

April 30, 2025

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Combating Research Misconduct: Reporting, Resolution & Prevention



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Research Integrity Officer UMB
Director Research Integrity office

Objectives

- Understand types of research misconduct
- Identify strategies for prevention
- Explore the institutional process for resolution



Definition of Research Misconduct

Fabrication, falsification or plagiarism in proposing, performing, reviewing and/or reporting research.

- **Fabrication/ Falsification of data**

- Enhancing digital Images partially
- Excluding Data from articles, presentations, grants
- Performing statistical analysis in a deliberately dishonest way.
- Creating data that was never recorded or performed

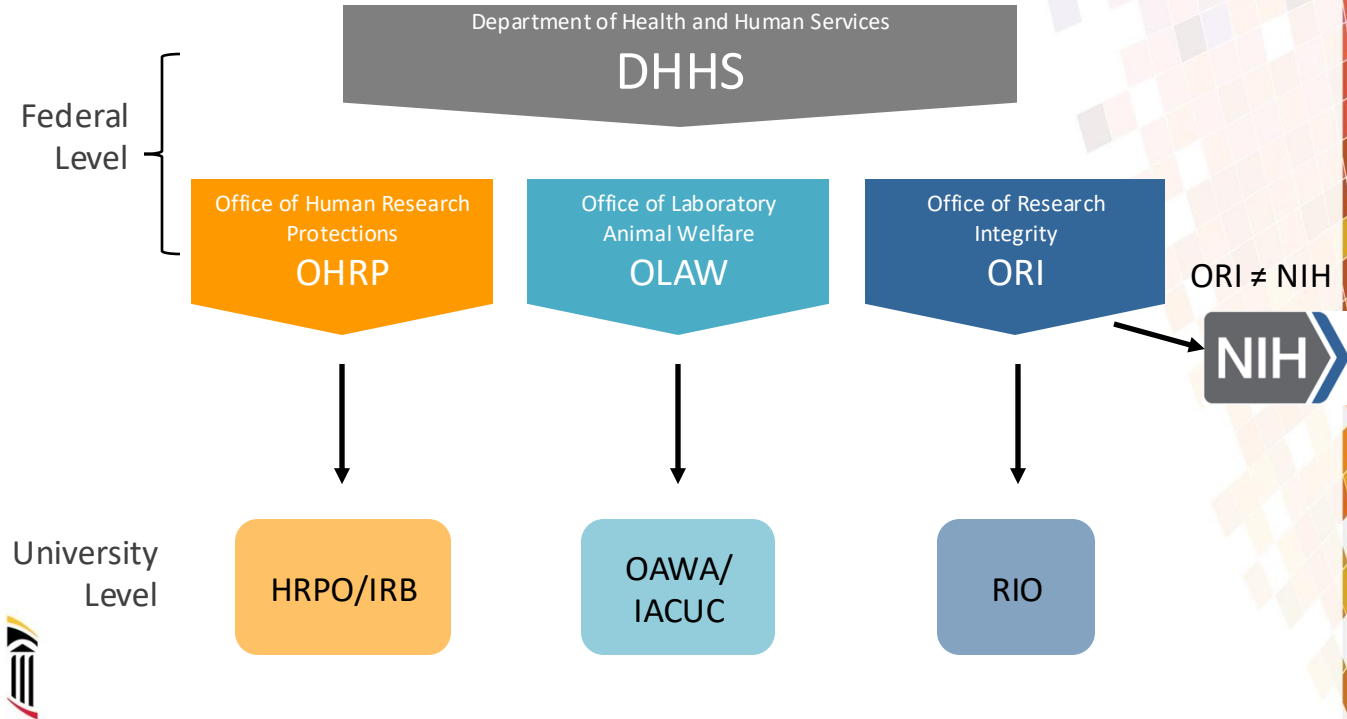
- **Plagiarism**

- Copying paragraph to use in a manuscript (article, thesis, grant, poster)
- Republishing your own work (Self-plagiarism)

Does NOT include honest errors or differences in opinion



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Role of the RIO

- Preventing research misconduct and promoting best practices.

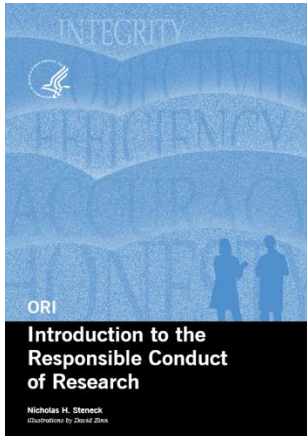
Responsible Conduct in Research training
Reaching out to Departments

- Investigating allegations of research misconduct (42cfr93)

UMB Policy on research misconduct



RCR Topics



<https://ori.hhs.gov/ori-introduction-responsible-conduct-research>

- ☐ Research Misconduct
- ☐ Human Protection
- ☐ Animal Welfare
- ☐ Conflicts of Interest
- ☐ Data Acquisition Management
- ☐ Mentor/Trainee Relationship
- ☐ Collaborative Science
- ☐ Publication practices
- ☐ Peer Reviewing



