

## Recombinant Proteins for Biopharma Industry

## Stability data of lyophilized protein powder under 37°C



## Experimental purpose

\* Testing the stability of lyophilized protein powder at 37°C for assessing the risk of shipment under ambient temperature.

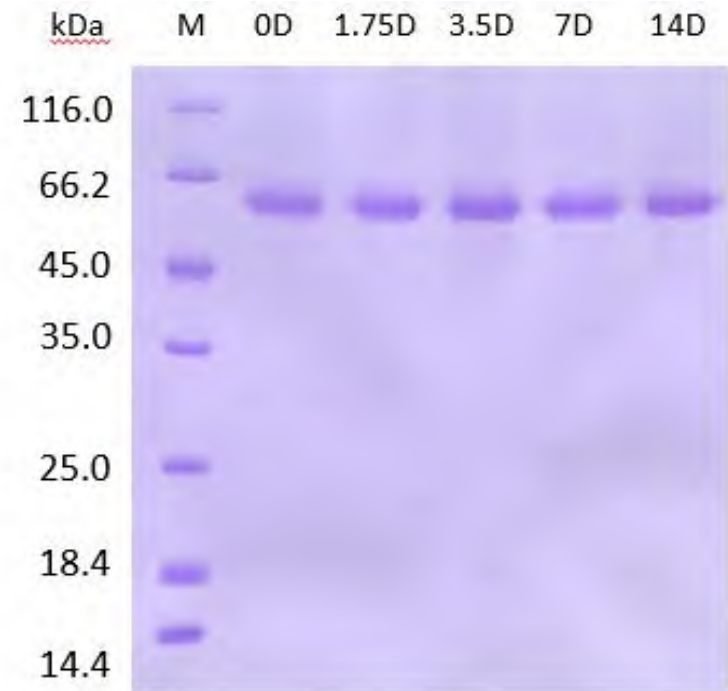
## Stability data

| Code | Cat. No.   | Lot. No.          | Name in Short | Conclusion                                                                                      |
|------|------------|-------------------|---------------|-------------------------------------------------------------------------------------------------|
| 1    | LA3-H5222  | 772-692S1-C8      | LAG-3         | No performance decrease in form of lyophilized powder after incubation for 14 days under 37 °C. |
| 2    | DN1-H82F9  | BV2249-682S1-GR   | DNAM-1        | No performance decrease in form of lyophilized powder after incubation for 7 days under 37 °C.  |
| 3    | SIA-C52H7  | 2667-83GF1-MG     | SIRP alpha    | No performance decrease in form of lyophilized powder after incubation for 15 days under 37 °C. |
| 4    | RO1-H522y  | C81-76KF1-WW      | ROR1          | No performance decrease in form of lyophilized powder after incubation for 7 days under 37 °C.  |
| 5    | CT4-H5229  | C55P1-2061F1-SB   | CTLA-4        | No performance decrease in form of lyophilized powder after incubation for 28 days under 37 °C. |
| 6    | MIA-H5221  | 891-8B9F1-RT      | MICA          | No performance decrease in form of lyophilized powder after incubation for 14 days under 37 °C. |
| 7    | PVG-H5253  | 2721b-208KR2-U3   | PVRIG         | No performance decrease in form of lyophilized powder after incubation for 42 days under 37 °C. |
| 8    | PVG-H82F6  | BV3136a-205KF1-S2 | PVRIG         | No performance decrease in form of lyophilized powder after incubation for 31 days under 37 °C. |
| 9    | ILR-H4223  | 413-6AHF1-CZ      | IL-6 R alpha  | No performance decrease in form of lyophilized powder after incubation for 45 days under 37 °C. |
| 10   | GMP-L15H13 | S85-216QF1-11H    | IL-15         | No performance decrease in form of lyophilized powder after incubation for 7 days under 37 °C.  |
| 11   | DP4-H5266  | 196-20AUF1-U4     | DPPIV         | No performance decrease in form of lyophilized powder after incubation for 20 days under 37 °C. |

## Product Information

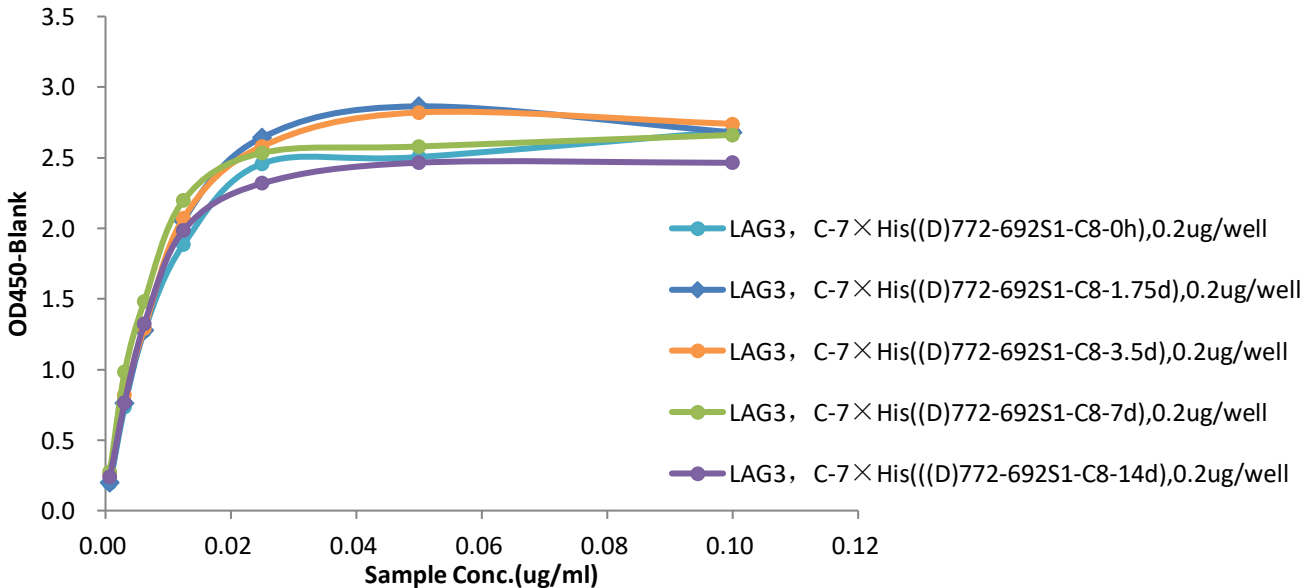
| Protein Name                            | Cat. No.  | Lot. No.     | Sample Form | Test conditions | Sampling time point      | MW        | Rec Con.  |
|-----------------------------------------|-----------|--------------|-------------|-----------------|--------------------------|-----------|-----------|
| Human LAG-3 / CD223 Protein,<br>His Tag | LA3-H5222 | 772-692S1-C8 | Powder      | 37°C            | 0D, 1.75D, 3.5D, 7D, 14D | 55-60 kDa | 100 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

