

# How a Single Allegation Transformed into a Large Research Misconduct Case at ORI

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Office of Research Integrity (ORI)

U.S. Department of Health and Human Services

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**OASH**

Office of the  
Assistant Secretary  
for Health



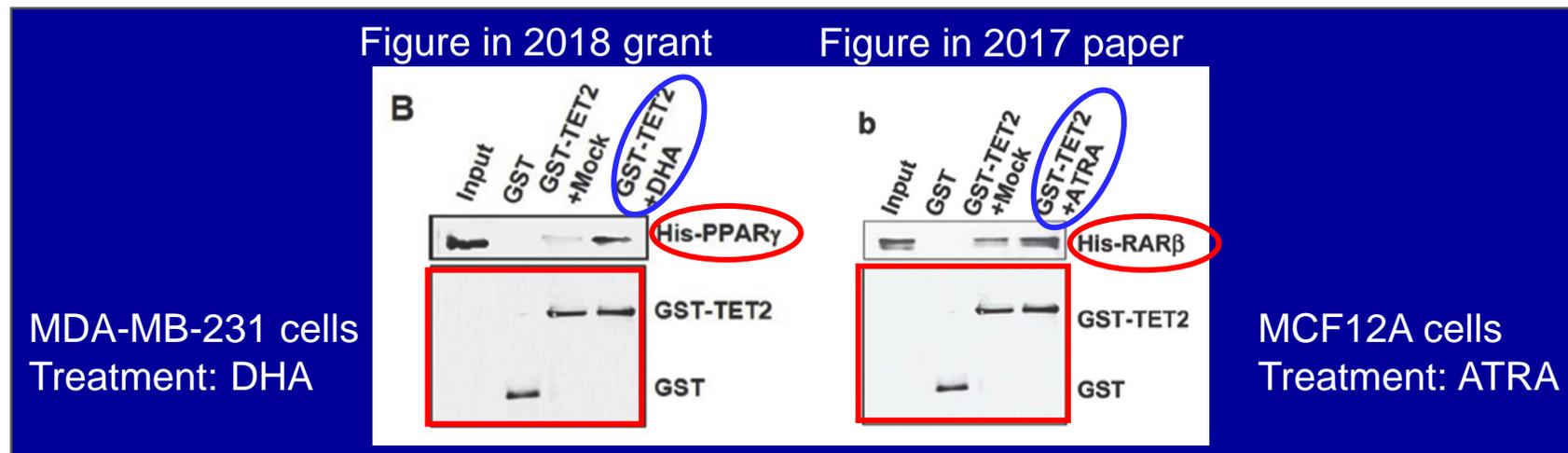
## Disclosure

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The opinions presented here are mine and does not reflect that of the Office of Research Integrity (ORI) and/or the Office of the Assistant Secretary of Health (OASH). I have no financial disclosures or incentives to declare. I have no actual or potential conflict of interest in relation to this program/presentation.

## Allegations – A single grant application – Tip of misconduct iceberg

- A grant reviewer reported concerns to NIH; NIH notified ORI:
  - Multiple figures in a grant application submitted in 2018 appear similar to figures in a paper published in 2017 by Respondent but represented different experimental results



