1. Assemble sgRNA Barcode Transfer Vector Plasmid Pool

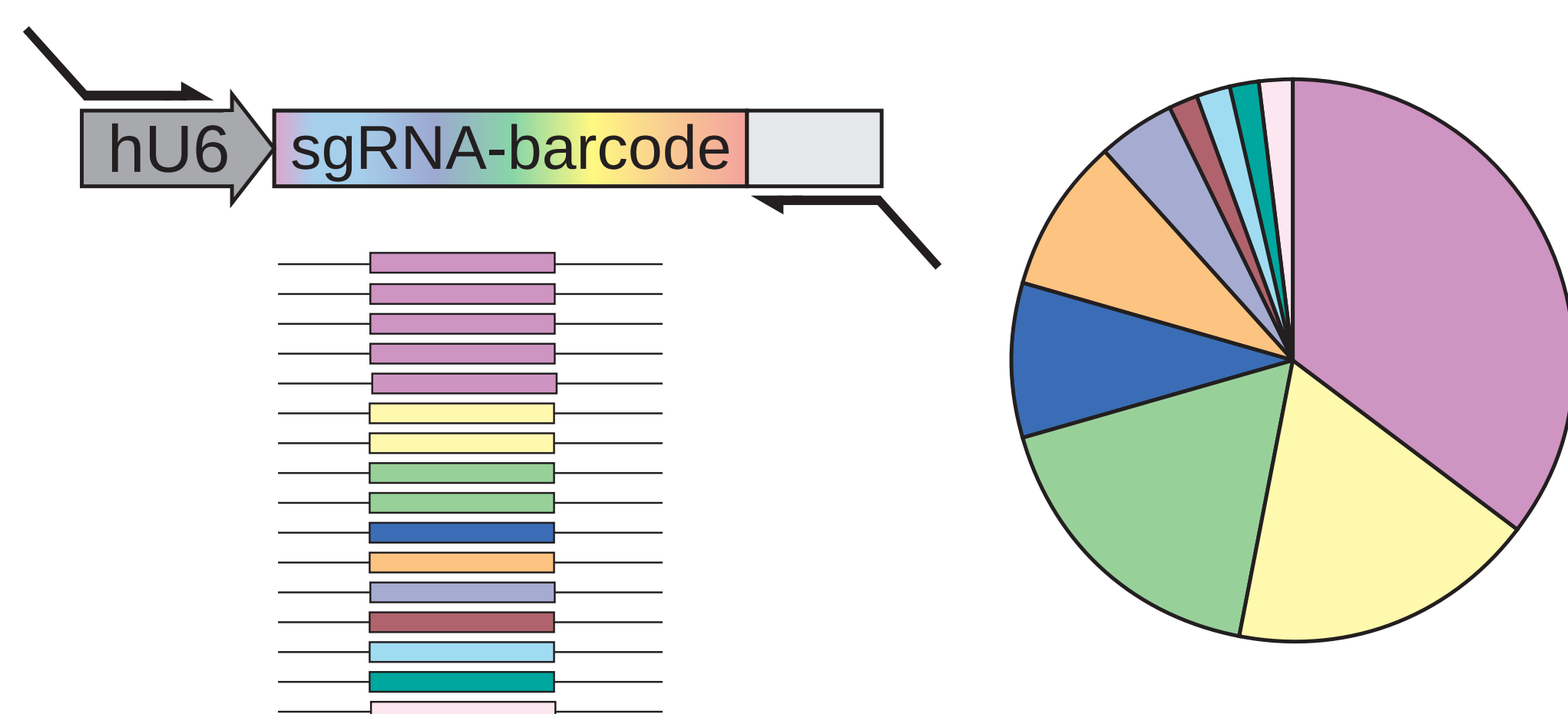| 5' LTR | EF-1a | BFP | WPRE | | hU6 | sgRNA-barcode | 3' LTR |

2. Package sgRNA Barcode Vector into Lentivirus and Tranduce Cells

FACS sort
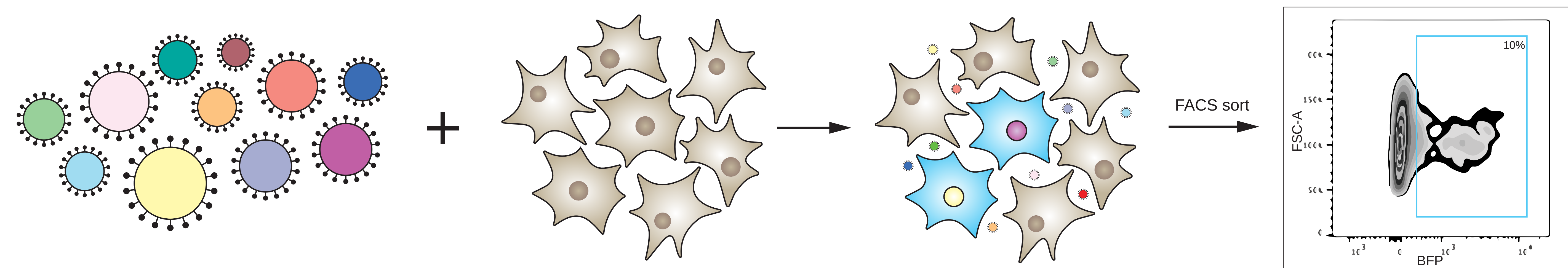
3. Transduced Cells Produce a Functional sgRNA Barcode and BFP
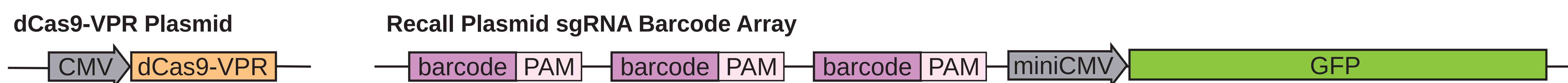
| hU6 | sgRNA-barcode | | EF-1a | BFP | WPRE | | hU6 | sgRNA-barcode |

