

# Product note

# ONSO LIBRARY PREPARATION

## Introduction

The Onso™ library preparation kits are used to create libraries for the PacBio® Onso short-read sequencing system. Leveraging proven next-generation sequencing workflows, libraries are optimized to support the Q40+ sequencing accuracy. These Onso library prep kits benefit from a streamlined workflow that generates complete libraries in as little as 3 hours.

## Library prep workflows

Onso library prep can be performed with the Onso fragmentation DNA library prep kit or the Onso DNA library prep kit (Figure 1). The fragmentation DNA library prep kit enables preparation of libraries from high-molecular weight (HMW) DNA, while the DNA library prep kit allows for the use of pre-fragmented or degraded DNA as a starting input. HMW DNA fragmentation, end repair, and A-tailing occur in a single enzymatic reaction, whereas only end-repair and A-tailing occur together for pre-fragmented DNA. Following these steps, both workflows continue as follows:

- Indexed adapters are added via ligation to uniquely tag each library
- Optional PCR step to amplify the library prior to downstream workflows or sequencing

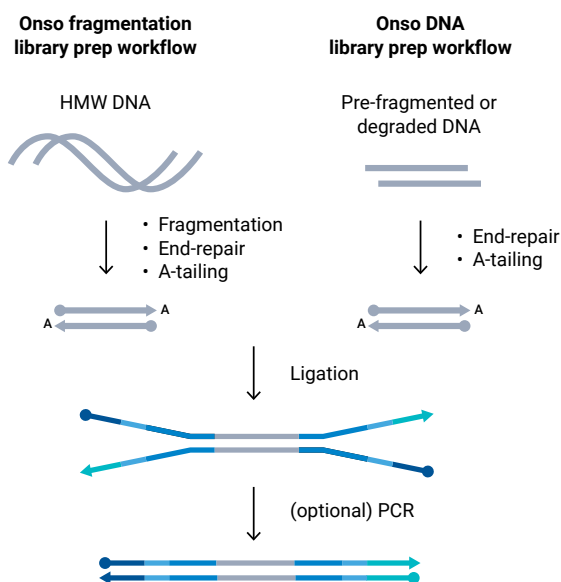


Figure 1. Workflows for the Onso fragmentation library prep kit and the DNA library prep kit

## Key benefits of Onso library prep



### Performance

- Libraries optimized for Q40+ sequencing accuracy
- Higher conversion efficiency than ligation-based approaches



### Ease of use

- Optimized workflow for complete library prep with a single kit in as few as 3 hrs



### Flexibility

- Accommodates a wide range of sample types (e.g., fragmented or high-molecular weight DNA) and input amounts (10–1,000 ng)



### Compatibility

- Supports all major short-read applications
- Library conversion kit enables existing P5/P7 libraries to be sequenced on the Onso system
- Seamless integration of Onso libraries with PacBio Compatible partners across the sequencing workflow

## Libraries optimized for Q40+ accuracy

Onso sequencing reads generated from Onso library prep kits benefit from greater accuracy than those generated through standard short-read library prep methods (Figure 2).

