

Small decisions, big consequences



REU Responsible Conduct in Research Workshop
Harvard University
Cambridge, MA, 3 July 2012



Introduction

why is this man smiling?



Introduction

who is he anyway?



Introduction

Dr. Hwang Woo Suk



Introduction

successfully cloned a dog!



Introduction

successfully cloned a dog!



"Snuppy"



Introduction

stem cells made from cloned human embryos!



Introduction

eleven of them!



Introduction

...but...



Introduction

...9 of the 11 were fabricated...



Introduction

...9 of the 11 were fabricated...



2 YEARS PRISON
EXPELLED FROM UNIVERSITY
BARRED FROM RESEARCH
PAPERS RETRACTED

Introduction

Hwang's poor judgement affected careers of many



Introduction

how do you prevent this from happening to *you*?

"Clickers"



- no ON/OFF button
- only last "click" counts
- display shows recorded answer

Case Study A

since 2008: work in Dowd group at Yale on cancer research

summer 2011: work in Tozik group at Stanford on cancer drug

fall 2011: Tozik asks you to prepare paper on new drug

Kevin, postdoc in Dowd group, wants to be co-author because

- methods were developed under his supervision
- paper is written at Yale, not Stanford

Case Study A

You:

- 1. acknowledge Kevin's contributions at end of paper**
- 2. tell Kevin work was done at Stanford, not Yale**
- 3. include Kevin as co-author**
- 4. discuss Kevin's contributions to work with Tozik**

(answer what you would *do*, not necessarily what you think is right — be honest)

Case Study A

Just before submitting the paper, Professor Tozik calls you to let you know that she is submitting an invention disclosure and that a pharmaceutical company has already agreed to provide Stanford University a \$2M yearly licensing fee for the new drug. You and Tozik will share Stanford's "inventor share" of \$600k

You:

1. inform Kevin and Professor Dowd of royalty agreement
2. rejoice and start wondering what to do with \$300K.
3. discuss Kevin's contributions with Tozik
4. hire an attorney to defend your interests

Authorship

The correct approach:

- **discuss contents of paper and authorship with all parties involved before beginning to write**
- **ensure every proposed author satisfies all authorship requirements (and vice-versa)**
- **include paragraph at end of paper detailing each author's contributions**

Authorship

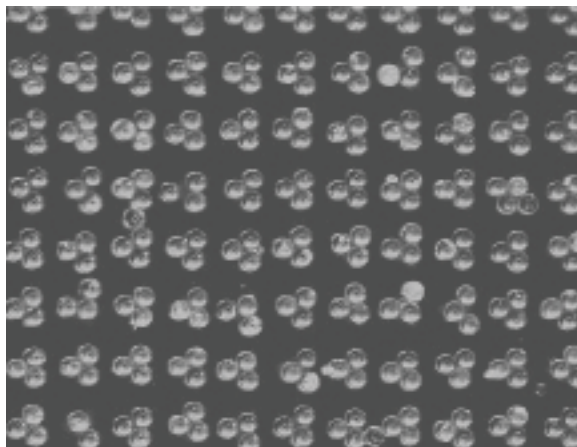
Authorship requirements:

Each author must be willing to take full, public responsibility for the content of the paper and have made substantial contributions to:

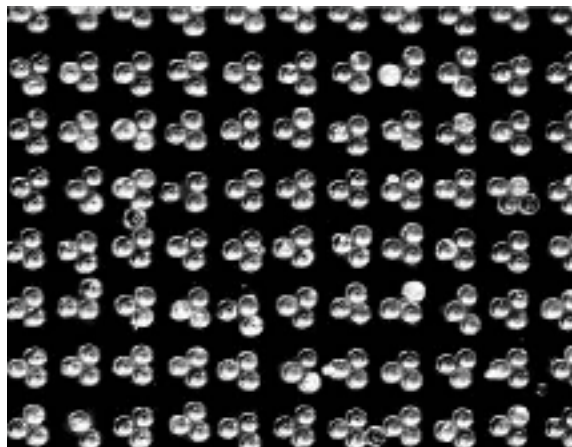
- either the conception and design or the analysis and interpretation of data
- drafting the article or revising it critically for important intellectual content
- final approval of the version to be published.

