

Plenary 2

# Definition of Key Terms & Factors associated with misconduct

# TIME

Nothing to See Here.



# Thank you

- University of Hong Kong
  - Planning Committee Members
  - Frederick Leung
  - Danny Chan
  - Kate Yip

# Thank you, Zoë Hammatt



# Contributors

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# Goals this session

- Presented foundational terms associated with misconduct and the responsible conduct of research
- Hear diverse perspectives on institutional approaches to research integrity and research misconduct
- Consider possible factors that may contribute to research misconduct or questionable research practices

# Understanding the underlying: defining key terms in research ethics and integrity



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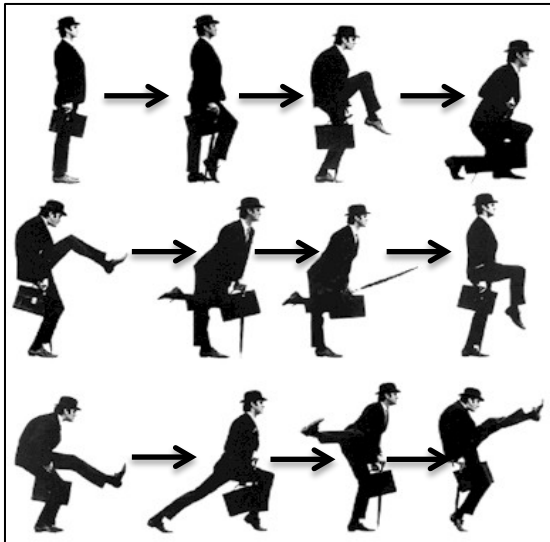
# Outline

- Solid foundations
- Why does this matter?
- A spectrum of behaviours
- Key terms defined
  - Responsible conduct of research
  - Research integrity
  - Research ethics
  - Questionable research practice
  - Research misconduct
- APEC Guiding Principles for Research Integrity Project



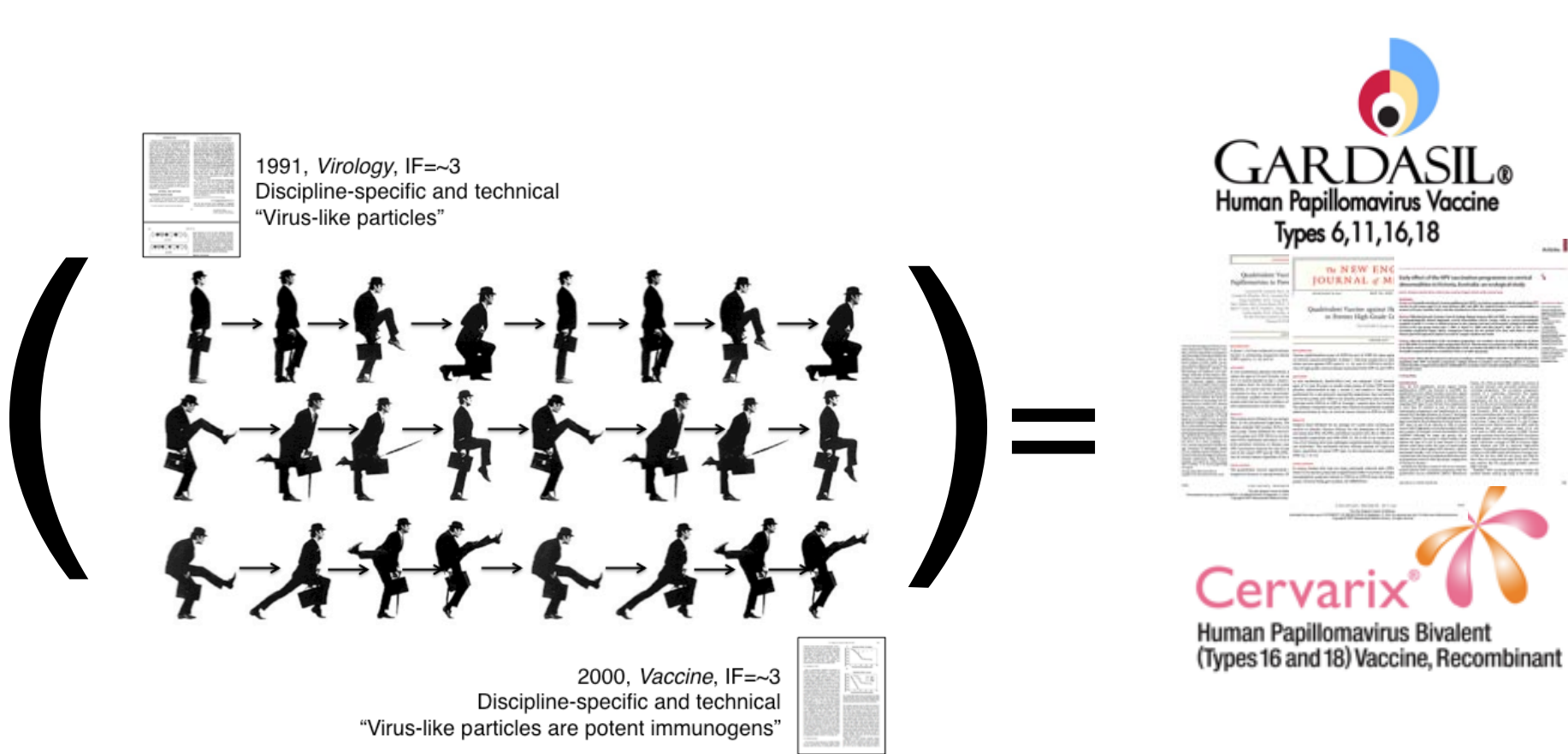
“Research is the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions”