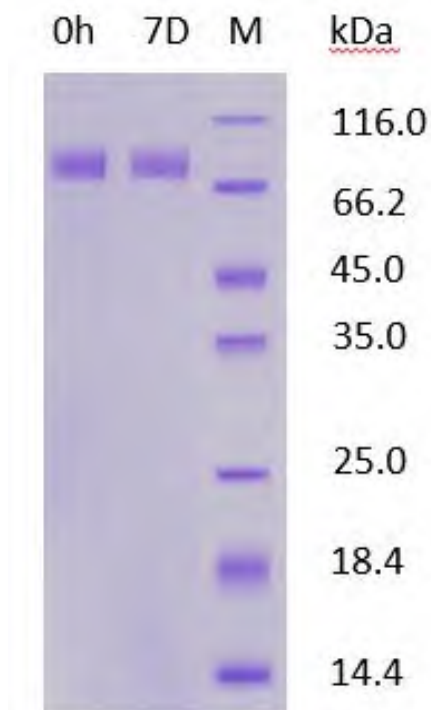
|             |                                                         |
|-------------|---------------------------------------------------------|
| Coating:    | LAG3, C-7×His(Cat. No. LA3-H5222), 0.2ug/well           |
| Sample :    | LAG3 Mab,Human IgG                                      |
| Detection : | HRP*-Goat anti Human IgG, Fcy Fragment Specific,1:10000 |



## Product Information

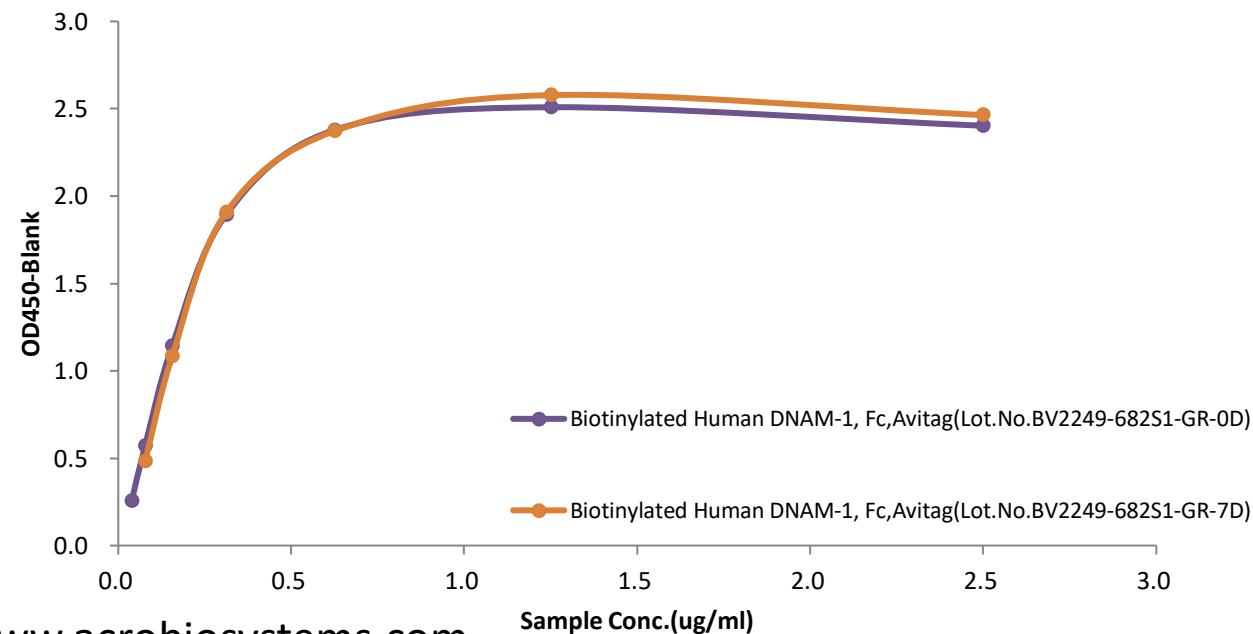
| Protein Name                                          | Cat. No.  | Lot. No.        | Sample Form | Test conditions | Sampling time point | MW         | Rec Con.  |
|-------------------------------------------------------|-----------|-----------------|-------------|-----------------|---------------------|------------|-----------|
| Biotinylated Human DNAM-1 / CD226 Protein, Fc,Avitag™ | DN1-H82F9 | BV2249-682S1-GR | Powder      | 37°C            | 0D, 7D              | 66-100 kDa | 100 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

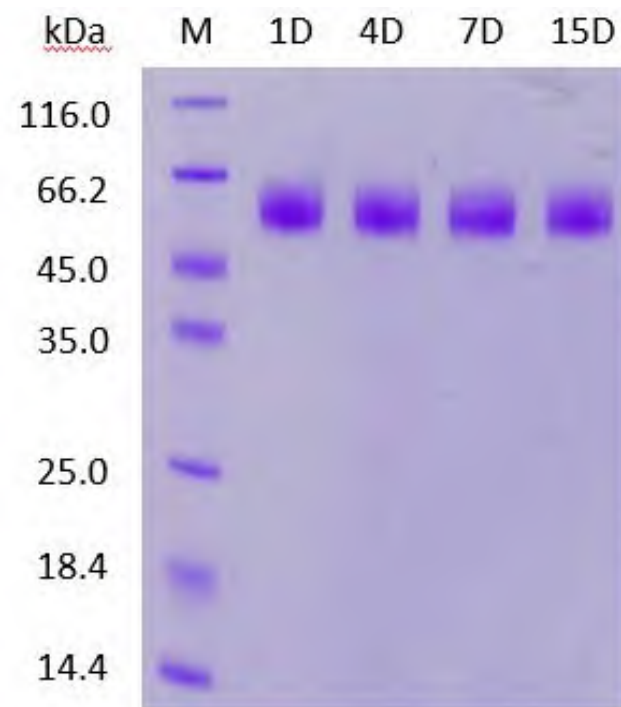
|             |                                                                           |
|-------------|---------------------------------------------------------------------------|
| Coating:    | Rhesus macaque CD155, His Tag (Cat. No. CD5-R52H5), 0.5ug/well            |
| Sample :    | Biotinylated Human DNAM-1, Fc,Avitag (Cat. No. DN1-H82F9)                 |
| Detection : | Streptavidin, horseradish peroxidase conjugated,from Thermo,21126,1:10000 |



