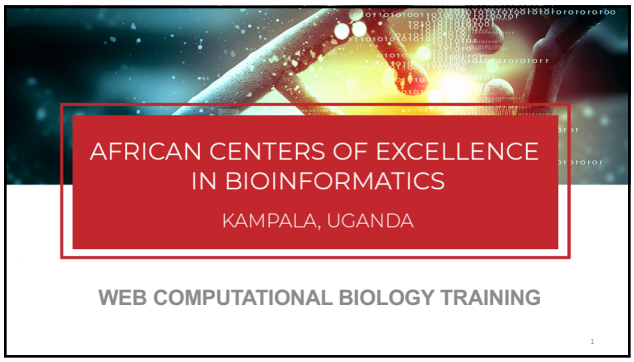

Today's Instructor

Dr. Amitava Roy,
Ph.D. in Physics

Ongoing Computational Biology projects:
- Vaccine development
- Structure determination of prion

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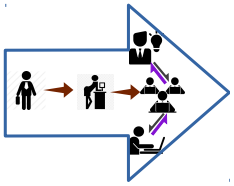
Unix for Computational Biology

Computational biology requires putting together many several tools together to create a pipeline.



Fundamental design concept in Unix is like a 'workbench' of small tools, each of which only does one thing but does it very well. Unix allows easy integration of different tools in to a pipeline. Programs can run on background – do not need their own pop up window

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Unix – Scripts

Unix can also be used as a programming language just like Python. Depending on what you want to do, a Unix script might solve all your problems and mean that you don't really need to learn Python at all.

So how do we make a Unix script (which are commonly called 'shell scripts')? At the simplest level, we just write one or more Unix commands to a file and then treat that file as if it was any other Unix command or program.

```
# my first Unix shell script
echo "Hello World"
```

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Unix – Scripts

Advantages
- Easy to use.
- Quick start, and interactive debugging.
- Time Saving.
- Sys Admin task automation.
- Shell scripts can execute without any additional effort on nearly any modern Unix/Linux/BSD/Mac OS X operating system as they are written an interpreted language.

Disadvantages
- Compatibility problems between different platforms.
- Slow execution speed.
- A new process launched for almost every shell command executed.

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Unix – Internal vs External commands

Internal Commands : Commands which are built into the shell. Fast execution as the shell doesn't have to search the excutable and also no process needs to be spawned for executing it. Examples: source, cd etc. You can get a list of internal commands by typing

```
help
```

External Commands : Commands which aren't built into the shell. Shell looks for the executable in directories in PATH variable and also a new process has to be spawned and the command gets executed. They are usually located in /bin or /usr/bin. Examples: ls, mv, cp etc. You can find out whether a specific command is internal or external by typing

```
type –a ls
```

Other than execution speed not much different to a user

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Unix – First script

Let us write our first script.

When executing the script we will need to change permission of the script file using command **"chmod"** so that it can be executed.

First hands on exercise - handson_unix_II_1.sh

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