

**Table S1-1. Trimming speed on the simulated data (uncompressed data)**

Threads	Trimmer	Efficiency (M Bases/s/CPU)	Speed (M Bases/s)	User Time (s)	System Time CPU	Elapsed Time (s)	Max Memory (kB)	Command
1	Atria	66.51	66.79	121.17	12.75	100.4%	133.36	atria --no-consensus -r TAIR10.sim_1.fq -R TAIR10.sim_2.fq -o Atria --no-tail-n-trim --max-n=-1 --no-quality-trim --no-length-filtration --adapter1
1	Atria (consensus)	50.79	50.95	162.96	12.42	100.3%	174.81	AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT --threads 1
1	AdapterRemoval	26.35	26.35	322.19	15.82	100.0%	338.05	atria -r TAIR10.sim_1.fq -R TAIR10.sim_2.fq -o Atria-consensus --no-tail-n-trim --max-n=-1 --no-quality-trim --no-length-filtration --adapter1
1	Skewer	13.44	13.41	639.41	23.27	99.8%	663.98	AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT --mm 3 --minlength 0 --threads 1
1	Trim Galore	7.04	8.32	1,184.12	80.57	118.1%	1,070.46	skewer --quiet -x AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -y AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -m pe -10 -o Skewer/Skewer
1	Trimmomatic	33.22	33.73	249.17	18.96	101.5%	264.10	trim_galore --cores 1 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2
1	Ktrim	139.85	139.48	49.81	13.88	99.7%	63.86	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
1	Fastp	9.75	13.25	852.91	60.98	135.9%	672.28	java -jar /usr/software/Trimmomatic-0.39/trimmomatic-0.39.jar PE -threads 1 -phred33 TAIR10.sim_1.fq TAIR10.sim_2.fq Trimmomatic/out-pair1.paired.fq
1	Atropos	4.32	4.32	2,034.18	27.57	100.0%	2,062.24	Trimmomatic/out-pair1.unpaired.fq Trimmomatic/out-pair2.paired.fq Trimmomatic/out-pair2.unpaired.fq ILLUMINACLIP:adapters.fa:2:30:10:1:TRUE:keepBothReads
2	Atria	59.85	108.48	132.07	16.74	181.2%	82.11	MINLEN:1
2	Atria (consensus)	45.54	85.65	180.39	15.19	188.1%	103.99	ktrim -l TAIR10.sim_1.fq -2 TAIR10.sim_2.fq -t 1 -p 33 -q 1 -s 10 -a AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -b
2	AdapterRemoval	25.99	51.65	325.97	16.80	198.8%	172.45	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
2	Skewer	13.09	26.01	657.88	22.64	198.8%	342.39	AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT --threads 1
2	Trim Galore	6.66	13.87	1,225.64	112.56	208.4%	642.02	AdapterRemoval --file1 TAIR10.sim_1.fq --file2 TAIR10.sim_2.fq --basename AdapterRemoval-3/adapterremoval --adapter1
2	Trimmomatic	21.22	94.76	372.36	47.38	446.5%	94.00	skewer --quiet -x AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -y AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -m pe -10 -o Skewer/Skewer
2	Ktrim	99.71	176.10	73.11	16.22	176.6%	50.58	TAIR10.sim_1.fq TAIR10.sim_2.fq --threads 2
2	Fastp	9.15	23.43	898.02	75.60	256.1%	380.16	trim_galore --cores 2 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2
2	Atropos	3.13	4.28	2,690.20	151.07	136.5%	2,081.35	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
4	Atria	55.95	168.15	142.73	16.47	300.5%	52.97	java -jar /usr/software/Trimmomatic-0.39/trimmomatic-0.39.jar PE -threads 2 -phred33 TAIR10.sim_1.fq TAIR10.sim_2.fq Trimmomatic/out-pair1.paired.fq
4	Atria (consensus)	43.05	136.80	190.52	16.40	317.8%	65.11	Trimmomatic/out-pair1.unpaired.fq Trimmomatic/out-pair2.paired.fq Trimmomatic/out-pair2.unpaired.fq ILLUMINACLIP:adapters.fa:2:30:10:1:TRUE:keepBothReads
4	AdapterRemoval	23.63	86.25	358.28	18.67	365.0%	103.27	MINLEN:1
4	Skewer	13.09	51.65	658.65	21.92	394.7%	172.44	ktrim -l TAIR10.sim_1.fq -2 TAIR10.sim_2.fq -t 2 -p 33 -q 1 -s 10 -a AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -b
4	Trim Galore	6.78	23.06	1,206.08	108.53	340.3%	386.33	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