## Product Information

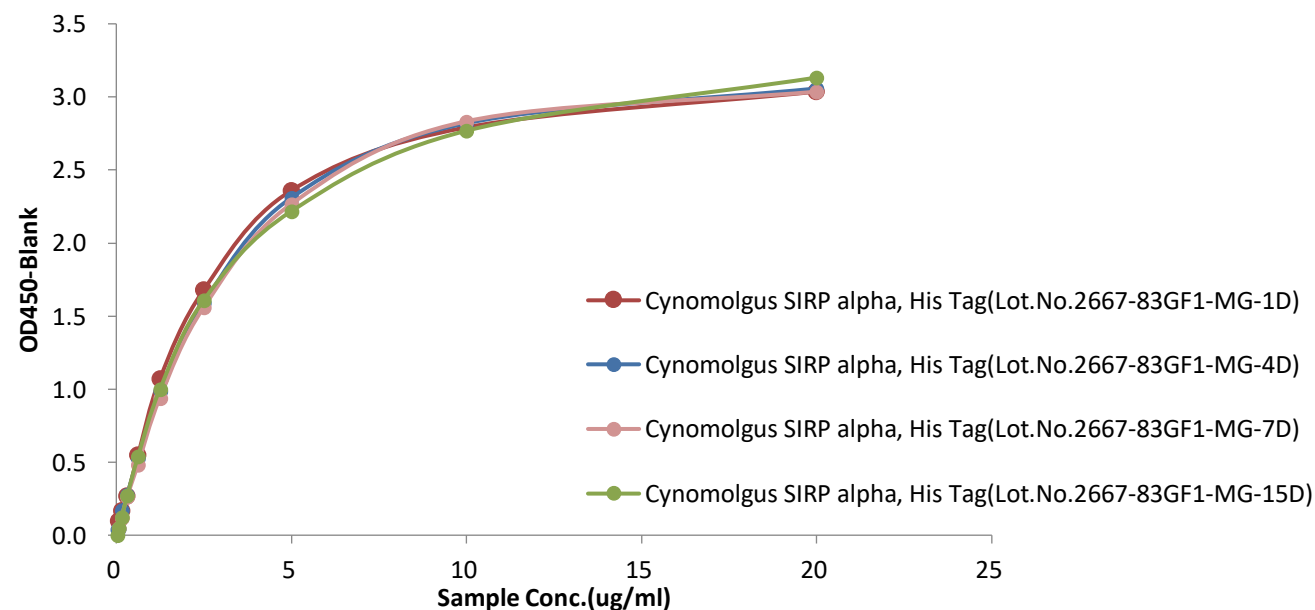
| Protein Name                                    | Cat. No.  | Lot. No.      | Sample Form | Test conditions | Sampling time point | MW        | Rec Con.  |
|-------------------------------------------------|-----------|---------------|-------------|-----------------|---------------------|-----------|-----------|
| Cynomolgus SIRP alpha / CD172a Protein, His Tag | SIA-C52H7 | 2667-83GF1-MG | Powder      | 37°C            | 1D, 4D, 7D, 15D     | 50-65 kDa | 400 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

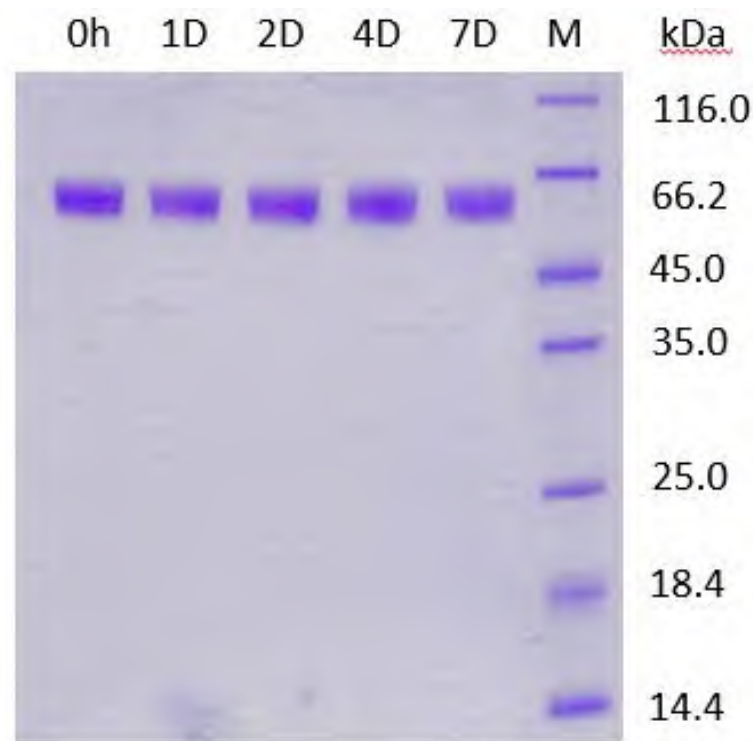
|             |                                                                           |
|-------------|---------------------------------------------------------------------------|
| Coating:    | Cynomolgus / Rhesus macaque CD47, Fc Tag (Cat. No. CD7-C5252), 0.2ug/well |
| Sample :    | Cynomolgus SIRP alpha, His Tag (Cat. No. SIA-C52H7)                       |
| Detection : | 6X His tag antibody[GT359](HRP),from GeneTex,GTX628914-01,1:4000          |



