CeGaT

Research &
Pharma Solutions

DNA Extraction for PacBio's HiFi Sequencing

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PacBio's long-read sequencing generates highly accurate reads, also known as HiFi reads. Starting the workflow with high molecular weight DNA is essential for the generation of long libraries, good sequencing performance, and high-quality results. In contrast to short-read sequencing that can more easily deal with varying DNA quality, HiFi sequencing works best with long DNA molecules.

To extract the high molecular weight DNA required for HiFi sequencing, PacBio recommends their Nanobind® kits. DNA extracted with Nanobind® is optimized for HiFi sequencing. It provides an all-in-one DNA extraction for a wide range of samples. The DNA extraction workflow follows four basic steps:

1. The samples are lysed with a specific buffer that is optimized for each sample type.
2. The DNA binds to the Nanobind® disks. They shield the DNA from damage during the extraction process.
3. Contaminants are removed during the three washing steps with ethanol-based buffers.
4. During the elution, the DNA is released from the Nanobind® disk without fragmentation, resulting in high molecular weight DNA.

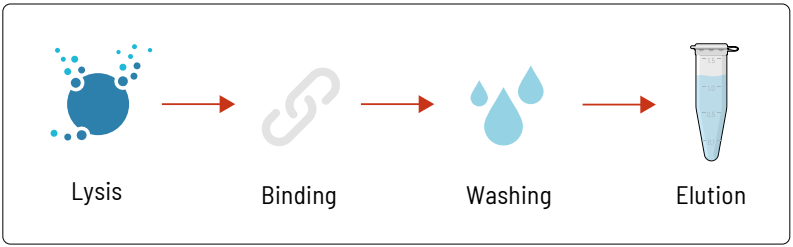

Figure 1 | DNA extraction workflow using PacBio's Nanobind® kit.

PacBio offers different Nanobind® kits. The best Nanobind® kit and procedure for your project depends on the starting material, sample type, and project scope:

- The Nanobind® PanDNA kit supports the DNA extraction from multiple sample types, including cultured cells, whole blood, saliva, tissue, bacteria, plant nuclei, and insect samples. The appropriate Nanobind® PanDNA procedure can be found here.

- For an automated DNA extraction and an optimized sample preparation workflow, Nanobind® HT kits enable the automation of DNA extraction.

For further information, tips, and tricks on DNA extraction for PacBio's HiFi sequencing, PacBio has a blog post focusing on DNA extraction tips and best practices for HiFi sequencing and a post on DNA extraction – tips, kits, and protocols.

When extracting your DNA for HiFi sequencing, keep in mind that long, high molecular weight DNA molecules are key for high-quality sequencing results.

About Us

CeGaT was founded in 2009 in Tübingen, Germany. Our scientists are specialized in next-generation sequencing (NGS) for genetic diagnostics, and we also provide a variety of sequencing services for research purposes and pharma solutions. Our sequencing service portfolio is complemented by analyses suited for microbiome, immunology, and translational oncology studies.

Our dedicated project management team of scientists and bio-informaticians works closely with you to develop the best strategy to realize your project. Depending on its scope, we select the most suitable library preparation and conditions on our sequencing platforms.

We would be pleased to provide you with our excellent service. Contact us today to start planning your next project.

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