**Supplementary file to “HyDrop enables droplet based single-cell ATAC-seq and single-cell RNA-seq using dissolvable hydrogel beads”**

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**HyDrop-ATAC**

**ATAC Reaction in bulk**

**5-GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXX CTGTCTCTTATACACATCT-3**

**3-TCTACACATATTCTCTGTC XXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCT-5**

**Linear PCR amplification in Emulsion**

**Gap Fill step**

**5-GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGA**

**3-CAGAGCACCCGAGCCTCTACACATATTCTCTGTCXXXXXXXXXXXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCT-5**

**Barcode captures fragment**

**5-TTTTTTTTAATACGACTCACTATAGGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGG-3**

**3-CAGAGCACCCGAGCCTCTACACATATTCTCTGTCXXXXXXXXXXXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCT-5**

**Linear PCR**

**5-TTTTTTTTAATACGACTCACTATAGGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGA-3**

**3-CAGAGCACCCGAGCCTCTACACATATTCTCTGTCXXXXXXXXXXXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCT-5**

**5-TTTTTTTTAATACGACTCACTATAGGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGA-3**

**5-TTTTTTTTAATACGACTCACTATAGGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGA-3**

**:**

**:**

**5-TTTTTTTTAATACGACTCACTATAGGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGA-3**

**PCR amplification in bulk (post emulsion breakage)**

**Sequencing library preperation**

**5-TTTTTTTTAATACGACTCACTATAGGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGA-3**

**3-** **GTGTAGACTGCGACGGCTGCTGCGAGGTGCTCACATCTAGAGCCACCAGCGGCATAGTAA-5**

**5-CAAGCAGAAGACGGCATACGAGATCGCTCAGTTCCTGTCCGC\**

**\GGAAGCAGTGGTATCAACGCAGAGTAC-3**

**/CCTTCGTCACCATAGTTGCGTCTCATGAAGGACACTCGTCGATGACGAGCCTGAATAGCTCATGGGACCGACTTAATCAGAGCACCCGAGCCTCTACACATATTCTCTGTCXXXXXXXXXXXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCT-5**

**3-AAAAAAAATTATGCTGAGTGATATC/**

**5-CAAGCAGAAGACGGCATACGAGATCGCTCAGTTCCTGTCCGCGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGACGCTCCACGAGTGTAGATCTCGGTGGTCGCCGTATCATT-3**

**3-GTTCGTCTTCTGCCGTATGCTCTAGCGAGTCAAGGACAGGCGCCTTCGTCACCATAGTTGCGTCTCATGAAGGACACTCGTCGATGACGAGCCTGAATAGCTCATGGGACCGACTTAATCAGAGCACCCGAGCCTCTACACATATTCTCTGTCXXXXXXXXXXXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCTGCGAGGTGCTCACATCTAGAGCCACCAGCGGCATAGTAA-5**

**Sequencing**

**Sequencing product (single ended, with custom primers, deprecated manner of sequencing)**

**I7 read (HyDrop custom primer) R1**

**<--GACAGGCGCCTTCGTCACCATAGTTGCGTCTCATG <--GACAGAGAATATGTGTAGACTGCGACGGCTGCT**

**5-CAAGCAGAAGACGGCATACGAGATCGCTCAGTTCCTGTCCGCGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGACGCTCCACGAGTGTAGATCTCGGTGGTCGCCGTATCATT-3**

**3-GTTCGTCTTCTGCCGTATGCTCTAGCGAGTCAAGGACAGGCGCCTTCGTCACCATAGTTGCGTCTCATGAAGGACACTCGTCGATGACGAGCCTGAATAGCTCATGGGACCGACTTAATCAGAGCACCCGAGCCTCTACACATATTCTCTGTCXXXXXXXXXXXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCTGCGAGGTGCTCACATCTAGAGCCACCAGCGGCATAGTAA-5**

**CTGTCCGCGGAAGCAGTGGTATCAACGCAGAGTAC--> CTGTCTCTTATACACATCTGACGCTGCCGACGA-->**

**R2 (HyDrop custom primer) I5 read (or via graft)**

**Sequencing product (dual ended, standard primers, used in paper BUT will require custom recipe on some sequencing machines for long index!)**

**I7 read R1**

**<--CAGAGCACCCGAGCCTCTACACATATTCTCTGTC <--GACAGAGAATATGTGTAGACTGCGACGGCTGCT**

**5-CAAGCAGAAGACGGCATACGAGATCGCTCAGTTCCTGTCCGCGGAAGCAGTGGTATCAACGCAGAGTACTTCCTGTGAGCAGCTACTGCTCGGACTTATCGAGTACCCTGGCTGAATTAGTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGXXXXXXXXXXXX...XXXXXXXXXXXXCTGTCTCTTATACACATCTGACGCTGCCGACGACGCTCCACGAGTGTAGATCTCGGTGGTCGCCGTATCATT-3**

**3-GTTCGTCTTCTGCCGTATGCTCTAGCGAGTCAAGGACAGGCGCCTTCGTCACCATAGTTGCGTCTCATGAAGGACACTCGTCGATGACGAGCCTGAATAGCTCATGGGACCGACTTAATCAGAGCACCCGAGCCTCTACACATATTCTCTGTCXXXXXXXXXXXX...XXXXXXXXXXXXGACAGAGAATATGTGTAGACTGCGACGGCTGCTGCGAGGTGCTCACATCTAGAGCCACCAGCGGCATAGTAA-5**

**GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAG--> CTGTCTCTTATACACATCTGACGCTGCCGACGA-->**

**R2 I5 read (or via graft)**