# RUTENDO F. **SIGAUKE**

## Bioinformaticist | Computational Biology Ph.D. Student

@ rutendo.sigauke@cuanschutz.edu
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

2020 **GO (Girls Opportunity) STEM** - Gave a presentation and led a workshop of the topic of 'Six Degrees of Separation' to high school students in Adams 12 County.

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