

Chairs: Dr. Shahram Kordasti (King's College London, UK), Dr. Duncan Murray (University Hospitals Coventry and Warwickshire, UK), Dr. Jonathan Irish (Vanderbilt University, USA), with the assistance of Dr. Todd Bartkowiak (Vanderbilt University, USA)

----- ===== Part 1 ===== -----

- 2:00 - 2:15 Welcome and Introduction, Goals of the Workshop (Kordasti)  
2:15 - 2:30 Introduction to RStudio and R (Irish)  
Everyone download and start installing code  
[https://github.com/JonathanIrish/datasci\\_london](https://github.com/JonathanIrish/datasci_london)
- 2:30 - 2:45 Data Science Overview, discussion of tools (Irish)  
t-SNE, UMAP, FlowSOM, SPADE, Phenograph, dbscan, MEM, etc.
- 2:45 - 3:00 Introduce the science for Irish examples covered in Part 2 (Irish)  
Human patient cGVHD phenotypes from Gandelman et al., *Haematologica* 2018  
Human blood cell CyTOF phenotypes from Diggins et al., *Nature Methods* 2017  
Human macrophage polarization phenotypes from Roussel et al., *JLB* 2017, *MiMB* 2019
- 3:00 - 3:15 Introduce the science for Murray example covered in Part 2 (Murray)  
List reference for Murray example(s)
- 3:15 - 3:30 Introduce the science for Kordasti example covered in Part 2 (Kordasti)  
List reference for Kordasti example(s)

----- ===== Break ===== -----

- 3:30 – 4:00 Coffee Break

----- ===== Part 2 ===== -----

- 4:00 – 4:15 Presentation from Cytobank / Beckman Coulter
- 4:15 – 4:45 Q & A on data science, tools, examples, and installing (All, including Cytobank)  
As needed, get everyone caught up on tools.
- 4:45 – 5:15 Hands on data analysis: R walkthrough for Irish example datasets (Irish)
- 5:15 – 5:30 Hands on data analysis: Data analysis examples (Kordasti)
- 5:30 – 5:45 Hands on data analysis: Data analysis examples (Murray)
- 5:45 – 6:00 Conclusion and final words, final questions, buffer (All)