RCR Topics

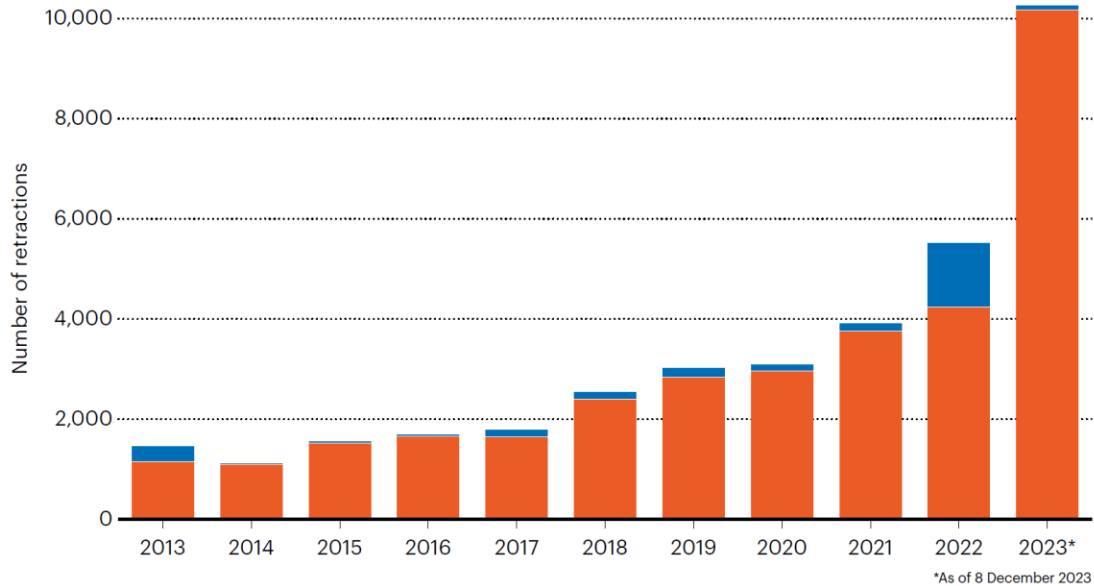
- Research Misconduct
- Conflict of Interest personal, professional, financial, and commitment in time/effort/resources
- Human Subject Protections
- Laboratory Animal Welfare
- Mentor/Mentee Relationship
- Collaborative Science with industry and investigators/institutions domestic/foreign
- Peer Review maintaining confidentiality and security in the process
- Authorship and Publication
- **Data Acquisition and Analysis** tools for analyzing data/images, recording keeping
- **Secure and Ethical Data Use** confidentiality, management, sharing, ownership
- **Safe Research Environments** promoting inclusion, free of discriminatory harassment



A BUMPER YEAR FOR RETRACTIONS

Retraction notices in 2023 have passed 10,000, largely because of more than 8,000 retractions by Hindawi.

Journal articles Conference papers



Nature | Vol 624 | 21/28 December 2023 | 481



What We Do

- Preventing research misconduct and promoting best practices.

Responsible Conduct in Research (CIPP907)
Reaching out to Campus

- Investigating allegations of research misconduct (42cfr93)

UMB Policy on research misconduct



Requirements for finding of Research Misconduct

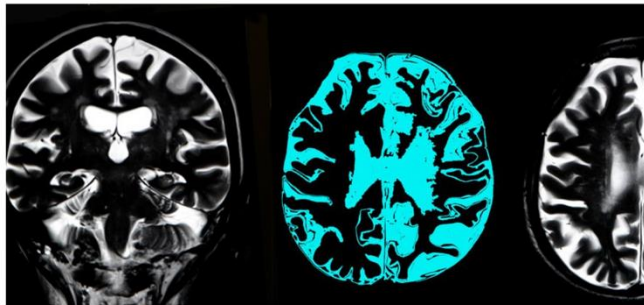
1. There be a significant departure from accepted practices of the relevant research community; and
2. The misconduct be committed intentionally, knowingly, or recklessly; and
3. The allegation be proven by a preponderance of the evidence.



Research Misconduct in the news

Explosive Report Claims a Leading Alzheimer's Theory May Use Fabricated Results

HEALTH 25 July 2022 By MARIANNE GUENOT, BUSINESS INSIDER



Haruko Obokata, a researcher at the Riken Center for Developmental Biology, at a news conference in Osaka, Japan, in April. After having two articles published in the journal Nature, she was accused of fabricating data and of plagiarism. Kiminaka Miyama/European Pressphoto Agency

ty to clinical trial



Stanford president's research under investigation for scientific misconduct, University admits 'mistakes'



(Graphic: MICHELLE FU/The Stanford Daily)

Impact of Research misconduct

1- Funding spent on fabricated/falsified data.

Estimated grant funding associated with retracted articles

Between 1992 and 2012, **291** articles published in the US were retracted for research misconduct.