*Oxford English Dictionary Online*



The research process is made up of non-linear steps and shifts

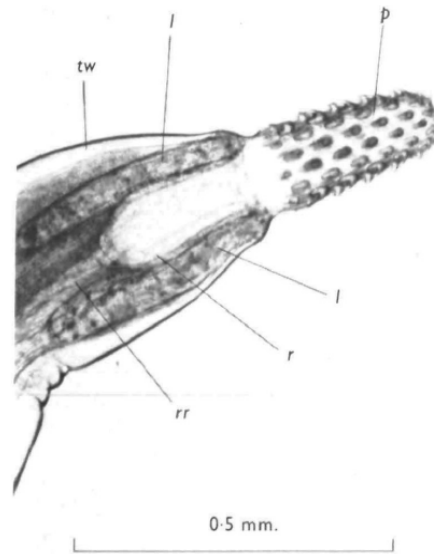
# Research always has impact



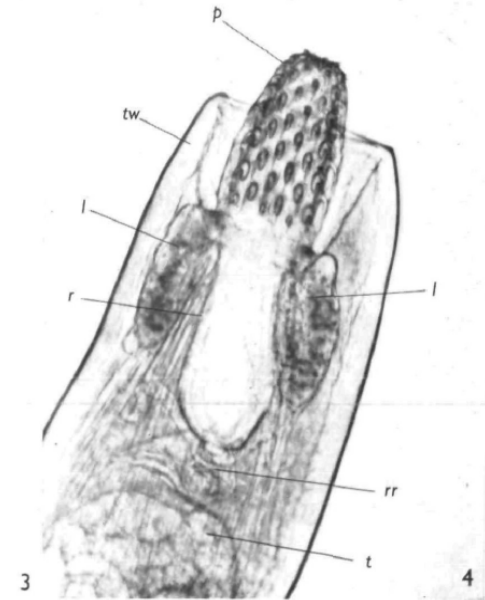
- Accumulation of non-linear steps
- A complex equation of research impact
- Safe and  $\sim$ 100% effective vaccines
- Reduction of precancer within 3 years of introduction

# From the face of a parasite....

- Hammond, R. A., The proboscis mechanism of *Acanthocephalus ranae*
- *J. Exp. Biol.* 45, 203-213 (1966)



R. A. HAMMOND



(Facing p. 213)

# ...to the face of a cure?

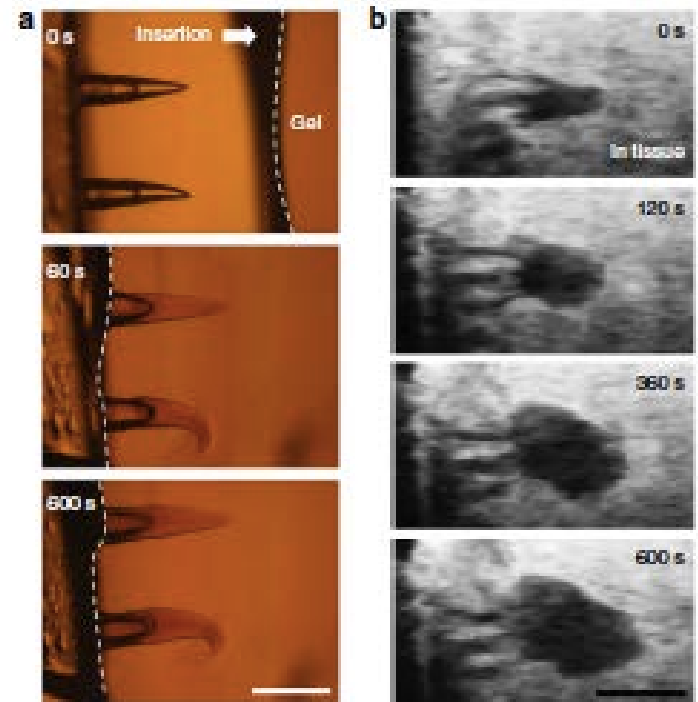
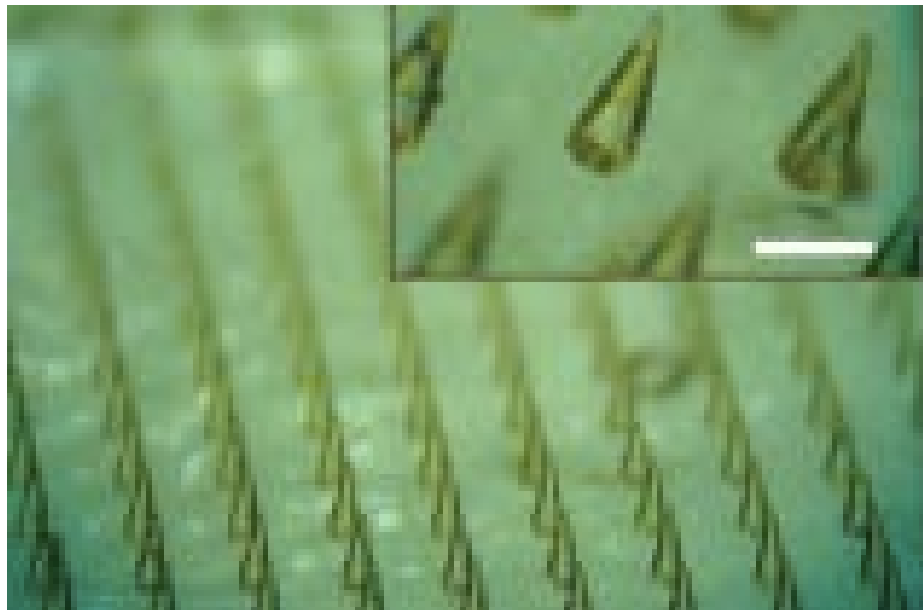
## ARTICLE

Received 27 Nov 2012 | Accepted 6 Mar 2013 | Published 16 Apr 2013

DOI: 10.1038/ncomms2715

## A bio-inspired swellable microneedle adhesive for mechanical interlocking with tissue

Seung Yun Yang<sup>1,2,3</sup>, Eoin D. O'Ceirbhail<sup>1,2,3</sup>, Geoffroy C. Sisk<sup>4</sup>, Kyeng Min Park<sup>5</sup>, Woo Kyung Cho<sup>1,3</sup>, Martin Villiger<sup>6</sup>, Brett E. Bouma<sup>3,6</sup>, Bohdan Pomahac<sup>4</sup> & Jeffrey M. Karp<sup>1,2,3</sup>



