

VHH LIBRARY GENERATION

sdAb or VHH is a promising next-generation therapeutic antibody technology for cancer immunotherapy and other applications. Biointron is a well-recognized leader in the field of single domain antibody discovery. Based on our advanced phage display technology and high-throughput antibody expression platform, our scientists are specialized in the production and discovery of specific single domain antibodies.



**SELF-OWNED ALPACA
BREEDING BASE**

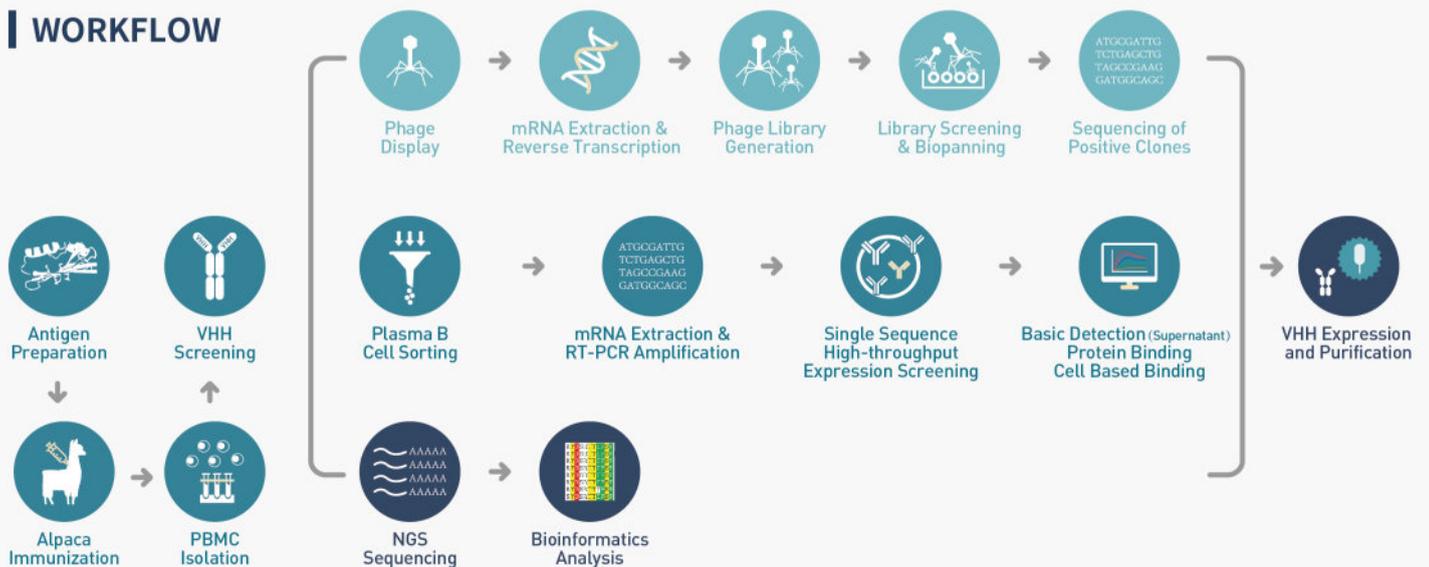


**GUARANTEED 20+
UNIQUE BINDERS**



**HIGH DIVERSITY &
LARGE CAPACITY**

WORKFLOW



Contact Us

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| | | Basic | Gold | Platinum |
|-----------|--|--------------------------|---|--|
| | Starting Material | Soluble Protein | <ul style="list-style-type: none"> Soluble Protein Over-expression Cell Line (Immunization & Detection) | <ul style="list-style-type: none"> DNA Over-expression Cell Line(Immunization & Detection) |
| Phase I | Alpaca Immunization | Soluble Protein | Soluble Protein+Cells | DNA+Cells |
| Phase II | PBMC Collection | >5x10 ⁷ Cells | >5x10 ⁷ Cells | >5x10 ⁷ Cells |
| Phase III | Plasma B Cell Sorting | 1 Round | 2 Rounds | 3 Rounds |
| Phase IV | High-throughput Expression Screening | • 5 Plates | • 15 Plates | • 20 Plates |
| | VHH Expression (SDS-PAGE>95%, SEC-HPLC, Endotoxin level<1 EU/mg) | 20 VHH, 0.5-1mg/Ab | 50 VHH, 0.5-1mg/Ab | 50 VHH, 0.5-1mg/Ab |
| | ELISA Binding Test | ✓ | ✓ | ✓ (with protein antigen) |
| | Biacore Full KD | Optional | ✓ | Optional |
| | FACS | Optional | Detection with Over-expression Cell Line from Mouse, Cyno and Human | Detection with Over-expression Cell line from Mouse, Cyno and Human |
| | Other Assays (Internalization, ADCC/ADCP, etc.) | Optional | Optional | Optional |
| | Guarantee | 20+ Unique Sequences | 20+ Unique Sequences (affinity higher than 10 ⁻⁹), at least 5 Unique Sequences (recognizing Mouse, Cyno and Human) | 20+ Unique Sequences, at least 5 Unique Sequences (recognizing Mouse, Cyno and Human) |

