INF-BIOx121 2017

HTS

Library prep

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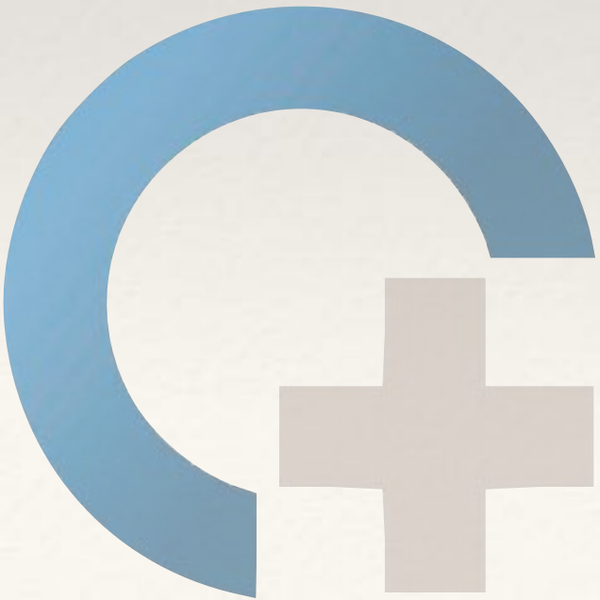
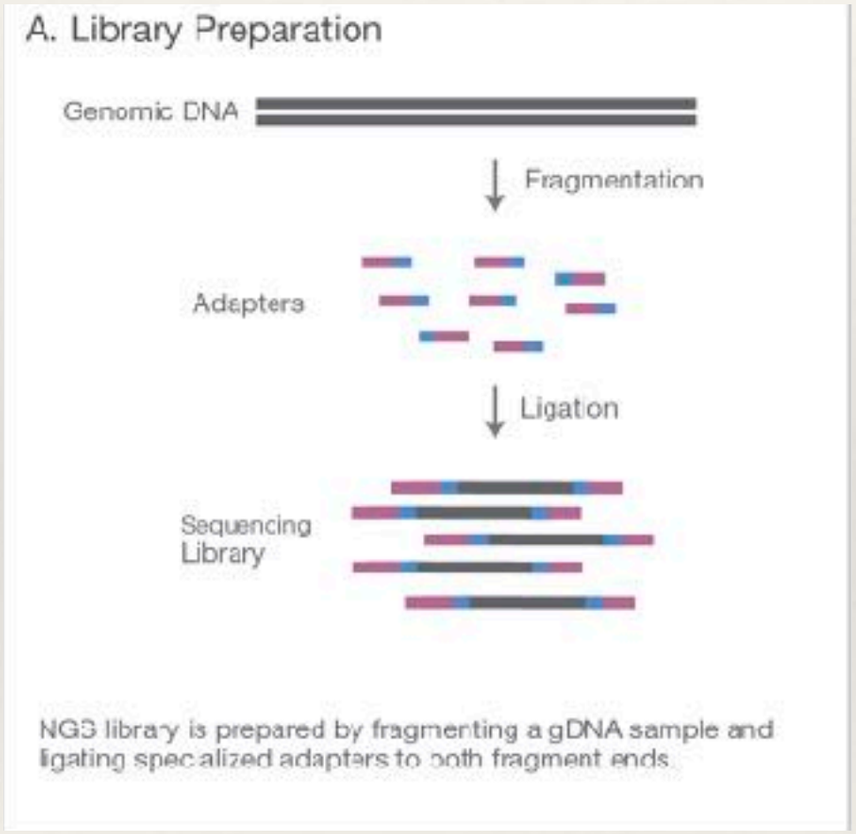
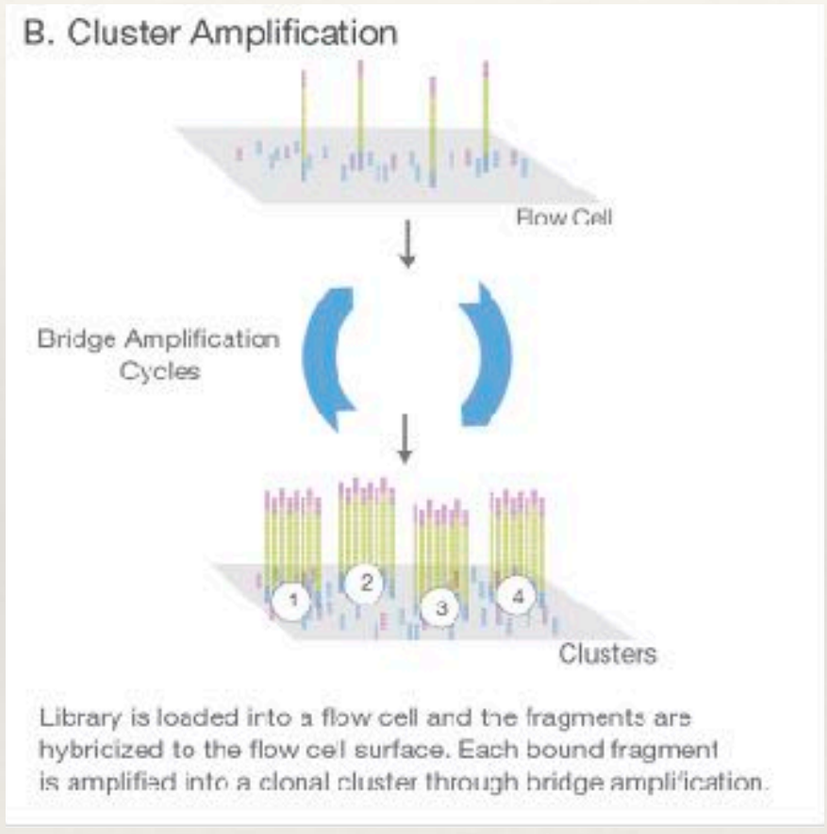
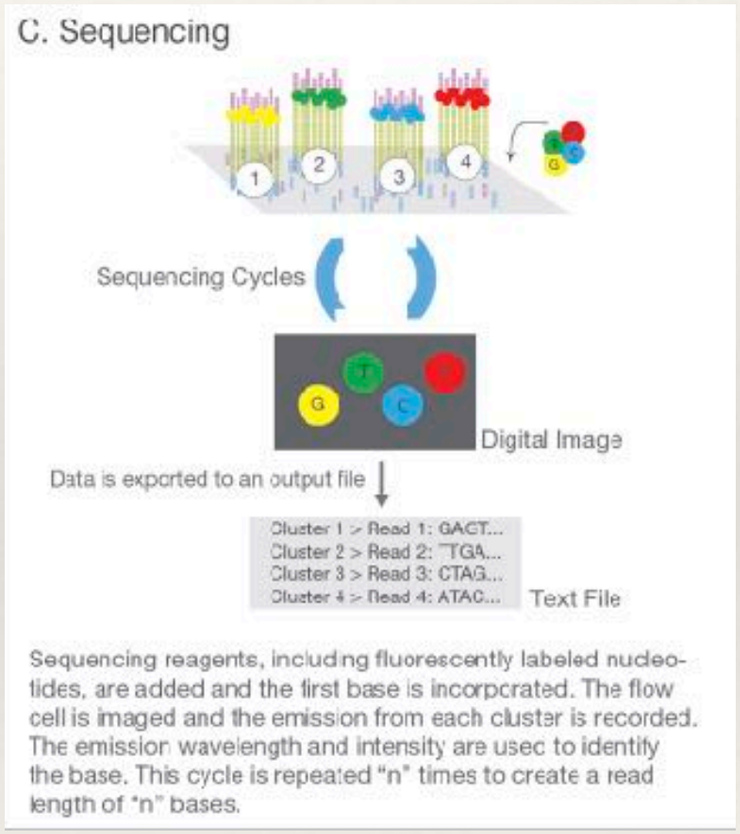