(A)$_n$
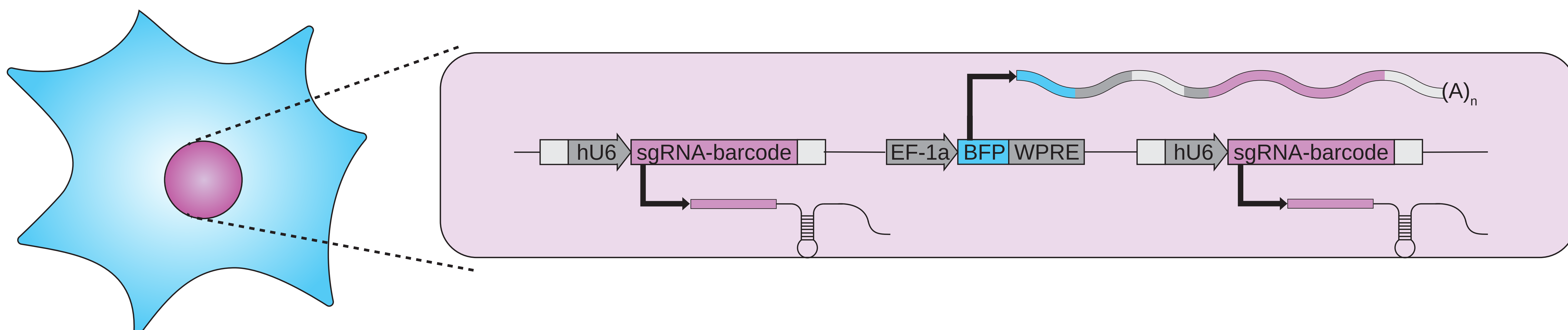
4. Barcode Sequence Analysis

| hU6 | sgRNA-barcode |

5. NGS Analysis

scRNAseq

PolyA Capture

AAAAAAAAAAAAAAAA
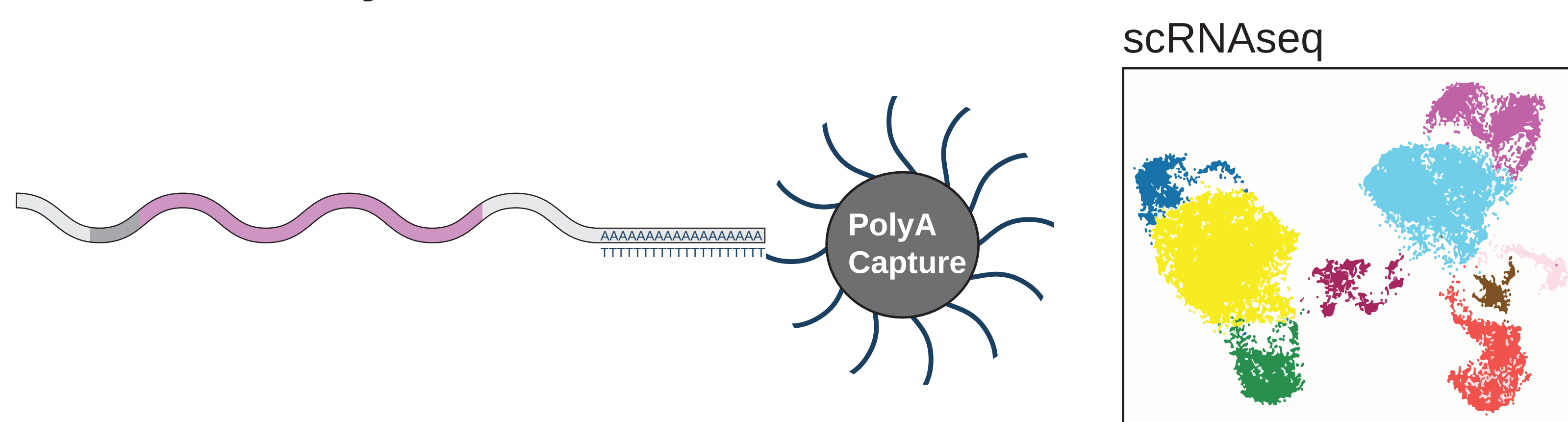
6. Prepare Recall Plasmids for Lineages of Interest

dCas9-VPR Plasmid

| CMV | dCas9-VPR |

Recall Plasmid sgRNA Barcode Array

| barcode | PAM | barcode | PAM | barcode | PAM | miniCMV | GFP |

7. Barcode Actuate Gene Expression For Lineage Isolation

Match

dCas9

VPR

GFP

RNA Pol II

Mismatch

dCas9

VPR

RNA Pol II