HDA GT-12™ System
High Performance Nucleic Acid Analyzer

Provide the Right Performance and Price to the Right Customers

eGene, Inc.

PRISMA Biotech Corporation

Integrated HDA-GT12 system offers efficient genetic information

eGene, Inc.

PRISMA Biotech Corporation

Yesterday and Today

Classical method, which is labor-intensive, highly dependent on operator technique, time-consuming, unreliable, slow, and often a subjective process that can take days. Interpreting samples is costly since a high level of skill is required

Today and Tomorrow

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Technology of Capillary Electrophoresis

eGene, Inc.

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eGene's Designed Platform

eGene, Inc.

PRISMA Biotech Corporation

Patents Awarded Technology

eGene, Inc.

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Capillary Electrophoresis

eGene's Designed Platform

Patents Awarded Technology

HDA GT-12™ System

- ❑ Capillary Electrophoresis
- ❑ Light-Induced Florescence Detection
- ❑ Polymer gel and EtBr intercalating dye

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Advantages of HDA-GT12 System for DNA analysis

- Automated system (auto sample loading)
- Fast separation (around 10 min separation time)
- High resolution (2-5 bp within 500 bp)
- High sensitivity (Detect ng – pg/μl)

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Functional Features (1)

- Provide high-resolution electrophoresis
  - Achieve 2-5 bp resolution in 10 minutes

4 base pair resolution of the HDA system in 10 minutes as compared to a 8% acrylamide gel which runs for hours.

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Functional Features (2)

- Provides high-detection sensitivity
  - Achieve pico-gram level for one shot
  - Achieve 0.1 ng/μl for undiluted PCR amplified DNA

Series dilution of PCR products (indicated by arrows) amplified in 50ml reaction. The original **30ng/μl** of PCR DNA was diluted up to 12800x by water and the results showed that HDA system can detect the DNA concentration as low as **2.3pg/μl**.

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Functional Features (3)

- Provides high-throughput DNA screening
  - Achieve 96 samples in one step

	name	time	reltime	height%	na	R	na%	start	stop	height	conc	size (bp)
1		2.506	0.0000	6.50	4.149E-003	0.868	4.30	2.496	2.518	0.9584	0.00	15
2		2.527	0.0129	1.43	1.172E-003	2.842	1.21	2.518	2.547	0.2105	0.07	72
3		2.637	0.0824	1.48	1.508E-003	3.105	1.56	2.619	2.654	0.2186	0.11	118
4		2.758	0.1583	3.60	2.798E-003	1.500	2.90	2.736	2.787	0.5303	0.18	194
5		2.838	0.2085	4.59	3.305E-003	1.286	3.43	2.814	2.863	0.6765	0.22	234
6		2.912	0.2548	5.56	4.096E-003	0.773	4.25	2.879	2.926	0.8203	0.25	271
7		2.936	0.2703	5.70	4.254E-003	1.276	4.41	2.926	2.971	0.8403	0.26	281
8		3.012	0.3179	6.41	4.603E-003	5.459	4.77	2.988	3.045	0.9451	0.29	310
9		3.426	0.5779	10.55	9.257E-003	1.218	9.60	3.383	3.483	1.5560	0.56	603
10		3.563	0.6641	13.83	1.350E-002	0.940	14.00	3.508	3.600	2.0401	0.81	872
11		3.623	0.7014	16.20	1.634E-002	0.954	16.94	3.600	3.664	2.3891	1.00	1078
12		3.688	0.7426	17.51	1.909E-002	2.597	19.79	3.664	3.752	2.5827	1.26	1353
13		4.098	1.0000	6.66	1.236E-002	0.000	12.82	4.004	4.209	0.9817	0.00	5386

DNA samples in a 96 well-plate were analyzed in 40 minutes. An individual window was blown up to show high speed resolution of DNA ranged 15bp to 5kb and data analysis was provided by BioCalculator ™ Software.

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Special display modes of HDA GT-12™ System

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Design for DNA Electrophoresis Users

- ❑ **Collect digital data**
- ❑ **Present in gel view format**

Separation in 10 minutes

Separation in 1.5 hours

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Design for DNA Electrophoresis Users (Continued)

- **Multiple data comparison**
  - 36 data in one row
- **Flexible data analysis (arrange, zoom, contract)**

