OmicsArray™ Antigen Microarray User Manual

Catalog No. PA001, PA002, PA003, PA004, PA005, PA006, PA007, PA008, PA010, PA011, PA012, PA013, PA015, PA016, PA017, PA018, PA019, PA020, PA021, PA022, PA023, PA024, PA026

User Manual

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I. Description

GeneCopoeia's OmicsArray™ antigen microarrays are protein microarrays designed to detect autoantibodies against certain antigens. The principle of the protein microarray is to fix a variety of verified autoantigens (proteins, peptides, nucleic acids) onto nitrocellulose (NC) membranes adhered to the surface of glass slides, and then incubate the arrays with body fluid samples (such as plasma, serum, lymph, urine, interstitial fluid, exudate, cell lysate, secretion, etc.). After washing, fluorescent secondary antibody incubation, data extraction and other steps, OmicsArray™ antigen microarrays provide information about autoantibodies present in the sample. OmicsArray™ antigen microarrays require only 1-50μl of sample to enable the simultaneous detection of hundreds of autoantibodies, which is very important for autoimmune-related research. OmicsArray™ antigen microarrays can be used to analyze the immune response of autoimmune diseases, allergies, tumor responses, vaccination and infection, organ transplantation, etc. on a large scale, providing a basis for disease early warning and diagnosis, scientific research such as disease process monitoring, treatment method selection, efficacy evaluation, and prognosis analysis. OmicsArray™ antigen microarrays are also powerful tools for discovering antibody markers of clinical value and studying the pathogenesis of diseases.

OmicsArray™ antigen microarrays have been developed for detection of common autoimmune diseases, allergic diseases, exposure to infectious agents (such as COVID-19), neurological disorders, and cancer, and are widely used in the research of related diseases.

II. Contents and Storage

Contents and storage recommendations for the OmicsArray™ protein microarrays are provided in the following table. Store at 4℃.

Catalog no.	Description	Amount
PA001	Human autoantigens general survey Microarray	120 superior-quality purified proteins and 8 controls
PA002	Human brain and central nervous system disorders Microarray	120 superior-quality purified proteins and 8 controls
PA003	Human cancer and neoplasms Microarray	120 superior-quality purified proteins and 8 controls
PA004	Antiphospholipid Syndrome and Neutrophil Extracellular Traps	120 superior-quality purified proteins and 8 controls
PA005*	Antiphospholipid Syndrome and Neutrophil Extracellular Traps Microarray (Citrullinated)	120 superior-quality purified proteins and 8 controls
PA006	Human common allergens Microarray	70 superior-quality purified proteins and 8 controls

Catalog no.	Description	Amount
PA007	Bacterial Surface Microarray	14 superior-quality purified proteins and 8 controls
PA008	Extractable Nuclear Antigen (ENA) and Antinuclear Antibody (ANA) Antigen	32 superior-quality purified proteins and 8 controls
PA009	Cardiac Autoimmune Diseases (CAD) antigen array	54 superior-quality purified proteins and 8 controls
PA010	Human Autoimmunity, Allergy, and Infection Microarray	120 superior-quality purified proteins and 8 controls
PA011	Interferon, Infection and Autoimmune Microarray	64 superior-quality purified proteins and 8 controls
PA012	Human Coronavirus-associated Autoimmunity (CAA) Microarray	120 superior-quality purified proteins and 8 controls
PA013	SARS-CoV-2 coronavirus variant proteins Microarray	58 superior-quality purified proteins and 8 controls
PA015	Ganglioside and Phospholipid (GPL) antigen Microarray	21 superior-quality purified ganglioside and phospholipid antigens, and 8 controls
PA016	Autoimmune myocarditis and Myositis (AMM) Antigen Array	120 superior-quality purified proteins and 8 controls
PA017	Myasthenia Gravis (MG) Antigen Array	68 superior-quality purified proteins and 8 controls
PA018	General Autoimmune Antigen Array, 82-plex	82 superior-quality purified proteins and 8 controls
PA019	General Autoimmune Antigen Array, 52-plex	52 superior-quality purified proteins and 8 controls
PA020	Kidney Autoimmune Antigen Array	51 superior-quality purified proteins and 8 controls
PA021	Common Pathogen Antigen Array	64 superior-quality purified proteins and 8 controls
PA022	Rheumotoid Arthritis Antigen Array	42 superior-quality purified proteins and 8 controls
PA023	Alzheimer’s Disease Autoantigen Array	40 superior-quality purified proteins and 8 controls
PA024	Paraneoplastic Neurological Syndrome (PNS) Antigen Array	34 superior-quality purified proteins and 8 controls
PA026	Tumor Associated Antigen Array	60 superior-quality purified proteins and 8 controls

