Poly Net Inc.

Manufactures and Develops

Replaceable Polymer Solutions for

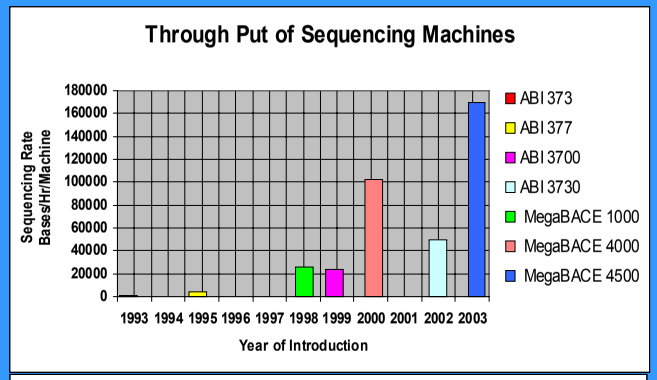
Electrophoretic Separations of

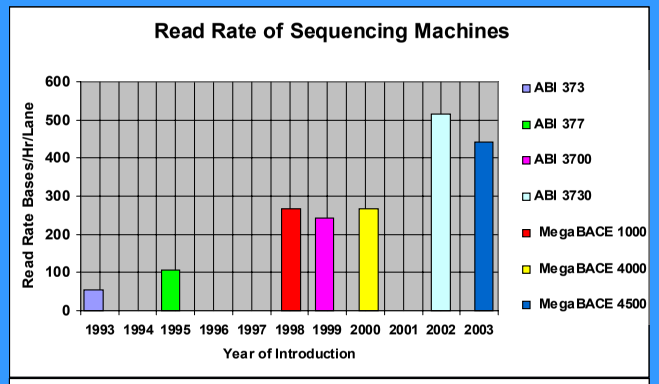
Bio-Molecules

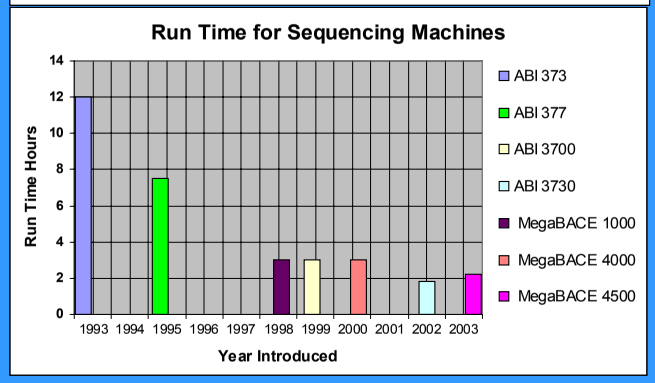
Improvements in Electrophoretic Sequencing since 1998

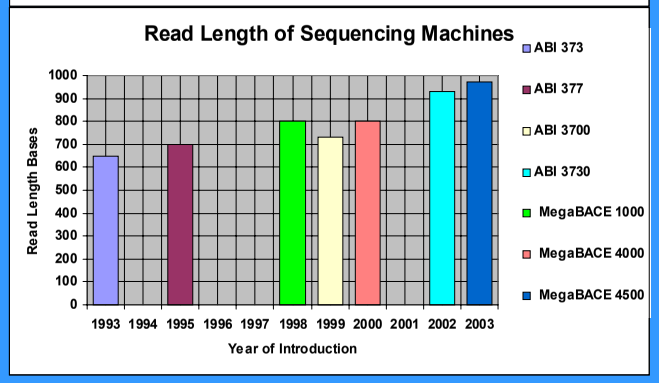
Time of Run about 3X Faster
Read Rate/Lane about 2X Faster
Throughput/Machine about 7X Greater

Read Length – Increased Approximately 30%









Polymer Plus by Itself

Increases
Read Length
50%
Compared to
1998 Technology

DNA Sequencing Demonstrates Polymer Plus' Power to Improve Separation Performance

- Polymer Plus
  [Current Performance]
  - 1200 Bases
  - 3 X Sensitivity
  - 25 % Increase in Throughput
  - 30 % Lower Sequencing Cost
- Long Read Matrix™
  - 800 Bases Read Length
  - 1X Sensitivity
  - Standard Throughput
  - Current Sequencing Cost

