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# JAMES C. COSTELLO, PH.D.

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## Research Interests

Systems biology, Bioinformatics, urological cancers, mathematical models, cancer genomics, data integration, algorithms, gene regulatory network inference, machine learning and translating systems-level models into testable hypotheses.

## EDUCATION

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<b>PhD</b>	<b>Informatics</b> , Indiana University, Bloomington School of Informatics	August 2009
<b>MS</b>	<b>Bioinformatics</b> , Indiana University, Bloomington School of Informatics	August 2004
<b>BS</b>	<b>Biology</b> , University of Iowa	May 2002
<b>BS</b>	<b>Economics</b> , University of Iowa	May 2002

## RESEARCH AND PROFESSIONAL EXPERIENCE

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<b>Associate Professor (Tenure awarded 2022)</b> University of Colorado Anschutz Medical Campus, Aurora, CO	2020 to present
<b>Co-Director of the Pharmacology Training Program</b> University of Colorado Anschutz Medical Campus, Aurora, CO	2022 to present
<b>CRIO Council Member</b> University of Colorado Anschutz Medical Campus, Aurora, CO	2022 to present
<b>Co-Director of the Biostatistics and Bioinformatics Shared Resource</b> University of Colorado Cancer Center, Bioinformatics Core University of Colorado Anschutz Medical Campus, Aurora, CO	2019 to present
<b>Faculty Member</b> Pharmacology Computational Biosciences Biomedical Science Program Cancer Biology Medical Science Training Program University of Colorado Cancer Center University of Colorado Anschutz Medical Campus, Aurora, CO	2014 to present
<b>Director of Computational/Systems Biology DREAM Challenges</b> Sage Bionetworks, Seattle, WA	2013 to present
<b>Assistant Professor</b> Department of Pharmacology University of Colorado Anschutz Medical Campus, Aurora, CO	2014 to 2020
<b>Consultant, Enbix</b> Cambridge, MA	2012 to 2013
<b>Consultant, Selventa</b> Cambridge, MA	2012 to 2013
<b>Instructor</b> Brigham and Women's Hospital Harvard Medical School, Boston MA Research Program of Men's Health: Aging and Metabolism	2013 to 2013
<b>Postdoctoral Research Associate</b>	2009 to 2013 Costello - 1

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HHMI/Boston University, Boston, MA  
Advisor: James J. Collins, Ph.D.

<b>Consultant, Vertex Pharmaceuticals</b> Cambridge, MA	2011
<b>Research Associate/Graduate Student</b> Indiana University, Bloomington, IN Advisors: Mehmet M Dalkilic, Ph.D. & Justen R Andrews, Ph.D.	2006 to 2009
<b>Assistant Staff Scientist</b> Center for Genomics and Bioinformatics, Bloomington, IN	2004 to 2006
<b>Associate Instructor/Graduate Student</b> Indiana University, Bloomington, IN Advisor: Mehmet M Dalkilic, Ph.D.	2003 to 2004

## **PUBLICATIONS (H-INDEX = 34; I-10-INDEX = 56)**

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### **Google Scholar:**

<https://scholar.google.com/citations?user=zLSCHnkAAAAJ&hl=en>

### **Colorado Profiles:**

<https://profiles.ucdenver.edu/display/3663664>

### **Complete List of published works in MyBibliography**

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/47290117/?sort=date&direction=descending>

Note that underlined names are members of the Costello lab or members of the BBSR that Dr. Costello directs.

### *Preprints*

1. Teemu D Laajala, Varsha Sreekanth, Alex Soupir, Jordan Creed, Federico CFG Calboli, Kalaimathy Singaravelu, Michael Orman, Christelle Colin-Leitzinger, Travis Gerke, Brooke L Fidler, Svitlana Tyekucheva, James Costello. curatedPCaData: Integration of clinical, genomic, and signature features in a curated and harmonized prostate cancer data resource. *bioRxiv* 10.1101/2023.01.17.524403 (January 17, 2023).
2. Gabriele Romano, Francesca Paradisco, John P. Miller, Roger J. Liang, Jennifer A. Wargo, Francesca Tarballi, **James C. Costello**, Lawrence Kwong. Microparticle-delivered Cxcl9 delays the relapse of BRAF inhibitor-treated melanoma. *bioRxiv* online May 25, 2022.
  - a. In revision at *Cancer Immunology Research*.
3. Florus C. de Jong, Teemu D. Laajala, Robert F. Hoedemaeker, Kimberley R. Jordan, Sébastien Rinaldetti, Angelique M.A. van der Made, Egbert R. Boevé, Deric K.E. van der Schoot, Bart Nieuwkamer, Emiel A.M. Janssen, Tokameh Mahmoudi, Joost L. Boormans, Dan Theodorescu\*, **James C. Costello\***, Tahlita C.M. Zuiverloon.\* Non-muscle Invasive Bladder Cancer Molecular Subtypes Predict Differential Response to Intravesical Bacillus Calmette-Guérin. *medRxiv* online Dec, 5 2021(\*joint senior authors)
  - a. Positive reviews from *Science Translational Medicine* – In revision
4. Robert T Jones, Andrew Goodspeed, Maryam C Akbarzadeh, Mathijs Scholtes, Hedvig Vekony, Annie Jean, Charlene B Tilton, Michael V Orman, Molishree Joshi, Teemu D. Laajala, Mahmodd Javaoid, Eric T Clambey, Ryan Layer, Sarah Parker, Tokameh Mahmoudi, Tahlita Zuiverloon, Dan Theodorescu, **James C Costello**. NPEPPS regulates intracellular import and sensitivity to cisplatin by interaction with volume regulated anion channels. *bioRxiv* online March 10, 2021
5. Rani K Powers, Anthony Sun, **James C Costello**. GSEA-InContext Explorer: An interactive visualization tool for putting gene set enrichment analysis results into biological context. *bioRxiv* 10.1101/659847 (June 4, 2019).
6. Brian C Ross, Fabio Anaclerio, Nicola Lorusso, Mario Ventura, **James C Costello**. Measuring chromosome conformation by fluorescence microscopy. *bioRxiv* 10.1101/798512 (October 16, 2019).

### *Submitted*

1. Marisa G. Stahl, Jessica R. Shaw, Neetha P. Eduthan, Angela L. Rachubinski, Keith P. Smith, Belinda E. Estrada, Matthew D. Galbraith, Ronald J. Sokol, Sameer Chavan, Laura A. Leaton, Katherine M. Kichula, Lucas A. Gillenwater, **James C. Costello**, Paul J. Norman, Jill M. Norris, Edwin Liu, Joaquin M. Espinosa. Multi-Omics Assessment of Genetic Risk for Celiac Disease in Down Syndrome *Journal of*

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*Pediatric Gastroenterology & Nutrition*. Submitted October, 2022

2. Samantha N. Thomas, Brian F. Niemeyer, Alexander J. Kaiser, Joaquin M. Espinosa, Kelly D. Sullivan, [Andrew Goodspeed](#), **James C. Costello**, Rodrigo Cañas-Arranz, Adolfo García-Sastre, Kambez H. Benam. Trisomy 21 Leads to Immune Hyperresponsiveness and Differential Ciliary Function in Response to Influenza Infection. *Communications Biology*. Resubmitted May, 2022

Refereed (Invited articles are noted)

## 2022

1. Faye A. Camp, [Tonya M. Brunetti](#), Michelle M. Williams, Jessica L. Christenson, [Varsha Sreekanth](#), **James C. Costello**, Zachary L.Z. Hay, Ross M. Kedl, Jennifer K Richer, Jill E Slansky. Antigen expressed by breast cancer cells undergoing EMT stimulate cytotoxic CD8+ T cell immunity. *Cancers* (Accepted)
2. Sébastien Rinaldetti, Qiong Zhou, Joshua M. Abbott, Florus C. DeJong, Hector Esquer, **James C. Costello**, Dan Theodorescu, Daniel V. LaBarbera. High-content drug discovery targeting molecular bladder cancer subtypes. *International Journal of Molecular Sciences* (accepted)
3. Dongmei Sun, Thanh M. Nguyen, Robert J. Allaway, Jelai Wang, Verena Chung, Thomas V Yu, Michael Mason, Isaac Dimitrovsky, Lars Ericson, Hongyang Li, Yuanfang Guan, Ariel Israel, Alex Olar, Balint Armin Pataki, RA2 DREAM Challenge Community, Gustavo Stolovitzky, Justin Guinney, Percio S. Gulko, Mason B. Frazier, Jake Y. Chen\*, **James C. Costello\***, S. Louis Bridges, Jr.\* A Crowdsourcing Approach to Develop Machine Learning Models to Quantify Radiographic Joint Damage in Rheumatoid Arthritis. *JAMA Open Network* 5(8):e2227423
4. Alexandra J Lee, Dallas L Mould, Jake Crawford, Dongbo Hu, [Rani K Powers](#), Georgia Doing, **James C Costello**, Deborah A Hogan, Casey S Greene. Generative neural networks separate common and specific transcriptional responses. *Genomics, Proteomics, and Bioinformatics*. (accepted)
5. Jessica Y Hsu, Stephanie Nance, Jenean O'Brien, Veronica M Wessells, [Andrew E Goodspeed](#), Jared C Talbot, Sharon L Amacher, Paul Jedlicka, Joshua C Black, **James C Costello**, Adam D Durbin, Kristin B Artinger, Heide L Ford. Six1 is a master regulator of the Rhabdomyosarcoma undifferentiated state. *Cell Reports* 38(5):110323.
6. Lomeli C Shull, Hyun Min Kim, Ezra S Lencer, Susumu Goyama, Mineo Kurokawa, **James C Costello**, Kenneth Jones, Kristin B Artinger. PRDM proteins control Wnt/B-catenin activity to regulate craniofacial chondrocyte differentiation *Development* 149(4):dev200082.

