



CENTURION UNIVERSITY OF TECHNOLOGY & MANAGEMENT, ODISHA

Workshop on

"NGS Data Analysis"

Date: 30-06-2021

Resource Person:

Chris Krichberg, USA

Technical Enablement Engineer for JMP

No. of Participants: 30

JMP Technical Enablement Engineer, SAS



Chris Kirchberg is a Technical Enablement Engineer for JMP, a business unit of SAS that specializes in data visualization software. Chris has more than 20 years of experience in bioinformatics, proteomics, genomics and clinical trials. Before joining SAS, Kirchberg worked at various bioinformatics and pharmaceutical companies helping customers explore biological pathways related to data and instructing users on software applications related to expression data analysis, data integration and protein identification.

Next generation sequencing (NGS) data is extremely high throughput, allowing for exponentially higher amounts of data to be generated than the traditional Sanger Sequencing. This is made possible by procuring millions of sequence clusters in parallel, and reading the sequences of all of these clusters base by base, through cycles of nucleotide incorporation, fluorescence reading, and dye cleaving (1). The explosion of experimental data from NGS has driven the need for new paradigms for data computation and knowledge extraction. In this knowledge base, we describe the common formats of NGS raw data files and some downstream analysis of NGS data.

Discussion Topics:

- Perform RNA-seq Differential Expression Analysis (DEG)
- Implement a workflow using JMP Genomics
- Apply, visualize and interpret normalization and quality control techniques
- Find and analyze Principal Components (PCA)
- Use and interpret ANOVA Mixed Model Differential Expression techniques
- Deploy Next Generation Expression Sequencing and interpret volcano plots and Venn diagrams
- Cross-correlate between mRNA and miRNA

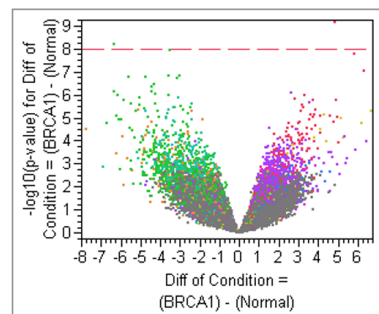
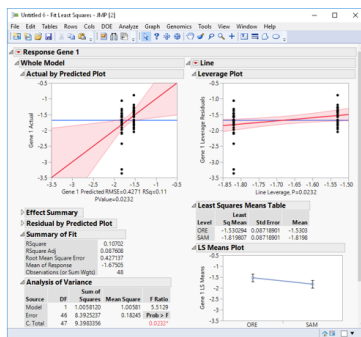
The Role of Software

- Improve Efficiency/Accessibility and Ensure Accuracy/Reproducibility
- End-to-end analysis workflows; Reduce unnecessary data manipulation that can introduce errors
- Robust statistical analysis capabilities; Fit appropriate normalization and model based on QC, distributions, and correlation patterns
- Early and often visual assessment of data patterns; Detect data anomalies, structure, quality issues and assess the right model fit
- Explore, Understand, Repeat, Reproduce, Redistribute

