



For Research Use Only.
Not for use in diagnostic procedures.

KAPA UDI Primer Mixes

Unique Dual-Indexed Primers used with the KAPA Universal Adapter for sample barcoding

Version 01
Content version: February 2020

Product Name and Pack Size

Catalog

Store at +2 to + 8°C

KAPA UDI Primer Mixes, 1-96, 96 reactions

09134336001

Contents

| Component | Quantity | Amount |
|--|----------|---------------------|
| Kit for 96 Reactions (Catalog# 09134336001) | | |
| 1 x 96 well plate | 1 | 1 reaction per well |

Storage and Stability

- Store at +2 to +8°C. The kit components are stable at +2 to +8°C through the expiration date printed on the label.

⚠ Store primer plate in an upright orientation only.

Warnings and Precautions

Employ best laboratory practices to avoid cross contamination of indexed primer pairs.

Application

The KAPA Unique Dual-Indexed (UDI) Primer Mixes are to be used with the KAPA Universal Adapter to generate uniquely labeled libraries from individual biological DNA samples. Sample indexing allows for pooling of libraries prior to target capture or cluster generation, to enable multiplexed sequencing. Each KAPA UDI Primer Mix is a pre-mixed combination of forward and reverse primers. The primers contain a non-redundant (unique), 8-nucleotide index designed to mitigate index misalignment ("index hopping") on Illumina sequencers that employ patterned flow cells and exclusion amplification chemistry.

Number of Reactions

1 kit with 96 indexes for library preparations. Each well contains enough material for one reaction.

How to Use this Product

Guidance on use in the KAPA HyperCap Workflow can be found in the KAPA HyperChoice, KAPA HyperExplore, and KAPA HyperExome Instructions for Use.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| A | UDI-P 01 | UDI-P 09 | UDI-P 17 | UDI-P 25 | UDI-P 33 | UDI-P 41 | UDI-P 49 | UDI-P 57 | UDI-P 65 | UDI-P 73 | UDI-P 81 | UDI-P 89 |
| B | UDI-P 02 | UDI-P 10 | UDI-P 18 | UDI-P 26 | UDI-P 34 | UDI-P 42 | UDI-P 50 | UDI-P 58 | UDI-P 66 | UDI-P 74 | UDI-P 82 | UDI-P 90 |
| C | UDI-P 03 | UDI-P 11 | UDI-P 19 | UDI-P 27 | UDI-P 35 | UDI-P 43 | UDI-P 51 | UDI-P 59 | UDI-P 67 | UDI-P 75 | UDI-P 83 | UDI-P 91 |
| D | UDI-P 04 | UDI-P 12 | UDI-P 20 | UDI-P 28 | UDI-P 36 | UDI-P 44 | UDI-P 52 | UDI-P 60 | UDI-P 68 | UDI-P 76 | UDI-P 84 | UDI-P 92 |
| E | UDI-P 05 | UDI-P 13 | UDI-P 21 | UDI-P 29 | UDI-P 37 | UDI-P 45 | UDI-P 53 | UDI-P 61 | UDI-P 69 | UDI-P 77 | UDI-P 85 | UDI-P 93 |
| F | UDI-P 06 | UDI-P 14 | UDI-P 22 | UDI-P 30 | UDI-P 38 | UDI-P 46 | UDI-P 54 | UDI-P 62 | UDI-P 70 | UDI-P 78 | UDI-P 86 | UDI-P 94 |
| G | UDI-P 07 | UDI-P 15 | UDI-P 23 | UDI-P 31 | UDI-P 39 | UDI-P 47 | UDI-P 55 | UDI-P 63 | UDI-P 71 | UDI-P 79 | UDI-P 87 | UDI-P 95 |
| H | UDI-P 08 | UDI-P 16 | UDI-P 24 | UDI-P 32 | UDI-P 40 | UDI-P 48 | UDI-P 56 | UDI-P 64 | UDI-P 72 | UDI-P 80 | UDI-P 88 | UDI-P 96 |

Fig. 1: Layout of the KAPA UDI Primer Mixes Plate.

Pooling/Multiplexing Guidelines

As a rule, choose primer mixes as highlighted by the boxes in Figure 2 to take advantage of the color-balanced indexes. This will prevent registration failure and laser color complexity issues during sequencing and de-multiplexing. Figure 2 details the recommended two-plexing combinations that are fully color-balanced.