## Product Information

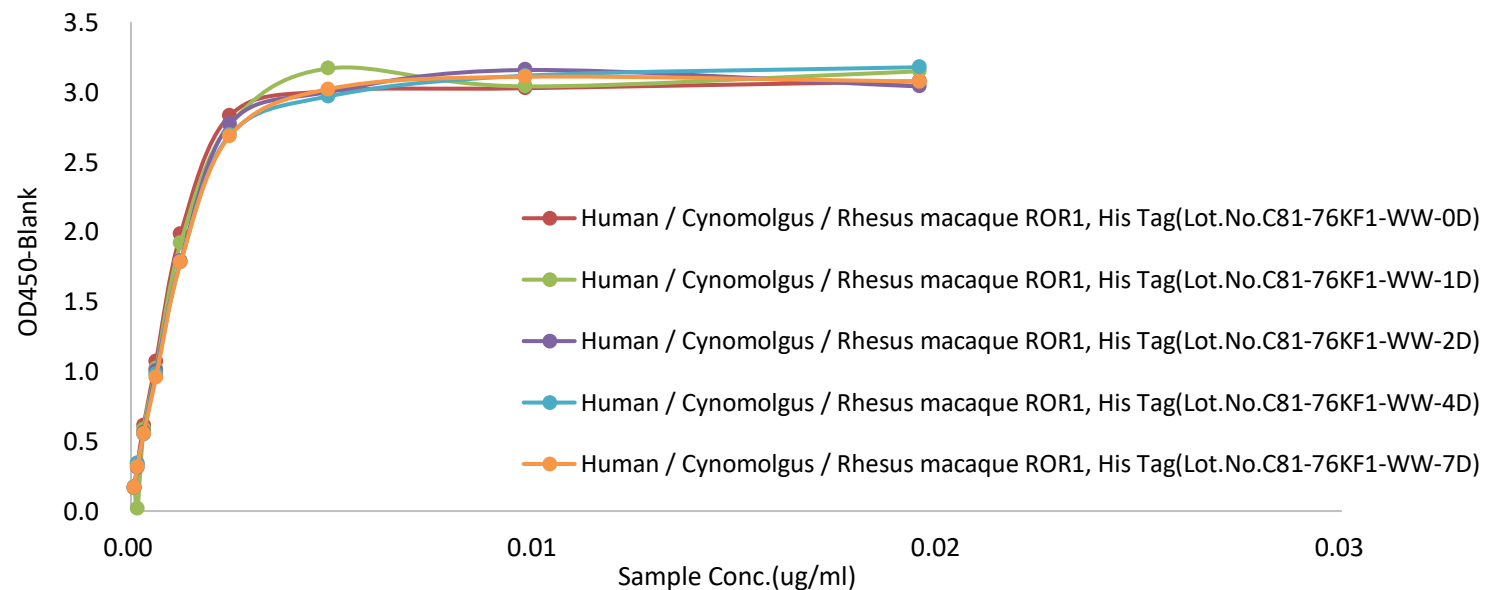
| Protein Name                          | Cat. No.  | Lot. No.     | Sample Form | Test conditions | Sampling time point | MW        | Rec Con.  |
|---------------------------------------|-----------|--------------|-------------|-----------------|---------------------|-----------|-----------|
| Human CTLA-4 / CD152 Protein, His Tag | RO1-H522y | C81-76KF1-WW | Powder      | 37°C            | 0D, 1D, 2D, 4D, 7D  | 55-66 kDa | 400 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

|             |                                                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Coating:    | Human / Cynomolgus / Rhesus macaque ROR1, His Tag (Cat. No. RO1-H522y), 0.2ug/well                                                     |
| Sample :    | Anti-ROR1 Antibody, Human IgG1                                                                                                         |
| Detection : | Peroxidase AffiniPure Goat Anti-Human IgG, Fcγ fragment specific (min X Bov, Hrs, Ms Sr Prot) (Jackson, Cat. No. 109-035-098), 1:12000 |

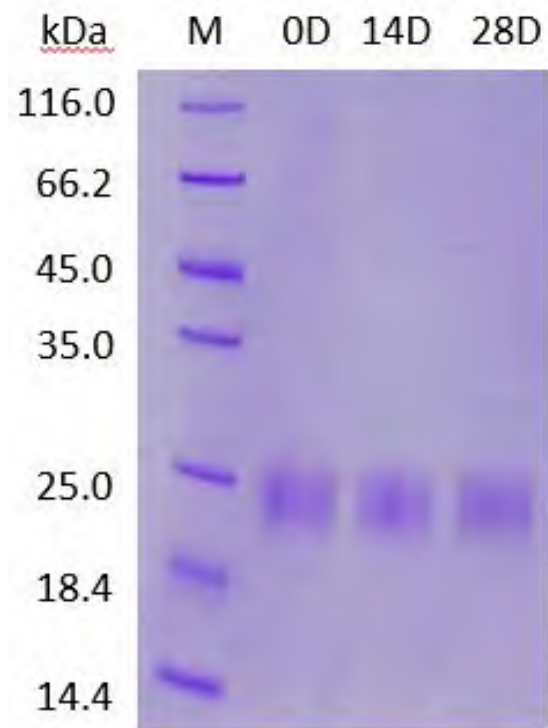




## Product Information

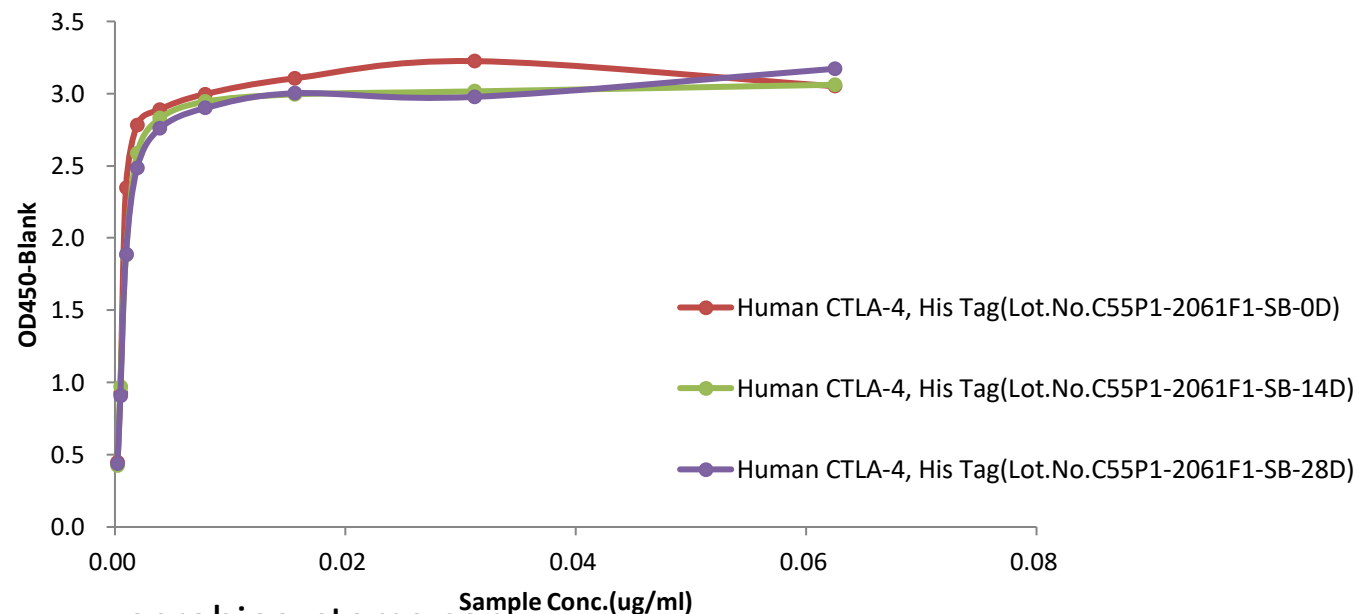
| Protein Name                          | Cat. No.  | Lot. No.        | Sample Form | Test conditions | Sampling time point | MW        | Rec Con.  |
|---------------------------------------|-----------|-----------------|-------------|-----------------|---------------------|-----------|-----------|
| Human CTLA-4 / CD152 Protein, His Tag | CT4-H5229 | C55P1-2061F1-SB | Powder      | 37°C            | 0D, 14D, 28D        | 20-25 kDa | 100 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