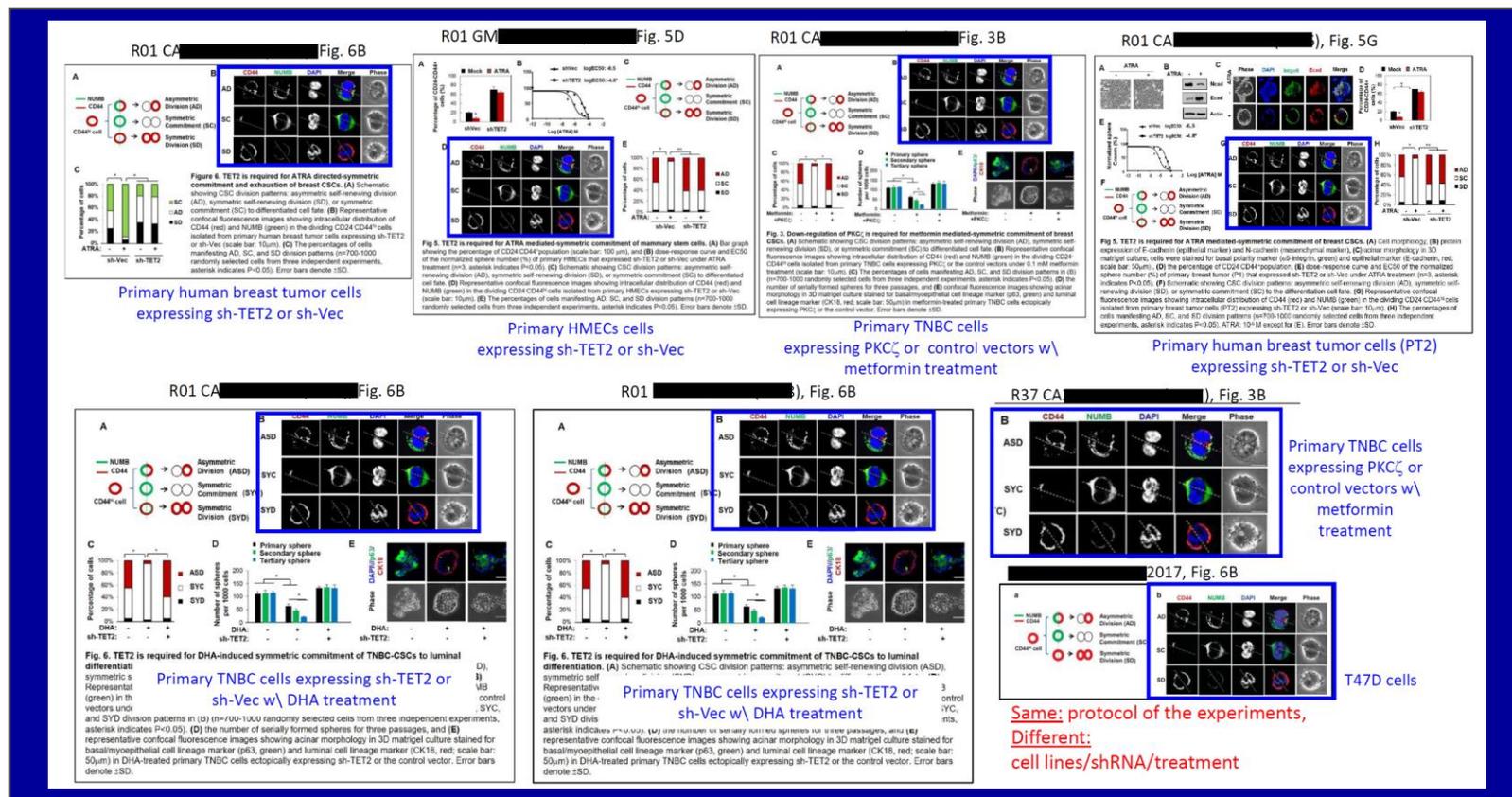
## ORI oversight review – 384 figure panels in 16 grant applications and 2 published papers – resembling an iceberg in its enormity

- Specifically, Respondent intentionally, knowingly, and recklessly falsified and/or fabricated data by reusing and relabeling them, with or without manipulation, to falsely represent different experimental results:

Data Type	Grants / Publications
Confocal images	54 figure panels in 15 grant applications
Western blot and co-IP blot images	81 figure panels in 13 grant applications
Figures, charts, and graphs reporting gene expression related results (RNA-Seq, ChIP-Seq, miRNA-seed-Seq, RT-PCR..)	119 figure panels in 15 grant applications and 2 published papers
Figures, charts, and graphs about cellular experiment related results	42 figure panels in 13 grant applications
Photomicrographs	85 figure panels in 15 grant applications
Data values in tables	3 figure panels in 3 grant applications

# ORI oversight review – 384 figure panels in 16 grant applications and 2 published papers – resembling an iceberg in its enormity

