IpA

IMMUNOPRECISE ANTIBODIES

CRO

B cell Select® Overview – Anti-Idiotype Antibodies

ENGINEERED for the scientific RACE

End-to-(no) end

Our mission is to provide a HUB of the most advanced intelligence and technology to treat disease, bar none.

Our goal is to improve the specificity of biotherapeutics by unlocking the language of the genome.

Anti-Idiotype Antibodies

Superiority of Rabbit B Cell Select®

IPA's proprietary Rabbit B cell Select® workflow provides an anti-idiotype solution that is unmatched in the industry, with a 100% program success rate in generating idiotype specific antibodies.

Anti-Idiotype Antibodies

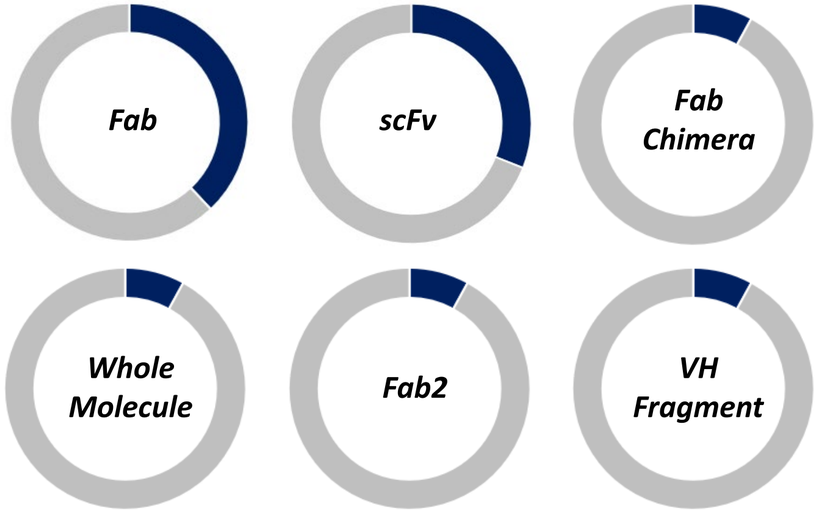
Superiority of Rabbit B Cell Select®

IPA's ability to combine the high specificity and affinity of the rabbit's immune system with the unbiased depth of our "Function-First" B cell Select® workflow, results in the early identification of a superior panel of anti-idiotype antibodies.

25

Recent or in progress
Rabbit B cell Select® Anti-ID Programs

Immunogens



100% [1]

Success of completed programs from a variety of immunogen formats

1. See data slide #6

Anti-ID

Typical program objectives

1. Program Goals

- ✓ To generate anti-idiotype antibodies with specificity to a number of antibody formats including:
  - Fab
  - Whole IgG
  - scFv
  - VHH
  - CAR's
  - ADC's

2. Desired Properties

- ✓ Must be able to discriminate target mAb within a matrix of human immunoglobulin (human serum)
- ✓ Must not bind outside the idiotype of the antibody or cross react with other antibodies with same scaffold
- ✓ High affinity
- ✓ Both blocking and non-blocking properties
- ✓ Antibody pairs

3. Ab Development

- ✓ **B cell Select®**
  - Immunization: 2-5 x rabbit
  - Functional Screening: ELISA, Octet®
  - Timeline: ~2.5 months
- ✓ Recombinant Production

Anti-ID

Rabbit anti-ID program and screening workflow

Pre-Phase

Target Validation: QC of immunogen prior to immunization

Phase I

Immunization: 28-day or 78-day immunization of cohort of 2 x rabbits

Phase II

PBMC isolation: 30 mL whole blood (no sacrifice required)

B cell enrichment: Proprietary antigen specific enrichment

B cell culture and primary screen: 40x 96-well plates

Phase III

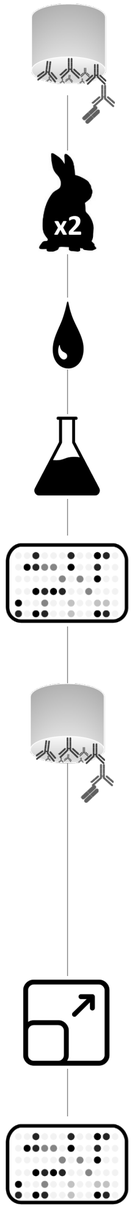
Molecular cloning and sequencing: up to 48 lead candidates based on primary screening data

