

HIGH PERFORMANCE RESEARCH COMPUTING

Fundamentals of R Programming

HPRC Training

21 February 2025

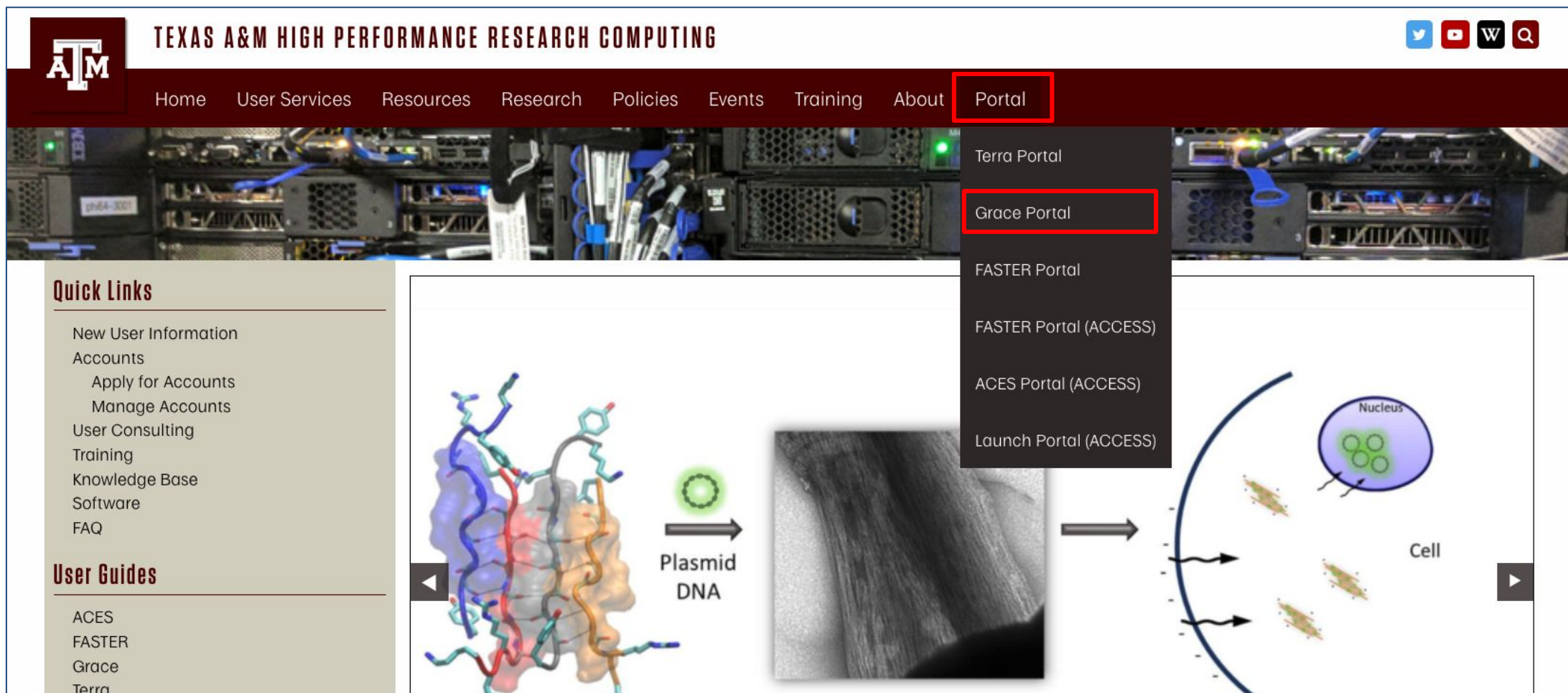


High Performance
Research Computing
DIVISION OF RESEARCH

Course Outline

1. Accessing Grace
2. Launching Tutorials OnDemand
3. Arithmetic Operators
4. Data Types and Variables
5. Built-in Functions
6. Vectors
7. Matrices
8. Data Frames

Accessing the HPRC Grace Portal



The screenshot displays the Texas A&M High Performance Research Computing (HPRC) website. The header features the ATM logo and the text "TEXAS A&M HIGH PERFORMANCE RESEARCH COMPUTING". A navigation bar includes links for Home, User Services, Resources, Research, Policies, Events, Training, About, and Portal. The Portal link is highlighted with a red box. A dropdown menu is open, showing options: Terra Portal, Grace Portal (highlighted with a red box), FASTER Portal, FASTER Portal (ACCESS), ACES Portal (ACCESS), and Launch Portal (ACCESS). On the left, a "Quick Links" section lists various user services, and a "User Guides" section lists links for ACES, FASTER, Grace, and Terra. The main content area features a large image of server racks and a diagram illustrating a biological process involving Plasmid DNA and a cell.