- Confocal images: 54 figure panels in 15 grant applications



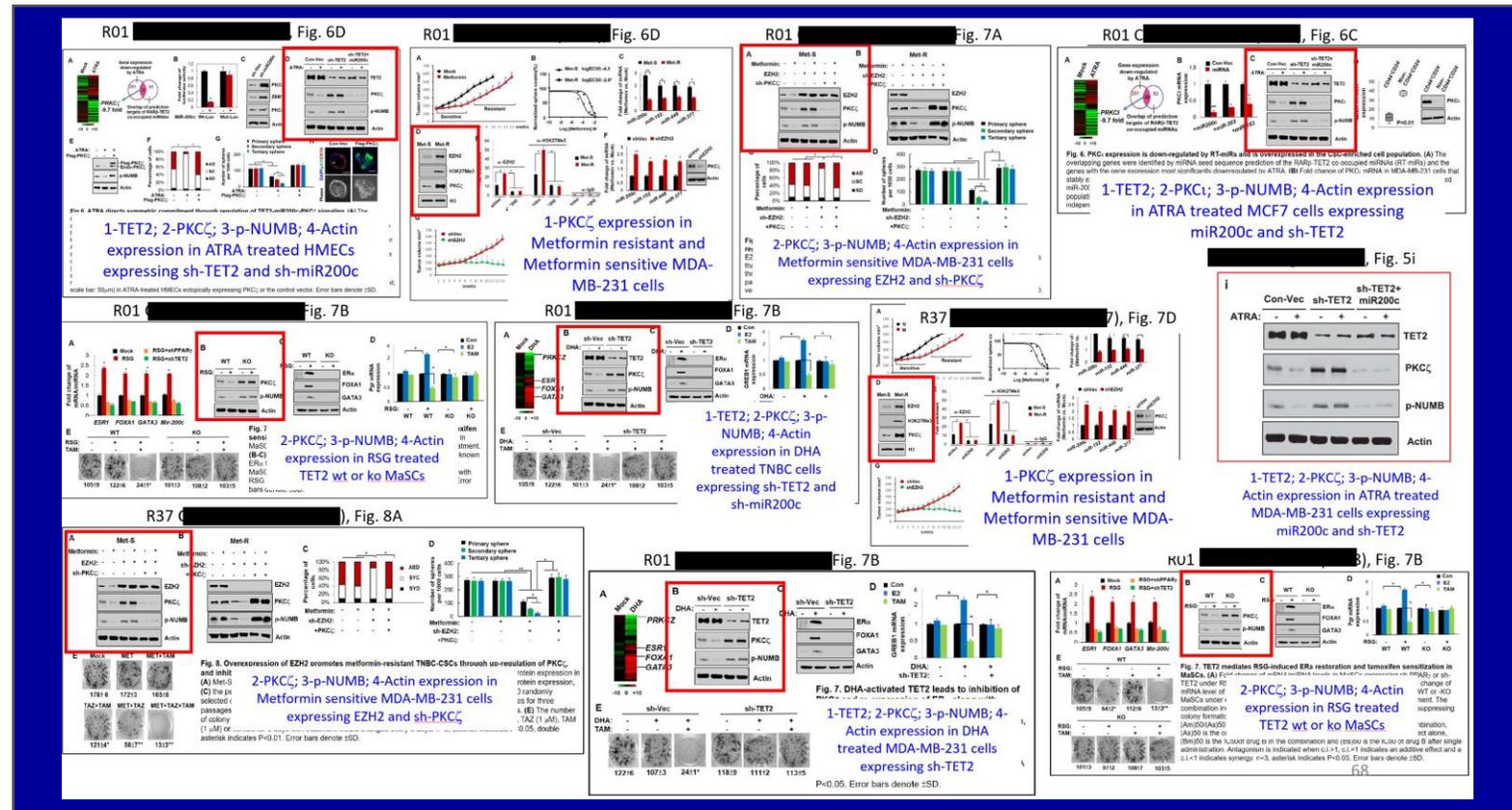
Same source images reused to represent: 5 cell types, 3 treatments in 7 grant applications and 1 paper

Same; protocol of the experiments, Different; cell lines/shRNA/treatment

# ORI oversight review – 384 figure panels in 16 grant applications and 2 published papers – resembling an iceberg in its enormity

