WORK-FLOW
EDUCATION & SUPPORT

# Flow Essentials

## Section 1

1. What is Flow Cytometry? *FCE 1.1*
2. Common Applications *FCE 1.1*
3. Fluorescence – Light Spectrum *FCE 1.1*
4. Fluorescence – Absorption & Emission *FCE 1.1*
5. Fluorescence – Fluorochrome Classes *FCE 1.1*
6. Fluorescence – Fluorochrome Properties *FCE 1.1*
7. Fluidics – Flow *FCE 1.2*
8. Fluidics – Pressure & Flow Rate *FCE 1.2*
9. Fluidics – Acoustic-Assisted Focusing *FCE 1.2*
10. Optics – Excitation *FCE 1.3*
11. Optics – Light Collection *FCE 1.3*
12. Optics – Photo Detection *FCE 1.3*
13. Electronics – Amplification & Conversion *FCE 1.4*
14. Electronics – Voltage Pulse *FCE 1.4*
15. Electronics – Time Delay *FCE 1.4*
16. Electronics – Digitization & Binning *FCE 1.4*
17. Electronics – FCS File *FCE 1.4*
18. Section 1 – Summary *FCE 1.4*

## Section 2

1. Sample Requirements *FCE 2.1*
2. Cellular Markers and Dyes *FCE 2.1*
3. Fluorescence Detection *FCE 2.1*
4. Fluorochrome Selection *FCE 2.1*
5. Antigen Classification *FCE 2.2*
6. Antibody Titration *FCE 2.2*
7. Dead Cell Staining *FCE 2.2*
8. Exclusion / Dump Channel *FCE 2.2*
9. Spectral Overlap *FCE 2.3*
10. Compensation Controls *FCE 2.3*
11. Compensation *FCE 2.3*
12. Spectral Overlap Reduction *FCE 2.3*
13. Spillover Spreading *FCE 2.3*
14. Spillover Spreading Matrix *FCE 2.3*
15. Autofluorescence *FCE 2.4*
16. Fc-Mediated Binding *FCE 2.4*
17. Fluorescence Minus One Controls *FCE 2.4*
18. Biological Controls *FCE 2.4*
19. Replicates *FCE 2.4*
20. Section 2 – Summary *FCE 2.4*

## Section 3

1. Plots & Gates *FCE 3.1*
2. Scaling *FCE 3.1*
3. Acquisition Speed *FCE 3.1*
4. Event Cycling *FCE 3.1*
5. Scatter Setup *FCE 3.2*
6. Threshold & Trigger *FCE 3.2*
7. Aggregate Discrimination *FCE 3.2*
8. Dead Cell Exclusion *FCE 3.2*
9. Compensation *FCE 3.2*
10. Data Recording *FCE 3.3*
11. Data Exporting *FCE 3.3*
12. Assay Setup Validation *FCE 3.3*
13. Instrument Cleaning *FCE 3.3*
14. Section 3 – Summary *FCE 3.3*

## Section 4

1. Matrix Inspection *FCE 4.1*
2. Data Display – Histograms & Plots *FCE 4.1*
3. Data Display – Gates, Regions, Quadrants *FCE 4.1*
4. Data Display – Gating *FCE 4.1*
5. Biexponential Scaling *FCE 4.1*
6. Data Cleaning – Time Gating *FCE 4.2*
7. Data Cleaning – Debris Exclusion *FCE 4.2*
8. Data Cleaning – Aggregates & Dead Cells *FCE 4.2*
9. Data Cleaning – Autofluorescence *FCE 4.2*
10. Data Cleaning – Antibody Aggregates *FCE 4.2*
11. Data Cleaning – Impact *FCE 4.2*
12. Gate Validation – FMO Controls *FCE 4.3*
13. Gate Validation – Backgating/Color Gating *FCE 4.3*
14. Cell Cycle – One-color DNA Analysis *FCE 4.3*
15. Cell Cycle – Multi-color DNA Analysis *FCE 4.3*
16. Section 4 – Summary *FCE 4.3*

## Section 5

1. Number of Events to Record *FCE 5.1*
2. Descriptive Statistics – Distribution *FCE 5.1*
3. Descriptive Statistics – Central Tendency *FCE 5.1*
4. Descriptive Statistics – Dispersion *FCE 5.2*
5. Descriptive Statistics – Data Normalization *FCE 5.2*
6. Descriptive Statistics – Fold Change *FCE 5.2*
7. Inferential Statistics – Statistical Test *FCE 5.3*
8. Inferential Statistics – Statistical Power *FCE 5.3*
9. Inferential Statistics – Hypotheses *FCE 5.3*
10. Inferential Statistics – Significance Level *FCE 5.3*
11. Inferential Statistics – Statistical Errors *FCE 5.3*
12. Inferential Statistics – Probability Value *FCE 5.3*
13. Student's t-test – T-distribution & Freedom *FCE 5.4*
14. Student's t-test – Formula *FCE 5.4*
15. Student's t-test – Real-Life Example pt1 *FCE 5.4*
16. Student's t-test – Real-Life Example pt2 *FCE 5.4*
17. Section 5 – Summary *FCE 5.4*