everest BIOTECH
CREATING NOVEL ANTIBODIES

How antibodies can prevent medical progress and how they can be great tools.

Birmingham 2015

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What do we expect?

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What do we get?

Recent literature on antibody performance

F1000Research

F1000 recommended
OPINION ARTICLE

published
15 Oct 2014

Commercial antibodies and their validation

[v2; ref status: indexed, http://f1000r.es/4jp]

JLA Voskuil

F1000Research

OPINION ARTICLE

published
28Apr 2015

How difficult is the validation of clinical biomarkers?

[v1; ref status: indexed, http://f1000r.es/5al]

Jan Voskuil

Recent attacks from Nature magazine

NATURE | NEWS

Irreproducible biology research costs put at $28 billion per year

Study calculates cost of flawed biomedical research in the United States.

•Monya Baker

09 June 2015

NATURE | TOOLBOX

Researchers argue for standard format to cite lab resources

Research Resource Identifier (RRID) aims to clean up poorly referenced data.

•Dalmeet Singh Chawla

29 May 2015

NATURE | NEWS FEATURE

Reproducibility crisis: Blame it on the antibodies

Antibodies are the workhorses of biological experiments, but they are littering the field with false findings. A few evangelists are pushing for change.

•Monya Baker

19 May 2015

NATURE | COMMENT

Reproducibility: Standardize antibodies used in research

To save millions of dollars and dramatically improve reproducibility, protein-binding reagents must be defined by their sequences and produced as recombinant proteins, say Andrew Bradbury, Andreas Plückthun and 110 co-signatories.

Andrew Bradbury & Andreas Plückthun

04 February 2015

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- How antibodies prevent progress in biomedical science
- How antibodies can be used as powerful tools

Alternatives to antibodies:

Affimers/Affibodies

Aptamers

Examples of Antibodies on the market appearing as different but they are not

protein	Biocompare (suppliers)	actual # different Ab
AIF1 / ABI1	348 (31)	~30
PIC3CA	220 (35)	~32
FOXP3	1055 (47)	~31
NANOG	574 (42)	~45
OCT4.	582 (41)	~30

AIF1/ABI1	**ACRIS**	**24 products**	
species	antigen	manufr	frequency
goat	aa81-93	1	5
goat	aa70-80	1	4
goat	aa28-42	1	5
rabbit	protein	2	1
rabbit	aa13-44	2	1
rabbit	aa85-147	3	1
rabbit	peptide	3	1
rabbit	peptide	4	1
mouse	mab#10225		2
mouse	mab#2A2-B6	5	1

PIK3CA	#	frequency
Acris	16	
AOL	10	
LSBIO	10	
Abcam	9	7 /4
Abnova	6	5 /1
Novus	6	4 /3 /2
Thermo	6	
Abgent	5	9 /5
Sigma	5	
Biorbyt	5	
GeneTex	4	7 /6
ProteinTech	4	4 /2
Aviva	3	
CST	3	2 /1 /1
Mybiosource	3	
Millipore	2	1
Origene	2	1 /1
SantaCruz	2	1 /1
EverestBiotech	1	16
ABDSerotec	1	
ProSci	1	

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Welcome to the world of OEM

- Other External Manufacturer (Original Equipment Manufacturer)
- One manufacturer, one product with many brands
- QC data responsibility of rebranding vendor
- Batch-to-batch variations ignored by many vendors
- QC data presented from previous animals
- QC data presented from own customers
- QC data presented from own QC department
- Rebranding vendors buying from each other
- Same product appearing several times on same catalogue

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Alternatives to antibodies:

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Specificity

Entire protein as antigen

Polyclonal Antibody Binding

Monoclonal Antibody Binding

Specific region as antigen

Peptide as antigen

Shared epitopes

Cross reactivity of clinically validated anti-HER2 antibodies

Schrohl A et al, Abstract for SABCS 2010, Abstract No. 850345

HER2 antibodies	HER1	HER2	HER3	HER4
Herceptest™ (Dako)		v		
PATHWAY® (Vantana)		v		v
Oracle™ (Leica)		v		v

Conclusion

Avoid antibodies with unknown epitopes