MABSOL® Biotinylated Proteins

Bring pre-labeled biotinylated proteins directly to your bench

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BIOSYSTEMS

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TIGIT

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Introduction

Biotin is commonly used as a protein tag to facilitate the detection, purification, and immobilization of the proteins.

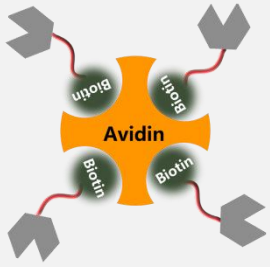


Fig. 1 Biotin-avidin binding structure

The bond between biotin and its binding partner Avidin (or Streptavidin) is unique in the following ways:

- Strong (Ka of 10^{15} M^{-1})
- Specific
- Multi-moiety
- Stable
- Minimal interference

With characteristics mentioned above, biotin-avidin (streptavidin) system is now considered a versatile independent technology in following applications.

Application

ELISA

Biotinylated proteins can be used in ELISA as two-way antibodies for both capture and detection with high specificity and detection sensitivity.

FACS

Biotinylated proteins can be used along fluorophore-tagged SA to detect/isolate cells expressing particular surface markers.

Biopanning

It is a technique often used for the selection of phage displays during antibody drug development. Biotinylated proteins can be used with SA-coated magnetic beads/surface in biopanning with higher coating density and uniformed antigen presentation.

SPR

It is a standard method used by pharmaceutical researchers to study protein binding kinetics. Biotinylated proteins can be used along with Biacore Sensor Chip SA for SPR analysis with low baseline drift and noise, and low activity loss during surface regeneration cycle.

Immuno-capture and Enrichment

Biotinylated proteins can be used to isolate antibodies from plasma or other biological fluid for subsequent analyses with high sensitivity, and the processed sample can be easily analyzed in quantitative mass spectrometry.

Product Series

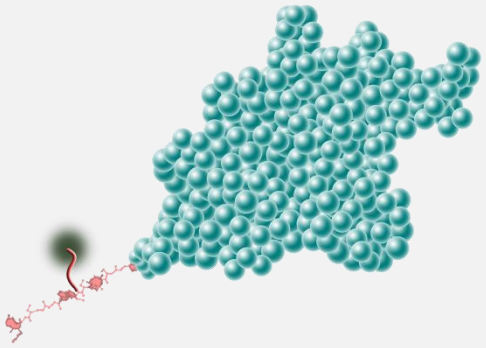
MABSOL® biotinylated protein collection includes two unique and complimentary product series, the PrecisionAvi series built upon the Avitag™ technology, and the UltraLys series produced using the in-house developed chemical labeling method. These products are made with every attention to details.

PrecisionAvi Series

An exclusive collection of ready-to-use Avitag™ biotinylated proteins

The products in this series are exclusively produced using the Avitag™ technology. Briefly, a unique 15 amino acid peptide, the Avi tag, is introduced into the recombinant protein during expression vector construction. The single lysine residue in the Avi tag is enzymatically biotinylated by the *E. Coli* biotin ligase BirA.

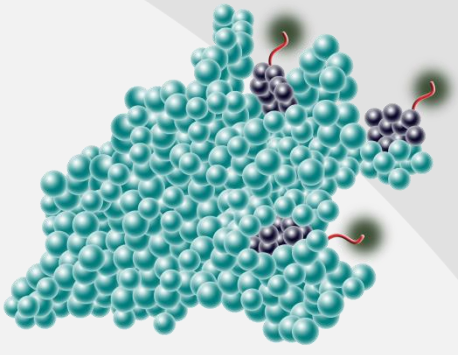
This single-point enzymatic labeling technique brings many advantages for commonly used binding assays. The biotinylation happens on the lysine residue of Avi tag, and therefore does NOT interfere with the target protein's natural binding activities. In addition, when immobilized on an avidin-coated surface, the protein orientation is uniform because the position of the Avi tag in the protein is precisely controlled since biotin is labeled at single lysine in the Avi tag.



UltraLys Series

A unique series of chemically labeled biotinylated proteins with ultra-sensitivity

The products in this series are produced using our in-house developed chemical labeling approach. The primary amines in the side chains of lysine residues and the N-terminus of protein are conjugated with biotins.



Chemical labeling usually results in multiple biotin attachment on a single protein molecule, which could potentially leads to higher detection sensitivity.

