

NGS methods

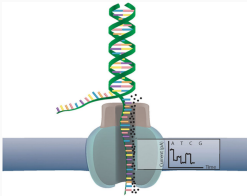
Long Reads

Christine Tranchant-Dubreuil & Francois Sabot

21st of January, 2021

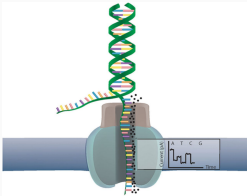
IRD





From Circulation Research

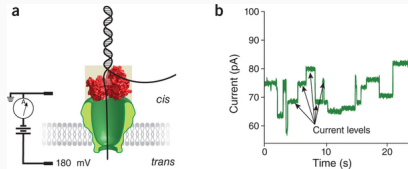
- No Amplification
- NO SYNTHESIS
- Very Long Length



From Circulation Research

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- Magnetic fields variation measure
- *Minion*: USB key - sized
- Raw signal in Fast5, basecalled in Fastq



From Nature Biotechnology

Advantages :

- Length (mean 10-50kb, more than 2Mb reported)
- Bases Modification detection in real-time
- Native RNA!
- Single strand direct sequencing
- Machine cheap (1,000 USD for Minion)
- Run cheap (1,000 USD for 30Gb by now minimum)
- Fast: 15mn library, 48-72h run

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Limits :

- Error Rate (3-8%, can be corrected, 1-2% in tests)
- Quality of DNA/RNA limits the sequencing
- Heu...

Research areas

- | | |
|---|--|
|  Microbiology |  Human genomics |
|  Microbiome |  Clinical research |
|  Environmental |  Cancer |
|  Plant |  Transcriptome |
|  Animal |  Populations genomics |

Research areas

-  Microbiology
-  Human genomics
-  Microbiome
-  Environmental
-  Plant
-  Animal

Investigations

-  Structural variation
-  Assembly
-  SNVs and phasing
-  Fusion transcripts
-  Gene expression
-  Chromatin conformation
-  Identification
-  Epigenetics
-  Splice variation
-  Single cell

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-  Human genomics
-  Microbiome
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-  Animal

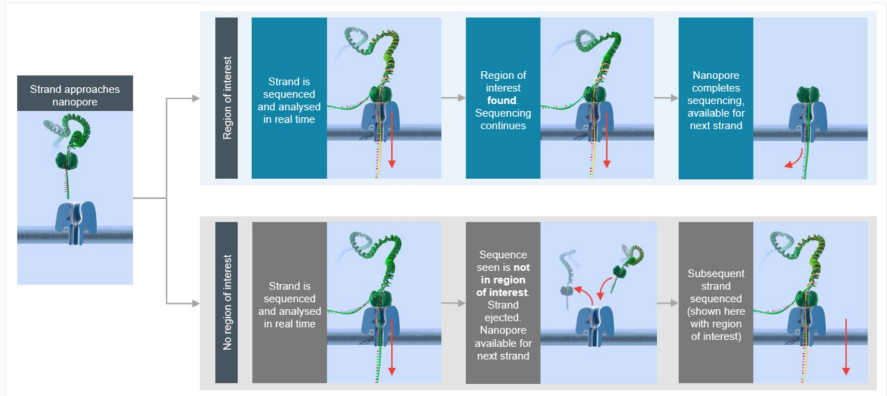
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-  Splice variation

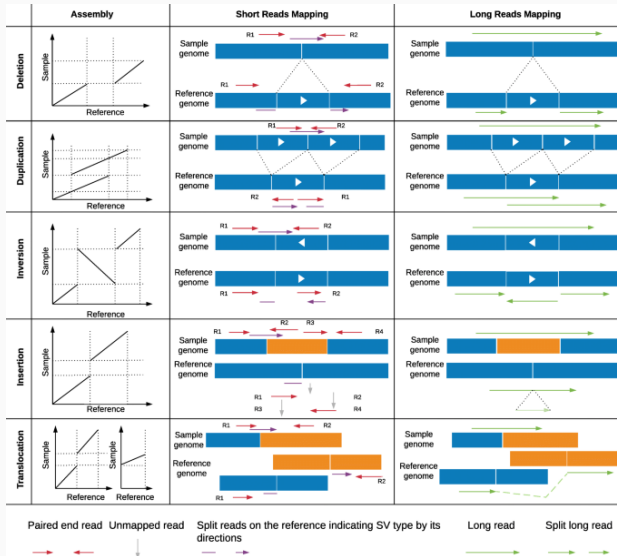
Techniques

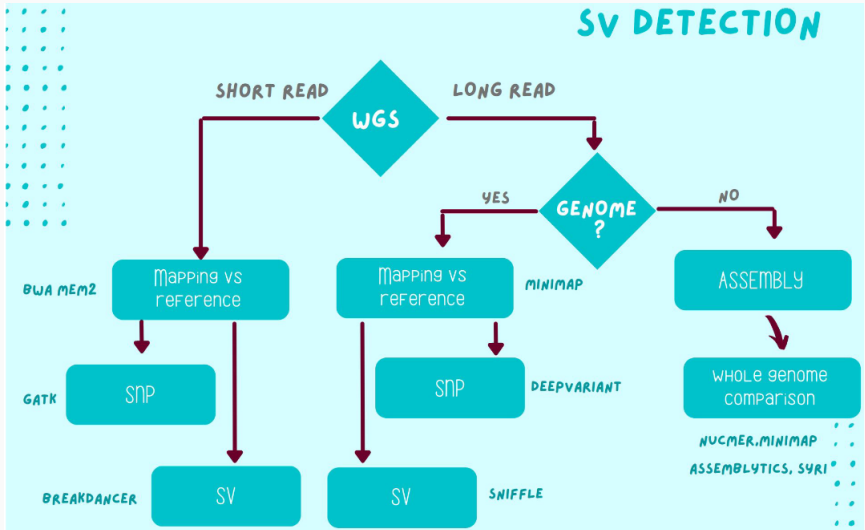
-  Whole genome
-  Targeted
-  Whole transcriptome
-  Metagenomics

What you can do with it ?



Structural Variant Detection





Thanks for your attention