## 2021

7. R Alejandro Marquez-Ortiz, Maria J Contreras-Zarate, Karen LF Alvarez-Eraso, Vesna Tesic, Gina Kwak, Zachary Littrell, **James C Costello**, [Varsha Sreekanth](#), D Ryan Ormond, Sana D Karam, Peter Kabos, Diana M Cittelly. *IL13TRa2 promotes proliferation and outgrowth of breast cancer brain metastasis*. *Clinical Cancer Research* 27(22):6209-6221.
8. Lauren K Jillson, Gabriel A Yette, [Teemu D Laajala](#), Wayne D Tilley, **James C Costello**, Scott D Cramer. Androgen receptor signaling in prostate cancer genomic subtypes. *Cancers* 13(13): 3255-3269.
9. Evelyn K Bordeaux, Joseph L Sottnik, Sanjana Mehrotra, [Sarah E Ferrara](#), [Andrew E Goodspeed](#), **James C Costello**, Mathew J Sikora. Mediator of DNA damage checkpoint 1 (MDC1) is a novel estrogen receptor co-regulator in invasive lobular carcinoma of the breast. *Molecular Cancer Research* 10.1158/1541-7789.MCR-21-0025
10. Lauren K Jillson, Leah C Rider, Lindsey U Rodrigues, Lina Romero, Anis Karimpour-Fard, Cera Nieto, Claire Gillette, Kathleen Torkko, [Etienne Danis](#), Elizabeth E Smith, Rosalie Nolley, Donna M Peehl, M Scott Lucia, **James C Costello**, Scott D Cramer. MAP3K7 loss drives enhanced androgen signaling and independently confers risk of recurrence in prostate cancer with joint loss of CHD1. *Molecular Cancer Research* 10.1158/1541-7786.MCR-20-0913.
  - a. Press in [Reuters](#)
  - b. Press in the [Colorado Cancer Blog](#)
11. Adi L Tarca, Balint Armin Pataki, Roberto Romero, Marina Sirota, Yuanfang Guan, Rintu Kuntum, Nardhy Gomez-Lopez, Bogdan Done, Gaurav Bhatti, Thomas Yu, Gaia Andrioletti, Tinnakorn Chaiworapongsa, The DREAM Preterm Birth Prediction Challenge Consortium, Sonia S Hassan, Caur-Dong Hsu, Nima Aghaeepour, Gustavo Stolovitzky, Istvan Csabai, **James C Costello**. Crowdsourcing assessment of maternal blood multi-omics for predicting gestational age and preterm birth *Cell Reports Medicine* 2(6): 100323.
  - c. Press release from [Wayne State University](#)

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12. Adam Mueller, Miles Piper, [Andrew Goodspeed](#), Shiv Bhuvane, Jason Williams, Shilpa Bhatia, Andy Phan, Benjamin Van Court, Kathryn Zolman, Brisa Peña, Ayman Oweida, Sara Zakem, Cheryl Meguid, Michael Knitz, Laurel Darragh, Thomas Bickett, Jacob Gadwa, Luisa Mestroni, Matthew Taylor, Kimberly Jordan, Peter Dempsey, M. Lucia, Martin McCarter, Marco Del Chiaro, Wells Messersmith, Richard Schulick, Karyn Goodman, Michael Gough, Casey Greene, **James C Costello**, Antonio Galvao Neto, David Lagares, Kirk Hansen, Adrie van Bokhoven, and Sana Karam. Induction of ADAM10 by RT drives fibrosis, resistance, and EMT in pancreatic cancer. *Cancer Research* canres.CAN-20-3892-A.2020.

## **2020**

13. Molishree Joshi, Jihye Kim, Angelo D'Alessandro, Emily Monk, Kimberley Bruce, Hanan Elajaili, Eva Nozik, [Andrew Goodspeed](#), **James C Costello**, Isabel Schlaepfer. CPT1A Over-expression increases reactive oxygen species in the mitochondria and promotes antioxidant defenses in prostate cancer. *Cancers*. 12(11): 3431.
14. Megan M Tu, Hany A Abdel-Hafiz, Robert T Jones, Annie Jean, Katelyn J Hoff, Jason E Duex, Ana Chauca-Diaz, **James C Costello**, Garrett M Dancik, Beth A Jirón Tamburini, Bogdan Czerniak, Jonathan Kaye, and Dan Theodorescu. Inhibition of CCL2 receptor, CCR2, enhances tumor response to 2 immune checkpoint therapies. *Communications Biology*. (accepted).
15. Casey Greene, **James C Costello**. Biologically informed neural network predicts drug responses. *Cancer Cell*. 38(5):613-615.
16. Tyler S McCann, Janet K Parrish, Joseph Hsieh, Marybeth Sechler, Lays M Sobral, Chelsea Self, Kenneth L Jones, [Andrew Goodspeed](#), **James C Costello**, Paul Jedlicka. KDM5A and PHF2 positively control expression of pro-metastatic genes repressed by EWS/Flit1, and promote growth and metastatic properties in Ewing sarcoma. *Oncotarget*. 11(43):3818.
17. Kimberly Jordan, Matthew J Sikora, Jill E Slansky, Angela Minic, Jennifer K Richer, Marisa R Moroney, Junxiao Hu, Rebecca J Wolsky, Zachary L Watson, Tomomi M Yamamoto, **James C Costello**, Aaron Clauset, Kian Behbakht, T Rajendra Kuma, Benjamin G Bitler. The capacity of the ovarian cancer tumor microenvironment to integrate inflammation signaling conveys a shorter disease-free interval. *Clinical Cancer Research* 10.1158/1078-0432.CCR-20-1762.
18. Josh L Stern, Hibshman G, Hu K, [Sarah E Ferrara](#), **James C Costello**, Kim W, Pablo Tamayo, Thomas R Cech, Franklin F Huang. Mesenchymal and MAPK Expression Signatures Associate with Telomerase Promoter Mutations in Multiple Cancers. *Molecular Cancer Research* 10.1158/1541-7786.MCR-19-1244.
19. ImmGen at 15. *Nature Immunology* 10.1038/s41590-020-0687-4.
20. Hengbo Zhou, Blevins MA, Hsu JY, Kong D, Galbraith MD, Goodspeed A, Culp-Hill R, Oliphant MUJ, Ramirez D, Zhang L, Trinidad-Pineiro J, Mathews Griner L, King R, Barnaeva E, Hu X, Southall NT, Ferrer M, Gustafson DL, Regan DP, D'Alessandro A, **James C Costello**, Patnaik S, Marugan J, Zhao R, Heide L Ford. Identification of a Small-Molecule Inhibitor That Disrupts the SIX1/EYA2 Complex, EMT, and Metastasis. *Cancer Research* 10.1158/0008-5472.CAN-20-0435.
21. Lays M Sobral, Hannah M Hicks, Janet K Parrish, Tyler S McCann, Joseph Hsieh, [Andrew Goodspeed](#), **James C Costello**, Joshua C Black, Paul Jedlicka. KDM3A/Ets1 epigenetic axis contributes to PAX3/FOXO1-driven and independent disease-promoting gene expression in fusion-positive Rhabdomyosarcoma. *Molecular Oncology* 14(10):2471-2486.
22. Shanshan Pei, Daniel A Pollyea, Annika Gustafson, Brett M Stevens, Mohammad Minhajuddin, Rui Fu, Kent A Riemondy, Austin E Gillen, Ryan M Sheridan, [Jihye Kim](#), **James C Costello**, Maria L Amaya, Anagha Inguva, Amanda Winters, Haobin Ye, Anna Krug, Courtney L Jones, Biniam Adane, Nabilah Khan, Jessica Ponder, Jeffrey Schowinsky, Diana Abbott, Andrew Hammes, Jason R Myers, John M Ashton, Travis Nemkov, Angelo D'Alessandro, Jonathan A Gutman, Haley E Ramsey, Michael R Savona, Clayton A Smith, Craig T Jordan. Monocytic subclones confer resistance to Venetoclax-based therapy in acute myeloid leukemia patients. *Cancer Discovery* 10:536-51.