# The impact of research is broad and unpredictable



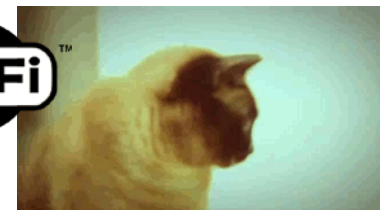
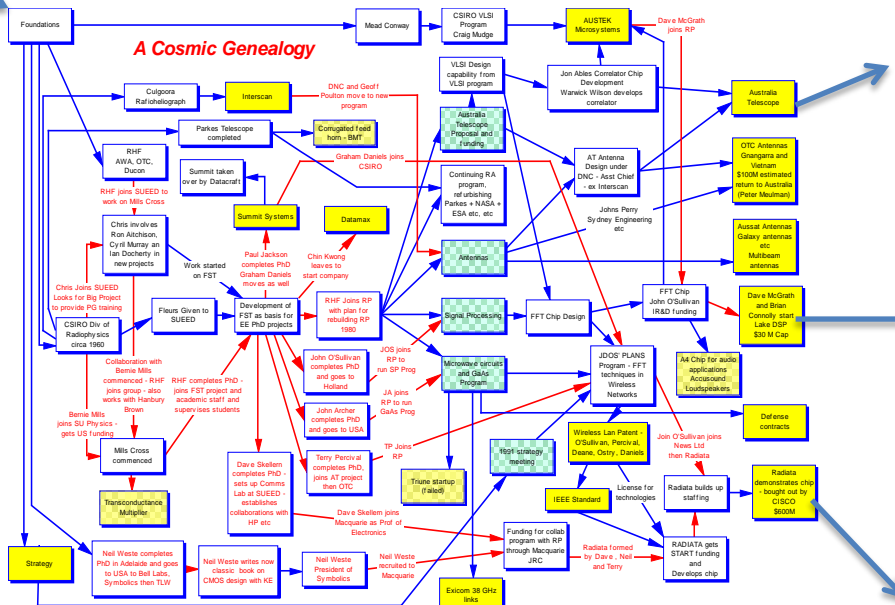
Allied Forces WWII radar



Radioastronomy



Cochlear implant



Cat videos on smartphones

Credit: Dr Bob Frater AO FAA FTSE

# Research impact and integrity

- Research always has impact
- The impact of research is predictably unpredictable
- *Because of this we must be able to trust research*
- The principles of research integrity:
  - make research trustworthy
  - can make research excellent
  - underpin the positive impact of research
  - are intrinsic to responsible research
  - are the norm

# Solid foundations

- Research can have great impact, only when we can trust the research.

# A spectrum of behaviours





# Research is a human endeavour

- Research is a defining trait of humans, and is reliant on human involvement for analysis and interpretation
- Pressures for funding, promotion, publication etc mean that some humans will respond in ways that many others think are not acceptable
- These unacceptable responses tend to either be dishonest or untrustworthy, or result in research that should not be allowed to have impact

The principles of research integrity are

- **Honesty** and **accountability** in all aspects of research.
- **Professional courtesy** and **fairness** in working with others.
- **Good stewardship** of research on behalf of others.

The principles of research integrity are translated into practice by humans (researchers) working in a complex system of expectations and traditions

- Morals
- Personality
- Skills and experience
- Cultural background
- Discipline
- Collaboration
- Community
- Institution
- Funding Source
- Publisher



Adherence to regulation  
Working safely  
Demonstration of respect for participants, animals, environment  
Rigour and objectivity  
Research data management  
Sharing research data  
Publication and communication of research  
Citation of the work of others  
Acknowledgment of contributions to research  
Authorship  
Peer review  
Conflict of interest management  
Supervision of research trainees  
RCR education and training  
Accuracy in research proposals  
Use of research funds  
Dual use of research  
Raising concerns about the integrity of research

**Excellent Conduct**

**Responsible Conduct**



Research integrity / Accepted and responsible research practice

Research is a human  
endeavour.

Sometimes researchers make  
honest mistakes.

Sometimes researchers  
breach the principles of  
research integrity deliberately  
or recklessly or negligently.

Sometimes this is called  
research misconduct



Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results,

(1) Fabrication means making up data or results and recording or reporting them.

(2) Falsification means manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

(3) Plagiarism means the appropriation of another person's ideas, processes, results or words without giving appropriate credit.

(c) A finding of research misconduct requires that —

(1) There be a significant departure from accepted practices of the relevant research community; and

(2) The research misconduct be committed intentionally, or knowingly, or recklessly; and

(3) The allegation be proven by a preponderance of evidence.

*Research misconduct does not include honest error or differences of opinion.*

**Table 1 | Percentage of scientists who say that they engaged in the behaviour listed within the previous three years (n = 3,247)**

Top ten behaviours	All	Mid-career	Early-career
1. Falsifying or 'cooking' research data	0.3	0.2	0.5
2. Ignoring major aspects of human-subject requirements	0.3	0.3	0.4
3. Not properly disclosing involvement in firms whose products are based on one's own research	0.3	0.4	0.3
4. Relationships with students, research subjects or clients that may be interpreted as questionable	1.4	1.3	1.4
5. Using another's ideas without obtaining permission or giving due credit	1.4	1.7	1.0
6. Unauthorized use of confidential information in connection with one's own research	1.7	2.4	0.8 ***
7. Failing to present data that contradict one's own previous research	6.0	6.5	5.3
8. Circumventing certain minor aspects of human-subject requirements	7.6	9.0	6.0 **
9. Overlooking others' use of flawed data or questionable interpretation of data	12.5	12.2	12.8
10. Changing the design, methodology or results of a study in response to pressure from a funding source	15.5	20.6	9.5 ***
<b>Other behaviours</b>			
11. Publishing the same data or results in two or more publications	4.7	5.9	3.4 **
12. Inappropriately assigning authorship credit	10.0	12.3	7.4 ***
13. Withholding details of methodology or results in papers or proposals	10.8	12.4	8.9 **
14. Using inadequate or inappropriate research designs	13.5	14.6	12.2
15. Dropping observations or data points from analyses based on a gut feeling that they were inaccurate	15.3	14.3	16.5
16. Inadequate record keeping related to research projects	27.5	27.7	27.3

Note: significance of  $\chi^2$  tests of differences between mid- and early-career scientists are noted by \*\* ( $P < 0.01$ ) and \*\*\* ( $P < 0.001$ ).

