

Astrocareers & Diversity workshop

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**Leibniz Institute for Astrophysics Potsdam (AIP)
University of Potsdam**

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How to win in hard mode

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This is me:

Prof. Dr. Katja Poppenhäger

I'm a professor for Stellar Physics
and Exoplanets at Potsdam
University, my office is at AIP in
Babelsberg

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Updates about my work on my
homepage:

www.katjapoppenhaeger.com



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**All workshop materials on my homepage under
→ Misc. → Diversity**



Today's program:

Morning:

- sign-in sheet
- introduction: fairness vs. bias in academia
- training session: developing your “elevator pitch”

Lunch break at Mensa Golm

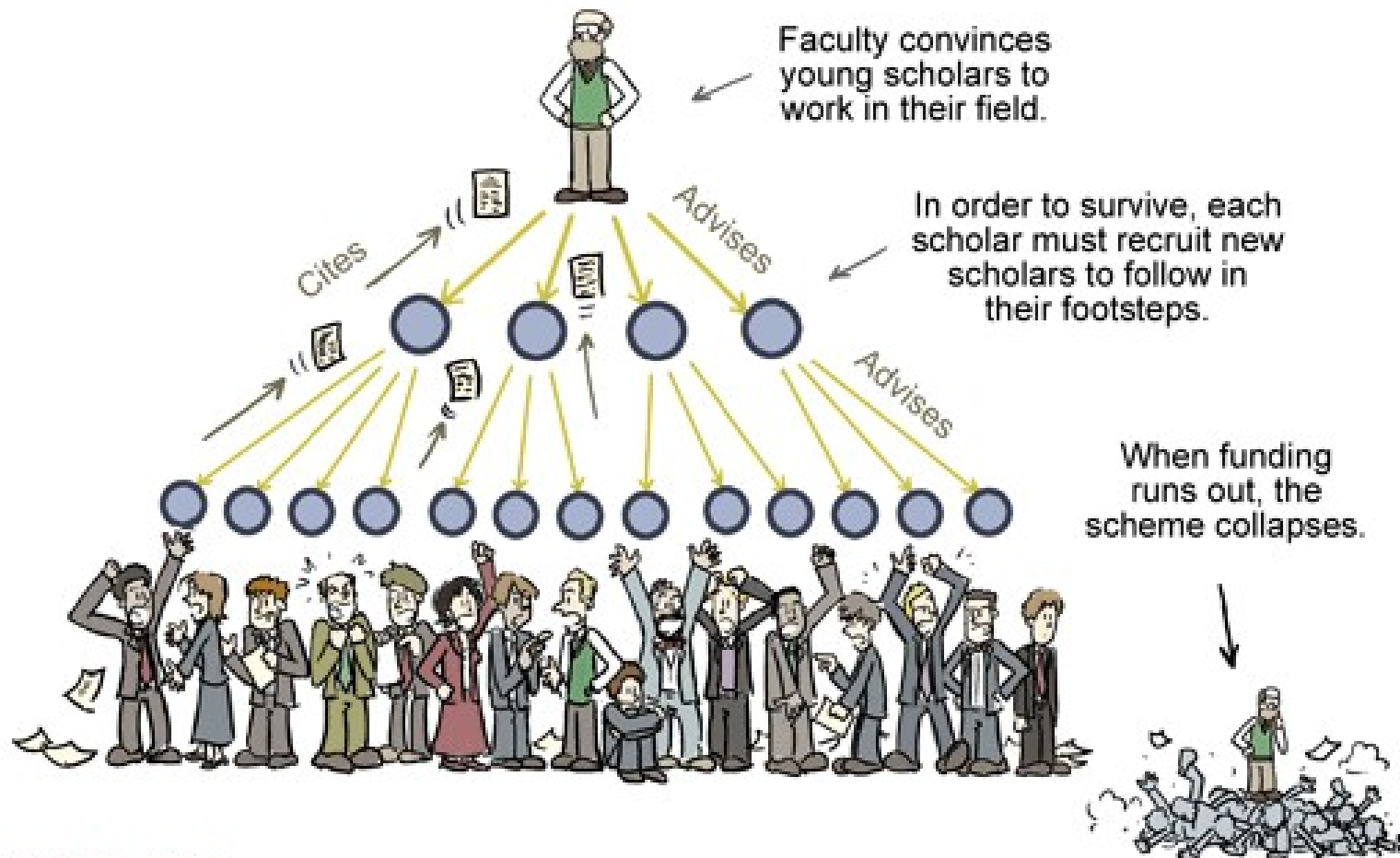
Afternoon:

- how-to session:
 - A) select a supervisor
 - B) talk to people at conferences
- Q&A about astro careers
- Feedback forms

Ca. 1 in 8 astro graduates gets a permanent job in academia

BEWARE THE PROFZI SCHEME

DON'T GET SCAMMED!

