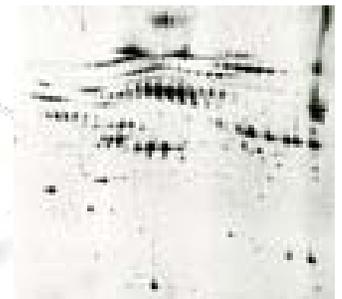
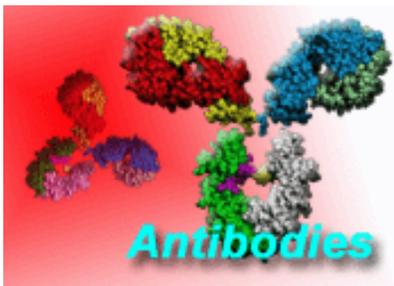




GenWay Biotech, Inc.

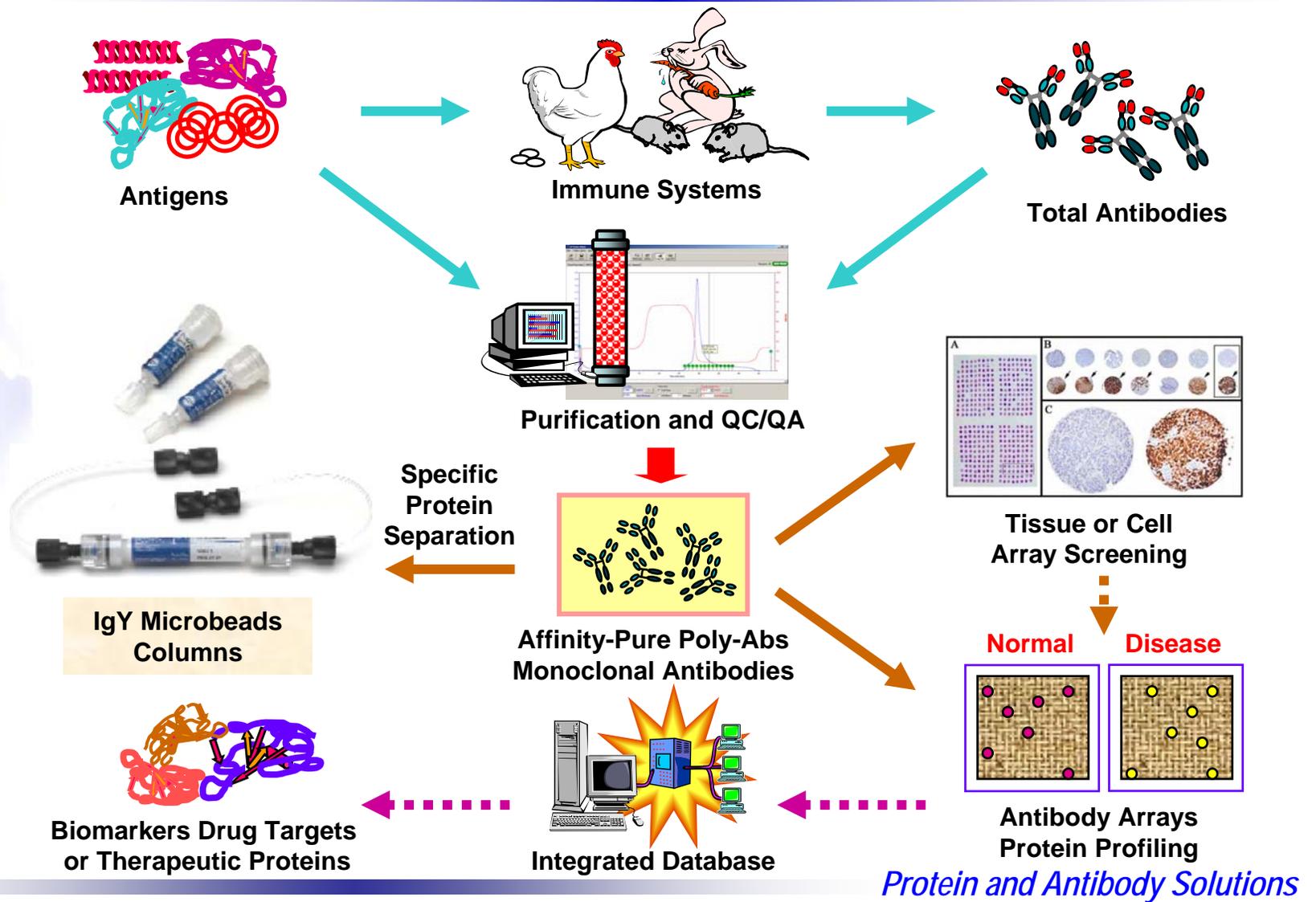
IgY-Based Proteomic Partitioning and Capturing

