- Abstract and Introduction:

- **Long-read sequencing offers a number of advantages over short-read sequencing.**
- **Although Short-reads are effective in cost, accurate, and supported by analysis tools and pipelines, sequencing nucleic acid polymers in short fragments is difficult.**
- **Long-read technologies are good at accuracy and generate reads in excess of 10 kb, so the characteristics of long-read data should be focused on the analysis tools.**
- **This paper will study error correction, base modification detection, and long-read transcriptomics analysis and the challenges.**
- **It will Describe the principles of long-read data analysis.**
- **It also introduces open-source catalogue of long-read analysis tools: long-read-tools.org.**
- **short-read sequencers such as Illumina's NovaSeq, HiSeq, NextSeq, and MiSeq instruments ; BGI's MGISEQ and BGISEQ models ; or Thermo Fisher's Ion Torrent sequencers.**
- **long-read sequencing technologies such as Pacific Biosciences' (PacBio) single-molecule real-time (SMRT) sequencing and Oxford Nanopore Technologies' (ONT) nanopore sequencing.**
- **Long-reads can also improve de novo assembly, mapping certainty, transcript isoform identification, and detection of structural variants.**
- **we check available tools to deal with long-read sequencing projects.**

- Related Work:

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III) Bentley DR, Balasubramanian S, Swerdlow HP, Smith GP, Milton J, Brown CG, et al.Accurate whole human genome sequencing using reversible terminator chemistry. Nature. 2008; 456(7218):53–9. https://doi.org/10.1038/nature07517.

IV) Goodwin S, McPherson JD, McCombie WR. Coming of age: ten years of next-generation sequencing technologies. Nat Rev Genet. 2016; 17(6):33351. https://doi.org/10.1038/nrg.2016.49.

V) Jeon SA, Park JL, Kim J-H, Kim JH, Kim YS, Kim JC, et al.Comparison of the MGISEQ-2000 and Illumina HiSeq 4000 sequencing platforms for RNA sequencing. Genomics Inform. 2019; 17(3):e32.

VI) Rothberg JM, Hinz W, Rearick TM, Schultz J, Mileski W, Davey M, et al.An integrated semiconductor device enabling non-optical genome sequencing. Nature. 2011; 475(7356):348–52. https://doi.org/10.1038/nature10242.

VII) Quail M, Smith ME, Coupland P, Otto TD, Harris SR, Connor TR, et al.A tale of three next generation sequencing platforms: comparison of Ion torrent, Pacific Biosciences and Illumina MiSeq sequencers. BMC Genomics. 2012; 13(1):341. https://doi.org/10.1186/1471-2164-13-341.