

# Canadian Bioinformatics Workshops

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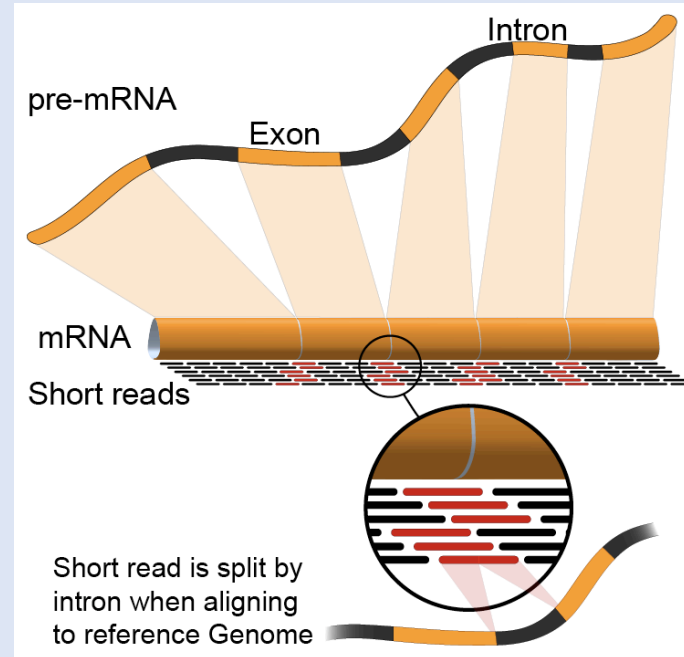
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# RNA-Seq Module 3: HTSeq

Obi Griffith and Malachi Griffith  
RNA-seq Analysis 2023. July 17-19, 2023



A composite image containing the bioinformatics.ca logo (top left), a network diagram with red nodes and white lines (bottom left), the Cold Spring Harbor Laboratory (CSH) logo (center), and the bioinformatics.ca logo (bottom right).



# Alternatives to FPKM

- Raw read counts for differential expression analysis
  - Assign reads/fragments to defined genes/transcripts, get “raw counts”
    - Transcript structures could still be defined by something like Stringtie

- HTSeq (htseq-count)

- <https://htseq.readthedocs.io/>

```
htseq-count --mode intersection-strict --stranded no --minqual 1 --type  
exon --idattr transcript_id accepted_hits.sam chr22.gff >  
transcript_read_counts_table.tsv
```

- Caveats of ‘transcript’ analysis by htseq-count:

- Designed for genes - ambiguous reads from overlapping transcripts may not be handled!
  - <http://seqanswers.com/forums/showthread.php?t=18068>

# HTSeq-count basically counts reads supporting a feature (exon, gene) by assessing overlapping coordinates

	union	intersection_strict	intersection_nonempty
	gene_A	gene_A	gene_A
	gene_A	no_feature	gene_A
	gene_A	no_feature	gene_A
	gene_A	gene_A	gene_A
	gene_A	gene_A	gene_A
	ambiguous	gene_A	gene_A
	ambiguous	ambiguous	ambiguous

Note, if gene\_A and gene\_B on opposite strands, sequence data is stranded, and correct HTSeq parameter set then this read may not be ambiguous

Whether a read is counted depends on the nature of overlap and "mode" selected

# We are on a Coffee Break & Networking Session

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