The estimated funding totals of all NIH grants that contributed in any way to the retracted papers:

\$2,324,906,182

Stern AM et al. Elife. 2014 Aug 14;3



Impact of Research misconduct

2- Public Health

Table 3. Most Cited Retracted Articles

First author	Journal	Year published	Year retracted	Times cited*	Reason for retraction
Wakefield	<i>Lancet</i>	1998	2004; 2010	758	Fraud
Reyes	<i>Blood</i>	2001	2009	740	Error
Fukuhara	<i>Science</i>	2005	2007	686	Error
Nakao	<i>Lancet</i>	2003	2009	626	Fraud
Chang	<i>Science</i>	2001	2006	512	Error
Kugler	<i>Nature Medicine</i>	2000	2003	494	Fraud
Rubio	<i>Cancer Research</i>	2005	2010	457	Error
Gowen	<i>Science</i>	1998	2003	395	Fraud
Makarova	<i>Nature</i>	2001	2006	375	Error
Hwang	<i>Science</i>	2004	2006	368	Fraud
Potti	<i>The New England Journal of Medicine</i>	2006	2011	361	Fraud
Brugger	<i>The New England Journal of Medicine</i>	1995	2001	336	Fraud
Van Parijs	<i>Immunity</i>	1999	2009	330	Fraud
Potti	<i>Nature Medicine</i>	2006	2011	328	Fraud
Schön	<i>Science</i>	2000	2002	297	Fraud
Chiu	<i>Nature</i>	2005	2010	281	Error
Cooper	<i>Science</i>	1997	2005	264	Fraud
Le Page	<i>Cell</i>	2000	2005	262	Error
Kawasaki	<i>Nature</i>	2004	2006	243	Fraud
Hwang	<i>Science</i>	2005	2006	234	Fraud

*As of June 22, 2012

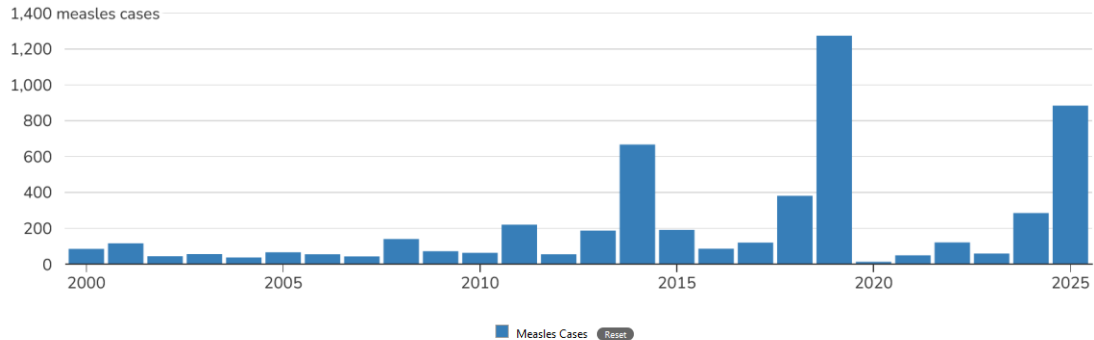


Impact of Research misconduct

Number of measles cases reported by year

2000–Present*

1985–Present*



Impact of Research misconduct

3- The institution financial health

- Funding needs to be refunded
- Reputation of the Institution



Impact of Research misconduct

3- The institution financial health

- Lawsuits

Duke settles case alleging data
doctoring for \$112.5 million



The New York Times

In a statement announcing the settlement, Vincent E. Price, president of Duke University, said that the payment would include reimbursement of the grants obtained as a result of the falsified data, as well as additional penalties.

“This is a difficult moment for Duke,” Dr. Price said. “This case demonstrates the devastating impact of research fraud and reinforces the need for all of us to have a focused commitment on promoting research integrity and accountability.”



RESEARCH INTEGRITY Research misconduct in the news

Cancer biologist stops research

with 14 comments

A cancer biologist's research, as a journal

Source: <http://www.retractionwatch.com>

Former U Maryland researcher faked data in seven papers, two Federal grants: ORI

U Maryland virus researcher up to 13 retractions

A former veterinary scientist at the University of Maryland has been found guilty of misconduct, including fabrication of data, by the U.S. Office of Research Integrity (ORI).

UMB professor lost his research eligibility after multiple retractions

University of Maryland researcher up to 21

When is the Research Integrity Office involved?

When an allegation reaches our office

- From the Hotline: **866-594-5220** or <http://www.ethicspoint.com>
- From an email
- From a phone call
- In person