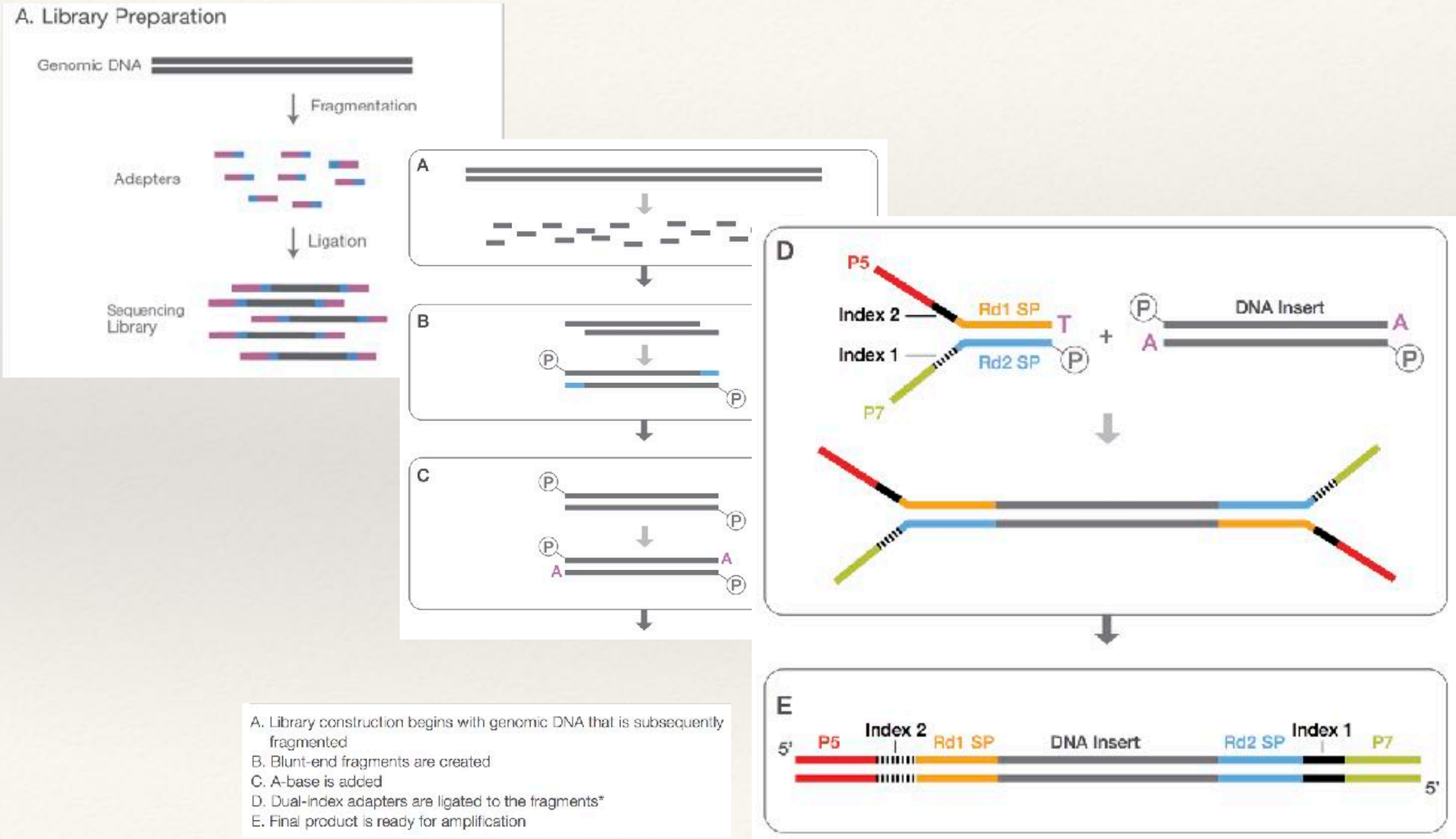
Sample to sequence data





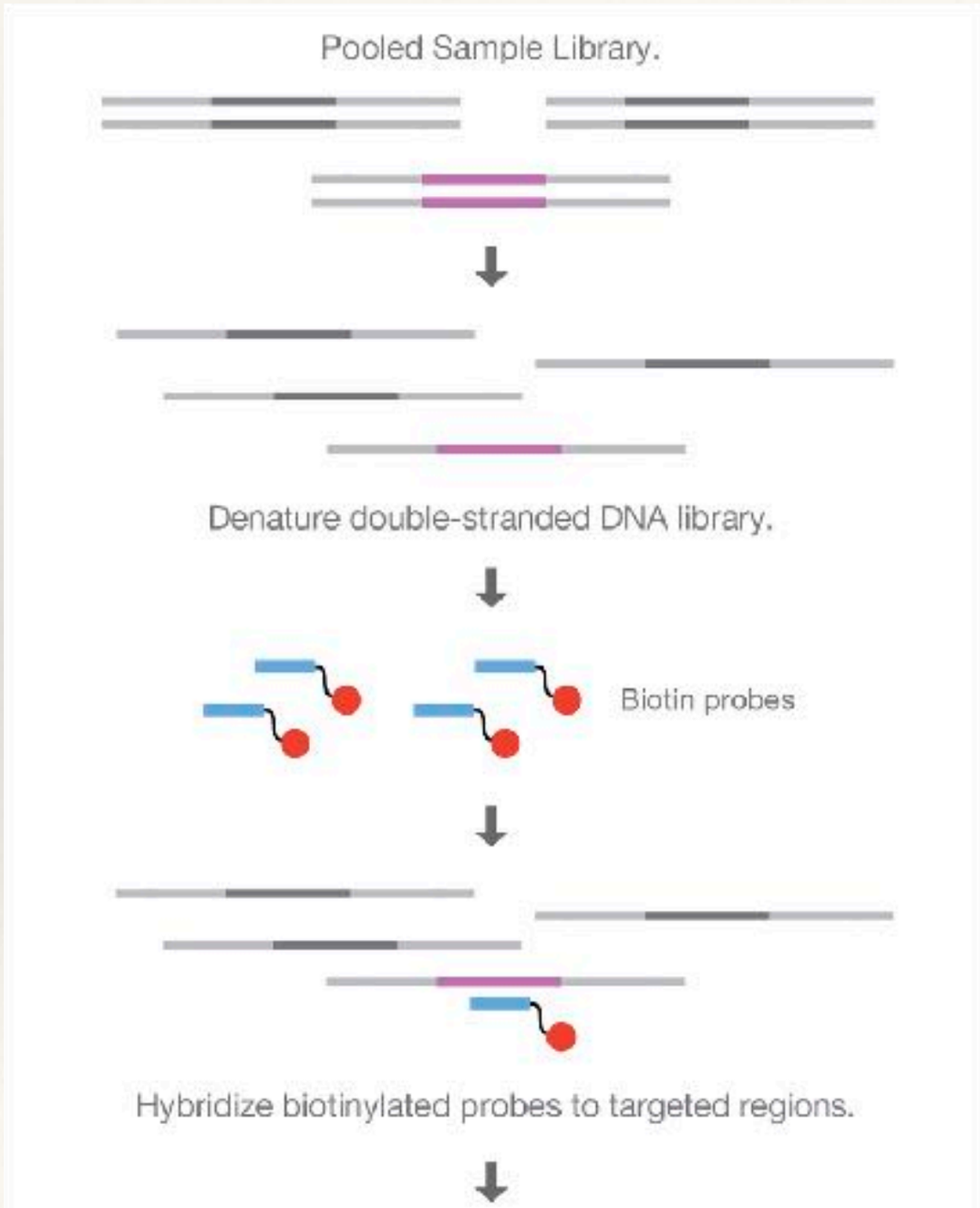


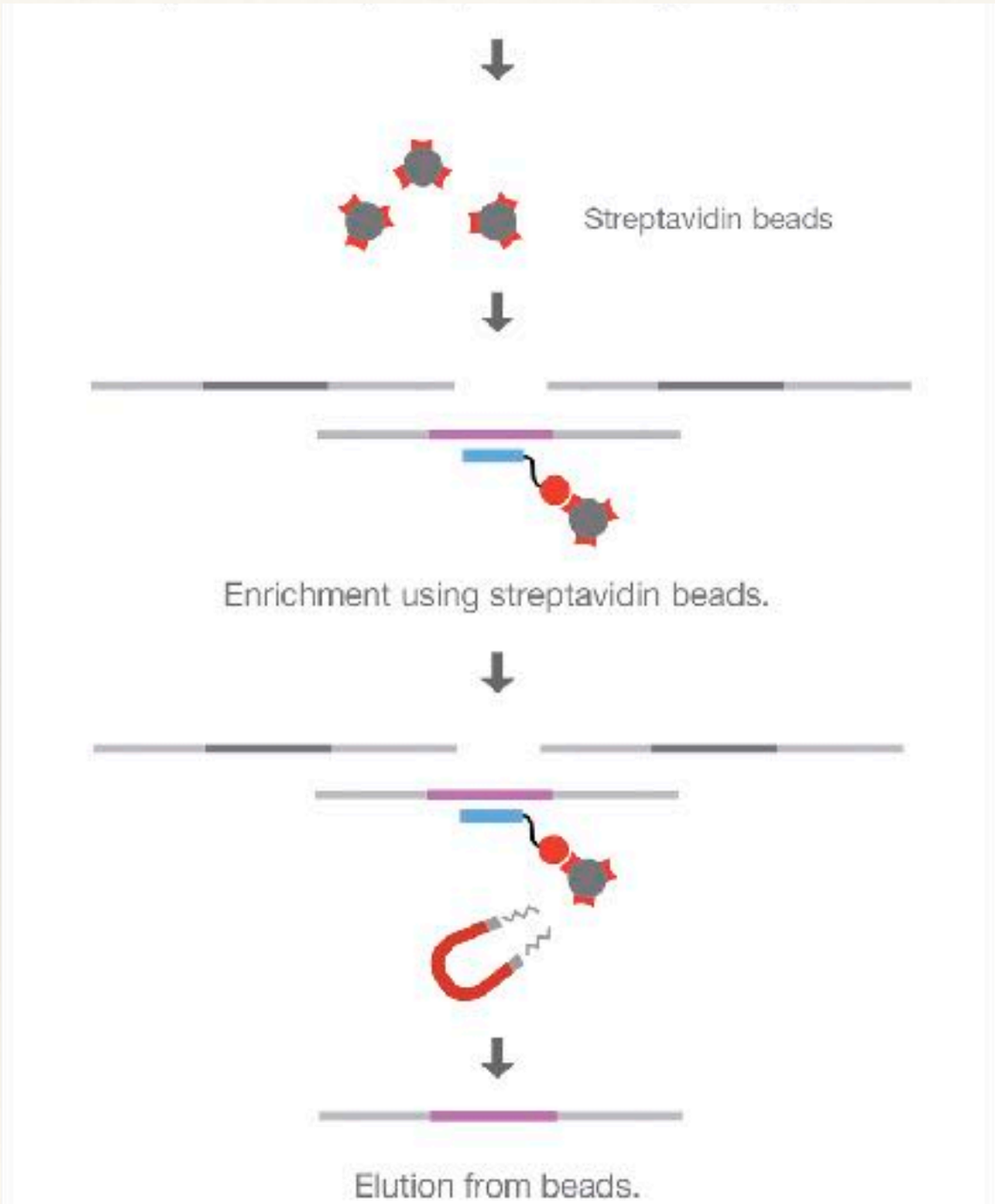
Library prep



A. Library construction begins with genomic DNA that is subsequently fragmented
B. Blunt-end fragments are created
C. A-base is added
D. Dual-index adapters are ligated to the fragments*
E. Final product is ready for amplification