## **2019**

23. [Rani K Powers](#), Rachel Culp-Hill, Michael Ludwig, Keith Smith, Kate Waugh, Ross Minter, Katie Tuttle, Angela Rachubinski, Ross Granrath, Rebecca Burgoyne, Angelo D'Alessandro, **James C Costello**, Kelly D Sullivan\*, Joaquin M Espinosa\*. Trisomy 21 disrupts tryptophan catabolism toward production of neurotoxic metabolites via the interferon-inducible kynurenine pathway. *Nature Communications* 10:4766.
24. Satoshi Washino, Leah C Rider, Lina Romero, Lauren Jillson, **James C Costello\***, Scott D Cramer\*. Loss of MAP3K7 sensitizes prostate cells to Dinaciclib and DNA damaging agents through disruption of

- homologous recombination. *Molecular Cancer Research*. doi:10.1158/1541-7786.MCR-18-1335 (\*equal contribution)
- a. Press from [Colorado Cancer Blog](#)
  25. [Teemu D Laajala](#), Travis Gerke, Svitlana Tyekucheva, **James C Costello**. Modeling genetic heterogeneity of drug response and resistance in cancer. *Current Opinions in Systems Biology*. 17: 8-14. (invited article)
  26. [Andrew Goodspeed](#), [Annie Jean](#), **James C Costello**. A whole-genome CRISPR screen identifies a role of MSH2 in cisplatin-mediated cell death in muscle-invasive bladder cancer. *European Urology* 75(2):242-250.
    - b. Press in the [Oncology Learning Network](#)
    - c. Commentary in [European Urology](#)
  27. Michael UJ Oliphant, Melanie Y Vincent, Matthew Galbraith, Ahwan Pandey, Vadim Zaberezhnyy, Pratyaydipta Rudra, K R Johnson, **James C Costello**, Debashis Ghosh, James V DeGregori, Joaquin M Espinosa, Heide L Ford. Six2 mediates late-stage metastasis via direct regulation of Sox2 and induction of a cancer stem cell program. *Cancer Research*. 79(4):720-734.
  28. Megan M Tu, Francis YF Lee, Robert T Jones, Abigail K Kimball, Elizabeth Saravia, Robert F Graziano, Brianne Coleman, Krista Menard, Jun Yan, Erin Michaud, Han Chang, Hany Abdel-Hafiz, Andrii Rozhok, Jason E Duex, Neeraj Agarwal, Ana Chauca-Diaz, Linda K Johnson, Terry L Ng, John C Cambier, Eric T Clambey, **James C Costello**, Alan J Korman, Dan Theodorescu. Targeting DDR2 enhances tumor response to anti-PD1 immunotherapy. *Science Advances*. 5(2):eaav2437.
  29. [Brian Ross](#), **James C Costello**. Improved inference of chromosome conformation from images of labeled loci. *F1000Research* 7(ISCB Comm J):1521 (doi: [10.12688/f1000research.16252.1](https://doi.org/10.12688/f1000research.16252.1))

## 2018

30. Michael Morgan, Brent Fitzwalter, [Rani K Powers](#), Charles R Owens, Graciela Gamez, **James C Costello**, Dan Theodorescu, and Andrew Thorburn. (2018) Selection for metastasis leads to increased sensitivity to lysosomal inhibitors. *Proceedings of the National Academy of Sciences* 115(36):E8479-E8488.
31. [Brian C Ross](#), [Mayla Boguslav](#), [Holly Weeks](#), **James C Costello** (2018) Modeling heterogeneous populations using Boolean networks. *BMC Systems Biology* 12(1):64.
32. [Andrew Goodspeed](#), [Annie Jean](#), Dan Theodorescu, **James C Costello**. (2018) A gene expression signature predicts bladder cancer cell line sensitive to EGFR inhibition. *Bladder Cancer* 4(3):269-282.
33. Diogo M Camacho, Katherine M Collins, [Rani K Powers](#), **James C Costello\***, James Collins\*. (2018) Next-generation machine learning for biological networks *Cell* 173:1581-92. (\*Co-senior author)
  - d. Auffray C and De Meulder B: F1000Prime Recommendation of [Camacho DM et al., *Cell* 2018 173(7):1581-1592]. In F1000Prime, 16 Sep 2019; 10.3410/f.733392063.793564997
34. Tahlita Zuiverloon, Florus C. de Jong, **James C Costello**, Dan Theodorescu. (2018) Systematic Review: Characteristics and preclinical uses of bladder cancer cell lines. *Bladder Cancer* 4(2):169-183.
35. [Rani Powers](#), Harrison Pielke-Lombardo, [Andrew Goodspeed](#), Aik-Choon Tan, **James C Costello** (2018) GSEA-InContext: Identifying novel and common patterns in expression experiments. *Bioinformatics* 34(13):i555-64.
  - e. *Proceedings paper at the 2018 ISMB conference*
  - f. *Winner of the Ian Lawson Von Toch Memorial Award for Outstanding Student Paper*
  - g. [Colorado Cancer Blog post about Rani Powers](#)
36. Rebecca L Vartuli, Hengbo Zhou, Lingdi Zhang, [Rani K Powers](#), Jared Klarquist, Pratyaydipta Rudra, Melanie Y Vincent, Debashis Ghosh, **James C Costello**, Ross M Kedl, Jill E Slansky, Rui Zhao, Heide L Ford. (2018) Eya3 enhances breast cancer progression via threonine phosphatase mediated upregulation of PD-L1 and resultant immune suppression. *JCI* 128(6):2535-2550.

## 2017

37. Josh Lewis Stern, Richard D. Pauczek, Franklin W. Huang, Mohamoud Ghandi, Ronald Nwumeh, **James C Costello**, Thomas R Cech. (2017) Allele-specific DNA methylation and its interplay with epigenetic histone marks at promoter-mutated TERT genes. *Cell Reports* 21(13):3700-3707.
38. Fatemeh Seyednasrollah<sup>†</sup>, Devin C Koestler<sup>†</sup>, Tao Wang<sup>†</sup>, Stephen R Piccolo, Roberto Vega, Russ Greiner, Christiane Fuchs, Eyal Gofer, Luke Kumar, Russell D Wolfinger, [Kimberly Kanigel Winner](#), J Christopher Bare, Elias Chiabub Neto, Thomas Yu, Liji Shen, Kald Abdallah, Thea Norman, Gustavo Stolovitzky, PCC-DREAM Community, Howard Soule, Christopher J Sweeney, Charles J Ryan, Howard I Scher, Oliver Sartor, Laura L Elo<sup>‡</sup>, Fang L Zhou<sup>‡</sup>, Justin Guinney<sup>‡</sup>, **James C Costello**<sup>‡</sup> (2017) A DREAM

Challenge to build prediction models for short term discontinuation of docetaxel in metastatic castration-resistant prostate cancer. **JCO Clinical Cancer Informatics** 1:1-15.

- h. *Selected as a top 3 paper for the IMIA yearbook of Medical Informatics 2018 in the section 'Cancer Informatics'*
  - i. *Colorado Cancer blog post*
  - j. *Business wire post. Picked up my 18 new outlets*
39. Kimberly Kanigel Winner and **James C Costello**. A spatiotemporal model to simulate chemotherapy regimens for heterogeneous bladder cancer metastases to the lung. (2017) **Pacific Symposium for Biocomputing** 22:611-622.
  40. Justin Guinney<sup>†</sup>, Tao Wang<sup>†</sup>, Teemu D Laajala<sup>†</sup>, Prostate Cancer Challenge DREAM Community, Kimberly Kanigel Winner, J Christopher Bare, Elias Chaibub Neto, Suleiman A Khan, Gopalacharyulu Peddinti, Antti Airola, Tapio Pahikkala, Tuomas Mirtti, Thomas Yu, Brian M Bot, Liji Shen, Kald Abdallah, Thea Norman, Stephen Friend, Gustavo Stolovitzky, Howard Soule, Christopher J Sweeney, Charles J Ryan, Howard I Scher, Oliver Sartor, Yang Xie, PhD<sup>‡</sup>, Tero Aittokallio<sup>‡</sup>, Fang Liz Zhou<sup>‡</sup> and **James C Costello**<sup>‡</sup> (2017) Prediction of overall survival for patients with metastatic castration-resistant prostate cancer: development of a prognostic model through a crowdsourced challenge with open clinical trial data. **Lancet Oncology** 18(1):132-142.
    - k. *Elias Tillandz prize – best 2017 paper from the University of Turku*
  41. Michael L. Nickerson, Nicolle Witte, Kate M. Im, Sevilya Turan, Charles Owens, Kevin Misner, Shirley X Tsang, Zhiming Cai, Song Wu, Michael Dean, **James C Costello** and Dan Theodorescu (2017) Molecular analysis of urothelial cancer cell lines for modeling tumor biology and drug response. **Oncogene** 36(1):35-46.
    - l. *Colorado Cancer blog post*
  42. Hengbo Zhou and **James C Costello** (2017) All paths lead to TRIM25. **Trends in Cancer** 3(10):673-5. (*invited*)
  43. Teemu D. Laajala, Justin Guinney, and **James C Costello**. Community mining of open clinical trial data. **Oncotarget** 8(47):81721-2. (*invited*)