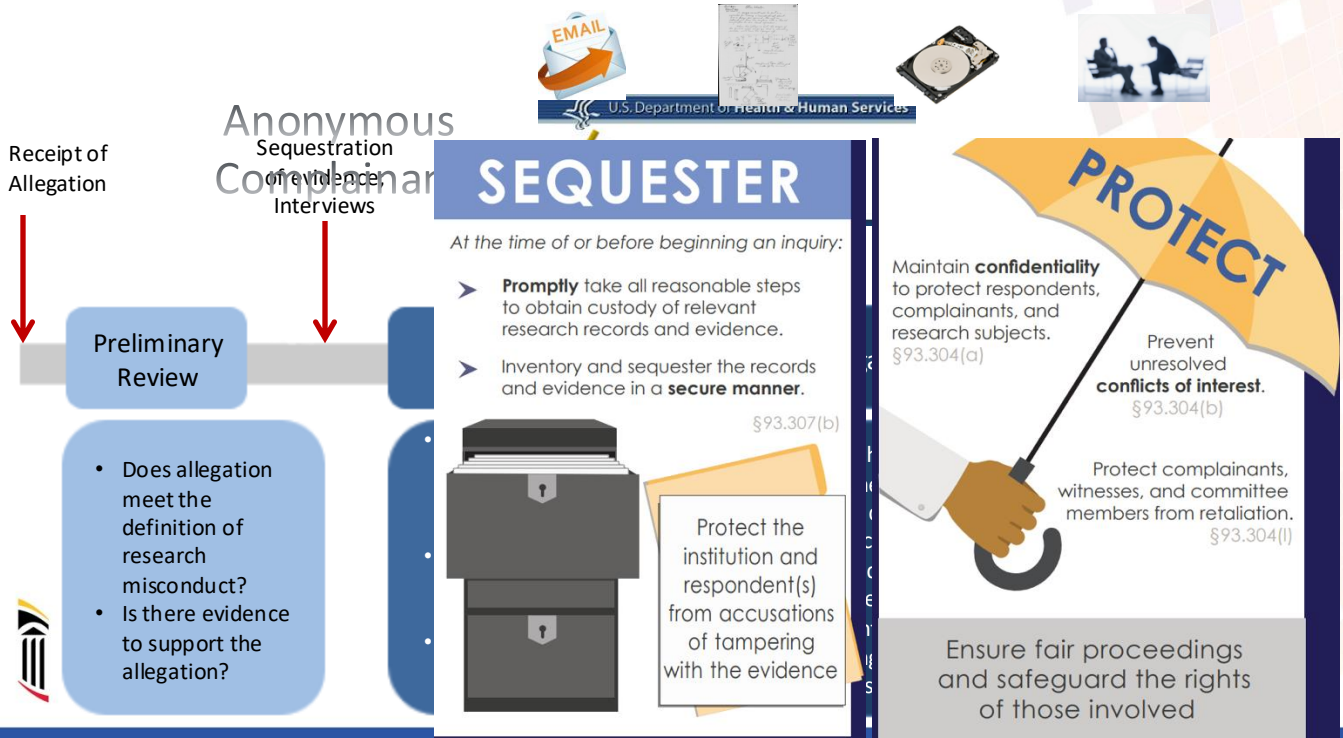
Stephan Vigues: svigues@umaryland.edu

Kaylin Adipietro: kaylinadipietro@umaryland.edu

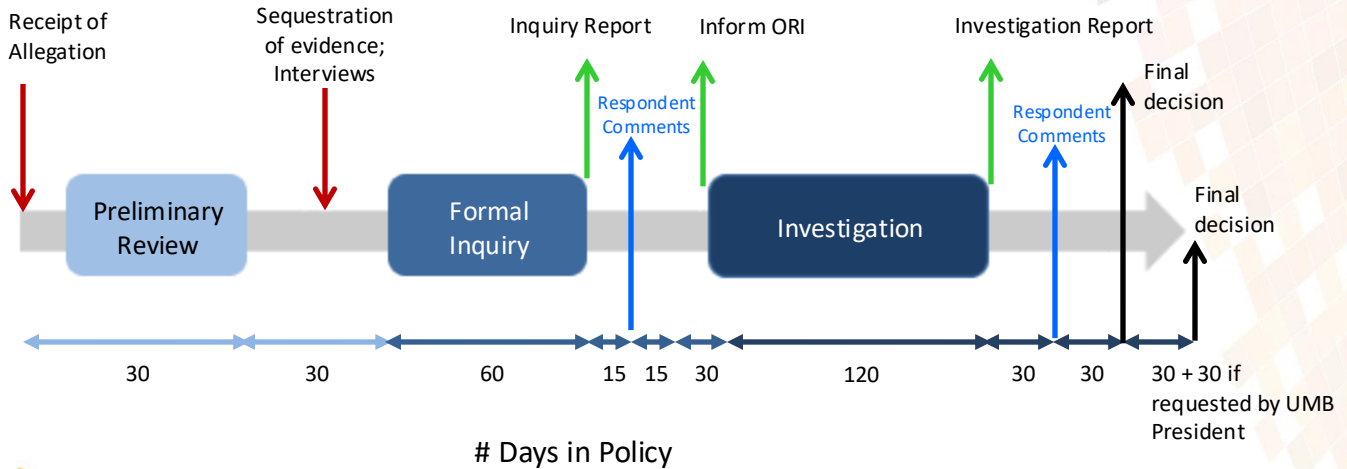
<https://www.umaryland.edu/oac/areas-of-responsibility/research-integrity-office/>



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Outcomes to findings of misconduct

Correct the scientific record!