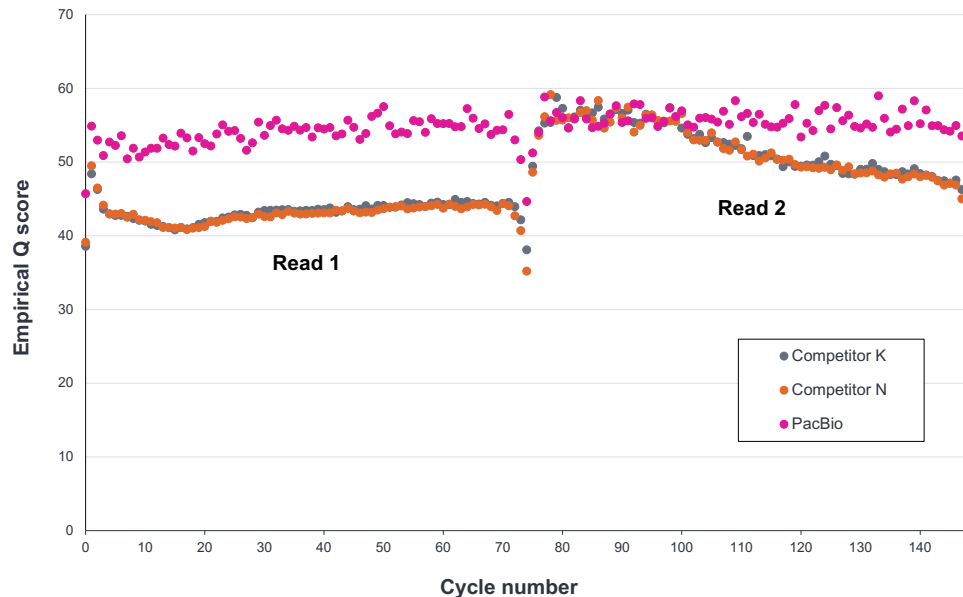


Figure 2. PacBio demonstrates improved read accuracy vs other short-read library preps

## Adapters

Both the Onso fragmentation DNA library prep kit and the Onso DNA library prep kit are compatible with the Onso indexed adapter kit. The indexed adapter kit contains 96 unique, individually plated adapters and follows a combinatorial indexing approach. These adapters contain unique sequences which allow libraries to be sequenced on the Onso system.

## Library amplification

Libraries containing Onso indexed adapters can be amplified with the Onso library amp kit. The resulting amplicons can be used for library QC, as input to downstream applications, and as input to the Onso clustering/sequencing process.

## Library quantification

The Onso library quantification kit is a qPCR-based method that contains standards and primers for accurate quantification (CV <10%) of libraries between 0.1 pM and 100 pM.

## Hybridization capture-based workflows

The Onso blocking oligo kit is designed to be utilized in hybridization capture-based workflows in place of

traditional P5/P7 blocking oligos. With optimized design specific to Onso indexed adapters, it decreases the frequency of non-specific binding of adapter sequences during the hybridization reaction.

## Sequencing existing libraries

The Onso library conversion kit can be used to create Onso-compatible libraries from existing P5/P7 libraries. With a single PCR reaction, as few as 5 fmols of input can be converted into a ready-to-sequence library in less than one hour.

Additionally, the Onso platform allows the use of primers for sequencing converted P5/P7 libraries. This allows researchers the flexibility to use any adapter/primer combination successfully on the Onso system.

## Indexed library control

The Onso indexed library control is a lambda phage-based control used as a spike-in control for sequencing runs to determine run quality and provide sequence diversity to the library pool. Provided as an indexed library at 2nM concentration, it is ready to dilute and spike-in to library pools prior to clustering and sequencing.

## Ordering information

Product	Part number
Onso fragmentation DNA library prep kit	102-499-100
Onso DNA library prep kit	102-431-400
Onso indexed adapter kit	102-431-700
Onso library amp kit	102-410-800
Onso library quant kit	102-431-800
Onso blocking oligo kit	102-431-600
Onso library conversion kit	102-529-500
Onso indexed library control kit	102-529-900
Onso system	102-837-000
Onso 200 cycle sequencing kit	102-860-100
Onso 300 cycle sequencing kit	102-860-300



Explore the applications:  
[pacb.com/applications](https://pacb.com/applications)



Connect with PacBio for more info:  
North America: [nasales@pacb.com](mailto:nasales@pacb.com)  
South America: [sasales@pacb.com](mailto:sasales@pacb.com)  
EMEA: [emea@pacb.com](mailto:emea@pacb.com)  
Asia Pacific: [apsales@pacb.com](mailto:apsales@pacb.com)



Contact a certified  
service provider  
[pacb.com/CSP](https://pacb.com/CSP)

Research use only. Not for use in diagnostic procedures. © 2023 Pacific Biosciences of California, Inc. ("PacBio"). All rights reserved. Information in this document is subject to change without notice. PacBio assumes no responsibility for any errors or omissions in this document. Certain notices, terms, conditions and/or use restrictions may pertain to your use of PacBio products and/or third-party products. Refer to the applicable PacBio terms and conditions of sale and to the applicable license terms at [pacb.com/license](https://pacb.com/license). Pacific Biosciences, the PacBio logo, PacBio, Circulomics, Omniome, SMRT, SMRTbell, Iso-Seq, Sequel, Nanobind, SBB, Revo, and Onso are trademarks of PacBio.