See the detailed suggestions below:

- Pooling two samples (two-plex):
 - Figure 2 demonstrates the recommended two-plex combinations that are fully color-balanced based on the plate layout in Figure 1 (all combinations indicated by the gray boxes, e.g. A1 + B1, C1 + D1, etc.).
- Pooling three to eight samples (three to eight-plex):
 - Use any of the recommended two-plex combinations with any other index in the column (all combinations indicated by colored box e.g. three-plex: A1 + B1 + C1, four-plex: A1 + B1 + C1 + D1, etc.).
- Pooling nine or more samples:
 - Any number of additional libraries may be multiplexed with any of the color-balanced combinations listed below to obtain pools of any plexity.
 - It is recommended to use column groups of indexes (e.g. colored box 1, 2 etc.).

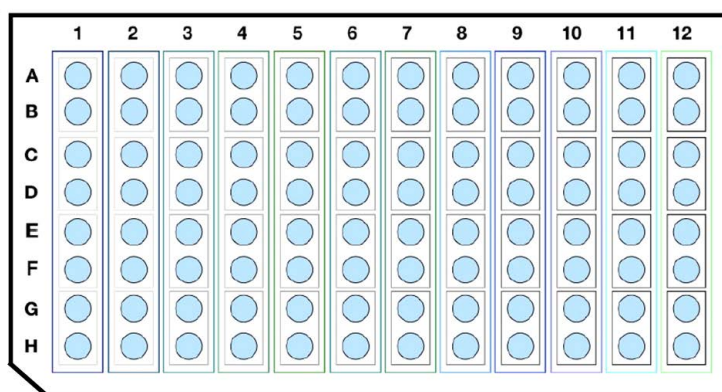


Fig. 2: Recommendations for two-plex (by pairs in grayscale boxes) and eight-plex (by columns in blue and green boxes) pooling. Note that the notched corner is on the bottom left of the plate. This directs the correct orientation of the plate with A1 positioned in the top left of the plate.

| Well | KAPA UDI Primer Mix | P7 Index Sequence | P5 Index Sequence | |
|------|---------------------|--------------------------|---|--|
| | | All Illumina Instruments | *NovaSeq 6000 MiSeq HiSeq 2000/2500 | **NextSeq 500/550 MiniSeq iSeq100 HiSeq 3000/4000/X |
| A1 | UDI-P 01 | TGGATCGA | ACCTAGCT | AGCTAGGT |
| B1 | UDI-P 02 | CAAGCTAG | GTTGATC | GATCGAAC |
| C1 | UDI-P 03 | GTACCAAG | CATGGTTC | GAACCATG |
| D1 | UDI-P 04 | ACGTTGGA | TGCAACCT | AGGTTGCA |
| E1 | UDI-P 05 | TCGTGGTA | AGCACCAT | ATGGTGCT |
| F1 | UDI-P 06 | CTACAACG | GATGTTGC | GCAACATC |
| G1 | UDI-P 07 | GTTCAAGG | CAAGTTCC | GGAACTTG |
| H1 | UDI-P 08 | ACCTGGAA | TGGACCTT | AAGGTCCA |
| A2 | UDI-P 09 | TCTTAGCG | AGAATCGC | GCGATTCT |
| B2 | UDI-P 10 | CTCCGATA | GAGGCTAT | ATAGCCTC |
| C2 | UDI-P 11 | GTCCTACT | CAGGATGA | TCATCCTG |
| D2 | UDI-P 12 | ACTTCGTC | TGAAGCAG | CTGCTTCA |
| E2 | UDI-P 13 | TCTACAGG | AGATGTCC | GGACATCT |
| F2 | UDI-P 14 | CTCGTGAA | GAGCACTT | AAGTGCTC |
| G2 | UDI-P 15 | GTTCCGAT | CAAGCCTA | TAGGCTTG |
| H2 | UDI-P 16 | ACCTAAGC | TGGATTCC | CGAATCCA |
| A3 | UDI-P 17 | GTTGACTG | CAACTGAC | GTCAGTTG |
| B3 | UDI-P 18 | ACCAGTCA | TGGTCAGT | ACTGACCA |
| C3 | UDI-P 19 | TACCGGAA | ATGGCCTT | AAGGCCAT |
| D3 | UDI-P 20 | CGTTAAGG | GCAATTCC | GGAATTGC |
| E3 | UDI-P 21 | GCTATGTC | CGATACAG | CTGTATCG |
| F3 | UDI-P 22 | ATCGCACT | TAGCGTGA | TCACGCTA |
| G3 | UDI-P 23 | GCACTTCT | CGTGAAGA | TCTTACCG |
| H3 | UDI-P 24 | ATGTCCTC | TACAGGAG | CTCCTGTA |