Validation of Polymer Plus for DNA Sequencing

Amersham's Matrix vs. Poly Net's Matrix

- Test Conditions

  - **MegaBACE™ 1000 Machine**
  - **ABI Terminator Chemistry v1.1**
  - **Sample- pGem-3Zf+ Puc/M13 Primer**
  - **Pooled Sample**
  - **Ethanol Precipitation**
  - **44 °C Running Temperature**
  - **6 Molar Urea**
  - **6.5 kV Running Voltage**
  - **Run Time 250 Minutes to 1200++ Bases**
  - **Base Caller Cimarron 1.53**

Amersham Success Average 808 Bases

molecular dynamics

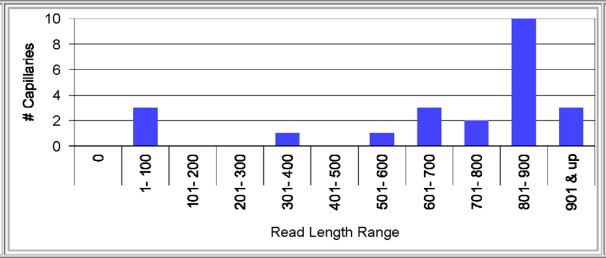
MegaBACE ScoreCard

Plate ID		**Run ID**	Run01	**Run Date**	
Run Time (min)	260	**Injection Time (sec)**	60	**Chemistry**	BD Terminators
Run Voltage (kV)	6.2	**Injection Voltage (kV)**	2	**Base Caller**	Cimarron 1.53 Slim Phredify
Comment					

	1	2	3	4	5	6	7	8	9	10	11	12
A								943/96		7/70	353/89	
B								809/97		825/96	693/94	779/97
C								572/89		850/97	730/97	818/97
D								668/95		851/98	838/95	930/96
E								5/71		888/97	807/96	
F										54/77	680/97	
G										895/96	838/94	
H											932/96	

Legend: MD/Quality Index

Read Length	MD
0	0
1-100	3
101-200	0
201-300	0
301-400	1
401-500	0
501-600	1
601-700	3
701-800	2
801-900	10
901 & up	3



Statistic	Value	Count	%
MD Average	164	96	100
MD Success Avg	808	19	20
MD > 0 Avg	685	23	24
MD Maximum			943
MD Tot bp/plate			15765

Polymer Plus Success Average 1217 Bases

molecular dynamics

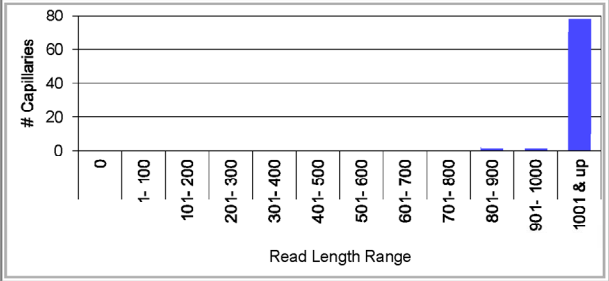
MegaBACE ScoreCard

Plate ID		Run ID	Run01	Run Date	
Run Time (min)	260	Injection Time (sec)	30	Chemistry	BD Terminators
Run Voltage (kV)	6.5	Injection Voltage (kV)	2	Base Caller	Cimarron 1.53 Slim Phredify
Comment					

	1	2	3	4	5	6	7	8	9	10	11	12
A			1305/94	1268/96	1160/97	1003/97	1166/96	1103/95	1115/95	1218/96	1140/95	1258/93
B			1185/96	1170/95	1410/95	1202/96	1262/95	1248/95	1333/95	1307/96	1201/93	1122/96
C			1070/94	940/95	1207/96	1249/96	1146/97	1037/93	1173/96	1102/95	1186/95	1272/95
D			1195/96	1101/96	1184/98	1294/96	1239/97	1107/90	832/93	1204/97	1278/96	1322/97
E			1038/96	1318/96	1326/96	1152/96	1156/96	1223/95	1251/93	1184/98	1161/95	1316/94
F			1296/95	1302/95	1002/96	1177/93	1132/96	1144/95	1122/96	1062/94	1215/92	1192/96
G			1050/95	1107/97	1200/97	1238/96	1363/95	1206/95	1222/97	1429/95	1341/95	1304/94
H			1248/95	1148/98	1197/96	1193/94	1330/95	1181/93	1378/95	1198/96	1165/97	1175/96