Meeting the Needs for Sample Preparation

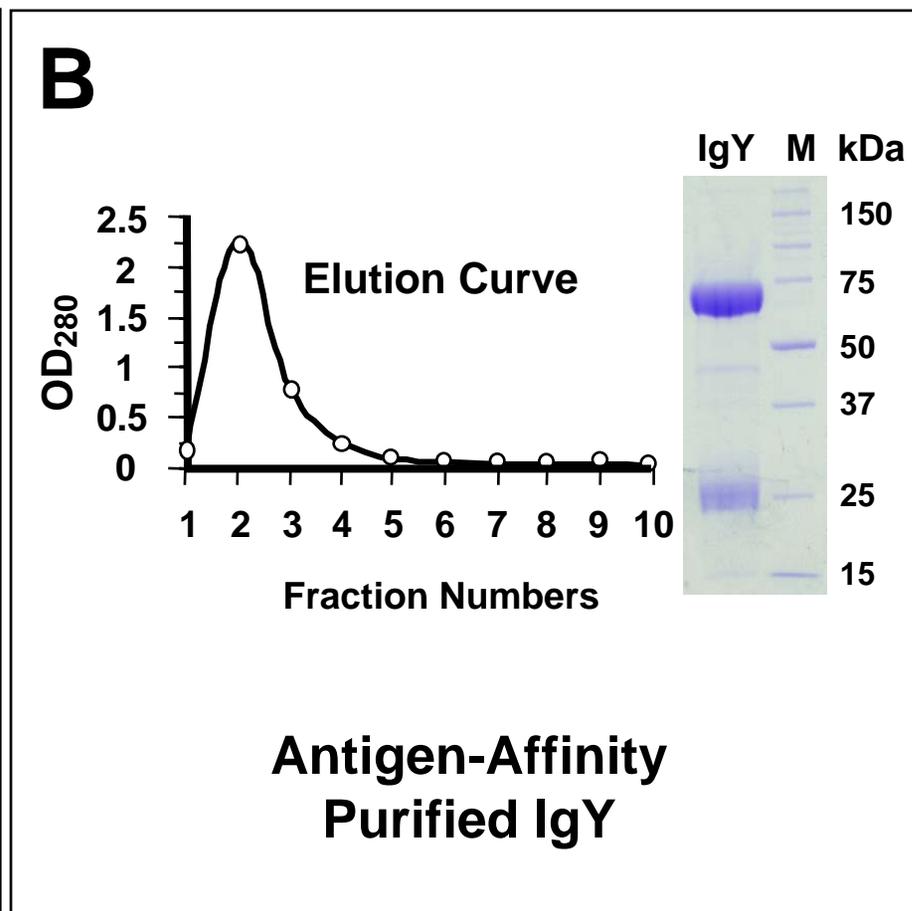
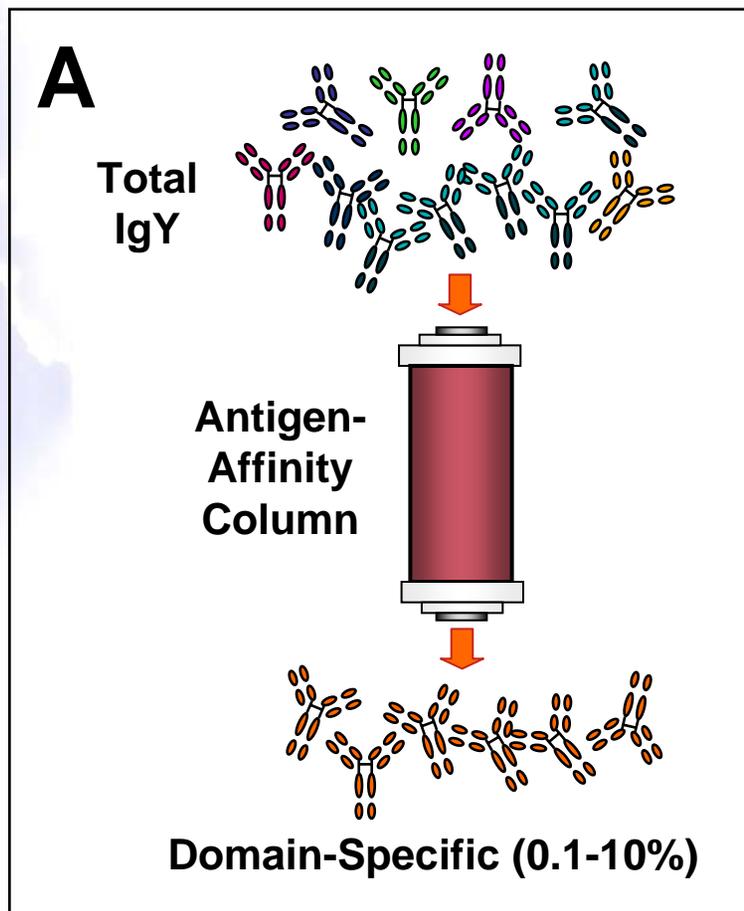