JMP Genomics

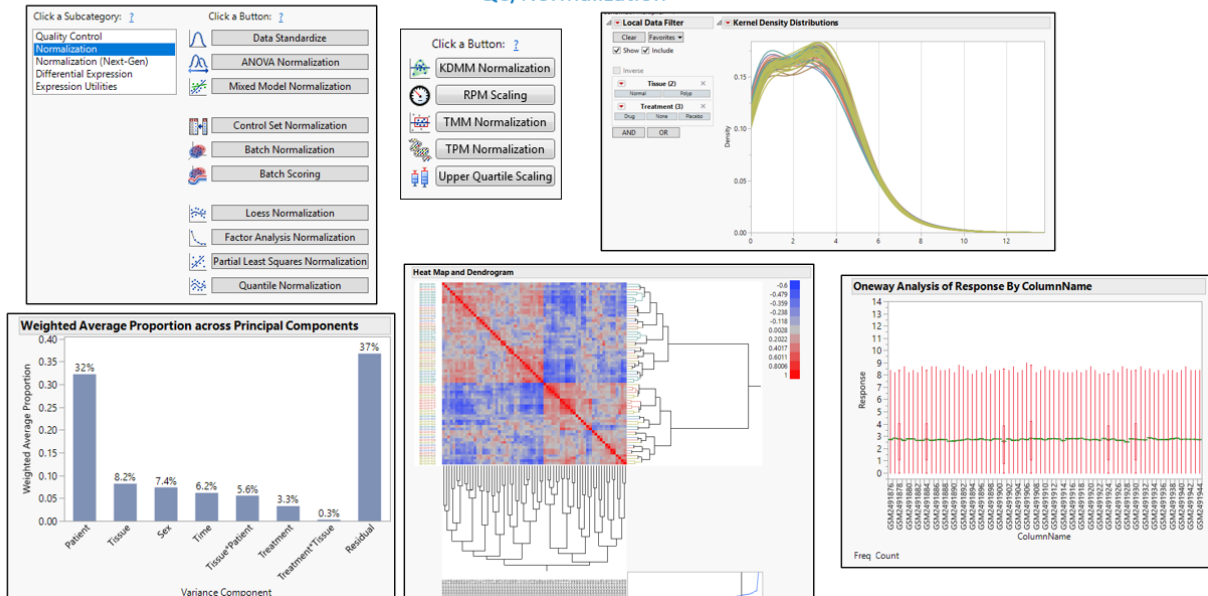
Origin Story: [BIG and MANY](#)

- Are you testing for differences in DNA or gene expression?
- Are you building biomarker models with large biological data?



Expression/NGS

QC/Normalization



Screenshots of the session on NGS Data Analysis: Implement a workflow using JMP Genomics

Centurion UNIVERSITY

WORKSHOP ON NGS DATA ANALYSIS

Date: 30-06-2021

Organised by :
Centurion University of Technology and Management

RESOURCE PERSON
Chris Kirchberg, USA
Technical Enablement Engineer for JMP

centurion university of technology and management
Shaping Lives... Empowering Communities...

Brochure of the online session

List of Participants:

1	Dr. Raghu Gogada	Professor
2	Dr. Udit Nandan Mishra	Assistant Professor
3	Dr. Gaikward D.J.	Assistant Professor
4	Dr. Praveen Boddna	Professor
5	Dr. Ria Mukhopadhyay	Assistant Professor
6	Dr. Gagan Kumar	Assistant Professor
7	Ms. Abhinandita Sahoo	Assistant Professor
8	Dr. Praveen Kumar	Assistant Professor
9	Prof.(Dr) V. Narsimha Reddy	Professor
10	Dr. Kalidindi Krishnam Raju	Associate Professor
11	Dr. Hari Ram Kumar Bandi	Assistant Professor
12	Mr. Durgadatta Mehera	Assistant Professor
13	Dr. Niranjana Kumar Chaurasia	Assistant Professor
14	Prof.(Dr) M. Devender Reddy	Professor cum Dean Acad
15	Dr. Sagar Maitra	Professor
16	Prof.(Dr) Gouranga Ch. Mishra	Professor
17	Dr. Tanmoy Shankar	Associate Professor
18	Dr. Subhashisa Praharaj	Assistant Professor
19	Ms. Jnana Bharati Palai	Assistant Professor
20	Ms. Deepthi Chandaka	Assistant Professor
21	Dr. Sivala Kumar	Professor
22	Dr. Kakani Grihalakshmi	Associate Professor
23	Dr. Gitanjali Behera	Assistant Professor

24	Dr. Rajashree Jena	Assistant Professor
25	Ms. Sharmistha Sahu	Assistant Professor
26	Dr. Vivek Kumar	Assistant Professor
27	Mr. Bhisma Narayan Ratha	Assistant Professor
28	Dr. Prasanta Kumar Choudhury	Assistant Professor
29	Dr. Ashish Ranjan Dash	Associate Professor
30	Ms. N. Jeebaratnam	Assistant Professor



Prof. KVD Prakash
Dean - IIE & HRD



Dr. Prasanta Ku. Mohanty
Dean Academic