*Our findings suggest that US scientists engage in a range of behaviours extending far beyond falsification, fabrication or plagiarism”*

Martinson, Anderson & de Vries *Nature* 2005  
435:737-738

**Table 2:** Types of behavior included in research misconduct definitions

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Fabrication	183/183 (100.0%)
Falsification	183/183 (100.0%)
Plagiarism	183/183 (100.0%)
Other serious deviations	83/183 (45.4%)
Significant or material violations of regulations	42/183 (23.0%)
Misuse of confidential information	29/183 (15.8%)
Misconduct related to misconduct	27/183 (14.8%)
Unethical authorship other than plagiarism	26/183 (14.2%)
Other deception involving data manipulation	24/183 (13.1%)
Misappropriation of property/theft	19/183 (10.4%)
Misappropriation of funds	12/183 (6.6%)
Misrepresentation of one's credentials	9/183 (4.9%)
Failure to disclose significant financial interests	3/183 (1.6%)
Other	11/183 (6.0%)

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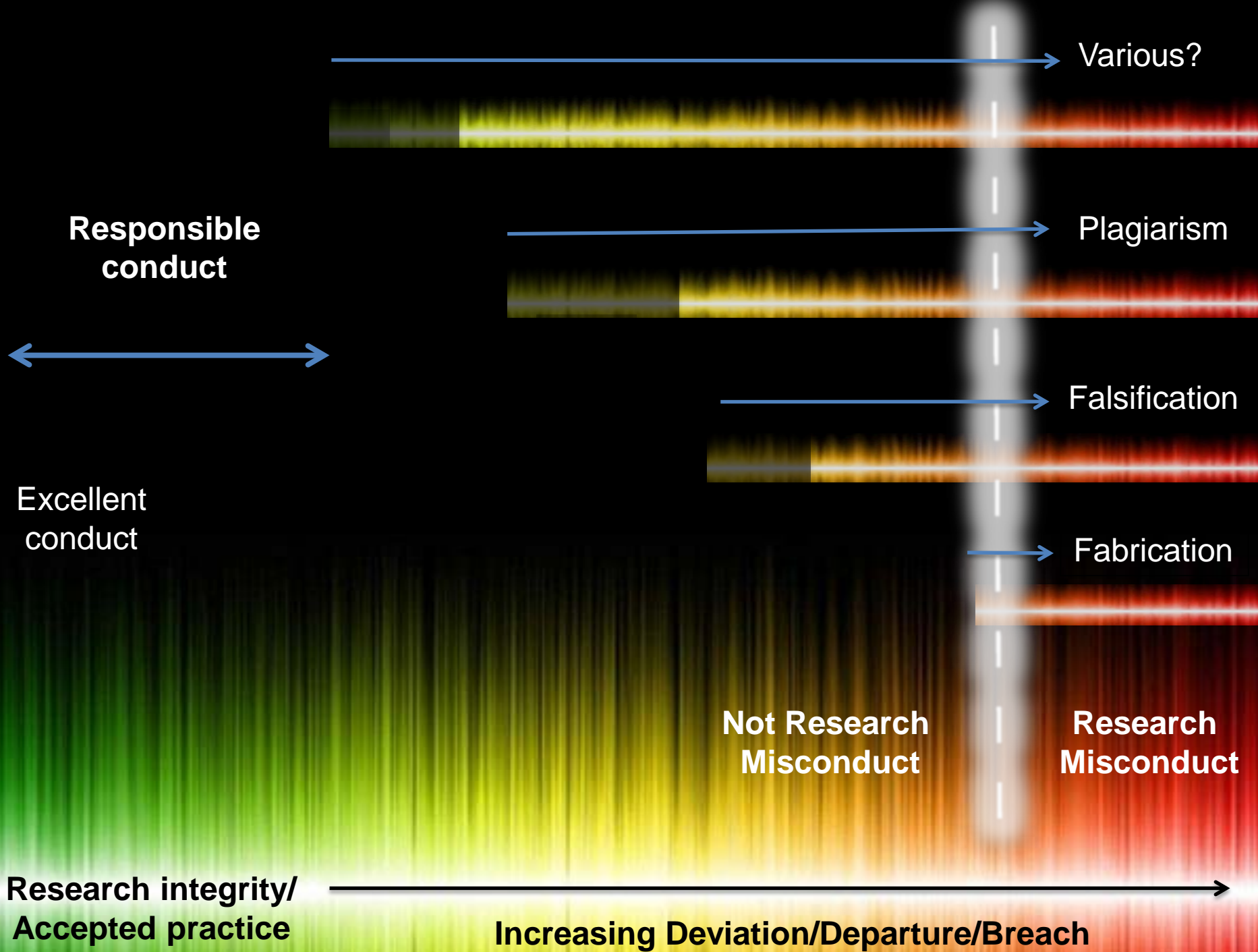
David B. Resnik J.D., Ph.D., Talicia Neal M.A., Austin Raymond B.A. & Grace E. Kissling Ph.D. (2015)  
Research Misconduct Definitions Adopted by U.S. Research Institutions,  
Accountability in Research, 22:1, 14-21, DOI: 10.1080/08989621.2014.891943