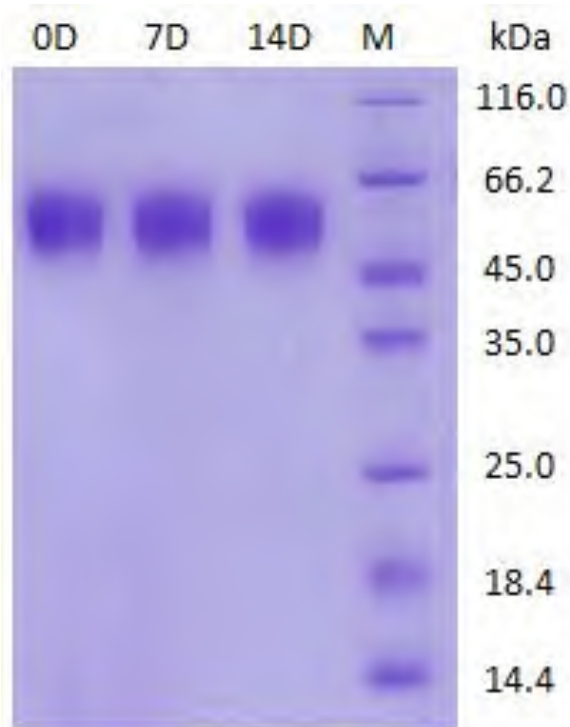
|             |                                                                     |
|-------------|---------------------------------------------------------------------|
| Coating:    | Human B7-1, Fc Tag (HPLC-verified) (Cat. No. B71-H5259), 0.2ug/well |
| Sample :    | Human CTLA-4, His Tag (Cat. No. CT4-H5229)                          |
| Detection : | 6X His tag antibody[GT359](HRP),from GeneTex,GTX628914-01,1:4000    |



## Product Information

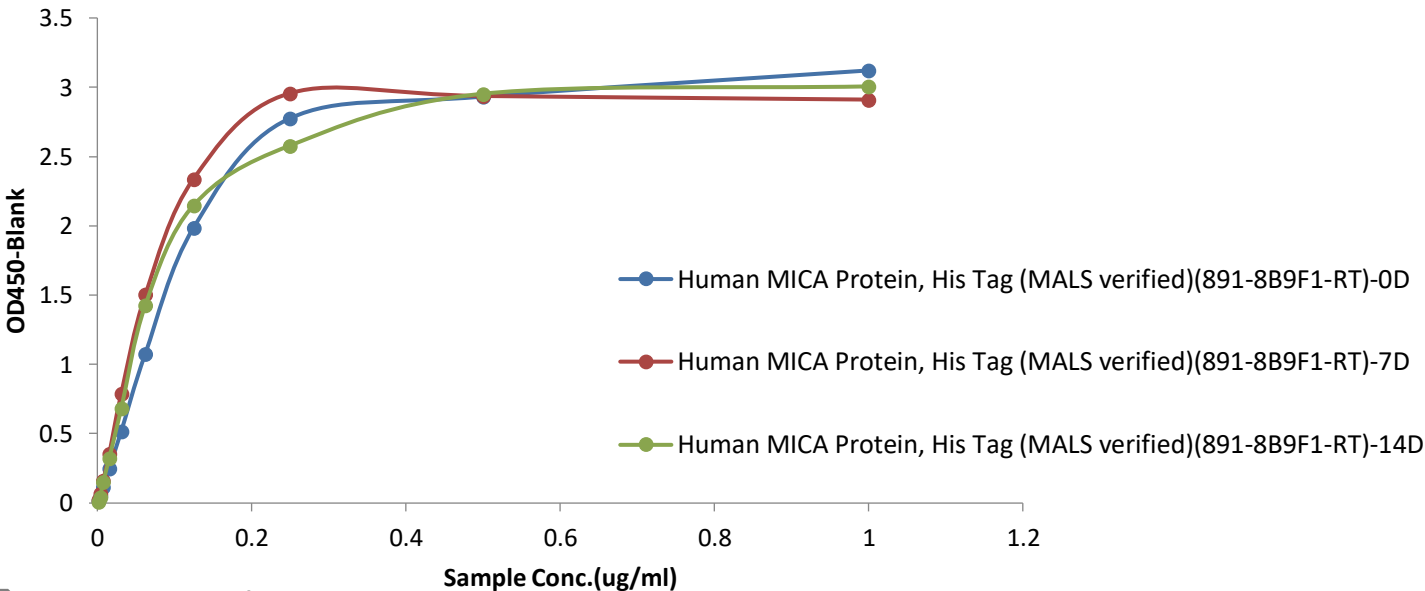
| Protein Name                | Cat. No.  | Lot. No.     | Sample Form | Test conditions | Sampling time point | MW        | Rec Con.  |
|-----------------------------|-----------|--------------|-------------|-----------------|---------------------|-----------|-----------|
| Human MICA Protein, His Tag | MIA-H5221 | 891-8B9F1-RT | Powder      | 37°C            | 0D, 7D, 14D         | 45-66 kDa | 400 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

|             |                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------|
| Coating:    | Human MICA Protein, His Tag (MALS verified)(Cat. No.MIA-H5221), 0.5ug/well                                |
| Sample :    | Human NKG2D, Fc Tag (HPLC-verified) (Cat. No. NKD-H5265)                                                  |
| Detection : | HRP Goat Anti-Human IgG,Fcy fragment specific (min X Bov,Hrs,Ms Sr Prot),form Jackson,109-035-098,1:10000 |

