RayBio® Label-Based (L-Series) Human Antibody Array L-6000 Membrane Kit

A combination of Human L-507, L-493, L-3, L-4, L-5, L-6, L-7, L-8, L-9, L-10, L-11, and L-12 arrays

Patent Pending Technology
User Manual (January 1, 2022)

For the simultaneous detection of the relative expression of 6000 human proteins in serum, plasma, cell culture supernatants, cell/tissue lysates and other body fluids.

L-Series Human Antibody Array L-6000
Cat# AAH-BLM-6000-2 (2 Sample Kit)
Cat# AAH-BLM-6000-4 (4 Sample Kit)

Please read manual carefully before starting experiment

RayBiotech
Empowering your proteomics

Your Provider of Excellent Protein Array Systems and Services

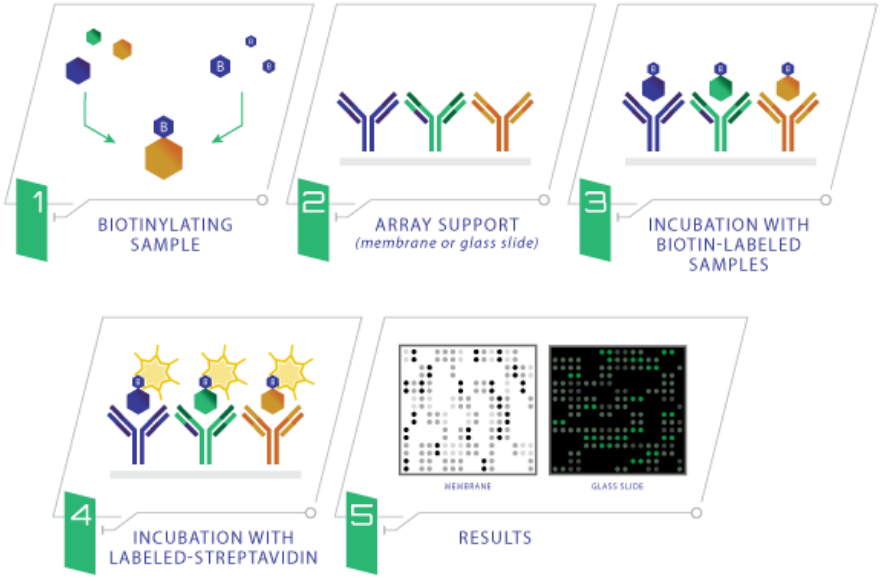
Tel: (Toll Free) 1-888-494-8555 or +1-770-729-2992; Fax: +1-770-206-2393;
Website: www.raybiotech.com Email: info@raybiotech.com

TABLE OF CONTENTS

I. Introduction

Combining direct antigen-labeling technology with our vast library of array-validated antibodies, RayBiotech has created the largest commercially available antibody array to date. With the L-Series high density array platform, researchers can now detect thousands of proteins simultaneously, obtaining a broad, panoramic view of protein expression. Our newly expanded panel includes a wide variety of metabolic enzymes, structural proteins, epigenetic markers, neuroregulatory factors, in addition to our popular list of cytokines, growth factors, receptors, adipokines, proteases, and signaling proteins. Available on both glass slide and membrane formats, this array is ideally suited for biomarker discovery studies and exploratory screens.

The first step in using the RayBio® L-Series Antibody Array is to biotinylate the primary amine groups of the proteins in your sample (sera or plasma, cell culture supernatants, cell lysates or tissue lysates). The membrane arrays are then blocked, similar to a Western blot, and the biotin-labeled sample is added onto the membrane array which is pre-printed with capture antibodies and incubated to allow for interaction of target proteins. After incubation with HRP-Conjugated Streptavidin, the signals can be visualized by chemiluminescence.



II. Materials Provided

A. Storage Recommendations

Upon receipt, the kit should be stored at 4 °C or below and must be used within 6 months from the date of shipment. For longer period of storage, Labeling Reagent (Item B) and Array Membrane (Item E) should be stored at -20 °C and avoid repeated freeze-thaw cycles. Labeling Reagent (Item B) should be prepared fresh before use. After initial use, Labeling Buffer, Blocking Buffer, Stop Solution, HRP-Conjugated Streptavidin, and Detection Buffers C and D should be stored at 4 °C to avoid repeated freeze-thaw cycles (may be stored for up to 3 months).

ITEM	DESCRIPTION	2 SAMPLE KIT	4 SAMPLE KIT
B	Labeling Reagent	4 vials	8 vials
C	Labeling Buffer	1 bottle (30 ml)	2 bottles (30 ml)
D	Stop Solution	1 vial (50 µl)	2 vials (50 µl)
E	L-series Antibody Array Membranes	2 membranes each of Human L-507, L-493, L-3, L-4, L-5, L-6, L-7, L-8, L-9, L-10, L-11, and L-12	4 membranes each of Human L-507, L-493, L-3, L-4, L-5, L-6, L-7, L-8, L-9, L-10, L-11, and L-12
F	4X Blocking Buffer	4 bottles (30 ml)	8 bottles (30 ml)
I	500X HRP-Conjugated Streptavidin Concentrate	4 vials (100 µl)	8 vials (100 µl)
K	Detection Buffer C	6 bottles (10 ml)	12 bottles (10 ml)
L	Detection Buffer D	6 bottles (10 ml)	12 bottles (10 ml)
G	20X Wash Buffer 1 Concentrate	6 bottles (30 ml)	12 bottles (30 ml)
H	20X Wash Buffer 2 Concentrate	6 bottles (30 ml)	12 bottles (30 ml)
J-2	Spin Columns (10 ml)	8 columns	16 columns
N/A	Plastic Incubation Trays (w/lid)	24 trays	48 trays
N/A	2X Lysis Buffer	1 bottle (10 ml)	1 bottle (10 ml)
Other Kit Components: Plastic Sheets			

B. Additional Materials Required

- 2-5 ml tube, small plastic or glass containers
- 50 ml conical collection tubes
- Orbital shaker or oscillating rocker
- Kodak X-Omat™ AR film (REF 165 1454) and film processor

or Chemiluminescence imaging system

- Pipettors, pipette tips and other common lab consumables
- Eppendorf tube

III. Overview and General Considerations

A. Preparation and Storage of Samples

1) Preparation of Cell Culture Supernatants

1. Seed cells at a density of $1x10^6$ cells in 100 mm tissue culture dishes.*
2. Culture cells in complete culture medium for ~24–48 hours.**
3. Replenish with serum-free or low-serum medium such as 0.2% FCS/FBS serum, and then incubate cells again for ~48 hours.**,†
4. To collect supernatants, centrifuge at 1,000 x g for 10 min and store as ≤1 ml aliquots at -80°C until needed.
5. If you want to use cell mass for inter-sample normalization, measure the total wet weight of cultured cells in the pellet and/or culture dish. You may then normalize between arrays by dividing densitometry signals by total cell mass (i.e., express results as the relative amount of protein expressed/mg total cell mass). Or you can normalize between arrays by determining the cell lysate concentration using a total protein assay (BCA Protein Assay Kit, Pierce, Prod #: 23227).

**The density of cells per dish used is dependent on the cell type. More or less cells may be required.*

***Optimal culture time may vary and will depend on the cell line, treatment conditions and other factors.*

†Bovine serum proteins produce detectable signals on the RayBio® L-Series Array in media containing serum concentrations as low as 0.2%. When testing serum-containing media, we strongly

recommend testing an uncultured media blank for comparison with sample results.

2) Extracting Protein from Cells

1. Centrifuging Cells:
    a. Adherent Cells:
        i. Remove supernatant from cell culture and wash cells gently twice with cold 1X PBS taking care not to disturb cell layer.
        ii. Add enough cold 1X PBS to cover cell layer and use cell scraper to detach cells.
    b. Cells in Suspension: Pellet the cells by centrifuging using a microcentrifuge at 1500 rpm for 10 min.
2. Make sure to remove any remaining PBS before adding 1X Cell Lysis Buffer (2X Cell Lysis Buffer should be diluted 2-fold with ddH_2O). Solubilize the cells at $2x10^7$ cells/ml in 1X Cell Lysis Buffer.
3. Pipette up and down to resuspend cells and rock the lysates gently at 2–8 °C for 30 minutes. Transfer extracts to microfuge tubes and centrifuge at 13,000 rpm for 10 min at 2-8 °C.

Note: If the lysates appear to be cloudy, transfer the lysates to a clean tube, centrifuge again at 13,000 rpm for 20 minutes at 2-8°C. If the lysates are still not clear, store them at -20°C for 20 minutes. Remove from the freezer and immediately centrifuge at 13,000 rpm for 20 minutes at 2-8°C.

4. Transfer lysates to a clean tube. Determine cell lysate concentrations using a total protein assay (BCA Protein Assay Kit, Pierce, Prod# 23227). Aliquot the lysates and store at -80°C.

3) Extracting Protein from Crude Tissue

1. Transfer approximately 100 mg crude tissue into a tube with 1 ml 1X Cell Lysis Buffer (2X Cell Lysis Buffer should be diluted 2-fold with ddH_2O).
2. Homogenize the tissue according to homogenizer manufacturer instructions.
3. Transfer extracts to microcentrifuge tubes and centrifuge for 20 min at 13,000 rpm (4°C).

Note: If the supernatant appears to be cloudy, transfer the supernatants to a clean tube, centrifuge again at 13,000 rpm for 20 minutes at 2-8°C. If the supernatant is still not clear, store the lysate at -20°C for 20 minutes. Remove from the freezer, immediately centrifuge at 13,000 rpm for 20 minutes at 2-8°C.

4. Transfer supernatant to a clean tube and store at -80°C.

4) Determine the total protein concentration

For optimal biotin labeling, it is necessary to determine the protein concentration in the cell/tissue lysate. We recommended using a BCA total protein assay (e.g., Pierce, Catalog # 23227).

B. Handling the Array Membranes

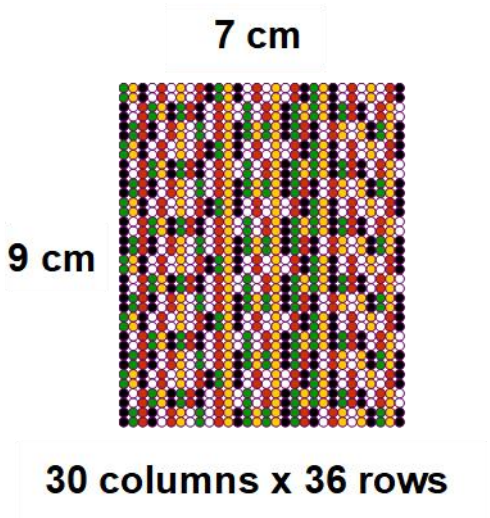
- Always use forceps to handle membranes and grip the membranes by the edges only.
- Never allow membranes to dry during the experiment.
- Avoid touching membranes with hands or any sharp tools.

C. Incubations of Antibody Array

- Completely cover membranes with sample or buffer during incubation and cover the Plastic Incubation Tray with the lid to avoid drying.
- Avoid foaming during incubation steps.

- Perform all incubation and wash steps under gentle rotation.
- Several incubation steps such as step 3 (sample incubation) or step 7 (HRP-Conjugated Streptavidin incubation) may be done at 4 °C overnight.

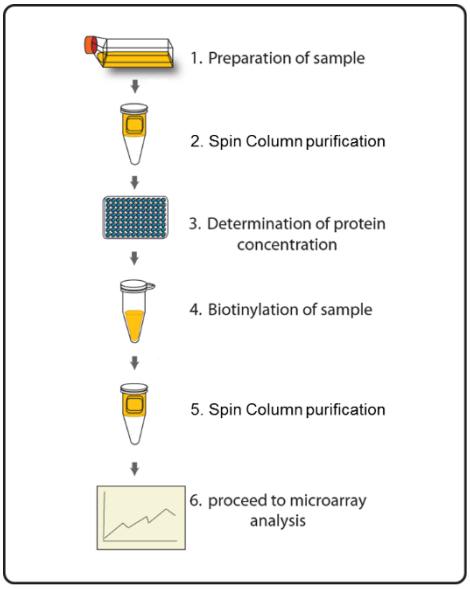
D. Layout of Array Membrane



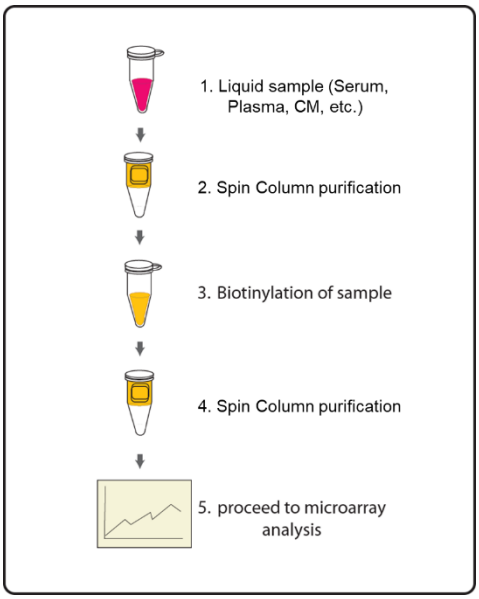
IV. Protocol

Assay Diagram

1. Cell/tissue lysates



2. Serum, plasma, body fluid, or Cell culture supernatants



A. Sample purification

Note: This step removes the low molecular weight amine derivatives or unwanted buffer from samples to ensure the quality biotinylation in Steps 5–7.

1. Twist to remove the bottom closure of the Spin column and loosen the cap (Do not remove).

2. Place the Spin column into a 50 ml conical collection tube, centrifuge at 1,000 x g for 3 minutes to remove the storage buffer. Discard the flow-through.

3. Wash the column three times with 5 ml ultrapure water (ddH2O) or 1xPBS (pH8.0) each, centrifuge 1,000 x g for 3 minutes to remove the

flow-through. Blot the bottom of the column to remove excess liquid, and transfer device to a new collection tube.

4. Apply sample on top of the resin within the next few minutes. Centrifuge at 1,000 x g for 3 minutes to collect the flow-through that contains sample. The recommended sample dilution as following:

    - *Culture Media (CM): 3.5 ml neat supernatant*
    - *Serum/Plasma: 50 µl serum/plasma in 3.5 ml labeling buffer*
    - *Cell/tissue lysate: 100 µg lysate in 1 ml labeling buffer*

Note: Each labelled sample volume is enough for at least 6 membranes following the protocol below.

Note: The maximal sample volume is 4 ml for each Spin Column. Do not load over 4 ml of sample into a Spin Column.

B. Biotin-Labeling the Sample

Note: Amines (e.g., Tris, glycine) and azides quench the biotinylation reaction. Avoid contaminating samples with these chemicals prior to biotinylation.

5. Immediately before use, prepare Labeling Reagent. Briefly spin down the Labeling Reagent tube (Item B). Add 100 µl Labeling Buffer into the tube, then pipette up and down or vortex slightly to dissolve the lyophilized reagent.

6. Add Labeling Reagent to the sample tube. Incubate the reaction solution at RT with gentle rocking or shaking for 30 min. Mix the reaction solution by gently tapping the tube every 5 minutes.

    a. For labeling cell culture supernatants: Add 80 µl of Labeling Reagent into the sample tube (for 3.5 ml supernatant).

    b. For labeling serum or plasma: Add 80 µl of Labeling Reagent Solution into the sample tube (for 50 µl serum/plasma *in 3.5 ml labeling buffer*).

c. For labeling cell or tissue lysates: Add 8 µl of Labeling Reagent Solution into the sample tube (for 100 µg lysate *in 1 ml labeling buffer*).

d. For all other body fluid: Add 2 µl of Labeling Reagent Solution per 100 µg sample to be labelled.

Note: The addition of Labeling Reagent volume is based upon the sample amount used in Step 4. If more or less amount sample is labelled, adjust this volume proportionally.

7. Add 5 µl Stop Solution (Item D) into each reaction tube. Using a new spin column, repeat Steps 1-4 of section A. Sample Purification to remove the excess non-reacted biotin reagent from each sample.

Note: Biotinylated samples can be stored at -20°C or -80°C until you are ready to proceed with the assay.

C. Blocking and Incubations

8. Place each membrane printed side up into a Plastic Incubation Tray (provided). 1 membrane per tray.

   Note: The printed membrane will have a "-" mark in the upper left corner of the membrane.

   Note: Up to 4 membranes can be incubated together within one tray with proportional amount of reaction buffer. Rotate the membrane sequence at least once during sample incubation if more than one membrane is incubated in one tray.

9. Dilute 4X Blocking Buffer (Item F) with deionized or distilled water to prepare the 1X Blocking Buffer. Add 6 ml of 1X Blocking Buffer to each

membrane and cover with the lid. Incubate at room temperature with gentle shaking for 1 hour.

10. Aspirate the Blocking Buffer from each tray. Add 6 ml of diluted sample onto each membrane and cover with the lid. Incubate at room temperature with gentle shaking for 2 hours.

Note: It is recommended to use 10-20 folds diluted biotin-labeled culture supernatant, 10-20 folds diluted biotin-labeled serum/plasma, 100 folds diluted biotin-labeled cell/tissue lysate, or 10-20 folds for other body fluids. Dilute sample using 1X Blocking Buffer. The optimal concentration of sample used will depend on the abundance of target proteins. The samples can be concentrated if the overall signals are too weak. If the overall signals are too strong, the sample can be diluted further.

Note: Incubation may be done at room temperature with gentle shaking for 2 hours or overnight at 4°C.

11. Dilute 20X Wash Buffer 1 (Item G) with deionized or distilled water to prepare the 1X Wash Buffer 1. Aspirate the samples from each tray and then wash by adding 20 ml of 1X Wash Buffer I at room temperature with gentle shaking (5 min per wash). Repeat the wash 2 more times for a total of 3 washes.

12. Aspirate the 1X Wash Buffer 1 from each tray. Dilute 20X Wash Buffer 2 (Item H) with deionized or distilled water to prepare the 1X Wash Buffer 2. Wash 3 times with 20 ml of 1X Wash Buffer 2 at room temperature with gentle shaking.

13. Aspirate the 1X Wash Buffer 2 from each tray.

14. Prepare the HRP-Conjugated Streptavidin. Briefly spin down the tube containing the 500X HRP-Conjugated Streptavidin (Item I)

immediately before use. Dilute the 500X HRP-Conjugated Streptavidin with 1X Blocking Buffer to prepare the 1X HRP-Conjugated Streptavidin. Pipette up and down to mix gently. Add 6 ml of 1X HRP-Conjugated Streptavidin to each membrane.

Note: Ensure that the vial containing the 500X HRP-Conjugated Streptavidin is mixed well before use, as precipitation can form during storage.

15. Incubate at room temperature with gentle shaking for 2 hours.

Note: incubation may be done overnight at 4 ^{o}C.

16. Wash as directed in steps 11 through 13.

D. Detection

Note: Do not let the membrane dry out during detection. The detection process must be completed within 40 minutes without stopping.

