## Validation of Commercial tool Antibodies

The Antibody Society Webcast series – Antibody Validation #4 What antibody have I found?

Simon L. Goodman Science and Technology Program Manager The Antibody Society

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## Antibody Validation: a 9-part series

- 1. Andreas Pluckthun
- 2. Glenn Begley
  - Cecilia Williams
- 3. Jan Voskuil Andy Chalmers
- 4. Anita Bardowski Jan Voskuil
- 5. Giovanna Roncador:
- 6. Aldrin Gomes Jim Trimmer
- 7. Travis Hardcastle Alejandra Solache
- 8. Mike Taussig Fridjhof Lund-Johansen
- 9. Andrew Bradbury Andreas Pluckthun

- : The different antibody formats
- : Antibodies and the reproducibility crisis in biological science
- : The Erß story is your antibody like this?
- : Beware the supplier OEM
- : Finding antibodies in the Antibody Databases
- : Which antibody are you looking for? The RRID
- Points to note on the supplier datasheets
- Correct positive and negative controls in validation
- Standard technology: "even" Western blots are non-trivial

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- : IHC issues in brain sciences
- : Cell KO technology
- : Validating Antibodies with KO technology
- Validating antibodies using array technologies
- : Mass spectroscopy for mass validation
- : Why publish sequences?
- : What are the coming alternatives ?

## What antibody have I found?

The Antibody Society Webcast series – Antibody Validation #4

Anita Bardowski UCSD; SciCrunch

Jan Voskuil Aeonian Biotech

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## What antibody have I found?

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## RRIDs are essential for rigor and transparency

The Antibody Society Webcast series – Antibody Validation #4

Anita Bandrowski, PhD Dept. Neurosci. UCSD SciCrunch Inc. August 2019



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## Rigor and Transparency in Research \*2016- Grant Review Criteria\*

- Scientific premise
- Scientific rigor
- Consideration of relevant biological variables, such as sex
- Authentication of key biological and/or chemical resources



## What about resources?

<u>Key resources</u> vary from lab-to-lab and application-toapplication, and are the source of variability in many experiments.

"...all grants must include a <u>1 page attachment</u> informing reviewers how grantees plan to authenticate key biological and chemical research resources", including:

• Cell Lines

#### Antibodies

- Transgenic organisms
- Specialty chemicals



Center for Scientific Review



## Why does the NIH talk about reagents?



Papers are currently poor at identifying the simplest part of the paper, the materials used

Vasilevsky 2013

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## Authors do not put enough information into papers to find antibodies



## How can this problem be solved?











eLife. 2019; 8: e49677. Published online 2019 Jul 26. doi: 10.7554/eLife.49677

#### Authors added 100K For at Sign up for RRIDs to their papers since 2014

Ataxin-7 and Non-stop coordinate SCAR protein levels, subcellular

localization, and actin cytoskeleton organization

Materials and m	nethods			• • •	I fitted to ppt 16:9 format
				scicrunch.org/resolver/AB_2618386	
				SciCrunch	
Key resources	s table				
Antibody M St	fouse anti I CAR I Monoclonal)	Developmental Studies Hybridoma Bank	PICI-SCAR RRID: <u>AB_2618386</u>	Home / Search for RRIDs / View Resource	
Antibody R A	abbit anti ( .txn7	(Mohan et al., 2014a)		SCAR antibody - Parkh	urst, S.; Fred H
Antibody	(	Gift from Jerry L		RRID:AB_2618386	
G	uinea Pig anti Ma2b	Workman ( <u>Kusch et al.,</u> 2003)		DESCRIPTION USED IN LITERA	TURE
Antibody G Pi (P	ioat anti Guinea ig HRP J Polyclonal) J	Jackson ImmunoResearch INC	106-035-003, RRID: <u>AB_2337402</u>	Antibody ID AB_2618386	Target Antigen SCAR drosophila melanogaster
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(P	Polyclonal) I	ImmunoResearch INC	RRID:AB 10015289		
Antibody G	ioat anti Rabbit	interestation in the	THE TOTAL STREET	Reference	Comments
H (P	RP J Polycional) I	Jackson ImmunoResearch INC	111-035-003 RRID: <u>AB_2313567</u>	References (5)	Application(s): mmunofluorescence,Immunoprec
					Blot; Date Deposited:



## How do publishers know what to do with RRIDs?

#### Journal Publishing Tag Library NISO JATS Version 1.2 (ANSI/NISO Z39.96-2019)

May 2019

<resource-name>Slc9a4 (C05) tmlb Mus musculus</resource-name> <resource-id resource-id-type="rrid" vocab="Research Resource Identifier" >RRID:IMSR\_HAR:5669</resource-id>



# Reminders during the publishing process do work!

## RRIDs = Better papers



Resource Identification Initiative

Bandrowski et al, 2015

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# Are there benefits to using RRIDs over just adding the catalog and lot number?

## Vendor names changing, reselling, ..oh my!

- Antibodies validated for an application, how do authors know?
- Vendor may pull products
- Vendor names may change
- Notes on independent validation:
  - ENCODE
  - RRID publications
  - Originating manufacturers

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**Resource Identification Portal** 

AB_2178887	Anti-NFkappaB, p65 subunit, active subunit, clone 12H11 antibody	Rela	Boehringer	1697 838	(Boehringer Cat# 1697 838, RRID:AB_2178887)	PMID
<u>AB_2178887</u>	Anti-NFkappaB, p65 subunit, active subunit, clone 12H11 antibody	Rela	Roche	1697838	(Roche Cat# 1697838, RRID:AB_2178887)	PMID :
AB_2178887 Anti-NFkappaB, p65 subunit, active subunit, clone 12H11		NFkappaB (NFkB, rel A), p65 subunit, active subunit	Millipore	MAB3026	(Millipore Cat# MAB3026, RRID:AB_2178887)	PMID :
One RRID	ibody	(alpha pé	compa	nies		



#### RRIDs are reported in many databases and catalogs

MM	About MMRRC - Submissions - Catalog & Distribution -	Search MMRRC via Google	P	q		
Strain Deta	ail Sheet			-		
🖶 🚖 🛱		ThermoFisher SCIENTIFIC Popul	ar Applicatio	ns & Techniques Shop All Products S	iervices Support	
Strain Name: Stock Number:	STOCK Tg(Sox9-EGFP)EB209Gsat/Mmucd 011019-UCD	Primary Antibodies	·	Enter target, gene symbol, antigen	Application	
Citation ID: Major Collection:	RRID:MMRRC_011019-UCD COPY RRID CITATION TO CLIPBOARD ? GENSAT	Invitrogen				
BioLegend <sup>®</sup> Search for		ZO-1 Monoclonal Antibody (ZO1-1A12)				
Enabling Legendary Discovery*		40 Published Figures	Cite ZO-1	Monoclonal Antibody (ZO1-1A1	12) ×	
Purified anti-AK	G43 References	The followi	ng antibody was used in this experime	ent: ZO-1 Monoclonal		
RRID	AB_2566355 (BioLegend Cat. No. 680302)	View all (25) ZO-1 antiboo	Antibody (ARID AB_2	201-1A12) from Thermo Fisher Scienti 533147.	fic, catalog # 33-9100,	
Antigen Details						
Structure	480 amino acids with a predicted molecular weight of ap		Click to	Сору		
Distribution	Cytoplasm, nucleus, cell membrane, phosphorylation on localization to the cell membrane where it is targeted for	[₀] Datasheet 🖉 Crea	te Citation	요 <sup>약</sup> Tech Support		

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## WE WANT YOU!

### To register <u>your</u> antibodies!

#### To put RRIDs into your next paper!

### To review papers for <u>methods</u>!

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