Matthew Carter

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Education

Cornell University, College of Engineering, Ithaca, NY **May 2014**
Bachelor of Science, *Cum Laude*, Biological Engineering (GPA: 3.69)
2013 Kessler Fellow

Technical Skills

Laboratory skills: DNA and RNA purification, PCR, gel electrophoresis, molecular cloning, NGS library preparation, RNA-seq
Bioinformatics tools: BWA, Bowtie, SAMtools, HH-suite, Clustal
Programming languages: Python, Javascript, Bash
Web development: HTML/CSS, Apache, MySQL, MongoDB

Research Experience

Caribou Biosciences, Inc., Berkeley, CA **March 2017 - Present**
Research Associate, Technology Development Group

- Developed *E. coli* cell-based assays in order to validate predicted activities of proteins discovered *in silico*.

Caribou Biosciences, Inc., Berkeley, CA **August 2014 - March 2017**
Bioinformatics Programmer, Computational Biology Group

- Built an NGS pipeline to quantify and classify DNA repair outcomes from Cas9-mediated breaks in human cell lines and primary cells.
- Architected a web-based Laboratory Information Management System consisting of back-end SQL databases for storing experimental data and interactive, front-end visualization tools.

Caribou Biosciences, Inc., Berkeley, CA **May 2013 - August 2013**
Summer Fellow

- Designed computational tool for generating *in silico* off-target site predictions for CRISPR-Cas9 guide RNA sequences.

Lucks Lab for RNA Engineering, Cornell University, Ithaca, NY **September 2011 - May 2014**
Undergraduate Researcher

- Created framework for visualizing RNA secondary structures based on SHAPE-Seq data.
- Designed pipeline for detecting putative *trans*-acting RNA activators endogenous to bacterial and viral genomes based on homology with bacterial terminator sequences.

Publications

Cameron, P.*, Fuller, C.K.*, Donohoue, P.D., Jones, B.N., Thompson, M.S., **Carter, M.M.**, Gradia, S., Vidal, B., Garner, E., Slorach, E.M., Lau, E., Banh, L.M., Lied, A.M., Edwards L.S., Settle A.H., Capurso D., Llaca, V., Deschamps, S., Cigan, M., Young, J.K., May, A.P. "Mapping the genomic landscape of CRISPR-Cas9 cleavage." *Nature Methods* **14(6)** (2017): 600-606. PMID: 28459459.

van Overbeek, M.*, Capurso, D.*, **Carter, M.M.**, Thompson, M.S., Frias, E., Russ, C., Reece-Hoyes, J.S., Nye, C., Gradia, S., Vidal, B., Zheng, J., Hoffman, G.R., Fuller, C.K., May, A.P. "DNA Repair Profiling Reveals Nonrandom Outcomes at Cas9-Mediated Breaks." *Molecular Cell* **63(4)** (2016): 633-646. PMID: 27499295.

Patents Issued

Andrew P. May, Rachel E. Haurwitz, Jennifer A. Doudna, James M. Berger, **Matthew M. Carter**, Paul Donohoue. Compositions and methods of nucleic acid-targeting nucleic acids. **US9260752**, Feb 2016; **US9410198**, Aug 2016; **US9725714**, Aug 2017; **US9803194**, Oct 2017; **US9809814**, Nov 2017.

Patents Pending

Matthew M. Carter, Megan van Overbeek, Andrew P. May. Directed nucleic acid repair. **US20170058272**, Mar 2017.