17. For detection of 2 membranes, add 4.2 ml of Detection Buffer C and 4.2 ml of Detection buffer D into a tube and mix both solutions. Drain off excess wash buffer. Place membrane antibody side up (There is a "-" symbol on the top left corner of each membrane) on a clean plastic plate or its cover (provided in the kit). Pipette 4 ml of the mixed Detection Buffers onto each membrane and incubate at room temperature for 2 minutes with gentle shaking. Ensure that the detection mixture is evenly covering the membrane without any air bubbles.

18. Gently place the membrane with forceps (antibody side up) on a plastic sheet (provided) and cover the membrane with another plastic sheet. Gently smooth out any air bubbles. Avoid using pressure on the membrane. Work as quickly as possible.

19. The signal can be detected directly from the membrane using a chemiluminescence imaging system or by exposing the array to x-ray film (we recommend using Kodak X-Omat™ AR film) with subsequent development. Expose the membranes for 40 seconds. Then re-expose the film according to the intensity of signals. If the signals are too strong (background too high), reduce the exposure time (e.g., 5–30 seconds). If the signals are too weak, increase the exposure time (e.g., 5–20 min or overnight) or re-incubate membranes overnight with 1X HRP-Conjugated Streptavidin, and repeat detection on the second day.

20. Save membranes at –20 °C to –80 °C for future reference.

V. Antibody Array Maps

A. RayBio® Human Antibody Array L-507 Array Map

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	POS1	POS2	POS3	Blank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
2	POS1	POS2	POS3	Blank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
3	Blank	Blank	Blank	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
4	Blank	Blank	Blank	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
5	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
6	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
7	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
8	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
9	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
10	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
11	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173
12	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173
13	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203
14	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203
15	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233
16	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233
17	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263
18	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263
19	Blank	Blank	Blank	Blank	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289
20	Blank	Blank	Blank	Blank	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289
21	Blank	Blank	Blank	Blank	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315
22	Blank	Blank	Blank	Blank	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315
23	Blank	Blank	Blank	Blank	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341
24	Blank	Blank	Blank	Blank	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341
25	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371
26	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371
27	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401
28	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401
29	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431
30	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431
31	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461
32	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461
33	Blank	Blank	Blank	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	Blank	Blank	Blank
34	Blank	Blank	Blank	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	Blank	Blank	Blank
35	Blank	Blank	Blank	Blank	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	Blank	POS3	POS2	POS1
36	Blank	Blank	Blank	Blank	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	Blank	POS3	POS2	POS1

B. RayBio® Human Antibody Array L-493 Array Map

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	POS1	POS2	POS3	Blank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
2	POS1	POS2	POS3	Blank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
3	Blank	Blank	Blank	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
4	Blank	Blank	Blank	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
5	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
6	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
7	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
8	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
9	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
10	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
11	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173
12	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173
13	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203
14	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203
15	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233
16	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233
17	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263
18	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263
19	Blank	Blank	Blank	Blank	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289
20	Blank	Blank	Blank	Blank	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289
21	Blank	Blank	Blank	Blank	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315
22	Blank	Blank	Blank	Blank	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315
23	Blank	Blank	Blank	Blank	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341
24	Blank	Blank	Blank	Blank	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341
25	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371
26	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371
27	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401
28	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401
29	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431
30	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431
31	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461
32	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461
33	Blank	Blank	Blank	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	Blank	Blank	Blank
34	Blank	Blank	Blank	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	Blank	Blank	Blank
35	Blank	Blank	Blank	Blank	486	487	488	489	490	491	492	493	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	POS3	POS2	POS1
36	Blank	Blank	Blank	Blank	486	487	488	489	490	491	492	493	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	POS3	POS2	POS1

C. RayBio® Human Antibody Array L-3, L-4, L-5, L-6, L-7, L-8, L-9, L-10, L-11, and L-12 Array Map

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	POS1	POS2	POS3	Blank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
2	POS1	POS2	POS3	Blank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
3	Blank	Blank	Blank	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
4	Blank	Blank	Blank	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
5	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
6	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
7	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
8	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
9	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
10	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
11	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173
12	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173
13	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203
14	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203
15	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233
16	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233
17	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263
18	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263
19	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293
20	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293
21	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
22	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
23	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353
24	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353
25	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383
26	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383
27	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413
28	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413
29	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443
30	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443
31	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473
32	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473
33	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	Blank	Blank	Blank
34	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	Blank	Blank	Blank
35	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	POS3	POS2	POS1
36	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	POS3	POS2	POS1

VI. Antibody Array Target Lists

A. RayBio® Human Antibody Array L-507 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	6Ckine	74	CNTF R alpha	147	FGF-19	220	IGFBP-4	293	IL-22 BP	366	MMP-24	439	Shh-N
2	Activin A	75	F3	148	FGF-20	221	IGFBP-6	294	IL-22 R	367	MMP-25	440	SPARC
3	Activin B	76	CRIM 1	149	FGF-21	222	IGFBP-rp1	295	IL-23	368	Musk	441	Spinesin
4	Activin C	77	Cripto-1	150	FGF-23	223	IGF-I	296	IL-23 R	369	MSPa	442	TACI
5	Activin RIA	78	CRTH-2	151	FLRG	224	IGF-I R	297	IL-24	370	MICA	443	Tarc
6	Activin RIB	79	Cryptic	152	Flt-3 Ligand	225	IGF-II	298	IL-26	371	NAP-2	444	TCCR
7	EYA2	80	CTACK	153	Follistatin	226	IGF-II R	299	IL-27	372	NCAM-1	445	TECK
8	Activin RIIA	81	CTGF	154	Follistatin-like 1	227	IL-1 alpha	300	IL-28A	373	Neuritin	446	TFPI
9	Adiponectin	82	CTLA-4	155	Fractalkine	228	IL-1 beta	301	IL-29	374	NeuroD1	447	TGF-alpha
10	AgRP	83	CV-2	156	Frizzled-1	229	IL-1 F5	302	IL-31	375	Neuropilin-2	448	TGF-beta 1
11	ALCAM	84	CXCL14	157	Frizzled-3	230	IL-1 F6	303	IL-31 RA	376	Neurturin	449	TGF-beta 2
12	Angiogenin	85	CXCL16	158	Frizzled-4	231	IL-1 F7	304	BACE-1	377	NGF R	450	TGF-beta 3
13	Angiopoietin-1	86	CXCR1	159	Frizzled-5	232	IL-1 F8	305	FACX	378	NOV	451	ATP2B1
14	Angiopoietin-2	87	CXCR2	160	Frizzled-6	233	IL-1 F9	306	Insulin	379	GGF2	452	TGF-beta RI
15	Angiopoietin-4	88	CXCR3	161	Frizzled-7	234	IL-1 F10	307	Insulin R	380	Nidogen-1	453	TGF-beta RII
16	ANGPTL1	89	CXCR4	162	Galectin-3	235	IL-1 R3	308	Insulysin	381	NrCam	454	Grb2
17	ANGPTL2	90	CXCR5	163	GASP-1	236	IL-1 R4	309	IP-10	382	NRG2	455	TGF-beta RIII
18	ANGPTL7	91	CXCR6	164	GASP-2	237	IL-1 R6	310	I-TAC	383	NRG3	456	Thrombopoietin
19	Angiostatin	92	D6	165	GCP-2	238	IL-1 R8	311	Kininostatin	384	NT-3	457	Thyroid Peroxidase
20	APJ	93	DAN	166	GCSF	239	IL-1 R9	312	Kremen-1	385	NT-4	458	Thrombospondin-1
21	Amphiregulin	94	DANCE	167	G-CSF R	240	IL-1 ra	313	Kremen-2	386	Orexin A	459	Thrombospondin-2
22	APRIL	95	DcR3	168	GDF1	241	IL-1 RI	314	Lck	387	Orexin B	460	Thrombospondin-4
23	Artemin	96	Decorin	169	GDF3	242	IL-1 RII	315	LTBP1	388	OSM	461	Thymopoietin
24	Axl	97	Dkk-1	170	GDF5	243	IL-2	316	LBP	389	Osteoactivin	462	Tie-1
25	B7-1	98	Dkk-3	171	GDF8	244	IL-2 R alpha	317	LECT2	390	Osteocrin	463	Tie-2
26	BAFF R	99	Dkk-4	172	GDF9	245	IL-2 R beta	318	Lefty-A	391	Osteoprotegerin	464	TIMP-1
27	BCMA	100	DR3	173	GDF11	246	IL-2 R gamma	319	Leptin R	392	OX40 Ligand	465	TIMP-2
28	BD-1	101	DR6	174	GDF-15	247	IL-3	320	Leptin	393	PARC	466	TIMP-3
29	BDNF	102	Dtk	175	GDNF	248	IL-3 R alpha	321	LFA-1 alpha	394	PD-ECGF	467	TIMP-4
30	beta-Catenin	103	EDA-A2	176	GFR alpha-1	249	IL-4	322	LIF	395	PDGF R alpha	468	DEFA5
31	Bax	104	EDAR	177	GFR alpha-2	250	IL-4 R	323	LIF R alpha	396	PDGF R beta	469	TLR1
32	beta-NGF	105	EDG-1	178	GFR alpha-3	251	IL-5	324	LIGHT	397	PDGF-AA	470	TLR2
33	BIK	106	EGF	179	GFR alpha-4	252	IL-5 R alpha	325	Lipocalin-1	398	PDGF-AB	471	TLR3
34	BLC	107	EGF R	180	GITR	253	IL-6	326	LRP-1	399	PDGF-BB	472	TLR4
35	BMP-2	108	EG-VEGF	181	GITR Ligand	254	IL-6 R	327	LRP-6	400	PDGF-C	473	TMEFF1
36	BMP-3	109	EMAP-II	182	CBR1	255	IL-7	328	L-Selectin	401	PDGF-D	474	TMEFF2
37	BMP-3b	110	ENA-78	183	Glut1	256	IL-7 R alpha	329	Lipocalin-2	402	PECAM-1	475	TNF-alpha
38	BMP-4	111	Endocan	184	Glut2	257	IL-8	330	Lymphotactin	403	Pentraxin3	476	TNF-beta
39	BMP-5	112	Endoglin	185	Glut3	258	IL-9	331	LTB	404	Persephin	477	TNF RI
40	BMP-6	113	Endostatin	186	Glut5	259	IL-10	332	LTBR	405	PF4	478	TNF RII
41	BMP-7	114	EN-RAGE	187	Glypican 3	260	IL-10 R alpha	333	MAC-1	406	PlGF	479	TRADD
42	BMP-8	115	Eotaxin	188	Glypican 5	261	IL-10 R beta	334	MCP-1	407	PLUNC	480	TRAIL
43	BMP-15	116	Eotaxin-2	189	GM-CSF	262	IL-11	335	MCP-2	408	Pref-1	481	TRAIL R1
44	BMPR-IA	117	Eotaxin-3	190	GM-CSF R alpha	263	IL-12 p40	336	MCP-3	409	Progranulin	482	TRAIL R2
45	BMPR-IB	118	Epiregulin	191	Granzyme A	264	IL-12 p70	337	MCP-4	410	Prolactin	483	TRAIL R3
46	BMPR-II	119	ErbB2	192	GREMLIN	265	IL-12 R beta 1	338	M-CSF	411	P-selectin	484	TRAIL R4
47	BTC	120	ErbB3	193	GRO	266	IL-12 R beta 2	339	M-CSF R	412	RAGE	485	TRANCE
48	Cardiotrophin-1	121	ErbB4	194	GRO-a	267	IL-13	340	MDC	413	RANK	486	TREM-1
49	CCL14	122	Erythropoietin	195	GH	268	IL-13 R alpha 1	341	MFG-E8	414	RANTES	487	TROY
50	CCL28	123	E-Selectin	196	GHR	269	IL-13 R alpha 2	342	MFRP	415	RELM beta	488	TSG-6
51	CCR1	124	Endothelin	197	HB-EGF	270	IL-15	343	MIF	416	RELT	489	TSLP R
52	CCR2	125	FADD	198	HCC-4	271	IL-15 R alpha	344	MIG	417	ROBO4	490	TWEAK
53	CCR3	126	FAM3B	199	HCR	272	IL-16	345	MIP-1a	418	S100 A8/A9	491	TWEAK R
54	CCR4	127	Fas	200	Hepassocin	273	IL-17	346	MIP-1b	419	S100A10	492	Ubiquitin+1
55	CCR5	128	Fas Ligand	201	GLO-1	274	IL-17B	347	MIP-1d	420	SAA	493	uPA
56	CCR6	129	FGF Basic	202	HGF	275	IL-17B R	348	MIP 2	421	SCF	494	uPAR
57	CCR7	130	FGF-BP	203	HGFR	276	IL-17C	349	MIP-3 alpha	422	SCF R	495	Vasorin
58	CCR8	131	FGF R3	204	HRG-alpha	277	IL-17D	350	MIP-3 beta	423	SDF-1	496	VCAM-1
59	CCR9	132	FGF R4	205	HRG-beta 1	278	IL-17E	351	MMP-1	424	sFRP-1	497	VE-Cadherin
60	CD14	133	FGF R5	206	HVEM	279	IL-17F	352	MMP-2	425	sFRP-3	498	VEGF
61	CD27	134	FGF-4	207	I-309	280	IL-17R	353	MMP-3	426	sFRP-4	499	VEGF R2
62	CD30	135	FGF-5	208	ICAM-1	281	IL-17RC	354	MMP-7	427	sgp130	500	VEGF R3
63	CD30 Ligand	136	FGF-6	209	ICAM-2	282	IL-17RD	355	MMP-8	428	SIGIRR	501	VEGF-B
64	CD40	137	FGF-7	210	ICAM-3	283	IL-18 BPa	356	MMP-9	429	Siglec-5	502	VEGF-C
65	CD40 Ligand	138	FGF-8	211	ICAM-5	284	IL-18 R alpha	357	MMP-10	430	Siglec-9	503	VEGF-D
66	CD 163	139	FGF-9	212	IFN-alpha/beta R1	285	IL-18 R beta	358	MMP-11	431	SLPI	504	VEGI
67	Cerberus 1	140	FGF-10	213	IFN-alpha/beta R2	286	IL-19	359	MMP-12	432	Smad 1	505	WIF-1
68	Chem R23	141	FGF-11	214	IFN-beta	287	IL-20	360	MMP-13	433	Smad 4	506	WISP-1
69	Chordin-Like 1	142	FGF-12	215	IFN-gamma	288	IL-20 R alpha	361	MMP-14	434	Smad 5	507	XEDAR
70	Chordin-Like 2	143	FGF-13 1B	216	IFN-gamma R1	289	IL-20 R beta	362	MMP-15	435	Smad 7		
71	Csk	144	FGF-16	217	IGFBP-1	290	IL-21	363	MMP-16	436	Smad 8		
72	CLC	145	FGF-17	218	IGFBP-2	291	IL-21 R	364	MMP-19	437	Prdx6		
73	CNTF	146	FGF-18	219	IGFBP-3	292	IL-22	365	MMP-20	438	Soggy-1		

