

Research Interests

My research group focuses on two major areas: bioinformatics and developmental genomics.

In the area of bioinformatics we build information systems that integrate diverse genetic and genomic data to facilitate the use of the laboratory mouse as a model system for understanding normative biology and disease processes in humans. My group is a member of the Mouse Genome Informatics consortium at The Jackson Laboratory which hosts the Mouse Genome Informatics database (<http://www.informatics.jax.org>).

In the area of developmental genomics, our goal is to use molecular genetics of normal lung development in mouse as a framework for identifying key genes and pathways in lung diseases such as cancer and pulmonary fibrosis.

Recent Publications

Guan, Y, Myers CL, **Bult CJ**, Troyanskaya O. 2008. A genome-wide functional network for the laboratory mouse. *PLOS Computational Biology*, 4(9) e1000165.

Naxerova K, **Bult CJ**, Peaston A, Fancher K, Knowles B, Kasif S, Kohane I. 2008. Analysis of gene expression in a developmental context emphasizes distinct biological leitmotifs in human cancers. *Genome Biology*, 9:R108.

Bult CJ, Eppig JT, Kadin JA, Richardson JE, Blake JA; Mouse Genome Database Group. 2008. The Mouse Genome Database (MGD): mouse biology and model systems. *Nucleic Acids Res.* 36(Database):D724-8.

Krupke DM, Begley DA, Sundberg JP, **Bult CJ**, Eppig JT. 2008. The Mouse Tumor Biology Database. *Nature Rev Cancer* 8:459-65.

Bogue MA, Grubb SC, Maddatu TP, **Bult CJ**. 2007. Mouse Phenome Database (MPD). *Nucleic Acids Res.* 35(Database):D643-9.

Peters LL, Robledo RF, **Bult CJ**, Churchill GA, Paigen BJ, Svenson KL. 2007. The mouse as a model for human biology: a resource guide for complex trait analysis. *Nat Rev Genet* 8(1):58-69.

Bouma GJ, Affourtit JP, **Bult CJ**, Eicher EM. 2007. Transcriptional profile of mouse pre-granulosa and Sertoli cells isolated from early-differentiated fetal gonads. *Gene Expr Patterns.* 7(1-2):113-23.

Kim, S, Huang LW, Snow KJ, Ablamunits V, Hasham MG, Young TH, Paulk AC, Richardson JE, Affourtit JP, Barak TS, **Bult CJ**, Barak Y. 2007. A mouse model of conditional lipodystrophy. *PNAS* 104:16627-16632.

Collins F, Rossant J, Wurst W and the International Mouse Knockout Consortium. 2007. A mouse for all reasons. *Cell* 128:9-13.

Frith MC, Bailey TL, Kasukawa T, Mignone F, Kummerfeld SK, Madera M, Sunkara S, Furuno M, **Bult CJ**, Quackenbush J, Kai C, Kawai J, Carninci P, Hayashizaki Y, Pesole G, Mattick JS. 2006. Discrimination of non-protein-coding transcripts from protein-coding mRNA. *RNA Biol.* 3(1):40-8.

Furuno M, Pang KC, Ninomiya N, Fukuda S, Firth MC, **Bult CJ**, Mattick JS and Suzuki H. 2006. Clustering of internally-primed transcripts reveals novel long non-coding RNAs. *PLOS Genetics* 2(4):e37.

Maeda N, Kasukawa T, Oyama R, Gough J, Frith M, Engström PG, Lenhard B, Aturaliya RN, Batalov S, Beisel KW, **Bult CJ**, et al. 2006. Transcript annotation in FANTOM3: mouse gene catalog based on physical cDNAs. *PLoS Genet.* 2(4):e62.

Grants

Maine Cancer Foundation – Developmental Cancer Genomics

W81XWH-07-2-0116 Cancer Geographic Information System

5 P41 HG000330-19 Mouse Genome Informatics - Genome Features and Maps

5 R01 CA089713-07 Electronic Access to Mouse Tumor Data

5 R01 HG003622-03 MouseCyc: A Biochemical Pathway Database for the Mouse

5 U01 HG004074 Data Coordination Center for the Knockout Mouse Project (KOMP)