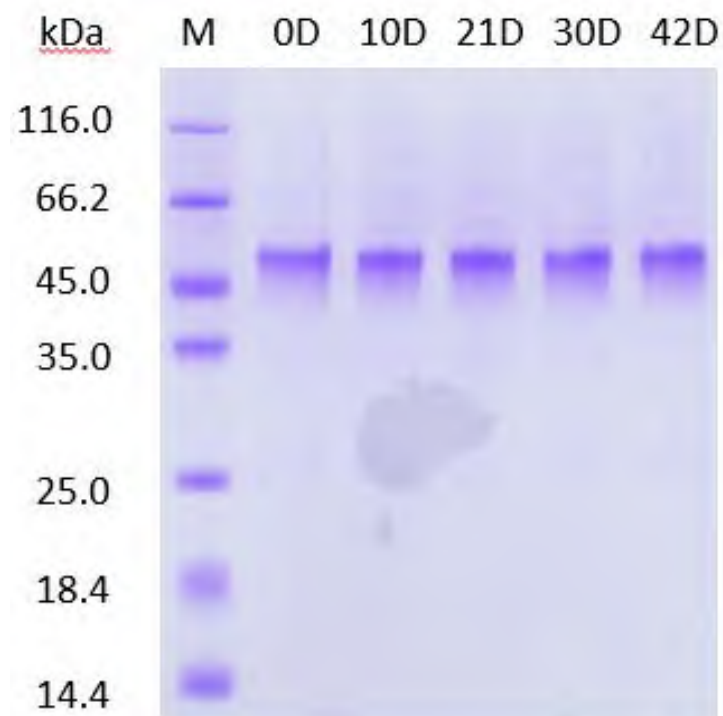




## Product Information

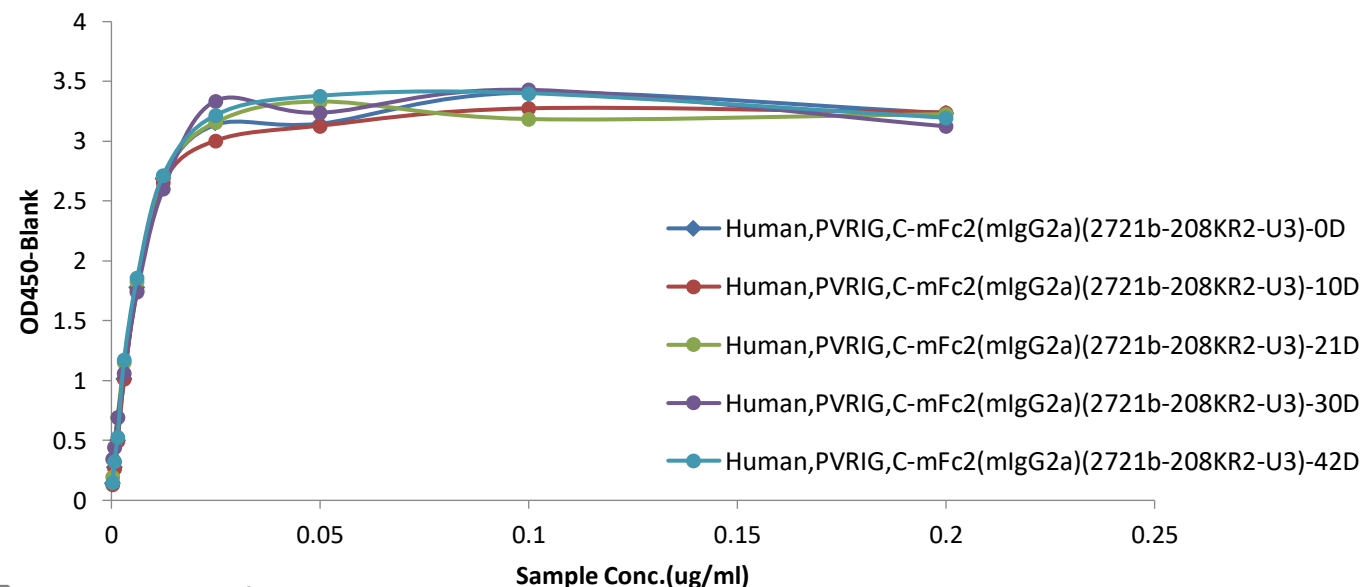
| Protein Name               | Cat. No.  | Lot. No.        | Sample Form | Test conditions | Sampling time point    | MW        | Rec Con.  |
|----------------------------|-----------|-----------------|-------------|-----------------|------------------------|-----------|-----------|
| Human,PVRIG,C-mFc2(mIgG2a) | MIA-H5221 | 2721b-208KR2-U3 | Powder      | 37°C            | 0D, 10D, 21D, 30D, 42D | 50-55 kDa | 200 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

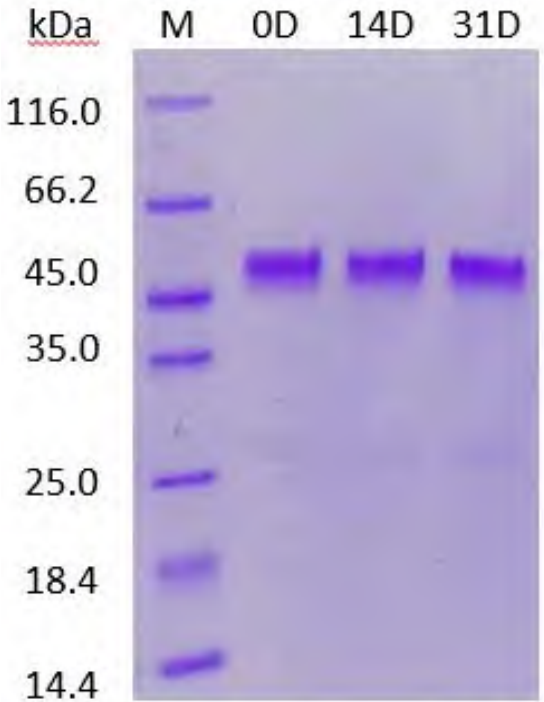
|             |                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Coating:    | Nectin-2,C-Fc(Cat. No. PV2-H5253),0.5ug/well                                                                                          |
| Sample :    | Human,PVRIG,C-mFc2(mIgG2a)(Cat. No.PVG-H5253)                                                                                         |
| Detection : | Peroxidase AffiniPure Goat Anti-Mouse IgG, Fcy fragment specific (min X Hu, Bov, Hrs Sr Prot)(Jackson, Cat. No. 115-035-071), 1:10000 |