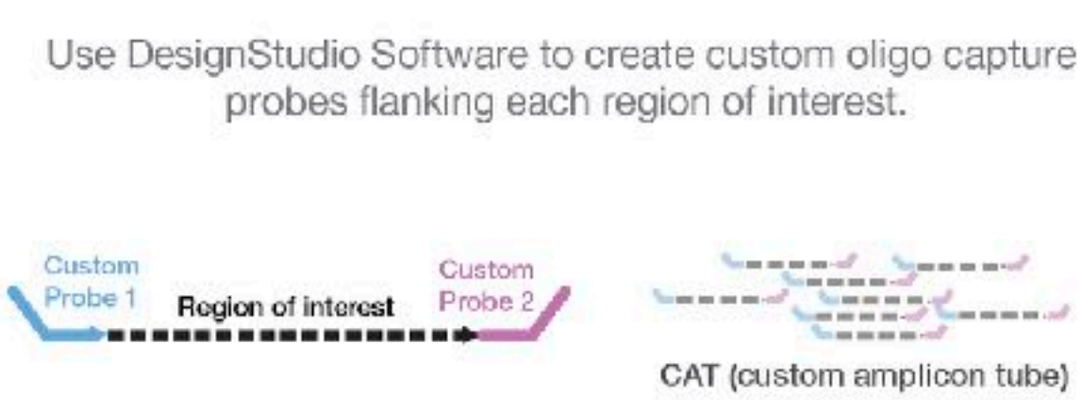
Target enrichment





Amplicons

Use DesignStudio Software to create custom oligo capture probes flanking each region of interest.



CAT probes hybridize to flanking regions of interest in unfragmented gDNA.

Extension/Ligation between Custom Probes across regions of interest.

PCR adds indexes and sequencing primers.

Uniquely tagged amplicon library ready for cluster generation and sequencing.

