

CombiMatrix

- Established 1995
- Corporate headquarters near Seattle, WA
- 85 employees
- CBMX Publicly traded on NASDAQ since 2002
- Subsidiary in Japan
- International Distributors



Expertise in synthetic micro-electrochemistry

Developing biological applications on semiconductor devices

The Bottom Line

	Blank Slide Cost	# of Arrays/blank	Cost/blank Array	# Blanks/B3 ***	Cost Blanks/Run of 8	Cost Array Reagents/Blank	Cost Array Reagents/Array	Cost Array Reagents/Run of	Cost Blanks+Reagents/Run of 8	Cost Blanks+Reagents/Array
CustomArray: 12K	\$150	1	\$150	8	\$ 1,200	\$ 34.46	\$ 34.46	\$275.68	\$ 1,476	\$ 184
CustomArray: 4x2K	\$150	4	\$38	8	\$ 1,200	\$ 34.46	\$ 8.62	\$275.68	\$ 1,476	\$ 46
CustomArray: 90K	\$225	1	\$225	8	\$ 1,800	\$ 34.46	\$ 34.46	\$275.68	\$ 2,076	\$ 259
CustomArray: 2x42K	\$225	2	\$113	8	\$ 1,800	\$ 34.46	\$ 17.23	\$275.68	\$ 2,076	\$ 130
CustomArray: 3x22K	\$225	3	\$75	8	\$ 1,800	\$ 34.46	\$ 11.49	\$275.68	\$ 2,076	\$ 86

*** Variable

	Cost of QC Reagents/Blank	Cost of QC Reagents/Array	Cost of Waste Disposal/Array	Maintenance /Yr	Maintenance/Array	Personnel/Yr***	Desired # Arrays/Year **	Cost of Q-cing Arrays**	# Arrays QC-ed at a time ***	Cost of Q-cing/Array	Total Cost/Array: Blanks, QC, Personnel, Maint
CustomArray: 12K	\$ 0.75	\$ 0.75	\$ 0.84	\$ 1,100	\$ 3.67	\$ 2,500	300	\$ 100	8	\$ 13	\$ 202.22
CustomArray: 4x2K	\$ 0.75	\$ 0.19	\$ 0.84	\$ 1,100	\$ 0.23	\$ 2,500	1200	\$ 100	32	\$ 3	\$ 50.50
CustomArray: 90K	\$ 0.75	\$ 0.75	\$ 0.84	\$ 1,100	\$ 3.67	\$ 2,500	300	\$ 100	8	\$ 13	\$ 277.22
CustomArray: 2x42K	\$ 0.75	\$ 0.38	\$ 0.84	\$ 1,100	\$ 0.92	\$ 2,500	600	\$ 100	16	\$ 6	\$ 138.11
CustomArray: 3x22K	\$ 0.75	\$ 0.25	\$ 0.84	\$ 1,100	\$ 0.20	\$ 2,500	1800	\$ 100	24	\$ 4	\$ 91.95

** 4hrs x
\$25/hr

* 1 FTE/20 units = 0.05FTE
0.05FTE x 2,000 hrs/yr = 100hrs/yr
100hrs/yr x \$25/hr salary =\$2,500/yr

** Variable =\$100

** Variable

	Current Combi Array Cost	Total Cost/Array: Blanks, QC, Personnel,	Savings	%Savings	# Proposed Arrays Used/Yr ***	Total \$ Savings with B3	B3 Cost	Months to Break Even
CustomArray: 12K	\$ 550	\$ 202	\$ 348	272%	300	\$ 104,335	\$ 380,000	44
CustomArray: 4x2K	\$ 99	\$ 50	\$ 49	196%	1200	\$ 58,204	\$ 380,000	78
CustomArray: 90K	\$ 850	\$ 277	\$ 573	307%	300	\$ 171,835	\$ 380,000	27
CustomArray: 2x42K	\$ 425	\$ 138	\$ 287	308%	600	\$ 172,133	\$ 380,001	26
CustomArray: 3x22K	\$ 285	\$ 92	\$ 193	310%	1800	\$ 347,495	\$ 380,002	13

** Variable

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Note: You can enter and change valuse in these workwheetes to see your specific cenario.