Protein and Antibody Solutions

Protein-Antibody Solutions Provider

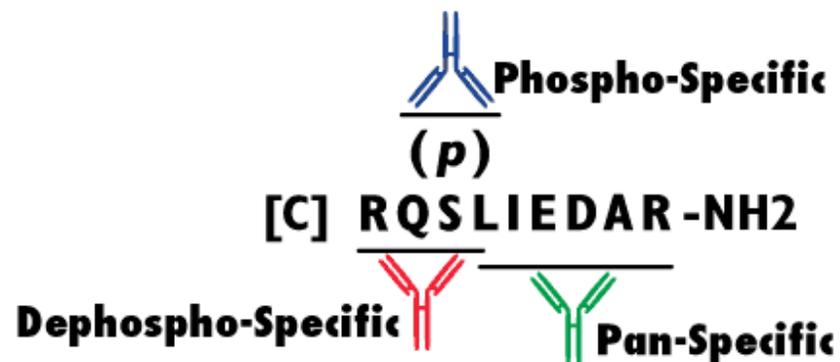


Domain-Specific IgY

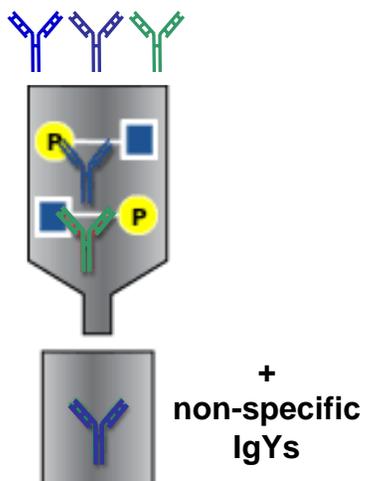


Production of Phospho-Specific IgYs

Three Antibody Possibilities



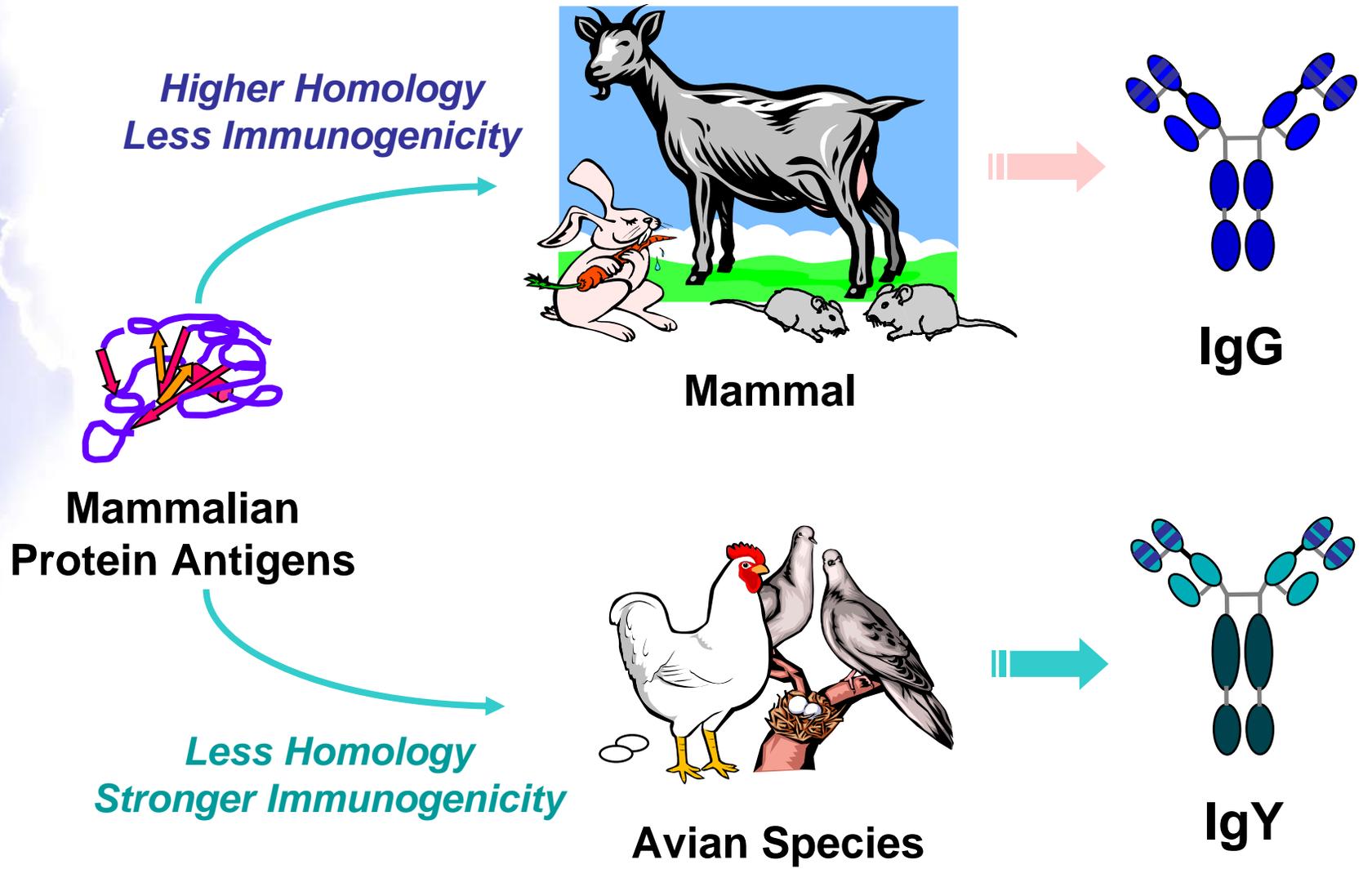
Phospho-peptide Affinity Column



Dephospho-peptide Affinity Column