## 2016

44. Forest Andrews, Qiong Tong, Kelly D Sullivan, Evan M Cornett, Yi Zhang, Muzaffar Ali, JaeWoo Ahn, Ahway Pandey, Angela H Guo, Brian D Strahl, **James C Costello**, Joaquin M Espinosa, Scott B Rothbart, Tatiana G Kutateladze (2016) Multivalent chromatin engagement and inter-domain crosstalk regulate MORC3 ATPase. **Cell Reports** 16(12):3195-207.
45. Neeraj Agarwal, Garrett M Dancik, Andrew Goodspeed, **James C Costello**, Charles Owens, Jason E. Duex and Dan Theodorescu (2016) GON4L drives cancer growth through a YY1-androgen receptor-CD24 axis. **Cancer Research** canres. 1099.2016.
46. Julio Saez-Rodriguez, **James C. Costello**, Stephen H. Friend, Michael R. Kellen, Lara Mangravite, Pablo Meyer, Thea Norman, and Gustavo Stolovitzky (2016) Crowdsourcing biomedical research: leveraging communities as innovation engineers. **Nature Reviews Genetics** 17(8):470-86.
  - m. *Pacific Standard post. Why Science Should be Crowdsourced – Sometimes.*
47. Andrew Goodspeed, Laura M Heiser, Joe W Gray, **James C Costello** (2016) Tumor-derived cell lines as molecular models of cancer pharmacogenomics. **Molecular Cancer Research** 14(1):3-13.
48. Elias Chaibub Neto, Bruce R. Hoff, Chris Bare, Brian M. Bot, Thomas Yu, Lara Mangravite, Andrew D. Trister, Thea Norman, Pablo Meyer, Julio Saez-Rodriguez, **James C. Costello**, Justin Guinney, Gustavo Stolovitzky (2016) Reducing overfitting in challenge-based competitions. **arXiv** 1607.00091.

## 2015

49. Erin M Griner, Garrett M Dancik, **James C Costello**, Charles Owens, Sunny Guin, Michael G Edwards, David L Brautigam and Dan Theodorescu (2015) RhoC is an unexpected Target of RhoGDI2 in prevention of lung colonization of bladder cancer. **Molecular Cancer Research** 13(3):483-92.
50. Sumit Borah, Linghe Xi, Arthur J Zaug, Natasha M Powell, Garrett M Dancik, Scott Cohen, **James C Costello**, Dan Theodorescu and Tom Cech (2015) TERT promoter mutations and telomerase reactivation in Urothelial Cancer. **Science** 347(6225):1006-10.
  - n. *Colorado Cancer blog post*
51. Lindsey Ulkus Rodrigues, Leah Rider, Cera Nieto, Lina Romero, Anis Karimpour-Fard, Massimo Loda, M Scott Lucia, Min Wu, Lihong Shi, Adela Cimic, S Joseph Sirintrapun, Rosalie Nolley, Colton Pac, Haitao Chen, Donna M Peehl, Jianfeng Xu, Wennuan Liu\*, **James C Costello\*** and Scott D Cramer (2015)

Coordinate loss of MAP3K7 and CHD1 promotes aggressive prostate cancer. *Cancer Research* 75(6):1021-1034. (\*equal contribution)  
 o. *Colorado Cancer blog post*

52. Thomas Cokelaer, Mukesh Bansal, Christopher Bare, Ebran Bilal, Brian Bot, Elias Chaibub Neto, Federica Eduati, Mehmet Gönen, Steven M Hill, Bruce Hoff, Jonathan R. Karr, Michael P Menden, Pablo Meyer, Raquel Norel, Abhishek Pratap, Robert J Prill, **James C Costello**, Gustavo Stolovitzky, Julio Saez-Rodriguez (2015) DREAMTools: a Python package for scoring collaborative competitions. *F1000Research* 4:1030 (doi: [10.12688/f1000research.7118.1](https://doi.org/10.12688/f1000research.7118.1)).

## 2014

53. **James C Costello\***, Laura M Heiser\*, Elisabeth Georgii\*, Mehmet Gönen, Michael P Menden, Nicholas J Wang, Mukesh Bansal, Muhammad Ammad-ud-din, Petteri Hintsanen, Suleiman A. Khan, John-Patrick Mpindi, NCI DREAM Community, Olli Kallioniemi, Antti Honkela, Tero Aittokallio, Krister Wennerberg, James J Collins, Dan Gallahan, Dinah Singer, Julio Saez-Rodriguez, Samuel Kaski, Joe W Gray, and Gustavo Stolovitzky (2014) A community effort to assess and improve drug sensitivity prediction algorithms. *Nature Biotechnology* 32:1202-12. (\*co-first author)  
 p. *Selected by ISCB as one of the top 10 papers of 2014*  
 q. *Selected for a Highlights Track presentation at ISCB 2014*  
 r. *Drug sensitivity predicted computationally*
54. Mukesh Bansal, Jichen Yang, Charles Karan, Michael P Menden, **James C Costello**, Hao Tang, Guanghua, Xiao, Yajuan Li, Jeffery Allen, Rui Zhong, Beibei Chen, Minsoo Kim, Tao Wang, Laura Heiser, Ronald Realubit, Michela Mattioli, Mariano Alvarez, Yao Shen, NCI-DREAM Community, Dan Gallahan, Dinah Singer, Julio Saez-Rodriguez, Yang Xie, Gustavo Stolovitzky, and Andrea Califano (2014) The challenge of predicting synergistic and antagonistic compound-pair activity from individual compound perturbations. *Nature Biotechnology* 32:1213-22.  
 s. *Computer model for combination therapy prediction in triple-negative breast cancer shows efficacy. GenomeWeb*
55. Chu-An Wang, David Drasin, Catherine Pham, Paul Jedlicka, Vadym Zaberezhnyy, Michelle Guney, Howard Li, Raphael Nemenoff, **James C Costello**, Aik-Choon Tan and Heide Ford (2014) The homeoprotein Six2 promotes breast cancer metastasis via transcriptional and epigenetic control of E-cadherin expression. *Cancer Research* 74(24):7357-70.
56. Michael L Nickerson, Garrett M Dancik, Kate M Im, Michael G Edwards, Sevilay Turan, Joseph Brown, Christina Ruiz-Rodriguez, Charles Owens, **James C Costello**, Guangwu Guo, Shirley X Tsang, Yingrui Li, Quan Zhou, Zhiming Cai, Lee E Moore, M Scott Lucia, Michael Dean, and Dan Theodorescu (2014) Concurrent Alterations in *TERT*, *KDM6A*, and the BRCA Pathway in Bladder Cancer. *Clinical Cancer Research* 20:2935-48.  
 t. *Colorado Cancer blog post*
57. **James C Costello** and Dan Theodorescu (2014) International Progress: From cytology to genomics. Decade in review -Bladder cancer. *Nature Reviews Urology* 11:609-11.
58. **James C Costello** and Gustavo Stolovitzky. (2014) Seeking the wisdom of crowds through challenge-based competitions in biomedical research. *Clinical Pharmacology & Therapeutics* 93:396-98.  
 u. *Journal cover image*

## 2013

59. Ran Xue, Mikhail N Zakharov, Yu Xia, Shalender Bhasin, **James C Costello**, Ravi Jasuja (2013) EPSLiM: Ensemble predictor for short linear motifs in nuclear hormone receptors. *Molecular Endocrinology*. 28(5):768-77.
60. Ravi Jasuja, **James C Costello**, Samudra Gangopadhyay, Rajan Singh, Vandana Gupta, Gianluca Toraldo, Hyeran Jang, Hu Li, Carlo Serra, Wen Guo, Pritibha Chauhan, Navjot S Narula, Ayla Ergun, Katie Spina, Thomas G Travison, James Collins, and Shalender Bhasin (2013) Combined administration of testosterone plus an ornithine decarboxylase inhibitor as a selective prostate-sparing anabolic therapy. *Aging Cell* 13(2):303-10.
61. Roi Gazit, Brian S Garrison, Tata N Rao, Tal Shay, **James C Costello**, Jeff Ericson, Francis Kim, James J Collins, Aviv Regev, Amy J Wagers, Derrick J Rossi, and The ImmGen Consortium (2013) Transcriptome analysis identifies regulators of hematopoietic stem and progenitor cells. *Stem Cell Reports* 1:266-80.
62. Ayla Ergun, Graeme Doran, **James C Costello**, Henry H Paik, James J Collins, Diane Mathis, Christophe Benoist, and ImmGen Consortium (2013) Differential splicing across immune system lineages.