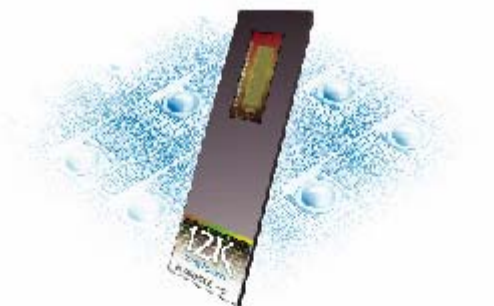
Unlimited Microarray Applications with Synthesizer

R&D Life Science Applications

- Gene Expression Arrays (Expression Profiling)
- Pathogen Typing (viral and bacterial sample diagnostic)
- Oligo Templates
- Transcript Discovery
- Comparative Genomic Hybridization (CGH)
- Splice Variants
- Re-Sequencing
- Hyb & Seq™ (SNP Genotyping)
- miRNA
- ChIP on Chip (Chromatin Immunoprecipitation)
- Chromosomal Complexity Reduction



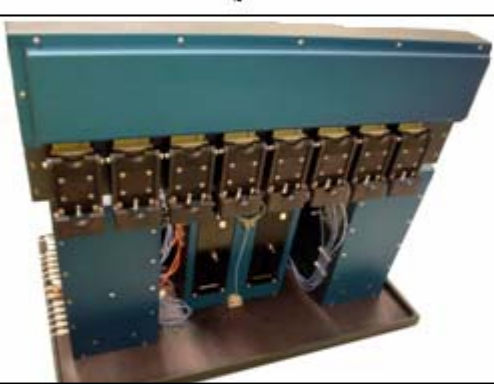
CombiMatrix Core Technologies



CustomArray™ – Custom oligonucleotide microarray

Design-on-Demand™ – Content design service

Semiconductor chips that are programmed to synthesize microarray “content” specific to customer’s requirements/application (probe length, probe layout, probe design)



CustomArray™ Synthesizer B3 - Synthesizes DNA microarrays

User-friendly production machine work horse

Automated, reliable and easy to use

Complete control, flexibility, throughput control



Electrochemical Detection System

Electrical sensing of hybridization/ligand binding to CustomArray microarray (*obvious differentiator from fluorescent based microarray systems*)

CombiMatrix Microarray Production Lab



- CustomArray™ Synthesizers
- Probe Design System
- Array Readers (ElectraSense™)
- Hyb Oven Rotisseries
- Array Re-use Solution (re-usable arrays)
- Low, Medium and High Density Arrays

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Benefits of In-house Production

- Make Home-Brew arrays for clinical tests that Medicare will pay for
- Make arrays at cost
- Control your supply
- Control your turnaround time
- Keep your design in-house and confidential
- Control your Quality Control specs
- Make arrays for any content/design
- Vary your probe lengths
- Avoid common environmental problems with standard printers
- Make only what you need