Case Studies

SPR: Antibody Optimization with Biotinylated FcRn

The half-life and efficacy of a therapeutic antibody largely depends on its Fc fragment. To obtain candidate antibody with desired pharmaceutical properties, the interaction between Fc fragment and Fc receptors needs to be evaluated. SPR is a common assay used for determing binding affinity between Fc and Fc receptors.

Efficient coating and chip regeneration present a major challenge in this approach. As shown here, the combo of ACROBiosystems' Avitag™ biotin-labeled FcRn and GE's sensor Chip-SA delivers satisfactory result in a binding assay against Herceptin.

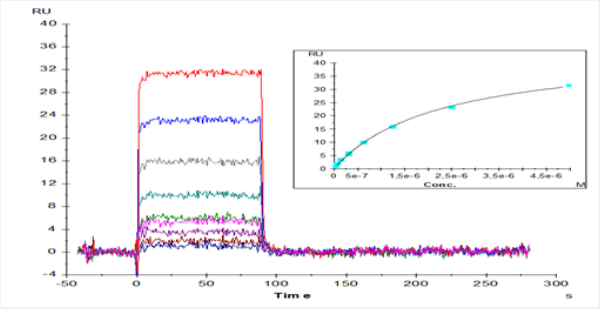
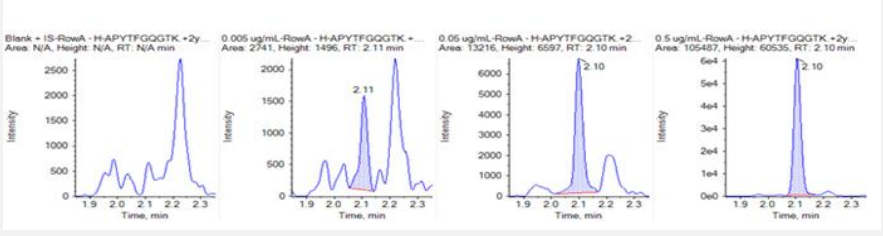


Fig. 2 Biotinylated Human FcRn / FCGRT & B2M, Avi Tag (Avitag™) (Cat. # FCM-H82W4) coupled to SA coated sensor chip can bind Herceptin with an affinity constant of 2.24 μM as determined in a SPR assay (Biacore 2000). The data is provided by Biaffin GmbH &Co KG, Germany.

Immuno-capture with Biotinylated TNF-alpha

TNF-alpha antibody is widely used in treating autoimmune diseases. In order to optimize the administration, it's very important to monitor the serum concentration of TNF-alpha antibody. Our collaborator AbSciex has shown that, using ACROBiosystems's biotinylated TNF-alpha (Cat. # TNA-H821R), TNF-alpha antibody in the serum could be easily detected by immune-capture coupled with quantitative MS/MS.



Biotinylated TNF-alpha is first coupled to streptavidin coated magnetic beads, and then capture TNF-alpha antibody in the serum. After that, MS/MS is applied to quantify TNF-alpha antibody. Immuno-capture with biotinylated TNF-alpha significantly increases the sensitivity by ten folds.

Fig. 3 Chromatograms spiked Adalimumab in human plasma: blank plasma, 5, 50, and 500 ng/ml

Inhibitor Screening with Biotinylated PD-1

ACROBiosystems has developed a PD1-PD-L1 inhibitor screening assay kit (Cat. # EP-101) for rapid and high throughput screening of candidate inhibitory antibodies or small molecules of the PD1 pathway.

This inhibitor screening ELISA pair is designed to facilitate the identification and characterization of new PD-1 pathway inhibitors. The assay takes advantage of our in-house developed binding of biotinylated human PD-1 to immobilized human PD-L1 in a functional ELISA assay, and employs a simple colorimetric sandwich ELISA platform. Briefly, we provide you with a human PD-1-Biotin protein, a human PD-L1 protein, an anti-PD-1 neutralizing antibody (as method verified Std.), and streptavidin-HRP reagent. Both biotinylated PD-1 and PD-L1 proteins are expressed in the HEK293 cells.