CASE STUDY (VHH LIBRARY DEVELOPMENT FOR CD3)



PLATE1

| Coating | Human CD3E&CD3D/His 2 µg/ml, 100 µl/well, 4°C, 16h | | | | | | | | | | | |
|--------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Blocking | 1% BSA, 150 µl/well, 25°C, 1h | | | | | | | | | | | |
| Primary Ab | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 0.105 | 0.084 | 0.471 | 0.119 | 0.046 | 0.13 | 0.475 | 1.034 | 1.201 | 0.079 | 0.137 | 0.184 |
| B | 1.8 | 0.06 | 0.082 | 0.431 | 0.098 | 0.08 | 0.06 | 0.104 | 0.921 | 0.066 | 0.671 | 0.086 |
| C | 0.081 | 0.09 | 0.1 | 0.152 | 0.136 | 0.056 | 0.048 | 0.062 | 0.049 | 0.054 | 0.059 | 0.128 |
| D | 0.084 | 0.038 | 0.264 | 0.026 | 0.084 | 0.033 | 0.056 | 0.011 | 0.0 | 0.252 | 0.059 | 0.208 |
| E | 0.124 | 0.272 | 0.063 | 1.185 | 0.052 | 0.059 | 0.057 | 0.063 | 0.071 | 0.056 | 0.07 | 0.178 |
| F | 0.05 | 0.077 | 0.057 | 0.077 | 0.06 | 0.069 | 0.052 | 0.062 | 0.07 | 0.081 | 0.065 | 0.139 |
| G | 0.425 | 0.056 | 0.07 | 0.268 | 0.066 | 0.056 | 0.061 | 0.072 | 0.064 | 0.068 | 0.062 | 0.129 |
| H | 0.129 | 0.055 | 0.057 | 0.064 | 0.064 | 1.824 | 1.311 | 0.061 | 0.064 | 0.069 | 0.062 | 0.119 |
| Secondary Ab | Goat Anti-Human IgG-Fc,HRP, 1:10000, 100 µl/well, 25°C, 1h | | | | | | | | | | | |

PLATE2

| Coating | Human CD3E&CD3D/His 2 µg/ml, 100 µl/well, 4°C, 16h | | | | | | | | | | | |
|--------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Blocking | 1% BSA, 150 µl/well, 25°C, 1h | | | | | | | | | | | |
| Primary Ab | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 0.044 | 0.283 | 0.02 | 0.177 | 0.18 | 0.323 | 0.177 | 0.184 | 0.163 | 0.339 | 0.067 | 0.321 |
| B | 0.912 | 0.042 | 0.229 | 0.314 | 0.057 | 0.265 | 0.164 | 0.062 | 0.066 | 0.111 | 0.115 | 0.181 |
| C | 1.753 | 1.637 | 0.106 | 1.189 | 0.085 | 0.098 | 0.216 | 0.079 | 0.084 | 0.075 | 0.077 | 1.031 |
| D | 1.924 | 1.728 | 0.130 | 0.26 | 0.142 | 0.072 | 0.07 | 0.407 | 1.601 | 0.293 | 0.104 | 0.186 |
| E | 1.192 | 1.447 | 0.072 | 0.072 | 0.168 | 0.121 | 0.153 | 0.728 | 0.251 | 0.007 | 0.174 | 0.215 |
| F | 0.433 | 1.727 | 1.13 | 2.026 | 0.099 | 0.274 | 1.108 | 0.754 | 0.202 | 0.134 | 0.205 | 0.046 |
| G | 0.201 | 1.663 | 1.348 | 0.109 | 0.079 | 1.028 | 0.766 | 0.615 | 0.08 | 1.052 | 0.607 | 0.435 |
| H | 0.333 | 0.164 | 0.156 | 0.302 | 0.571 | 0.227 | 0.081 | 0.108 | 0.148 | 0.106 | 0.226 | 0.24 |
| Secondary Ab | Goat Anti-Human IgG-Fc,HRP, 1:10000, 100 µl/well, 25°C, 1h | | | | | | | | | | | |