Quick Links

- New User Information
- Accounts
 - Apply for Accounts
 - Manage Accounts
- User Consulting
- Training
- Knowledge Base
- Software
- FAQ

User Guides

- ACES
- FASTER
- Grace
- Terra

Plasmid DNA

Nucleus

Cell

HPRC webpage: hprc.tamu.edu

Launching Tutorials OnDemand on Grace

The screenshot shows the TAMU HPRC OnDemand (Grace) web interface. The top navigation bar includes links for Apps, Files, Jobs, Clusters, Interactive Apps, Dashboard, and My Interactive Sessions. The 'Interactive Apps' menu is open, displaying a list of applications categorized by type: BIO, GUI, and Imaging. The 'Imaging' category is highlighted, showing a list of applications including ChimeraX, Diffusion Toolkit & TrackVis, FSL, Fiji, ImageJ, VMD, cisTEM, and CryoSPARC 3.3.1, 4, and 4.5.1. A red box highlights the 'Tutorials OnDemand' option at the bottom of the Imaging list. A red arrow points from a text box to this option. The text box contains the instruction: 'Scroll down to the bottom of the drop-down menu'. The main content area shows 'Pinned Apps' (Drona Joblisting, Grace da..., Jupyter Notebook) and a 'Message of the Day' section with 'IMPORTANT POLICY INFORMATION'.

TAMU HPRC OnDemand (Grace) Apps Files Jobs Clusters **Interactive Apps** Dashboard My Interactive Sessions Develop Help Logged in as wbrashear Log Out

OnDemand provides an integrated,
our HPC resources.

Pinned Apps A featured sub

Message of the Day

IMPORTANT POLICY INFORMATION

- Unauthorized use of HPRC resources is prohibited and subject to criminal prosecution.
- Use of HPRC resources in violation of United States export control laws and regulations is prohibited. Current HPRC staff members are US citizens and legal residents.
- Sharing HPRC account and password

Scroll down to the bottom of the drop-down menu

Imaging

- ChimeraX
- Diffusion Toolkit & TrackVis
- FSL
- Fiji
- ImageJ
- VMD
- cisTEM
- CryoSPARC 3.3.1
- CryoSPARC 4
- CryoSPARC 4.5.1
- Tutorials OnDemand**

powered by **OnDemand**

Tutorials OnDemand

This app will launch Tutorials OnDemand on the [Grace cluster](#).

What tutorial would you like to access?

Fundamentals of R

Select "Fundamentals of R"

Number of hours (max 10)

8

Set number of hours to 8

Email

This field is optional.

Launch

Click "Launch" once the correct parameters have been selected

* The Tutorials OnDemand session data for this session can be accessed under the [data root directory](#).

Session was successfully created.



[Home](#) / [My Interactive Sessions](#)

Interactive Apps

BIO

Beauti

CRISPR-Local

Gap5

IGV

JBrowse

Mauve

RNAlysis

Structure

XtalOpt

Tutorials OnDemand (11562830)

1 node | 2 cores | Running

Host: >_c310

Delete

Created at: 2024-10-01 09:29:00 CDT

Time Remaining: 7 hours and 54 minutes

Session ID: b50faf7f-97ea-49c0-bd64-6e58c79201d1

Connect to Tutorials OnDemand: Fundamentals of R

Click this button when it says
"Connect to Tutorials
OnDemand: Fundamentals of
R" (this will take a minute)

Transition to Workbook

Fundamentals of R

Mathematics Operations

Data types

Variables

Built-in functions

Vectors

Flow control

Matrices

Data Frames and Tibbles

dplyr

Importing and Exporting Data

Regression

Principal Component Analysis

Data Visualization with ggplot2

Texas A&M University High Performance
Research Computing

Start Over

Mathematics Operations

In it's simplest form, R can be used as a calculator (although it can do so much more!). Let's get started in R by doing some basic arithmetic!

Arithmetic Operators

- Addition: `+`
- Subtraction: `-`
- Multiplication: `*`
- Division: `/`
- Exponentiation: `^`
- Modulo: `%%`

Use the correct operators to complete the equations in the code chunks below.

R Code [Start Over](#) [Run Code](#)

```
1 # Add 12 and 3
2
3
```

R Code [Start Over](#) [Run Code](#)

```
1 # Subtract 7 from 11
2
3
```

R Code [Start Over](#) [Run Code](#)

```
1 # Multiply 27 by 9
2
3
```

R Code [Start Over](#) [Run Code](#)

```
1 # Divide 46 by 8
2
3
```



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<https://hprc.tamu.edu>

HPRC Helpdesk:

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Phone: 979-845-0219

Take our short course survey!



HPRC Survey

https://u.tamu.edu/hprc_shortcourse_survey

Help us help you. Please include details in your request for support, such as, Cluster (Faster, Grace, ACES, Launch), NetID (UserID), Job information (Job id(s), Location of your jobfile, input/output files, Application, Module(s) loaded, Error messages, etc), and Steps you have taken, so we can reproduce the problem.