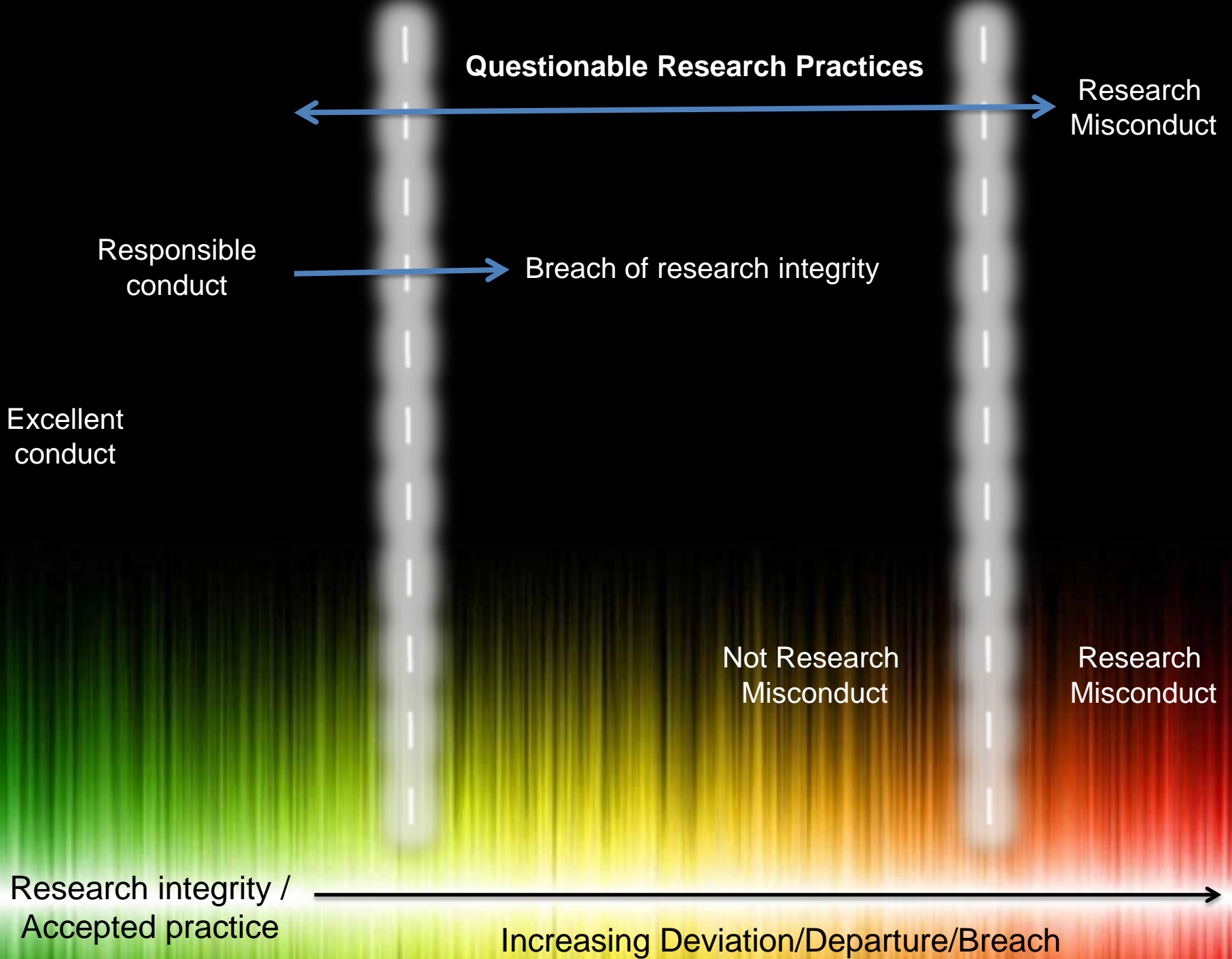


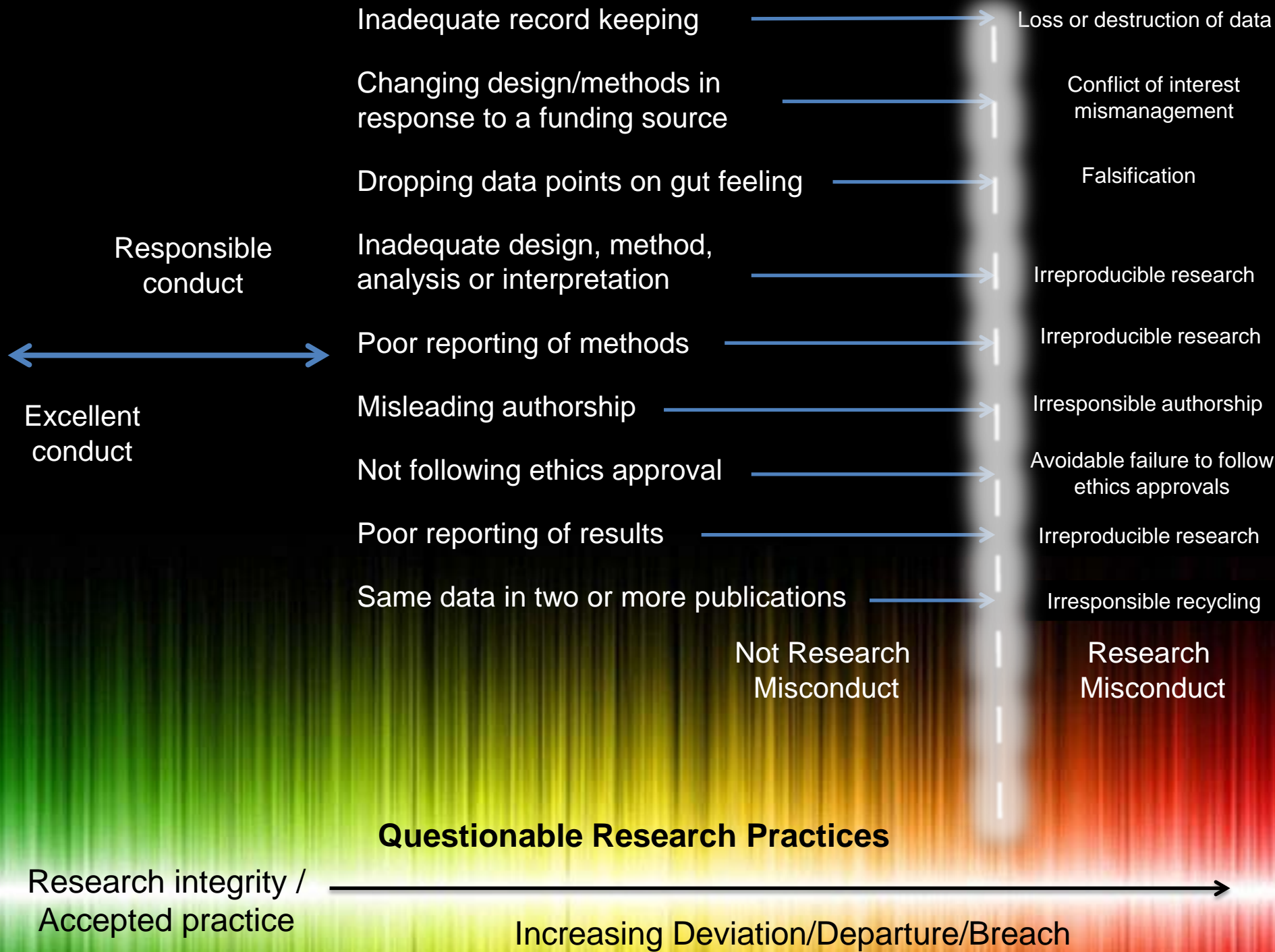
**Table 3:** Behaviors Defined as Misconduct in National Policies