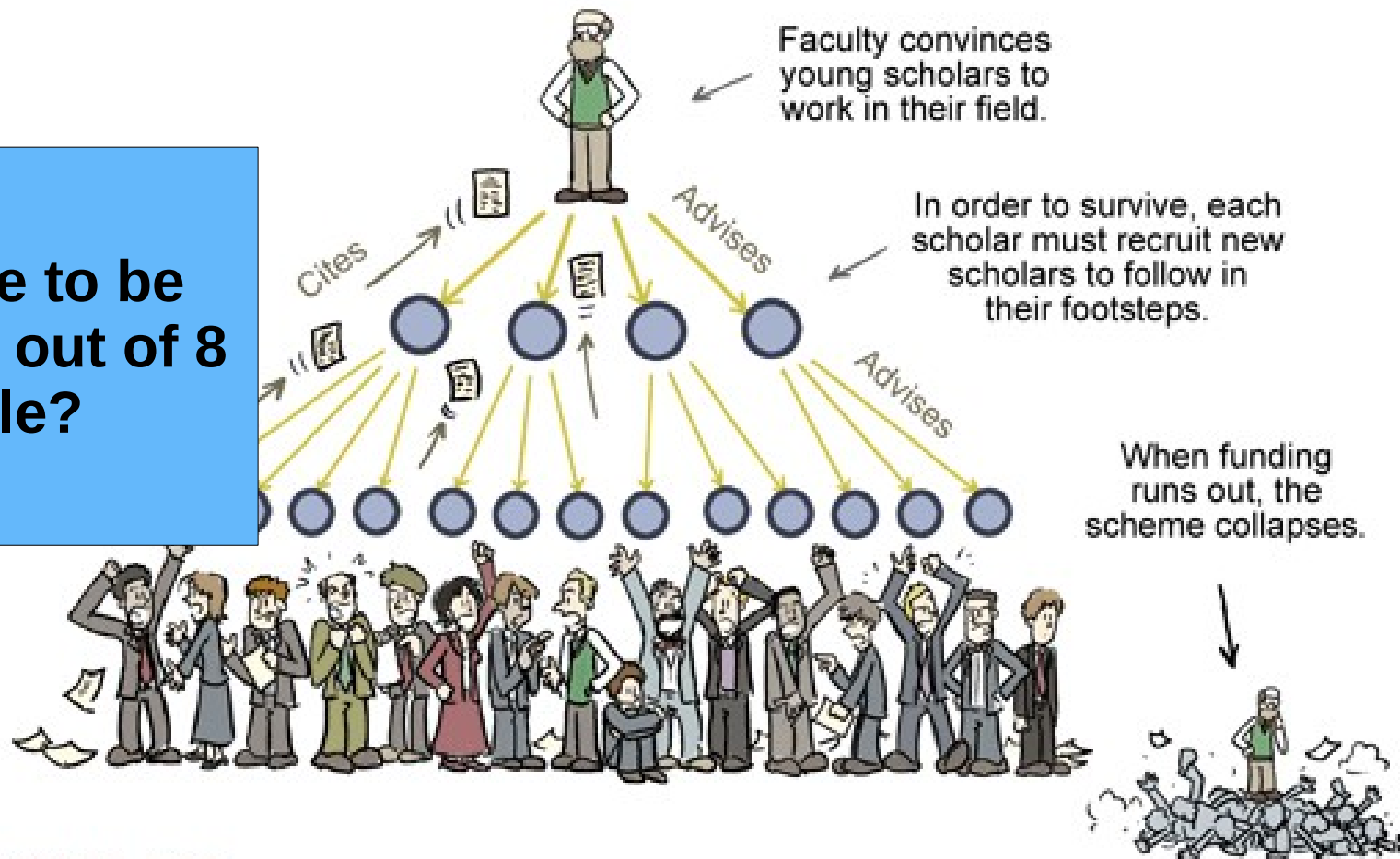


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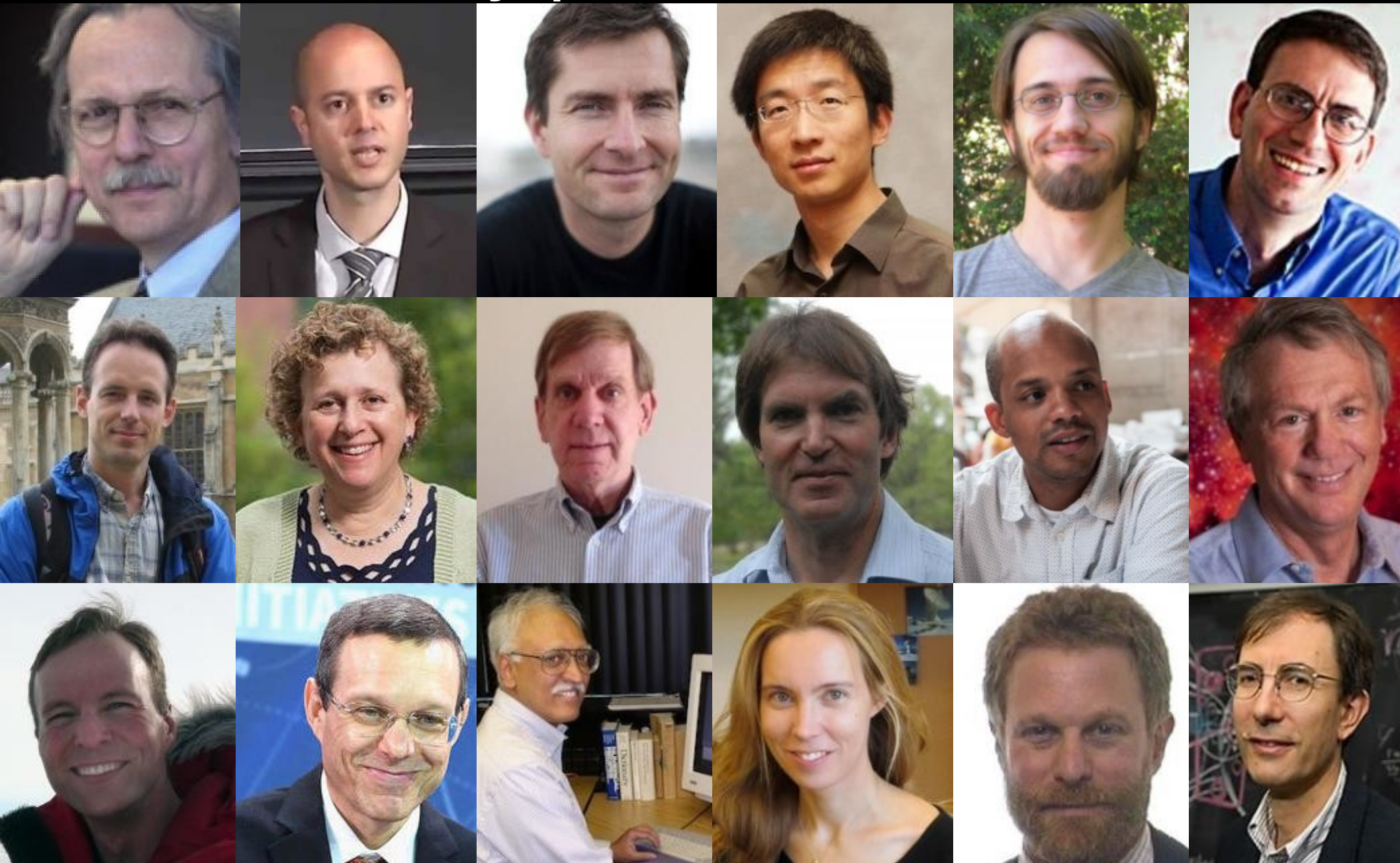
DON'T GET SCAMMED!

Just have to be
“the best” out of 8
people?



Astronomy professors at Harvard

Astronomy professors at Harvard



Academic careers



Academic careers



Academic careers



Already pretty difficult



Academic careers



Already pretty difficult



How academic astronomy careers work

Get a PhD

**Work as a
postdoc for
a while**

**Get a
permanent
academic
job**

How academic astronomy careers work

Get a PhD

**Work as a
postdoc for
a while**

**Get a
permanent
academic
job**

This doesn't count yet
as "your own
independent work" -
people count this as
"you learning how to do
independent research"

How academic astronomy careers work

Get a PhD

**Work as a
postdoc for
a while**

**Get a
permanent
academic
job**

This DOES count as
“your own independent
work”
(“Make a name for
yourself”)