B. RayBio® Human Antibody Array L-493 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	11b-HSD1	73	BMX	145	CRTAM	217	FRK	289	KLF4	361	PI 16	433	SCGF
2	2B4	74	BNIP2	146	CSH1	218	ARB1	290	LAG-3	362	PIK3R1	434	SOST
3	4-1BB	75	BNP	147	Troponin T	219	Furin	291	Layilin	363	PIM2	435	SOX17
4	A1BG	76	Btk	148	CutA	220	Fyn	292	LDL R	364	PKM2	436	SOX2
5	A2M	77	C2	149	Cyclin D1	221	GADD45A	293	Legumain	365	Plasminogen	437	SPARCL1
6	ABL1	78	C3a	150	Cystatin A	222	Galanin	294	LH	366	Podocalyxin	438	SPINK1
7	ACE	79	C5a	151	Cystatin B	223	Galectin-1	295	LIMPII	367	POMC	439	SRMS
8	ACE-2	80	C7	152	Cystatin C	224	Galectin-3BP	296	LIN41	368	PON1	440	SSEA-1
9	ACK1	81	C8b	153	Cytochrome C	225	Galectin-7	297	Livin	369	PON2	441	SSEA-4
10	ACPP	82	C9	154	Cytokeratin 8	226	gamma-Thrombin	298	LOX-1	370	PPARg2	442	SSTR2
11	ACTH	83	CA9	155	Cytokeratin 18	227	Gas1	299	LPS	371	PPP2R5C	443	SSTR5
12	ADAM-9	84	CA15-3	156	Cytokeratin 19	228	Gastrin	300	LRG1	372	Presenilin 1	444	Survivin
13	ADAMTS1	85	CA19-9	157	DBI	229	GATA-3	301	LTF	373	Presenilin 2	445	SYK
14	ADAMTS10	86	CA125	158	DCBLD2	230	GATA-4	302	LTK	374	Pro-BDNF	446	Syndecan-1
15	ADAMTS13	87	Cadherin-13	159	D-Dimer	231	Gelsolin	303	Lumican	375	Procalcitonin	447	Syndecan-3
16	ADAMTS15	88	CLEC14A	160	DEFA1/3	232	Ghrelin	304	Lyn	376	Pro-Cathepsin B	448	TACE
17	ADAMTS17	89	Calbindin D	161	CPA1	233	GLP-1	305	LYRIC	377	Progesterone	449	TAF4
18	ADAMTS18	90	Calcitonin	162	Desmin	234	GMNN	306	LYVE-1	378	pro-Glucagon	450	Tec
19	ADAMTS19	91	Calreticulin	163	DLL1	235	GPBB	307	LZTS1	379	Prohibitin	451	TFF1
20	ADAMTS4	92	Calsyntenin-1	164	DLL4	236	GPI	308	Mammaglobin A	380	Pro-MMP-7	452	TFF3
21	ADAMTS5	93	CART	165	DMP-1	237	GPR-39	309	Marapsin	381	Pro-MMP-9	453	Thrombin
22	ADAMTSL2	94	Caspase-3	166	DPPIV	238	GPX1	310	MATK	382	Pro-MMP-13	454	Thrombomodulin
23	Adipsin	95	Caspase-8	167	E-Cadherin	239	GPX3	311	MBL	383	ProSAAS	455	TK1
24	Afamin	96	Cathepsin B	168	Endorphin Beta	240	GRP	312	C1qTNF1	384	Prostasin	456	Thyroglobulin
25	AFP	97	Cathepsin D	169	EDNRA	241	GRP75	313	Mer	385	Protein p65	457	TIM-1
26	ALBUMIN	98	Cathepsin L	170	Enolase 2	242	GRP78	314	Mesothelin	386	PSA-Free	458	TNK1
27	Aldolase A	99	Cathepsin S	171	ENPP2	243	GSR	315	MICB	387	PSA-total	459	TOPORS
28	Aldolase B	100	CBP	172	EpCAM	244	GST	316	Midkine	388	PSP	460	TPA
29	Aldolase C	101	CCK	173	EphA1	245	HADHA	317	MINA	389	PTH	461	TPM1
30	ALK	102	CD23	174	EphA2	246	HAI-1	318	MSHa	390	PTHLP	462	TRA-1-60
31	Alpha 1 AG	103	CD24	175	EphA3	247	HAI-2	319	MTUS1	391	PTN	463	TRA-1-81
32	A1M	104	CD36	176	EphA4	248	Haptoglobin	320	Myoglobin	392	PTPRD	464	Transferrin
33	Alpha Lactalbumin	105	CD38	177	EphA5	249	hCG alpha	321	NAIP	393	PYK2	465	Trappin-2
34	ALPP	106	CD44	178	EphA6	250	hCGb	322	Nanog	394	PYY	466	TRKB
35	AMICA	107	CD45	179	EphA7	251	Hck	323	NELL2	395	Ras	467	Troponin I
36	AMPKa1	108	CD46	180	EphA8	252	HE4	324	Neprilysin	396	RBP4	468	Troponin C
37	Amylin	109	CD47	181	EphB1	253	Hemopexin	325	Nesfatin	397	RECK	469	TRPC1
38	ANGPTL3	110	CD55	182	EphB2	254	Hepcidin	326	Nestin	398	RELM alpha	470	TRPC6
39	ANGPTL4	111	CD59	183	EphB3	255	HOXA10	327	NET1	399	Resistin	471	TRPM7
40	Annexin A7	112	CD61	184	EphB4	256	HSP10	328	Netrin G2	400	RET	472	Trypsin 1
41	APC	113	CD71	185	EphB6	257	HSP20	329	Netrin-4	401	RIP1	473	TSH
42	APCS	114	CD74	186	ERRa	258	HSP27	330	Neurokinin A	402	ROCK1	474	TSLP
43	Apelin	115	CD79 alpha	187	Erythropoietin R	259	HSP32	331	Neuropeptide Y	403	ROCK2	475	TXK
44	Apex1	116	CD90	188	ESAM	260	HSP40	332	NF1	404	ROR1	476	Tyk2
45	APN	117	CD97	189	EV15L	261	HSP60	333	NM23-H1/H2	405	ROR2	477	TYRO10
46	ApoA1	118	CD200	190	EXTL2	262	HSP70	334	Notch-1	406	ROS	478	Uromodulin
47	ApoA2	119	CEA	191	FABP1	263	HSP90	335	NPTX1	407	RYK	479	Vasopressin
48	ApoA4	120	CEACAM-1	192	FABP2	264	HSPA8	336	NPTXR	408	S100A4	480	VDUP-1
49	ApoB	121	Ceruloplasmin	193	FABP3	265	HTRA2	337	NR3C3	409	S100A6	481	VEGF R1
50	ApoB100	122	CFHR2	194	FABP4	266	IBSP	338	Ntn1	410	S100A8	482	VGF
51	ApoC1	123	Chemerin	195	Fc gamma RIIIB	267	IGF2BP1	339	OCT3/4	411	S-100b	483	VIPR2
52	ApoC2	124	CHI3L1	196	Factor XIII B	268	IGFBP-5	340	Omentin	412	SART1	484	Visfatin
53	ApoC3	125	Chromogranin A	197	FAK	269	IDUA	341	Osteocalcin	413	SART3	485	VDR
54	ApoD	126	Chymase	198	FAP	270	IL-33	342	Osteopontin	414	SCG3	486	VDB
55	ApoE	127	cIAP-2	199	Fcg RIIB/C	271	IL-34	343	OX40	415	Selenoprotein P	487	PROS1
56	ApoE3	128	Ck beta 8-1	200	Fen-1	272	IL-28B	344	p21	416	SEMA3A	488	Vitronectin
57	ApoH	129	CKMB	201	FER	273	INSL3	345	p27	417	Serotonin	489	VWF
58	ApoM	130	Claudin-3	202	Ferritin	274	INSRR	346	p53	418	Serpin G1	490	WT1
59	APP	131	Claudin-4	203	Fetuin A	275	ITGAV	347	PAI-1	419	Serpin A1	491	XIAP
60	ASPH	132	CLEC3B	204	Fetuin B	276	Itk	348	PAK7	420	Serpin A3	492	ZAG
61	Attractin	133	Clusterin	205	FGFR1	277	ITM2B	349	Pancreastatin	421	Serpin A4	493	ZAP70
62	B3GNT1	134	CNDP1	206	FGFR1 alpha	278	Kallikrein 2	350	PP	422	Serpin A5		
63	BAF57	135	COCO	207	FGFR2	279	Kallikrein 5	351	Pappalysin-1	423	Serpin A8		
64	BAFF	136	CFH	208	Fibrinogen	280	Kallikrein 6	352	PARK7	424	Serpin A9		
65	BAI-1	137	Contactin-1	209	Fibrinopeptide A	281	Kallikrein 7	353	P-Cadherin	425	Serpin A12		
66	BCAM	138	Contactin-2	210	Fibronectin	282	Kallikrein 8	354	PCAF	426	Serpin B5		
67	B2M	139	CBG	211	Ficolin-3	283	Kallikrein 10	355	PD-1	427	Serpin D1		
68	Beta Defensin 4	140	COX-2	212	FIH	284	Kallikrein 11	356	PDX-1	428	Serpin I1		
69	Beta IG-H3	141	C-peptide	213	FOLR1	285	Kallikrein 14	357	PEDF	429	SERTAD2		
70	Biglycan	142	CPN2	214	FOXN3	286	KCC3	358	PEPSINOGEN I	430	SHBG		
71	BLAME	143	Creatinine	215	FoxO1	287	KCTD10	359	PEPSINOGEN II	431	SMAC		
72	BMP-9	144	CRP	216	FoxP3	288	KIF3B	360	PGRP-S	432	SNCG		

C. RayBio® Human Antibody Array L-3 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	14-3-3 beta	73	Antithrombin III	145	C4BPA	217	CHREBP	289	Cytokeratin 9	361	EVC2	433	Glyoxalase II
2	14-3-3 epsilon	74	APA	146	C5b-9	218	Chromogranin B	290	D4 GDI	362	Ezrin	434	GM2A
3	14-3-3 eta	75	APLP-1	147	C6	219	Chromogranin C	291	DAK	363	F11	435	GMF beta
4	14-3-3 gamma	76	APM2	148	C8G	220	CIP29	292	Contactin-4	364	FABP5	436	GNB1
5	14-3-3 sigma	77	Apo (a)	149	C9orf40	221	CKB	293	DARS2	365	Factor IX	437	GNPTG
6	14-3-3 theta	78	APOA1BP	150	CA1	222	CLIC1	294	DCI	366	Factor V	438	GOLPH2
7	14-3-3 zeta	79	ApoF	151	CA150	223	CLIC4	295	DCXR	367	Factor XII	439	GOLPH4
8	53BP1	80	ApoL1	152	CA2	224	CLIP170	296	DDAH1	368	Factor XIII	440	GOT2
9	67LR	81	ApoL2	153	CA3	225	CL-P1	297	DDT	369	FAM20C	441	GPR116
10	ABAT	82	ARFBP1	154	CACNB4	226	CLPS	298	DDX3Y	370	FAM3C	442	GPLD1
11	ABCF1	83	ARFGEF3	155	CAD	227	CLTA	299	DEFA6	371	Fascin	443	GRHL1
12	ABI3BP	84	ASL	156	Cadherin 22	228	CNN2	300	DEP-1	372	FASN	444	Granzyme M
13	ACAA1	85	ArgRS	157	Cadherin-6	229	CNOT1	301	DNER	373	fast skeletal Myosin	445	GRHPR
14	ACAA2	86	ARP19	158	CALD1	230	CO4A2	302	Dermcidin	374	FASTKD5	446	GRP
15	ACACA	87	Arp2	159	CALML5	231	COG4	303	Desmocollin 1	375	FBP38	447	GSTM1
16	ACAA	88	ARP2/3	160	Calmodulin	232	COL19A1	304	Desmocollin-2	376	FBP2	448	GSTP1
17	ACLP	89	Arp3	161	Calpain 1	233	COL4A3	305	Desmocollin-3	377	FBPase 1	449	Guanylin
18	ACLY	90	ARPC2	162	Calpain S1	234	Col6A2	306	Desmoglein-1	378	FCGBP	450	GULP1
19	Aconitase 1	91	ARPC3	163	Calpastatin	235	COL9A3	307	Desmoglein-2	379	FDPS	451	H6PD
20	ACTBL2	92	ART3	164	Calretinin	236	COLEC10	308	Desmoplakin	380	FH	452	HABP2
21	ACTC1	93	ARTS1	165	Calumenin	237	Collagen I a1	309	Desmuslin	381	Fibrillin 1	453	HBZ
22	Actinin alpha 1	94	ARX	166	CAP1	238	Collagen III	310	Destrin	382	FGG	454	HCFC1
23	ADAMDEC1	95	ASH2L	167	CapG	239	Collagen IVa6	311	DGK	383	Fibrinogen-like 2	455	HDGF
24	ADAS	96	ASGR2	168	CAPZA1	240	Collagen IX	312	DISC 1	384	Fibrinopeptide B	456	HEG1
25	ADH1B	97	ASK1	169	CPB2	241	Collagen V	313	DMGDH	385	Fibulin 3	457	Hemoglobin
26	ADH1C	98	AST	170	CARHSP1	242	Collagen VI	314	DMRN9	386	Ficolin-2	458	Hemoglobin A1c
27	ADH4	99	DNPEP	171	Caspase-14	243	Collagen X	315	DBH	387	Filamin A	459	HBB
28	ADH5	100	ASXL1	172	Catalase	244	COL15A1	316	DOT1L	388	Filamin B	460	HBD
29	ADM	101	ATBF1	173	Cathelicidin	245	COMP	317	DPEP2	389	Filamin C	461	HBG2
30	Advillin	102	ATP5A	174	Cathepsin A	246	CFB	318	DPP3	390	FKBP12	462	HEXB
31	AFG3L2	103	ATP5O	175	Cathepsin G	247	Contactin-3	319	DPPI	391	FKBP25	463	HGFA
32	AGA	104	ATPB	176	Cathepsin H	248	COPS8	320	DRIL1	392	FKBP51	464	hGH
33	Aggrecan	105	B3GNT2	177	Cathepsin Z	249	Corneodesmosin	321	DSCAM	393	FLG2	465	hHR23b
34	AGXT	106	B4GalT1	178	CBS	250	Coronin 3	322	DSPG3	394	FOLR3	466	HIBADH
35	AHNAK	107	B7-H2	179	CCDC126	251	Cortactin	323	Dystroglycan	395	Frizzled 8	467	HINT1
36	Ahsp	108	B7-H3	180	CCDC25	252	COTL1	324	UBA1	396	FRY	468	HIP1R
37	AIF	109	BAD	181	CCT3	253	CPE	325	ECHS1	397	FSH	469	Histone H1.2
38	AK2	110	Band 3	182	CD109	254	CPEB3	326	ECM-1	398	Azurocidin	470	Histone H1.3
39	AKAP9	111	BASP1	183	CD133	255	CPM	327	EEF1G	399	FUCA1	471	Histone H2A
40	AKR1B1	112	Bassoon	184	CD155	256	CPN1	328	EEF2	400	FUCA2	472	Histone H2A.Z
41	AKR1C3	113	BAZ2B	185	CD157	257	CPNE3	329	EFEMP2	401	FAH	473	Histone H2B K
42	AKR7A2	114	BCHE	186	CD16	258	CPS1	330	EFTUD2	402	G0/G1switch 2	474	Histone H3.3
43	ALAD	115	Bcl-w	187	CD21	259	CKMM	331	EHD1	403	G3BP	475	Histone H4
44	ALT	116	BCOR	188	CD32	260	CRF21	332	EHD3	404	GALNT2	476	HLA-C
45	ADH	117	beta 1 Spectrin	189	CD35	261	CRHBP	333	EIF3S2	405	gamma Catenin	477	HMGB1
46	AOX1	118	CRYBB1	190	CD39L4	262	CrkL	334	eIF4A1	406	GAPDH	478	HMGB2
47	ALDH16A1	119	beta 1 Tubulin	191	CD41	263	CRMP2	335	eIF5A	407	GARNL1	479	HMGB3
48	ALDH1A1	120	CUBB3	192	CD42b	264	CRTAC1	336	ELAVL1	408	GART	480	HMGN2
49	ALDH9A1	121	BID	193	CD48	265	CS	337	EMILIN1	409	Gastrokine 1	481	HN1
50	ALKP	122	BIN2	194	CD5L	266	Ctip2	338	EMSY	410	GATM	482	FoxA1
51	ALP	123	BIRC6	195	CD9	267	Cux2	339	EN2	411	GBE1	483	hnRNP A1
52	MAN1A1	124	BLMH	196	CD98	268	Cyclophilin A	340	Endorepellin	412	GCDFP 15	484	hnRNP A2B1
53	alpha Actinin 4	125	BLVRB	197	CDA	269	Cyclophilin B	341	ENO1	413	GCLC	485	hnRNP C1+C2
54	Alpha Fodrin	126	BMP-1	198	CDC5L	270	Cystatin D	342	ENO1+ENO2+ENO3	414	GCSH	486	hnRNP G
55	alpha Glucosidase II	127	BPGM	199	CDK2	271	Cystatin E	343	ENSA	415	GDA	487	hnRNP L
56	alpha-Synuclein	128	BPIFB1	200	CEACAM-8	272	Cystatin S	344	Envoplakin	416	GDF7	488	hnRNP M1-M4
57	alpha Tubulin	129	BPIL1	201	CECR1	273	Cystatin SN	345	EDN	417	GDI1	489	hnRNP U
58	CRYAA	130	BRCA 2	202	CENPF	274	CSRP1	346	EPB41	418	GDI2	490	Hornerin
59	ALS	131	BRD2	203	CEP57	275	CYTL1	347	EPCR	419	Gephyrin	491	Hoxb3
60	Als2	132	Brevican	204	CES1	276	Cytochrome b5	348	Ephrin B1	420	GFAP	492	HOXD11
61	ALS2CR1	133	Brg1	205	CETP	277	Cytochrome c (n)	349	Ephrin B2	421	GHRF	493	HP1BP3
62	Aminoacylase	134	BRSK1	206	Cezanne	278	Cytokeratin 1	350	EPHX2	422	GIP	494	HPD
63	Androgen Receptor	135	BTD	207	CFHR1	279	Cytokeratin 10	351	EPPK1	423	GLIPR2	495	HPR
64	ANGPTL6	136	BTF3	208	CFHR4	280	Cytokeratin 13	352	Eps15	424	GLRX1	496	HPRT
65	ANGPTL8	137	C1q	209	CFHR5	281	Cytokeratin 14	353	ERAB	425	G6PD	497	HRG
66	ANK	138	C1qA	210	CFI	282	Cytokeratin 15	354	ERAP2	426	PRKCSH	498	HRSP12
67	Ankrd26	139	C1qB	211	CFL1	283	Cytokeratin 16	355	ERp29	427	GLUD1	499	HSC70
68	Annexin A1	140	C1qR1	212	CFVII	284	Cytokeratin 17	356	ERp57	428	CGH	500	HSP47
69	Annexin A2	141	C1RL	213	CHC17	285	Cytokeratin 20	357	ERp72	429	GSTO1		
70	Annexin A6	142	C1s	214	Chitobiase	286	Cytokeratin 3	358	ESD	430	GSS		
71	Annexin V	143	ELP6	215	Chitotriosidase	287	Cytokeratin 4	359	ESR1	431	GPD1		
72	ANP	144	C4.4A	216	CHORDC1	288	Cytokeratin 5	360	ETL	432	Glycoprotein V		