<b>Behavior</b>	<b>Number</b>	<b>*Percentage</b>
Fabrication	22	100.0
Falsification	22	100.0
Plagiarism	22	100.0
Unethical Authorship (not Plagiarism)	12	54.6
Unethical Publication Practices	8	36.4
Conflict of Interest Mismanagement	8	36.4
Unethical Peer Review	7	31.8
Misconduct Related to Misconduct Investigations	6	27.3
Poor Record Keeping	6	27.3
Other Deception	6	27.3
Serious Deviations	5	22.7
Violating Confidentiality	5	22.7
Human or Animal Research Violations	5	22.7
Misappropriating Funds	3	13.6
Misrepresenting Credentials	3	13.6
Theft of Physical Property	2	9.1
Interfering with Research	2	9.1
Other	9	40.9

\**n* = 22 countries with misconduct policies.







**Can the research be trusted?**  
**Would we be happy for it have impact?**

Key terms defined



Wetenschappelijke Integriteit = RI  
Life

Integritate interschikese

科研诚信 / Keyan Chengxin (Chinese) queyen  
chenstie.

YTIKGETNI HORAFSEK

ASIUOSEP ME EDADIR DETNI  
INTEGRIDADE EM PESQUISA

l'intégrité de la recherche

# Research integrity/responsible conduct of research

- The idea that the way that research is conducted impacts on the trustworthiness, honesty and impact of the research. Research conducted responsibly can be said to have research integrity.
- A set of principles that guide the conduct of research such that the research is trustworthy and honest.
- “the *right* way to do research”
- “what researchers should do even when no one is watching”
- “research spirit”



# Research ethics

- The idea that research involving human or animal participants should not proceed unless the research has the potential to produce benefits that justify the impact on human or animals involved.
- Three R's in animals
- Human Subject Protection
- “Unnecessary intrusion into researchers' activity”

# Questionable research practices

- Those research practices which reduce the trustworthiness of research or the degree to which the research can be presented honestly.
- Those research practices that most researchers/institutions would agree reduce the trustworthiness and honesty of their research but nevertheless they continue to conduct their research in this way
- Irresponsible research practices

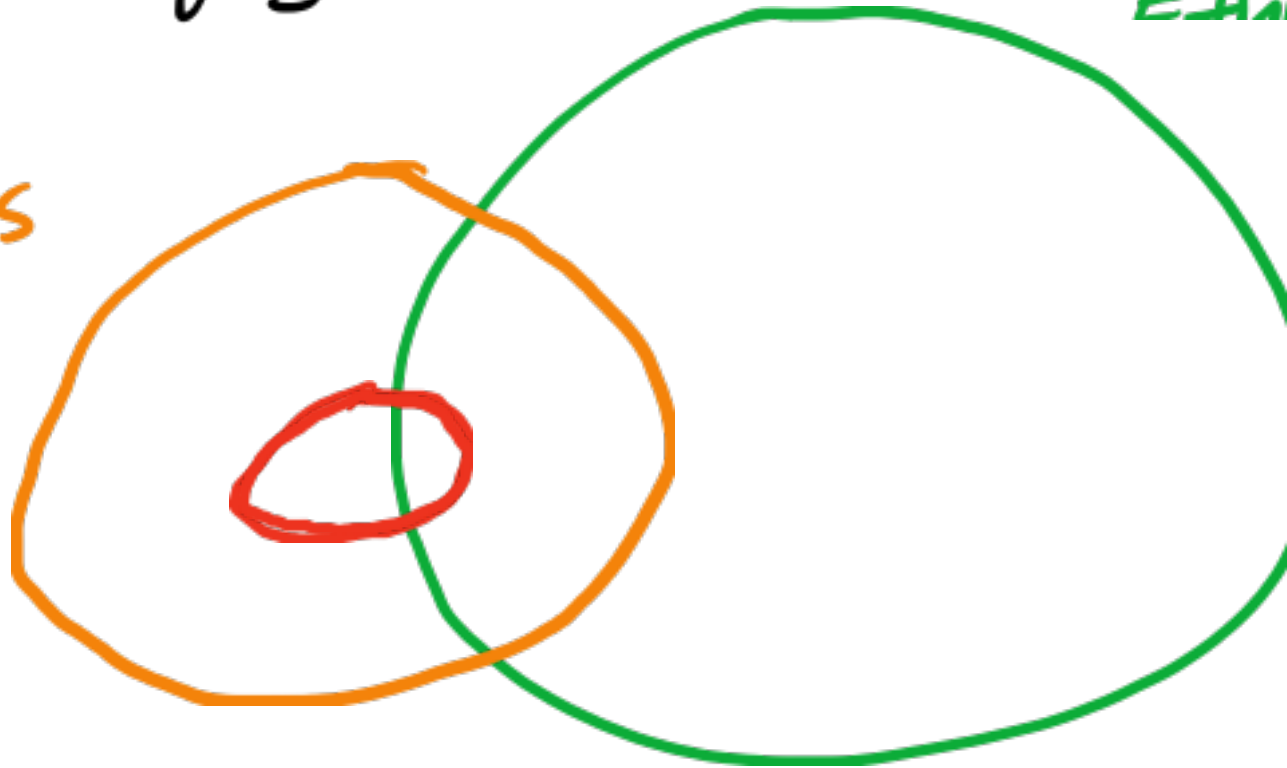
# Research misconduct

- Research practices that significantly depart from accepted research practice in the discipline such that the research is rendered untrustworthy and or dishonest in the opinion of researchers from that discipline.
- Research practices that cannot be justified in the view of researchers from the same discipline
- We don't need a definition – it just gets in the way and makes things harder. The questions should be can we trust the research and are we happy for it to have impact.