| Well | KAPA UDI Primer Mix | P7 Index Sequence | P5 Index Sequence | |
|------|---------------------|--------------------------|-------------------------------------|---|
| | | All Illumina Instruments | *NovaSeq 6000 MiSeq HiSeq 2000/2500 | **NextSeq 500/550 MiniSeq iSeq100 HiSeq 3000/4000/X |
| A4 | UDI-P 25 | GGATGATC | CCTACTAG | CTAGTAGG |
| B4 | UDI-P 26 | AAGCAGCT | TTCGTCGA | TCGACGAA |
| C4 | UDI-P 27 | TGCTATCG | ACGATAGC | GCTATCGT |
| D4 | UDI-P 28 | CATCGCTA | GTAGCGAT | ATCGCTAC |
| E4 | UDI-P 29 | TCCTGAGT | AGGACTCA | TGAGTCTT |
| F4 | UDI-P 30 | CTTCAGAC | GAAGTCTG | CAGACTTC |
| G4 | UDI-P 31 | GATCCTTC | CTAGGAAG | CTTCTAG |
| H4 | UDI-P 32 | AGCTTCCT | TCGAAGGA | TCCTTCGA |
| A5 | UDI-P 33 | TAGGCAAC | ATCCGTTG | CAACGGAT |
| B5 | UDI-P 34 | CGAATGGT | GCTTACCA | TGTAAGC |
| C5 | UDI-P 35 | TCACCAGA | AGTGGTCT | AGACCACT |
| D5 | UDI-P 36 | CTGTTGAG | GACAACCTC | GAGTTGTC |
| E5 | UDI-P 37 | TCAGCTCA | AGTCGAGT | ACTCGACT |
| F5 | UDI-P 38 | CTGATCTG | GAAGTCTG | GTCTAGTC |
| G5 | UDI-P 39 | GATGGAAC | CTACCTTG | CAAGGTAG |
| H5 | UDI-P 40 | AGCAAGGT | TCGTTCCA | TGGAACGA |
| A6 | UDI-P 41 | TGTCAGCT | ACAGTCGA | TCGACTGT |
| B6 | UDI-P 42 | CACTGATC | GTGACTAG | CTAGTCAC |
| C6 | UDI-P 43 | GTTACGTG | CAATGCAC | GTGCATTG |
| D6 | UDI-P 44 | ACCGTACA | TGGCATGT | ACATGCCA |
| E6 | UDI-P 45 | GCAACGTA | CGTTGCAT | ATGCAACG |
| F6 | UDI-P 46 | ATGGTACG | TACCATGC | GCATGGTA |
| G6 | UDI-P 47 | GTGACAGT | CACTGTCA | TGACAGTG |
| H6 | UDI-P 48 | ACAGTGAC | TGTCACTG | CAGTGACA |
| A7 | UDI-P 49 | GATTGGTC | CTAACCAG | CTGGTTAG |
| B7 | UDI-P 50 | AGCCAACT | TCGGTTGA | TCAACCGA |
| C7 | UDI-P 51 | GCATCTTG | CGTAGAAC | GTTCTACG |
| D7 | UDI-P 52 | ATGCTCCA | TACGAGGT | ACCTCGTA |
| E7 | UDI-P 53 | GTCTTCAG | CAGAAGTC | GACTTCTG |
| F7 | UDI-P 54 | ACTCCTGA | TGAGGACT | AGTCTCTA |
| G7 | UDI-P 55 | GCATTCGT | CGTAAGCA | TGCTTACG |
| H7 | UDI-P 56 | ATGCCTAC | TACGGATG | CATCCGTA |
| A8 | UDI-P 57 | GAGTCATG | CTCAGTAC | GTAAGTAC |
| B8 | UDI-P 58 | AGACTGCA | TCTGACGT | ACGTCAGA |
| C8 | UDI-P 59 | GGAACTGA | CCTTGACT | AGTCAAGG |
| D8 | UDI-P 60 | AAGGTCAG | TTCCAGTC | GACTGGAA |
| E8 | UDI-P 61 | GTGTATCG | CACATAGC | GCTATGTG |
| F8 | UDI-P 62 | ACACGCTA | TGTGCGAT | ATCGCACA |
| G8 | UDI-P 63 | TCGACGAA | AGCTGCTT | AAGCAGCT |
| H8 | UDI-P 64 | CTAGTAGG | GATCATCC | GGATGATC |
| A9 | UDI-P 65 | GTGTCTGA | CACAGACT | AGTCTGTG |
| B9 | UDI-P 66 | ACACTCAG | TGTGAGTC | GACTCACA |
| C9 | UDI-P 67 | GCCTTATC | CGGAATAG | CTATTCCG |
| D9 | UDI-P 68 | ATTCCGCT | TAAGGCGA | TCGCCTTA |
| E9 | UDI-P 69 | TGATCGGT | ACTAGCCA | TGGCTAGT |
| F9 | UDI-P 70 | CAGCTAAC | GTCGATTG | CAATCGAC |
| G9 | UDI-P 71 | GAACATGG | CTTGTACC | GGTACAAG |
| H9 | UDI-P 72 | AGGTGCAA | TCCACGTT | AACGTGGA |
| A10 | UDI-P 73 | GGTGACAA | CCACTGTT | AACAGTGG |
| B10 | UDI-P 74 | AACAGTGG | TTGTCACC | GGTGACAA |
| C10 | UDI-P 75 | TGCACCTC | ACGTGAAG | CTTCACGT |
| D10 | UDI-P 76 | CATGTCTT | GTACAGGA | TCCTGTAC |
| E10 | UDI-P 77 | GTACAGCT | CATGTCGA | TCGACATG |
| F10 | UDI-P 78 | ACGTGATC | TGCACTAG | CTAGTGCA |
| G10 | UDI-P 79 | TGTTGCAG | ACAACGTC | GACGTTGT |
| H10 | UDI-P 80 | CACCATGA | GTGGTACT | AGTACCAC |