III. Protocol

Materials required but not provided

1. Slide rack and 16-well slide gasket
2. DNase I and associated buffer (NEB Cat. # M0303S)
3. PBS, PBST, blocking buffer (PBST+5% BSA), 0.1 M DTT
4. Nuclease free water
5. Cy3-conjutaged Goat Anti-Human IgG antibody, 1 mg/mL, or other Cy3-conjugated secondary antibodies
6. Alexa Fluor 647-conjugated Goat Anti-Human IgM antibody, 1 mg/mL, or other Cy5/Alexa Fluor 647-conjugated secondary antibodies
7. Tubes, tips, gloves, etc.
8. Shaker
9. GenePix® 4000B Microarray Systems

Procedure

1. Plasma sample preparation
   Prepare digestion of each plasma sample according to the following table. Vortex, spin down briefly, incubate at room temp for 30 min on the shaker. For the control, no plasma sample is added.

Nuclease free water	6.5 μL
10x reaction buffer	1 μL
0.1 M DTT	1 μL
DNase I	0.5 μL
Plasma sample	1 μL

2. Slide preparation
   Apply a 16-well slide gasket on one slide and then put into the rack, add 100 ul blocking buffer to each array well, incubate at room temp for 30 min on the shaker. After the incubation, wash the slide 2x times with PBST (100 ul for each well), each for 5 min.
   *For PA005, an on-chip citrullization treatment will be applied on each well to convert the antigens to citrullinated antigens. Contact Genecopopia for detail.

3. Hybridization

a) Add 90 µL PBST into each plasma sample or control mix, add sample into each well of the slide (100 µL/each)

b) Incubate at room temp for 1 hour on the shaker.

4. Wash
   a) Wash with PBST 100 µL/each well, 5 min on the shaker.
   b) Wash with blocking buffer 100 µL/each well, 5 min on the shaker.
   c) Wash with PBST 100 µL/each well, 5 min on the shaker.

5. Secondary antibody incubation
   a) Dilute anti-human IgG and anti-human IgM secondary antibody (or other secondary antibodies) 1:1000 in PBST.
   b) Add 100 µL secondary antibody to each well.
   c) Incubate at room temp for 1 hour on the shaker.

6. Wash
   a) Wash with PBST 100 µL/each well, 5 min on the shaker, 3 times.
   b) Wash with 45 mL PBS in 50 ml tube for 5 min on the shaker, 2 times.
   c) Wash with 45 mL nuclease-free water in 50 mL tube for 5 min on the shaker, 2 times.
   d) Spin down.

7. Use GenePix® 4000B microarray systems to scan the slide. Use 532 nm channel to scan Cy3 fluorescence, and use 635 nm channel to scan Alexa Fluor-647 fluorescence.

IV. Limited Use License and Warranty

Limited Use License

The following terms and conditions apply to use of all OmicsArray™ Protein Microarray. If the terms and conditions are not acceptable, the product in its entirety must be returned to GeneCopoeia within 5 calendar days. A limited End-User license is granted to the purchaser of the product. The Product shall be used by the purchaser for internal research purposes only. The product is expressly not designed, intended, or warranted for use in humans or for therapeutic or diagnostic use. The product must not be resold, repackaged or modified for resale, or used to manufacture commercial products without prior written consent from GeneCopoeia. This product should be used in accordance with the NIH guidelines developed for recombinant DNA and genetic research. Use of any part of the product constitutes acceptance of the above terms.

Limited Warranty

GeneCopoeia warrants that the product meets the specifications described in the accompanying Product Datasheet. If it is proven to the satisfaction of GeneCopoeia that the product fails to meet these specifications, GeneCopoeia will replace the product. In the event a replacement cannot be provided, GeneCopoeia will provide the purchaser with a refund. This limited warranty shall not extend to anyone other than the original purchaser of the product. Notice of nonconforming products must be made to GeneCopoeia within 30 days of receipt of the product. GeneCopoeia's liability is expressly limited to replacement of product or a refund limited to the actual purchase price. GeneCopoeia's liability does not extend to any damages arising from use or improper use of the product, or losses associated with the use of additional materials or reagents. This limited warranty is the sole and exclusive warranty. GeneCopoeia does not provide any other warranties of any kind, expressed or implied, including the merchantability or fitness of the product for a particular purpose.

GeneCopoeia is committed to providing our customers with high-quality products. If you should have any questions or concerns about any GeneCopoeia products, please contact us at 301-762-0888.