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Design for Genotyping Users

- ❑ **Present in electropherogram**
- ❑ **Data calculation**

	name	time	reltime	start	stop	height	height%	ns	ns%	R	size (bp)	conc
1		2.705	0.0000	2.660	2.742	0.4093	3.63	2.260E-003	3.70	6.320	15	0.00
2		3.029	0.0985	3.014	3.085	0.2709	2.54	1.474E-003	2.39	1.808	73	0.00
3		3.137	0.1289	3.108	3.184	0.3752	3.51	1.901E-003	3.09	8.381	100	0.00
4		3.466	0.2264	3.481	3.535	0.8046	7.54	3.466E-003	5.68	7.566	172	0.00
5		3.916	0.3610	3.897	3.951	1.1937	11.18	5.182E-003	8.42	0.984	255	0.00
6		3.985	0.3757	3.951	4.024	1.2512	11.72	5.318E-003	8.64	2.132	265	0.00
7		4.131	0.4252	4.112	4.213	1.1997	11.24	6.188E-003	10.02	5.538	297	0.00
8		4.721	0.6011	4.696	4.750	1.5769	14.79	8.217E-003	13.35	0.614	432	0.00
9		4.766	0.6145	4.750	4.860	1.2762	11.97	9.255E-003	15.03	2.657	453	0.00
10		5.094	0.7123	5.073	5.204	1.5727	14.73	1.144E-002	18.57	8.828	532	0.00
11		6.059	1.0000	6.028	6.291	0.7436	6.96	6.840E-003	11.11	0.000	6366	0.00

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Design for Genotyping User (Continued)

Multiple data comparison in electropherogram

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Easy-To-Use Operation

❑ Easy As 1-2-3 for PCR product screening

- Insert Cartridge
- Place PCR amplified DNA into system
- Select method to run

❑ Automatic data collection/analysis

- For 12 samples in 5-10 minutes
- For 96 samples in 0.5-1.5 hours

Usages of HDA GT-12™ System

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Diagnostic Applications

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Screening for Pathogens Detection

Detection of Hepatitis B Virus (HBV) DNA

Detection of Mycobacterium tuberculosis DNA

Typing of Human Papillomaviruses (HPV) DNA

Identification of *Plasmodium* species (Malaria detection)

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Screening in Genetic Diseases

Molecular Diagnosis of Hereditary Inclusion Body Myopathy (H.I.B.M)

Molecular Diagnosis of Bardet-Biedl Syndrome (Short Tandem Report Polymorphism)

Total automatic analysis time: 10 minutes

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Screening in Genetic Diseases

Demonstration of STR/Microsatellite Analysis

	name	time	reltime	start	stop	height	height%	na	na%	R	size (bp)	conc
1		5.372	0.0000	5.329	5.428	1.2205	26.94	4.323E-003	15.44	5.591	242.0	0.00
2		5.876	0.5629	5.842	5.950	1.1527	25.45	7.734E-003	27.63	0.963	304.5	0.00
3		6.032	0.7368	5.952	6.163	1.2316	27.19	1.041E-002	37.19	1.474	323.8	0.00
4		6.268	1.0000	6.239	6.300	0.9250	20.42	5.526E-003	19.74	0.000	353.0	0.00

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Molecular Diagnosis of Down Syndrome

	apex	area	area%
1	2.332	1.0938	44.01
2	2.633	1.3915	55.99

Anal Biochem. (2005) 340:213-219

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Quantitative Assay of Deletion or Duplication Genotype by Capillary Electrophoresis System: Application in Prader–Willi Syndrome and Duchenne Muscular Dystrophy

Prader–Willi Syndrome

Duchenne Muscular Dystrophy

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Clin. Chem. (2006) 10: 1373-1378

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HLA-A “02” SSP Subtyping
(48 genetics markers in one patient)

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Detection of Muscular Dystrophy genotypes via Universal Condition Direct Sequencing

The Automated UCDS Line

PCR Primers Pre-Dried Down

In glycerol in 384 well plates

Single Condition PCR - All Amplicons in Thermal Cycler

Deletion Analysis eGene

Universal Sequencing Primers Pre-Dried Down

Add Patient DNA and PCR Mix in Robot

Cycle Sequencing in Thermal Cycler

AmpPure Purify PCR In Robot

CleanSeq Purify Sequence in Robot

Band concentration Quantification eGene

Direct Sequence Amplicons In ABI 3730

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Multiplex PCR Analysis

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The 10plex panel detection of antibiotic resistance genes in methicillin-resistant *Staphylococcus aureus* (MRSA)

10plex PCR

Alignment Marker

Alignment Marker

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Analysis of 16plex PCR DNA in Cystic Fibrosis Gene for Mutation Detection

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Genetic Analysis in Food Products

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Genetic Analysis in Food Products

Analysis of Vertebrate Species Specific PCR amplified DNA in Meat

Total automatic analysis time: 10 minutes

Detection of Genetic Modified Organism (GMO) Specific PCR Amplified DNA in Food Materials

Total automatic analysis time: 10 minutes

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Multicapillary electrophoresis analysis of single-nucleotide sequence variations