*Proceedings of the National Academy of Sciences* 110:14324-29.

63. Sameer Kalghatgi, **James C Costello**, Catherine Spina, Anthony Molina, and James J Collins (2013) Bactericidal antibiotics induce mitochondrial dysfunction and oxidative damage via a common mechanism in mammalian cells. *Science Translational Medicine* 5:190ra81.
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## **2012 and older**

64. Lawrence Kwong, **James C Costello**, Huiyun Liu, Giannicola Genovese, Shan Jiang, Joseph H Jeong, Ryan P Bender, James J Collins, and Lynda Chin (2012) RAS acts as a multi-state rheostat to differentially regulate survival and proliferation in cancer. *Nature Medicine* 18:1503-10.
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65. Daniel Marbach\*, **James C Costello\***, Robert Kueffner\*, Nicole M Vega, Robert Prill, Diogo M Camacho, Kyle R Allison, the DREAM5 Consortium, Manolis Kellis, James J Collins, and Gustavo Stolovitzky (2012) Wisdom of crowds for robust gene network inference. *Nature Methods* 9(8):796-804. (\*co-first author)
  - y. *Journal cover image*
  - z. *Subject of 6 separate blog posts*
66. Jennifer C Miller, Brian D Brown, Tal Shay, Emmanuel L Gautier, Vladimir Jojic, **the Immunological Genome Project Consortium**, and *et al.* (2012) Deciphering the transcription network of the dendritic cell lineage. *Nature Immunology* 13:888-99.
67. Natalia A Bezman, Charles C Kim, Joseph C Sun, Gandula Min-Oo, Deborah W Hendricks, **the Immunological Genome Project Consortium**, and *et al.* (2012) Molecular definition of the identity and activation of natural killer cells. *Nature Immunology* 13:1000-09.
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69. Deepali Malhotra, Anne L Fletcher, Jilian Astarita, Veronika Lukas-Kornek, Prakriti Tayalia, **the Immunological Genome Project Consortium**, and *et al.* (2012) Transcriptional profiling of stroma from inflamed and resting lymph nodes defines immunological hallmarks. *Nature Immunology* 13:499-510.
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72. Teiya Kijimoto, **James C Costello**, Zuoqian Tang, Armin P Moczek, and Justen R Andrews (2009) EST and microarray analysis of horn development in *Onthophagus* beetles. *BMC Genomics* 10:504.
73. Daniel R Schrider, **James C Costello**, and Matthew W Hahn (2009) All human-specific gene losses are present in the genome as pseudogenes. *Journal of Computational Biology* 16:1419-27.
74. **James C Costello**, Daniel R Schrider, Jeff R Gehlhausen, and Mehmet M Dalkilic (2009) Data-driven ontologies. *Pacific Symposium on Biocomputing* 14:15-26.
75. Yong Li, **James C Costello**, Alisha K Holloway, and Matthew W Hahn (2008) Reverse ecology and the power of population genomics. *Evolution* 62:2984-94.
76. **James C Costello**, Mira V Han, and Matthew W Hahn (2008) Limitations of pseudogenes in identifying gene losses. *In Proceedings of Recomb-CG* Paris, France
77. **James C Costello**, Amy Cash, Mehmet M Dalkilic, and Justen R Andrews (2008) Data Pushing: a Fly-centric guide to Bioinformatics tools. *Fly* 2(1):1-18.
78. Mehmet M Dalkilic, **James C Costello**, Wyatt Clark, and Predrag Radivojac (2008) From protein-disease associations to disease informatics. *Frontiers in Bioscience* 13:3391-3407.
79. *Drosophila* 12 Genomes Consortium\* (2007) Evolution of genes and genomes on the *Drosophila* phylogeny. *Nature* 450(7167):203-218. (\*Consortium member)
80. **James C Costello**, Jade Buchannan-Carter, Mehmet M Dalkilic, and Justen R Andrews (2007) Integrating *Drosophila* data to discover disease-related protein interactions in human. *IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology* Honolulu, HI
81. Mehmet M Dalkilic, Wyatt Clark, **James C Costello**, and Predrag Radivojac (2006) Using compression to

identify classes of inauthentic texts. *In Proceedings SIAM Conference on Data Mining* Bethesda, MD. 603-607.

82. Brian Eads, Amy Cash, Kevin Bogart, **James C Costello**, and Justen R Andrews (2006) Troubleshooting microarray hybridizations. *Methods in Enzymology* 411:34-49.
83. Mehmet M Dalkilic and **James C Costello**. (2004) BioKnOT: Biological Knowledge through Ontologies and TFIDF. *In Proceedings ACM SIGIR Workshop: Search and Discovery in Bioinformatics* Sheffield, UK. 2004
84. Mehmet M Dalkilic, **James C Costello**, and Arjrit Sengupta (2004) Semantic Thumbnails: A novel method for summarizing document collections. *In Proceedings ACM SIGDOC* Memphis, TN
85. Kazuhiro Seki, **James C Costello**, Vasanth Singhan, and Javed Mostafa (2004) TREC 2004 genomic track experiments. *In Proceedings of TREC 2004; Genomics Track* 2004

#### *Media/Interviews/Perspectives*

1. Members of the Crnic Institute obtain \$18M in new funding from the National Institutes of Health. Sept 23, 2022. <https://news.cuanschutz.edu/linda-crnic-institute/members-of-the-crnic-institute-obtain-18m-in-new-funding-from-the-national-institutes-of-health>
2. AI model can quantify radiographic joint damage in rheumatoid arthritis. Sept 2, 2022 <https://medicalxpress.com/news/2022-09-ai-quantify-radiographic-joint-rheumatoid.html>
3. \$3 million for research on bladder cancer and chemotherapy. Aug 3, 2022. <https://amazingerasmusmc.com/urology/3-million-for-research-on-bladder-cancer-and-chemotherapy/>
4. Better treatment for aggressive prostate cancer. April 12, 2021. <https://news.cuanschutz.edu/cancer-center/better-treatment-for-aggressive-prostate-cancer>
5. Can crowd-sourcing help advance open science? Dec 10, 2020. <https://network.febs.org/posts/can-crowd-sourcing-help-advance-open-science>
6. Community climbing competition raises funds for the CU Cancer Center research. Colorado Cancer Blogs. Feb. 17, 2020. <https://coloradocancerblogs.org/heart-soul-rock-climbing/>
7. CU Cancer Center project makes big data analysis accessible to Anschutz Campus researchers. Colorado Cancer Blogs. Dec. 5, 2019. <https://coloradocancerblogs.org/data-analysis-tools-anschutz/>
8. Search tightens for genes driving prostate cancer. Colorado Cancer Blogs. Sep. 12, 2019. <https://coloradocancerblogs.org/u01-targeted-treatment-prostate-cancer/>
9. Scientists don't have to travel alone; solutions can come from the crowd. *Atlas of Science*. September 21, 2017. <http://atlasofscience.org/scientists-dont-have-to-travel-alone-solutions-can-come-from-the-crowd/>
10. Crowdsourcing better predictive models. *Prostatepedia*. May 2017. <https://www.prostatepedia.net/>
11. Community-wide effort to use open clinical trial data for the quantitative prediction of outcomes in metastatic prostate cancer. *Practice Update*. April 29, 2015. <https://www.practiceupdate.com/content/community-wide-effort-to-use-open-clinical-trial-data-for-the-quantitative-prediction-of-outcomes-in-metastatic-prostate-cancer/23507/12/3/1>
12. Prediction mutations in high-grade bladder cancer. *Practice Update*. Feb 15, 2015. <https://www.practiceupdate.com/content/predictive-mutations-in-high-grade-bladder-cancer/21874/12/3/1>