D. RayBio® Human Antibody Array L-4 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	HEXA	73	LIMS1	145	Nectin-1	217	Peroxiredoxin 3	289	PTK 7	361	Serpin A7	433	Thymosin b10
2	HTRA1	74	LMAN2	146	Nectin-3	218	Peroxiredoxin 5	290	PTMA	362	Serpin B3	434	Titin
3	Agrin	75	ACP1	147	NEDD8	219	PF4V1	291	PTP gamma	363	Serpin B6	435	TLS
4	IBP160	76	LOK	148	Neogenin	220	PGAM1	292	PTP kappa	364	Serpin B8	436	TMEM223
5	IDH1	77	LOX	149	Nesprin2	221	PGAM2	293	PTP mu	365	Serpin F2	437	TOB2
6	IDH3A	78	LOXL1	150	Neurabin 1	222	PGD	294	PTPRS	366	Serpin A10	438	TOP2B
7	IFRD1	79	LRP 4	151	Neural Cadherin	223	PHGDH	295	PTPRZ	367	SERPINB1	439	TPM4
8	IGF2BP2	80	LTA4H	152	PAM	224	PGK-1	296	PYGL	368	SerpinB4	440	TPP1
9	ITGB5	81	LTBP4	153	Neurogranin	225	PGLS-C-t	297	PZP	369	SerpinE2	441	TALDO1
10	IGSF4B	82	Lubricin	154	Neuropeptide B	226	PGM1	298	QDPR	370	SerRS	442	TALDO
11	Ihh	83	LUZP1	155	Neuropilin-1	227	PGRPL	299	QPRT	371	SET	443	Transthyretin
12	ILK	84	LYPA1	156	Neurotrimin	228	PHAP1	300	Quiescin Q6	372	SEZ6L2	444	TRAP1
13	Inhibin beta	85	Lysozyme	157	NF-M	229	PSAT1	301	Rab7a	373	SF20	445	TRAP220
14	ITGB1	86	MAGI2	158	Nidogen-2	230	PIK3C2B	302	Ran	374	SH3BGRL	446	TRF 2
15	ITGB6	87	MAGP-2	159	NIT2	231	pIgR	303	RanGAP1	375	SH3BGRL3	447	TPIS
16	ITGA6	88	MAN1	160	NME3	232	PIK3IP1	304	RAP1AB	376	SHANK1	448	Tropomyosin 3
17	IQGAP1	89	MANF	161	nNOS	233	PIN	305	Rbm15	377	SHC1	449	Twist-1
18	IQGAP2	90	Mannosidase II	162	Noelin	234	PISD	306	RCL	378	SHIP	450	TRPS1
19	IRE1	91	MAP1A	163	Non-muscle Actin	235	PKLR	307	Reg1A	379	SHMT1	451	Trypsinogen-2
20	IRS2	92	MAPRE1	164	Myosin IIA	236	PLA2G1B	308	Reg3A	380	SHP-1	452	Trypsin Pan
21	ISOC2	93	MARCKS	165	Notch-2	237	Plakophilin 1	309	RHOC	381	Siglec-1	453	WRS
22	ITGB4BP	94	MASP3	166	Notch-2 ICD	238	Plastin L	310	RhoGDI	382	SIGLEC14	454	TSR2
23	ITIH1	95	MBD2	167	NPAS3	239	PLC-gamma 1	311	RNASE1	383	SIM2	455	TUBA6
24	ITIH2	96	MBP	168	NPM1	240	Pleckstrin	312	RNH1	384	SIRP beta 1	456	TWF2
25	ITIH3	97	MCAM	169	NQO2	241	Plectin	313	RNASET2	385	Six3	457	TXNDC4
26	ITIH4 a	98	Mcl-1	170	NT5C3	242	Plexin B1	314	RKIP	386	SLC38A10	458	TXNDC5
27	JAM-A	99	MCM	171	NUCB1	243	Plexin B2	315	POLR2A	387	SLITRK1	459	TXNRD2
28	JARID2	100	MCM5	172	NUP98	244	PLOD1	316	RNASE4	388	SLURP1	460	UBE2D3
29	KPNB1	101	MCMP2	173	OBCAM	245	PLOD2	317	RNASE6	389	SMA	461	Ube2L3
30	Keratin 36	102	MDH1	174	OIT3	246	PLS3	318	RPL10	390	SMC4	462	UBE2N
31	Keratin 38	103	MDH2	175	Olfactomedin-2	247	Plxdc2	319	RPL10A	391	SMPD4	463	Ubiquitin
32	KHSRP	104	ME1	176	OTC	248	PNP	320	RPL11	392	SOD1	464	UCH-L1
33	KIAA0319L	105	MEP1A	177	Orosomucoid 2	249	POR	321	RPL12	393	SOD2	465	UFM 1
34	KIAA1468	106	Metallothionein	178	ORP150	250	PPCS	322	RPL14	394	SOD-3	466	UGGT
35	KIAA1967	107	Metavinculin	179	OSBP1	251	PPOX	323	RPL17	395	SOD4	467	UNC13D
36	KIF5B	108	MFAP4	180	OSCAR	252	PPP2R1B	324	RPL22	396	Somatostatin	468	UNC45A
37	Kilon	109	MFI2	181	OSM R beta	253	PPP2R4	325	RPL5	397	SORD	469	UNC5H4
38	KLK-B1	110	mGLUR5	182	Osteoadherin	254	PRCP	326	RPL7A	398	SorLA	470	UPB1
39	KMD4B	111	MGP	183	OXT	255	PRDM13	327	RPLP0	399	SOX4	471	UQCRB
40	KMT2B	112	Mimecan	184	p16 ARC	256	PRDX 1	328	RPS10	400	SP-D	472	UQCRH
41	KRT31	113	MINPP1	185	P20Sb3	257	PRELP	329	RPS11	401	Spectrin beta-5	473	URB
42	KRT72	114	MLCK	186	p23	258	PREP	330	RPS12	402	SPEN	474	URB2
43	Krt73	115	MMR	187	p39	259	PRG2	331	RPS19	403	SPINK7	475	UROC1
44	KRT82	116	MMRN1	188	P4HB	260	PRNP	332	RPS2	404	SPTBN1	476	UROD
45	KRT85	117	MN1	189	p73	261	Profilin 1	333	RPS20	405	Src	477	URP2
46	KRTDAP	118	Moesin	190	PA2G4	262	Properdin	334	RPS23	406	SREC-II	478	USP14
47	KRTHA3B	119	MP1	191	PABP	263	Prosaposin	335	RPS25	407	STAT3	479	USP5
48	KSR1	120	MPCA	192	PACS1	264	PTGDS	336	RPS28	408	Stathmin 1	480	Uteroglobin
49	LAD	121	MPO	193	PARVB	265	PSMB6	337	RPS3	409	SCP2	481	Utrophin
50	LAF4	122	MRP 1	194	PCBP1	266	PSMA3	338	RPS5	410	STI1	482	VAP-1
51	LAIR1	123	MSH6	195	PCBP2	267	PSMA5	339	RREB1	411	STOM	483	VAP-A
52	LAM b1	124	mTOR	196	PCCA	268	PSMB7	340	RSU1	412	SUCLG1	484	VCP
53	LAMA	125	MUCDHL	197	PCDH7	269	PSMD5	341	S100A1	413	SUMO3	485	VDAC1
54	LMNA	126	Multimerin 2	198	PCDX8	270	PSMB1	342	S100A11	414	Symplekin	486	Versican
55	LMNB1	127	MyBPC3	199	PCK2	271	PSMA6	343	S100A7	415	SynCAM	487	Vimentin B
56	LMNB2	128	MYH2	200	PCMT1	272	PSB2	344	S100A9	416	Syntaxin 7	488	VNN1
57	LAMA2	129	MYH6	201	PCNA	273	PSB4	345	S100P	417	TAB182	489	VSIG4
58	LAMB2	130	MYH7	202	PCPE-1	274	Protein C	346	TIM-4	418	TAGLN2	490	WDR1
59	LAMC1	131	MYHC	203	PCSK9	275	Protein Z	347	SAA4a	419	Talin1	491	WISP2
60	LAMP	132	MYL12B	204	PCYOX1	276	Prouroguanylin	348	aAmylase	420	Talin1&2	492	WNK2
61	LAMP1	133	MYL3	205	PDE1B	277	PRSS23	349	SAMSN1	421	TAX1BP3	493	YB1
62	LAMP2	134	MYO5A	206	PDIA6	278	PRSS3	350	SBP-1	422	TBCA	494	YY1
63	LAP3	135	Myoferlin	207	PDLIM1	279	PRTN3	351	SBSN	423	TCEB2	495	ZBTB4
64	LASP1	136	Myosin 18B	208	PDLIM5	280	PSMA1	352	SDF4	424	Tcf20	496	ZC3H4-N-t
65	LTBP2	137	Myotrophin	209	PDZD2	281	PSMA2	353	SDNSF	425	TCN1	497	ZC3H8
66	LCAT	138	NABC1	210	PEBP4	282	PSMA4	354	SDPR	426	TCP1 eta	498	ZDHHC18
67	LCMT2	139	NAGLU	211	PEPD	283	PSMA7	355	SCG5	427	Tenascin C	499	ZNF671
68	LDHA	140	NAP1L1	212	PER1	284	PSMB5	356	Semaphorin 6B	428	Tenascin X	500	Zyxin
69	LDHB	141	NAPRT1	213	perilipin 3	285	PSMC3	357	Semaphorin 7A	429	TFF2		
70	LEDGF	142	NASP	214	Perilipin-1	286	PSMD1	358	SEMG1	430	TGM3		
71	SPINK5	143	NCAM2	215	Periostin	287	PSMD9	359	SEMG2	431	Thioredoxin-1		
72	LILRA3	144	Nebulin	216	Peroxiredoxin 2	288	PTEN	360	Serpin A11	432	THOP1		

E. RayBio® Human Antibody Array L-5 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	A4GNT	73	CLDN1	145	F2RL1	217	ITGB8	289	NETO2	361	PSMD4	433	SPRED2
2	AAK1	74	CLDN10	146	FAM123B	218	ITLN2	290	NEUROD2	362	PTCH1	434	SPRY2
3	ABI1	75	CLDN12	147	FERMT2	219	ITM2A	291	NFAM1	363	PTGER1	435	SPRYD4
4	ACKR1	76	CLDN15	148	FLI1	220	ITM2C	292	NFATC1	364	PTGER2	436	SPTBN2
5	ADAM33	77	CLDN17	149	FOS	221	KDM4A	293	NKX2-1	365	PTGER3	437	SRPK2
6	ADAMTS3	78	CLDN19	150	FOXC1	222	KDM4C	294	NKX3-1	366	PTK6	438	STMN2
7	ADAMTS8	79	CLDN6	151	FOXD3	223	KDM5B	295	NME2	367	PTPN14	439	STXBP2
8	ADGRA2	80	CLTCL1	152	FOXF2	224	KHDRBS1	296	NNMT	368	PTPRN	440	STXBP3
9	ADGRE3	81	CNMD	153	FOXJ3	225	KIAA1303	297	NOD1	369	PTPRT	441	SULF2
10	ADGRG3	82	COMMD1	154	FOXK1	226	KLF12	298	NOMO1	370	PYCARD	442	SUSD2
11	ADIPOR1	83	COPS5	155	FOXL2	227	KLF2	299	NR1D2	371	PYGO1	443	SVEP1
12	ADNP	84	COX4I1	156	FOXP2	228	KLF5	300	NR1I3	372	RACGAP1	444	SVIL
13	ADORA2A	85	COX4I2	157	FOXP4	229	KLF6	301	NR2C1	373	RAP2B	445	SWAP70
14	ADRB1	86	CRNN	158	FRAT2	230	KPNA1	302	NR2C2	374	RARA	446	SYBU
15	ADRBK2	87	CRTC2	159	FXYD5	231	KPNA4	303	NR2E1	375	RARB	447	SYN1
16	AFAP1	88	CRTC3	160	GAB2	232	LEF1	304	NR2E3	376	RARG	448	SYP
17	AGR2	89	CRX	161	GABBR1	233	LGALS12	305	NR2F6	377	RARRES1	449	TAP2
18	AGTR1	90	CSRP2	162	GAK	234	LGI2	306	NR4A3	378	RB1	450	TBK1
19	AICDA	91	CTBP1	163	GALNT4	235	LHX1	307	NUB1	379	RBPJ	451	TBX5
20	AIRE	92	CTCF	164	GAPDHS	236	LIPI	308	NXN	380	RELB	452	TCF7
21	ANXA10	93	CUX1	165	GBX2	237	LMO4	309	OAS2	381	RHBDF2	453	TCL1A
22	ANXA13	94	CX3CR1	166	GCHFR	238	LOXL3	310	OCLN	382	RHEB	454	TCL1B
23	APBA3	95	CYTH1	167	GFI1	239	LPAR2	311	ONECUT1	383	RIPK2	455	TDRD1
24	APH1A	96	DACH2	168	GJA1	240	LPAR4	312	OPA1	384	RIPK3	456	TFR2
25	APPL1	97	DACT3	169	GLI1	241	LPAR5	313	OTOR	385	RIT1	457	TGFB1I1
26	ARAF	98	DAXX	170	GLIS1	242	LPL	314	PADI2	386	RIT2	458	TIAM1
27	ARHGEF12	99	DDB2	171	GPR101	243	LPP	315	PAK1	387	RND3	459	TICAM2
28	ASCL2	100	DDIT3	172	GPR12	244	LRMP	316	PAK3	388	RNF14	460	TINAG
29	ATAD2	101	DDX17	173	GPR183	245	LRP1B	317	PALLD	389	RNF8	461	TLE1
30	ATF1	102	DDX5	174	GPR22	246	LRP5	318	PANX2	390	RORA	462	TLR5
31	ATF4	103	DDX58	175	GPR26	247	LRRK2	319	PARD3	391	RPS6KA6	463	TM4SF1
32	ATG5	104	DECR1	176	GPR34	248	MAD1L1	320	PAWR	392	RUNX1	464	TMEM59
33	ATN1	105	DGKB	177	GPR37L1	249	MAF	321	PAX5	393	RXRA	465	TMPRSS9
34	AURKB	106	DGKD	178	GPRC5A	250	MAFF	322	PAX6	394	RXRB	466	TNKS
35	AXIN2	107	DGKI	179	GPRC5B	251	MAFG	323	PCDH19	395	RXRG	467	TNS4
36	BACH1	108	DGKZ	180	GSK3A	252	MAFK	324	PCDHA1	396	SACS	468	TRAF1
37	BCR	109	DISP2	181	GUCY2C	253	MAOA	325	PDZK1	397	SALL1	469	TRAF5
38	BRCA1	110	DMPK	182	GZMK	254	MAP2	326	PEA15	398	SALL4	470	TRAF6
39	BRIX1	111	DNAH17	183	HAX1	255	MAP2K3	327	PHOX2B	399	SAMHD1	471	TRIM28
40	BTN3A2	112	DNMT1	184	HES1	256	MAP2K4	328	PIBF1	400	SATB1	472	TRIM5
41	BTRC	113	DOCK2	185	HEXIM1	257	MAP3K10	329	PIK3CB	401	SCAMP3	473	TSC2
42	C12orf5	114	DOCK3	186	HHEX	258	MAP3K11	330	PIK3CD	402	SCGB3A2	474	TSPAN2
43	C1QTNF3	115	DOK3	187	HIF1AN	259	MAP3K14	331	PIK3R2	403	SGCA	475	TSPAN9
44	C3AR1	116	DPPA2	188	HIST3H3	260	MAP3K3	332	PIK3R4	404	SGCD	476	TSPO
45	C5AR1	117	DRD1	189	HMGA1	261	MAP3K7IP1	333	PIK3R5	405	SHB	477	TWIST2
46	C6orf190	118	DRD2	190	HMGA2	262	MAP4K5	334	PINK1	406	SIGMAR1	478	UCP1
47	CARD9	119	DUSP1	191	HNF1B	263	MAPK11	335	PIWIL4	407	SIN3A	479	UCP2
48	CAV3	120	DVL1	192	HNF4G	264	MAPK7	336	PKD1	408	SLC12A2	480	VISA
49	CBLN4	121	DVL3	193	HOXB13	265	MATN1	337	PLA2G16	409	SLC16A1	481	VSIG10L
50	CCNA2	122	E2F1	194	HR	266	MATN4	338	PLCB1	410	SLC17A7	482	VWA1
51	CCND3	123	E2F2	195	HS6ST2	267	MBD3	339	PLCB3	411	SLC18A2	483	WASF1
52	CCNE2	124	EBF1	196	HSD11B2	268	MCPH1	340	PLCD3	412	SLC1A3	484	WASF3
53	CCR10	125	EBF2	197	HSF2	269	MDC1	341	PLCG2	413	SLC22A1	485	WDR5
54	CCRL1	126	EBF3	198	HSF4	270	MEGF9	342	PLD1	414	SLC22A2	486	WNT10A
55	CD1B	127	EGFL7	199	ICA1	271	MELK	343	PLD2	415	SLC27A1	487	WNT6
56	CD1C	128	EGLN1	200	ID2	272	MEN1	344	PLEKHA1	416	SLC27A2	488	XBP1
57	CD1D	129	EGLN2	201	IFITM3	273	MFN1	345	PLSCR1	417	SLC27A5	489	XG
58	CD1E	130	EGLN3	202	IFNA17	274	MGMT	346	POU3F2	418	SLC6A3	490	ZBTB17
59	CDC73	131	EIF2AK3	203	IFNA6	275	MITF	347	PPARA	419	SLC7A5	491	ZBTB7A
60	CDK8	132	EIF2AK4	204	IFNGR2	276	MLKL	348	PPARD	420	SLC8A1	492	ZEB1
61	CDKN2AIP	133	EIF4B	205	IGDCC3	277	MLX	349	PPARGC1A	421	SMAGP	493	ZEB2
62	CDKN2B	134	EIF4G1	206	IKBKB	278	MRC2	350	PPM2C	422	SMARCA5	494	ZFP90
63	CDKN2C	135	EMCN	207	IKZF1	279	MSH2	351	PPP1R1B	423	SMO	495	ZG16B
64	CDX2	136	ENAH	208	IKZF3	280	MSX2	352	PRDM16	424	SNAPIN	496	ZMIZ1
65	CEBPE	137	ENPP3	209	IL17RE	281	MTF2	353	PREX1	425	SOCS4	497	ZNF366
66	CELSR2	138	EPAS1	210	IL4I1	282	MUC19	354	PRF1	426	SOS2	498	ZNF71
67	CFTR	139	EPS8	211	IRAK1	283	MX1	355	PRKAA2	427	SOX18	499	ZSCAN10
68	CHD1L	140	ESRRG	212	IRAK2	284	MXI1	356	PRKAB2	428	SOX5	500	ZSCAN21
69	CHRM3	141	ETV1	213	IRF2BP1	285	MYOCD	357	PROKR1	429	SOX6		
70	CHRM5	142	ETV5	214	ITGA8	286	MYOD1	358	PROM2	430	SP3		
71	CHUK	143	ETV6	215	ITGA9	287	NANOS2	359	PRSS22	431	SP7		
72	CIDEC	144	EZH2	216	ITGB1BP1	288	NCOA3	360	PSENEN	432	SPIB		