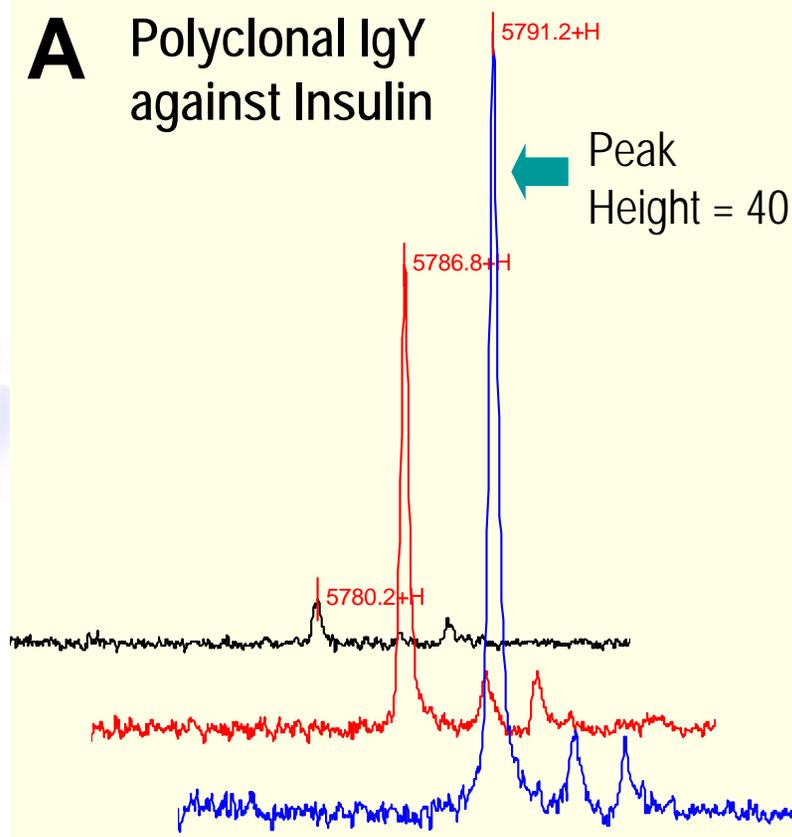


Better Immune Response in Birds



Comparison of Avidity

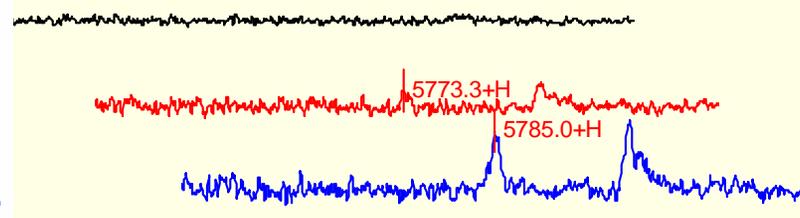
A Polyclonal IgY against Insulin



B Monoclonal IgG against Insulin

10 fg rh-Insulin
50 fg rh-Insulin
100 fg rh-Insulin

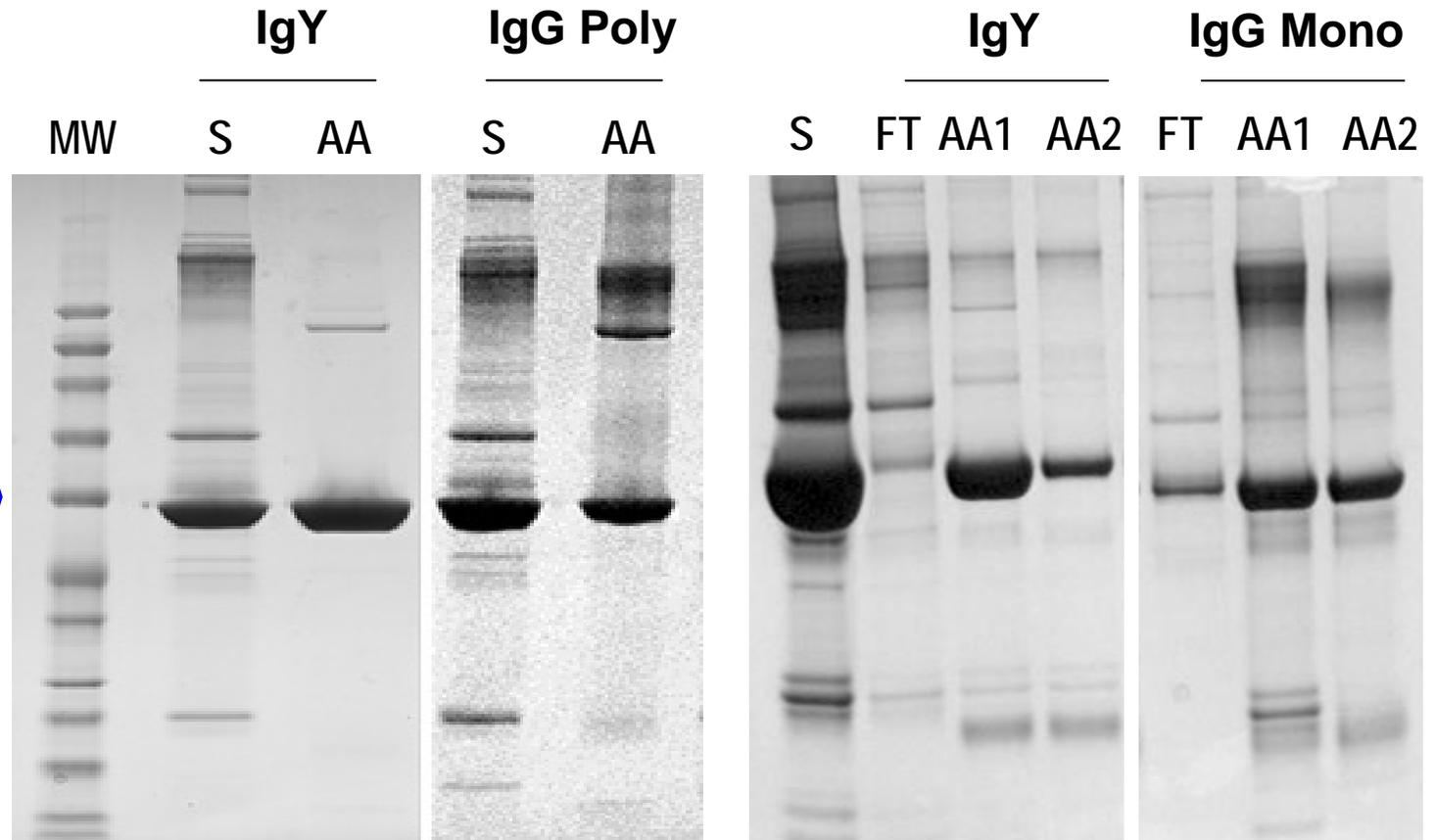
(220 Laser Energy)