## PRESENTATIONS AND INVITED LECTURES

### *Local*

- “NPEPPS is a novel regulator of cisplatin response in treatment resistant bladder cancer” Barbara Davis Center for Diabetes. University of Colorado Anschutz Medical Campus, Aurora, CO. 2022
- “Non-muscle invasive bladder cancer molecular subtypes predict differential response to intravesical Bacillus Calmette-Guerin” Multiplex Imaging Seminar Series. University of Colorado Anschutz Medical Campus, Aurora, CO. 2022
- “Vignettes from the Costello lab” Pediatric Heart Lung Lab. University of Colorado Anschutz Medical Campus, Aurora, CO. 2020
- “Computing Resources at the Anschutz Medical Campus” Panel Member. Department of Biostatistics and Informatics. University of Colorado Anschutz Medical Campus, Aurora, CO. 2019
- “Putting your –omic data into context” Department of Endocrinology. University of Colorado Anschutz Medical Campus, Aurora, CO. 2019
- “A systems biology approach to study aggressive molecular subtypes in prostate cancer” Donald King Symposium. University of Colorado Anschutz Medical Campus, Aurora, CO. 2019
- “Pathway analysis in context” Tumor Host Interaction Symposium. University of Colorado Anschutz Medical Campus, Aurora, CO. 2019

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- “Everything you need to know about gene set enrichment analysis” BBSR University of Colorado Anschutz Medical Campus, Aurora, CO. 2018
- “GSEA-InContext: Identifying novel and common patterns in expression experiments” Bioinformatics Journal Club. University of Colorado Anschutz Medical Campus, Aurora, CO. 2018
- “Trisomy 21 results in upregulation of kynurenine and dysregulation of tryptophan metabolism” Linda Crnic Super Group. University of Colorado Anschutz Medical Campus, Aurora, CO. 2018
- “A systems biology approach to study aggressive subtypes in prostate cancer” Division of Endocrinology, Metabolism and Diabetes. University of Colorado Anschutz Medical Campus, Aurora, CO. 2017
- “Data integration and cancer systems biology” Integrative Biology Department. University of Colorado Denver, Denver. CO. 2017
- “Computational Approaches for Predicting Drug Sensitivities and Synergies from Genomics Data” Array BioPharma. Boulder, CO 2015.
- “Transcriptional Regulators Associated with Pathways: Setting a TRAP to Identify Gene Drug Targets” Front Range Computational and Systems Biology 2015 Symposium. Fort Collins, CO 2015.
- “Computational Approaches for Predicting Drug Sensitivities and Synergies” Cancer Biology Training Program. University of Colorado Anschutz Medical Campus, Aurora, CO. 2015.
- “Extracting Predictive Signatures from Heterogeneously Sampled Cancer Patient Data” University of Colorado Cancer Center, Aurora, CO. 2015.
- “Transcriptional Regulatory Associations with Pathways: Setting a TRAP to identify drug-gene targets” Division of Endocrinology, Metabolism and Diabetes. University of Colorado Anschutz Medical Campus, Aurora, CO. 2014.
- “Whole exome sequence analysis of 40 human bladder cancer cell lines” University of Colorado Cancer Center Retreat. University of Colorado Anschutz Medical Campus, Aurora, CO. 2014.
- “The analysis revolution: The shift from data generation to data interpretation” Graduate Program in Pharmacology Student Symposium. University of Colorado Anschutz Medical Campus, Aurora, CO. 2014.
- “Transcriptional Regulatory Associations with Pathways: Setting a TRAP to identify drug-gene targets” Computational Bioscience Program. University of Colorado Anschutz Medical Campus, Aurora, CO. 2014.
- “Predicting, targeting, and validating a drug combination therapy for melanoma” for the Mini-symposium on The Power of Informatics to Advance Health. University of Colorado Anschutz Medical Campus, Aurora, CO. 2014.

#### *National*

- “Open Collaborative Competitions: Insights from DREAM Challenges” Panel Discussion. CureSearch, PEDS Pediatric Early Development Symposium, Virtual. 2022
- “Systems biology approaches predict therapeutic response and investigate experiments in context” *Department of Biomedical Engineering. Oregon Health Sciences University.* Portland, OR. 2019
- “A systems biology approach to study aggressive subtypes in prostate cancer” (Keynote) *Rocky Bioinformatics Conference.* Snowmass, CO 2017.
- “The Prostate Cancer DREAM Challenge: Community efforts to mine open clinical trial data” *Project Data Sphere Symposium V.* Rockville, MD 2017.
- “Network-based models: from predicting protein function in Drosophila to identifying drug targets in cancer” *Laboratory of Cellular and Developmental Biology.* NIDDK/NIH. Bethesda, MD 2016.
- “Urothelial cancer cell line models of tumor biology and drug response” *ISMB.* Orlando, FL 2016.
- “Introduction to the DREAM Prostate Cancer Challenge” *Recomb/ISCB Conference on Regulatory & Systems Genomics with DREAM Challenges.* Philadelphia, PA 2015.
- “Characterizing bladder cancer cell lines as models of solid tumor biology” *Rocky Mountain Bioinformatics Conference.* Aspen, CO. 2014.
- “Predicting survival for diverse patient cohorts using large-scale cancer genomics data” *Rocky Mountain Bioinformatics Conference.* Aspen, CO. 2014.
- “Integrative Genomics Approaches for Predicting Drug Synergies” *Rocky Mountain Bioinformatics Conference.* Aspen, CO. 2014.
- “A community effort to assess drug sensitivity prediction algorithms identifies approaches for improved performance” *ISMB 2014 Highlights Track.* Boston, MA. 2014.
- “Translating genomics data into actionable models to discover novel therapeutics” *University of Illinois.* Champaign, IL. 2013.
- “Translating genomics data into actionable models to discover novel therapeutics” *Worcester Polytechnic Institute.* Worcester, MA. 2013.

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- “Translating genomics data into actionable models to discover novel therapeutics” *University of Colorado School of Medicine, Department of Pharmacology*. Denver, CO. 2012.
- “Wisdom of crowds for constructing gene networks and predicting drug sensitivities” *The 10<sup>th</sup> Annual Rocky Mountain Bioinformatics Conference*. **Keynote Speaker**. Snowmass Village, CO. 2012.
- “NCI-DREAM drug sensitivity challenge: evaluation and results” *The DREAM Conference*. San Francisco, CA. 2012.
- “DREAM5 network inference challenge: The wisdom of crowds” *NCI-DREAM Summit*. Bethesda, MD. 2012.
- “Wisdom of crowds for gene network inference” *International Conference on Systems Biology of Human Disease*. Boston, MA. 2011.
- “Identifying key gene regulatory relationships underlying mechanical induction of ECM scaffold during tooth organ development” *SysCode Retreat*. Waltham, MA. 2011.
- “Alternative splicing in the Immunological Genome Project” *The Immunological Genome Retreat*. Boston, MA. 2011.
- “Network Biology approaches to discover drug synergies” *Vertex Pharmaceuticals*. Cambridge, MA. 2011
- “Experimental assessment of DREAM5 network inference predictions” *The DREAM conference*. New York, NY. 2010.
- “Data integration and gene function prediction in *Drosophila melanogaster*” *Boston University*. Boston, MA. 2009.
- “Data integration and gene function prediction in *Drosophila melanogaster*” *The Jackson Laboratory*. Bar Harbor, ME. 2009.
- “Data integration and gene function prediction in *Drosophila melanogaster*” *Broad Institute*. Boston, MA. 2009.

#### *International*

- “Predicting therapeutic sensitivity and resistance” *AACR Educational Session, Systems Biology Approaches in Cancer*. Atlanta, GA, USA. 2019
- “DREAM Challenges” *Intelligent Systems for Molecular Biology*. Chicago, IL, USA. 2018
- “GSEA-InContext: Identifying novel and common patterns in expression experiments” *Intelligent Systems for Molecular Biology*. Chicago, IL, USA. 2018
- “Addressing biomedical research challenges: the community and the individual” *Polish Bioinformatics Society*. Bialystok, Poland. 2016.