| Well | KAPA UDI Primer Mix | P7 Index Sequence | P5 Index Sequence | |
|------|---------------------|--------------------------|-------------------------------------|---|
| | | All Illumina Instruments | *NovaSeq 6000 MiSeq HiSeq 2000/2500 | **NextSeq 500/550 MiniSeq iSeq100 HiSeq 3000/4000/X |
| A11 | UDI-P 81 | TATGCGTG | ATACGCAC | GTGCGTAT |
| B11 | UDI-P 82 | CGCATACA | GCGTATGT | ACATACGC |
| C11 | UDI-P 83 | TCCTCTGA | AGGAGACT | AGTCTCCT |
| D11 | UDI-P 84 | CTTCTCAG | GAAGAGTC | GACTCTTC |
| E11 | UDI-P 85 | TCAGGCAA | AGTCCGTT | AACGGACT |
| F11 | UDI-P 86 | CTGAATGG | GACTTACC | GGTAAGTC |
| G11 | UDI-P 87 | GGTAGCTA | CCATCGAT | ATCGATGG |
| H11 | UDI-P 88 | AACGATCG | TTGCTAGC | GCTAGCAA |
| A12 | UDI-P 89 | TGTATGGC | ACATACCG | CGGTATGT |
| B12 | UDI-P 90 | CACGCAAT | GTGCGTTA | TAACGCAC |
| C12 | UDI-P 91 | GTTCTGTA | CAAGCACT | AGTGCTTG |
| D12 | UDI-P 92 | ACCTACAG | TGGATGTC | GACATCCA |
| E12 | UDI-P 93 | GACCTAAG | CTGGATTC | GAATCCAG |
| F12 | UDI-P 94 | AGTTCGGA | TCAAGCCT | AGGCTTGA |
| G12 | UDI-P 95 | GTGCTTAG | CACGAATC | GATTCGTG |
| H12 | UDI-P 96 | ACATCCGA | TGTAGGCT | AGCCTACA |

Tab. 1: Sequencing indexes (barcodes) included in the KAPA UDI Primer Mix. For convenience, all 96 index sequences in a comma-separated values file (delimited text file), as well as instructions for installation of KAPA UDI Primer Mix indexes for use with Illumina Experiment Manager are available from the Technical Documents at sequencing.roche.com/support.

*The sequence of the P5 index in the orientation required when completing the sample sheet for Illumina HiSeq 2000/2500, MiSeq, and NovaSeq instruments.

**The reverse complement sequence of the P5 index in the orientation required when completing the sample sheet for Illumina iSeq, MiniSeq, NextSeq, HiSeq 3000/4000, and HiSeq X instruments.

Changes to Previous Version


First version.

Ordering Information

For a complete overview of Roche Sequencing products, including those used in sequence capture workflows, go to sequencing.roche.com/products.