F. RayBio® Human Antibody Array L-6 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	AADAC	73	CA10	145	DEFB118	217	IFT81	289	NUDT2	361	RASA1	433	SYNGR3
2	AARS1	74	CABP5	146	DEPTOR	218	IGHMBP2	290	OFD1	362	RBPMS	434	SYS1
3	AARSD1	75	CACNB3	147	DFFB	219	IGLL1	291	OPHN1	363	RFXANK	435	SYT11
4	ABCB5	76	CACNG1	148	DHRSX	220	ING5	292	OPTN	364	RGL4	436	TAOK3
5	ABI3	77	CACNG4	149	DIAPH2	221	IRAK4	293	OSBPL3	365	RGS5	437	TARBP2
6	ACHE	78	CALCR	150	DLGAP2	222	IRX4	294	OTOA	366	RGS6	438	TBC1D14
7	ADAM20	79	CALCRL	151	DLX6	223	IRX6	295	OTUB2	367	RHCE	439	TCF4
8	ADGRF3	80	CAMLG	152	DMBT1	224	IVD	296	PAK4	368	RHOA	440	TESK2
9	ADRA1B	81	CAPN3	153	DNAJC12	225	KANK1	297	PAK6	369	RMND5B	441	TET3
10	ADRA2A	82	CARD11	154	DRP2	226	KARS1	298	PALM	370	RNF11	442	TEX13B
11	ADRA2B	83	CARM1	155	DTX1	227	KCNA6	299	PANX1	371	RNF112	443	TEX264
12	ADRB2	84	CASQ1	156	DZIP3	228	KCNC3	300	PAX8	372	RNF2	444	TGIF2LX
13	ADRB3	85	CASZ1	157	E2F4	229	KCNG1	301	PAXBP1	373	RNF217	445	THAP6
14	AFTPH	86	CCDC134	158	E2F6	230	KCNH7	302	PCDH17	374	RNF26	446	TIMM10B
15	AGGF1	87	CCDC8	159	EBAG9	231	KCNIP3	303	PCDH18	375	ROBO1	447	TIMM17A
16	AGO4	88	CCDC9	160	EDN3	232	KCNS3	304	PCDHB3	376	ROM1	448	TIMM17B
17	AGTR2	89	CCDC91	161	EEFSEC	233	KIAA0355	305	PCIF1	377	RPGR	449	TMC2
18	AHCY	90	CCNA1	162	EGR4	234	KIF25	306	PCMTD2	378	RRAS2	450	TMCC2
19	AIMP1	91	CCNO	163	EHMT1	235	KIFAP3	307	PCP4	379	RRM1	451	TMED10
20	AKAP10	92	CD19	164	EHMT2	236	KIFC1	308	PDCD5	380	RRM2B	452	TMEM199
21	AKAP7	93	CD200R1L	165	EIF4E	237	KIR2DL1	309	PDCD6	381	RTN1	453	TMEM25
22	ALDH3A1	94	CD37	166	EIF5	238	KLHL17	310	PDE2A	382	RXFP1	454	TNFAIP8
23	ALDH7A1	95	CD3D	167	ELL2	239	KLHL32	311	PFDN2	383	S100A3	455	TNIP1
24	ALKBH1	96	CD72	168	EMC8	240	KLK4	312	PFDN4	384	SAE1	456	TNM2
25	ALPI	97	CDH8	169	ENDOU	241	L3MBTL2	313	PHF2	385	SCML2	457	TNM4
26	ALS2CR12	98	CDK11B	170	EPDR1	242	LHX6	314	PHOSPHO1	386	SEC13	458	TNRC6A
27	AMACR	99	CDK13	171	ERBIN	243	LILRB3	315	PHYH	387	SEC14L1	459	TRAIP
28	AMH	100	CDK3	172	ERN2	244	LNX2	316	PIAS4	388	SECISBP2L	460	TRAK1
29	AMMECR1	101	CDKN2D	173	ETFDH	245	LRFN5	317	PIN1	389	SELPLG	461	TRIAP1
30	ANKH	102	CDON	174	ETHE1	246	LRRC29	318	PITPNA	390	SEMA3F	462	TRIM23
31	ANKMY1	103	CDX1	175	ETV3	247	LSM1	319	PIWIL2	391	SENP8	463	TRIM31
32	ANXA3	104	CDYL	176	EXOC6	248	LYPD6	320	PKN2	392	SERINC2	464	TRIM7
33	ANXA9	105	CEBPZ	177	FAM161B	249	MAP2K2	321	PLCB4	393	SERPINB9	465	TSC1
34	APBB1IP	106	CEND1	178	FAM43B	250	MAP2K5	322	PLEKHA2	394	SERPINI2	466	TSC22D1
35	APTX	107	CFAP410	179	FAM83C	251	MAPK14	323	PLSCR4	395	SETD7	467	TSEN34
36	ARIH2	108	CHEK1	180	FAM9B	252	MBD3L1	324	PMVK	396	SFXN2	468	TSPAN7
37	ARL4A	109	CHEK2	181	FANCA	253	MED28	325	PNLIP	397	SIAE	469	TTC14
38	AS3MT	110	CHRM2	182	FBXL7	254	MEOX2	326	POLG	398	SIAH2	470	TUB
39	ASS1	111	CHRNB3	183	FBXO11	255	MERIT40	327	POLG2	399	SIN3B	471	TUBA1A
40	ATF2	112	CIB2	184	FBXO27	256	MID1IP1	328	PPCDC	400	SIX6	472	UBE2D1
41	ATG4B	113	CKAP4	185	FBXO28	257	MKI67	329	PPIG	401	SLBP	473	UBE2D4
42	ATP5D	114	CLDN8	186	FBXO34	258	MKKS	330	PPIL1	402	SLC12A1	474	UBR5
43	ATP6V0A4	115	CLN6	187	FBXO7	259	MLPH	331	PPIL2	403	SLC13A1	475	UBXN2A
44	ATP6V0C	116	CLOCK	188	FBXW7	260	MMAA	332	PPM1B	404	SLC25A2	476	USH1C
45	ATP6V1B2	117	CLPX	189	FCER1G	261	MOAP1	333	PPM1G	405	SLC35A2	477	USP13
46	ATP6V1C1	118	CMPK1	190	FFAR2	262	MOB1B	334	PPM1L	406	SLC35A3	478	USP36
47	ATP6V1C2	119	CNKSR1	191	FKBP6	263	MPP2	335	PPP1R10	407	SLC6A18	479	USP38
48	ATP6V1D	120	CNR1	192	FKBP7	264	MRPL45	336	PPP1R8	408	SLIT2	480	VANGL2
49	ATP6V1E1	121	CNR2	193	GAS2	265	MRPS25	337	PPP1R9B	409	SMPDL3A	481	WASL
50	ATP8B4	122	COG3	194	GAS7	266	MSH5	338	PRDM5	410	SNAPC2	482	WNT2B
51	ATRIP	123	COL4A3BP	195	GCNT1	267	MSRB2	339	PRKAB1	411	SNIP1	483	WNT7A
52	ATXN7L1	124	COPZ2	196	GFPT1	268	MTFR1	340	PRKAR1B	412	SNPH	484	WNT9B
53	AUP1	125	COQ7	197	GGPS1	269	MTRR	341	PRKCB	413	SNX8	485	XK
54	BAG4	126	COQ8A	198	GPATCH2	270	MYBPC1	342	PRKCG	414	SPINK4	486	ZBTB20
55	BBOX1	127	CORO2A	199	GPR150	271	MYL2	343	PRKD3	415	SPPL2A	487	ZCCHC4
56	BBS2	128	COX5B	200	GPR19	272	MYO7A	344	PROKR2	416	SRCIN1	488	ZFHX2
57	BCAP29	129	CPLX2	201	GPR63	273	MYT1	345	PRTFDC1	417	SRFBP1	489	ZIM2
58	BCAP31	130	CPNE1	202	GRAP	274	MZB1	346	PSG1	418	SRI	490	ZNF219
59	BCKDK	131	CRHR1	203	GRB14	275	N4BP2	347	PSG6	419	SRPK1	491	ZNF232
60	BHLHE41	132	CRIP2	204	GRK7	276	NCF2	348	PSPH	420	ST3GAL2	492	ZNF280A
61	BLZF1	133	CRY1	205	GSTT2B	277	NCKIPSD	349	PTGFRN	421	STAC	493	ZNF280B
62	BOK	134	CSRP3	206	H2AFY2	278	NEMP1	350	PTP4A2	422	STK17B	494	ZNF282
63	BPI	135	CTHRC1	207	HAS1	279	NFIB	351	PTPN9	423	STK31	495	ZNF384
64	BRF1	136	CTNNBIP1	208	HDAC4	280	NLGN3	352	PTPRU	424	STX1B	496	ZNF410
65	BRIP1	137	CYB561	209	HEMK1	281	NLK	353	PTS	425	STX3	497	ZNF483
66	BSND	138	CYGB	210	HES6	282	NLRP5	354	RAB11A	426	STX5	498	ZNF512B
67	BST2	139	CYP7A1	211	HLA-DQA1	283	NMT2	355	RAB27A	427	STXBP1	499	ZP2
68	BTBD9	140	DACH1	212	HOXB9	284	NPHP1	356	RAB5IF	428	SUB1	500	ZWINT
69	BUB1	141	DARS1	213	HPCA	285	NRAS	357	RABGEF1	429	SULT1A1		
70	BUB3	142	DCDC2	214	HSF1	286	NRG4	358	RAD18	430	SUN1		
71	C1D	143	DCTPP1	215	IFNA4	287	NSL1	359	RAP1A	431	SUN2		
72	C20orf96	144	DDHD1	216	IFT122	288	NUBPL	360	RAP2A	432	SYN3		

G. RayBio® Human Antibody Array L-7 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	AAMDC	73	CBX1	145	DDB1	217	FN3KRP	289	MSH4	361	PPID	433	SRRM4
2	ABCC8	74	CBX3	146	DDRGK1	218	FTSJ3	290	MTCOX3	362	PPP1R13B	434	SS18
3	ABCF2	75	CBX8	147	DDX19A	219	FXYD2	291	MTFR2	363	PPP1R3C	435	SSB
4	ABHD11	76	CCDC114	148	DDX19B	220	FXYD3	292	MUC15	364	PPP3CB	436	SSPN
5	ABHD16A	77	CCDC124	149	DDX24	221	G6PC	293	MYBPH	365	PRPH	437	SSX2
6	ACOT9	78	CCDC40	150	DDX39A	222	GADD45B	294	NAB2	366	PSMC2	438	ST8SIA6
7	ACSF2	79	CCDC47	151	DDX47	223	GALK2	295	NCF1	367	PSMC4	439	STARD10
8	ACTL6A	80	CCDC6	152	DDX50	224	GATAD2A	296	NCOA4	368	PSMC5	440	STRADA
9	ACTL6B	81	CCIN	153	DDX53	225	GATAD2B	297	NDN	369	PSMC6	441	SUPT3H
10	ACY3	82	CCM2L	154	DDX56	226	GBAS	298	NDUFA10	370	PSMD13	442	SUPT7L
11	ADAMTSL4	83	CCND2	155	DENR	227	GCA	299	NDUFA13	371	PSMD14	443	SZRD1
12	ADCY5	84	CCNF	156	DERL1	228	GFPT2	300	NDUFA2	372	PSMD2	444	TAF4B
13	ADCY7	85	CCNT1	157	DGCR8	229	GHITM	301	NDUFA3	373	PSMD6	445	TAF7L
14	ADD1	86	CCT5	158	DIMT1L	230	GIMAP1	302	NDUFA5	374	PSMD7	446	TANGO2
15	ADRM1	87	CD2BP2	159	DLEC1	231	GIMAP6	303	NDUFB5	375	PYGM	447	TC2N
16	AFAP1L2	88	CDC23	160	DLGAP4	232	GJA8	304	NDUFB7	376	R3HDM2	448	TET1
17	AFF4	89	CDC42EP4	161	DNAH8	233	GJA9	305	NDUFB8	377	RAB18	449	TFAM
18	AGO3	90	CDCA5	162	DNAJB4	234	GJB6	306	NDUFB9	378	RAB38	450	THAP12
19	AHCTF1	91	CDCA8	163	DNAJC8	235	GLMN	307	NDUFC1	379	RABEP1	451	TLX2
20	AHNAK2	92	CDK9	164	DNAL1	236	GNA15	308	NDUFS2	380	RAC3	452	TMEM106C
21	AIPL1	93	CEACAM16	165	DNTTIP2	237	GNB5	309	NDUFS3	381	RAD9B	453	TMEM8B
22	ANKEF1	94	CEACAM21	166	DPF2	238	GNGT2	310	NDUFS6	382	RASL10A	454	TMPRSS2
23	ANKRD30B	95	CENPI	167	DPH5	239	GNL1	311	NDUFV2	383	RASSF1	455	TNN
24	AP2A2	96	CEP55	168	DR1	240	GOLGA1	312	NEMF	384	RASSF5	456	TOMM40L
25	AP2B1	97	CGAS	169	DRAP1	241	GORASP2	313	NOG	385	RBL1	457	TPM2
26	APBB1	98	CGGBP1	170	DROSHA	242	GPN1	314	NR5A2	386	RBM6	458	TRABD
27	APEH	99	CHCHD5	171	DUSP26	243	GRPEL1	315	NRSN2	387	RCAN3	459	TRIB3
28	APOBR	100	CHD4	172	ECI2	244	GSTA3	316	NUDCD1	388	RCVRN	460	TRIM13
29	ARHGAP12	101	CHD5	173	EIF2D	245	GSTM3	317	NUDT13	389	REM1	461	TRIM36
30	ARHGAP4	102	CHML	174	EIF3M	246	GTF2A1L	318	OARD1	390	RFPL2	462	TRIM42
31	ARHGEF1	103	CHMP2A	175	EIF4ENIF1	247	GYS2	319	OAZ2	391	RHOBTB2	463	TRIM43
32	ARHGEF6	104	CIP2A	176	EIF4H	248	H1F0	320	OCIAD1	392	RIPK4	464	TRIM55
33	ARIH1	105	CISD2	177	ELAC2	249	HAP1	321	OCIAD2	393	RNF115	465	TRMO
34	ARL1	106	CLASP1	178	EN1	250	HAUS1	322	OGT	394	RSPH14	466	TRMT10C
35	ARL3	107	CLCC1	179	ENDOD1	251	HAUS7	323	PACRG	395	RTN3	467	TRMU
36	ARL6	108	CLIC3	180	ENOX2	252	HDAC11	324	PAQR6	396	RTP4	468	TROVE2
37	ARMC1	109	CLPP	181	EPB41L3	253	HKDC1	325	PARP12	397	SARG	469	TSPAN17
38	ASB11	110	CLYBL	182	EPB42	254	HLA-E	326	PBX1	398	SCGB2A1	470	TTC16
39	ASB12	111	CMC1	183	EPS8L2	255	HOPX	327	PBXIP1	399	SCNN1B	471	TTC23
40	ASB6	112	CNPY3	184	EPS8L3	256	HS3ST6	328	PCDH12	400	SEC14L4	472	TTC6
41	ASMTL	113	CNTNAP4	185	ERCC6L	257	HYPK	329	PCDHA10	401	SEL1L3	473	TUBA1B
42	ATG13	114	COA6	186	ESPN	258	IFT57	330	PCDHAC1	402	SEPTIN12	474	TUBB4A
43	ATG2A	115	COBLL1	187	ETFB	259	JCAD	331	PCDHAC2	403	SHC2	475	TUBE1
44	ATP13A3	116	COL5A3	188	EURL	260	JPH3	332	PCDHGA4	404	SIGLEC12	476	UBA52
45	ATP1B2	117	COL8A1	189	EXOC5	261	KCNQ1	333	PCDHGB1	405	SLC12A3	477	UBAP1
46	ATP1B3	118	COLCA1	190	EXPH5	262	KCTD9	334	PCDHGB3	406	SLC15A2	478	UBE2J1
47	ATP1B4	119	COMMD10	191	F2RL3	263	KIF20B	335	PCDHGC4	407	SLC16A6	479	UGT1A6
48	ATP2A1	120	COPG1	192	FADS3	264	KIF5C	336	PCED1A	408	SLC1A5	480	UQCRC1
49	ATP6V0D1	121	COPS2	193	FAIM	265	KIF9	337	PCYT1A	409	SLC20A1	481	UQCRC2
50	ATP6V0E2	122	CORO1B	194	FAM107A	266	KLC3	338	PDHA1	410	SLC23A2	482	USP32
51	ATPAF2	123	COX5A	195	FAM111B	267	KLC4	339	PDZRN4	411	SLC26A1	483	VAV2
52	ATXN10	124	COX6B1	196	FAM129B	268	KNSTRN	340	PELI3	412	SLC2A8	484	WBP1L
53	ATXN2	125	CREB3L2	197	FAM13C	269	LACTB	341	PFKFB3	413	SLC2A9	485	WDR23
54	ATXN7L2	126	CRISPLD1	198	FAM175B	270	LCN8	342	PFTK1	414	SLC35E3	486	WDR34
55	BCAS2	127	CRISPLD2	199	FAM181B	271	LDOC1	343	PHACTR1	415	SLC36A4	487	WDR35
56	BCAS3	128	CRMP1	200	FAM217B	272	LETMD1	344	PHF11	416	SLC38A2	488	WDTC1
57	BRME1	129	CRTAP	201	FAM45BP	273	LYRM1	345	PIK3C3	417	SLC3A1	489	WHSC1
58	BRWD1	130	CRYM	202	FAM53C	274	LZTS2	346	PIP5K1B	418	SLC43A1	490	WNT1
59	BTF3L4	131	CTDSPL	203	FAM96B	275	MAGEA10	347	PKD2	419	SLC44A1	491	WNT2
60	BZW2	132	CTNNA3	204	FAM98B	276	MAGEB10	348	PKD2L2	420	SLC44A3	492	WNT5B
61	C12orf57	133	CTR9	205	FASTKD3	277	MED19	349	PLA2G4F	421	SLC4A1AP	493	WRB
62	C1QTNF6	134	CWF19L1	206	FBXL16	278	MGST1	350	PLCD1	422	SLC7A2	494	XP32
63	C20orf144	135	CYP1B1	207	FBXL2	279	MGST2	351	PLCL1	423	SLC7A7	495	ZBED6CL
64	C5orf22	136	CYP24A1	208	FBXO10	280	MIA3	352	PLEKHA4	424	SLC9A1	496	ZDHHC19
65	C7orf25	137	CYP2A13	209	FBXO16	281	MIS18A	353	PLEKHA8	425	SLCO2B1	497	ZGPAT
66	C9orf78	138	CYP2E1	210	FBXO33	282	MKL1	354	PMEL	426	SLCO3A1	498	ZNF14
67	CAMK2B	139	DAP3	211	FBXO39	283	MLF2	355	PNOC	427	SMG8	499	ZPBP2
68	CAND1	140	DAPK2	212	FBXO42	284	MLLT3	356	POLB	428	SNCAIP	500	ZSWIM3
69	CAPN6	141	DBNL	213	FDX1	285	MORC1	357	POLR2B	429	SNRPD1		
70	CAPN9	142	DBR1	214	FDXR	286	MROH8	358	POLR2C	430	SNTB1		
71	CAPRIN1	143	DCTN3	215	FGD6	287	MRPL47	359	POLR2D	431	SNW1		
72	CAPRIN2	144	DCTN6	216	FLVCR1	288	MRPL58	360	PPHLN1	432	SPECC1L		

