R: fundamental skills for biologists

1, 8 , 15 & 22 June 2022

2-5pm AEST/ 1:30-4:30pm ACST/ 12-3pm AWST

Lead Trainers:
Dr Saskia Freytag, WEHI
Dr Brendan Ansell, WEHI
Dr Maria Doyle, Peter MacCallum Cancer Centre
Ms Adele Barugahare, Monash Bioinformatics Platform

Host: Dr Melissa Burke, Australian BioCommons

Training materials: https://saskiafreytag.github.io/biocommons-r-intro/

Schedule

*Timings are approximate and subject to change. [Check the start time in your location here](#)

Wednesday 1 June 2022

Session 1: Spreadsheets, organising data and first steps with R

1 June 2022	Topic	Who
14:00 AEST 13:30 ACST 12:00 AWST	**Welcome and Housekeeping**	Melissa
14:10 AEST 13:40 ACST 12:10 AWST	**Spreadsheets** - Introduction - Formatting tables - Common mistakes	Saskia
14:30 AEST 14:00 ACST 12:30 AWST	**Breakout activity**: Messy dataset	All
14:55 AEST 14:25 ACST 12:55 AWST	**Spreadsheets** - Exporting data	Saskia
15:00 AEST 14:30 ACST 13:00 AWST	**First steps in R** - Why learn R? - R Studio - Setting up your project	Saskia
15:10 AEST 14:40 ACST 13:10 AWST	**Breakout Activity:** Create your project directory	All
15:20 AEST 14:50 ACST 13:20 AWST	**First steps in R** Setting your working directory + Interacting with R	Saskia
15:25 AEST 14:55 ACST 13:25 AWST	**Question + Answer Time**	All
15:30 AEST 15:00 ACST 13:30 AWST	**Break**	

15:45 AEST 15:15 ACST 13:45 AWST	***First steps in R*** - Loading R packages - Creating objects - Functions - Vectors and data types	Saskia
16:10 AEST 15:40 ACST 14:10 AWST	***Breakout Activity:*** Some questions	All
16:20 AEST 15:50 ACST 14:20 AWST	***First steps in R*** - Subsetting vectors + naming vectors - Missing data - Generating vectors	Saskia
16:45 AEST 16:15 ACST 14:45 AWST	***Asking for help***	Saskia
16:50 AEST 16:20 ACST 14:50 AWST	***Questions + Homework***	All
16:55 AEST 16:25 ACST 14:55 AWST	***Wrap up and reminders***	Melissa
17:00 AEST 16:30 ACST 15:00 AWST	***End of session***	
17:00 AEST 16:30 ACST 15:00 AWST	***OPTIONAL: Social session (30 minutes)***	All

------ Between session homework ------

Wednesday 8 June 2022

Session 2: Manipulating and analysing data with dplyr

8 June 2022	Topic	Who
14:00 AEST 13:30 ACST	***Welcome and housekeeping***	Melissa

Time	Activity	Presenter
12:00 AWST		
14:10 AEST 13:40 ACST 12:10 AWST	*Homework and recap*	All
14:20 AEST 13:50 ACST 12:20 AWST	*Starting with data* - Loading data	Saskia
14:30 AEST 14:00 ACST 12:30 AWST	*Breakout activity*: Structure question	All
14:40 AEST 14:10 ACST 12:40 AWST	*Starting with data* - Indexing and subsetting	Saskia
14:45 AEST 14:15 ACST 12:45 AWST	*Breakout Activity:* Subsetting questions	All
14:55 AEST 14:25 ACST 12:55 AWST	*Starting with data* - Factors - Matrices - Lists - Exporting and saving data	Saskia
15:25 AEST 14:55 ACST 13:25 AWST	*Question and answer time*	All
15:30 AEST 15:00 ACST 13:30 AWST	*Break*	
15:40 AEST 15:10 ACST 13:40 AWST	*dplyr* - tidyverse introduction - Selecting columns and rows - Pipes - Mutate + Split-apply-combine - Summarize - Counting	Brendan
16:15 AEST 15:45 ACST 14:15 AWST	*Breakout Activity*: Summarize and Counting	All
16:30 AEST 16:00 ACST 14:30 AWST	*dplyr* - Reshape data	Brendan
16:35 AEST 16:05 ACST 14:35 AWST	*Breakout Activity:* Reshape data	All