## **RESEARCH FUNDING**

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### *Active*

#### **R01 HD109765 – NIH/NICHD (Costello, Greene)**

07/2022 – 06/2027

*Novel strategies to deconvolute co-occurring conditions in Down syndrome*

Role: MPI (Contact PI), \$2.5M direct (\$1.25M to Costello)

#### **R01 CA268055 – NIH/NCI (Costello, Theodorescu)**

08/2022 – 07/2027

*NPEPPS is a novel and druggable determinant of chemotherapy resistance in bladder cancer*

Role: MPI, \$2M direct (\$1M to Costello)

#### **CSU-CU Companion Animals in Cancer Research pilot award – (Duval, Costello)**

03/2022 – 03/2024

*Identifying biological dependencies in canine osteosarcoma using whole genome CRISPR-Cas9 libraries*

Role: MPI, 50k direct

#### **R01 AI150305-01 – NIH/NIAID (Espinosa)**

09/2019 – 03/2024

*Understanding Down syndrome as an interferonopathy*

Role: Collaborator, \$14M direct (\$100k to Costello)

#### **U2C HL156291 – NIH/NHLBI (Espinosa, Resnick, Carroll, DiGiovanna, Ferretti, Guinney, Haendel)**

09/2020 – 08/2025

*Data management and portal for the INCLUDE (DAPI) project*

1/23/2023

Role: Co-I, \$12.5M direct (\$130k to Costello)

**U01 CA231978 – NIH/NCI (Costello, Cramer)**

09/2019 – 08/2024

*Systems analysis of aggressive prostate cancer pathology*

Role: MPI (Contact PI), \$2.5M direct (\$1.25M to Costello)

**5 P30 CA046934 – NIH/NCI (Schulick)**

04/1997 – 01/2027

*University of Colorado Cancer Center Support Grant*

Role: Director of Bioinformatics Shared Resource, (35% salary support)

*Completed*

**R13 CA271712 – NIH/NCI (Costello)**

04/2022 – 03/2023

*Systems Approaches to Cancer Biology Meeting*

Role: PI, \$25K direct

**R21 CA242747 – NIH/NCI (Tyekucheva, Costello)**

03/2020 – 02/2023

*Curated prostate cancer data for novel and reproducible prognostic modeling*

Role: MPI, 250k direct (\$40k to Costello)

**AWD G-40093-01, Anschutz Foundation (Costello, Duval)**

07/2017 – 07/2022

*Transforming the cancer drug development paradigm by integrating precision medicine in companion animals with naturally occurring cancers.*

Role: MPI, \$375k direct

**CO-C-29-098 Colorado CTSA (UL1TR002535) (Duval, Costello)**

07/2020-06/2022

*Development of a comparative oncology functional genomics screen platform using a CRISPR-Cas9 library to identify critical dependencies and mechanisms of treatment resistance in canine cancers.*

Role: MPI

**1 R01 CA199741-01 – NIH/NCI (Cramer, Lucia)**

07/2015 – 07/2020

*Coordinate loss of CHD1 and MAP3K7 with other CNAs in prostate cancer aggressiveness*

Role: Co-I, \$1.5M direct (\$145k to Costello)

**2 R01 GM099705-05 – NIH/NIGMS (Cech)**

04/2016 – 04/2021

*TERT Promoter Mutations and Telomerase Reactivation in Cancer Cells*

Role: Collaborator, \$750k direct (\$90k to Costello)

**Bristol-Meyers Squibb research grant (Bridges)**

09/2019 – 08/2020

*RA-DREAM Challenge: Automated Scoring of Radiographic Damage in Rheumatoid Arthritis*

Role: Challenge Director, \$200k direct (\$17k to Costello)

**Cancer League of Colorado (Costello, Cramer)**

07/2018 – 07/2019

*Targeting the Achilles heel of prostate cancer with loss of CHD1 and MAP3K7*

Role: MPI, \$60k direct

**AWD-173685, Cancer League of Colorado (Costello)**

07/2017 – 12/2018

*Measuring chromosome-conformation abnormalities within a single cancer cell*

1/23/2023

Role: PI, \$30k direct

**AWD-152792, Boettcher Foundation Webb-Waring Research Award (Costello)**

07/2015 – 07/2018

*Defining and targeting bladder cancer subtypes through pan-cancer pharmacogenomic profiling*

Role: PI, \$225k direct

**Colorado Advanced Industry Accelerator Program (Costello)**

06/2016 – 07/2017

*PrecisionProfileDx: A genomics workbench solution to accelerate insights for cancer treatment*

Role: PI, \$142k direct

**AWD-153400, Cancer League of Colorado (Costello)**

07/2015 – 07/2016

*Integrating transcriptional regulatory and metabolic networks to characterize bladder cancer cellular response to chemotherapies*

Role: PI, \$30k direct

**2014 Pilot Grant, Denver Chapter of Golfers Against Cancer (Costello, Theodorescu)**

09/2014 – 09/2016

*Identifying predictive markers of bladder cancer patient response to chemotherapeutics*

Role: Co-PI, \$50k direct

**Meyn Foundation Prostate Cancer Program (Cramer, Costello, Lucia)**

04/2014 – 04/2016

*Identification of Driver Pathways in Prostate Cancer-Associated Fibroblasts*

Role: Co-PI, \$50k direct

**IRG 57-001-53, American Cancer Society – Institutional Resource Grant**

01/2015 – 01/2016

*Co-deletion of MAP3K7 and CHD1 as drivers in bladder cancer*

Role: PI, \$30k direct

*Student Fellowships*

**Cailin Deiter** – T32 Pharmacology Training Grant

**Lily Elizabeth Feldman** – T32 Pharmacology Training Grant

**Andrew Goodspeed** – T32 Pharmacology Training Grant; Front Range Cancer Challenge (\$50,000)

**Rani Powers** – NSF GRFP (Honorable mention); Linda Crnic Institute, Blumenthal Down Syndrome Predoctoral Fellowship (\$40,000). Best Dissertation Award 2020.

**PATENTS**

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Title: COMPOSITIONS AND METHODS FOR IMPROVED TREATMENT OF PLATINUM-BASED

CHEMOTHERAPEUTIC RESISTANT TUMORS

Application No.: 63/153,519

Filing Date: February 25, 2021

**HONORS AND AWARDS**

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Faculty Award in Research Excellence, Department of Pharmacology	2022
Faculty Award in Research Excellence, Department of Pharmacology	2020
Winning team for the CD2H Idea Competition for the CTSA Program	2019
Rani Powers, Winner of the Ian Lawson Von Toch Memorial Award for Outstanding Student Paper	2018
Top 3 paper for the IMIA yearbook of Medical Informatics 2018 in the section 'Cancer Informatics'	2018
Elias Tillandz prize – best 2017 paper from the University of Turku	2018
Boettcher Investigator, Webb-Waring Biomedical Research Award	2015
Sage Bionetworks Young Investigator Award	2013
Best Poster Award at the Intl. Conf. for Systems Biology of Human Disease	2011
First Ph.D. awarded from IU School of Informatics	2009
NSF-IGERT Fellow in Evolution, Genomics, and Development	2009

1/23/2023

Student Travel Grant for PSB, ISCB	2009
Student Travel Grant for CIBCB, IEEE	2007
Student Travel Grant for SDM, Lawrence Livermore National Laboratory	2006
IU School of Informatics Outstanding Teaching Award	2004
IU School of Informatics Outstanding Achievement Award	2004
IU GPSO Outstanding Graduate Student	2004
Indiana University (UITS) Consultant of the Month	2003
Two-time Track and Field Athletics All-American	2002

## FORMAL TEACHING AND MENTORING

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### *Courses*

**Spring 2016, 2018 – CPBS7630** – Instructor, Computational Methods for Addressing Big Data Challenge in Biomedicine

### *Lectures*

**Spring 2014-2023 – CPBS7712** – Taught 2 lectures on cancer informatics and systems pharmacology

**Spring 2017-2023 – CANB7600** – Taught 2 lectures as a Bioinformatics workshop.

**Spring 2015-2023 – PHCL7620** – Taught 2 lectures on next-gen drug target identification

**2014-2020** – Pharmacology journal club

**2014-2021** – Biomedical Sciences journal club

**Fall 2014-2022 – PHCL7600** – Taught 1 lecture on genomic analysis in pharmacology

**Fall 2014-2022 – CPBS7711** – Taught 2 lectures on genomic analysis

**Fall 2015, 2016 – PHCL7605** – Led group discussions on ethics in research

**Fall 2015 – BIOS6660** – Taught 2 lectures on predicting drug sensitivity

**Fall 2016 – BSBT6111** – Taught 1 lecture on open-data and open-science

### *Mentoring*

#### **Graduate Students**

Andrew Goodspeed – Pharmacology – graduated 10/18

- 3 first-authored, 4 co-authored manuscripts
- Front Range Cancer Challenge Fellow
- T32 PHCL training grant
- Current Position: Manager of the UCCC Bioinformatics Core

Rani Powers – Computational Biosciences – graduated 8/19

- 3 first-authored, 4 co-authored manuscripts
- Blumenthal Down syndrome Predoctoral Fellow
- NSF GRFP honorable mention
- T15 CPBS training grant
- Ian Lawson Van Toch Memorial Award for Outstanding Student Paper – ISMB 2018
- Dissertation award winner from the Graduate School
- Senior Staff Scientist at the Wyss Institute
- Current Position: Founder and CEO of Pluto Biosciences

Christiaan De Jong – MD, PhD - current

- Co-mentored with Dr. Tahlita Zuiverloon at Erasmus MC, The Netherlands
- Second Prize for the Best Abstract by a Resident at EAU22