4	Trimmomatic	29.81	191.63	274.28	24.55	642.9%	46.48	AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT --threads 1
4	Ktrim	74.29	243.16	103.87	16.03	327.3%	36.63	AdapterRemoval --file1 TAIR10.sim_1.fq --file2 TAIR10.sim_2.fq --basename AdapterRemoval-3/adapterremoval --adapter1
4	Fastp	9.68	43.40	840.32	79.77	448.3%	205.24	skewer --quiet -x AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -y AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -m pe -10 -o Skewer/Skewer
4	Atropos	3.01	7.66	2,797.51	157.68	254.2%	1,162.70	TAIR10.sim_1.fq TAIR10.sim_2.fq --threads 4
8	Atria	50.15	216.56	160.07	17.55	431.9%	41.13	trim_galore --cores 4 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2
8	Atria (consensus)	39.10	179.50	210.31	17.50	459.1%	49.62	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
8	AdapterRemoval	16.09	60.28	519.04	34.51	374.6%	147.76	AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT --mm 3 --minlength 0 --threads 4
8	Skewer	12.96	100.83	666.59	20.77	778.1%	88.34	skewer --quiet -x AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -y AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -m pe -10 -o Skewer/Skewer
8	Trim Galore	6.91	34.05	1,181.85	106.31	492.4%	261.61	TAIR10.sim_1.fq TAIR10.sim_2.fq --threads 8
8	Trimmomatic	30.70	250.90	267.46	22.63	817.2%	35.50	trim_galore --cores 8 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2
8	Ktrim	40.67	226.64	200.72	18.27	557.2%	39.30	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
8	Fastp	8.68	55.55	928.18	98.04	640.1%	160.33	java -jar /usr/software/Trimmomatic-0.39/trimmomatic-0.39.jar PE -threads 4 -phred33 TAIR10.sim_1.fq TAIR10.sim_2.fq Trimmomatic/out-pair1.paired.fq
8	Atropos	2.82	15.77	2,992.63	162.34	558.4%	564.96	Trimmomatic/out-pair1.unpaired.fq Trimmomatic/out-pair2.paired.fq Trimmomatic/out-pair2.unpaired.fq ILLUMINACLIP:adapters.fa:2:30:10:1:TRUE:keepBothReads
16	Atria	37.18	241.71	219.48	20.06	650.0%	36.85	MINLEN:1
16	Atria (consensus)	30.39	215.77	274.26	18.79	709.9%	41.28	ktrim -l TAIR10.sim_1.fq -2 TAIR10.sim_2.fq -t 4 -p 33 -q 1 -s 10 -a AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -b
16	AdapterRemoval	12.52	47.93	655.04	56.23	382.8%	185.82	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
16	Skewer	12.56	173.63	683.48	25.94	1382.9%	51.30	AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT --threads 1
16	Trim Galore	6.75	36.31	1,208.08	112.13	538.2%	245.28	skewer --quiet -x AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -y AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -m pe -10 -o Skewer/Skewer
16	Trimmomatic	25.23	250.06	328.79	24.18	990.9%	35.62	TAIR10.sim_1.fq TAIR10.sim_2.fq --threads 16
16	Ktrim	21.67	217.19	391.92	19.03	1002.1%	41.01	trim_galore --cores 16 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2
16	Fastp	6.69	51.20	1,213.88	116.80	764.8%	173.98	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
16	Atropos	2.79	15.68	3,031.15	160.49	561.7%	568.17	java -jar /usr/software/Trimmomatic-0.39/trimmomatic-0.39.jar PE -threads 16 -phred33 TAIR10.sim_1.fq TAIR10.sim_2.fq Trimmomatic/out-pair1.paired.fq
32	Atria	19.16	225.49	443.40	21.38	1176.7%	39.50	Trimmomatic/out-pair1.unpaired.fq Trimmomatic/out-pair2.paired.fq Trimmomatic/out-pair2.unpaired.fq ILLUMINACLIP:adapters.fa:2:30:10:1:TRUE:keepBothReads
32	Atria (consensus)	16.50	228.50	520.27	19.66	1385.1%	38.98	MINLEN:1
32	AdapterRemoval	11.43	45.45	695.64	83.36	397.5%	195.97	ktrim -l TAIR10.sim_1.fq -2 TAIR10.sim_2.fq -t 8 -p 33 -q 1 -s 10 -a AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -b