Case Study B

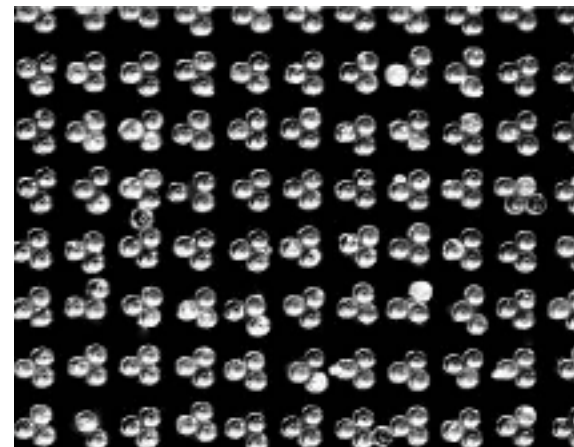
original



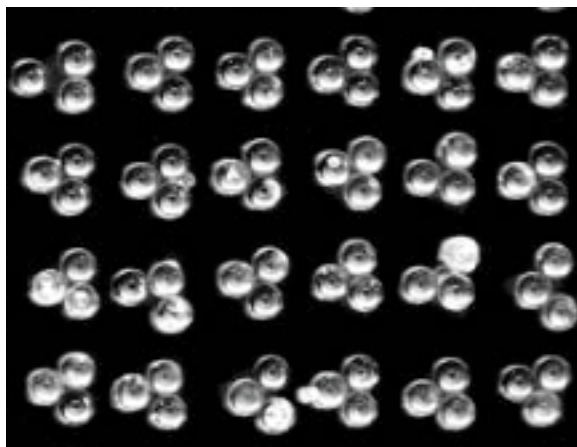
1. adjust contrast



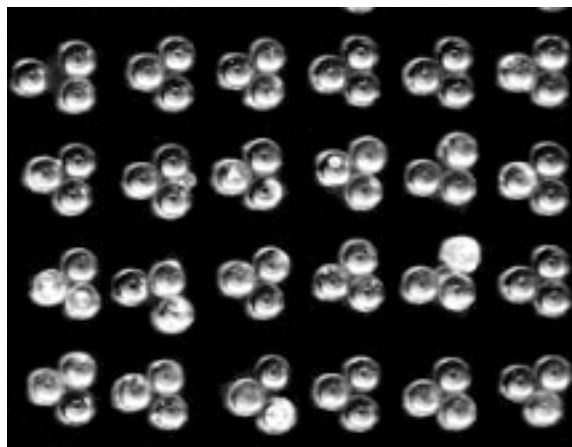
2. remove blemishes



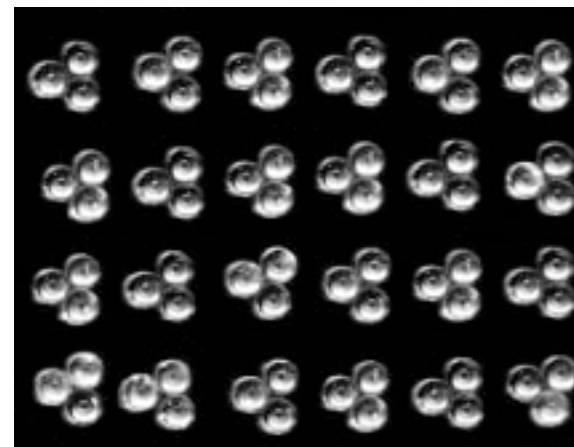
3. crop



4. remove outliers



5. reconstruct



Case Study B

At which of the above steps were acceptable standards of ethics violated?

- 1. Optimize brightness/contrast**
- 2. Remove blemishes**
- 3. Crop on optimal area**
- 4. Retouch outliers**
- 5. Replace outliers with parts copied from other locations**

Case Study B

The editor of Nature calls you and asks you to provide the original, unedited microscope image for posting on a supplementary data web site.

You

1. provide original image
2. tell editor the image, as submitted, was the original
2. provide image you had just before you took final editing step

Case Study C

During a gap year before graduate school, you are planning to work for management consulting firm.

The opportunity arises to continue work on new electronic material in a university laboratory with funds from your advisor's startup company.

If you are paid directly by the company, you get a larger stipend, than if you were to be paid through University channels.

Case Study C

You:

- 1. ask to be paid through the university**
- 2. stick to original plan and decide to work for consulting firm.**
- 3. accept the higher amount**

(answer what you would *do*, not necessarily what you think is right — be honest)

Case Study C

After accepting the offer to be paid directly by EIMat, your work leads to a huge breakthrough. EIMat claims to own the data and any rights to the invention because they paid you, not the university. They file a patent and — as is customary in industry — lay full claim on any proceeds from the invention.

Case Study C

You accept the offer to be paid directly by ElMat. Later that year, a graduate student starts a fire in your lab and you suffer severe burns over part of your hand and arm. Your insurance company declines to pay for the required skin grafts, claiming that the accident should be covered by the university's insurance. The university's insurance refuses to pay, since you were not a university employee at the time of the accident. And El-Mat denies liability since the accident was not caused by one of its employees and did not occur on its property. You are left with unpaid health bills of over \$50,000.

Case Study C

After accepting the offer, your work leads to a huge breakthrough. You ask to present your results at a departmental colloquium, knowing that this presentation will help ensure your admission to graduate school. Your advisor denies your request because he is worried that competing companies with more resources might learn of your results and scoop EIMat. Furthermore, he asks that you not mention your research results in your applications to graduate schools.

Conclusion

You need to think through the possible consequences of your decisions.

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You need to think through the possible consequences of your decisions.

If you have any questions/qualms or are unsure of the potential consequences, consult a trusted third-party

Conclusion

Uncertain if a particular course of action is responsible?

The Headline Test

Imagine what you are preparing to do (or someone you are working is doing) will be reported the next day on the front page of your local newspaper.

Are 100% comfortable having your advisor/ employer, colleagues, friends, and family know exactly what you are involved in?

The Headline Test

Case Study A:

“Student awarded \$300k on work done at Stanford”

Case Study B:

“100% efficiency reported in simple self-assembly experiment”

Case Study C:

“work done in university lab leads to major breakthrough”

The Headline Test

one potential problem:

The Headline Test

one potential problem:

you may not be able to imagine every possible outcome...

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for a copy of this presentation:

<http://mazur.harvard.edu>

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