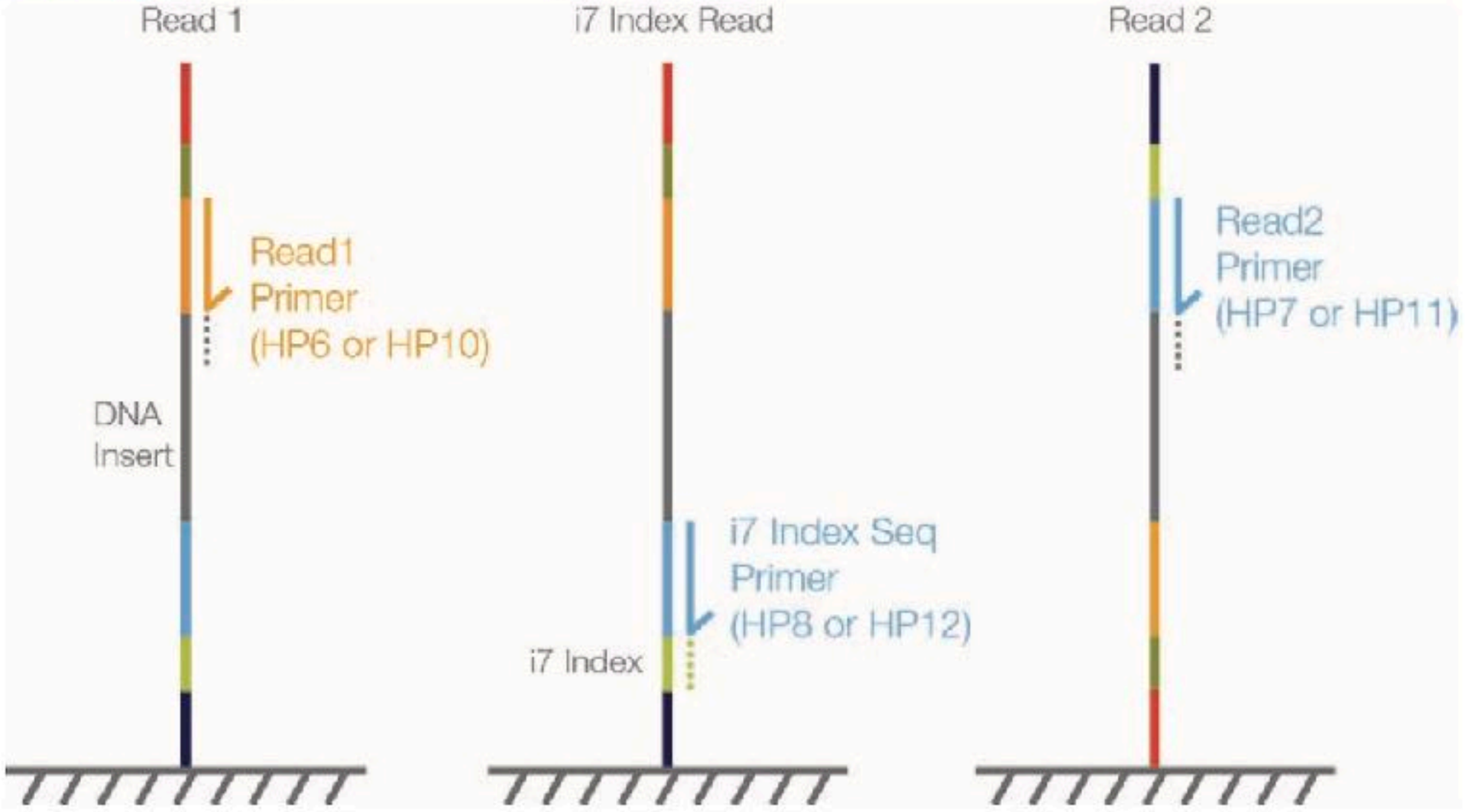
Illumina library prep

- DNA sequencing
  - Whole genome
  - Targeted resequencing
  - ChIP seq
- RNA sequencing
  - Total RNA
  - mRNA
  - small RNA
  - Ribosome profiling
- Methylation sequencing

Check **Sequencing Method Explorer** at
https://www.illumina.com/techniques/sequencing.html