- Paper corrections (in cases of honest error as well)
- Retractions
- Special training
- Research oversight
- Termination of position

- Prohibited from serving in an advisory capacity
- Funding withheld (ORI)
- Funding barred for X number of years (by ORI)

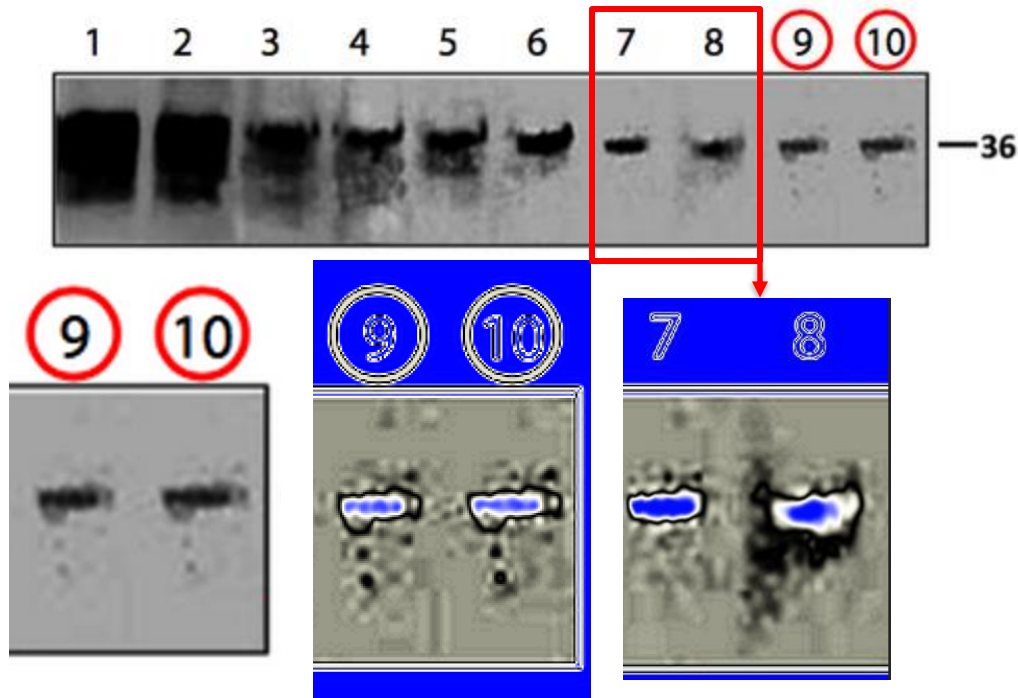


The tools we are using

- Plagiarism detection tools
- Image analysis tools
- Forensic software



Problematic images in publications



Western Blots are used to falsify/fabricate data.



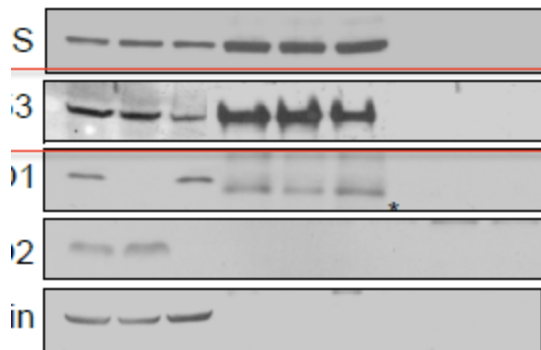
According to ORI: 70% of research misconduct involve images such as Western Blots.



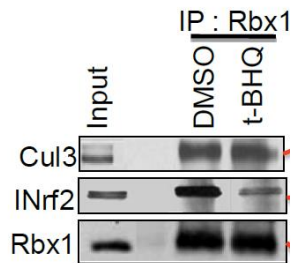
Splicing blots



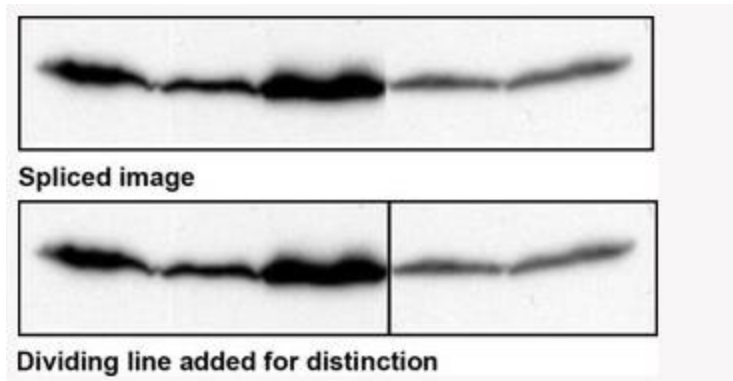
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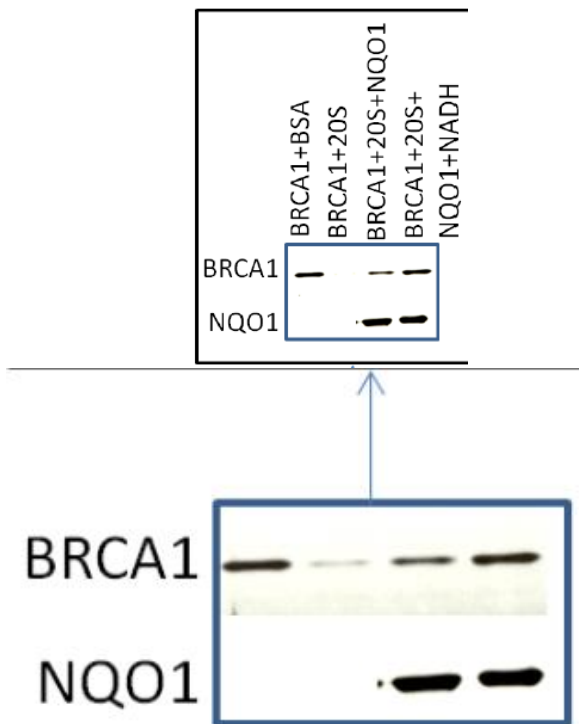