Research Integrity

Research  
ETH

ORPs



# APEC Guiding Principles for Research Integrity



# APEC Guiding Principles

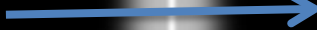
- RMIT University, with Deakin University, will be developing Guiding Principles for Research Integrity for use by APEC economies
- The project involves some produce agreed definitions and a set of Guiding Principles for Research Integrity. A final product is expected by mid-2018.
- If you are interested or have questions please contact Paul Taylor or Daniel Barr.

**Questionable Research Practices**



Research Misconduct

Responsible conduct



Breach of research integrity

Excellent conduct

Not Research Misconduct

Research Misconduct

Research integrity / Accepted practice



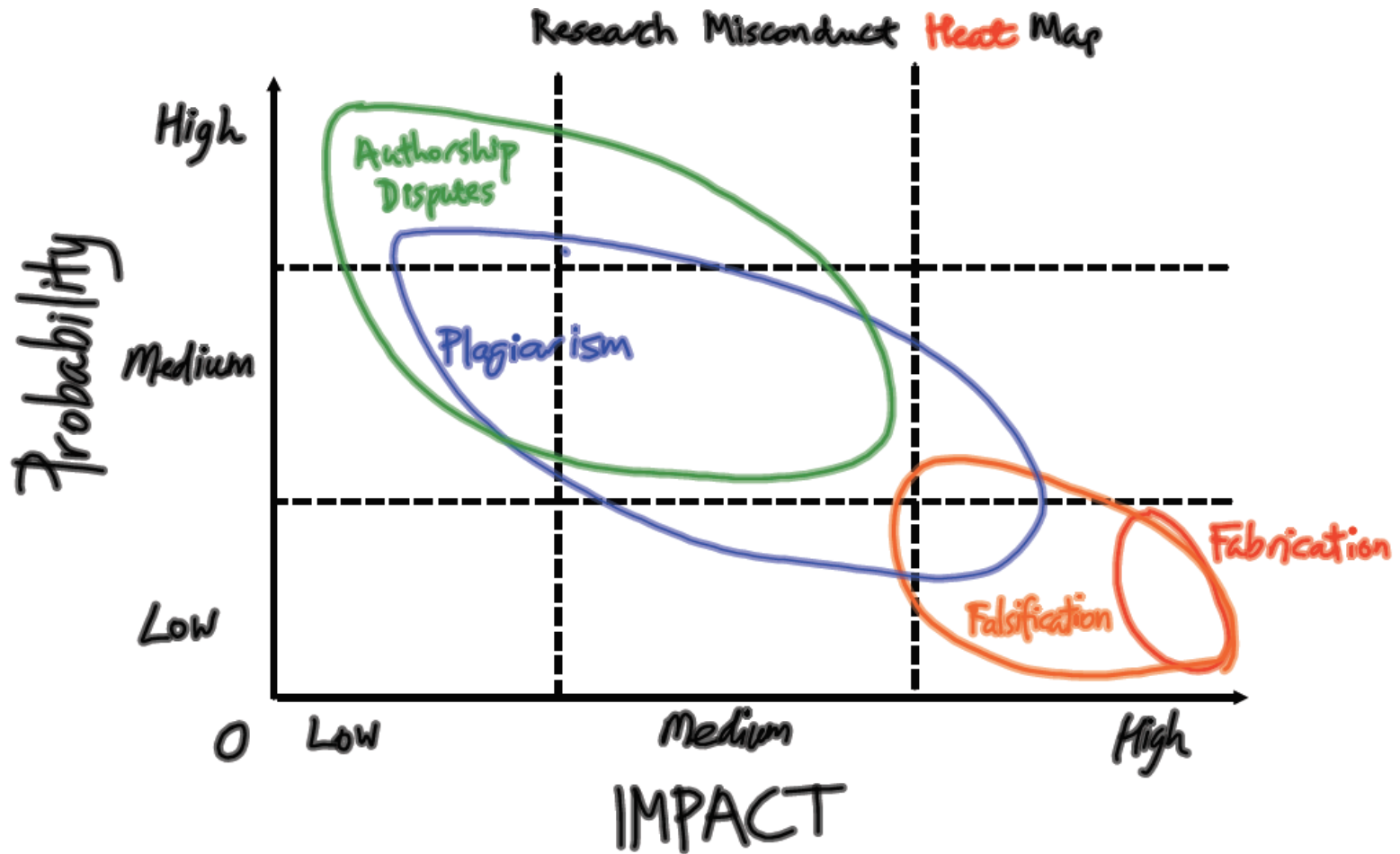
Increasing Deviation/Departure/Breach

Thank you!