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Multicapillary electrophoresis analysis of single-nucleotide sequence variations in the deoxycytidine kinase gene

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Clinical Chemistry (2006) 52:1756–1762

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Clinical Chemistry (2006) 52:1756–1762

Targeting Induced Local Lesion in Genome

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PCR Amplification of Target Gene from Pooled Genomic DNA

Nuclease CEL1 cuts at mis-match

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A modified TILLING system for rice mutant screening

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Japan Rice Genetics Newsletter 2005 Vol. 22, 89

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Laboratory Applications

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Plasmid Cloning
(Large DNA fragments analysis)

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Oligonucleotides Separation

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Total RNA Quality Analysis

RNA concentration in solution (ng/μl)

Total automatic analysis time: 10 minutes

RNA Fragments Size Analysis

Total automatic analysis time: 10 minutes

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Multiple Applications in One System

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eGene's Cartridge Products

HDA-GT12™ DNA Analyzer

GCK-5000

GCK-5000F

GCK-10K

RNAQC*

ANALYSIS

Choice based on type of Application

12-channel

8-channel

4-channel

Choice based on the Sample capacity

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BioCalculator™ Software

Software CD

=

Instrument Control

+

Data Analysis

Software keys

	Blue system operation key	Instrument Control, Data Analysis	Users
	Green data analysis key	Data Analysis	Users
	Yellow system service key	Instrument Control, Data Analysis, Method Development, Maintenances and troubleshooting	Distributors/ Application Scientists/ Collaborators Field Service Engineers

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Choice of data Output

- Full plate and single data report by BioCalculator
- Gel view and electrophenogram image in JPEG format
- Real time and analysis data in Microsoft Excel format.
- Single data report in HTML format.

nr	name	time	reltime	start	stop	height	height%	height% [bkt]	na	na%	na% [bkt]	R	size (bp)
1		4.832	0.0000	4.737	4.891	0.163	6.61	0.00	1.746E-003	9.74	0.00	1.311	15.0
2		4.952	0.0141	4.920	4.983	0.754	30.59	56.24	4.219E-003	23.52	60.81	26.818	24.5
3		7.370	0.2966	7.311	7.390	0.278	11.27	20.72	1.360E-003	7.58	19.61	0.510	216.1
4		7.399	0.3000	7.390	7.444	0.160	6.49	11.94	5.462E-004	3.04	7.87	1.070	218.2
5		7.524	0.3146	7.452	7.563	0.149	6.04	11.10	8.122E-004	4.53	11.71	20.898	227.4
6		13.389	1.0000	13.147	13.664	0.961	39.00	0.00	9.254E-003	51.59	0.00	0.000	5386.0

	name	time	reltime	start	stop	height	height%	height% [bkt]	na	na%	na% [bkt]	R	size (bp)	conc
2		4.832	0	4.737	4.891	0.163	6.61	0	1.75E-03	9.74	0	1.311	15	0
3		4.952	0.0141	4.92	4.983	0.754	30.59	56.24	4.22E-03	23.52	60.81	26.818	24.5	0.06
4		7.37	0.2966	7.311	7.39	0.278	11.27	20.72	1.36E-03	7.58	19.61	0.51	216.1	0.13
5		7.399	0.3	7.39	7.444	0.16	6.49	11.94	5.46E-04	3.04	7.87	1.07	218.2	0.05
6		7.524	0.3146	7.452	7.563	0.149	6.04	11.1	8.12E-04	4.53	11.71	20.898	227.4	0.08
7		13.389	1	13.147	13.664	0.961	39	0	9.25E-03	51.59	0	0	5386	0

eGene, Inc.

PRISMA Biotech Corporation

HDA-GT12 System Provides Total Solution for Current and Future Genotyping Works

- **Right Performance**
  - ✓ Right Resolution
  - ✓ Right Sensitivity
  - ✓ Right Throughput
- **Acceptable Cost**

eGene, Inc.

PRISMA Biotech Corporation

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Resolution of GCK-5000F

Method	Fragment Sizes		
	<500bp	500bp-1kb	1kb-5kb
	Best Resolution		
AM320 AL320 AH320	10bp	100bp	500bp
AM420 AL420 AH420	50bp	50bp	200bp
APH600 APL600	Circular plasmid DNA		

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Resolution of GCK-5000

Method	Fragment Sizes		
	100bp-500bp	500bp-1kb	1kb-5kb
	Best Resolution		
0M400 0L400 0H400	20bp	200bp	1kb
0M500 0L500 0H500	5-10bp	10-100bp	500bp
0M700 0L700 0H700	2bp-5bp (1% resolution)	50bp	Non-Detectable

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