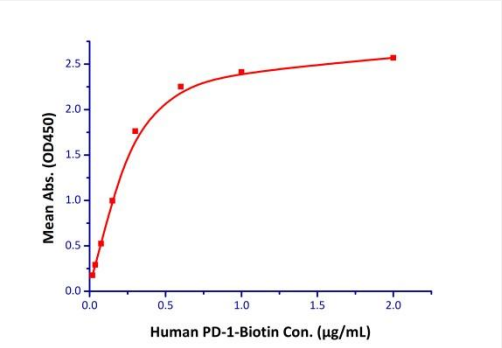


Fig. 4 Immobilized human PD-L1 protein at 2 μg/mL (100 μL/well) can bind biotinylated human PD-1 with a linear range of 0.038 - 0.6 μg/mL when detected by Streptavidin-HRP.

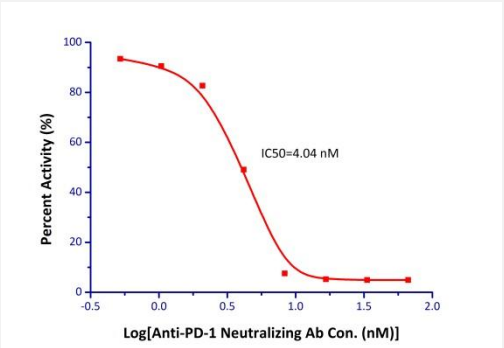


Fig. 5 Inhibition of PD-1-PD-L1 binding by Anti-PD-1 neutralizing antibody is measured using the PD-1 [Biotinylated] : PD-L1 Inhibitor Screening ELISA Assay Pair (Cat. # EP-101).

PrecisionAvi Series (Avitag™) Product List

Molecule	Cat. No.	Species	Structure	Size
4-1BB	41B-H82F7	Human	4-1BB (24-186) Fc **Avi**	25ug, 200ug,
4-1BB	41B-H82E3	Human	4-1BB (24-186) **Avi** His	25ug, 200ug,
B7-1	B71-H82F2	Human	B7-1 (35-242) Fc **Avi**	25ug, 200ug,
B7-2	CD6-H82E2	Human	B7-2(26-247) **Avi** His	25ug, 200ug,
B7-2	CD6-H82F5	Human	B7-2 (26-247) Fc **Avi**	25ug, 200ug,
B7-H4	B74-H82E2	Human	B7-H4(29-258) **Avi** His	25ug, 200ug,
B7-H5	B75-H82E1	Human	B7-H5 (33-194) **Avi** His	25ug, 200ug,
BAFF	BAF-H82F3	Human	**Avi** Fc BAFF (134-285)	25ug, 200ug,
BAFF	BAF-H82Q2	Human	His **Avi** BAFF (134-285)	25ug, 200ug,
BAFFR	BAR-M82F0	Mouse	BAFFR (10-71) Fc **Avi**	25ug, 200ug,

PrecisionAvi Series (Avitag™) Product List

Molecule	Cat. No.	Species	Structure	Size
BCMA	BC7-H82F0	Human	BCMA(1-54) Fc Avi	25ug, 200ug,
BTLA	BTA-H82F8	Human	BTLA (31-134) Fc Avi	25ug, 200ug,
CD155	CD5-H82F6	Human	CD155 (21-343) Fc Avi	25ug, 200ug,
CD27	TN7-H82F6	Human	CD27 (21-192) Fc Avi	25ug, 200ug,
CD28	CD8-H82F2	Human	CD28 (19-152) Fc Avi	25ug, 200ug,
CD40	CD0-H82E8	Human	CD40 (21-193) Avi His	25ug, 200ug,
CD40	CD0-H82F2	Human	CD40 (21-193) Fc Avi His	25ug, 200ug,
CD47	CD7-H82F6	Human	CD47 (19-139) Fc Avi	25ug, 200ug,
CD47	CD7-H82E9	Human	CD47(19-139) His Avi	25ug, 200ug,
CTLA-4	CT4-H82F3	Human	CTLA-4 (37-162) Fc Avi	25ug, 200ug,
CTLA-4	CT4-C82E5	Cynomolgus	CTLA-4 (37-160) Avi His	25ug, 200ug,
DNAM-1	DN1-H82F9	Human	DNAM-1 (19-247) Fc Avi	25ug, 200ug,
EGFR	EGR-H82E7	Human	EGFR (25-645) Avi His	25ug, 200ug,
EGFR (vIII)	EGR-H82E0	Human	EGFR(25-29) \ EGFR (298-645) Avi His	25ug, 200ug,
Fc gamma RI / CD64	CD4-M52E8	Mouse	CD64 (25-297) Avi His	25ug, 200ug,