CustomArray Synthesizer



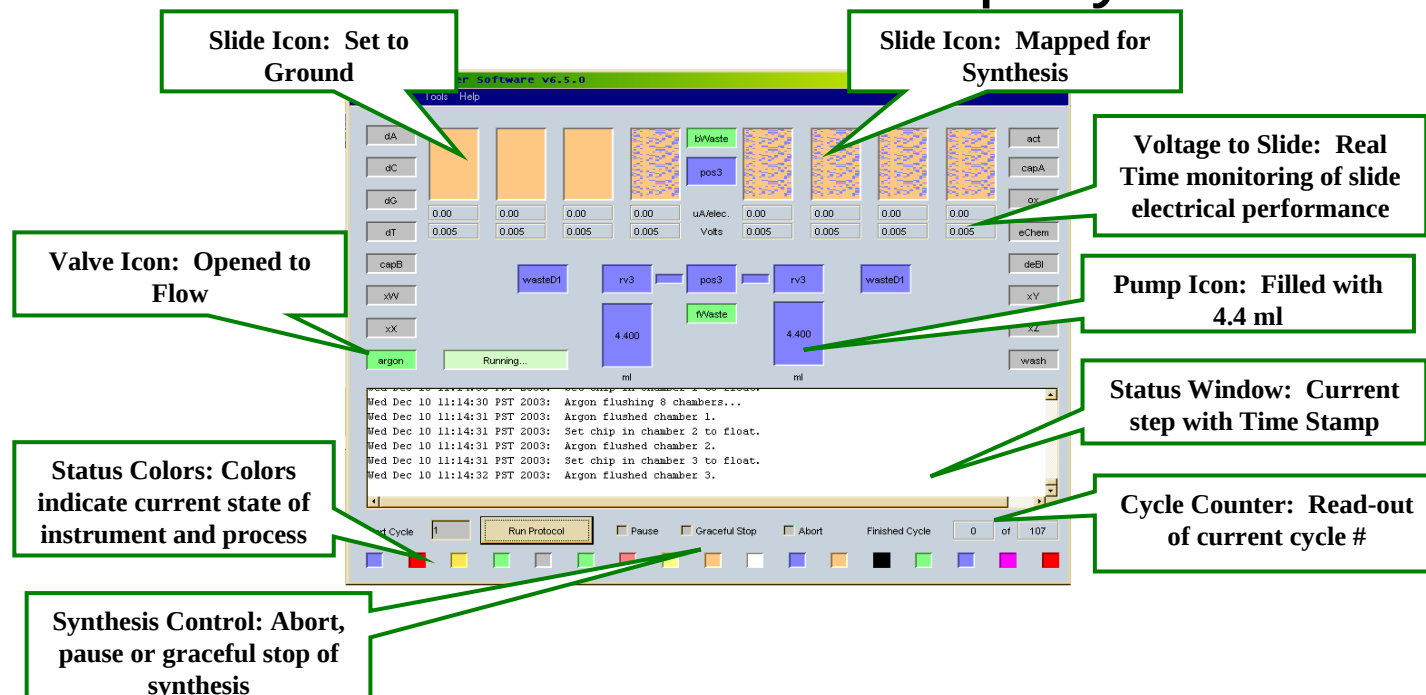
- Run time is 24 hours (35 mer)
- Flexibility: 1 to 8 slides in one synthesis run
- Formats and Capacity/Run:
 - 32 low density arrays per run (4x2K)
 - 8 low - medium density arrays (12K)
 - 16 medium density arrays per run (2 x 40K)
 - 8 high density arrays (90K)
- Versatility: 1 - 32 different slide designs in one synthesis run

Production Work Flow

- Make sure there is enough reagent; prepare Echem deblock, if necessary.
- Replace any expired reagent.
- Load Synthesizer with blank, coated slides.
- Select in the software what designs to build on which chips.
- Press “run” button.
- Wait for synthesis to finish.
- Remove slides, deprotect (in solution at 65C, 1.5 hr), and give to QC staff.



Software Display



- Real-time monitoring of process for a consistently safe and quality synthesis
- Visual display of instrument processes and log-file generation for control and record of synthesis conditions
- Single-click routines for instrument cleaning and servicing.
- Software is simple to install and upgrade

Features & Benefits

Feature

Benefits

Programmable Semiconductor

100% Customization
Synthesis up to 50nm
Unlimited density

High Quality

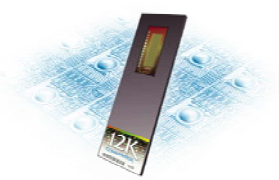
Every probe is 100% functionally tested
Every wafer electronically tested
On-board Synthesis Diagnostics
Free of spot morphology issues

Sectorized Designs

Reduces cost
Increased throughput

Re-Use

Greatly reduces cost. Arrays are re-usable up to 3 times post first use.



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Features & Benefits

Feature

Slide Format

Feature Size

Multi-label Friendly

Rapid Turnaround Time

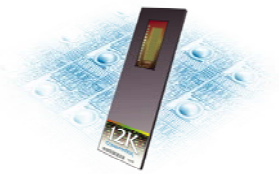
Benefits

Integrates well with automation and existing laboratory equipment

Scannable on most Molecular Devices (Axon), PE and API scanners

One color or two color

Typically 1-4 weeks
Rapid iterative analysis
Faster results, speeds up research



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Features & Benefits

Feature

Very Affordable

Made Upon Ordering

Benefits

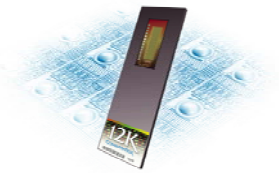
Free of start-up fees

Free of minimum order requirements

Free probe design

Longer shelf life

Order only what you'll use

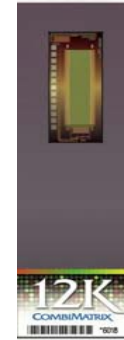


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CustomArray™ Formats

12K Configuration:

1 array having 12,000 programmable sites for custom probe synthesis.



