

Single cell or Bulk?

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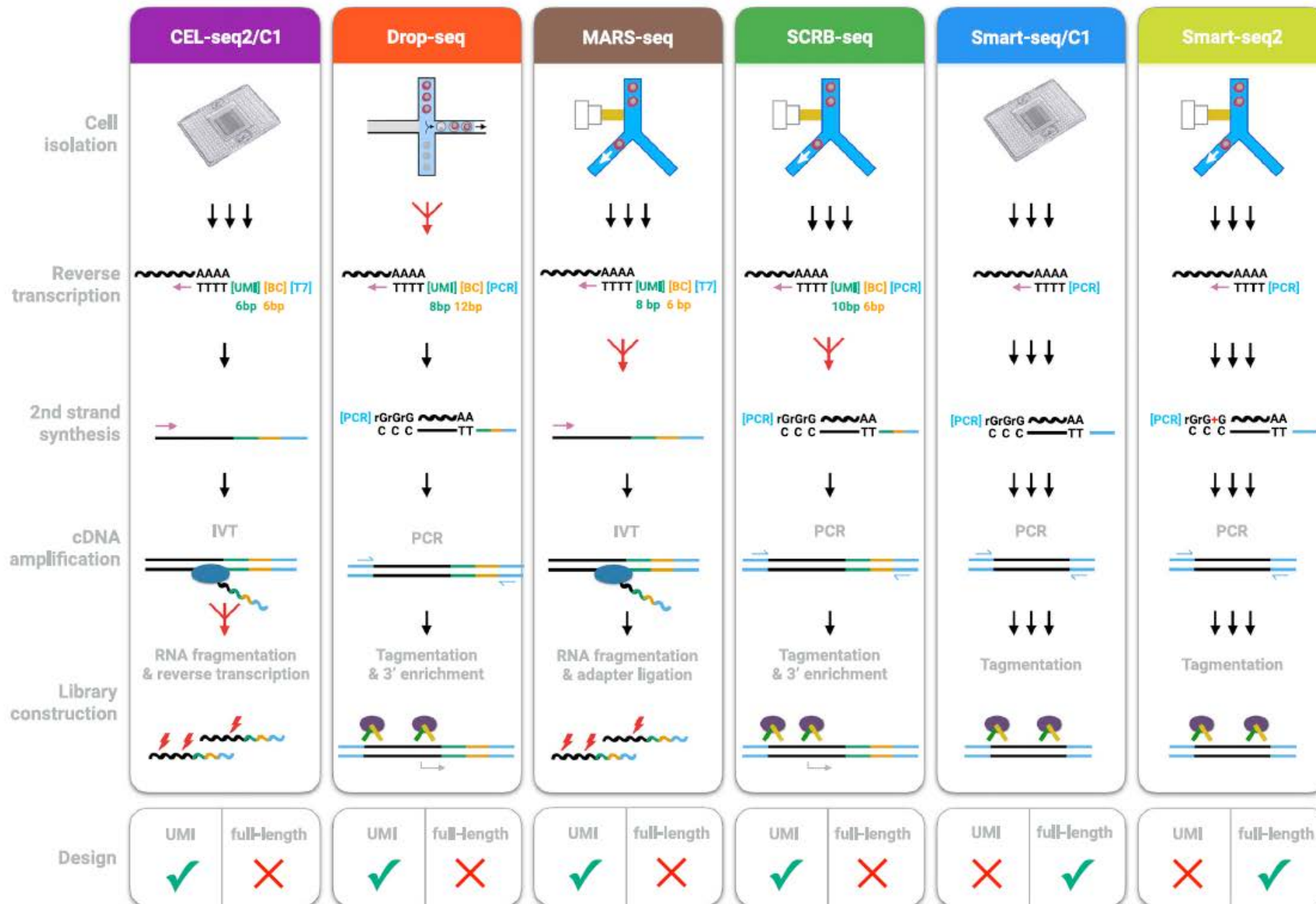
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What you will gain


- Higher resolution at the individual cell level
 - ➔ Questions you may not get to ask before
 - ✓ Heterogeneity among cells
 - ✓ Identifying new cell types
 - ✓ Tissues with multiple cell types, and cell-type specific expression if of interest
 - ✓ Development

The 'price' to pay

- More complicated protocol
 - Every step you add to the protocol is another source of noise
 - You may lose cells – dissociation will damage some cells
 - You may lose time – snapshot? Dissociation first, extraction next
 - If you add UMI, this is another barcode
- Less coverage per sample
- More complicated analysis



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- 1000 cells from one tumor tissue vs 1000 cells from a control biopsy
 - Sample size is 1 vs 1
- Development stages $t=1,2,3,\dots,10$ each with 1000 cells
 - Sample size may be $n=1$
 - You may conclude that the group of cells sampled at $t=1$ are different from the group of cells sampled at $t=2$, but this could also simply be batch effect.