H. RayBio® Human Antibody Array L-8 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	AASDHPPT	73	HPS3	145	MSC	217	PLP2	289	SCFD1	361	TCAP	433	WBSCR22
2	ABHD12B	74	HRASLS2	146	MX2	218	PNKP	290	SCN3B	362	TCEAL3	434	WDR4
3	ACADS	75	HSDL2	147	MYH11	219	PNMA2	291	SCO1	363	TCTN3	435	WDR44
4	ACADSB	76	HSF2BP	148	MYO10	220	POGK	292	SCRT2	364	TEP1	436	WDR54
5	ACADVL	77	HSFY1	149	MYO9B	221	POLQ	293	SCYL1	365	TGM6	437	WDR64
6	AGXT2	78	HTATIP2	150	NAA50	222	POPDC2	294	SEC14L3	366	THYN1	438	WDR77
7	ALAS2	79	HTATSF1	151	NACC1	223	PPIL3	295	SELENON	367	TIMM8A	439	WNK3
8	ALDH18A1	80	IER5	152	NAP1L2	224	PPME1	296	SETBP1	368	TIPRL	440	ZADH2
9	ALDH1L1	81	IFIT1	153	NCAPH	225	PPP1R18	297	SFTPA1	369	TM9SF1	441	ZBTB12
10	ALDH3A2	82	IFIT2	154	NDE1	226	PPP1R7	298	SH3BGR	370	TM9SF3	442	ZBTB2
11	ALDH5A1	83	IGHG4	155	NDRG3	227	PPP2R1A	299	SHROOM2	371	TMCC3	443	ZBTB26
12	ALDH8A1	84	IPP	156	NDRG4	228	PPP2R2A	300	SKAP2	372	TMED2	444	ZBTB3
13	AMDHD1	85	KCNH2	157	NECAP2	229	PPP4R2	301	SLA2	373	TMEM109	445	ZBTB45
14	ANKRD9	86	KCNH3	158	NEK3	230	PRMT7	302	SLC13A2	374	TMEM115	446	ZBTB46
15	AQP12A	87	KCNH6	159	NFKBIL1	231	PROSC	303	SLC13A3	375	TMEM132A	447	ZBTB9
16	ARF1	88	KCNK12	160	NFYA	232	PRPSAP2	304	SLC16A8	376	TMEM184B	448	ZC3H3
17	ARG2	89	KCNK13	161	NIFK	233	PRRC1	305	SLC1A4	377	TMEM260	449	ZDHHC11
18	ARHGEF25	90	KCTD13	162	NIN	234	PRRG1	306	SLC25A14	378	TMEM43	450	ZDHHC13
19	ARHGEF26	91	KCTD4	163	NKX3-2	235	PRSS16	307	SLC25A19	379	TMEM59L	451	ZDHHC14
20	ARPC1A	92	KDM2A	164	NLE1	236	PRSS21	308	SLC25A22	380	TMEM9	452	ZFAND1
21	ASB3	93	KIAA0825	165	NLRC4	237	PSG4	309	SLC25A29	381	TMEM91	453	ZFP28
22	ASPA	94	KIAA1755	166	NOLC1	238	PSMG1	310	SLC25A32	382	TMOD2	454	ZFP64
23	ASPN	95	KIAA1958	167	NOP9	239	PSMG3	311	SLC25A39	383	TMPRSS4	455	ZFP91
24	ATP10D	96	KLHL12	168	NOVA1	240	PTGR2	312	SLC26A5	384	TNRC6B	456	ZFYVE19
25	ATP11C	97	KLHL40	169	NRIP3	241	QTRT1	313	SLC2A6	385	TOMM70A	457	ZFYVE28
26	BCL6B	98	KLHL41	170	NSMCE1	242	RAB15	314	SLC35C1	386	TOR1AIP2	458	ZIC5
27	BEST4	99	KLHL42	171	NTAN1	243	RAB3B	315	SLC35F6	387	TOX2	459	ZIM3
28	BRD4	100	KLHL5	172	NUDCD2	244	RAB5B	316	SLC37A1	388	TP53RK	460	ZKSCAN1
29	C2CD2L	101	KRT23	173	NUDT11	245	RAB5C	317	SLC39A2	389	TPD52L2	461	ZMYM2
30	CALCOCO2	102	KRT6A	174	NUTF2	246	RAB6C	318	SLC39A7	390	TRAF3IP3	462	ZMYM3
31	CASP4	103	KRT6C	175	NXF1	247	RABEP2	319	SLC45A4	391	TRAPPC2L	463	ZMYM5
32	CDC27	104	KRT76	176	OGFR	248	RABGAP1	320	SLC4A10	392	TRAPPC6B	464	ZMYM6
33	CDH20	105	LCN15	177	OLFML1	249	RABGGTA	321	SLC7A3	393	TRIM29	465	ZNF100
34	CDH24	106	LEPREL1	178	OPN1MW	250	RALY	322	SLCO5A1	394	TRIM3	466	ZNF101
35	CDH26	107	LHX2	179	OSBPL9	251	RALYL	323	SLMAP	395	TRIM33	467	ZNF117
36	CDH9	108	LIMCH1	180	OSER1	252	RANBP3	324	SMARCA2	396	TRIM34	468	ZNF140
37	CENPB	109	LIN7A	181	OSTF1	253	RANBP9	325	SMARCC1	397	TRIM56	469	ZNF195
38	CEP41	110	LIN7C	182	OTUD6B	254	RBCK1	326	SMARCD1	398	TRIO	470	ZNF205
39	CLCN3	111	LMCD1	183	OVGP1	255	RBM11	327	SNAPC5	399	TRIP13	471	ZNF248
40	CLCN5	112	LPXN	184	OXER1	256	RBM14	328	SNX10	400	TRPM3	472	ZNF250
41	CLCN7	113	LRRC14	185	OXR1	257	RBM3	329	SNX15	401	TSC22D2	473	ZNF264
42	CLDN18	114	LRRC2	186	P4HTM	258	RBM45	330	SNX9	402	TSNAX	474	ZNF275
43	CLMN	115	LRRC25	187	PACSIN1	259	RBM7	331	SON	403	TSPAN10	475	ZNF285
44	CTIF	116	LRRC59	188	PACSIN2	260	RBP1	332	SOX12	404	TSPAN3	476	ZNF300
45	DHX34	117	LUC7L2	189	PACSIN3	261	RCN1	333	SP140	405	TSPAN31	477	ZNF319
46	DHX35	118	LYG2	190	PADI3	262	RECQL	334	SPAG11B	406	TSPAN5	478	ZNF320
47	DHX37	119	LYPLAL1	191	PAGE1	263	RFPL3	335	SPC24	407	TSSC1	479	ZNF335
48	DIP2A	120	LZTFL1	192	PAPLN	264	RFX2	336	SPPL2B	408	TSSC4	480	ZNF33A
49	DMTN	121	MAK10	193	PCDHB16	265	RGS22	337	SPPL3	409	TSTD1	481	ZNF354C
50	DYNC1LI1	122	MAP1B	194	PCDHB2	266	RHAG	338	SRRM2	410	TTC12	482	ZNF407
51	DYSF	123	MAP3K7CL	195	PCDHB5	267	RHBDL2	339	SSRP1	411	TTC17	483	ZNF451
52	EEF1A2	124	MAP7	196	PCM1	268	RHOF	340	ST6GALNAC2	412	TTC19	484	ZNF462
53	EVI2B	125	MAP7D2	197	PCMTD1	269	RHOG	341	STAU1	413	TTLL12	485	ZNF501
54	EXOG	126	MAPRE2	198	PCYOX1L	270	RIC8A	342	STOML1	414	TUFM	486	ZNF502
55	FAM71D	127	MARK3	199	PDAP1	271	RNF114	343	STOML2	415	TWSG1	487	ZNF512
56	FBXL5	128	MAST4	200	PDE4D	272	RNF146	344	SUPT16H	416	TXNDC16	488	ZNF543
57	GABRD	129	MBNL2	201	PDIA2	273	RNF25	345	SUPT5H	417	TXNL1	489	ZNF558
58	GLIS3	130	MBTD1	202	PDIA5	274	RNF38	346	SUSD6	418	UBAP2L	490	ZNF580
59	GPS2	131	MED8	203	PDLIM4	275	RNPEPL1	347	SYNE1	419	UBLCP1	491	ZNF599
60	GRIP1	132	MFAP3L	204	PDPR	276	RPAP3	348	SYNGR1	420	UBTF	492	ZNF606
61	GSC2	133	MIS12	205	PDS5A	277	RRAGB	349	SYT4	421	UBXN1	493	ZNF644
62	HCFC2	134	MOB4	206	PDXDC1	278	RSL1D1	350	SYT5	422	UBXN10	494	ZNF665
63	HDDC2	135	MORC3	207	PGRMC1	279	RUNDC3A	351	TADA2A	423	UBXN4	495	ZNF684
64	HDGFRP2	136	MOXD1	208	PHF21A	280	RWDD4	352	TAPT1	424	UCHL5	496	ZNF799
65	HDHD2	137	MPZL2	209	PHF6	281	SAFB2	353	TATDN1	425	UEVLD	497	ZNF823
66	HDHD3	138	MRGPRX3	210	PHGR1	282	SAMM50	354	TBC1D10B	426	USP10	498	ZNF93
67	HDLBP	139	MRPL37	211	PHLDB2	283	SAR1A	355	TBC1D2	427	USP18	499	ZNHIT3
68	HEBP1	140	MRPL40	212	PIN4	284	SATB2	356	TBC1D9B	428	USP26	500	ZW10
69	HLA-H	141	MRPS22	213	PITPNB	285	SBNO1	357	TBCC	429	VGLL2		
70	HMCN1	142	MRPS23	214	PITRM1	286	SCAF8	358	TBCE	430	VPS16		
71	HMG20A	143	MRPS26	215	PLEKHF2	287	SCAMP5	359	TBRG4	431	VPS53		
72	HOMEZ	144	MRPS36	216	PLLP	288	SCAPER	360	TBX10	432	VSTM2L		

I. RayBio® Human Antibody Array L-9 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	AARS2	73	CDK5RAP2	145	ELOVL5	217	HSD17B6	289	NSDHL	361	SH3GLB2	433	XYLB
2	ABCA10	74	CDK7	146	EMC2	218	HSPA1L	290	NT5C1A	362	SHISA5	434	YARS
3	ABCC11	75	CDKN1C	147	EMID1	219	HYI	291	NT5C3L	363	SIPA1L1	435	YARS2
4	ABCG5	76	CDYL2	148	ENOPH1	220	ICMT	292	NUDT12	364	SKIL	436	ZBTB11
5	ACOX3	77	CELA1	149	ENOSF1	221	IDH2	293	NUDT9	365	SLC1A2	437	ZFP14
6	ACTN3	78	CHAF1B	150	EPX	222	IFI27L2	294	NUP188	366	SLC25A16	438	ZFP57
7	ACTR3C	79	CHDH	151	ERCC8	223	IFNA7	295	NXF5	367	SLC27A6	439	ZFP92
8	ADAM30	80	CHERP	152	ERF	224	IGSF5	296	OLAH	368	SLC36A2	440	ZIK1
9	ADAR	81	CHMP4C	153	EVX1	225	IPKB	297	OR10C1	369	SLC36A3	441	ZNF154
10	ADARB2	82	CHRD	154	EVX2	226	IRG1	298	OR2AK2	370	SLC38A1	442	ZNF200
11	ADCY2	83	CHRNA4	155	EXOSC2	227	IRX1	299	OR2C3	371	SLC38A3	443	ZNF226
12	ADCY4	84	CHRNB2	156	EXOSC4	228	IRX2	300	OR4C15	372	SLC4A4	444	ZNF251
13	AER61	85	CHST10	157	FAM213	229	IRX3	301	OR4K1	373	SLC52A3	445	ZNF286A
14	AF10	86	CHST11	158	FANCC	230	JAZF1	302	OR52I2	374	SLC5A1	446	ZNF30
15	AGAP1	87	CHST12	159	FANCG	231	JPH1	303	OR5D13	375	SLC7A9	447	ZNF317
16	AHCYL1	88	CIB3	160	FANCL	232	KCNA1	304	OR5V1	376	SLC8A3	448	ZNF334
17	AHCYL2	89	CKMT2	161	FIS1	233	KCNC1	305	OR6K2	377	SLC9A3	449	ZNF404
18	AIG1	90	CLCN2	162	FKBP11	234	KCNG4	306	OR6T1	378	SLC9A7	450	ZNF41
19	AKAP11	91	CLDN23	163	FOXB1	235	KIAA1024	307	ORC3L	379	SLU7	451	ZNF417
20	AL2S7	92	CLK1	164	FOXI1	236	KIFC2	308	OXA1L	380	SLX1A	452	ZNF418
21	ALDH1A2	93	CLK4	165	FOXL1	237	KLF1	309	OXSM	381	SMAD6	453	ZNF419
22	ALDH1L2	94	CLNS1A	166	FPGS	238	LARS2	310	P4HA2	382	SMYD1	454	ZNF420
23	ALDH6A1	95	CMAS	167	FSCN2	239	LASS6	311	PAPSS1	383	SNRPB	455	ZNF431
24	ALX3	96	CNKSR2	168	FTCD	240	LIAS	312	PARD6A	384	SNX3	456	ZNF433
25	AMCASE	97	COL11A2	169	FXR1	241	LIG3	313	PARP4	385	SOAT2	457	ZNF440
26	AMD1	98	COL12A1	170	GABRA5	242	LIMK1	314	PC	386	SQLE	458	ZNF454
27	AMT	99	COL14A1	171	GABRB2	243	LPCAT2	315	PCBD2	387	SRR	459	ZNF486
28	ANGEL1	100	COL4A4	172	GABRE	244	LRRC37A3	316	PDE1A	388	SRRM1	460	ZNF517
29	ANKRA2	101	COL5A2	173	GABRQ	245	MAD4	317	PDHX	389	SSR4	461	ZNF527
30	AP1G2	102	COL7A1	174	GABRR2	246	MAGEL2	318	PDXK	390	ST3GAL4	462	ZNF529
31	APOL4	103	COQ2	175	GAL3ST3	247	MAN2A2	319	PECR	391	STX17	463	ZNF534
32	APOL5	104	COX10	176	GAL3ST4	248	MAN2B2	320	PELO	392	STX18	464	ZNF546
33	APOL6	105	COX11	177	GALM	249	MANBA	321	PGM2	393	SUCLA2	465	ZNF548
34	APRT	106	COX17	178	GALNT12	250	MAP3K1	322	PGM2L1	394	SUCLG2	466	ZNF554
35	ARHGAP17	107	CPSF2	179	GALNTL4	251	MAP3K9	323	PI4K2B	395	SUV39H1	467	ZNF560
36	ART1	108	CRYL1	180	GCAT	252	MARK4	324	PIGG	396	SUV39H2	468	ZNF561
37	ATP12A	109	CSAD	181	GCLM	253	MAST2	325	PIGP	397	SUV420H1	469	ZNF562
38	ATP6V0A1	110	CSGALNACT2	182	GDPD3	254	MAT1A	326	PINX1	398	SV2B	470	ZNF564
39	ATP6V1G2	111	CSTF3	183	GGCX	255	MCCC2	327	PKIA	399	SV2C	471	ZNF565
40	ATP7A	112	CTRB1	184	GGT2	256	ME2	328	PKN3	400	TACR3	472	ZNF566
41	ATP8B2	113	CTRL	185	GGT7	257	MEF2D	329	PKP2	401	TAPBP	473	ZNF567
42	ATXN7	114	CUEDC1	186	GLRB	258	MGAT4A	330	PNPO	402	TBL3	474	ZNF570
43	AUH	115	CUL4B	187	GLYAT	259	MIOX	331	POFUT1	403	TFDP2	475	ZNF582
44	AVEN	116	CYB5R1	188	GMPPA	260	MRI1	332	POLR3E	404	THOC1	476	ZNF583
45	B4GALNT1	117	CYB5R2	189	GMPR	261	MRPL1	333	POLR3H	405	THOC3	477	ZNF584
46	B4GALNT3	118	CYB5R3	190	GMPR2	262	MRPL20	334	POU3F1	406	THOC7	478	ZNF587
47	BBS1	119	CYBA	191	GNA14	263	MRPL23	335	PPAT	407	THTPA	479	ZNF607
48	BCKDHA	120	CYP21A2	192	GNPDA1	264	MRPL24	336	PPP1R3A	408	TKTL1	480	ZNF610
49	BNIP1	121	CYP39A1	193	GNPDA2	265	MRPL34	337	PRDM12	409	TMLHE	481	ZNF624
50	BTG2	122	CYTH4	194	GNPNAT1	266	MRPL9	338	PRDM9	410	TRIM37	482	ZNF643
51	BTG4	123	DCPS	195	GORAB	267	MRPS10	339	PTAFR	411	TRPC5	483	ZNF674
52	BTNL9	124	DCTD	196	GPRC6A	268	MRPS21	340	PTTG2	412	TUBB6	484	ZNF675
53	BUD31	125	DDX46	197	GPT2	269	MTHFD1	341	PWP2	413	UAP1L1	485	ZNF676
54	C1QTNF2	126	DERL2	198	GRIA1	270	MTHFD1L	342	QARS	414	UBA6	486	ZNF680
55	C1QTNF7	127	DHCR24	199	GRIN2D	271	MTHFD2	343	RAB39B	415	UBE2J2	487	ZNF682
56	C21orf58	128	DHDH	200	GTF2F2	272	MTHFS	344	RAD1	416	UBE4A	488	ZNF689
57	C3HC4	129	DHRS3	201	GUK1	273	MTMR2	345	RAD9A	417	UBE4B	489	ZNF709
58	CABLES2	130	DHTKD1	202	HADH	274	MVD	346	RAG1	418	UCK1	490	ZNF714
59	CACNA1G	131	DLAT	203	HADHB	275	MYBL2	347	RASGRF1	419	UCKL1	491	ZNF764
60	CACNA2D4	132	DNAJB12	204	HERC5	276	MYH4	348	RBP2	420	UCN2	492	ZNF765
61	CACNB2	133	DPF1	205	HIBCH	277	MYL6B	349	RCAN1	421	UCRC	493	ZNF778
62	CACNG6	134	DPM1	206	HIST2H2AA3	278	MYLK4	350	RFC3	422	UFD1L	494	ZNF780B
63	CACNG8	135	DPM2	207	HIST2H2AC	279	NAGPA	351	RFC4	423	UMPS	495	ZNF785
64	CACYBP	136	DTYMK	208	HLA-DPA1	280	NANS	352	RNASEL	424	VAMP4	496	ZNF91
65	CaMK1b	137	DUSP8	209	HLA-DQA2	281	NARS2	353	RNGTT	425	VASP	497	ZNF98
66	CAMKK2	138	DUT	210	HLCS	282	ND5	354	RPA3	426	VAV3	498	ZP1
67	CARD18	139	DYNC1I1	211	HMBS	283	ND6	355	RPL18A	427	VMP1	499	ZSCAN1
68	CBX6	140	DYRK1B	212	HMGCL	284	NFATC4	356	RPL23A	428	VPS37B	500	ZXDA
69	CDC16	141	EBP	213	HMGCS1	285	NMNAT3	357	SEMA3D	429	WDR33		
70	CDC26	142	EIF2B3	214	HOGA1	286	NNT	358	SEPHS2	430	WIBG		
71	CDC34	143	ELMO3	215	HS3ST3A1	287	NPAS2	359	SETD1B	431	WIPI1		
72	CDCA4	144	ELOA3	216	HSD17B4	288	NRBF2	360	SETD2	432	XRCC3		