Legend: MD/Quality Index

Read Length	MD
0	0
1-100	0
101-200	0
201-300	0
301-400	0
401-500	0
501-600	0
601-700	0
701-800	0
801-900	1
901-1000	1
1001 & up	78



Statistic	Value	Count	%
MD Average	997	96	100
MD Success Avg	1217	73	76
MD > 0 Avg	1197	80	83
MD Maximum			1429
MD Tot bp/plate			95756

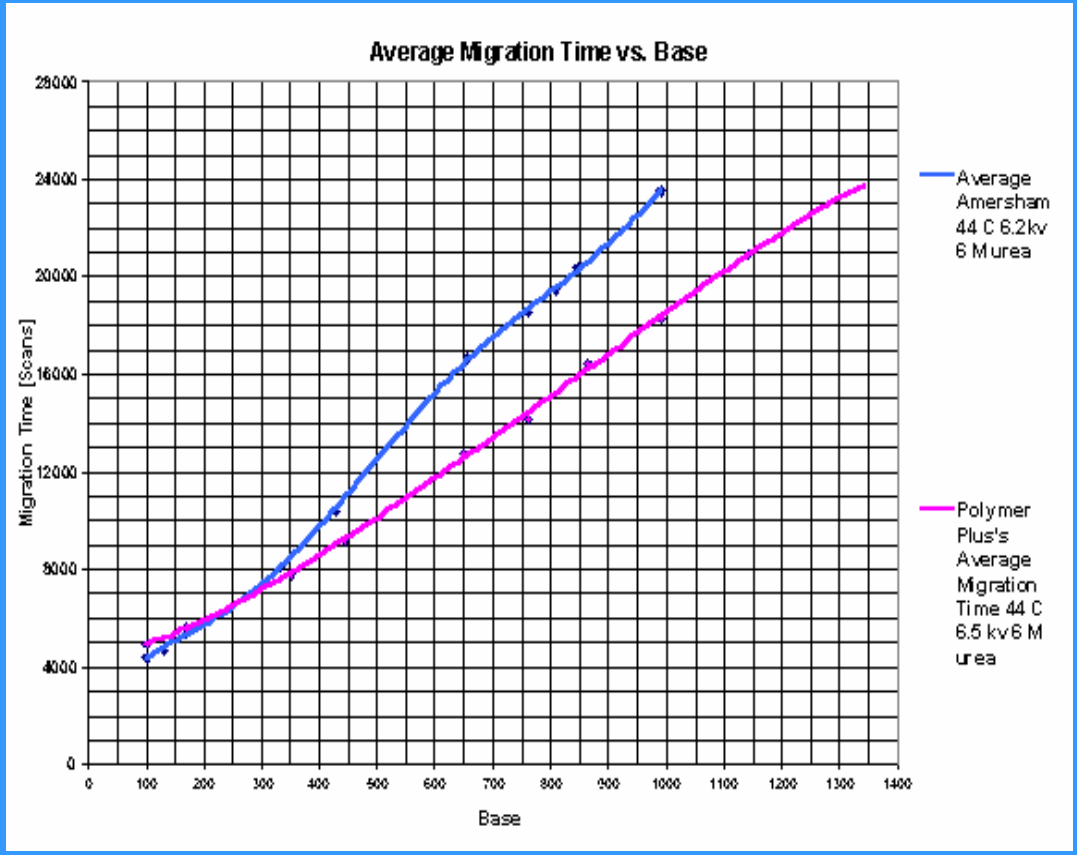
Average Migration Time
Polymer Plus vs. Amersham Matrix

