

ISEEC 2017 Conference  
International Society for Evolution, Ecology and Cancer

Theme: Resistance, Resilience and Robustness  
<http://www.iseec.org/#conference>

**Tentative Schedule**

**Dates:** Thursday - Sunday, December 7-10, 2017

**Location:** ASU campus and Mission Palms Hotel, Tempe, AZ.

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**Thursday, December 7, 2017** (Mission Palms Hotel)

1:00pm - 8:00pm Registration

2:00pm - 3:00pm **Evolution Keynote: Paul Turner “Evolutionary robustness of oncolytic RNA viruses”**

3:00pm - 5:00pm **Session 1: Evolution and Cancer** (chair: TBD)

1. Alexander Anderson, Evolution of cancer metaphenotypes
2. Carlo Maley, Resistance Management for Cancer
3. James DeGregori, Coevolution of somatic maintenance programs and mutation rates
4. Athena Aktipis, How do multicellular bodies ‘decide’ if a cell poses a cancer threat?  
Cellular information processing is required to effectively solve Peto’s Paradox
5. Noemi Andor, The identity of surviving and extinct clones in a longitudinal study of DNA-damage therapy response in gliomas
6. Aurora Nedelcu, Exploring the role of selection in shaping cancer’s evolutionary potential and resilience

5:00pm - 6:00pm Welcome reception (wine, beer & appetizers)

6:00pm - 7:00pm **Cancer Keynote: Christina Curtis “Quantifying the evolutionary dynamics of therapeutic resistance and metastasis”**

Dinner on your own

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**Friday, December 8, 2017** (ASU, Student Pavilion)

7:30am - 8:00am walk from Mission Palms Hotel to the ASU Student Pavilion (20 minute walk)

8:00am - 9:00am Light Breakfast (Room Senita C)

8:00 am - 6:00 pm Registration

9:00am -10:00am **Plenary: Deborah Gordon “The ecology of collective behavior” (Room Senita A)**

10:00am-10:30am Poster flash talks (Chair: Amy Boddy) Room Senita B

10:30am - 11:00am Coffee Break Room Senita C

11:00am - 12:20pm **Parallel Sessions**

**Parallel session 2A: Ecosystem robustness/resilience** (Chair: Athena Aktipis) Room Senita A

1. Beata Ujvari, Adaptive evolution in the face of a transmissible cancer
2. Frédéric Thomas, Oncobiota, an underappreciated component of animal evolutionary ecology
3. Michael J. Metzger, Contagious Clam Cancer: Evolution at the intersection of cancer and infectious disease
4. Chandler Gatenbee, The Immunogenic Bottleneck: Get Lucky or Get Smart

**Parallel session 2B: Cancer Evolutionary Genomics** (chair: TBD) Room Senita B

1. Diego Mallo, PISCA: a new phylogenetic method for the reconstruction of somatic evolution using somatic chromosomal alteration data
2. Vincent Cannataro, The likelihood of heterogeneity or additional mutation in KRAS or associated oncogenes to compromise targeting of oncogenic KRAS G12C
3. Luca Ermini, Evolutionary selection of cancer risk alleles
4. Jeffrey Townsend, Effect sizes of somatic mutations in cancer: calculating the intensity of natural selection

12:20pm - 1:45pm Lunch: Panel on the Future of Evolution, Ecology and Cancer Room Senita C

1:45pm -2:45pm **Plenary: Sunetra Gupta “Evolution and maintenance of pathogen population structure under immune selection” Room Senita A**

2:45pm - 3:00pm Coffee Break Room Senita C

3:00pm - 4:00pm **Parallel sessions**

**Parallel session 3A: Evolution of Therapeutic Resistance** (chair : TBD) Room Senita A

1. Jill Gallaher, Adaptive vs continuous cancer therapy: Exploiting space and trade-offs in drug scheduling
2. John Nagy, A model of natural selection predicts treatment resistance in prostate cancer
3. Daniel Nichol, Stochasticity in the Genotype-Phenotype Map: Implications for the Robustness and Persistence of Bet-Hedging