CIPHERGEN

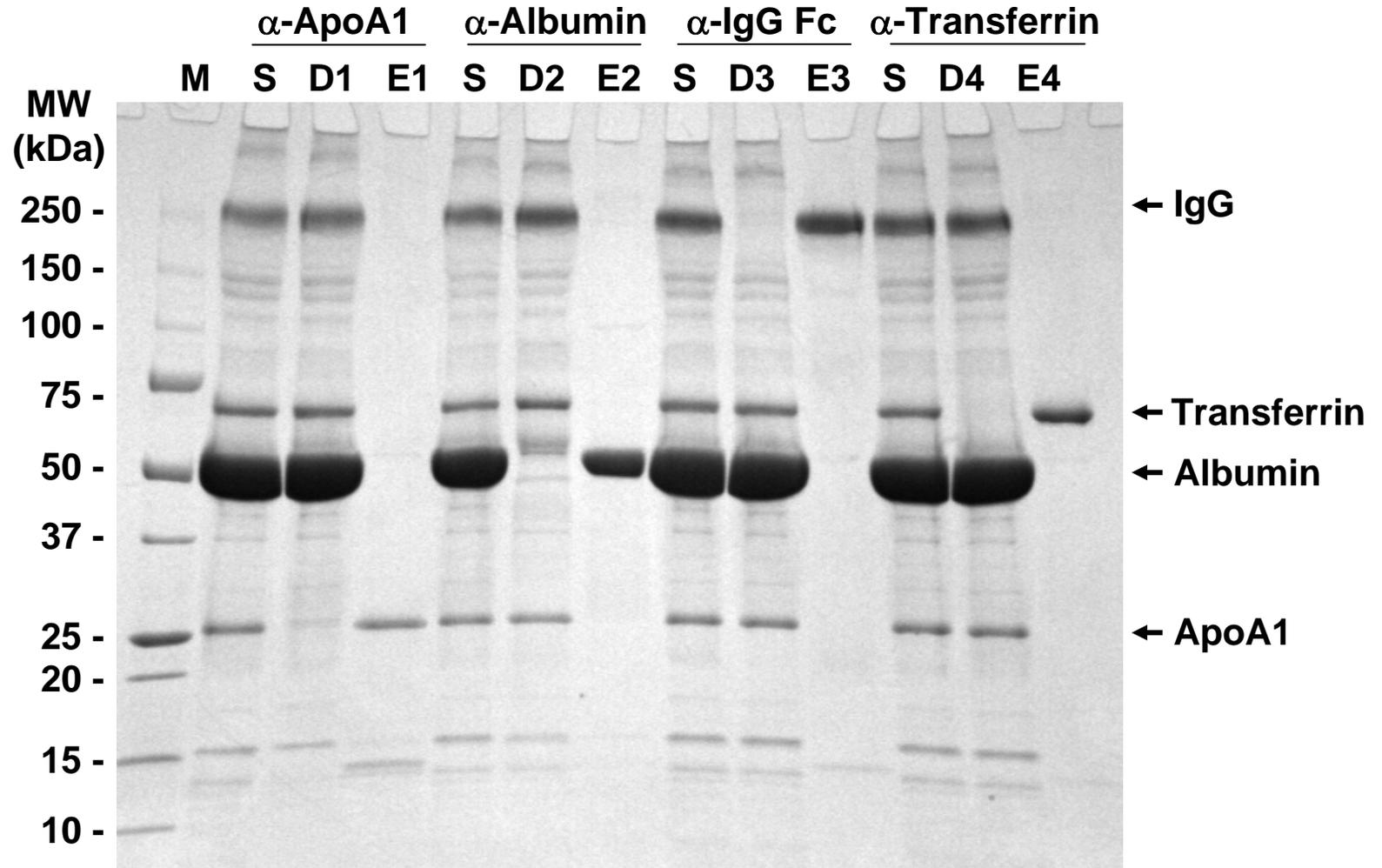
Specificity of Binding: IgY vs IgG

HSA →

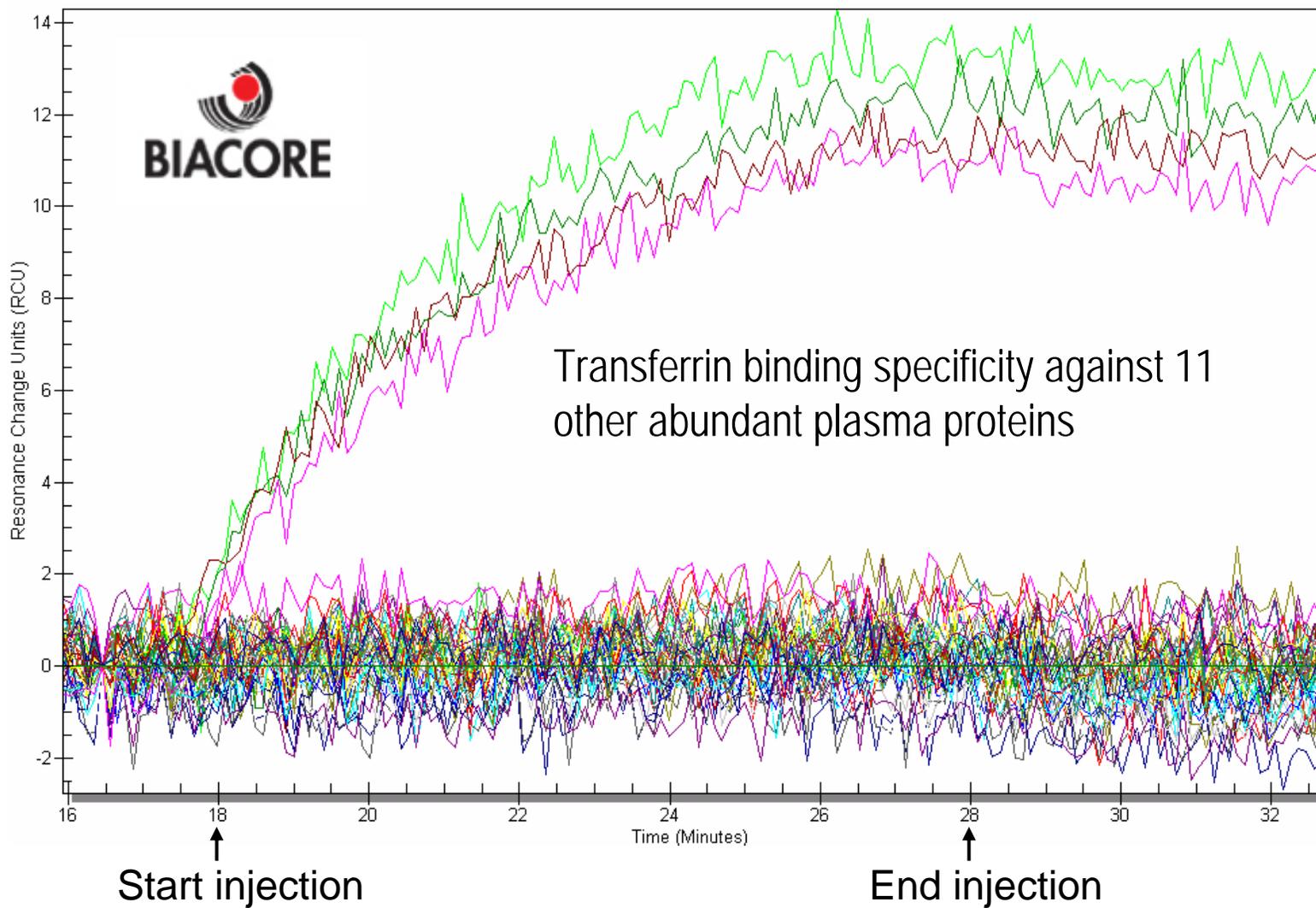


AA = Albumin Associated

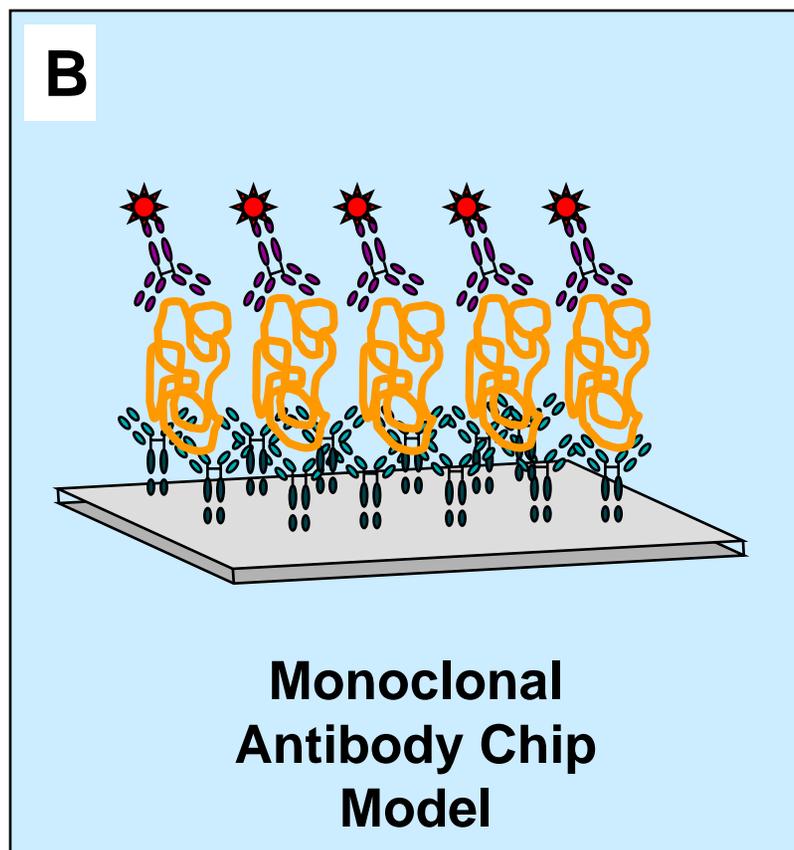