32	Skewer	9.34	171.45	921.59	32.31	1836.2%	51.95	AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq TAIR10.sim_2.fq
32	Trim Galore	6.09	36.49	1,358.40	104.65	599.3%	244.12	AdapterRemoval --file1 TAIR10.sim_1.fq --file2 TAIR10.sim_2.fq --basename AdapterRemoval-3/adapterremoval --adapter1
32	Trimmomatic	23.94	249.57	348.00	24.08	1042.5%	35.69	skewer --quiet -x AGATCGGAAGAGCAGCTGTAAGTCCAGTCA -y AGATCGGAAGAGCGTCGTGTAGGAAAGAGTGT -m pe -10 -o Skewer/Skewer
32	Ktrim	10.38	203.08	836.79	21.67	1957.3%	43.86	TAIR10.sim_1.fq TAIR10.sim_2.fq --threads 32
32	Atropos	2.79	15.84	3,029.19	160.27	567.2%	562.36	trim_galore --cores 32 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCAGCTGTAAGTCCAGTCA --adapter2

Input and output files are not compressed. Atria (consensus) does both adapter trimming and paired-end consensus call (base correction of overlapped regions). SeqPurge does not support output uncompressed files, so it is not shown in the uncompressed benchmark. Fastp does not support 32 threads, so only 1-16 threads were tested.

**Table S1-2. Trimming speed on the simulated data (gzip compressed data)**

Threads	Trimmer	Efficiency (M Bases/s/CPU)	Speed (M Bases/s)	User Time (s)	System Time (s)	CPU	Elapsed Time (s)	Max Memory (kB)	Command
1	Atria	3.58	3.91	2,436.81	53.42	109.4%	2,276.45	2,421,012	atria --no-consensus -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 1
1	Atria (consensus)	3.52	3.84	2,476.92	54.11	109.1%	2,319.96	2,423,976	atria -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria-consensus --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 1
1	AdapterRemoval	3.65	3.65	2,433.19	5.50	100.0%	2,438.82	11,576	AdapterRemoval --file1 TAIR10.sim_1.fq.gz --file2 TAIR10.sim_2.fq.gz --basename AdapterRemoval-3/adapterremoval --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --mm 3 --minlength 0 --threads 1 --gzip
1	Skewer	2.78	8.49	3,165.30	42.27	305.8%	1,048.92	3,664	o Skewer/Skewer TAIR10.sim_1.fq.gz TAIR10.sim_2.fq.gz --threads 1 --compress trim_galore --cores 1 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq.gz
1	Trim Galore	1.36	2.93	6,452.45	111.48	216.1%	3,038.02	16,636	TAIR10.sim_2.fq.gz
1	Trimmomatic	3.61	3.61	2,429.06	40.13	100.1%	2,466.01	1,304,372	java -jar /usr/software/Trimmomatic-0.39/trimmomatic-0.39.jar PE -threads 1 -phred33 TAIR10.sim_1.fq.gz TAIR10.sim_2.fq.gz Trimmomatic/out-pair1.paired.fq.gz Trimmomatic/out-pair1.unpaired.fq.gz Trimmomatic/out-pair2.paired.fq.gz Trimmomatic/out-pair2.unpaired.fq.gz ILLUMINACLIP:adapters.fa:2:30:10:1:TRUE:keepBothReads MINLEN:1 SeqPurge -in1 TAIR10.sim_1.fq.gz -in2 TAIR10.sim_2.fq.gz -out1 SeqPurge/TAIR10.sim_1.fq.gz.seqpurge.fq.gz -out2 SeqPurge/TAIR10.sim_2.fq.gz.seqpurge.fq.gz -a1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA -a2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 1
1	SeqPurge	2.69	8.06	3,279.71	33.06	299.9%	1,104.76	16,336	AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 1
1	Fastp	2.96	24.49	2,893.69	116.55	827.7%	363.68	16,600	fastp --in1 TAIR10.sim_1.fq.gz --in2 TAIR10.sim_2.fq.gz --out1 fastp/out.fastp.r1.fq.gz --out2 fastp/out.fastp.r2.fq.gz -z 6 --adapter_sequence AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter_sequence_r2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --disable_trim_poly_g --disable_quality_filtering --disable_length_filtering --thread 1
2	Atria	3.46	7.91	2,515.19	56.64	228.4%	1,126.18	2,773,240	atria --no-consensus -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 2
2	Atria (consensus)	3.40	7.76	2,560.00	56.31	227.9%	1,148.18	2,772,940	atria -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria-consensus --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 2
