Ryan P Smith

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Education

- **Washington University** — St Louis, MO
  PhD, Molecular Genetics and Genomics — *Aug. 2014 – Present*
- **University of Iowa** — Iowa City, IA
  BS, Microbiology and Informatics; GPA: 3.8 — *Aug. 2009 – May. 2014*

Experience

- **The McDonnell Genome Institute, Washington University** — St Louis, MO
  Graduate Research Scientist, Ira Hall Lab, Computational Genetics — *Feb 2015 - Present*
  - **Distributed Computing**: Leverage a high-performance distributed computing cluster to process population-scale genome sequencing data, improving our understanding of the causes and consequences of structural variation in human genomes. (10,000 CPU cores across 550 nodes. 1TB RAM in total.)
  - **Single-cell Sequencing**: Develop novel computational and molecular biology methods to sequence the genomes of single mammalian neurons in collaboration with The Scripps Research Institute at University of California, San Diego. (Often processing up to 10 TB of raw Illumina sequencing data within a 36 hour period.)
  - **Teaching Assistant**: Advised students in characterizing the genome sequences of novel bacteriophages. Hands-on computer lab course using a series of bioinformatics tools to identify genes and predict their function as well as classifying phages into existing phylogenetic groups.
- **University of Iowa** — Iowa City, IA
  Undergraduate Research Fellow, Adam Dupuy Lab, Cancer Genetics — *Aug 2010 - May 2014*
  - **Genome Editing**: Designed methods for viral genetic engineering in mouse models of human cancers and a sequencing method for detecting resulting transgene insertions.
  - **Bioinformatics**: Processed high-throughput genome sequencing data using Linux bioinformatics tools followed by ad-hoc statistical analyses and data visualization in Python and R.

Interests

- Distributed computing, bioinformatics, genetics, data science (to add..)

Programming Skills

- **Languages**: Bash, Python, R (ggplot), SQL, C++, awk
- **Technologies**: Linux/Unix, OSX, Windows, sed, git, Docker, distributed computing (IBM Platform LSF, Oracle Grid Engine)

Publications

- **Jesse D. Riordan, Luke Drury, Ryan P. Smith*, Ben T. Brett, Adam J. Dupuy**: "Sequencing Methods and Datasets to Improve Functional Interpretation of Sleeping Beauty Mutagenesis Screens" BMC Genomics, 15(1): 1150. December 2014
- **Ryan P. Smith*, Jesse D. Riordan, Charlotte R. Feddersen, Adam J. Dupuy**: "A Hybrid Adenoviral Vector System Achieves Efficient Long-term Gene Expression in the Liver via PiggyBac Transposition" Human Gene Therapy, 26(6):377-85. June 2015
- **Jennifer L. Hazen, Michael A. Duran, Ryan P. Smith*, Alberto R. Rodriguez, Greg S. Martin, Sergey Kupriyanov, Ira M. Hall, Kristin K. Baldwin**: "Using Cloning to Amplify Neuronal Genomes for Whole-Genome Sequencing and Comprehensive Mutation Detection and Validation" Genomic Mosaicism in Neurons and Other Cell Types. Neuromethods, vol 131. September 2017