Migration Time to Base 1000

Polymer Plus =176 Minutes

Amersham =224 Minutes

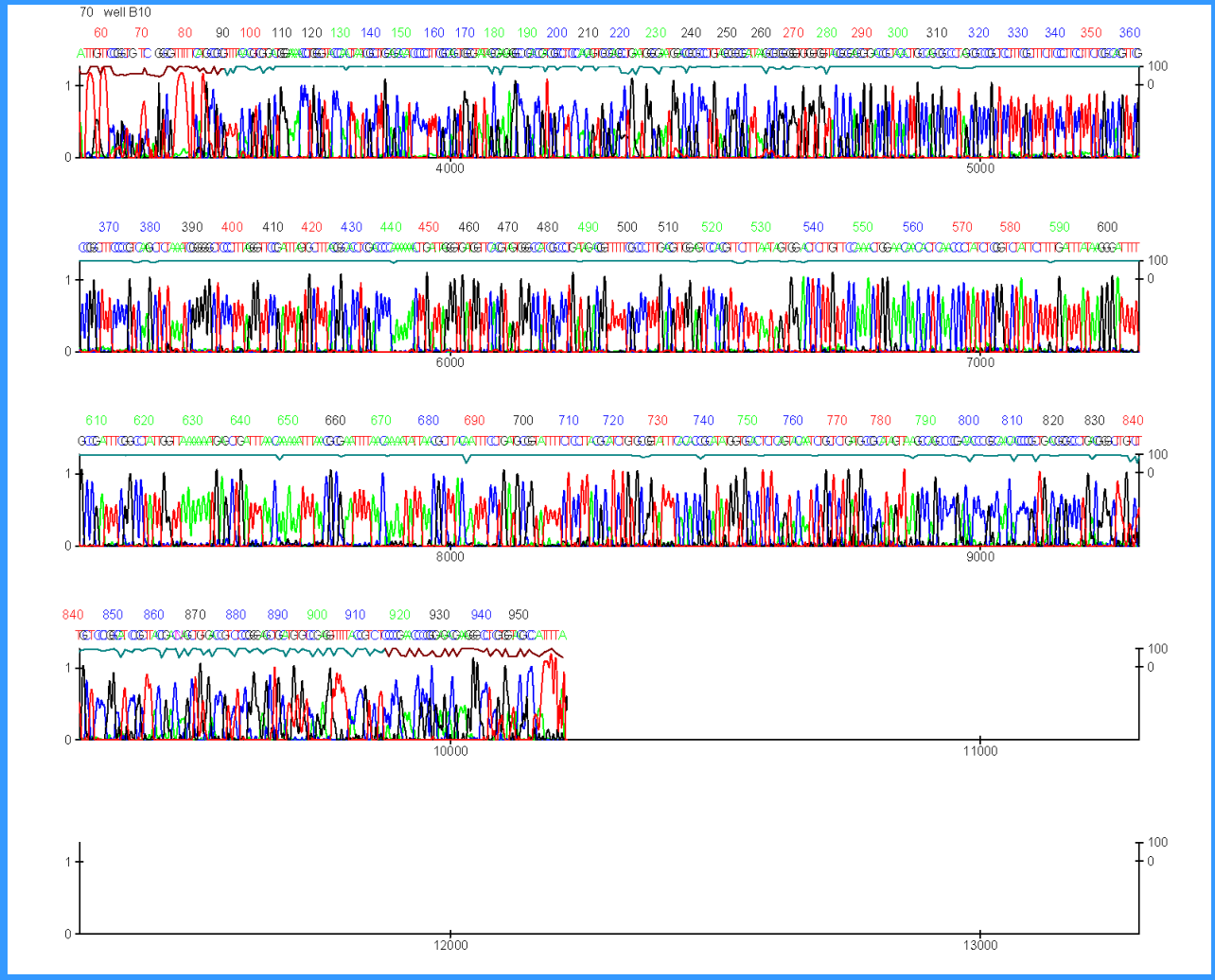
10 Capillary Average



Typical Amersham Separation

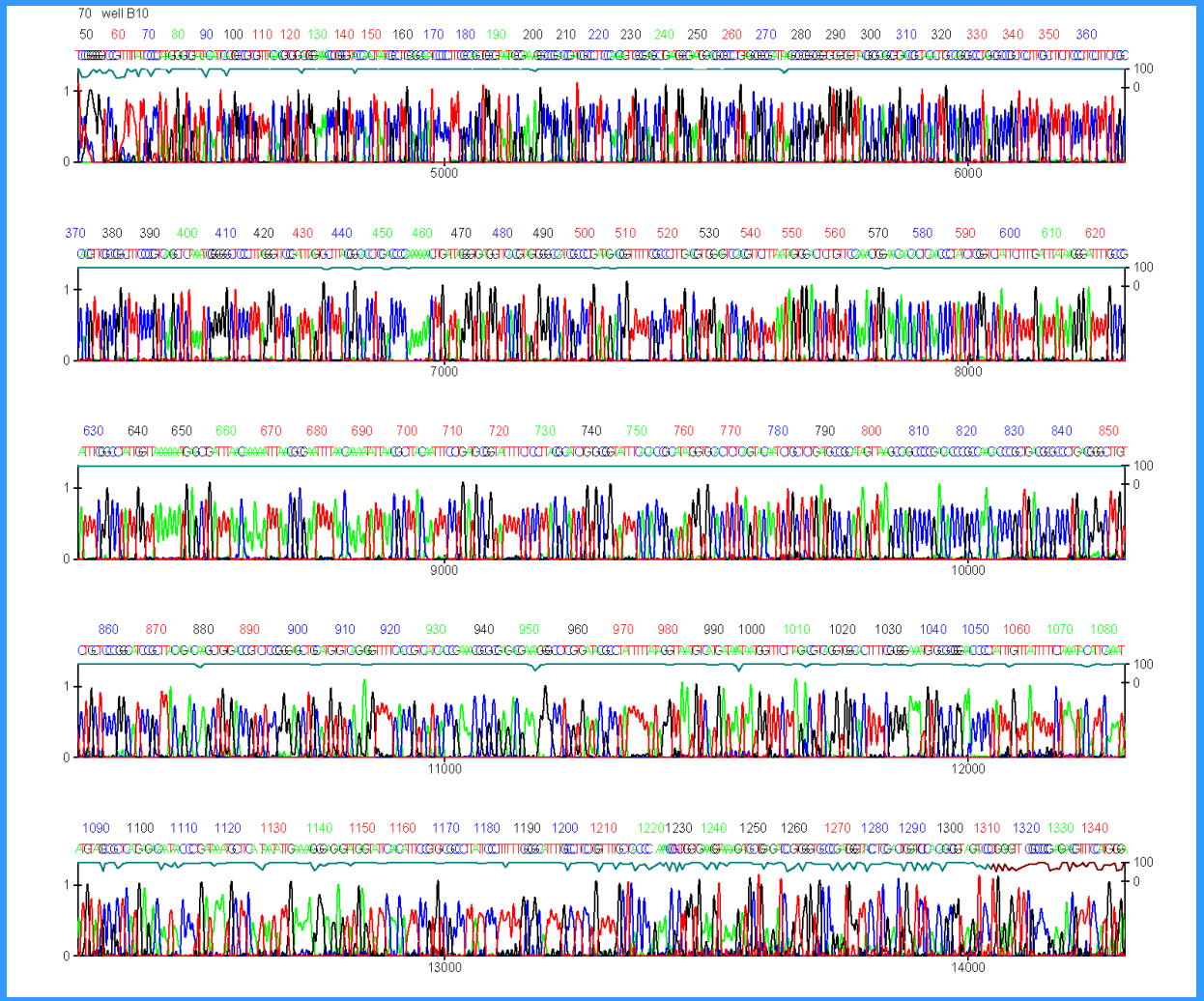
Readlength 810 Bases

Dye Front Degrades First 90 Bases



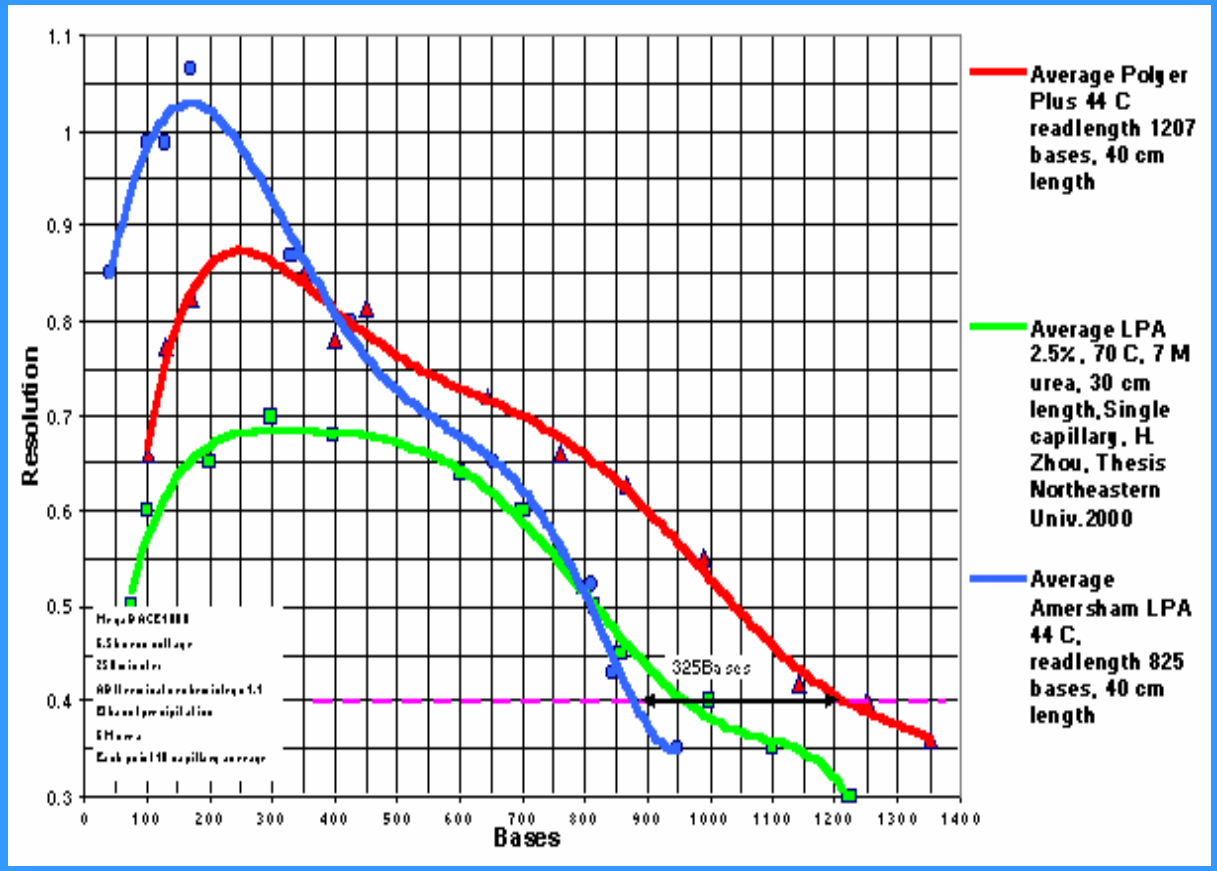
Typical Polymer Plus Separation

- **Readlength 1260 Bases**
- **Dye Front Degrades First 70 Bases**