2	AdapterRemoval	3.65	7.30	2,431.78	7.90	199.9%	1,220.29	18,504	AdapterRemoval --file1 TAIR10.sim_1.fq.gz --file2 TAIR10.sim_2.fq.gz --basename AdapterRemoval-3/adapterremoval --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --mm 3 --minlength 0 --threads 2 --gzip
2	Skewer	2.34	8.49	3,742.64	66.14	363.0%	1,049.12	3,944	o Skewer/Skewer TAIR10.sim_1.fq.gz TAIR10.sim_2.fq.gz --threads 2 --compress trim_galore --cores 2 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq.gz
2	Trim Galore	1.43	5.87	6,029.34	217.94	411.4%	1,518.62	45,008	TAIR10.sim_2.fq.gz
2	Trimmomatic	2.89	8.32	3,023.60	61.30	288.1%	1,070.80	1,339,960	java -jar /usr/software/Trimmomatic-0.39/trimmomatic-0.39.jar PE -threads 2 -phred33 TAIR10.sim_1.fq.gz TAIR10.sim_2.fq.gz Trimmomatic/out-pair1.paired.fq.gz Trimmomatic/out-pair1.unpaired.fq.gz Trimmomatic/out-pair2.paired.fq.gz Trimmomatic/out-pair2.unpaired.fq.gz ILLUMINACLIP:adapters.fa:2:30:10:1:TRUE:keepBothReads MINLEN:1 SeqPurge -in1 TAIR10.sim_1.fq.gz -in2 TAIR10.sim_2.fq.gz -out1 SeqPurge/TAIR10.sim_1.fq.gz.seqpurge.fq.gz -out2 SeqPurge/TAIR10.sim_2.fq.gz.seqpurge.fq.gz -a1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA -a2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 2
2	SeqPurge	3.98	15.89	2,202.47	37.87	399.8%	560.41	16,372	AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 2
2	Fastp	3.03	8.63	2,920.61	21.05	285.1%	1,031.96	3,042,404	fastp --in1 TAIR10.sim_1.fq.gz --in2 TAIR10.sim_2.fq.gz --out1 fastp/out.fastp.r1.fq.gz --out2 fastp/out.fastp.r2.fq.gz -z 6 --adapter_sequence AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter_sequence_r2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --disable_trim_poly_g --disable_quality_filtering --disable_length_filtering --thread 2
4	Atria	3.38	15.07	2,564.93	68.38	445.7%	590.86	2,300,680	atria --no-consensus -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 4
4	Atria (consensus)	3.32	14.79	2,609.96	68.99	444.8%	602.31	2,299,232	atria -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria-consensus --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 4
4	AdapterRemoval	3.37	7.40	2,639.21	7.68	219.8%	1,204.19	34,076	AdapterRemoval --file1 TAIR10.sim_1.fq.gz --file2 TAIR10.sim_2.fq.gz --basename AdapterRemoval-3/adapterremoval --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --mm 3 --minlength 0 --threads 4 --gzip
4	Skewer	2.12	8.48	4,070.75	128.05	399.8%	1,050.16	4,032	o Skewer/Skewer TAIR10.sim_1.fq.gz TAIR10.sim_2.fq.gz --threads 4 --compress trim_galore --cores 4 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq.gz
4	Trim Galore	1.46	11.70	5,893.69	200.33	800.7%	761.05	44,352	TAIR10.sim_2.fq.gz
4	Trimmomatic	2.92	8.35	2,994.21	59.96	286.2%	1,067.08	1,334,864	java -jar /usr/software/Trimmomatic-0.39/trimmomatic-0.39.jar PE -threads 4 -phred33 TAIR10.sim_1.fq.gz TAIR10.sim_2.fq.gz Trimmomatic/out-pair1.paired.fq.gz Trimmomatic/out-pair1.unpaired.fq.gz Trimmomatic/out-pair2.paired.fq.gz Trimmomatic/out-pair2.unpaired.fq.gz ILLUMINACLIP:adapters.fa:2:30:10:1:TRUE:keepBothReads MINLEN:1 SeqPurge -in1 TAIR10.sim_1.fq.gz -in2 TAIR10.sim_2.fq.gz -out1 SeqPurge/TAIR10.sim_1.fq.gz.seqpurge.fq.gz -out2 SeqPurge/TAIR10.sim_2.fq.gz.seqpurge.fq.gz -a1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA -a2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 4
4	SeqPurge	4.73	24.49	1,830.09	52.50	517.6%	363.70	16,384	AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 4