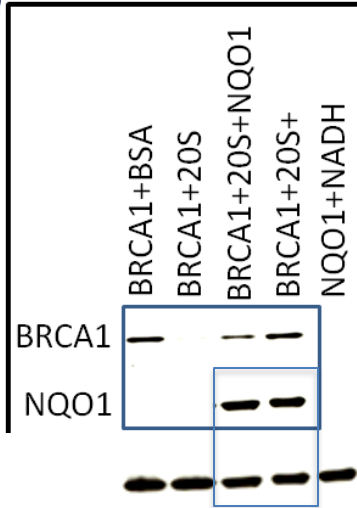
Splicing must be shown clearly with a dark line



Do Not change the parameters to make data disappear







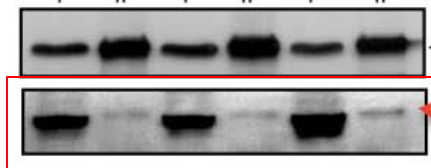
36
20

BRCA1

4-11-2005



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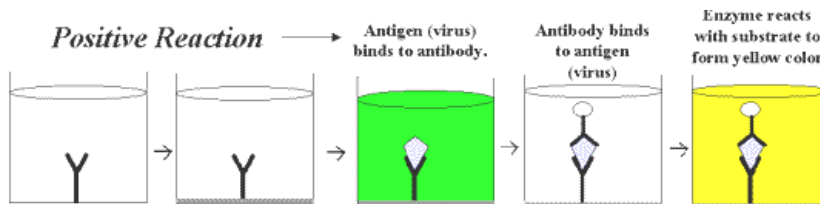


Contrast
reset



changing raw data

- The allegation came from the PI
- The lab works on detecting a specific protein



What went wrong?

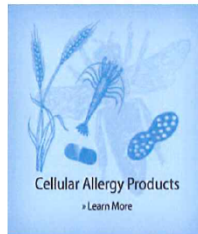
Most of the results were below the detection threshold of the technique used.

Table showing data for GLP-1 release, used for analysis and published.

Folder: T1R2 data and figures
File: T1R2 GLP-1 release.xlsx

	A	B	Blanko	C
tongue	0.199	0.28	0.206	
duodenum	0.654	0.381	0.295	
jejunum	0.63	0.245	0.036	
ileum	0.017	0.331	0.118	
colon	0.403	0.289	0.318	
rectum	0.866	0.606	0.784	

GLP-1 (Active 7-36) ELISA



Focus

Clinical
Research

Application

Immunoassays
Flow Cytometry
HPLC/MS

Therapeutic Areas

Allergy & Infectious Disease
Bone Metabolism
CVD & Oxidative Stress

[Buy Now](#)
[Price](#)
[SHARE](#)

Catalog Number:

43-GP1 HU-E01

Description:

GLP-1 (Active 7-36) ELISA

Sample Types:

EDTA Plasma, Plasma

Sample Sizes:

100 µL

Available Sizes:

96 Wells

Range:

0.64 - 48 pmol/L

Incubation:

Overnight

Protocol:

[GLP-1 \(Active 7-36\) ELISA](#)

Material Safety Data Sheet:

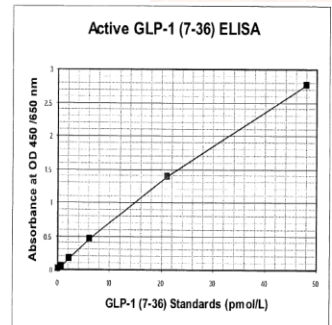
[GLP-1 \(Active 7-36\) ELISA](#)

Regulatory Status:

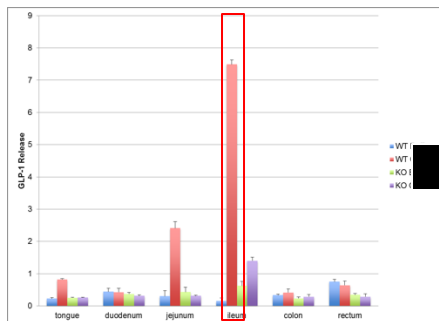
Research Use Only. Not for Use in Diagnostic Procedures.