Average Resolution vs. Bases

Polymer Plus Increases Resolution 325 Bases over Amersham



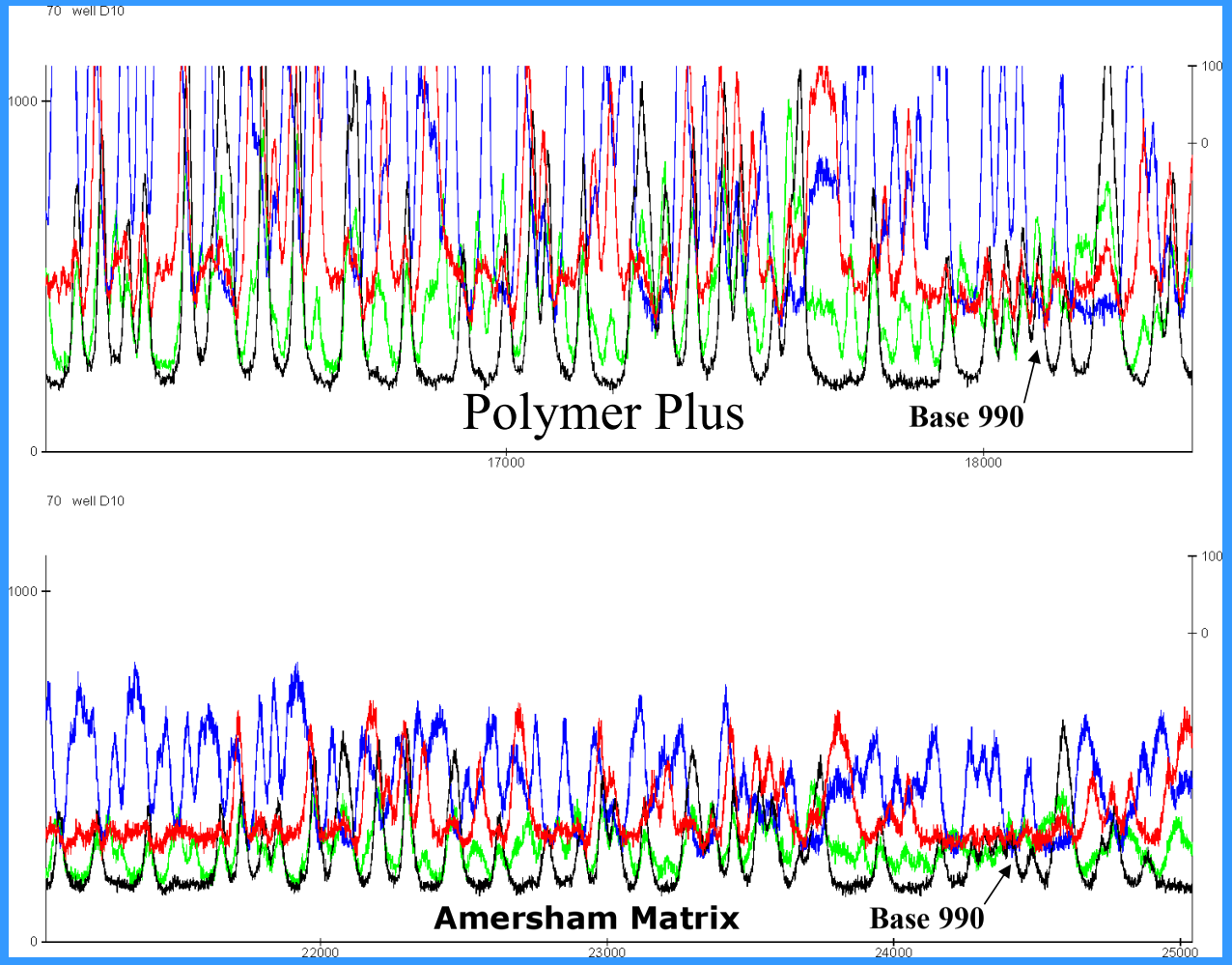
MegaBACE and Long Read Matrix are trade marks of Amersham Biosciences

Polymer Plus vs. Amersham Matrix at 1000 Bases

Signal to Noise 3X better for Polymer Plus

Narrower Peaks make Amplitudes Higher

1000 Bases in 180 Minutes



JGI Web Site Statistics

Date(s)	Total Q20* Bases	Total Lanes**	% Passed†	Ave. Read Length‡
12/11/04: ABI3730	29.867 Million	41,088	97.05%	748
12/11/04: MegaBACE4000	9.952 Million	18,048	90.31%	608
12/11/04: MegaBACE4500	21.374 Million	28,800	95.03%	779

*Q20 indicates good confidence in the assignment of a base.
**The number of lanes is the number of samples loaded into a sequencer.
†The % passed is the percentage of bases that meet the Q20 criteria and were in a lane with an average read length of more than 50 bases.
‡Read length is the total number of Q20 bases in a read (i.e., in a lane with more than 50 Q20 bases).

Conversion of Polymer Plus's Cimarron Read Length to JGI Q20 Phred Scores for Production Samples

- Cimarron Read Length MegaBACE™1000
- Amersham 808 Bases

- JGI Web Site results for MegaBACE™4000
- Amersham 608 Q20 Bases

- Polymer Plus 1217 Bases Interpolates to ~ 915 Q20 Bases