

Currently Active Rutgers Patents and Patent Applications from Our Laboratory

(Fred Russell Kramer, Sanjay Tyagi, Salvatore Marras, and Diana Vargas-Gold)

IMAGING INDIVIDUAL mRNA MOLECULES USING MULTIPLE SINGLY LABELED PROBES

Raj A and Tyagi S
Rutgers University [Rutgers Docket S08-054]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	01/25/2012	13/062,975	02/20/2018	9,896,720
Australia	09/10/2009	2009291752	11/30/2015	2009291752
Canada	09/10/2009	2,735,197	05/08/2017	2,735,197
France	09/10/2009	09813630.2	07/20/2016	2324123
Germany	09/10/2009	09813630.2	07/20/2016	2324123
Italy	09/10/2009	09813630.2	07/20/2016	2324123
Japan	09/10/2009	2011-526977	06/26/2015	5764730
United Kingdom	09/10/2009	09813630.2	07/20/2016	2324123
China	02/22/2018	201810154172.2	Pending	

FLUOROPHORE CHELATED LANTHANIDE LUMINESCENT PROBES WITH IMPROVED QUANTUM EFFICIENCY

Mustaev A, Kozlov M, Marras SAE, Krasnoperov L, Wirpsza L, and Pillai S
Rutgers University and The New Jersey Institute of Technology [Rutgers Docket S08-041]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	07/13/2012	13/522,043	12/29/2015	9,221,759
United States	12/28/2015	14/980,342	08/15/2017	9,732,378

GEL-TETHERED MOLECULAR BEACONS

Dai X, Marras SAE, and Libera M
Rutgers University and The Stevens Institute of Technology [Rutgers Docket S11-101]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	03/28/2014	14/348,197	05/17/2016	9,340,831
France	04/28/2014	12857357.3	02/21/2018	2761033
Germany	04/28/2014	12857357.3	02/21/2018	2761033
United Kingdom	04/28/2014	12857357.3	02/21/2018	2761033

RAPID ASSAYS FOR T-CELL ACTIVATION BY RNA MEASUREMENTS USING FLOW CYTOMETRY

Bushkin Y, Gennaro ML, Tyagi S, and Pine R
Rutgers University [Rutgers Docket S12-006]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	12/24/2014	14/411,224	01/26/2021	10,900,072
United States	01/08/2021	17/144,793	09/26/2023	11,767,551
Japan	12/24/2014	2015-520420	01/11/2019	6464081
Australia	01/08/2015	2013280416	09/28/2017	2013280416
South Africa	01/13/2015	2015/00239	12/23/2015	2015/00239
Belgium	01/26/2015	13809753.0	10/28/2020	2867374
Germany	01/26/2015	13809753.0	10/28/2020	2867374
France	01/26/2015	13809753.0	10/28/2020	2867374
United Kingdom	01/26/2015	13809753.0	10/28/2020	2867374
Russia	01/27/2015	2015102447	11/06/2018	2671707
Australia	09/15/2017	2017228677	05/30/2019	2017228677
Europe	10/23/2020	20203726.3	Pending	

HIGHLY SELECTIVE NUCLEIC ACID AMPLIFICATION PRIMERS

Marras SAE, Vargas-Gold DY, Tyagi S, and Kramer FR
Rutgers University [Rutgers Docket S12-040]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	08/06/2015	14/766,139	03/06/2018	9,909,159
United States	01/22/2018	15/877,007	10/27/2020	10,815,512
Australia	08/05/2015	2014214725	06/25/2020	2014214725
Belgium	08/03/2015	14748774.8	04/11/2018	2953958
Canada	08/04/2015	2,900,259	12/29/2020	2,900,259
China	08/08/2015	2014800199742	01/22/2019	ZL2014800199742
France	08/03/2015	14748774.8	04/11/2018	2953958
Germany	08/03/2015	14748774.8	04/11/2018	2953958
India	08/07/2015	2606/KOLNP/2015	09/09/2022	406237
Israel	08/04/2015	240347	05/29/2019	240347
Italy	08/03/2015	14748774.8	04/11/2018	2953958
Japan	08/06/2015	2015-557131	06/28/2019	6544861
Korea	09/04/2015	10-2015-7024265	02/25/2021	10-2222546
New Zealand	08/07/2015	710851	03/03/2021	710851
Singapore	08/05/2015	11201506146T	05/29/2019	11201506146T
South Africa	08/05/2015	2015/05637	07/27/2016	2015/05637
Sweden	08/03/2015	14748774.8	04/11/2018	2953958
Switzerland	08/03/2015	14748774.8	04/11/2018	2953958
United Kingdom	08/03/2015	14748774.8	04/11/2018	2953958
United States	10/23/2020	17/078,463	09/07/2021	11,111,515
Belgium	02/07/2018	18156307.3	10/02/2019	3346016
Canada	10/15/2020	3,096,578	06/22/2021	3,096,578
France	02/07/2018	18156307.3	10/02/2019	3346016
Germany	02/07/2018	18156307.3	10/02/2019	3346016
Israel	01/30/2019	264555	02/01/2022	264555
Italy	02/07/2018	18156307.3	10/02/2019	3346016
Korea	02/23/2021	10-2021-7005395	01/22/2022	10-7005395
Sweden	02/07/2018	18156307.3	10/02/2019	3346016
Switzerland	02/07/2018	18156307.3	10/02/2019	3346016
United Kingdom	02/07/2018	18156307.3	10/02/2019	3346016
China	01/02/2019	2019100031106	Pending	