J. RayBio® Human Antibody Array L-10 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	A4GALT	73	CASQ2	145	EIF3D	217	IGSF8	289	OLFM4	361	PXMP4	433	SSR1
2	ABCB9	74	CBFB	146	EIF3G	218	IMPA1	290	ORAI3	362	RAB11B	434	STAG1
3	ABCC2	75	CBLC	147	EIF3J	219	INSL5	291	OS9	363	RAB27B	435	STC2
4	ABCC3	76	CBR3	148	EIF3K	220	ISM1	292	OTX1	364	RAB31	436	STK16
5	ABCD1	77	CD247	149	EIF4EBP1	221	ITCH	293	OXCT1	365	RAB6A	437	STX8
6	ABHD14B	78	CD3E	150	EIF5A2	222	ITGAE	294	P2RX5	366	RAB8B	438	SYT6
7	ABI2	79	CD81	151	ELN	223	KCNJ12	295	P2RY6	367	RAD54B	439	TAZ
8	ABLIM1	80	CD8B	152	EMR1	224	KCNQ5	296	PABPC3	368	RAET1L	440	TBCB
9	ACADL	81	CDC37	153	EPN3	225	KIAA0101	297	PADI4	369	RBKS	441	TBP
10	ACIN1	82	CDC42	154	ERCC5	226	KIAA1279	298	PAPOLA	370	RBL2	442	TFDP1
11	ACOT13	83	CDC42BPB	155	EWSR1	227	KLF13	299	PARD6B	371	RBM17	443	TJP1
12	ACOT2	84	CDC6	156	EXOSC10	228	KLF7	300	PARVA	372	RBM34	444	TJP2
13	ACOX1	85	CDCA3	157	F8	229	KLRC1	301	PCF11	373	RBP5	445	TLE3
14	ACSBG1	86	CDH16	158	FAM98A	230	KRT24	302	PDCD10	374	RBP7	446	TLK1
15	ACSL1	87	CDK6	159	FAR2	231	KRT7	303	PDCD6IP	375	RELA	447	TP53I3
16	ACSL5	88	CDS2	160	FAU	232	KRT78	304	PDE1C	376	REXO1	448	TPPP3
17	ACSS3	89	CEBPB	161	FBL	233	KRT79	305	PDE9A	377	RFK	449	TPT1
18	ACYP2	90	CGREF1	162	FBXO6	234	LAPTM4A	306	PDK1	378	RHOT1	450	TRDMT1
19	ADCYAP1R1	91	CHMP4A	163	FGFBP3	235	LIG1	307	PDRG1	379	RING1	451	TRH
20	ADK	92	CHN1	164	FHIT	236	LIN52	308	PDYN	380	RIOK2	452	TSG101
21	Adracalin	93	CHRNA7	165	FSTL5	237	LRIG1	309	PEX13	381	RNASEH1	453	TSPAN1
22	ADSL	94	CKMT1A	166	GABARAPL2	238	LRP10	310	PEX19	382	RNASEH2B	454	TST
23	AIM2	95	CLCA1	167	GADD45G	239	LRP11	311	PEX3	383	RNF41	455	TTF1
24	AKR1A1	96	CLDN7	168	GALE	240	LRP12	312	PFDN5	384	RNMT	456	TTF2
25	AKR1B10	97	CLPB	169	GALK1	241	LSM3	313	PFKFB4	385	RPL36	457	TUBG1
26	ALOX15B	98	CMBL	170	GALNS	242	LSM7	314	PFKP	386	RPP14	458	TXNL4A
27	ALOX5AP	99	CNOT6	171	GBP2	243	LSP1	315	PFN2	387	RPRD1B	459	TXNRD1
28	AMFR	100	CNPY2	172	GCDH	244	LTC4S	316	PGA4	388	RRAGC	460	TYMS
29	ANAPC13	101	COASY	173	GCM2	245	MAG	317	PGS1	389	RUVBL1	461	TYRP1
30	ANO1	102	COL6A3	174	GFER	246	MAGOH	318	PHB2	390	RXFP3	462	UBASH3A
31	AP1B1	103	COMMD8	175	GGA1	247	MAN1A2	319	PHF1	391	SACM1L	463	UBE2F
32	AQP1	104	CPLX3	176	GGA3	248	MAP4K3	320	PHF13	392	SCARB1	464	UBE2H
33	AQP9	105	CPSF6	177	GLIPR1	249	MAPK1	321	PIAS1	393	SCLY	465	UBE2I
34	ARD1A	106	CPT2	178	GLT8D2	250	MAPK8	322	PIGK	394	SCN2B	466	UBE2M
35	ARF3	107	CPVL	179	GMEB1	251	MAPKAPK3	323	PIK3CA	395	SCPEP1	467	UBE2T
36	ARID1A	108	CRABP1	180	GMFG	252	MAPRE3	324	PIM1	396	SDF2	468	UBE2W
37	ARID1B	109	CRABP2	181	GNG13	253	MASP2	325	PIPOX	397	SDHB	469	UBE3A
38	ARL2BP	110	CRADD	182	GNGT1	254	MAX	326	PLBD2	398	SEC11C	470	UBQLN2
39	ASB2	111	CRELD1	183	GOPC	255	MCM8	327	PLK4	399	SEC23B	471	UBXN6
40	ASF1A	112	CRYZ	184	GPD2	256	MCTS1	328	PLN	400	SECTM1	472	UGDH
41	ATIC	113	CSNK1G2	185	GPR37	257	MECP2	329	PLSCR3	401	SELM	473	UGP2
42	ATL3	114	CSNK2A2	186	GRIK2	258	MRPL11	330	PMCH	402	SETD8	474	UNC13C
43	ATOX1	115	CST7	187	GSTK1	259	MRPL12	331	PML	403	SF3B4	475	UNC5A
44	ATP1B1	116	CTSK	188	GSTM5	260	MRPL15	332	PMM2	404	SHOC2	476	UNG
45	ATP6V0A2	117	CUTC	189	GSTZ1	261	MRPL30	333	PNPT1	405	SIPA1	477	UPF3B
46	ATP6V1F	118	CYP19A1	190	GUCA1A	262	MRPL44	334	POLR3B	406	SIRT4	478	UROS
47	ATPIF1	119	DAO	191	HAT1	263	MRPS2	335	POP4	407	SLC19A3	479	USP30
48	AZI2	120	DCLK1	192	HDAC1	264	MRPS5	336	PPIE	408	SLC22A7	480	USP46
49	B3GAT3	121	DCUN1D1	193	HDAC3	265	MRTO4	337	PPIF	409	SLC22A8	481	UTP18
50	B3GNT3	122	DDX41	194	HDAC6	266	MS4A1	338	PPIP5K2	410	SLC26A6	482	UXS1
51	BABAM2	123	DHRS2	195	HERC2	267	MTSS1	339	PPP1CC	411	SLC27A4	483	VARS
52	BCL2L1	124	DHRS4	196	HERPUD1	268	MUS81	340	PPP1R17	412	SLC2A10	484	VKORC1
53	BCL2L12	125	DHRS9	197	HIST1H2BB	269	MVP	341	PPP2R5E	413	SLC34A1	485	VLDLR
54	BCL6	126	DHX15	198	HIST1H3A	270	NAALADL1	342	PPT1	414	SLC34A3	486	VNN2
55	BDKRB1	127	DIS3L	199	HIST2H2BE	271	NANOS1	343	PQBP1	415	SLC39A8	487	VPS25
56	BET1L	128	DNAJC30	200	HNF1A	272	NARS	344	PRAC1	416	SLC6A1	488	VPS26A
57	BHLHE40	129	DNASE2	201	HNMT	273	NCKAP1	345	PRAP1	417	SLC9A3R1	489	VRK1
58	BLNK	130	DNM1	202	HRAS	274	NCL	346	PRDM2	418	SLK	490	VSNL1
59	BMF	131	DNTT	203	HSD3B1	275	NDRG1	347	PRICKLE2	419	SMG1	491	VTA1
60	BOLA1	132	DPF3	204	HSPA6	276	NFE2L3	348	PRKAR1A	420	SMN1	492	VTI1A
61	BPHL	133	DPYSL5	205	HTR3B	277	NGLY1	349	PRKD2	421	SMPD2	493	VTI1B
62	BTG3	134	DUSP14	206	HTRA3	278	NMRAL1	350	PRKG2	422	SMYD2	494	WDR61
63	BTN3A3	135	DZIP1	207	IDI2	279	NOS1AP	351	PRMT5	423	SNRPD2	495	WWC1
64	BVES	136	E2F5	208	IDO2	280	NPC1	352	PRMT6	424	SNX2	496	XCL2
65	CA7	137	EBPL	209	IFITM2	281	NSFL1C	353	PRPF18	425	SP1	497	XPC
66	CALM2	138	ECD	210	IFNA10	282	NTNG1	354	PRPF19	426	SP100	498	XRCC1
67	CAMK1	139	ECH1	211	IFNA2	283	NTS	355	PSME1	427	SP4	499	XRCC2
68	CAMK4	140	ECSIT	212	IFNA5	284	NUDC	356	PSME2	428	SPCS2	500	ZFP36L2
69	CAPZA2	141	EEF1B2	213	IFNA8	285	NUDT1	357	PSME3	429	SPDYC		
70	CAPZB	142	EFNA1	214	IFNW1	286	NUP107	358	PSMF1	430	SPEG		
71	CASP5	143	EHD2	215	IGF2BP3	287	NUP50	359	PTGES	431	SRP72		
72	CASP6	144	EIF1AY	216	IGJ	288	NUP62	360	PTPN12	432	SRSF10		

K. RayBio® Human Antibody Array L-11 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	ABCC13	73	ATP6AP1	145	COL11A1	217	GEM	289	KLC1	361	POLR2E	433	STON1
2	ABHD2	74	ATP6V1A	146	COL1A2	218	GJA4	290	KLHL1	362	POLR2G	434	SULT1C4
3	ACR	75	ATP6V1B1	147	COL26A1	219	GJC1	291	KLHL2	363	POLR2J	435	SURF6
4	ACTL7A	76	ATP6V1E2	148	COL4A5	220	GJC3	292	KPNA3	364	POLR2J2	436	SYT2
5	ACTL7B	77	ATP6V1G1	149	COL8A2	221	GNAI2	293	KPNA5	365	POLR2K	437	SYTL1
6	ACTR10	78	ATP6V1G3	150	CORO1A	222	GNAL	294	KRT25	366	POU4F3	438	TASP1
7	ACTR1A	79	ATP6V1H	151	CORO2B	223	GNG12	295	KRT27	367	PPEF1	439	TBC1D10A
8	ACTR1B	80	ATP8	152	COX18	224	GNG5	296	KRT32	368	PPFIBP2	440	TBC1D21
9	ACTRT2	81	ATP8A1	153	COX6A1	225	GNG8	297	KRT37	369	PPP1R16A	441	TCF19
10	ADAMTS2	82	ATX3	154	COX6A2	226	GPR103	298	L3MBTL1	370	PPP1R3B	442	TCFL5
11	ADAP2	83	AURKC	155	COX7A1	227	GPR114	299	LCA5L	371	PPP4R1L	443	TEF
12	ADAR2	84	AXUD1	156	COX7A2L	228	GPR123	300	LGALS13	372	PRDM15	444	TESK1
13	ADCY1	85	BAIAP2	157	COX7B	229	GPR143	301	LRP3	373	PRKY	445	TFAP2A
14	ADCY3	86	BARHL2	158	COX7B2	230	GPR144	302	MAP126	374	PRRX2	446	TLE4
15	ADCY6	87	BAZ2A	159	COX7C	231	GPR151	303	MAZ	375	PSKH1	447	TOMM40
16	ADCY8	88	BBS7	160	COX8A	232	GPR152	304	MEF2A	376	PSMD11	448	TRIM2
17	ADCY9	89	BCO2	161	CPA3	233	GPR160	305	MKRN1	377	PSMD3	449	TRIM24
18	ADGRB2	90	BEST3	162	CPA5	234	GPR174	306	MNT	378	PSMD8	450	TRIM45
19	ADGRG4	91	BIN3	163	CPA6	235	GPR18	307	MPHOSPH9	379	PTPRN2	451	TSKS
20	ADIPOR2	92	BLOC1S5	164	CPNE4	236	GPR20	308	MPRG	380	RAB29	452	TSPYL1
21	AGFG2	93	BMP13	165	CPSF4	237	GPR25	309	MRGPRX1	381	RAB30	453	TSSK2
22	AKAP17A	94	BNC1	166	CPT1A	238	GPR27	310	MRPS30	382	RAB36	454	TUBA3C
23	AKAP5	95	BRP44L	167	CPT1B	239	GPR4	311	MTFP1	383	RAG2	455	TUBAL3
24	ALOXE3	96	BTBD6	168	CRCP	240	GPR62	312	MTND3	384	RASD2	456	TUBGCP5
25	ALY	97	C4A	169	CRSP7	241	GPR83	313	MYBL1	385	REST	457	TUBGCP6
26	AMBN	98	CABLES1	170	CRYBA1	242	GPR85	314	MYH15	386	RFTN1	458	U2AF1
27	AMBRA1	99	CABP4	171	CRYBB3	243	GPR87	315	MYH8	387	RGS16	459	UBE2D2
28	ANAPC1	100	CACNA1C	172	CSH2	244	GPRIN2	316	MYL10	388	RGS4	460	UBE2G2
29	ANAPC2	101	CACNA1E	173	CSN3	245	GPX7	317	MYL6	389	RHOH	461	ULK2
30	ANAPC4	102	CACNA1S	174	CTDSP1	246	GRK4	318	MYO1C	390	RLBP1	462	UQCRFS1
31	ANKRD2	103	CACNG5	175	CTNNAL1	247	GSG2	319	MYO3B	391	RNASE3	463	UQCRQ
32	ANO3	104	CAPN11	176	CX32	248	GUCY1B2	320	MYO6	392	RNF113B	464	URI1
33	ANP32D	105	CAPN12	177	CYC1	249	GYS1	321	MYOM2	393	RNF130	465	USP35
34	AP2A1	106	CBLN3	178	DAB1	250	HDC	322	MZF1	394	RNF144A	466	WDR21A
35	AP2M1	107	CCNI	179	DCLRE1C	251	HES2	323	N4BP1	395	RNF19A	467	YAF2
36	AP2S1	108	CCT6B	180	DHRS7	252	HIRA	324	NDUFA1	396	RPH3A	468	YBX2
37	APBA1	109	CD180	181	DIAPH1	253	HIST1H2AH	325	NDUFA12	397	RRAD	469	ZBED1
38	APBB2	110	CDC2L6	182	DIRAS1	254	HKR1	326	NDUFA4	398	RRH	470	ZC3H7B
39	APBB3	111	CDH18	183	DMAP1	255	HLA-DMA	327	NDUFA7	399	RRP1B	471	ZDHHC9
40	ARHGAP10	112	CDH7	184	DNAI2	256	HLA-DMB	328	NDUFAB1	400	SAR1B	472	ZFP36
41	ARHGAP26	113	CDK10	185	DNTTIP1	257	HLA-DOA	329	NDUFAF4	401	SCAND1	473	ZHX2
42	ARHGAP9	114	CDK5RAP1	186	DONSON	258	HLA-DOB	330	NDUFS1	402	SCN8A	474	ZKSCAN3
43	ARHGEF2	115	CDKL5	187	DTNA	259	HLA-DQB2	331	NDUFS4	403	SCNN1A	475	ZMIZ2
44	ARL4C	116	CDKN3	188	DTNB	260	HLA-DRB3	332	NDUFS8	404	SCNN1D	476	ZMYND11
45	ARL5B	117	CDR2	189	DYNLRB2	261	HOXA3	333	NDUFV1	405	SENP6	477	ZNF133
46	ARPC4	118	CEBPD	190	EIF2B5	262	HOXA4	334	NEK4	406	SEPTIN7	478	ZNF148
47	ARPP21	119	CENPM	191	EIF4G2	263	HOXA7	335	NFAT5	407	SERPINB13	479	ZNF169
48	ARR3	120	CEP110	192	ELMO1	264	HOXB2	336	NFYB	408	SFRS9	480	ZNF225
49	ARRB2	121	CEP135	193	EML1	265	HOXB4	337	NGB	409	SGCB	481	ZNF227
50	ARSD	122	CEP152	194	EMX1	266	HOXC11	338	NKX2-4	410	SGLT2	482	ZNF25
51	ART5	123	CEP63	195	EPM2AIP1	267	HOXC12	339	NOX1	411	SHOX	483	ZNF337
52	ARVCF	124	CEP72	196	EXOC7	268	HOXC13	340	NR2F1	412	SIM1	484	ZNF397
53	AS160	125	CEP76	197	FAM120C	269	HOXC6	341	NUDT6	413	SIX5	485	ZNF398
54	ASB4	126	CHD2	198	FAM13A	270	HPS6	342	NULP1	414	SLC1A1	486	ZNF436
55	ASB8	127	CHRM1	199	FASTK	271	INCENP	343	OAS1	415	SLC22A17	487	ZNF442
56	ATE1	128	CHRNA6	200	FBG3	272	INSIG1	344	OPN3	416	SLC25A21	488	ZNF519
57	ATF3	129	CIITA	201	FBG4	273	IPO13	345	OPN4	417	SLC25A31	489	ZNF540
58	ATF7	130	CKLF1	202	FBXL20	274	IQCB1	346	OPRM1	418	SLC25A5	490	ZNF592
59	ATP11B	131	CKLF2	203	FBXO24	275	ITGA7	347	OR4A4P	419	SLC28A1	491	ZNF596
60	ATP13A1	132	CKLF4	204	FCGR2C	276	KATNB1	348	OSBPL11	420	SLC28A2	492	ZNF7
61	ATP1A1	133	CLCN1	205	FKLF	277	KCNA3	349	OSBPL6	421	SLC4A9	493	ZNF707
62	ATP1A2	134	CLCN4	206	FKSG2	278	KCNAB1	350	OSGIN2	422	SLC6A14	494	ZNF76
63	ATP2A3	135	CLCN6	207	FOXD4	279	KCNAB3	351	PAX9	423	SLC6A15	495	ZNF763
64	ATP2C1	136	CLCNKA	208	FOXD4L1	280	KCNB1	352	PDE4C	424	SLC6A17	496	ZNF786
65	ATP5C1	137	CLDN14	209	FOXN1	281	KCNJ3	353	PDP2	425	SLC6A8	497	ZNF792
66	ATP5F1	138	CLDN2	210	FSBP	282	KCNJ5	354	PHACTR3	426	SLC9A3R2	498	ZNF83
67	ATP5G1	139	CLDN9	211	FTSJ1	283	KCNJ9	355	PHEX	427	SLC9A9	499	ZP4
68	ATP5G2	140	CLN3	212	FUS2	284	KCNK15	356	PIK3R6	428	SNTA1	500	ZRANB1
69	ATP5G3	141	CLTB	213	GABARAPL1	285	KCNN4	357	PKCB1	429	SOX13		
70	ATP5J	142	CMTM3	214	GABPB1	286	KDELR2	358	PLCB2	430	SP2		
71	ATP5S	143	CNTN6	215	GAS2L1	287	KIAA0494	359	PLCZ1	431	SPG7		
72	ATP6	144	COG8	216	GCKR	288	KIR2DL2	360	PLEKHA3	432	SREBF1		

