RUTENDO F. **SIGAUKE**

Bioinformaticist | Computational Biology Ph.D. Student

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github.com/https://github.com/rutendos

Computational Biology student interested in using various algorithms to answer questions about transcription and transcription regulation.

Education

2017 - present	**PhD, Computational Biology**; University of Colorado - AMC (CO)
2014 - 2015	**MSc, Bioinformatics**; University of Oregon (OR)
2011 - 2013	**BSc, Biochemisty with Honors in Biology**; Hamline University (MN)
	Advised by : Dr. Jodi Goldberg
	Thesis title : The Significance of the Protein Phosphatase 1H (PPM1H) gene in Colorectal Cancer
2009 - 2011	**ASc, Chemistry**; Cottey College (MO)

Honors and Awards

2019	**ISCB Rocky Bioinformatics Conference : Best Poster Award - 2nd Place**
2012 - 2013	**Hoffman Biology Scholarship Award**
2012 - 2013	**Beggs Chemistry Scholarship Award**
2012 - 2013	**Kenyon Chemistry Fund Award**
2011 - 2013	**Presidential Fellowship Scholarship Award**
2009 - 2012	**Dean's List**
2011	**American Chemical Society : Outstanding Chemistry Student**

Experience

January 2015 – July 2017 — **Bioinformaticist, Stowers Institute for Medical Research, Kansas City, MO**

- Optimized differential gene expression analysis pipelines.
- Analyzed NGS data using python, bash, R and Bioconductor Packages.
- Designed R Shiny Applications for analyzing various NGS experiments.
- Presented findings and data biweekly

R Shiny | Rmarkdown | Jupyter | OrgMode | linux/unix | python | R | bash

July 2013 – May 2014 — **Junior Scientist, University of Minnesota, Minneapolis, MN**

- Determined future experiments by examining motive, direction and findings of research monthly.
- Designed primer constructs to mutate the APOBEC protein used in experimental analysis of HIV and APOBEC reactions.
- Synthesized and isotopically labeled protein constructs using standard protein expression and purification protocols.
- Isolated proteins using Fast Protein Liquid Chromatography (FPLC).
- Managed relationship with service provider that synthesized DNA constructs.

Primer Design | Protein amplification | NMR | FPLC

June 2012 – May 2013 — **Undergraduate Research and Honors, Hamline University, St Paul, MN**

- Investigated the significance of the PPM1H gene in colon cancer cells in a colorectal cancer research lab.
- Determined cell viability using microscopy experiments, trypan blue staining and a hemocytometer.
- Performed flow cytometry experiments to determine the effects of chemotherapy drugs on colon cancer cells.

Cell culture | Primer Design | Flow-cytometry

Skills

Operating Systems	Unix/Linux, Windows, MacOS
Programming Languages	Python, R, Bash
Development Tools	Visual Studio Code, git., Jupyter, RStudio, ShinyApps
Office	LaTeX, Pack Office(Word, Excel, PowerPoint).

Publications

2020 Jonathan D. Rubin, Jacob T. Stanley, **Rutendo F. Sigauke**, Cecilia B. Levandowski, Zachary L. Maas, Jessica Westfall, Dylan J. Taatjes, Robin D. Dowell. "Transcription factor enrichment analysis (TFEA) : Quantifying the activity of hundreds of transcription factors from a single experiment". Nature Communications **In Review**.

2018 Diego Páez-Moscoso, Lili Pan, **Rutendo F. Sigauke**, Morgan Schroeder, and Wen Tang, Peter Baumann. "Pof8 is a La-related protein and a constitutive component of telomerase in fission yeast". Nature Communications 9, no. 1 (February 8, 2018) : 587.

Conferences

2019 **Rutendo F. Sigauke**, Jacob T. Stanley, Robin D. Dowell. "Technical Bias Correction of Sequencing Libraries Using Wavelet Transform Analysis and Clustering. ISCB Rocky Bioinformatics Conference". Aspen/Snowmass CO

2018 **Rutendo F. Sigauke**, Jonathan D. Rubin, Jacob T. Stanley, Robin D. Dowell. "Measuring Transcription Factor Activity with Nascent RNA Sequencing using Transcription Factor Enrichment Analysis (TFEA)". ISCB Rocky Bioinformatics Conference. Aspen/Snowmass CO

2015 **Rutendo F. Sigauke**, Li Chen, Alison Burns, Peter Baumann. "Using RNA-Seq to elucidate the effects of the mammalian methyltransferase Tgs1 in RNA processing". University of Oregon Genomics in Action Meeting. Eugene OR

2014 Thom Nelson, **Rutendo F. Sigauke**, Alan G. DanAdel, Michelle Domini, Micheal Montgomery, William Cresko. "Differential gene expression analysis in murine pre-glioblastoma cells". Oregon Biosciences Association Annual Conference. Portland OR

2013 **Rutendo F. Sigauke**, Lars Meisner, Katie Gelinas, Jodi Goldberg. "The Significance of the Protein Phosphatase 1H (PPM1H) gene in Colorectal Cancer (CRC)". Minnesota Academy of Science 25th Winchell Undergraduate Research Symposium. Minneapolis, MN

Service

2020 **Computational Bioscience CU Anschutz Medical Campus** - CPBS7711/7712 Curriculum Planning Committee (Student Representative)

2019 - present **Computational Bioscience CU Anschutz Medical Campus** - Seminar Series Committee Co-Chair

Women in Science and Engineering CU Boulder - Outreach and Professional Development Committee Co-Chair

Outreach and Volunteering

2019 **Think Like a Scientist** - Teaching elementary school students how to critically analyze the news

Short Read Workshop - Prepared and taught a lecture on linux/unix for bioinformatics

2018 **Short Read Workshop** - Prepared a lecture on using R as a programming language and led a hands-on workshop using R in Rmarkdown

2017 **Kansas DNA Day** -

- Led the organization of KSDNADay for participants at Stowers Institute for Medical Research.
- Prepared and presented modules for Genomic Inheritance, Pharmacogenomics and Phylogeography classes to various high schools in Kansas City, Kansas.

Interests

Art : painting, drawing

Extracurricular : hiking