- Western blot images
- 81 figure panels in 13 grant applications

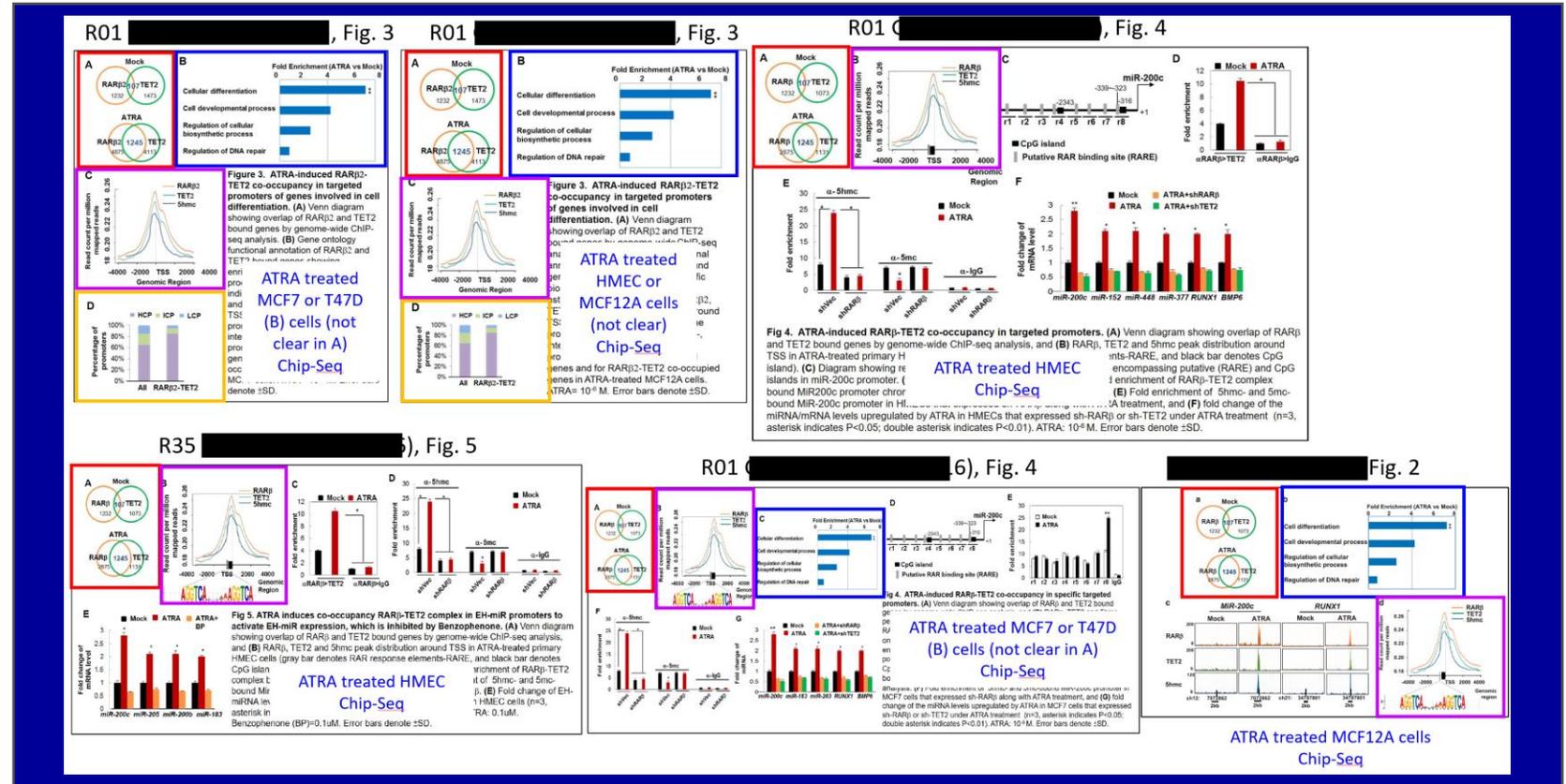
Same source images reused to represent:  
8 cell types  
3 treatments  
 in 11 figure panels  
 in 8 grant applications  
 and 1 paper



# ORI oversight review – 384 figure panels in 16 grant applications and 2 published papers – resembling an iceberg in its enormity

- Gene expression related figures, charts, and graphs
- 119 figure panels in 15 grant applications and 2 papers