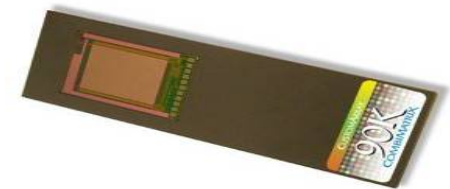
4x2k Configuration:

Divides the slide into 4 separate hybridization chambers of 2,240 features



90k Configuration:

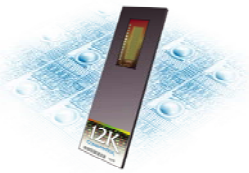
One array having 94,028 programmable sites for custom probe synthesis.



Common Features to all Formats

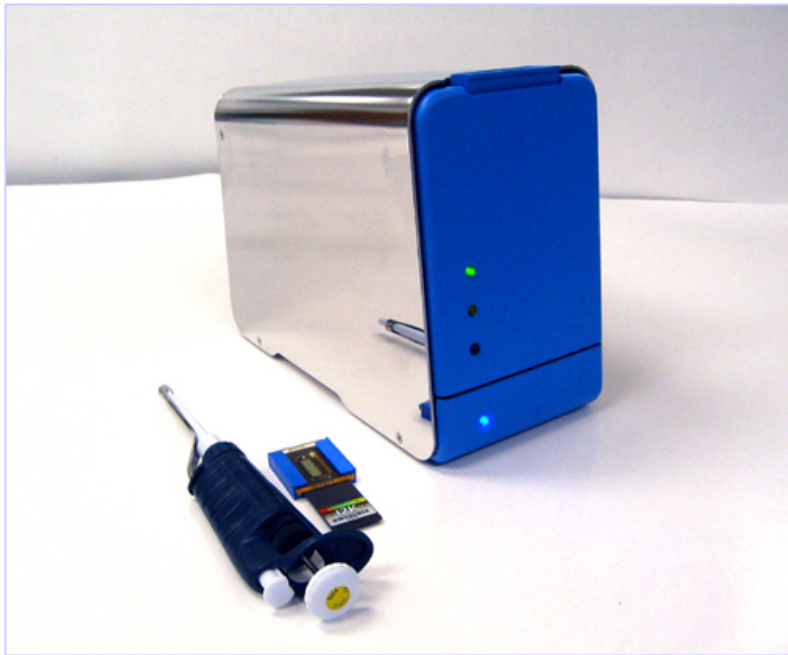
- Hyb Chamber is disposable and comes free of charge
- Open architecture
- **Re-usable:** Strip and re-hyb up to 3 times after 1st usage

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ElectraSense™

electro-chemical detection

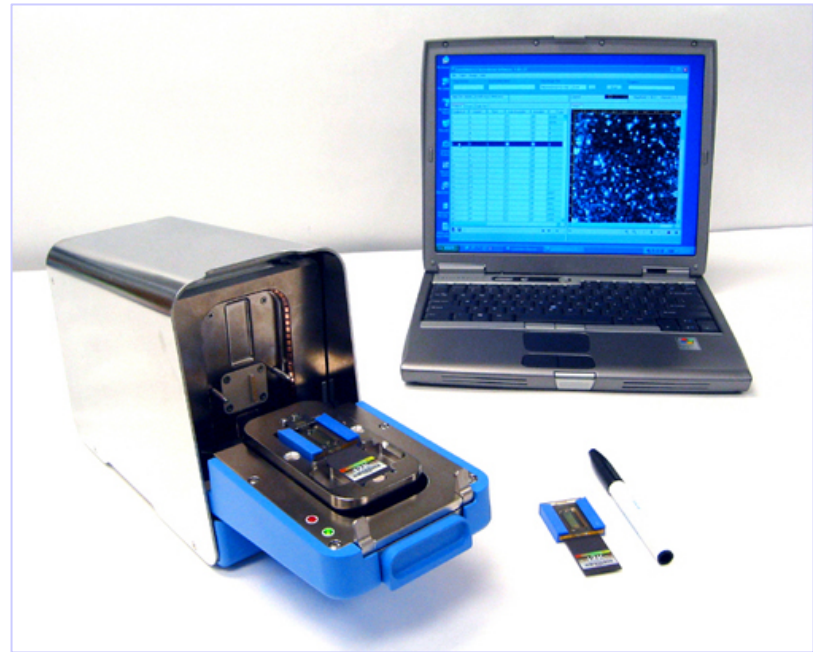


Feature

Electronic Based (no optics or lasers)