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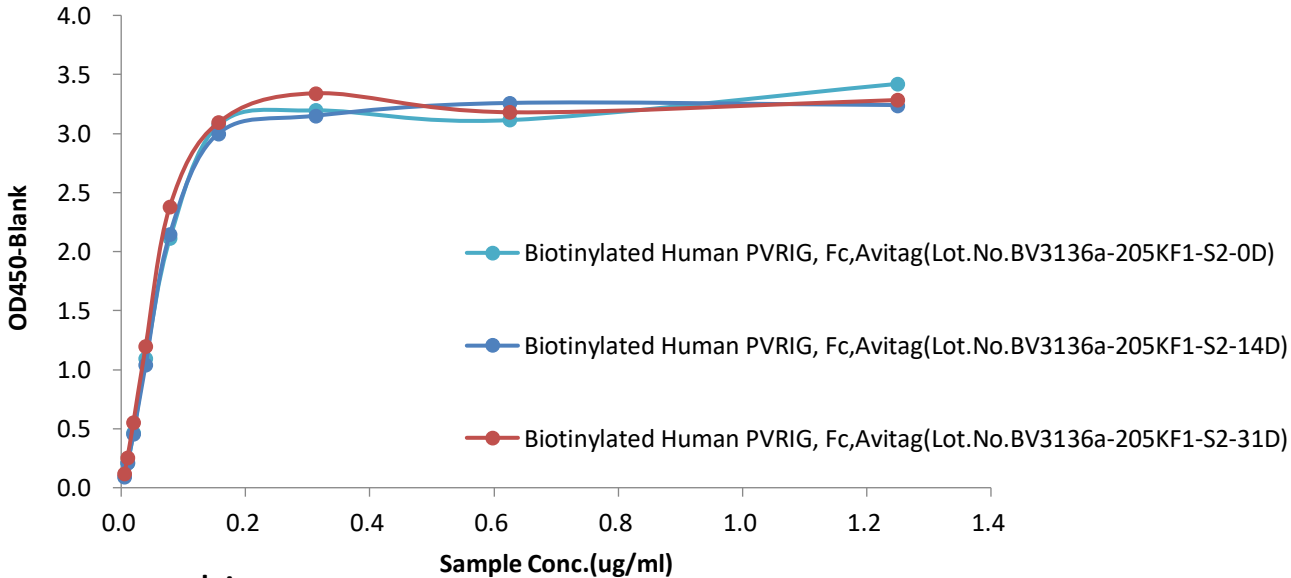
| Protein Name                                 | Cat. No.  | Lot. No.          | Sample Form | Test conditions | Sampling time point | MW        | Rec Con.  |
|----------------------------------------------|-----------|-------------------|-------------|-----------------|---------------------|-----------|-----------|
| Biotinylated Human PVRIG Protein, Fc,Avitag™ | PVG-H82F6 | BV3136a-205KF1-S2 | Powder      | 37°C            | 0D, 14D, 31D        | 50-58 kDa | 100 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

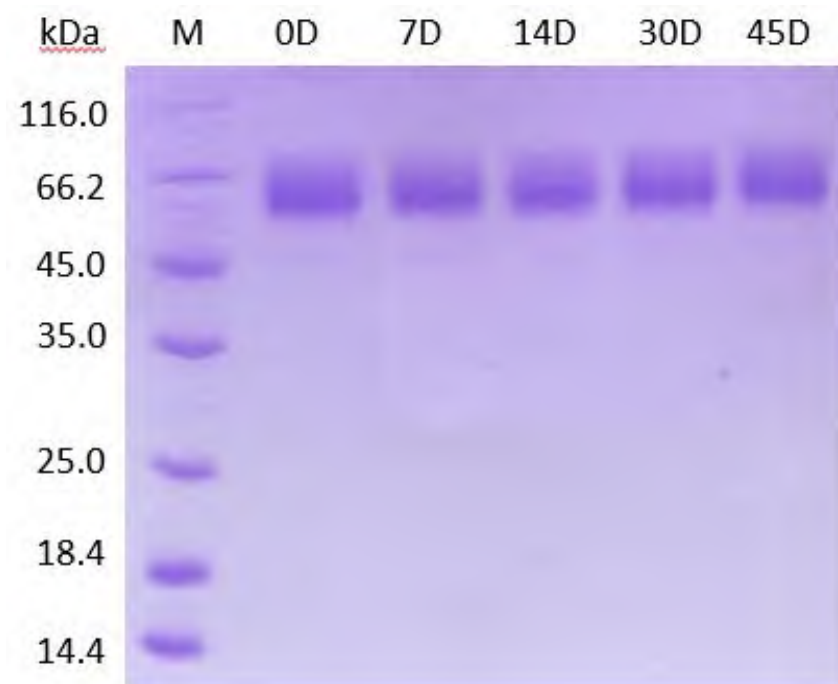
|             |                                                                                          |
|-------------|------------------------------------------------------------------------------------------|
| Coating:    | Human Nectin-2, Mouse IgG2a Fc Tag (Cat. No. CD2-H5257), 1ug/well                        |
| Sample :    | Biotinylated Human PVRIG, Fc,Avitag (Cat. No. PVG-H82F6)                                 |
| Detection : | Streptavidin, horseradish peroxidase conjugated (Thermo Fisher, Cat. No. 21126), 1:10000 |



## Product Information

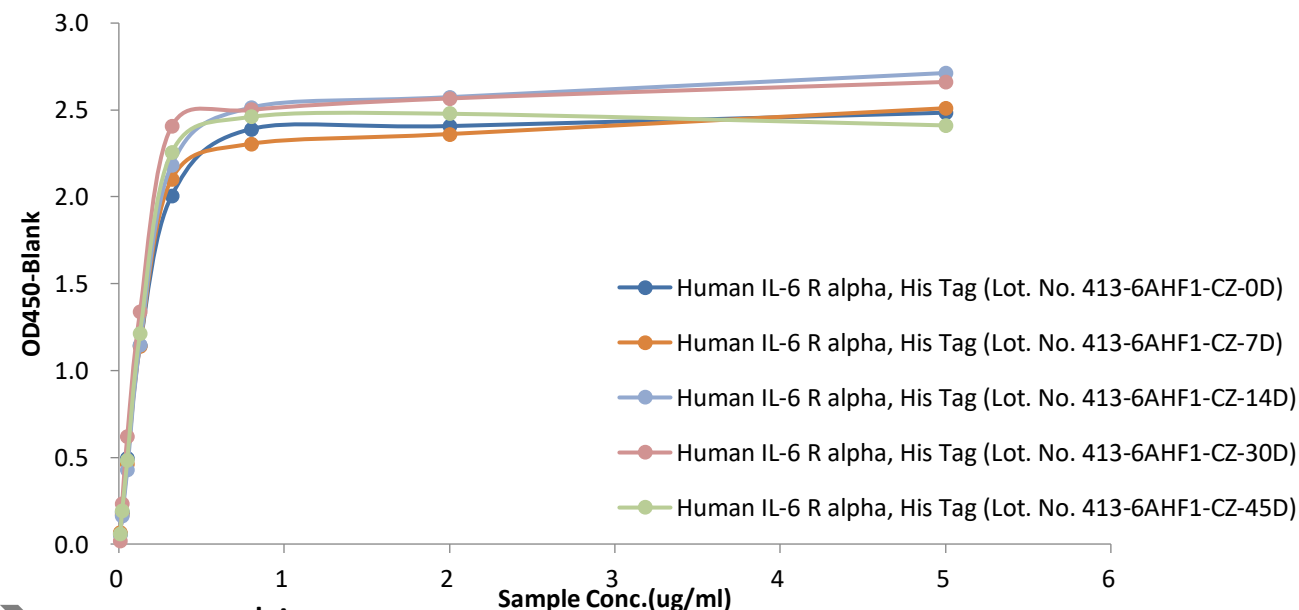
| Protein Name                                | Cat. No.  | Lot. No.     | Sample Form | Test conditions | Sampling time point  | MW        | Rec Con.  |
|---------------------------------------------|-----------|--------------|-------------|-----------------|----------------------|-----------|-----------|
| Human IL-6 R alpha / CD126 Protein, His Tag | ILR-H4223 | 413-6AHF1-CZ | Powder      | 37°C            | 0D,7D, 14D, 30D, 45D | 50-58 kDa | 100 ug/ml |