Same source images reused to represent: 4 cell lines in 5 grant applications and 1 paper



# ORI oversight review – 384 figure panels in 16 grant applications and 2 published papers – resembling an iceberg in its enormity

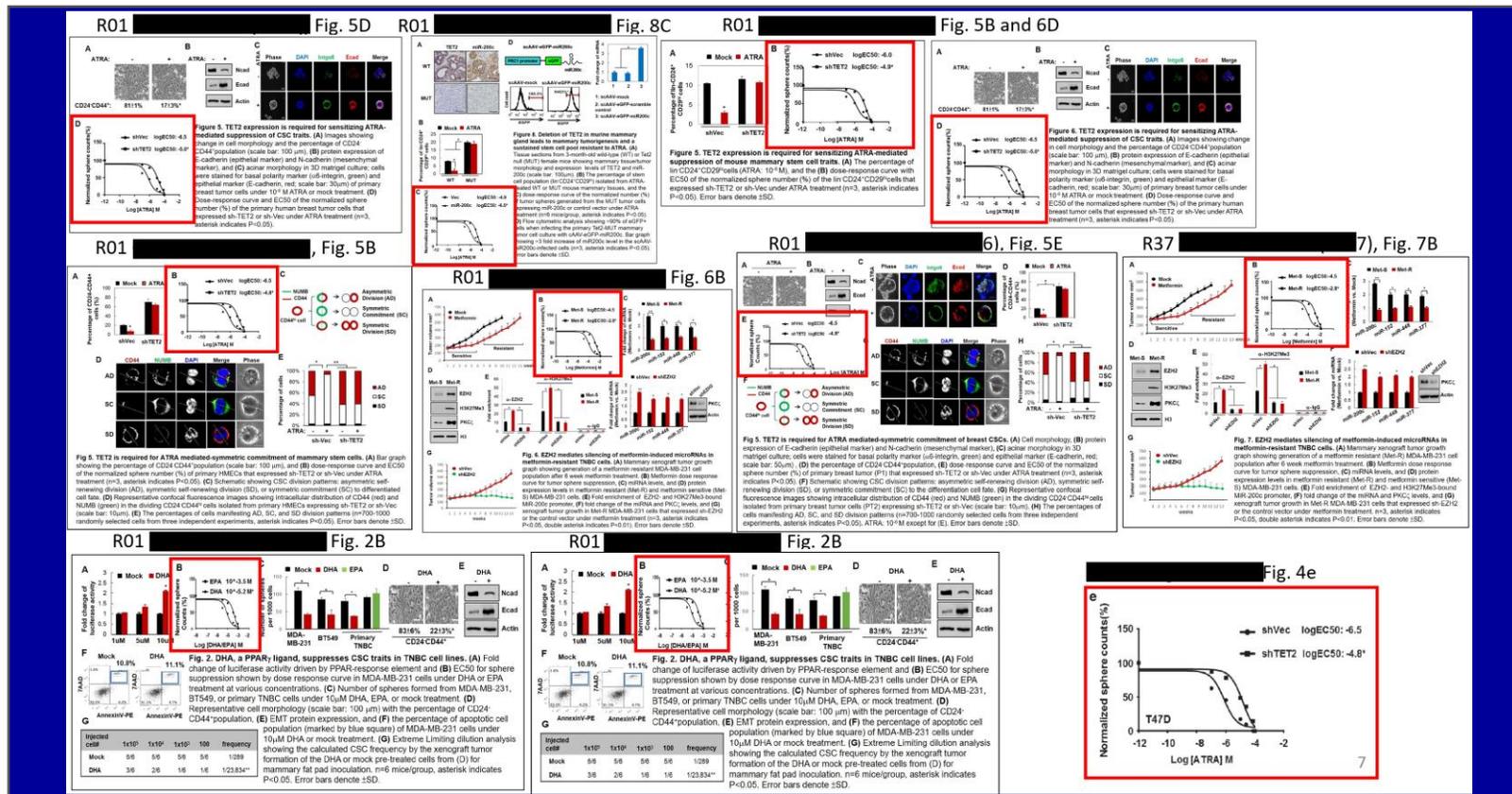
- Cellular experiments related figures, charts, and graphs

