



## **Licensing Molecular Beacons Technology**

Public Health Research Institute Properties, Inc. (PHRI) offers non-exclusive worldwide licenses for the molecular beacons technology in a variety of fields and for a variety of uses. A license under PHRI's patents includes rights to seven different patents and patent applications and further improvements to the technology. Issued claims describe molecular beacon probes, kits, and assays. Patents that cover additional aspects of molecular beacons technology are pending. Foreign counterparts are issued or pending in Canada, Europe, Japan, China and Australia. Licensing income received by PHRI is used to support further biomedical research. Also, a license creates a contractual collaborative relationship with the laboratory of Drs. Fred Russell Kramer, Sanjay Tyagi, and Salvatore Marras, the inventors of the technology.

For more information on the molecular beacons licensing program, please contact Dr. Fred Russell Kramer (fred.kramer@umdnj.edu; 1-973-854-3370.)

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### **Products and assays that utilize the molecular beacons technology**

1. Custom molecular beacon probes
2. Assay kits
3. Performance of assays for a fee
4. Performance of assays for internal quality control
5. Assay instruments

### **Fields of use for the molecular beacons technology**

1. Human *in vitro* diagnostics
  - a. Testing for infectious agents
  - b. Genetic testing
  - c. Oncology
2. Research
3. GMO testing
4. Food testing
5. Veterinary diagnostics
6. Hybrid seed production
7. Agricultural infectious agents
8. Forensics
9. Paternity testing
10. High-density probe arrays
11. Industrial microbiology
12. Blood products quality control
13. Environmental pathogens

## PHRI Properties Patent Rights

**I. Hybridization Probes for Nucleic Acid Detection, Universal Stems, Methods and Kits**  
 Tyagi S, Kramer FR, and Lizardi PM

COUNTRY	APPLN. NUMBER	FILING DATE	PATENT NUMBER
United States	08/152,006	11/12/1993	C-I-P filed as 08/439,819
Australia	95/12921	11/14/1994	697841
Canada	2,176,348	11/14/1994	2176348
Belgium	95/904104.7	11/14/1994	728218
France	95/904104.7	11/14/1994	728218
Germany	95/904104.7	11/14/1994	728218
Great Britain	95/904104.7	11/14/1994	728218
Italy	95/904104.7	11/14/1994	728218
Portugal	95/904104.7	11/14/1994	728218
Sweden	95/904104.7	11/14/1994	728218
The Netherlands	95/904104.7	11/14/1994	728218
Japan	7-514079	11/14/1994	4071277
Europe	07/075511.1	06/21/2007	Pending

**II. Detectably Labeled Dual Conformation Oligonucleotide Probes, Assays and Kits**  
 Tyagi S, Kramer FR, and Lizardi PM

COUNTRY	APPLN. NUMBER	FILING DATE	PATENT NUMBER
United States	08/439,819	05/12/1995	5,925,517
United States	09/268,402	03/15/1999	6,103,476
Australia	96/52324	05/13/1996	702598
Japan	8-118110	05/13/1996	3850914
Belgium	96/303544.9	05/10/1996	0745690
Denmark	96/303544.9	05/10/1996	0745690
France	96/303544.9	05/10/1996	0745690
Germany	96/303544.9	05/10/1996	0745690
Great Britain	96/303544.9	05/10/1996	0745690
Italy	96/303544.9	05/10/1996	0745690
Portugal	96/303544.9	05/10/1996	0745690
Sweden	96/303544.9	05/10/1996	0745690
The Netherlands	96/303544.9	05/10/1996	0745690
Canada	2,176,266	05/10/1996	pending
Europe	08/018375.9	10/21/2008	pending

## PHRI Properties Patent Rights (continued)

### III. Nucleic Acid Detection Probes Having Non-FRET Fluorescence Quenching and Kits and Assays Including Such Probes

Tyagi S and Kramer FR

COUNTRY	APPLN. NUMBER	FILING DATE	PATENT NUMBER
United States	08/990,176	12/12/1997	6,150,097
Australia	97/29224	04/14/1997	713667
Japan	9-537293	04/14/1997	3898228
France	97/923412.7	04/14/1997	0892808
Germany	97/923412.7	04/14/1997	69,738,687.2
Great Britain	97/923412.7	04/14/1997	0892808
Italy	97/923412.7	04/14/1997	49295BE/2008
Canada	2,252,048	04/14/1997	2252048

### IV. Non-Competitive Co-Amplification Methods

Kramer FR, Tyagi S, Alland D, Vet J, and Piatek A

COUNTRY	APPLN. NUMBER	FILING DATE	PATENT NUMBER
United States	09/508,343	10/20/2000	6,461,817
Australia	98/94846	09/11/1998	743011
Canada	2,303,414	09/11/1998	2303414
Japan	2000-510898	09/11/1998	Pending

### V. Wavelength-Shifting Probes and Primers and Their Use in Assays and Kits

Tyagi S, Kramer FR, and Marras SAE

COUNTRY	APPLN. NUMBER	FILING DATE	PATENT NUMBER
United States	09/123,764	07/28/1998	6,037,130
Australia	99/52402	07/28/1999	763106
Japan	2000-562560	07/28/1999	3851088
France	99/937602.3	07/28/1999	1100971
Germany	99/937602.3	07/28/1999	1100971
Great Britain	99/937602.3	07/28/1999	1100971
Italy	99/937602.3	07/28/1999	1100971
Canada	2,336,489	07/28/1999	Pending

## PHRI Properties Patent Rights (continued)

### VI. Assays for Short Sequence Variants

Tyagi S, Kramer FR, and Alland D

COUNTRY	APPLN. NUMBER	FILING DATE	PATENT NUMBER
United States	10/110,907	07/24/2002	Pending
Australia	00/80240	10/13/2000	781945
Japan	2001-533197	10/13/2000	Pending
Canada	2,387,306	10/13/2000	Pending
France	00/970925.4	10/13/2000	1230387
Germany	00/970925.4	10/13/2000	60030145.1
Great Britain	00/970925.4	10/13/2000	1230387
Italy	00/970925.4	10/13/2000	1230387

### VII. Homogenous Multiplex Screening Assays and Kits

Kramer FR

COUNTRY	APPLN. NUMBER	FILING DATE	PATENT NUMBER
United States	10/426,556	04/30/2003	7,385,043
Australia	04/236725	04/29/2004	Allowed
Canada	2,524,080	04/29/2004	Pending
China	04/80018729.6	04/29/2004	Pending
Europe*	04/751175.3	04/29/2004	Pending
Japan	2006-514227	04/29/2004	Pending
United States	12/116,642	05/07/2008	Pending

\* The following countries are designated: all countries as of October 2005, except Albania, Croatia, Lithuania, Latvia, and Macedonia