

	454 FLX/Roche	Solexa/Illumina	Solid/ABI
Sequencing Approach	pyrophosphate release	bridge amplification	ligation
Starting material needed	3 to 5ug DNA; 20ug total RNA	1 to 5 ug DNA (shotgun Arab); 1 to 2ug total RNA	1 ug DNA (shot gun bacterial); 5ng total RNA (Ambion kits for prep)
Sequence Yield/Read Length	large picotiter plate, long read, 200-300base 400K reads (~100Mb)	flow cell, 25 to 35base (800Mb to 1Gb)	35base (1.5Gb/slide); can run 2 slides (3Gb total)
	small plate, long read, 60-80K reads		
	large plate, short read, 100base (~100Mb)		
Data file size	12-15Gb/run (total storage for about 10 runs)	1 terabyte/run (stores image files)	15 terabyte/run (stores image files)
Software	Linux, open license software	open license software	open license software
Lanes/plate	1 plate (400k reads, 100Mb)	1 to 8 channels/flowcell (5Mil reads/channel; 125Mb/channel)	1 slide
	2 lanes (210k reads each, 50.4Mb)	<i>Note: 1 channel is control</i>	4 lanes/slide (35base, 400Mb)
	4 lanes (70k reads each, 16.8Mb)		8 lanes/slide (35base, 175Mb)
	16 lanes (12k reads each, 2.9Mb)		16 lanes/slide
Accuracy	>6 homopolymer length problematic	near 100% (25nt)	near 100% (21nt)
Time/run	7.5 hrs	3 to 5 days (~1Gb)	up to 8 days
Run/week (potentially)	5 (1 run per day) (>200 runs/year)	1 or 2 (maybe 50 runs/yr)	1 (maybe 50 runs per year)
Applications			
re-sequencing	xx	xx	xx
transcriptome analysis	xx	xx	xx
transcription factor binding (CHiP seq)	xx	xx	xx
methylation (bisulfite)	xx	xx	
snp/InDel	xx	xx	xx

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Costs			
Reagents	\$8200 (2 PCR kits, 1 long seq kit, plate, gaskets) per run	\$3300/ flowcell 1Gb	\$3000 slide (\$12k/sequencng kit; 4 slides)
	Note: Price reduced to \$4980 in Feb 08	\$275 (\$2200 sample prep kit; 8 samples)	\$400 ePCR kit (\$4000 for 10 enrichments)
	\$2000 library prep kit (10 libraries)	\$282 (\$2250 cluster kit; 8 samples)	\$250 bead enrichment kit (\$2500 for 10 enrichments)
		\$119 (\$950 18 cycle sequencing kit)	
Taq polymerase	\$500-1000/library (Qiagen)		
Cost per run (one user)	\$8,200	\$3,976	\$3,650
Cost per user (assume two users per run)	\$4100 per user	\$1988 per user	\$1825 per user (1 slide)
Cost per Mb (based on available data)	\$4980/100Mb = \$49.80/Mb	\$3976/1000Mb = \$3.98/Mb	\$3650/1500Mb = \$2.43Mb
Cost as commercial service	\$25k Library through seq analysis (user supplied DNA; 20x bacterial genome coverage)	\$3500 Library through re-seq analysis (user supplied DNA; 33base) 250Mb	
		\$11k Library through re-seq analysis (user supplied DNA; 33base) 1Gb	
		\$3000 RNA expression profiling (user supplied RNA; 21nt) 2Mb	
		\$3500 Small RNA expression profiling (user supplied RNA; 33base) 2Mb	
Instrument Cost	\$500k (instrument, training, software (basecalling, mapping, assembly, varients like InDels). No transcriptome analysis software.	\$475k [\$430k (Genome analyzer cluster station, training, software, controls) plus \$45k (paaired end module)]	\$525k (instrument, training, prep kits, sofware)
Instrument Lease Option	\$43,680/month (12 months), \$10,015/month (60 months)	\$20,145/month (24 months; \$100k buyout), \$9190/month (60 months; FMV buyout)	
Some strengths	more runs per year and longer reads; established instrumentation compared to ABI	low cost per base and probably lower user cost than 454; established instrumentation compared to ABI; requires less starting material than 454	low cost per base; established company; requires less starting material than 454
Some weaknesses	higher cost per base	shorter reads and fewer runs per year	shortest reads; technology limited ultimately to 80 to 100bases; no protocol currently for methylation; instrumentation very new