**42** figure panels in **13** grant applications

Same source images reused to represent:

**4 cell types**  
**2 sh-RNA expression**  
**2 treatments**

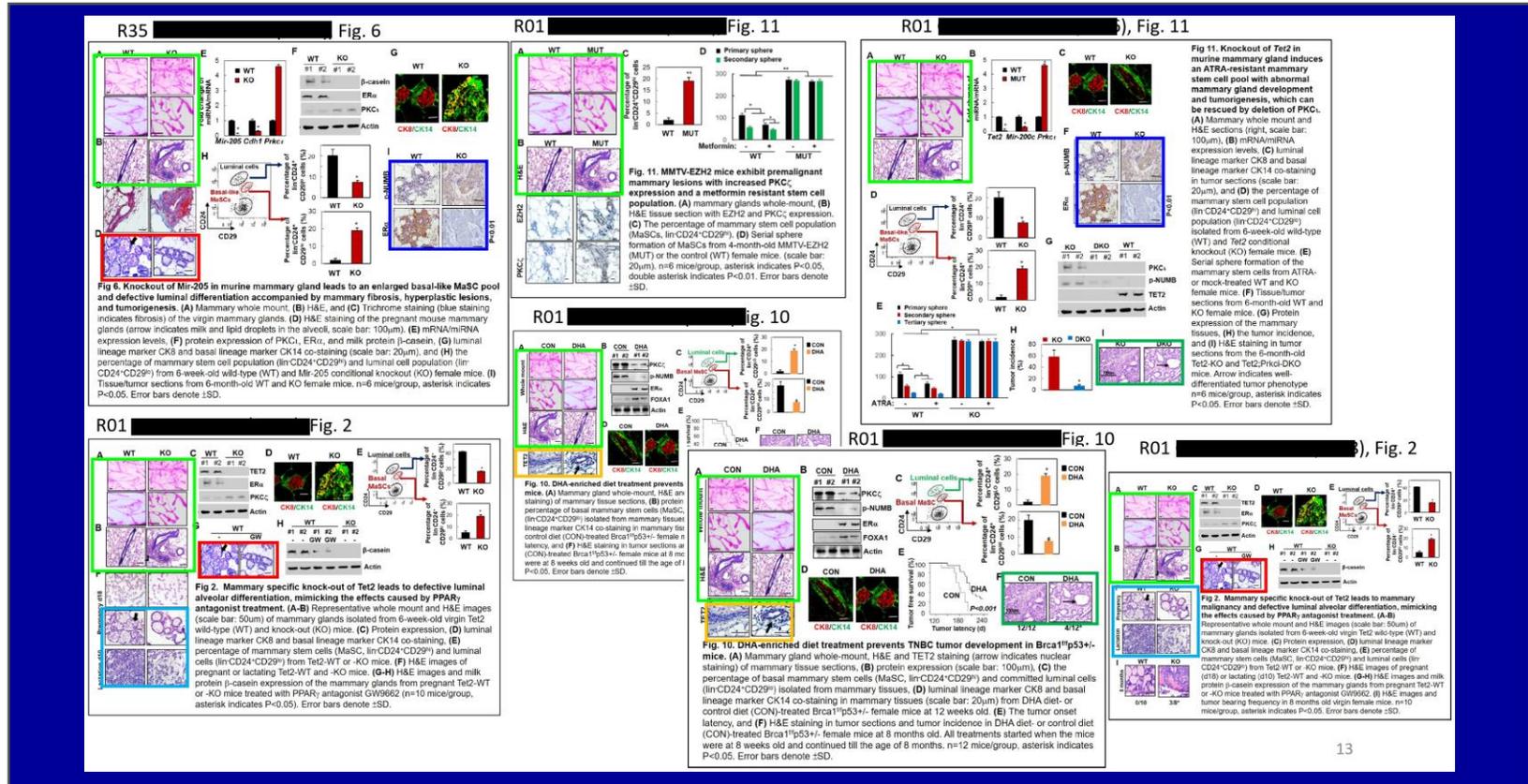
in **11 figure panels**  
 in **5 grant applications**  
 and **1 paper**



