



Shawn Gomez



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Title: Computational Medicine and Systems Biology

Research emphasis:

Dr. Gomez's research spans multiple aspects of computational biology and informatics, incorporating components of systems engineering/modeling with machine learning and pattern recognition approaches. With recent applications in cancer and infectious disease, much work centers on the integration and analysis of multiple data types for the better understanding of normal and diseased cellular behavior. Research examples include the prediction of the interface between host and pathogen protein networks, defining key kinases and subnetworks in cancer, the development of predictive methods for the rational design of combination drug therapies and the creation of automated image analysis tools to quantify cellular behavior.

Selected publications:

Doolittle JM and Gomez SM. Mapping protein interactions between Dengue virus and its human and insect hosts. *PLoS Neglected Tropical Diseases*. 2011 Feb 15;5(2):e954.

Wu C, Asokan SB, Berginski ME, Sharpless NE, Griffith JD, Gomez SM and Bear JE. Arp2/3 complex is critical for lamellipodia and organization of cell-matrix adhesion but dispensable for fibroblast chemotaxis. *Cell*. 2012 Mar 2;148(5):973-87.

Tsai Y, Dominguez D, Gomez S*, and Wang Z*. Transcriptome-wide identification and study of cancer-specific splicing events across multiple tumors. *Oncotarget*. 2015. Feb 5.

Application:

- Prediction of host-pathogen interactions
- Machine learning and predictive models for diagnostic/medical applications
- Network models and system analysis

Collaboration potential:

- Study of host-pathogen interactions
- Modeling of biological systems
- Integration and analysis of different "omic" data sets with an eye toward creating/informing predictive models
- Bioimage informatics & cellular imaging