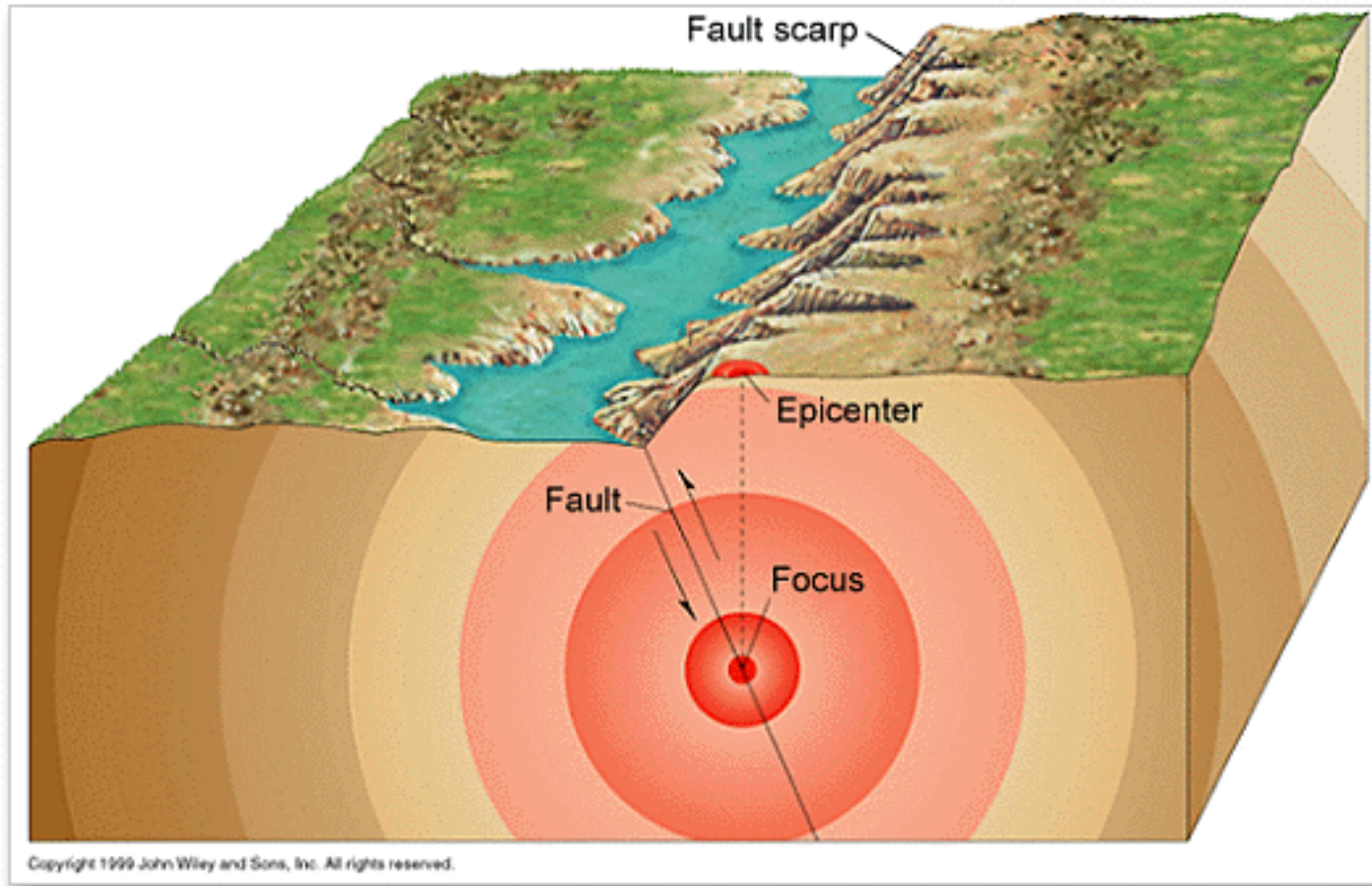


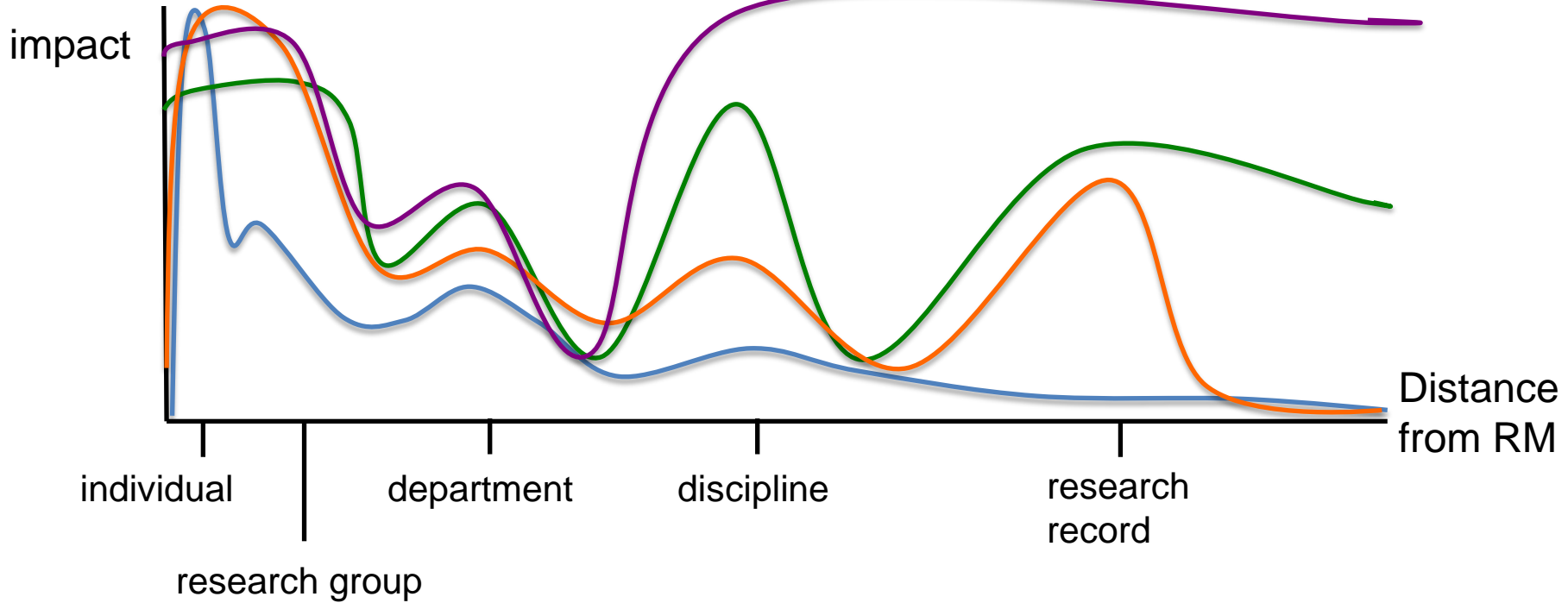


# Different risks



# Different impacts for different types of RM





AUTHORSHIP

FABRICATION

PLAGIARISM

LOSS OF DATA

# So, what does all of this mean?

- Impact of research is predictably unpredictable
- Principles of research integrity make research trustworthy and excellent
- Range of accepted research practice, including some that reduce honesty and trustworthiness
- Influence from discipline is large
- Range of practice that is not acceptable because it reduces the honesty and trustworthiness of research
- Not all of this 'unacceptable' research practice is research misconduct but it should all be addressed

# Do we need a definition?

- The term research misconduct doesn't tell us much about the way in which the research is dishonest or untrustworthy
- It can be a barrier to taking corrective action to preserve the integrity of the research record
- If corrective action is needed, then it should be taken irrespective of a finding of research misconduct
- Our focus needs to be on improving research practice (reducing QRPs) rather than on preventing research misconduct