# ORI oversight review – 384 figure panels in 16 grant applications and 2 published papers – resembling an iceberg in its enormity

- Photomicrographs
- 85 figure panels in 15 grant applications

Same source images reused to represent:  
4 genotyping mouse models  
 in 7 grant applications



# ORI oversight review – 384 figure panels in 16 grant applications and 2 published papers – resembling an iceberg in its enormity

- Data values in tables

**3** figure panels in  
**3** grant applications

Same source data reused to represent:

**3 cell types with 2 treatments**  
**in 3 grant applications**

F R37 [REDACTED] Fig. 11F

Injected cell#	1x10 <sup>5</sup>	1x10 <sup>4</sup>	1x10 <sup>3</sup>	100	frequency
Mock	6/6	5/6	5/6	5/6	1/289
Metformin	3/6	2/6	1/6	1/6	1/23,834**

CSC frequency (xenograft tumor formation) of tumor cells from metformin treated and control MMTV-Cre;Brca1f/fp53+/- mice

R01 C [REDACTED] 2G

Injected cell#	1x10 <sup>5</sup>	1x10 <sup>4</sup>	1x10 <sup>3</sup>	100	frequency
Mock	6/6	5/6	5/6	5/6	1/289
DHA	3/6	2/6	1/6	1/6	1/23,834**

CSC frequency (xenograft tumor formation) of DHA treated and control MDA-MB-231 cells

R01 C [REDACTED] 2G

Injected cell#	1x10 <sup>5</sup>	1x10 <sup>4</sup>	1x10 <sup>3</sup>	100	frequency
Mock	6/6	5/6	5/6	5/6	1/289
DHA	3/6	2/6	1/6	1/6	1/23,834**

CSC frequency (xenograft tumor formation) of DHA treated and control TNBC cells

## ORI oversight review – Significance of research misconduct in this case

- Data manipulation in Respondent’s grant applications:

NO.	Grant application	Received Year	Total figures	Figures w/ RM	% of RM
3	R01	2014	9	1 (likely)	11.1
4	R21	2014	4	2	50
5	R21	2014	3	3	100
6	R03	2014	2	2	100
7	R01	2015	8	8	100
8	R01	2015	8	8	100
9	R01	2016	6	6	100
10	R21	2016	4	4	100
11	R01	2016	8	8	100
12	R01	2016	10	10	100
13	R35	2016	5	5	100

NO.	Grant application	Received Year	Total figures	Figures w/ RM	% of RM
14	R01	2016	10	10	100
15	R37 (funded)	2017	11	11	100
16	R01	2017	9	9	100
17	R01	2017	8	8	100
18	R01	2018	9	9	100
19	R01	2018	11	11	100
20	R37 (funded) (NO Figure)	2018	NA	NA	NA
21	R01 (NO Figure)	2020	NA	NA	NA

- 100% of grant applications were involved
- A long time-period from 2010-2018
- A long-life gradual progress
- A broad scope of misconduct with multiple types of images on multiple types of experiments

# ORI Findings – Research Misconduct

<https://ori.hhs.gov/content/case-summary-chang-alice-c>

## Respondent's defense

- Blame lab members
- Mistake/honest error
- No remorse

## Evidence

- The laboratory members were not involved in Respondent's grant preparation.
- Primary data were named, organized, and saved clearly without any confusion.
- The same source data were reused and relabeled to represent multiple (≥3) different items (A identified as B, C, D, E, etc.).
- The same source images were not only reused but also edited by selectively combining, clipping, flipping, and differently relabeling to align with varying objectives and research plans.

- Respondent intentionally, knowingly, and recklessly falsified and/or fabricated data.
- Respondent signed settlement agreements with ORI – **10-year debarment**

Falsified and fabricated data in grant applications may escape detection for years because the data have not been released for widespread scrutiny. Reviewers may be the last line of defense in detecting suspect data, as demonstrated in this case. Their diligence and careful review of applications contributes to preserving the quality and integrity of science.

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Thank you



## ORI's Mission & Vision

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### Mission

ORI's mission is to advance research integrity, protect taxpayer funds for Public Health Service-supported research, and support research integrity communities.

### Vision

Promoting a world where we build trust in science together for future generations.

## Contact ORI

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