4	Fastp	2.99	8.62	2,940.37	35.08	288.1%	1,032.92	3,161,256	fastp --in1 TAIR10.sim_1.fq.gz --in2 TAIR10.sim_2.fq.gz --out1 fastp/out.fastp.r1.fq.gz --out2 fastp/out.fastp.r2.fq.gz -z 6 --adapter_sequence AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter_sequence_r2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --disable_trim_poly_g --disable_quality_filtering --disable_length_filtering --thread 4
8	Atria	3.31	27.24	2,625.60	67.75	823.8%	326.96	2,620,340	atria --no-consensus -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 8
8	Atria (consensus)	3.25	26.75	2,675.96	68.32	824.2%	332.97	2,617,968	atria -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria-consensus --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 8
8	Trim Galore	1.49	22.66	5,814.96	155.89	1518.8%	393.13	48,020	trim_galore --cores 8 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq.gz
8	SeqPurge	2.92	18.56	2,454.65	597.81	636.2%	479.83	16,252	SeqPurge -in1 TAIR10.sim_1.fq.gz -in2 TAIR10.sim_2.fq.gz -out1 SeqPurge/TAIR10.sim_1.fq.gz.seqpurge.fq.gz -out2 SeqPurge/TAIR10.sim_2.fq.gz.seqpurge.fq.gz -a1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA -a2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 8
16	Atria	3.23	45.68	2,693.23	64.82	1414.5%	194.98	2,541,276	atria --no-consensus -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 16
16	Atria (consensus)	3.17	44.97	2,744.78	63.21	1417.8%	198.05	2,541,872	atria -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria-consensus --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 16
16	Trim Galore	1.27	26.18	6,894.45	139.49	2067.6%	340.20	40,784	trim_galore --cores 16 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq.gz
16	SeqPurge	1.86	12.92	3,968.28	815.93	694.2%	689.16	17,072	SeqPurge -in1 TAIR10.sim_1.fq.gz -in2 TAIR10.sim_2.fq.gz -out1 SeqPurge/TAIR10.sim_1.fq.gz.seqpurge.fq.gz -out2 SeqPurge/TAIR10.sim_2.fq.gz.seqpurge.fq.gz -a1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA -a2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 16
32	Atria	3.01	58.09	2,899.15	62.37	1931.5%	153.33	2,528,128	atria --no-consensus -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 32
32	Atria (consensus)	2.95	57.41	2,951.99	62.65	1943.2%	155.14	2,528,608	atria -r TAIR10.sim_1.fq.gz -R TAIR10.sim_2.fq.gz -o Atria-consensus --no-tail-n-trim --max-n=1 --no-quality-trim --no-length-filtration --adapter1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT --threads 32
32	Trim Galore	1.25	25.68	6,981.19	168.58	2061.8%	346.78	38,356	trim_galore --cores 32 --quality 0 -o TrimGalore --adapter AGATCGGAAGAGCACACGTCTGAACTCCAGTCA --adapter2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -e 0.1 --stringency 1 --max_n 100 --length 0 --paired TAIR10.sim_1.fq.gz
32	SeqPurge	1.98	4.94	4,330.20	165.56	249.5%	1,802.15	537,256	SeqPurge -in1 TAIR10.sim_1.fq.gz -in2 TAIR10.sim_2.fq.gz -out1 SeqPurge/TAIR10.sim_1.fq.gz.seqpurge.fq.gz -out2 SeqPurge/TAIR10.sim_2.fq.gz.seqpurge.fq.gz -a1 AGATCGGAAGAGCACACGTCTGAACTCCAGTCA -a2 AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT -mep 0.1 -qcut 0 -min_len 0 -summary SeqPurge/seqpurge.summary -threads 32

Input and output files are compressed. Atria (consensus) does both adapter trimming and paired-end consensus call (base correction of overlapped regions). In the trimming for compressed data, the speed of AdapterRemoval, Skewer, Fastp, and Trimmomatic kept constant when the number of threads increased from 4 to 32, so we only benchmarked those trimmers using 1, 2, and 4 threads. Atropos was too slow to trim compressed data, and Ktrim did not support output compressed files, so they are not shown in the compressed benchmark.