

# NGS Bioinformatics Course

## AFRICA 2021

### Module 7: RNA-Seq Expression Analysis (Human)

#### Practical Assignment **MEMORANDUM**

**Module topic:** Analysis of RNA-sequencing data

**Contact session title:** Module 7 Day 1: RNA-Seq human

**Trainer:** Nyasha Chambwe, Phelelani Mpangase, Jon Ambler

#### Introduction

This practical illustrates the principles of RNA-seq expression analysis using data derived from human subjects. The practical assignment for this module can be found in the file:

[‘Module7\\_RNASeq\\_Human\\_Practical.pdf’](#).

The participant should follow the instructions outlined in this manual and perform each analysis step as indicated. Each practical section ends with a series of exercises that are compiled in the accompanying assignment document.

Participants should answer the questions at the end of each section and submit their answers by the deadline indicated on Vula.

#### Learning Outcomes

The learning outcomes for this session are for the participants to be able to:

- Align RNA-Seq reads to a reference genome and a transcriptome
- Visualise transcription data using standard tools
- Perform QC of NGS transcriptomic data
- Quantify the expression values of your transcripts using standard tools

#### Tools used in this session

*List any tools and appropriate URLs or software download information. Please note: use web-based online applications as far as possible.*

See Section 1.5 Prerequisites in [Module7\\_RNASeq\\_Human\\_Practical.pdf](#)

#### Assigned Tasks

See ‘Questions’ sections in [‘Module7\\_RNASeq\\_Human\\_Practical.pdf’](#)

## Additional Information

### **Supplemental Data**

Please take note of the supplemental data download instructions in Section 1.6.1. Please help facilitate the acquisition of these two transcript annotation reference files. They are critical for completing Section 5 of this practical.

### **Optional**

This practical has been offered over an 8 hour session in the past and as such we cannot cover all the material here. There is an additional section included at the end of this practical on normalisation. This is largely for the more advanced participants who complete the exercises quickly or for participant's future reference. There are no exercises associated with this section.