## SDS-PAGE Data



## Bioactivity Data-Elisa

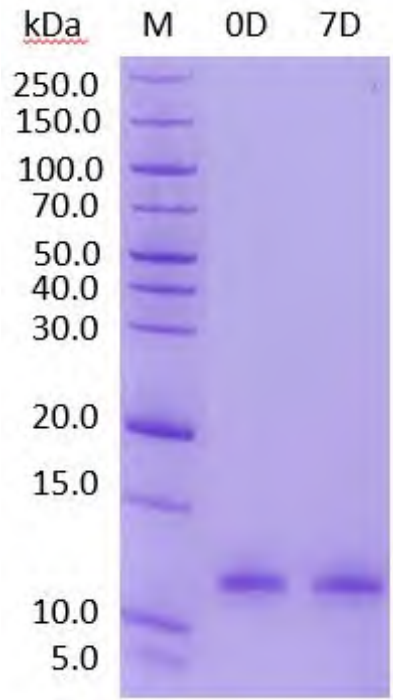
|             |                                                                  |
|-------------|------------------------------------------------------------------|
| Coating:    | ActiveMax® Human IL-6, Tag Free (Cat. No. IL6-H4218), 0.5ug/well |
| Sample :    | Human IL-6 R alpha, His Tag (Cat. No. ILR-H4223)                 |
| Detection : | HRP*-Anti His Tag Monoclonal Mouse Antibody 1:40000              |



Product Information

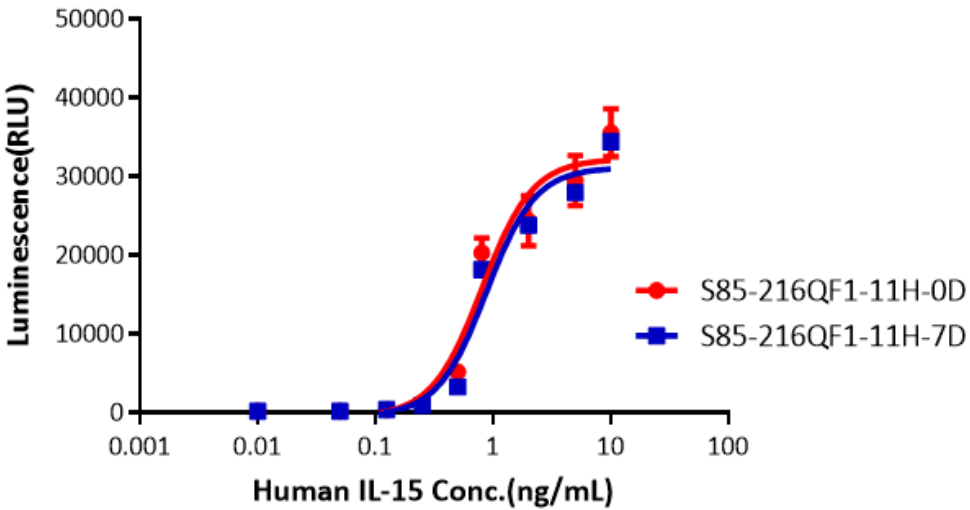
| Protein Name    | Cat. No.   | Lot. No.       | Sample Form | Test conditions | Sampling time point | MW        | Rec Con.  |
|-----------------|------------|----------------|-------------|-----------------|---------------------|-----------|-----------|
| GMP Human IL-15 | GMP-L15H13 | S85-216QF1-11H | Powder      | 37°C            | 0D, 7D              | 12-13 kDa | 500 ug/ml |

SDS-PAGE Data



| Con. of IL-15 (ng/mL) | S85-216QF1-11H-0D       |       | S85-216QF1-11H-7D |       |
|-----------------------|-------------------------|-------|-------------------|-------|
|                       |                         |       |                   |       |
| 10                    | 37729                   | 33419 | 34187             | 34575 |
| 5                     | 31703                   | 27230 | 28246             | 27682 |
| 2                     | 26598                   | 22132 | 24212             | 23449 |
| 0.8                   | 21639                   | 18957 | 18424             | 17826 |
| 0.5                   | 5337                    | 5034  | 3333              | 3240  |
| 0.25                  | 1068                    | 976   | 965               | 903   |
| 0.125                 | 375                     | 359   | 378               | 415   |
| 0.05                  | 208                     | 176   | 232               | 184   |
| 0.01                  | 172                     | 168   | 184               | 169   |
| 0                     | 255、237、231、243、225、229 |       |                   |       |

Bioactivity Data-Cell based assay



## Product Information

| Protein Name                                       | Cat. No.  | Lot. No.      | Sample Form | Test conditions | Sampling time point | MW         | Rec Con.  |
|----------------------------------------------------|-----------|---------------|-------------|-----------------|---------------------|------------|-----------|
| Human DPPIV / CD26 Protein, Fc Tag (active enzyme) | DP4-H5266 | 196-20AUF1-U4 | Powder      | 37°C            | 0D, 7D, 20D         | 90-116 kDa | 400 ug/ml |

## specific activity Data

### Principle :

Measured by its ability to cleave the fluorogenic peptide substrate, Gly-Pro-7-amido-4-methylcoumarin (GP-AMC).

### Definition & Calculations:

$$\text{Specific Activity (pmol/min/}\mu\text{g)} = \frac{\text{Slope (RFU/min)} \times \text{Conversion Factor}^a \text{ (pmol/RFU)}}{\text{amount of enzyme (}\mu\text{g)}}$$

### Assay Data:

| Sample ID         | Name in Short | Bioactivity(pmol/ug/min) | Compare to 0D |
|-------------------|---------------|--------------------------|---------------|
| 196-20AUF1-U4-0D  | DPPIV         | 7974.3                   | 100.00%       |
| 196-20AUF1-U4-7D  | DPPIV         | 8083.4                   | 101.37%       |
| 196-20AUF1-U4-20D | DPPIV         | 8398.6                   | 105.32%       |