Plenary 2
Definition of Key Terms & Factors associated with misconduct
Thank you

- University of Hong Kong
  - Planning Committee Members
  - Frederick Leung
  - Danny Chan
  - Kate Yip
Thank you, Zoë Hammatt
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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

  Disciplined-specific and technical
  “Virus-like particles”

- 2000, *Vaccine*, IF~3
  Disciplined-specific and technical
  “Virus-like particles are potent immunogens”

- Accumulation of non-linear steps
- A complex equation of research impact
- Safe and ~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*
...to the face of a cure?
The impact of research is broad and unpredictable
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 Singapore Statement on Research Integrity*
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
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.
Our finding 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

<table>
<thead>
<tr>
<th>Type</th>
<th>Count/Total (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrication</td>
<td>183/183 (100.0%)</td>
</tr>
<tr>
<td>Falsification</td>
<td>183/183 (100.0%)</td>
</tr>
<tr>
<td>Plagiarism</td>
<td>183/183 (100.0%)</td>
</tr>
<tr>
<td>Other serious deviations</td>
<td>83/183 (45.4%)</td>
</tr>
<tr>
<td>Significant or material violations of regulations</td>
<td>42/183 (23.0%)</td>
</tr>
<tr>
<td>Misuse of confidential information</td>
<td>29/183 (15.8%)</td>
</tr>
<tr>
<td>Misconduct related to misconduct</td>
<td>27/183 (14.8%)</td>
</tr>
<tr>
<td>Unethical authorship other than plagiarism</td>
<td>26/183 (14.2%)</td>
</tr>
<tr>
<td>Other deception involving data manipulation</td>
<td>24/183 (13.1%)</td>
</tr>
<tr>
<td>Misappropriation of property/theft</td>
<td>19/183 (10.4%)</td>
</tr>
<tr>
<td>Misappropriation of funds</td>
<td>12/183 (6.6%)</td>
</tr>
<tr>
<td>Misrepresentation of one’s credentials</td>
<td>9/183 (4.9%)</td>
</tr>
<tr>
<td>Failure to disclose significant financial interests</td>
<td>3/183 (1.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>11/183 (6.0%)</td>
</tr>
</tbody>
</table>
### Table 3: Behaviors Defined as Misconduct in National Policies

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

*n = 22 countries with misconduct policies.*
Increasing Deviation/Departure/Breach

Research integrity / Accepted practice

Questionable Research Practices

Responsible conduct

Breach of research integrity

Excellent conduct

Not Research Misconduct

Research Misconduct

Research Misconduct

Increasing Deviation/Departure/Breach
Increasing Deviation/Departure/Breach

Research integrity / Accepted practice

Responsible conduct

Excellent conduct

Questionable Research Practices

Inadequate record keeping

Changing design/methods in response to a funding source

Dropping data points on gut feeling

Inadequate design, method, analysis or interpretation

Poor reporting of methods

Misleading authorship

Not following ethics approval

Poor reporting of results

Same data in two or more publications

Lost or destruction of data

Conflict of interest mismanagement

Falsification

Irreproducible research

Irreproducible research

Irreproducible research

Irreproducible research

Avoidable failure to follow ethics approvals

Irreproducible research

Irresponsible authorship

Irresponsible recycling

Research Misconduct

Not Research Misconduct
Can the research be trusted?
Would we be happy for it to have impact?
Key terms defined
Wetenschappelijke Integriteit = RI
l'Intégrité de la recherche

Integritijë interschkesse

Asiotes NE EADADIE INTÉGRITÉ

Keygan Chengxin (Chineèse)

YIRGEINTI HIRASEK

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

ORPs

Research Ethics
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.
Increasing Deviation/Departure/Breach

Research integrity / Accepted practice

Questionable Research Practices

Breach of research integrity

Responsible conduct

Excellent conduct

Not Research Misconduct

Research Misconduct

Research Misconduct
Thank you!
Different risks

- Research Misconduct
- Heat Map

- Authorship Disputes
- Plagiarism
- Fabrication
- Falsification

Probability vs. Impact

- Low
- Medium
- High
Different impacts for different types of RM
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