PLATE3

| Coating | Human CD3E&CD3D/His 2 µg/ml, 100 µl/well, 4°C, 16h | | | | | | | | | | | |
|--------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Blocking | 1% BSA, 150 µl/well, 25°C, 1h | | | | | | | | | | | |
| Primary Ab | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 0.145 | 0.15 | 0.052 | 0.012 | 0.136 | 1.458 | 0.433 | 0.114 | 0.238 | 0.101 | 0.448 | 0.124 |
| B | 0.111 | 0.084 | 0.765 | 0.423 | 0.095 | 0.089 | 0.078 | 0.079 | 0.189 | 0.062 | 0.059 | 0.081 |
| C | 0.155 | 0.019 | 0.207 | 0.1 | 0.443 | 1.227 | 0.302 | 1.382 | 0.132 | 1.031 | 0.098 | 0.082 |
| D | 0.077 | 0.31 | 0.07 | 0.078 | 0.062 | 0.057 | 0.07 | 0.153 | 0.064 | 0.075 | 0.077 | 0.081 |
| E | 0.268 | 0.45 | 0.061 | 0.113 | 0.03 | 1.088 | 0.169 | 0.076 | 0.125 | 0.072 | 0.091 | 0.145 |
| F | 0.332 | 0.083 | 0.062 | 1.385 | 0.161 | 0.189 | 0.057 | 0.071 | 0.254 | 0.069 | 0.079 | 1.445 |
| G | 0.141 | 0.148 | 0.162 | 0.128 | 0.266 | 0.064 | 0.412 | 0.065 | 0.071 | 0.095 | 0.309 | 0.302 |
| H | 0.163 | 0.182 | 0.119 | 1.868 | 0.214 | 0.128 | 0.338 | 0.112 | 0.091 | 1.407 | 0.435 | 0.296 |
| Secondary Ab | Goat Anti-Human IgG-Fc,HRP, 1:10000, 100 µl/well, 25°C, 1h | | | | | | | | | | | |

PLATE4

| Coating | Human CD3E&CD3D/His 2 µg/ml, 100 µl/well, 4°C, 16h | | | | | | | | | | | |
|--------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Blocking | 1% BSA, 150 µl/well, 25°C, 1h | | | | | | | | | | | |
| Primary Ab | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 0.222 | 0.164 | 0.191 | 0.186 | 0.152 | 0.224 | 0.195 | 0.192 | 0.007 | 0.001 | 0.077 | 0.278 |
| B | 0.137 | 0.356 | 0.069 | 0.003 | 0.104 | 0.081 | 0.059 | 0.082 | 0.105 | 0.297 | 0.133 | 0.22 |
| C | 0.171 | 0.133 | 1.565 | 0.093 | 0.108 | 0.091 | 0.074 | 0.08 | 0.086 | 0.513 | 0.12 | 0.267 |
| D | 0.178 | 0.266 | 0.055 | 0.066 | 0.22 | 0.487 | 0.057 | 0.097 | 0.092 | 1.528 | 0.147 | 0.058 |
| E | 0.266 | 0.296 | 0.056 | 0.062 | 0.104 | 1.066 | 0.141 | 0.108 | 0.121 | 0.122 | 1.001 | 0.359 |
| F | 1.561 | 0.119 | 0.331 | 0.207 | 0.054 | 0.223 | 0.078 | 0.078 | 1.338 | 0.133 | 0.142 | 0.266 |
| G | 0.622 | 0.225 | 0.060 | 0.007 | 0.279 | 0.23 | 0.031 | 0.113 | 0.247 | 0.113 | 0.142 | 0.326 |
| H | 0.271 | 0.085 | 0.089 | 0.756 | 1.288 | 0.106 | 0.268 | 0.138 | 0.133 | 0.145 | 0.288 | 0.251 |
| Secondary Ab | Goat Anti-Human IgG-Fc,HRP, 1:10000, 100 µl/well, 25°C, 1h | | | | | | | | | | | |