 2013. PMID: PMC3567474
44. Datta, R.S., Gutteridge, A., Swanton, C., **Maley, C.C.**, Graham, T.A.: Modeling the evolution of genetic instability during tumour progression. *Evolutionary Applications* 6: 20-33, 2013. PMID: PMC3567468
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## NON-PEER REVIEWED PUBLICATIONS AND OTHER CREATIVE ACTIVITIES:

### Review Articles

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### Books and Chapters

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23. **Maley, C.C.**, E. Szabo, and B.J. Reid: Somatic Evolution in Neoplastic Progression and Cancer Prevention, in *Pre-Invasive Disease: Pathogenesis and Clinical Management*, R.C. Fitzgerald, Editor, 2011, p. 111-127.

### **Other Publications**

24. **Maley, C.C.:** Cancer: The Evolutionary Legacy by M. Greaves. *Heredity*. 88:219, 2002.

**OTHER CREATIVE ACTIVITIES** [*list other forms of creative activities such as teaching aids, syllabi, web pages, etc. Dissemination of such creative work is an essential element of criteria for review.*]

Led the committee that wrote the Wikipedia page on “Somatic Evolution.”