|  |
| --- |
| ***Insert Laboratory Specific Name Here*** |
| **Operating in Linux Environments Training Form** |

|  |  |
| --- | --- |
| **Employee Name** | **Training Start Date** |
|  |  |

**Section I – *TELL* - Base Knowledge (Video and Reading Requirements)** *[select videos and documents relevant to your lab processes; add other videos and documents as appropriate]*

|  |  |  |
| --- | --- | --- |
| **Document Name** | **Trainee Initials** | **Date Watched** |
| [***The Linux Command line for beginners***](https://ubuntu.com/tutorials/command-line-for-beginners#1-overview) |  |  |
| [***An introduction to Linux for Bioinformatics***](https://sites.ualberta.ca/~stothard/downloads/linux_for_bioinformatics.pdf) |  |  |
| [***30 Useful ‘ps Command’ Examples for Linux Process Monitoring***](https://www.tecmint.com/ps-command-examples-for-linux-process-monitoring/) |  |  |

**Section II – *SHOW* - Observation: Trainee observes the trainer perform all steps in the Operating in Linux SOP**

|  |  |  |
| --- | --- | --- |
| **Discussion Points** | **Trainer Initials** | **Date** |
| What are the benefits of utilizing a command-line interface when developing and executing Bioinformatics tools? |  |  |
| What commands and parameters would you utilize to execute *\*insert Pipeline of choice here\**, given that your starting point is from your home directory? |  |  |
| How would you go about monitoring a Bioinformatics job that has been executed? What tools and associated commands would you use? |  |  |
| *Add additional questions the trainer should ask the trainee to determine level of understanding specific to your protocol.* |  |  |

**Section III – *DO -* Performance under Supervision: Trainee performs all steps in the sequencing Operating in Linux SOP under direct trainer supervision**

Controls and/or sample(s) will be provided to the trainee. The trainee will:

*(Find example steps below, insert steps specific to your lab)*

1. *Login to the Linux Environment (following your group’s access procedure) and navigate to working directory.*
2. *Perform basic navigation commands to access files, directories and analytical tools needed for a given pipeline.*
3. *Perform execution of pipeline and demonstrate knowledge of tools for monitoring the job / run.*

Successful performance criteria: All steps to perform Linux operations are followed appropriately, data are accurately processed and saved correctly.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Performance Assessment** | **Yes** | **No** | **Trainer Initials** | **Date** |
| *Connected and logged into environment successfully*  |  |  |  |  |
| *Performed basic navigation commands to retrieve files and directories and access tools* |  |  |
| *Executed pipeline successfully and demonstrated knowledge of how to monitor the workflow* |  |  |
| **Comments:** |

**Section IV – *APPLY -* Independent Performance: Trainee individually executes all steps in the Operating in Linux SOP**

Previously run sample(s) will be provided to the trainee. The trainee will:

*(Find example steps below, insert steps specific to your lab)*

1. *Connect and login to the appropriate environment*
2. *Connect and log into appropriate linux environment*
3. *Perform basic navigation commands to retrieve files and directories and access tools*
4. *Execute pipeline successfully and demonstrate knowledge of how to monitor the workflow*

Successful performance criteria: All steps to perform Linux operations are followed appropriately, data are accurately processed and saved correctly.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Performance Assessment** | **Yes** | **No** | **Trainer Initials** | **Date** |
| *Connected and logged into environment successfully*  |  |  |  |  |
| *Performed basic navigation commands to retrieve files and directories and access tools* |  |  |
| *Executed pipeline successfully and demonstrated knowledge of how to monitor the workflow* |  |  |
| **Comments:** |

**Section V – Employee Attestation**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attestations** | **Yes** | **No** | **Trainee Initials** |
| I read and understand the procedures listed in the required reading. | **** | **** |  |
| I had an opportunity to discuss my questions with the trainer. | **** | **** |  |
| I am satisfied with the explanations provided to me; all my questions were answered. | **** | **** |  |

**Section VI – Review and Signatures**

|  |  |  |
| --- | --- | --- |
| **Trainee Name** | **Signature** | **Date** |
|  |  |  |
| **Trainer Name** | **Signature** | **Date** |
|  |  |  |
| **CLIA Technical or General Supervisor (as applicable)** | **Signature** | **Date** |
|  |  |  |

**Appendix A – Trainer Discussion Topic Answer Sheet**

**What are the benefits of utilizing a command-line interface (CLI) when developing and executing Bioinformatics tools?**

There are advantages and disadvantages to either a CLI or Graphical User Interface (GUI). Learning and remembering typed commands can take time and effort and may not be the easiest option for users that are inexperienced with CLI. Expert users of CLI may find in many cases that command line can be much faster and easier to use given proper experience and practice. Among other advantages for general use of a CLI, bulk operations on files and folders may be performed more quickly because of reduced navigation involved with a GUI, furthermore, the use of scripting can enable complex tasks to be automated and performed with reduced manual effort.

**What commands and parameters would you utilize to execute *\*insert Pipeline of choice here\**, given that your starting point is from your home directory?**

*\*The answer to this question will depend on your lab’s workflow, and should account for all the steps that you expect the trainee to be responsible for executing and overseeing\**

**How would you go about monitoring a Bioinformatics job that has been executed? What tools and associated commands would you use?**

*\*The answer to this question will depend on your lab’s workflow, and should account for all the steps that you expect the trainee to be responsible for executing and overseeing\**

***\*Insert answers to additional discussion topics here (including tool-specific questions)\****