PrecisionAvi Series (Avitag™) Product List

Molecule	Cat. No.	Species	Structure	Size
Fc gamma RIIA / CD32a	CDA-H82E6	Human	H131 CD32a (36-218) Avi His	25ug, 200ug,
Fc gamma RIIA / CD32a	CDA-H82E7	Human	R131 CD32a (35-217) Avi His	25ug, 200ug,
Fc gamma RIIB / CD32b	CDB-H82E0	Human	CD32b (46-217) Avi His	25ug, 200ug,
Fc gamma RIIIA / CD16a	CDA-H82E8	Human	F158 CD16a (17-208) Avi His	25ug, 200ug,
Fc gamma RIIIA / CD16a	CDA-H82E9	Human	V158 CD16a (17-208) Avi His	25ug, 200ug,
Fc gamma RIIIB / CD16b	CDB-H82E1	Human	CD16b (17-200) Avi His	25ug, 200ug,
FcRn	FCM-H82W4	Human	FCGRT (24-297) Avi His B2M (21-119) Strep II	25ug, 200ug,
FcRn	FCM-M82W6	Mouse	FCGRT (22-297) Avi His B2M (21-119) Twin-Strep	25ug, 200ug,
FcRn	FCM-R82W7	Rat	FCGRT (23-298) Avi His B2M (21-119) Strep II	25ug, 200ug,
FcRn	FCM-C82W5	Cynomolgus / Rhesus	FCGRT (24-297) Avi His B2M (21-119) Strep II	25ug, 200ug,
G-CSF R	GCR-H82E4	Human	G-CSF R (25-621) Avi His	25ug, 200ug,
Hemagglutinin (HA)	HA1-V82E1	Influenza	Hemagglutinin (HA) (19-523) Avi His	25ug, 200ug,
Hemagglutinin (HA)	HA1-V82E2	Influenza	Hemagglutinin (HA) (19-338) Avi His	25ug, 200ug,
Hemagglutinin (HA)	HA1-V82E4	Influenza	Hemagglutinin (HA) (17-339) Avi His	25ug, 200ug,

PrecisionAvi Series (Avitag™) Product List

Molecule	Cat. No.	Species	Structure	Size
HGF R	MET-H82E1	Human	HGF R (25-932) Avi His	25ug, 200ug,
HVEM	HV4-H82F1	Human	HVEM (39-202) Fc Avi	25ug, 200ug,
IGF-II	IG2-H82F9	Human	Avi Fc IGF-II (25-91)	25ug, 200ug,
IgG Fc	IG1-H82E2	Human	Human IgG1 Fc (100-330) Avi His	25ug, 500ug,
IgG Fc	IGA-M8210	Mouse	Mouse IgG2a Fc (98-330) Avi	25ug, 500ug,
IL-17 RA	ILA-H82F1	Human	IL-17 RA (33-320) Fc Avi	25ug, 200ug,
IL-17 RA	ILR-H82E0	Human	IL-17 RA (33-320) Avi His	25ug, 200ug,
IL23A & IL12B	ILB-H82W6	Human	His Avi IL23A (20-189) IL12B (23-328)	25ug, 200ug,
IL-4 R alpha	ILR-H82E9	Human	IL-4 R alpha (26-232) Avi His	25ug, 200ug,
IL-7 R alpha	IL7-H82F8	Human	IL-7 R alpha (21-236) Fc Avi	25ug, 200ug,
OX40	OX0-H82F7	Human	OX40 (29-216) Fc Avi	25ug, 200ug,
PCSK9	PC9-H82E7	Human	PCSK9 (31-692) Avi His	25ug, 200ug,
PCSK9	PCY-H82E7	Human	D374Y PCSK9 (31-692) Avi His	25ug, 200ug,
PCSK9	PC9-M82E1	Mouse	PCSK9 (35-694) Avi His	25ug, 200ug,
PD-1	PD1-H82E4	Human	PD-1 (25-167) Avi His	25ug, 200ug,