Conventions

In this document, the following symbol is used to highlight important information:

| Symbol | Description |
|--|---|
|  | Important Note: Information critical to the success of the procedure or use of the product. |

Notice to Purchaser

1. Limited Warranty

A. Products: Roche Sequencing Solutions, Inc. ("Roche") warrants that its Products conform to its published specifications and are free from defects in material or workmanship. Customer's sole and exclusive remedy (and Roche's sole and exclusive liability) under this limited warranty shall be to either (a) replace the defective Products, or (b) provide Customer with a refund, as solely determined by Roche.

B. Under no circumstances shall Roche's liability to Customer exceed the amount paid by Customer for the Services and Products to Roche. Roche will bear all reasonable shipping costs if service is re-performed at Roche or the Products are replaced. This warranty does not apply to any defect or nonconformance caused by (i) the failure by Customer to provide a suitable storage, use, or operating environment for the Materials or Customer's submission of substandard quality Materials or contaminated or degraded Materials to Roche, (ii) Customer's use of non-recommended reagents, (iii) Customer's use of the Products, Materials or Data for a purpose or in a manner other than that for which they were designed, (iv) the failure by Customer to follow Roche's published protocols, or (v) as a result of any other abuse, misuse or neglect of the Products, Materials or Data by Customer. This warranty applies only to Customer and not to third parties.

C. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ROCHE DISCLAIMS ALL OTHER REPRESENTATIONS, AND WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS, SERVICES AND DATA, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. CUSTOMER'S SOLE REMEDY FOR BREACH OF WARRANTY IS STATED ABOVE.

D. Any action by Customer against Roche for Roche's breach of this warranty must be commenced within 12 months following the date of such breach. Notwithstanding such 12-month period, within twenty (20) days of the delivery of Data and/or Products to Customer, Customer must notify Roche in writing of any nonconformity of the Services and Products, describing the nonconformity in detail; otherwise all Services and Products shall be conclusively deemed accepted without qualification.

2. Further Liability Limitation

To the fullest extent permitted under applicable law, Roche shall not have any liability for incidental, compensatory, punitive, consequential, indirect, special or other similar damages, however caused and regardless of form of action whether in contract, tort (including negligence), strict product liability or otherwise, even if Roche has been advised of the possibility of such damages. Customer understands that any risks of loss hereunder are reflected in the price of the services and products and that these terms would have been different if there had been a different allocation of risk.

Evidence of original purchase is required. It is important to save your sales receipt or packaging slip to verify purchase.

Restrictions and Liabilities for Roche Products

This document is provided "as is" and Roche Sequencing Solutions, Inc. ("Roche") assumes no responsibility for any typographical, technical or other inaccuracies in this document. Roche reserves the right to periodically change information that is contained in this document; however, Roche makes no commitment to provide any such changes, updates, enhancements or other additions to this document to you in a timely manner or at all.

OTHER THAN THE LIMITED WARRANTY CONTAINED IN THIS DOCUMENT, ROCHE MAKES NO REPRESENTATIONS, WARRANTIES, CONDITIONS OR COVENANTS, EITHER EXPRESS OR IMPLIED (INCLUDING WITHOUT LIMITATION, ANY EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OF FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, MERCHANTABILITY, DURABILITY, TITLE, OR RELATED TO THE PERFORMANCE OR NON-PERFORMANCE OF ANY PRODUCT REFERENCED HEREIN OR PERFORMANCE OF ANY SERVICES REFERENCED HEREIN).

This document might contain references to third party sources of information, hardware or software, products or services and/or third party web sites (collectively the "Third-Party Information"). Roche does not control, and is not responsible for, any Third-Party Information, including, without limitation the content, accuracy, copyright compliance, compatibility, performance, trustworthiness, legality, decency, links, or any other aspect of Third-Party Information. The inclusion of Third-Party Information in this document does not imply endorsement by Roche of the Third-Party Information or the third party in any way.

Roche does not in any way guarantee or represent that you will obtain satisfactory results from using Roche products as described herein. You assume all risk in connection with your use of Roche products.

Roche is not responsible nor will be liable in any way for your use of any software or equipment that is not supplied by Roche in connection with your use of Roche products.

Trademarks

KAPA is a trademark of Roche.

All other product names and trademarks are the property of their respective owners.

Patent License Limitations

For patent license limitations for individual products, go to www.technical-support.roche.com.

Regulatory Disclaimer

For Research Use Only. Not for use in diagnostic procedures.

Contact and Support

If you have questions, contact your local Roche Technical Support. Go to sequencing.roche.com/support for contact information.

© 2020 Roche Sequencing Solutions, Inc. All rights reserved.

Roche Sequencing Solutions, Inc.
4300 Hacienda Drive
Pleasanton, CA 94588 USA