

# Measuring the Transcriptome of the *C. elegans* Lifecycle Using Direct RNA Sequencing

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## Table of Contents



- Introduction
- Results
- Discussion

# Ceanorhabditis Elegans Life Cycle





- Simple Metazoan
- Fully sequenced, compact genome
- Rapid Life Cycle
- High Number of Progeny

Worm Atlas. Altun, Z. F. and Hall, D. H. (ed.s). 2002-2006



Gene Analyse isoforms directly mRNA isoforms Poly-A length assessment Short reads RNA modifications Reads spanning splice junctions Long read transcript sequencing





Oxford Nanopore Technologies









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# Summary of Sequencing Data





# Summary of Sequencing Data





## Quantitative Correlation of Reads





#### **Detection of Splice Isoforms**





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 Poly(A) tail length can be estimated from the dwell time of the homopolymer in the nanopore









Lima et al. Nat Struct Mol Biol. 2017.





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https://github.com/jts/nanopolish/tree/polya-merged





- In depth analysis of current data: detection of alternative poly adenylation, additional splice isoforms, and modified bases
- Deeper sequencing across life stages
- Sequencing of additional life stages (ex. dauer)
- Tissue specific transcriptome analysis

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