PrecisionAvi Series (Avitag™) Product List

Molecule	Cat. No.	Species	Structure	Size
PD-1	PD1-H82F2	Human	PD-1 (25-167) Fc **Avi** His	25ug, 200ug,
PD-1	PD1-M82F4	Mouse	PD-1 (25-167) Fc **Avi**	25ug, 200ug,
PD-L1	PD1-H82F3	Human	PD-L1 (19-238) Fc **Avi** His	25ug, 200ug,
PD-L1	PD1-H82E5	Human	PD-L1 (19-238) **Avi** His	25ug, 200ug,
PD-L1	PD1-M82F5	Mouse	PD-L1 (19-238) Fc **Avi**	25ug, 200ug,
PD-L2	PD2-H82E8	Human	PD-L2 (20-219) **Avi** His	25ug, 200ug,
PD-L2	PD2-H82F6	Human	PD-L2 (20-219) Fc **Avi**	25ug, 200ug,
ROR1	RO1-H82F4	Human	ROR1 (30-403) Fc **Avi**	25ug, 200ug,
SCF	SCF-H82E1	Human	SCF (26-190) **Avi** His	25ug, 200ug,
Siglec-3	CD3-H82E7	Human	CD33 (18-259) **Avi** His	25ug, 200ug,
TIGIT	TIT-H82F1	Human	TIGIT (22-141) Fc **Avi**	25ug, 200ug,
TIGIT	TIT-H82E5	Human	TIGIT (22-141) **Avi** His	25ug, 200ug,
TNF-alpha (HPLC-verified)	TNA-H82E3	Human	TNF-alpha (77-233) His **Avi**	25ug, 200ug,
TNF-alpha (HPLC-verified)	TNA-M82E9	Mouse	TNF-alpha (80-235) His **Avi**	25ug, 200ug,
TNFR1	TN1-H82E3	Human	TNFR1 (22-211) **Avi** His	25ug, 200ug,

PrecisionAvi Series (Avitag™) Product List

Molecule	Cat. No.	Species	Structure	Size
VEGF R2	KDR-H82E5	Human	VEGF R2 (20-764) **Avi** His	25ug, 200ug,
VEGF121	VE1-H82E7	Human	**Avi** His VEGF121 (27-147)	25ug, 200ug,
VEGF164	VE4-M82Q3	Mouse	His **Avi** VEGF164 (27-190)	25ug, 200ug,
VEGF165	VE5-H82Q0	Human	His **Avi** VEGF165 (27-191)	25ug, 200ug,

UltraLys Series (Chemical labeling) Product List

Molecule	Cat. No.	Species	Structure	Size
B7-H4	B74-H8222	Human	B7- H4 (29-258) His	25ug, 200ug
CD19	CD9-H8259	Human	CD19 (20-291) Fc	25ug, 200ug
CD3E & CD3D	CDD-H82W0	Human	CD3E (23-126) Fc His CD3D (22-105) Fc Flag	25ug, 200ug
CD3 epsilon	CDE-H8223	Human	CD3 epsilon (23-126) His	25ug, 200ug
CX3CL1	CX1-H8221	Human	CX3CL1 (25-341) His	25ug, 200ug
EphB4	EP4-H8229	Human	EphB4 (16-539) His	25ug, 200ug
EpCAM	EPM-H8223	Human	EpCAM (24-265) His	25ug, 200ug
EpCAM	EPM-H8254	Human	EpCAM (24-265) Fc	25ug, 200ug
ErbB3	ER3-H8223	Human	ErbB3 (20-643) His	25ug, 200ug
FcRn	FCM-H8286	Human	FCGRT (24-297) His B2M (21-119) Strep II	25ug, 200ug
FGF basic	BFF-H8117	Human	FGF basic (143-288)	50ug, 500ug
Growth Hormone R	GHR-H8222	Human	Growth Hormone R (27-264) His	50ug, 200ug
GM-CSF	GMF-H8214	Human	GM-CSF (18-144)	25ug, 200ug
GPA33	GP3-H8224	Human	GPA33 (22-235) His	25ug, 200ug