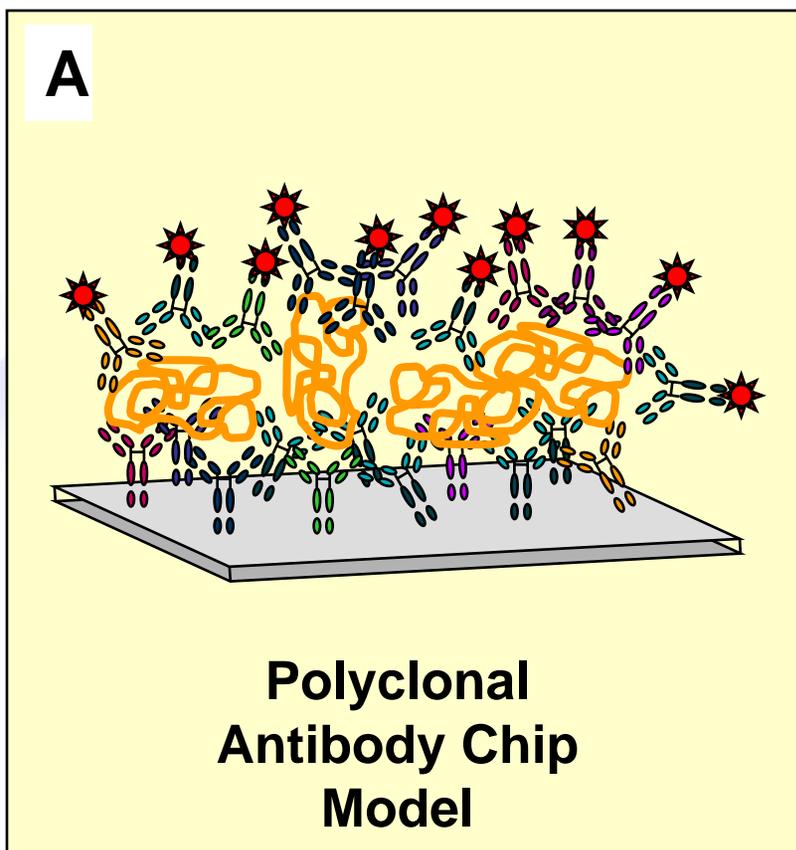
Specific Removal of Targets



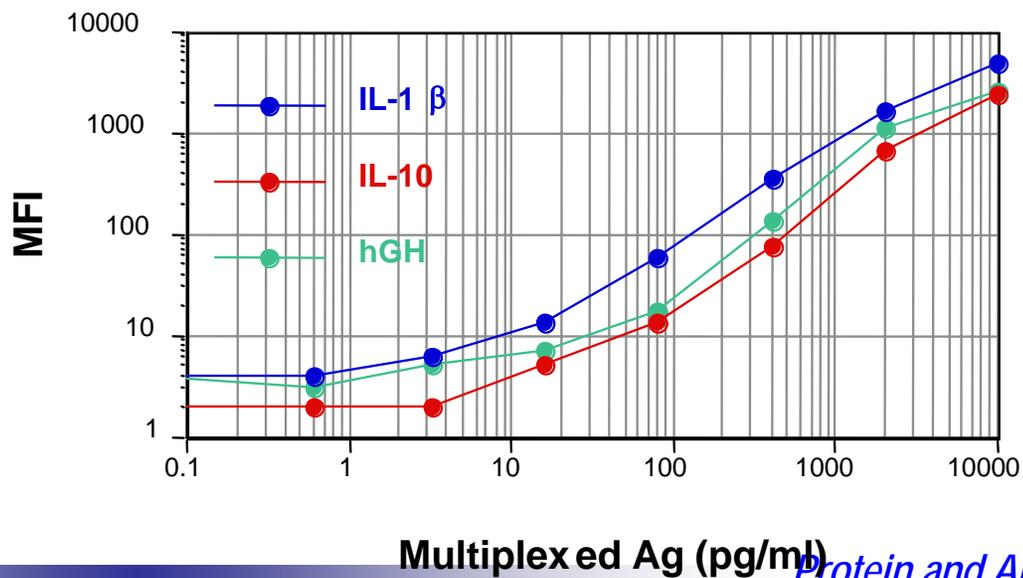
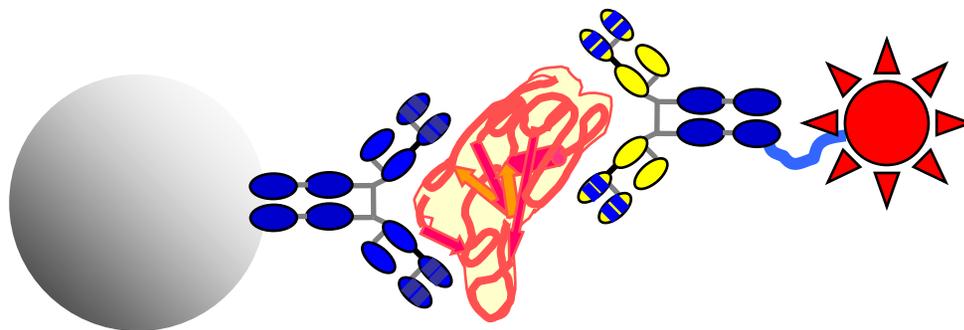
IgY Binding Specificity



