

Center for Evolution and Cancer University of California San Francisco Newsletter

Summer 2012

This Newsletter highlights past and upcoming events and various other items related to Cancer and Evolution



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From Unicellularity to Multicellularity and Back Again

IBECC 2013 - University of California San Francisco, June 12-16

The Center for Evolution and Cancer (CEC) and the Helen Diller Family Comprehensive Cancer Center at the University of California San Francisco will host the Second International Biannual Evolution and Cancer Conference (IBECC), June 12-16, 2013. IBECC brings together cancer researchers, clinicians, evolutionary biologists and social scientists from around the world to address the applications of evolutionary thinking to cancer research and treatment. The theme of the 2013 conference is “From Unicellularity to Multicellularity and Back Again.” The two foci are: 1) cancer suppression in the evolution of multicellularity and 2) applying insights from the evolution of unicellular organisms to the study of cancer. IBECC 2013 will feature Keynote Speaker Mel Greaves and a special performance by Baba Brinkman of “The Rap Guide to Evolution.” More information soon:

<http://cancer.ucsf.edu/evolution/conference-2013> and

<http://www.unbf.ca/vip/CEC/>

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CEC WEBINARS FALL 2012



- **Douglas E. Brash** – Yale School of Medicine.
 - Sunlight, Stochasticity, and Non-mutational Events in the Evolution of Precancers and Melanoma.
September 18th, 12 pm
 - **Mel Greaves** – Institute of Cancer Research, London.
 - Clonal architecture and evolution in childhood leukemia.
September 24th, 4 pm
 - **John Pepper** – National Cancer Institute.
 - How to avoid Acquired Drug Resistance in Cancer Therapy.
November 13th, 10 am
- For additional information go to <http://www.unbf.ca/vip/CEC/Seminars.html>

CEC PROGRAMS

The Center for Evolution and Cancer at UCSF is offering various opportunities for scientists at all levels to visit research labs and interact with researchers working at the interface between evolution and cancer. For information go to http://www.unbf.ca/vip/CEC/Visiting_program.html

POSTDOC OPPORTUNITIES IN EVOLUTION AND CANCER

- Center for Evolution and Cancer, UCSF (Athena Aktipis and Carlo Maley)
 - Application of life history theory to cancer biology
- Université Montpellier II, France (Michael Hochberg); 2 positions
 - Understanding cancer progression and chemotherapeutic treatments, employing mathematical models and/or computer modeling
 - Evolutionary models of cancer progression and therapies
- Yale University (Jeffrey Townsend)
 - Bioinformatics
- Moffitt Cancer Center (Robert Gatenby)
 - The role of accumulating mutations and loss of mitochondrial energy production to induce a cellular phase transition leading to cancer.
- Center for Computational Neuroscience at NeuroTexas Institute at St. David's HealthCare (Matthew C. Cowperthwaite)
 - Evolutionary Genetics of Glioblastoma Multiformae

For more information go to: http://www.unbf.ca/vip/CEC/Post-doc_opportunities.html

COURSES AND WORKSHOPS ON EVOLUTION AND CANCER

- A one-week summer course on Evolutionary Foundations for Medicine and Public Health – Special focus on cancer and infectious diseases – was held at the Mount Desert Island Biological Laboratory, August 6-10, 2012. Lectures were videotaped and will be available to the general public. For more information go to http://www.mdibl.org/courses/Evolution_and_Medicine/398/
- Several CEC faculty have participated in the BEYOND Center “Cancer Forum” Workshop – Evolution, development and cancer: connecting the dots – at the Arizona State University, February 9-10, 2012 (<http://cancer-insights.asu.edu/category/workshops/>).

RECENT PUBLICATIONS ON EVOLUTION AND CANCER by CEC Faculty (for more publications go to <http://www.unbf.ca/vip/CEC/Publications.html>)

- **Beckman** RA, Schemmann GS, Yeang C-H. 2012. Impact of genetic dynamics and single-cell heterogeneity on development of nonstandard personalized medicine strategies for cancer. PNAS Early Edition doi/10.1073/pnas.1203559109
- Gillies RJ, Verduzco D, **Gatenby** RA. Evolutionary dynamics of carcinogenesis and why targeted therapy does not work. Nature Reviews Cancer 12(7): 487-493
- Antolin MF, Jenkins KP, Bergstrom CT, **Crespi** BJ, De S, Hancock A, Hanley KA, Meagher TR, Moreno-Estrada A, **Nesse** RM, Omenn GS, Stearns SC. 2012. Evolution and medicine in undergraduate education: A prescription for all biology students. Evolution 66(6): 1991-2006
- **Nesse** RM, Ganten D, Gregory TR, et al. 2012. Evolutionary molecular medicine. Journal of Molecular Medicine 90(5): 509-522
- **DeGregory** J. 2012. Challenging the axiom: does the occurrence of oncogenic mutations truly limit cancer development with age? Oncogene. doi:10.1038/onc.2012.281
- Hatzikirou H, **Basanta** D, et al. 2012. 'Go or Grow': the key to the emergence of invasion in tumor progression? Math Med Biol. 29: 49-65
- **Shibata** D. 2012. Heterogeneity and Tumor History. Science 336: 304-305.
- **Pienta** KJ, Camacho DF. 2012. Disrupting the networks of cancer. Clin Cancer Res 18(10): 2801-2808
- **Ewald** PW, Swain Ewald HA. 2012. Infection, mutation and cancer evolution. J Mol Med 90(5): 535-41
- Podlaha O, Riester M, De S, **Michor** F. 2012. Evolution of the cancer genome. Trends Genet. 28:155-163
- **Basanta** D, **Gatenby** RA, **Anderson** AR. 2012. Exploiting evolution to treat drug resistance: Combination therapy and the double bind. Mol Pharm. 9: 914-921
- Martin NK, Robey IF, Gaffney EA, Gillies RJ, **Gatenby** RA, Maini PK. 2012. Predicting the safety and efficacy of buffer therapy to raise tumour pH: an integrative modelling study. Br J Cancer. 106(7): 1280-1287
- Kam Y, Rejniak KA, **Anderson** AR. 2012. Cellular modeling of cancer invasion: integration of in silico and in vitro approaches. J Cell Physiol. 227(2): 431-8
- Rejniak KA, **Anderson** AR. 2012. State of the art in computational modeling of cancer. Math Med Biol 29: 1-2