UltraLys Series (Chemical labeling) Product List

Molecule	Cat. No.	Species	Structure	Size
Her2	HE2-H822R	Human	Her2 (23-652) His	25ug, 200ug
IL-6	IL6-H8218	Human	IL-6 (30-212)	25ug, 200ug
IL-1 alpha	ILA-H8213	Human	IL-1 alpha (113-271)	25ug, 200ug
Mesothelin	MSN-H8223	Human	Mesothelin (296-580) His	25ug, 200ug
Mesothelin	MSN-H826x	Human	Fc Mesothelin (296-580)	25ug, 200ug
PD-1	PD1-M8259	Mouse	PD-1 (25-167) Fc	25ug, 200ug
Protein L	RPL-P814R	N/A	N/A	500ug, 2mg
SCF	SCF-M8228	Mouse	SCF (26-189) His	25ug, 200ug
SOST	SOT-H8245	Human	His SOST (24-213)	25ug, 200ug
TFPI	TFI-H8226	Human	TFPI (29-282) His	25ug, 200ug
Transferrin R	TFR-H8243	Human	His Transferrin R (89-760)	25ug, 200ug
TNF-alpha	TNA-H8211	Human	TNF-alpha (77-233)	25ug, 200ug
TNF-alpha	TNA-H821R	Human	TNF-alpha (77-233)	25ug, 200ug
VEGF165	VE5-H8210	Human	VEGF165 (27-191)	25ug, 200ug

Testimonials

"I have been very satisfied with ACROBiosystems' products and customer service. Their technical support team has been extraordinarily proactive in making sure that our needs are being fully addressed. They always work closely with us to help us find the products that suited our research the best. This includes offering an array of samples for free for our preliminary testing. The demonstration of such awareness of subtle issues surrounding our research was quite unexpected and highly impressive.

Vidal F.de la Cruz, Founder & Principal of Fomento Pharma, LLC

"Rubicon Biotechnology considers ACROBiosystems a preferred vendor to supply us with high quality proteins for our drug development programs, including using their proteins in our in vivo studies. We have contracted with ACROBiosystems to manufacture high purity custom proteins and they proposed, and met, aggressive delivery times that allowed Rubicon to start some critical proof-of-concept studies. Acro's customer service was extremely knowledgeable and responsive and kept us up to date on their progress. We never felt out of the loop. We are extremely satisfied with ACROBiosystems and would recommend them to anyone in the protein discovery and development fields.

Richard Richieri, Founding Partner & Chief Operating Officer, Rubicon Biotechnology

"TNF-alpha immunocapture is easy to automate and offers a very specific sample preparation by isolating only the compound of interest. Furthermore the high specificity generates very low and robust MS/MS signal to noise ratios and has allowed us to gain a factor of ten in sensitivity. Thus our mass spectrometer which hitherto was not sensitive enough, can now detect levels of concentration of our therapeutic monoclonal antibody which are compatible with the clinical diagnosis.

Jean-François Jourdil, University Hospital of Grenoble

"In my ten years of research experience, I have found that the protein products produced by ACROBiosystems are equal to none. They are exceptional in their purity and activity and, as such, have greatly enhanced the quality of my research. It has been a pleasure to find a great multitude of proteins, most with a variety of tags, all offered by a single company. In addition, the efficiency and cordiality of their customer service matches the excellence of their products, resulting in one very satisfied customer!

Adam D. Friedman, University of North Carolina at Chapel Hill

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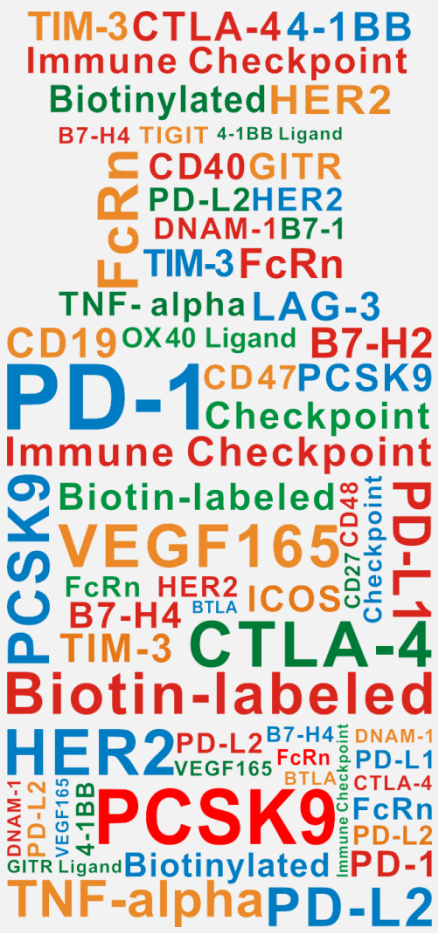

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