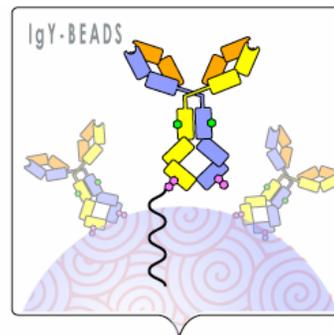
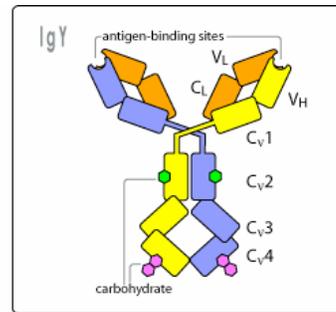
Screening vs Analysis



IgY Application in Luminex

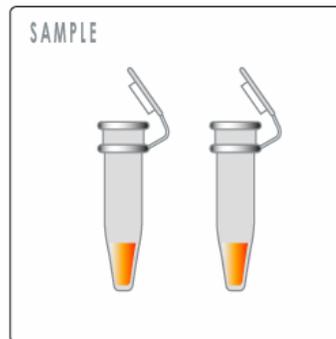


IgY Microbeads – Seppro™

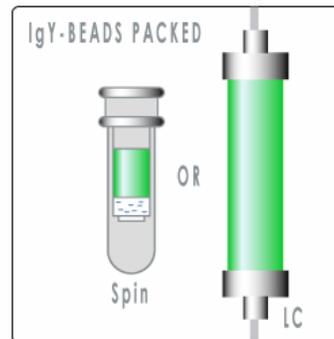
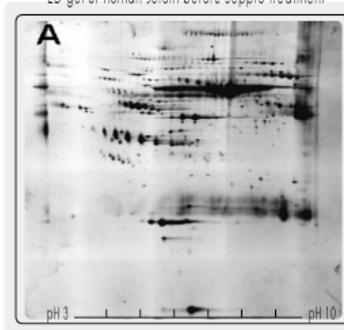


IgY-BEADS' FEATURES

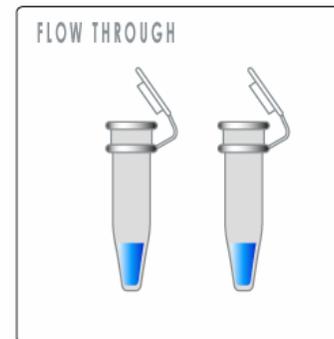
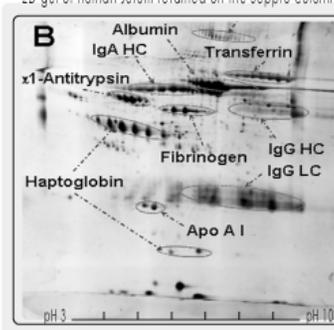
1. High avidity of binding
2. Specific removal of the targets
3. Sample size 20-500 μ l
4. Recyclable >100x
5. Efficacy >95%
6. Minimal loss of non-targets



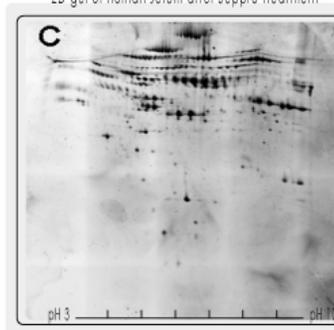
2D-gel of human serum before Seppro treatment