**Parallel session 3B: Evolution of Cancer Suppression Mechanisms/Organism Robustness** (chair: Joshua Schiffman) Room Senita B

1. Marc Tollis, Tempo and Mode of Peto's Paradox: A Molecular Evolutionary Approach to Understanding Cancer Suppression
2. Benjamin Roche, Non-oncogenic infectious agents modulate cancer development through alteration of immune responses
3. Amy Boddy, A large-scale evaluation of neoplasia occurrence and life history traits in vertebrates

4:00pm - 5:30pm Poster session and Reception (wine, beer & appetizers) Room Senita C

5:30pm - 6:30pm **Public lecture: “Transmissible cancers in dogs and Tasmanian devils” Room Senita A**

6:45pm Walk back to Mission Palms Hotel

7:30pm Invited Speaker & Program Committee Dinner, House of Tricks - Tempe

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**Saturday, December 9, 2017** (ASU, Student Pavilion)

7:30am - 8:00am walk from Mission Palms Hotel (20 minute walk)

8:00am - 9:00am Light Breakfast Room Senita C

8:00am-6:00pm: Registration

9:00am -10:00am **Plenary: Inigo Martincorena “Somatic evolution in normal tissues”  
Room Senita A**

10:00am -10:30am Coffee Break Room Senita C

10:30am - 12:30pm **Parallel Sessions**

**Parallel session 4A: Evolution of therapeutic resistance** (Chair: Carlo Maley) Room Senita A

1. Ahmet Acar, Quantitative Measurements of Treatment Resistance in Non-Small Cell Cancer
2. Rob Noble, Spatial competition constrains resistance to targeted cancer therapy
3. Jeffrey Chuang, Evolutionary Dynamics of Response to Chemotherapies in Breast Cancer Xenografts
4. Benjamin Werner, Forecasting resistance evolution in cancer from liquid biopsies
5. Nara Yoon, Optimal Chemotherapy Scheduling Based on a Pair of Collaterally Sensitive Drugs
6. Andriy Marusyk, Acquired resistance to targeted therapies evolves through gradual, therapy-directed trajectories.

**Parallel session 4B: Cell viability in the face of genomic alterations** (Chair: Michael Hochberg) Room Senita B

1. Violet Kovacheva, Automated nuclear grading of Ductal carcinoma in situ
2. Enrico Borriello, Network duplication reinforces phenotypes by increasing attractor basin sizes
3. Kelsey Temprine, Evolvability in melanoma mediated by DNA polymerase kappa
4. Peter J. O'Brien, A single protein modulates stressed cell resilience
5. Henry Heng, Distinguishing gene mutation mediated micro-cellular evolution from karyotype reorganization mediated macro-cellular evolution in cancer
6. Kimberly J. Bussey, Non-inherited mutation is constrained by genomic evolutionary history in non-intuitive ways

12:30pm -2:00pm Lunch (Optional **science writing workshop with George Johnson**) Room Senita C

2:00pm - 3:00pm **Plenary: Pablo Marquet “Diversity, transitions and robustness in ecosystems” Room Senita A**

3:00pm - 3:30pm Coffee Break Room Senita C

3:30pm - 4:30pm **Parallel Sessions**

**Parallel session 5A: Theoretical evolutionary biology of robustness** (Chair: Amy Boddy)  
Room Senita A

1. David Basanta, Define the bone ecosystem: homeostasis and selection in prostate cancer to bone metastasis
2. Weini Huang, Revealing the evolutionary mechanisms of spatial mixing of sub-clones in tumour by a mathematical model and colorectal tumour samples
3. Dominik Wodarz, Feedback regulation in cancer: evolutionary dynamics and treatment

**Parallel session 5B: Cancer prevention as resilience/robustness in the face of somatic challenges** (Chair: Aurora Nedelcu) Room Senita B

1. Elena Svenson, Quantifying the effects of advantageous, deleterious, and neutral passenger mutations on VAF architecture
2. Angelo Fortunato, Development of novel model organisms in cancer research
3. Pierre Martinez, Evolution of Barrett’s Esophagus through space and time at single-crypt and whole-biopsy levels

4:30pm **Plenary Jake Scott “Learning and perturbing the evolutionary mechanisms driving therapeutic resistance in cancer” Room Senita A**

5:30pm -6:15pm International Society for Evolution, Ecology and Cancer business meeting ??