Product Distribution:

Available Worldwide



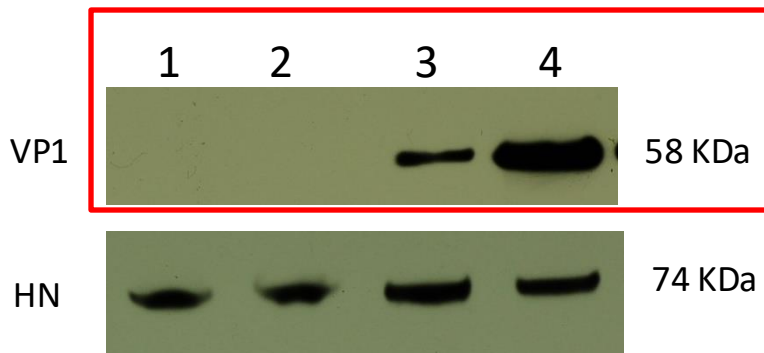
Changing raw data

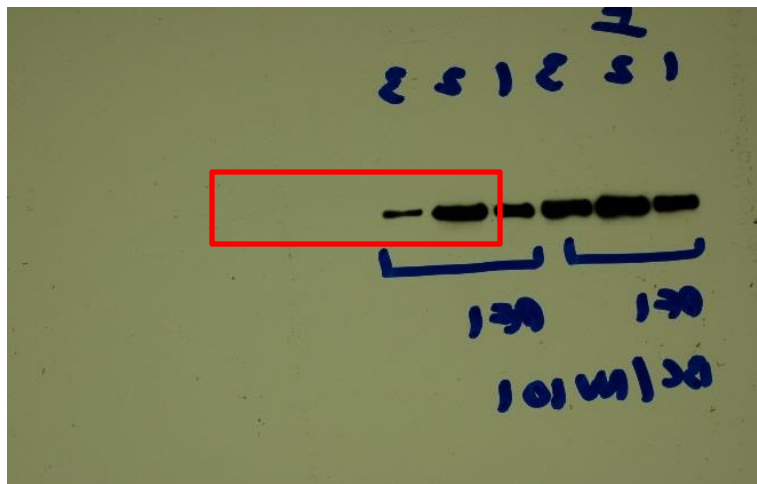
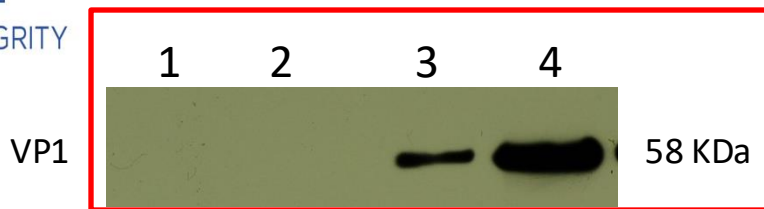


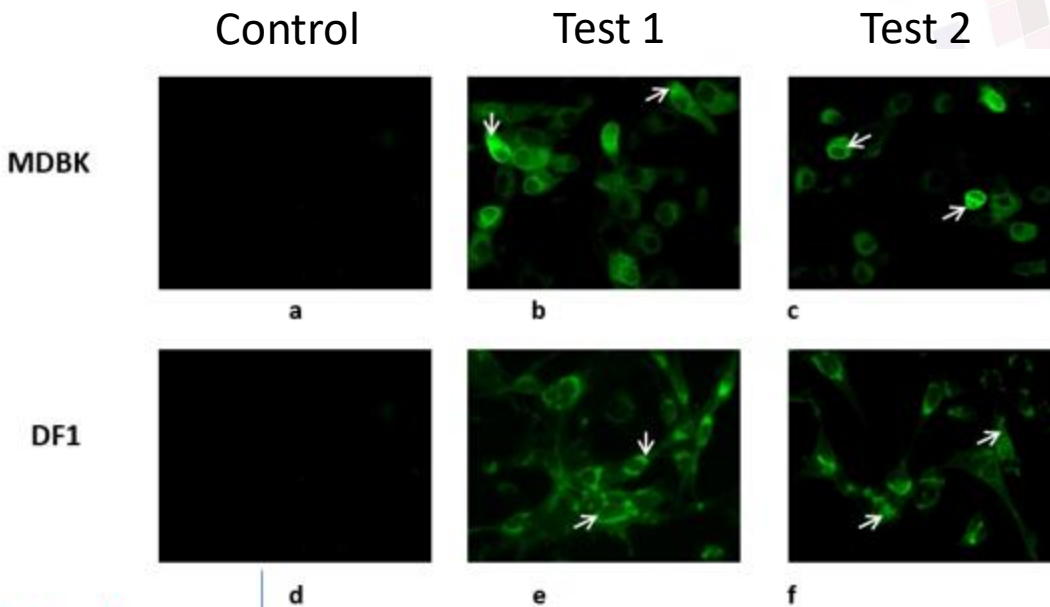
Sample #:	A	B	C	D
Raw Data	1.696	1.226	0.364	1.677
Excel	7.696	7.226	7.364	7.677