Secondary screening: Sequence confirmation and further testing of up to 48 recombinant lead candidates

Phase IV

Recombinant expression and purification: up to 48 clones at scale desired by client

Tertiary testing: Testing of purified material



Target Validation
- QC by ELISA, Octet®

Immunization:
- 28 day
- 78 day

Test Bleed:
- ELISA: Immunogen
- ELISA: Off-target

1˚Screening (B cell supernatant):
- ELISA: Target
- ELISA: Off-target scaffold
- ELISA: Target human serum

Octet®:
- Binding
- competition
- Off-rate

IPA can determine blocking/nonblocking and relative off-rates of lead candidates prior to sequencing.

2˚/ 3˚ Screening (Recombinant)
- ELISA: Target
- ELISA: Off-target scaffold
- ELISA: Target human serum
- Octet®: Binding/competition/kinetics

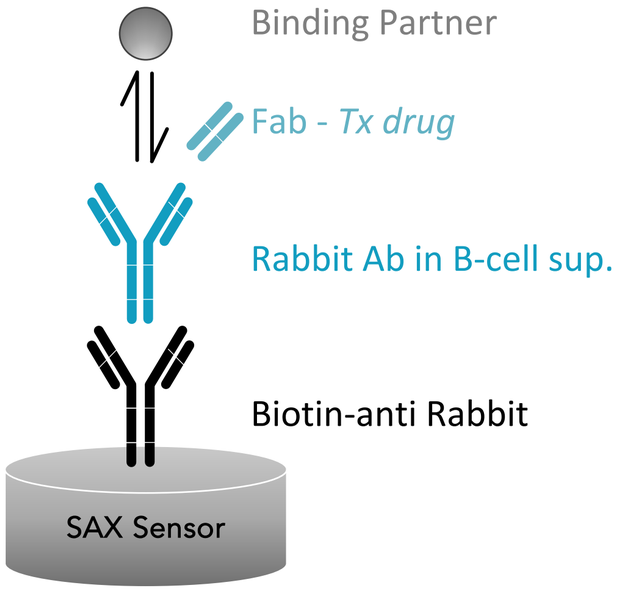
Anti-ID

Octet® characterization of primary B cell supernatant

IPA's "Function-First" B cell Select® workflow allows for the identification of blocking/non-blocking functionality and in addition to off-rate ranking **prior to cloning/sequencing**