Small and Portable

Affordable



Benefit

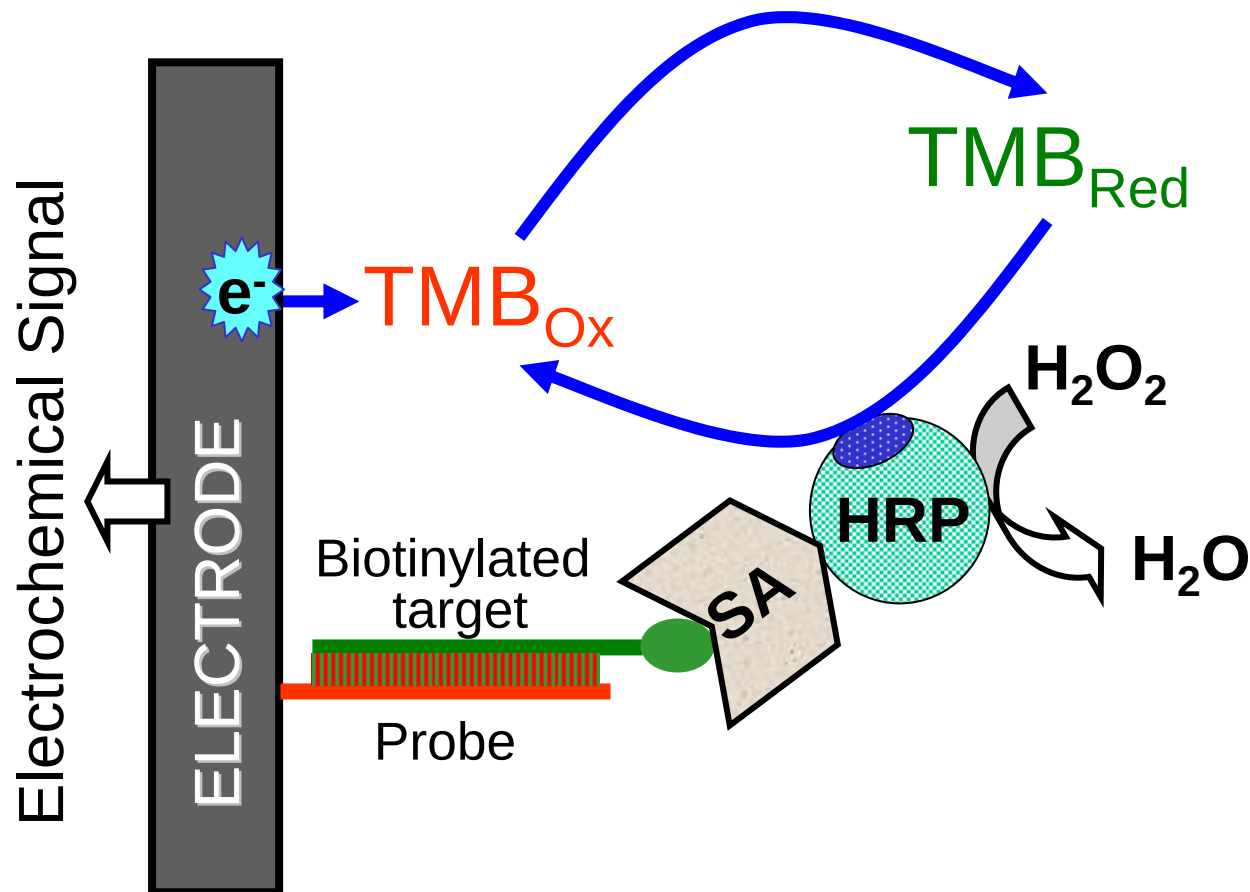
Free of Cy5 and Cy3 dyes
Free of gridding or templating
Easy data output ready for analysis software
Fast array read time
Increased Dynamic Range
Decreased background
Detection/analysis is more streamlined & automated

Save bench space
Easily transferable and greater utility

Starts at \$20,000.00 USD

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Electrochemical Detection: the basic principle



1. Target labeling with biotin;
2. Array hybridization;
3. Post-hybridization labeling with Streptavidin-HRP conjugate;
4. Electrochemical reaction: HRP catalyzes oxidation of a substrate, TMB;
5. Electro-reduction of oxidized TMB generates a current flux.
6. The ElectraSense™ reader performs amperometric detection of this current flux.