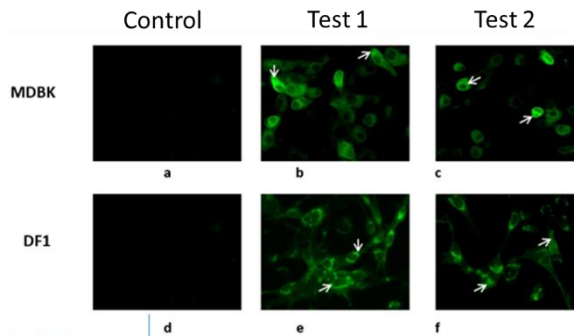
Cherry Picking Pictures



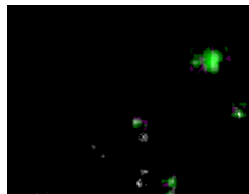




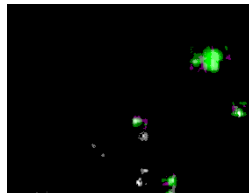
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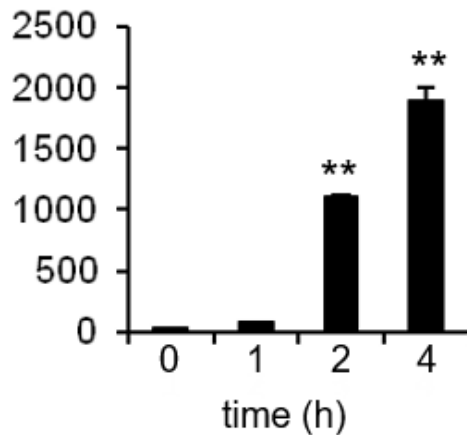
MDBK



DF1



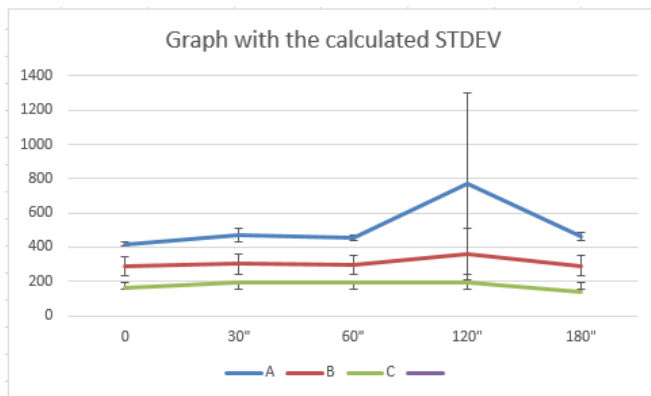
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29							
30							
31							
32	RESULTS	-BB					
33	RANGE OF	31 TO 2000 PG/ML					
34							
35	Sample	Wells	OD	Conc	AvgConc	SD	CV
36	0 h	A3	0.037	41.84	40.753	1.884	4.6
37		A4	0.037	41.84			
38		A5	0.034	38.577			
39	12 h	C3	0.042	47.358	41.516	6.011	14.5
40		C4	0.031	35.349			
41		C5	0.037	41.84			
42	24 h	D3	0.095	111.857	106.626	5.22	4.9
43		D4	0.087	101.417			
44		D5	0.091	106.606			
45	48 h	E3	0.762	1863.615	1889.622	111.45	5.9
46		E4	0.744	1793.474			
47		E5	0.799	2011.776			
48							
49							



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	I	J	K	L	M
w	FALSE	1			
j	7	8	9	10	11
	AVG				
	0 30"	60"	120"	180"	
	417.3087	472.2903	454.9833	769.0483	464.997
	287.3557	301.147	295.5503	358.8793	290.781
	160.796	190.5963	191.456	190.5467	141.7303
EV A	12.87986	38.39467	12.70791	529.6943	23.32524
EV B	56.44696	57.60731	56.08626	152.6915	59.33823
EV C	32.41079	12.67472	23.85958	23.96511	23.71106

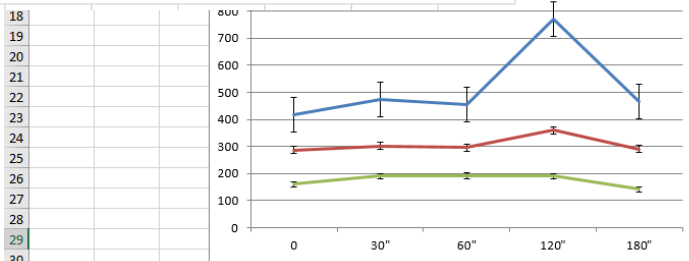


CHART ELEMENTS

- ☒ Axes
- ☐ Axis Titles
- ☒ Chart Title
- ☐ Data Labels
- ☐ Data Table
- ☒ Error Bars
- ☒ Gridlines
- ☐ Legend
- ☐ Trendline
- ☐ Up/Down Bars





<https://retractionwatch.com/>



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