L. RayBio® Human Antibody Array L-12 Target List

Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name	Number	Name
1	5T4	73	CD79B	145	DNASE1	217	GRID2	289	LRRTM1	361	PODXL2	433	SORCS2
2	ABP1	74	CD86	146	DNMT3A	218	GRK1	290	LXN	362	POGLUT1	434	SORCS3
3	ACP5	75	CD99	147	DPP7	219	GRK5	291	LY86	363	PPA1	435	SORT1
4	ACP6	76	CD99L2	148	DRAK1	220	GRM3	292	MATN2	364	PRKCA	436	SOX10
5	ACYP1	77	CDC14B	149	DSCAML1	221	GRM4	293	MATN3	365	PRKN	437	SOX15
6	ADA	78	CDC25B	150	DSG3	222	GRM7	294	MD-2	366	PRTG	438	SOX21
7	ADAM12	79	CDCP1	151	DSG4	223	GUSB	295	MDGA1	367	PSMA	439	SOX9
8	ADAM23	80	CDH11	152	DUSP3	224	GYPA	296	MDGA2	368	PSMB8	440	SPHK1
9	ADAM28	81	CDH15	153	DYRK3	225	GZMB	297	MDM2	369	PTGES2	441	SPI1
10	ADGRE2	82	CDH17	154	EDEM2	226	HAND1	298	MEF2C	370	PTGIS	442	SPOCK1
11	AGR3	83	CDH4	155	EDIL3	227	HAPLN1	299	MEP1B	371	PTH1R	443	SPON1
12	AIF1L	84	CDO1	156	EDNRB	228	HAPLN4	300	MESD	372	PTP1B	444	SPRY1
13	AK1	85	CDX4	157	EFNA4	229	HCN4	301	METAP1D	373	PTPN11	445	SRGN
14	AKR1C1	86	CEACAM3	158	EFNA5	230	HIF1A	302	METTL11A	374	PXN	446	ST3GAL1
15	AKR1C4	87	CEACAM6	159	EGR1	231	HIN1	303	MIA	375	RAB5A	447	ST8SIA1
16	AMIGO2	88	CEACAM7	160	ENPP5	232	HK1	304	MISRII	376	RAET1E	448	ST8SIA2
17	ANTXR2	89	CES2	161	ENPP7	233	HNF4A	305	MKK7	377	RALA	449	STAB2
18	ARG1	90	CES3	162	ENTK	234	HPGD	306	MLANA	378	RALB	450	STAMBP
19	ARNT	91	CFC1	163	ENTPD1	235	HPN	307	MOG	379	RCOR1	451	STC1
20	ARSA	92	CFL2	164	ENTPD2	236	HS3ST1	308	MSPR	380	REN	452	STUB1
21	ASAH2	93	CHAT	165	ESR2	237	HS3ST3B1	309	MYD88	381	RGMA	453	STX2
22	ASB17	94	CHI3L2	166	ETS1	238	HS3ST4	310	NAAA	382	RGMB	454	STX4
23	ASF1B	95	CHMP2B	167	EXTL3	239	HSPH1	311	NAGA	383	RGMC	455	STX6
24	ATCAY	96	CHST1	168	FABP6	240	ICK	312	NAPSA	384	RLN1	456	SULT1B1
25	BAI3	97	CHST15	169	FABP7	241	ICOS	313	NCK1	385	RNF113A	457	SULT1C2
26	BAMBI	98	CHST2	170	FABP8	242	IDS	314	NCR2	386	RNF31	458	SULT2A1
27	BCCIP	99	CHST3	171	FAM3A	243	IFNE	315	NCR3	387	RNF43	459	SULT2B1
28	BCL2	100	CHST4	172	FAM3D	244	IGSF11	316	NCSTN	388	RNLS	460	SULT4A1
29	BCL2L10	101	CIB1	173	FCAR	245	IGSF3	317	NDP	389	ROBO2	461	SUMF1
30	BCS1L	102	CITED2	174	FCER1A	246	IKBKG	318	Nectin-2	390	ROBO3	462	SUMF2
31	BIRC2	103	CLEC4C	175	FCGR1A	247	IL28RA	319	Nectin-4	391	RSPO2	463	SUMO1
32	BMP8A	104	CLEC4M	176	FCN1	248	INA	320	NEDD9	392	RSPO3	464	SUMO2
33	BOC	105	CLEC7A	177	FES	249	ING1	321	NENF	393	RTN4R	465	TBX18
34	BSG	106	CLIP1NTF	178	FGF3	250	INHA	322	NEUROG3	394	S100A13	466	TCF7L1
35	BTN3A1	107	CLSTN2	179	FGR	251	IPP2	323	NFASC	395	S100A2	467	TCN2
36	C1QTNF4	108	CNP	180	FHL1	252	IRF1	324	NFATC3	396	SARS2	468	TCPTP
37	C1QTNF5	109	CNTN5	181	FKBP4	253	IRF2	325	NFKB1	397	SBDS	469	TDP43
38	C1R	110	COL2A1	182	FLOT2	254	IRF4	326	NgR3	398	SCARF1	470	TFPI2
39	CA12	111	COMT	183	FLRT1	255	ISL1	327	NKp46	399	SCGN	471	TGM2
40	CA14	112	CPB1	184	FLRT2	256	ITGA1	328	NLGN1	400	SEMA3C	472	TGM4
41	CA4	113	CRELD2	185	FLRT3	257	ITGA11	329	NLGN2	401	SEMA3E	473	TGM7
42	CA5B	114	CRISP2	186	FMOD	258	ITGA2	330	NLGN4X	402	SEMA4A	474	THSD1
43	CA6	115	CRISP3	187	FOSB	259	ITGA3	331	NLRP2	403	SEMA4C	475	TINAGL1
44	CA8	116	CRK	188	FOXC2	260	ITGA4	332	NMNAT1	404	SEMA4D	476	TNR
45	CADM4	117	CSNK2A1	189	FOXJ1	261	ITGA5	333	NOS3	405	SEMA4G	477	TP63
46	CALR3	118	CSPG4	190	FOXM1	262	ITGB4	334	NOTCH3	406	SEMA5A	478	TPH1
47	CANT1	119	CTRC	191	FSTL4	263	ITGB7	335	NPDC1	407	SEMA6D	479	TPST2
48	CANX	120	CTSE	192	FUT11	264	JAG1	336	NPTN	408	SERINC3	480	TRAF3
49	CASP1	121	CTSV	193	FUT3/5	265	JAG2	337	NQO1	409	SERPINB2	481	TREM2
50	CASP2	122	CXADR	194	FUT7	266	JAM2	338	NR1H4	410	SH2B1	482	TTK
51	CASP9	123	CXCL17	195	FUT8	267	JAM3	339	NRXN3	411	SH2D1A	483	TXNL5
52	CASPR2	124	CXXC1	196	GAD1	268	JUN	340	NTHL1	412	SIGLEC10	484	UCHL3
53	CAV2	125	CYFIP2	197	Galectin-8	269	JUNB	341	NTRK1	413	SIGLEC11	485	UGT1A1
54	CBLN2	126	CYP2W1	198	GALNT10	270	KIRREL3	342	NUDT5	414	SIGLEC6	486	ULBP3
55	CCNE1	127	CYP4B1	199	GALNT3	271	KLK1	343	NUMB	415	SIRPG	487	USE1
56	CD164	128	CYP4F11	200	GATA1	272	KLK12	344	NUP85	416	SIRT1	488	VAMP1
57	CD2	129	CYP4F12	201	GATA2	273	KLK15	345	OLIG1	417	SIRT2	489	VAMP2
58	CD200R1	130	CYTH2	202	GATA5	274	KPNA2	346	OLIG2	418	SIRT3	490	VAPB
59	CD205	131	CYTH3	203	GBA3	275	KRT12	347	ONPEP	419	SIRT5	491	VDAC2
60	CD226	132	DAB2	204	GCK	276	KRT2	348	PAR1	420	SLAMF1	492	VIAAT
61	CD28	133	DAPK3	205	GIF	277	L1CAM	349	PAX3	421	SLC15A1	493	VISTA
62	CD300A	134	DAPP1	206	GLA	278	LGALS4	350	PAX4	422	SLITRK2	494	VTCN1
63	CD34	135	DAZL	207	GLB1	279	LGALS9	351	PCDH1	423	SLITRK4	495	WNT4
64	CD39L2	136	DBN1	208	GLI3	280	LILRA2	352	PCK1	424	SLITRK5	496	WNT9A
65	CD39L3	137	DCTN1	209	GLRX3	281	LILRB1	353	PGDS	425	SMAD2	497	WTAP
66	CD4	138	DCTN2	210	GNMT	282	LILRB2	354	PGLYRP4	426	SMAD3	498	WWP2
67	CD43	139	DCTN4	211	GPA33	283	LILRB4	355	PILRA	427	SMOC2	499	WWTR1
68	CD5	140	DCTN5	212	GPC1	284	LOXL2	356	PIR	428	SMPD1	500	XPNPEP2
69	CD58	141	DDR1	213	GPC2	285	LRRC32	357	PLA2G2A	429	SMPD3		
70	CD6	142	DDX21	214	GPC4	286	LRRC4	358	PLA2G4A	430	SNAP25		
71	CD7	143	DFF45	215	GRAP2	287	LRRC4C	359	PLXNA2	431	SNCB		
72	CD70	144	DMD	216	GRIA2	288	LRRC8D	360	PNPLA2	432	SORCS1		

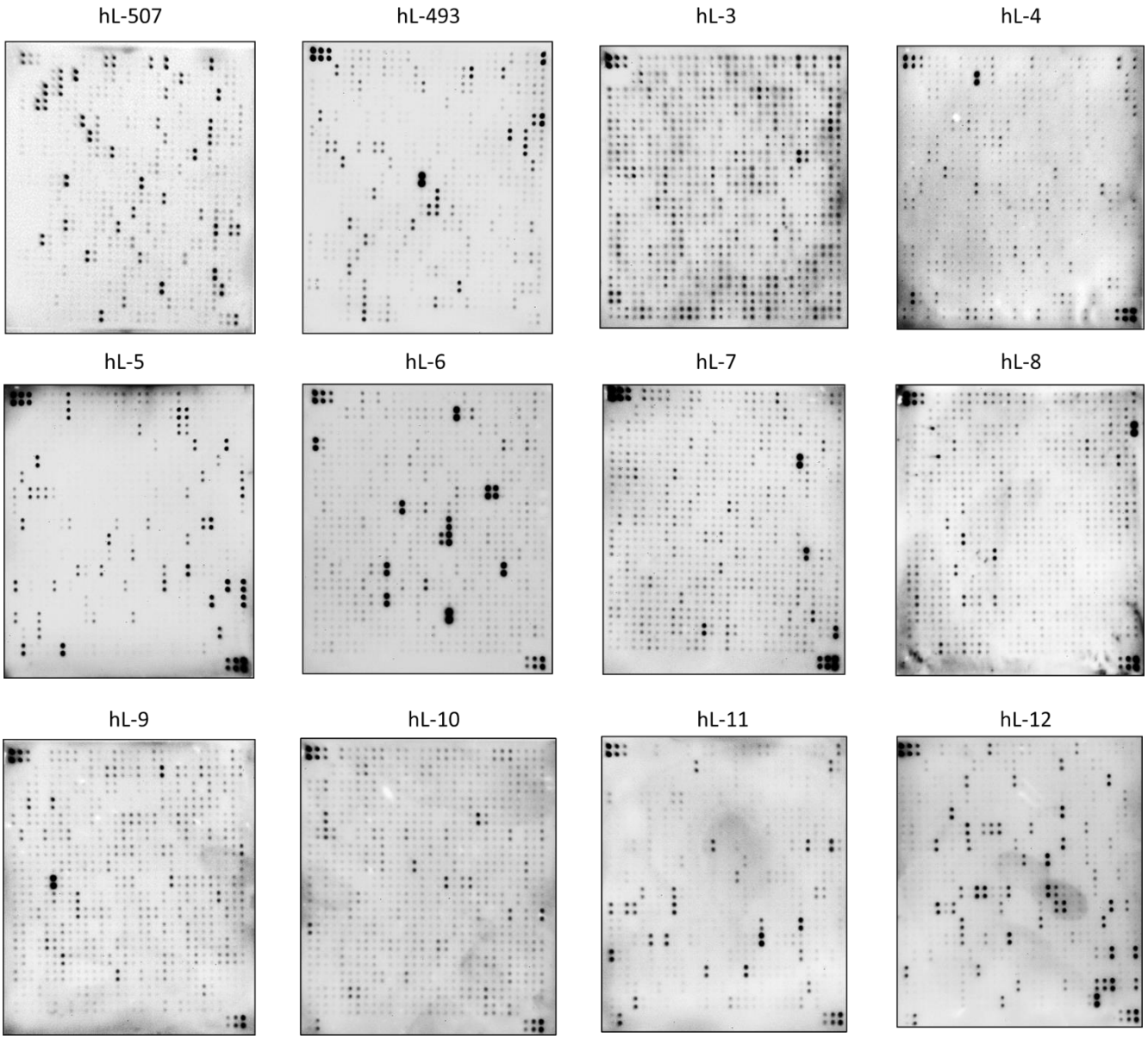
VII. Interpretation of Results:

A. Explanation of Controls Spots

To obtain optimal results using a chemiluminescence imaging system (UVP BioImaging Systems), it is suggested to try several different exposure times until the best one is determined. Then, by comparing the signal intensities, relative expression levels of the target proteins can be made. The intensities of signals can be quantified by densitometry. There are three Positive Controls (POS1, POS2, POS3) in each array. These are three levels of standardized anti-HRP antibodies, which will produce positive control signals after incubation with HRP-conjugated Streptavidin. With all other variables being equal, the Positive Control intensities will be the same for each sub-array, which allows for inter-array normalization. Antibody affinity to its target varies significantly between antibodies. The intensity detected on the array with each antibody depends on this affinity; therefore, signal intensity comparison can be performed only within the same antibody/antigen system and not between different antibodies. Some arrays may have beta-actin and GAPDH as internal controls, much as "housekeeping" genes or proteins are used to normalize results in PCR or Western blots, respectively.

B. Typical Results

The following figure shows the typical result of arrays probed with human serum sample.



Note: In the absence of an external standard curve for each protein detected, there is no means of assessing absolute or relative concentrations of different proteins in the same sample using immunoassays. If you wish to obtain quantitative data (ie, concentrations of the various analytes in your samples), try using our Quantibody® Arrays as a targeted follow up experiment.

C. Background Subtraction

Once you have obtained densitometry data, it is recommended to subtract the local background and normalize to the Positive Control signals before proceeding to analysis.

D. Normalization of Array Data

To normalize signal intensity data, one sub-array is defined as "reference" to which the other arrays are normalized. This choice is arbitrary. For example, in our Analysis Tool Software (described below), the array represented by data entered in the left-most column each worksheet is the default “reference array.”

You can calculate the normalized values as follows:

$X(Ny) = X(y) * P1/P(y)$

Where:
P1 = mean signal intensity of POS spots on reference array
P(y) = mean signal intensity of POS spots on Array "y"
X(y) = mean signal intensity for spot "X" on Array "y"
X(Ny) = normalized signal intensity for spot "X" on Array "y"

The RayBio® Analysis Tool software is available for use with data obtained using RayBio® Biotin Label-based Antibody Arrays. You can copy and paste your signal intensity data (with and without background) into the Analysis Tool, and it will automatically normalize signal intensities to the Positive Controls.

E. Threshold of Significant Difference

After subtracting background signals and normalization to Positive Controls, comparison of signal intensities between and among array images can be

used to determine relative differences in expression levels of each protein between samples or groups.

Any ≥1.5-fold increase or ≤0.65-fold decrease in signal intensity for a single analyte between samples or groups may be considered a measurable and significant difference in expression, provided that both sets of signals are well above background (Mean background + 2 standard deviations, accuracy ≈ 95%).

F. Pathway Analysis of the Array Proteins

Human antibody array L-6000 detects 6000 unique human proteins, including most analyzed cytokines, chemokines, adipokines, extracellular matrix proteins, growth factors, angiogenic factors, proteases, enzymes, soluble and transmembrane receptors and transport proteins, adhesion molecules and other proteins. All the array proteins are provided with their Uniprot number and GeneID, which are essential for further data mining. Raybiotech offers affordable biostatistics and bioinformatics service, including data clean-up, differential expression analysis, cluster analysis, biomarker selection, pathway analysis and experimental design. See more details on the website: https://www.raybiotech.com/biostatistics-and-bioinformatics-services

VIII. Troubleshooting Guide

Problem	Cause	Recommendation
Weak Signal	Taking too much time for detection	The whole detection process must be completed within 30 min.
	Film developer does not work properly.	Fix film developer.
	Did not mix HRP-Streptavidin well before use.	Mix tube containing HRP-Conjugated Streptavidin well before use since precipitates may form during storage.
	Sample is too diluted	Increase sample concentration
	Labeling reagent does not function well	Labeling reagent needs to be saved in -20C and avoid free thaw cycle. Always use fresh labeling reagent for sample labelling.
	Other	Check if there were any contamination with any solution containing amines in biotin-labeling step.
		Slightly increase HRP concentrations.
		Work as quickly as possible after mix Detection Buffer C and D.
Uneven signal	Bubble formed during incubation	Remove bubbles during incubation.
	Membranes were not completely covered with solution	Completely cover membranes with solution.
	Insufficient wash	Use more stringent wash.
High background	Exposure time is too long	Decrease exposure time.
	Membranes dry out during experiment.	Completely cover membranes with solution during experiment. Cover tray with lid.
	Sample is too concentrated.	Dilute sample.

IX. Selected References

Christina Scheel et all., *Paracrine and Autocrine Signals Induce and Maintain Mesenchymal and Stem Cell States in the Breast*. Cell. 2011;145, 926–940

Lin Y, Huang R, Chen L, et al., *Profiling of cytokine expression by biotin-labeled-based protein arrays*. Proteomics. 2003, 3: 1750–1757.

Huang R, Jiang W, Yang J, et al., *A Biotin Label-based Antibody Array for High-content Profiling of Protein Expression*. Cancer Genomics Proteomics. 2010; 7(3):129–141.

Liu T, Xue R, Dong L, et al., *Rapid determination of serological cytokine biomarkers for hepatitis B–virus-related hepatocellulare carcinoma using antibody arrays*. Acta Biochim Biophys Sin. 2011; 43(1):45–51.

Cui J, Chen Y, Chou W-C, et al., *An integrated transcriptomic and computational analysis for biomarker identification in gastric cancer*. Nucl Acids Res. 2011; 39(4):1197–1207.

Jun Zhong et all., *Temporal Profiling of the Secretome during Adipogenesis in Humans*. Journal of Proteome Research. 2010, 9, 5228–5238

Chowdury UR, Madden BJ, Charlesworth MC, Fautsch MP., *Proteomic Analysis of Human Aqueous Humor*. Invest Ophthalmol Visual Sci. 2010; 51(10):4921–4931.

Wei Y, Cui C, Lainscak M, et al., *Type-specific dysregulation of matrix metalloproteinases and their tissue inhibitors in end-stage heart failure patients: relationshp between MMP-10 andLV remodeling*. J Cell Mol Med. 2011; 15(4):773–782.

Kuranda K, Berthon C, Lepêtre F, et al., *Expression of CD34 in hematopoietic cancer cell lines reflects tightly regulated stem/progenitor-like state*. J Cell Biochem. 2011; 112(5):1277–1285.

Toh HC, Wang W-W, Chia WK, et al., *Clinical Benefit of Allogenic Melanoma Cell Lysate-Pulsed Autologous Dendritic Cell Vaccine in MAGE-Positive Colorectal Cancer Patients*. Clin Chem Res. 2009; 15:7726–7736.

Zhen Hou, *Cytokine array analysis of peritoneal fluid between women with endometriosis of different stages and those without endometriosi*. Biomarkers. 2009;14(8): 604-618.

Yao Liang Tang, et al., *Hypoxic Preconditioning Enhances the Benefit of Cardiac Progenitor Cell Therapy for Treatment of Myocardial Infarction by Inducing CXCR4*. Circ Res. 2009;109:197723

This product is for research use only.