2D-gel of human serum retained on the Seppro column

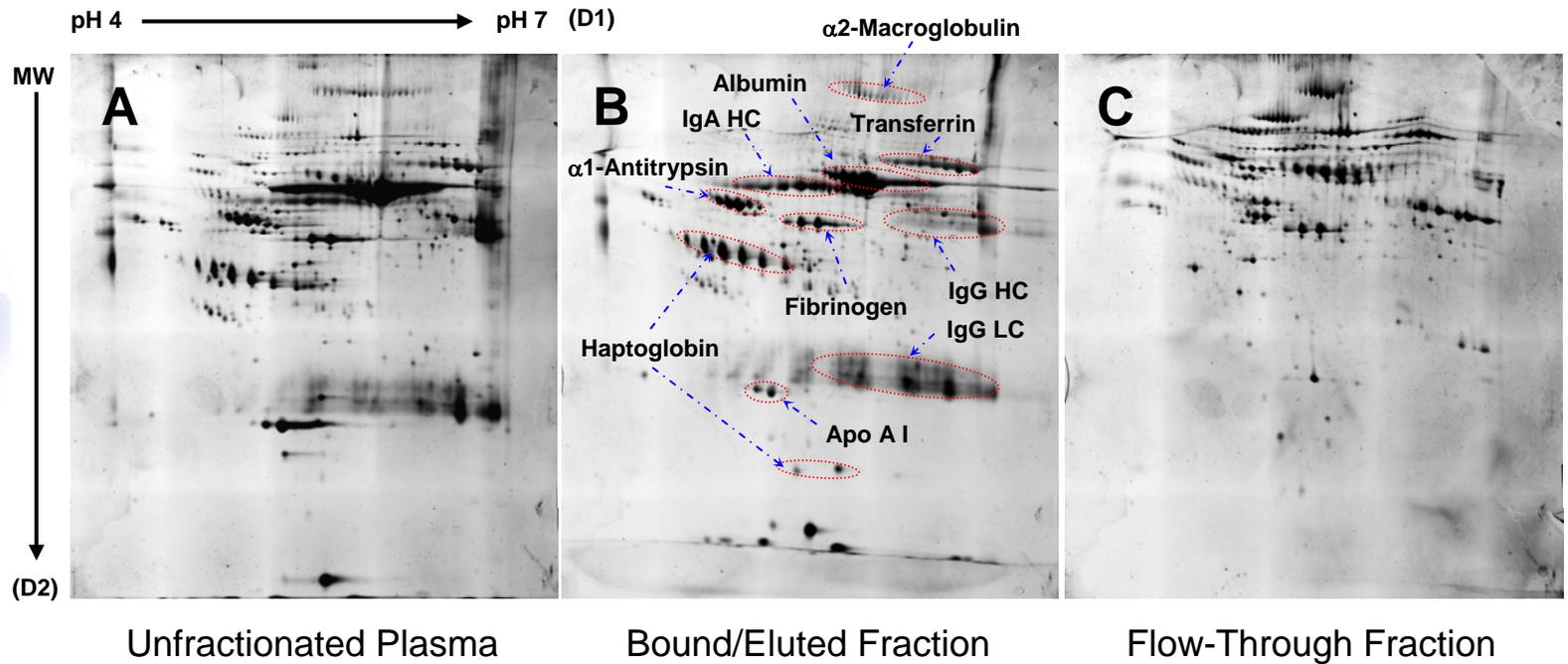


2D-gel of human serum after Seppro treatment



MS
or
2D

Plasma Separated by IgY12



Electrospray NanoLC-MS/MS Analysis of IgY12 Treated Human Serum

Relative Abundance	Flow-Through/ Depleted Plasma	Wash	Bound/ Eluted
1	Complement C3	Complement C3	Albumin
2	Complement C4	α 1-Antitrypsin	α 1-Antitrypsin
3	Ceruloplasmin	Serum Amyloid A1	Apolipoprotein A-I
4	Apolipoprotein B-100	Apolipoprotein A-I	α 2-Macroglobulin
5	Complement B	Apolipoprotein B-100	Transferrin
6	α 1-Antitrypsin	α 1-Acid Glycoprotein	α 1-Acid Glycoprotein
7	α 1-Acid Glycoprotein	Complement C4	Haptoglobin
8	Haptoglobin	Haptoglobin	IgA
9	Antichymotrypsin	Antichymotrypsin	Complement C3
10	Hemopexin	Serum Paraoxonase	Ig kappa heavy chain
11	Angiotensinogen	α 2-HS-glycoprotein	Ig kappa light chain
12	H factor	α 1- β -Glycoprotein	Fibrinogen
13	Antithrombin III	Albumin	Complement C4
14	Complement I	Apolipoprotein D	Serum Amyloid A1
15	Complement C5	Apolipoprotein C-III	Leucine-rich α -Glycoprotein
16	α 1- β -Glycoprotein	C4b Binding Protein	Apolipoprotein A-II
17	Serum Amyloid A1	Ceruloplasmin	IgM heavy chain
18	IgM	Hemopexin	
19	Leucine-rich α -Glycoprotein	Fibrinogen	
20	Serum Amyloid P	Leucine-rich α -Glycoprotein	
21	α 2-HS-glycoprotein	Serum Amyloid A4	
22	Lumican	Apolipoprotein E	
23	Apolipoprotein A-I	Complement Factor B	
24	Herapin Factor 2	Lumican	
25	C Reactive Protein	Complement C9	
26	C4b Binding Protein	Complement factor I	
27	α 2-Macroglobulin	α 2-Macroglobulin	
28	Plasminogen	Vitamin Binding Protein	
29	Vitronectin	Complement C6	
30	Bikunin	Apolipoprotein C-I	
31	Thrombin	Apolipoprotein C-II	
32	Apolipoprotein A-IV	IgA	
33	Apolipoprotein C-II	Ig kappa light chain	
34	Vitamin Binding Protein	Ig lambda light chain	
35	Protein S		
36	C1-inhibitor		
37	Complement C8		
38	Ig J		

10 μ l human serum was separated over a 0.6ml IgY-12 spin column. Fractions were treated as follows:

FT: Flow Through + 500 μ L Loading Buffer + C18 ZipTip.

Wash: 500 μ L + 2 Wash Buffers + SCX ZipTip.

B: 500 μ L + 2 Elution Buffers + C18 ZipTip.

Color-labeled proteins are IgY-12 targets.



Avian IgY Antibody Summary

Advantages	High avidity and specificity, less cross-reactivity, broader species reactivity, accumulative production, and better success rate.
Methodology	Bioinformatic and structural analysis on antigenic domain or epitope, followed by generating recombinant protein as immunogen, injecting immunogen to Chickens, isolating antibodies from egg yolk, and purifying antibodies with antigen-affinity columns.
Mono/polyclonal or other	Specializing in IgY Polyclonal. Also having expertise in IgG monoclonal and polyclonal antibody generation.
Throughput	40 affinity-purified polyclonal antibodies per month, with the capacity linearly scalable to 200 antibody per month. So far over 1,500 antibodies/antigens have been made and delivered.
Cost	\$800-\$1,500 per 0.5 mg antibodies, depending upon antigen type and requirement for affinity purification of the antibodies.
Verification	Western blot as primary QC testing, ELISA as supplement.
Specificity and sensitivity	Validated mainly with Western blot, ELISA, ICC or IHC assays on biological samples such as plasma, cells, tissues, lysates. Biocore or antibody arrays also used.

Features of IgY Antibodies

- ◆ Gene-specific
- ◆ Large quantity
- ◆ Better Stability
- ◆ Stronger Avidity
- ◆ Less Cross-reactivity
- ◆ Broader Species reactivity
- ◆ High Success Rate
- ◆ Good for Immunoaffinity Partitioning