6:30pm-7:00 Reception (wine, beer & appetizers) Room Senita C

7:00pm -9:00pm **Dinner (Mission Palms Hotel)**

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**Sunday, December 10, 2017** (Mission Palms Hotel)

9:00am - 10:00am Networking Breakfast

10:00am **Plenary Grazyna Jasienska “Evolution of female reproduction and breast cancer: it was never about the 3 Rs”**

11:00am **Plenary Bruce Tabashnik “Insect resistance to transgenic crops: Lessons from the first billion acres”**

12:00pm Closing remarks from Carlo Maley and Athena Aktipis

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## Posters

1. James Cunningham, Cancer Ecology: A Registry Study of Newly Diagnosed Patients with Cancer from an Ecologic Perspective
2. Cassandra Balsley, The Effect of Inbreeding and Life History Traits on the Risk of Cancer Mortality in Dogs
3. Angelo Fortunato, Eco-evolution of ductal carcinoma: why does cancer develop in mammary gland ducts?
4. Feng Fu, Mathematical Models of Combination Cancer Immunotherapy Based on Adoptive Cell Transfer
5. Chaya Fux, Optimization of Cell Growth in HYPERFlask for Therapeutic Resistance Selection
6. Ryan Gutenkunst, Leveraging tumor mutational spectra when calling genetic variants
7. Valerie Harris, Life history strategies, Peto's paradox, and tumor incidence in Class Aves
8. Tara Harrison, Risk Factor Modeling of Neoplasia in Madagascar lesser hedgehog tenrecs (*Echinops telfairi*)
9. Zheng Hu, Phylogeographic evidence for early metastatic dissemination in colorectal cancer
10. Artem Kaznatcheev, Dark Selection for resistance without a tumour burden U-curve
11. John T. Kennedy III, The Evolution of Radiation Sensitivity During Treatment with Targeted Therapy in EGFR-Mutant NSCLC
12. Ji Young Li, Sharks do get cancer
13. Katherine Lui, Investigating the eco-evolutionary dynamics of metastasis
14. Alex May, Transmissible Cancer and Eusociality: 'Sharing' Selfishness with Others
15. Frederic Mery, The relationship between cancer progression and social environment in *Drosophila*
16. Daria Miroshnychenko and Etienne Baratchart, Cell fusion mediated parasexual recombination as a novel source of intra-tumor heterogeneity
17. Aleesa Monaco, Coevolving cancer hallmarks: The angiogenic switch is modulated by clonal selection on proliferation
18. Shrinath Narayanan, Population genetics in oncology
19. Aurora Nedelcu, Phenotypic state affects resistance and response to pH changes in a lung cancer cell line
20. Paul Nelon, Intercellular Competition and the Inevitability of Cancer, Senescence, and Aging
21. Javad Noorbakhsh, Distribution-based measures of tumor heterogeneity are sensitive to mutation calling and lack strong clinical predictive power
22. Derek Park, Deep Chemotherapy: Machine-Learned Strategies to Adaptively Manage Chemotherapy and Immune Response
23. Caspian Robertson, This Beautiful Monster - an education garden installation at Arizona State University exhibiting the beauty of fasciation in cacti
24. Laure Talarmin, Evolution of resistance determined by uncompetitive growth and competitive regrowth in mouse model of lymphoma treatment
25. Tazzio Tissot, The evolution of resistance and tolerance to cancer

26. Robert Vander Velde, Dissecting evolutionary trajectories toward acquired resistance in EML4-ALK lung cancers
27. Will Walker, Life History, Cancer Incidence, and Cancer Mortality in Non-Human Primates
28. Jeffrey West, Dissemination timing and doubling rate drive selection in metastatic tumors
29. Marc Williams, Measuring and predicting evolution evolution in human cancers with genomics
30. Drew FK Williamson, Emergence of chemotherapeutic resistance in a evolutionary game theoretic model
31. Ashley Zehnder, Development of an online tumor database for zoological and exotic species