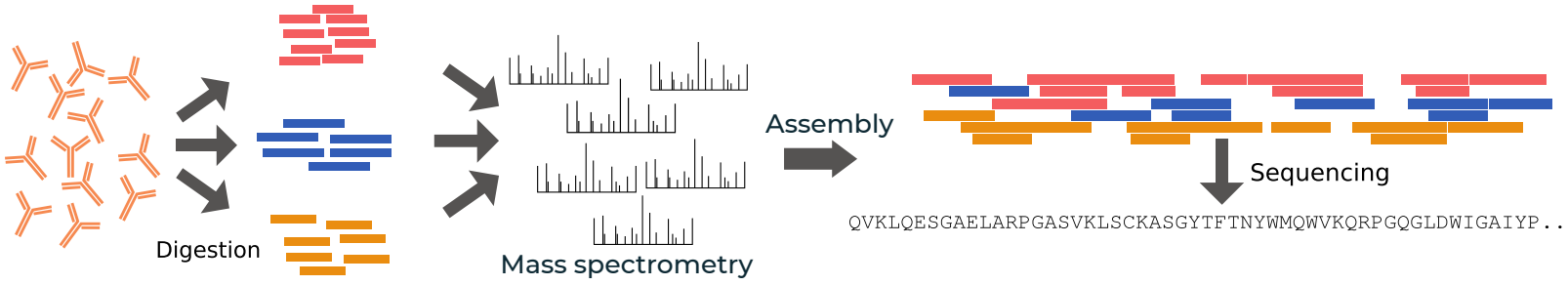
Abterra bio

Valens

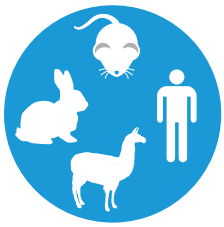
Antibody Protein Sequencing

Lost your hybridoma? Want to convert to a recombinant monoclonal antibody? Valens™ is an antibody protein sequencing service that uses mass spectrometry and proprietary analysis software.

The Valens™ Workflow

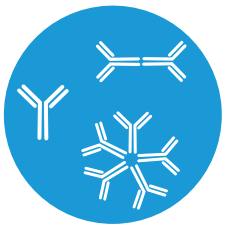


Key Features:



Any Species

Human, mouse, rat, hamster, rabbit, and llama antibodies.



Any Isotype

IgG1, IgG2, IgM and others.

Celebrating Over 10 Years Of Sequencing!

Deliverables:

- **Full-length sequences** of heavy and light chain
- **Free** Leucine and Isoleucine determination with CLIP.
- **Interactive** HTML report
- **Recombinant expression** and binding validation **(Optional)**

Starting Material
100ug, >90% purity

Turnaround Time
3 weeks

All work performed in the USA!

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www.abterrabio.com

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Case Study

In collaboration with LakePharma, Inc. we determined the antibody sequence for an anti-FLAG M2 antibody. We were able to determine the full-length sequence and fill in missing regions of an Edman sequenced publication (Roosild et al, 2006)

Valens sequencing

The purified anti-FLAG M2 antibody was digested with five enzymes, and subjected to LC-MS/MS analysis. Valens recovered the full-length sequences for both the heavy and light chains. We aligned the predicted sequences to the published sequences for the anti-FLAG M2 antibody.

34 Unknown residues in the published sequence (blue)

11 Amino acid differences (orange)

Some amino acids are replaced by 'X' for confidentiality

Heavy Chain

```
Valens     EVQLQQSAAELARPGASVKMSCKASGYXFTXYXIHWVKQRPGQGLEWIGYIXPXXGXXXY
Published  EVQLQQSGGEL?KPGASVKMSCK?SGYTFT?Y?IHW?KQ?-G?GLEWIGYI?P??G??-Y

Valens     NQNFKDETTLTADPSSSTAYMELNSLTSEDSAVYYCARXXXXGXDYWGQGATLTVSS...
Published  N??FKGK?TL??DKSSSTAYM????LTSEDSAVY-C?R????G?DYWGQGTTLTVSS...
```

Light Chain

```
Valens     DVLMTQIPLSLPVSLGDQASISCRSSQXIVHXNGNTYLEWYLLKPGQSPKLLIYKVXNRF
Published  DVLMTQ?PLSLPVSLGDQASISCRSSQ?IVH?NGNTYLEWYLQKPGQSP?LLIYKV?NRF

Valens     SGVPDRFSGSGSGTDFTLKISRVEAEDLGVYYCFQGXHXPYTFGGGTKLEIR...
Published  SGVPDRFSGSGSGTDFTLKISRVEAEDLGVYYCFQG?H?PYTFGGGTKLEIK...
```

Expression and validation

Plasmid DNA encoding the full-length antibody was transfected to CHO cells to produce the HM2 antibody. Purified HM2 antibody was tested for binding to multiple proteins in comparison to commercial M2 antibody, and the results showed that they have similar binding profiles and affinity (Kd).

	Kd against FLAG-tagged protein (Octet)	Kd against His-tagged protein (Octet)	Kd against 3x FLAG-tagged protein (Biacore)
HM2	26 ± 3 nM	No binding	< 1nM
M2 (ref)	25 ± 4 nM	No binding	< 1nM

Using HM2 for purification

HM2 antibody was chemically conjugated to sepharose beads. The resulting beads were used to purify from a mixture containing a FLAG-tagged protein. As shown in the graphs to the right, the HM2 beads can specifically and efficiently purify FLAG-tagged proteins with a recovery rate greater than 90%. The target protein binding capacity is 13.5 mg per mL of HM2 resin, which is more than 10x better than commercial M2 resin.