Michael Orman – Pharmacology – current

Lily Elizabeth Feldman – Pharmacology – current

- T32 PHCL training grant
- CU Innovations Fellow

Lucas Gillenwater – Computational Biosciences – current

- Blumenthal Down syndrome Predoctoral Fellow
- T32 PHCL training grant

Cailin Deiter – Pharmacology – current

- T32 PHCL training grant

### **Thesis Committee**

D. Suzi Bryan – Molecular Biology  
Kyle Smith – Computational Biosciences (chair)  
Katie Mishall – Cancer Biology  
Patrick Cherry – Molecular Biology  
Michael Oliphant – Reproductive Science  
Jessica Hsu – Pharmacology (chair)  
Callie Federer – Computational Biosciences (chair)  
Cody Glickman – Computational Biosciences  
Johannes Menzel – Molecular Biology  
Nan Chen – Pharmacology (chair)  
Mayla Boguslav – Computational Biosciences (chair)  
Harrison Pielke-Lombardo – Computational Biosciences (chair)  
Laura Stevens – Computational Biosciences (chair)  
Connor Hughes – Pharmacology (chair)  
Lauren Jillson – Cancer Biology  
Connor Purdy – Cancer Biology  
Logan Tyler – Pharmacology  
Phil Tatman – Pharmacology  
Ian Shelton – Pharmacology (chair)

### **Postdoctoral Researcher**

Gabriel Yette (Co-mentor with Dr. Cramer) – current  
Teemu (Daniel) Laajala – Faculty at the University of Turku  
Brian Ross – Independent Consultant  
Kim Kanigel-Winner – Now a Data Analyst with Rancho Bioscience, San Diego, CA  
Somsak Phattarasukol – returned to Thailand

### **Rotation Students**

Jessica Hsu – Pharmacology  
Gregory Wright – Biomedical Sciences Program  
Callie Federer – Computational Bioscience  
Sean Korpela – Pharmacology  
Robert Jones – Medical Science Training Program  
Mayla Boguslav – Computational Bioscience  
Harrison Pielke-Lombardo – Computational Biosciences  
Justin Roberts – Biomedical Sciences Program  
Brent Carrillo – Pharmaceutical Sciences  
Michael Orman – Pharmaceutical Sciences  
Lily Feldman – Biomedical Sciences Program  
Lucas Gillenwater – Computational Biosciences  
Michelle Foreman – Biomedical Science Program  
Stephanie Araki – Biomedical Science Program  
Connor Elkhill – Computational Biosciences  
Nathaniel Xander – Pharmacology  
Cailin Deiter – Biomedical Science Program  
Ralf Dagdag – Biomedical Science Program  
Kate Matlin – Biomedical Science Program

### **Summer Interns**

Christian De Jong – Erasmus Medical Center - 2019  
Anthony Sun – CRSF Fellow - 2019  
Holly Weeks – MPH student at University of Colorado Anschutz Medical Campus – 2016-17  
Alex Singh – Lakewood High School – 2016 – Currently attending Carnegie Mellon University  
William Duncan Palmer – Computational Biosciences Summer Student – 2015 – Next position at Sage Bionetworks  
Becca Marion – Master's Biostatistics Student, Université catholique de Louvain – 2015 – currently PhD student  
Amay Srivastava – Rock Canyon High School – 2015

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## UTRAC student interns

Hunter Carrol – 2022-23

### PROFESSIONAL SERVICE

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#### University of Colorado

Department of Pharmacology faculty search committee, Chair	2022
Co-Director, Pharmacology Training Program	2022-
CRIO Council	2022-
University of Colorado Cancer Center search committee for AD of Data Science	2020
Research Advisory Council	2019-
University of Colorado Cancer Center strategic planning committee	2019
Biostatistics and Informatics faculty search committee	2019
Computational Bioscience Program postdoctoral research recruitment committee (Chair)	2018
Computational Bioscience Program admissions committee	2016-2018
Biomedical Sciences Program admissions committee	2017-
Pharmacology Program graduate training committee	2015-
Pharmacology Program retreat organizing committee (Chair 2016)	2015, 2016
Computational Bioscience Program preliminary exam committee (Chair 2018)	2015 -
Department of Pharmacology faculty search committee	2014, 2016
Pharmacology Program graduate student admissions committee	2014-

#### Conference

SACB 2022 (Organizing Committee Chair)	2022
ASPET 2021 (Co-Organizer, Systems Pharmacology session)	2021
SACB 2020 (Organizing Committee Chair)	2020
ACSB Committee Chair (Society Secretary)	2019-
ISMCO'20 program committee member	2020
RSG/DREAM conference (Organizing Committee)	2018-
ISMB program committee member	2018-
RSGDREAM program committee member	2017-
Power of Informatics to Advance Health Mini Symposium (Steering Committee)	2015- 2018
ISCB/Recomb/DREAM Conference, Session Chair	2015,2017
DREAM7, "NCI-DREAM Drug Sensitivity Prediction Challenge"	2012
DREAM5, "Gene Network Inference Challenge"	2010
Daphnia Genomics Consortium	2005,2007

#### Review Panel

Bladder Cancer Advocacy Network (BCAN) Scientific Review Group	2023
NIH, NCI, Cancer Genetics Study Section (ad hoc) - October	2022
NIH, NCI, Clinical and Translational Cancer Research, ZCA1 TCRB-R(O1) S	2022
NIH, NCI, Cancer Genetics Study Section (ad hoc) - March	2022
NIH, NCI, Informatics Technology in Cancer Research, ZCA1 SRB-X (J1) S	2021
NIH, NCI, Program Project I (P01) ZCA1 RPRB-L (M1)	2021
NIH, NCI, Pathway to Independence Award (Postdoctoral researchers) ZCA1 RTRB-U (O1)	2020
NIH, SARS-COV-2 Serological Sciences Center of Excellence, ZCA1 RTRB-C (A1)	2020
NIH, NCI, Program Project I (P01) ZCA1 RPRB-L (J1) S	2020
NIH, NCI, CSBC U01 ZCA1 RTRB-U (M1)	2020
NIH, NCI, CSBC U01 ZCA1 RTRB-U (J1)	2020
Fonds de recherche du Québec, Review Panel Member	2020
Natural Sciences and Engineering Council of Canada	2018
Austrian Science Foundation	2018
Cancer League of Colorado	2018,2019
Luxembourg Institute of Health	2017
American Cancer Society, IRG review panel	2016-2019
NIH, NCI, Cancer Systems Biology Consortium U54 Research Centers, ZCA1 RTRB- R (O1)	2017
NIH, NCI, Cancer Systems Biology Consortium U54 Research Centers, ZCA1 RTRB- R (J3)	2016
Swiss National Science Foundation	2015,2016
Helmsley Charitable Trust	2015
Joslin Diabetes Center/Boston University internal grant review member	2013

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Improver scoring review committee

2013

**Journal Reviewer (ad hoc)**

Science, Nature, PLoS Computational Biology, PLoS One, Journal of Biomedical Informatics, Bioinformatics, Journal of Proteome Research, Scientific Reports, Current Pharmaceutical Design, Pacific Symposium for Biocomputing, Algorithms, Oncotarget, BMC Cancer, Nature Communications, Nature Biotechnology, Autophagy, Computing Surveys, Journal of Molecular Medicine, Cancer Cell International, Foundations of Computing and Decision Sciences, Genes, FEBS Open Bio, BMC Medical Genomics, Molecular Pharmaceutics, Cell Reports, GigaScience, Pharmaceutics, Cancer Letters, Journal of Pharmacokinetics and Pharmacodynamics, Nature Cancer, Computational and Structural Biology Journal.

Editor for DREAM Gateway in F1000Research (2015-2021)

Guest editor for PLoS Computational Biology (2022)

Editor, special issue for Frontiers in Pharmacology (2023)

**LEADERSHIP AND VOLUNTEER EXPERIENCE**

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Chair of the Education and Outreach Working Group through the CSBC	2022-
Led the Collab Lab at Sage Bionetworks on educational challenges	2022
Heart & Soul Climbing Competition – invited speaker	2020
American Cancer Society, Relay for Life - research speaker	2015
DSST (Denver) high school – Taught a class on predictive modeling in biomedicine	2015
Jim Holland Summer Enrichment Program in Biology	2005,2007,2009
IU Academic Fairness Committee Member	2002-2009
IU Graduate Curriculum Committee Member	2002-2006
Undergraduate Capstone Group Leader	2004
Lead Associate Instructor	2004
Graduate Informatics Student Association, Vice-President	2004
Volunteer Assistant Track and Field Coach, Indiana University	2003
University of Iowa Track and Field Captain	2002
Community Youth Leader, Cedar Rapids, IA	2000-2002