Sequencing

Figure 1 Single-Indexed Sequencing



Sequencing

Figure 2 Dual-Indexed Single-Read Sequencing

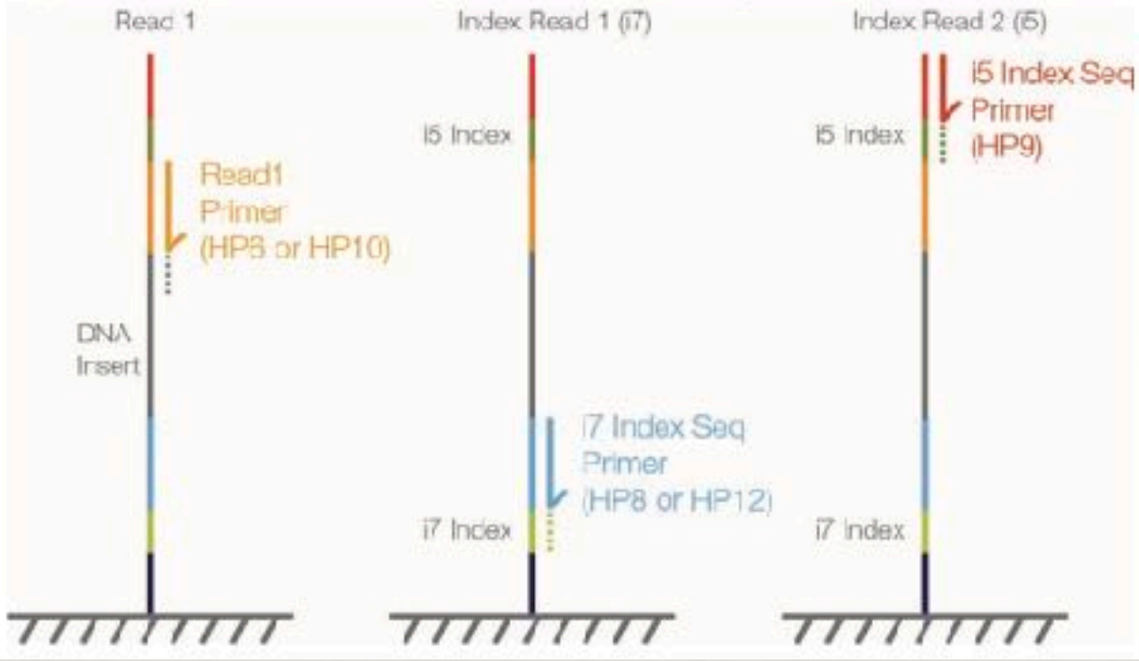
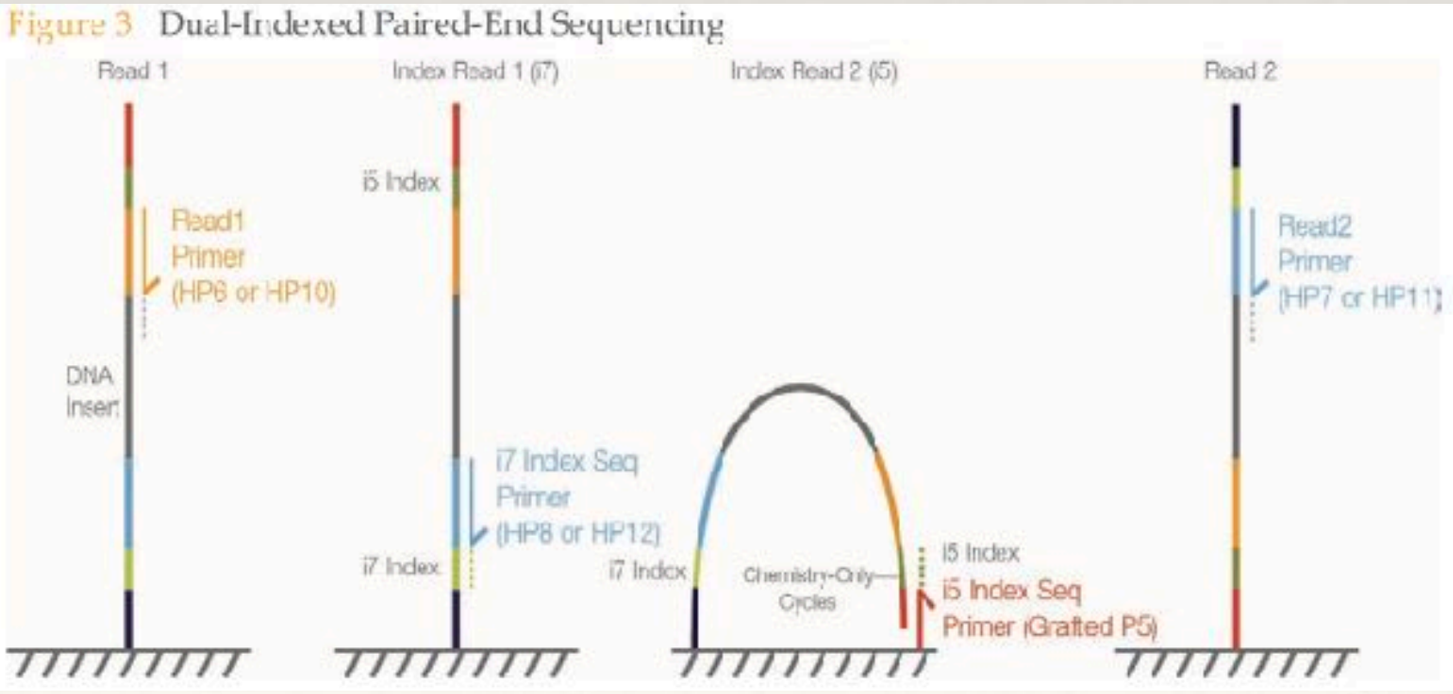


Figure 3 Dual-Indexed Paired-End Sequencing



Illumina library prep

- TruSeq PCR-free DNA kit, TruSeq Nano DNA kit
- Nextera DNA kit, Nextera DNA XT kit

- Nextera Rapid Capture Exome kit
- Nextera Rapid Capture Expanded Exome kit

- TruSeq Stranded Total RNA kit
- TruSeq Stranded mRNA kit
- TruSeq small RNA kit

- TruSeq DNA Methylation kit

https://www.illumina.com/library-prep-array-kit-selector.html

https://www.youtube.com/watch?v=-kTcFZxP6kM