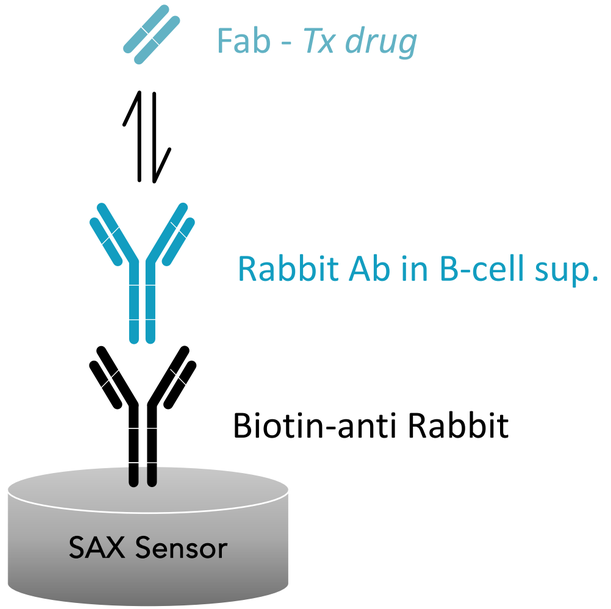
Competition Assay

Determine blocking / non-blocking properties



Off-rate Ranking / Full Kinetics

Relative & absolute affinity measurements



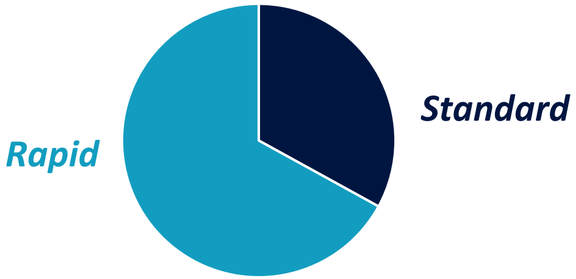
Anti-ID

Completed anti-Id rabbit programs since 2020

B cell Select® Rabbit Anti-ID Programs

Program Average sorted by		*Normalized to 3840 clone screen*		*Normalized to cloning and sequencing of top 48 clones*		
		Total Ag (+) Clones *Primary Screen*	ID-Specific Clones *Secondary Screen*	B Cell Cloning Efficiency	Unique Sequences	
					Combined H + L	*CDR3*
Immunogen	**Fab**	**160** 5%	**91** 57%	**37** 77%	**36** 97%	**33** 88%
	scFv	**101** 3%	**57** 56%	**38** 80%	**38** 99%	**36** 94%
Immunization	**Rapid Prime (28-Day)**	**147** 4%	**72** 49%	**43** 80%	**42** 97%	**35** 83%
	Standard (78-days)	**135** 4%	**85** 63%	**34** 69%	**34** 99%	**33** 98%
Consolidated Averages		**142** 4%	**67** 47%	**35** 72%	**34** 97%	**31** 89%

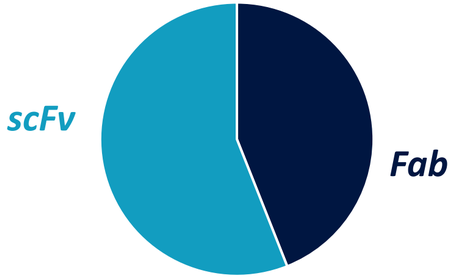
Immunization Method Breakdown



100%

Program success in generating idiotype specific antibodies

Immunogen Breakdown



B cell Select®

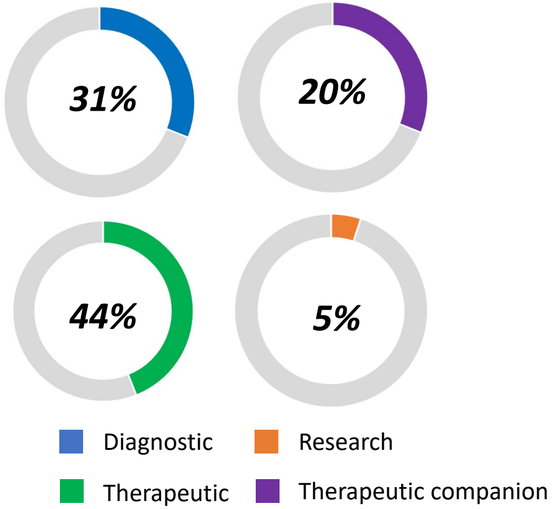
Consolidated program data average from last 2 years

All B cell Select® Programs since 2020 including Anti-ID of all Species

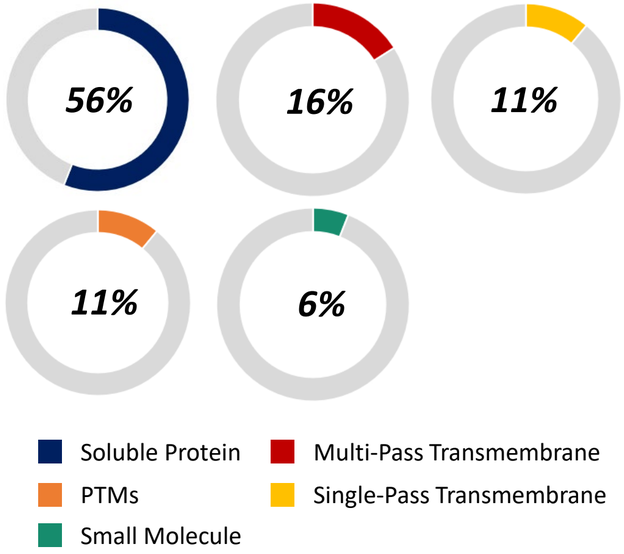
B cell programs	Total Ag (+) Clones *Primary Screen*	B Cell Cloning Efficiency	Unique Sequences	
			Combined H + L	*CDR3*
66	**7%**	**82%**	**90%**	**62%**
Completed or in Progress	ELISA & Flow	Transgenic, Rabbit, Canine, Chicken, & Rodent	One (1) A.A. difference in stitched heavy and light chain within a program	One (1) A.A. difference in CDR3 within a program

Rodent Strain Breakdown

Program Breakdown



Target Breakdown



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Engineered for the race
and the shared pursuit
of clinical success

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