16:45 AEST 16:15 ACST 14:45 AWST	*dplyr* - Exporting and saving data	Brendan
16:50 AEST 16:20 ACST 14:50 AWST	*Questions + Homework*	All
16:55 AEST 16:25 ACST 14:55 AWST	*Wrap up and reminders*	Melissa
17:00 AEST 16:30 ACST 15:00 AWST	*End of session*	
17:00 AEST 16:30 ACST 15:00 AWST	*OPTIONAL: Social session* (30 minutes)	All

------ Between session homework ------

Wednesday 15 June 2022

Session 3: Data visualisation

15 June 2022	Topic	
14:00 AEST 13:30 ACST 12:00 AWST	*Welcome and Housekeeping*	Melissa
14:10 AEST 13:40 ACST 12:10 AWST	*Recap + Question time*	All
14:25 AEST 13:55 ACST 12:25 AWST	*Homework*	All
14:35 AEST 14:05 ACST 12:35 AWST	*Visualisation* - ggplot2 intoduction - Log transformation - Building plots iteratively	Saskia
14:55 AEST 14:25 ACST 12:55 AWST	*Breakout Activity:* Scatterplots	All

15:10 AEST 14:40 ACST 13:10 AWST	***Visualisation*** - Boxplots	Saskia
15:25 AEST 14:55 ACST 13:25 AWST	***Breakout Activity:*** Boxplots	All
15:35 AEST 15:05 ACST 13:35 AWST	***Break***	
15:45 AEST 15:15 ACST 13:45 AWST	Recap of Boxplots challenge	All
15:50 AEST 15:20 ACST 13:50 AWST	***Visualisation*** - Line plots - Faceting - Customisation - Exporting plots	Saskia
16:25 AEST 15:55 ACST 14:25 AWST	***Breakout activity:*** Ugly plot competition	All
16:50 AEST 16:20 ACST 14:50 AWST	***Questions + Homework***	All
16:55 AEST 16:25 ACST 14:55 AWST	***Wrap up and reminders***	Melissa
17:00 AEST 16:30 ACST 15:00 AWST	**END OF SESSION**	

------ Between session homework ------

Wednesday 22 June 2022

Session 4: Summarized experiments and getting started with
Bioconductor

22 June 2022	Topic	Who
14:00 AEST 13:30 ACST 12:00 AWST	*Welcome and Housekeeping*	Melissa
14:10 AEST 13:40 ACST 12:10 AWST	*Homework and recap*	All
14:20 AEST 13:50 ACST 12:20 AWST	*SummarizedExperiment* - Data containers and - SummarizedExperiment introduction - Creating a SummarizedExperiment - Subsetting a SummarizedExperiment	Maria
14:45 AEST 14:15 ACST 12:45 AWST	*Breakout activity:* subsetting SummarizedExperiment	All
14:55 AEST 14:25 ACST 12:55 AWST	*SummarizedExperiment* - Adding variables to SummarizedExperiment metadata - tidySummarizedExperiment introduction	Maria
15:10 AEST 14:40 ACST 13:10 AWST	*Breakout activity:* exploring tidySummarizedExperiment	All
15:20 AEST 14:50 ACST 13:20 AWST	*Extension of SummarizedExperiment to SingleCellExperiment*	Maria
15:25 AEST 14:55 ACST 13:25 AWST	*Question and answer time*	All
15:30 AEST 15:00 ACST 13:30 AWST	*Break*	
15:45 AEST 15:15 ACST 13:45 AWST	*Bioconductor* - Introduction and website	Saskia

15:50 AEST 15:20 ACST 13:50 AWST	*Breakout activity:* biocViews	All
16:00 AEST 15:30 ACST 14:00 AWST	*Bioconductor* - Vignettes and Core prinicples	Saskia
16:05 AEST 15:35 ACST 14:05 AWST	*Breakout activity:* S4 classes	All
16:10 AEST 15:40 ACST 14:10 AWST	*Bioconductor* - Release cycle and annotations	Saskia
16:20 AEST 15:50 ACST 14:20 AWST	*Breakout activity:* Annotations	All
16:35 AEST 16:05 ACST 14:35 AWST	*Question + Answer Time*	All
16:50 AEST 16:20 ACST 14:50 AWST	**Next Steps**	Saskia
16:55 AEST 16:25 ACST 14:55 AWST	**Good-bye and feedback**	Melissa
17:00 AEST 16:30 ACST 15:00 AWST	**End of workshop**	