MULTIPLEX DIAGNOSTIC ASSAYS FOR LYME DISEASE AND OTHER TICK-BORNE DISEASES

Parveen N and Marras SAE
Rutgers University [Rutgers Docket S11-083]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	03/11/2016	15/021,317	11/19/2019	10,480,035
United States	11/18/2019	16/686,460	05/10/2022	11,326,215
France	09/10/2014	14844412.8	03/18/2020	3044337
Germany	09/10/2014	14844412.8	03/18/2020	3044337
Sweden	09/10/2014	14844412.8	03/18/2020	3044337
Switzerland	09/10/2014	14844412.8	03/18/2020	3044337
United Kingdom	09/10/2014	14844412.8	03/18/2020	3044337
Canada	03/09/2017	2,960,776	11/16/2021	2,960,776
United States	04/06/2022	17/658,201	Pending	

**MULTIPLEX NUCLEIC ACID ASSAY METHODS CAPABLE OF DETECTING CLOSELY RELATED ALLELES,
AND REAGENTS THEREFOR**

**Marras SAE, Vargas-Gold DY, Tyagi S, and Kramer FR
Rutgers University [Rutgers Docket S16-121]**

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	10/05/2018	16/091,824	01/03/2023	11,542,547
Australia	11/02/2018	2017246663	12/15/2022	2017246663
Belgium	11/05/2018	17779722.2	02/17/2021	3440226
China	12/07/2018	2017800357947	05/31/2022	2017800357947
France	11/05/2018	17779722.2	02/17/2021	3440226
Germany	11/05/2018	17779722.2	02/17/2021	3440226
India	11/03/2018	201817041693	06/14/2023	434728
Italy	11/05/2018	17779722.2	02/17/2021	3440226
Japan	10/03/2018	2018-552172	08/24/2021	6933858
Sweden	11/05/2018	17779722.2	02/17/2021	3440226
Switzerland	11/05/2018	17779722.2	02/17/2021	3440226
United Kingdom	11/05/2018	17779722.2	02/17/2021	3440226
South Africa	11/05/2018	2018/07405	04/28/2020	2018/07405
Singapore	10/03/2018	11201808740T	04/30/2021	11201808740T
Canada	10/04/2018	3,020,165	Pending	
New Zealand	11/05/2018	748011	Pending	

TARGET MEDIATED *IN SITU* SIGNAL AMPLIFICATION WITH DUAL INTERACTING HAIRPIN PROBES

**Tyagi S and Marras SAE
Rutgers University [Rutgers Docket S17-038]**

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	11/22/2019	16/615,922	10/04/2022	11,459,603
Australia	11/06/2019	2018272848	03/17/2022	2018272848
China	11/25/2019	2018800343313	08/17/2023	2018800343313
Europe	11/14/2019	18805396.1	05/10/2023	3630790
Japan	11/22/2019	2019-564848	03/08/2023	7240733
Canada	11/06/2019	3,062,708	Pending	

ASSAY METHODS AND KITS FOR DETECTING RARE SEQUENCE VARIANTS

**Vargas-Gold DY and Kramer FR
Rutgers University [Rutgers Docket P19-188]**

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
Australia	03/07/2022	2020359655	Allowed	2020359655
South Africa	03/15/2022	2022/03111	Allowed	
United States	03/22/2022	17/754,032	Pending	
Europe *	03/15/2022	20871738.9	Pending	
Canada	03/10/2022	3150825	Pending	
India	03/10/2022	202217013118	Pending	
Israel	03/30/2022	291819	Pending	
Japan	04/01/2022	2022-520562	Pending	
Korea	04/29/2022	10-2022-7014741	Pending	
New Zealand	03/07/2022	785920	Pending	
Singapore	03/09/2022	11202202397Y	Pending	
China	03/31/2022	2020800692434	Pending	

* Will be pursued in Belgium, France, Germany, Italy, Sweden, Switzerland, and the United Kingdom

METHODS AND SYSTEMS FOR DETECTING AND DISCRIMINATING BETWEEN VIRAL VARIANTS

Alland D, Banada P, and Marras SAE
Rutgers University [Rutgers Docket P22-080]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	01/13/2023	18/154,427	Pending	

DETECTION OF MULTIDRUG-RESISTANT *MYCBACTERIUM TUBERCULOSIS* USING SUPERSELECTIVE PRIMER-BASED REAL-TIME PCR ASSAYS

Marras SAE, Subbian S, Vinnard C, and Narang A
Rutgers University [Rutgers Docket T23-083]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	07/27/2023	63/515,902	Pending	

METHODS FOR PROFILING IMMUNE REPERTOIRES

Tyagi S, Kramer FR, Marras SAE, Dikdan RJ, and Kwang S
Rutgers University [Rutgers Docket P23-126]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States	09/06/2024	PCT/US24/45631	Pending	

USE OF STRUCTURE-SPECIFIC AMPLIFICATION PRIMERS FOR THE DETECTION OF GENETIC REARRANGEMENTS

Vargas-Gold DY
Rutgers University [Rutgers Docket RU 2024-096]

Jurisdiction	Filing Date	Application	Issue Date	Patent Number
United States			Pending	
United States			Pending	