How academic astronomy careers work

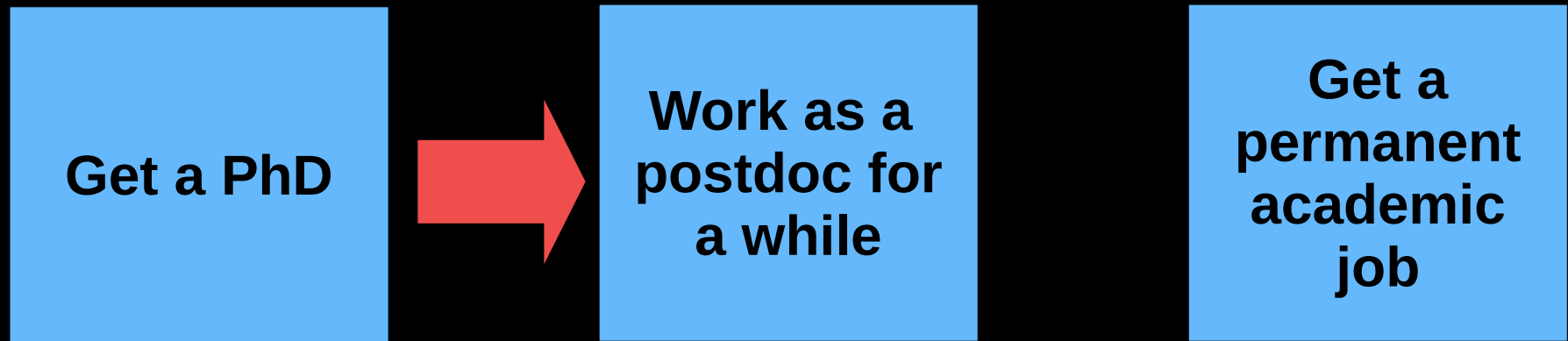
Get a PhD

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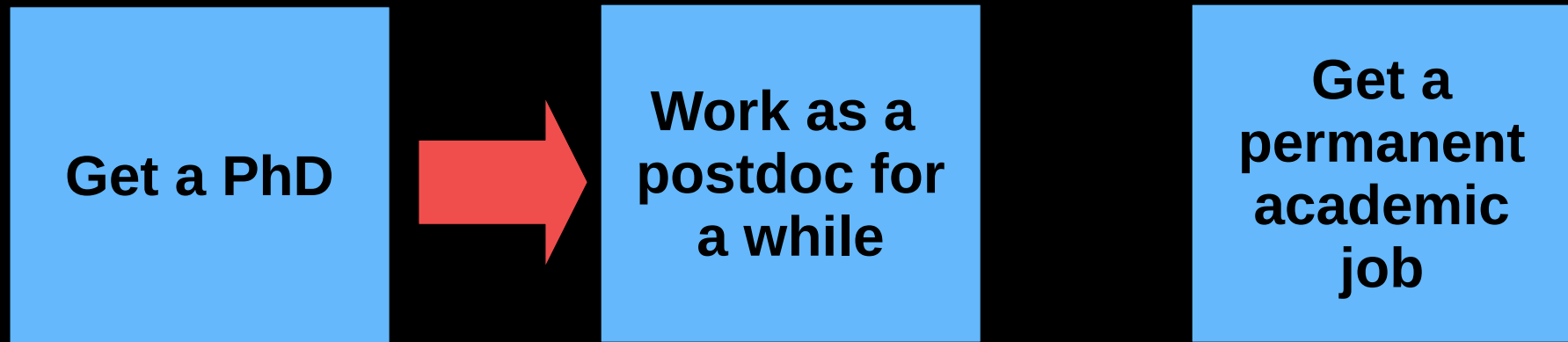
**Get a
permanent
academic
job**

This can be a professor position, research scientist, instrumentation person...

How academic astronomy careers work



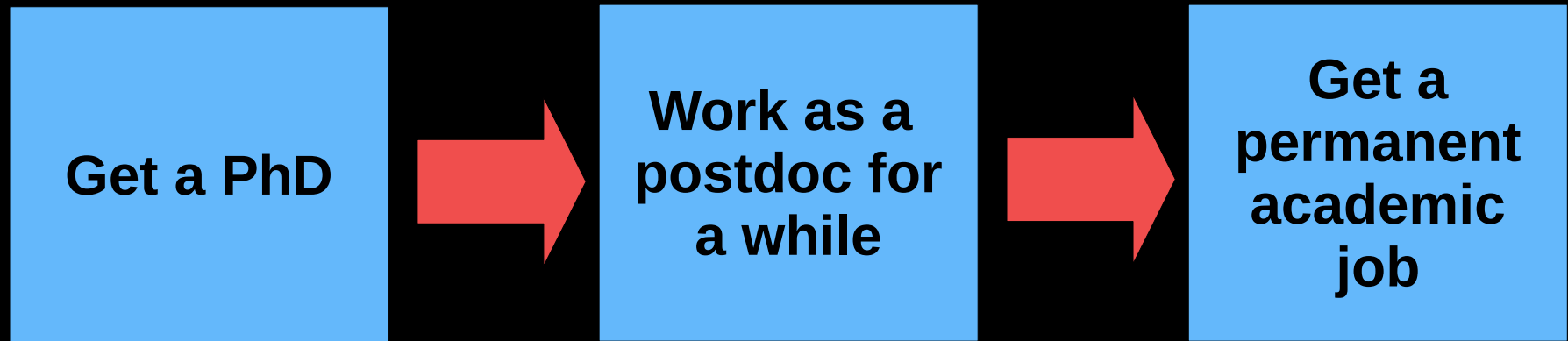
How academic astronomy careers work



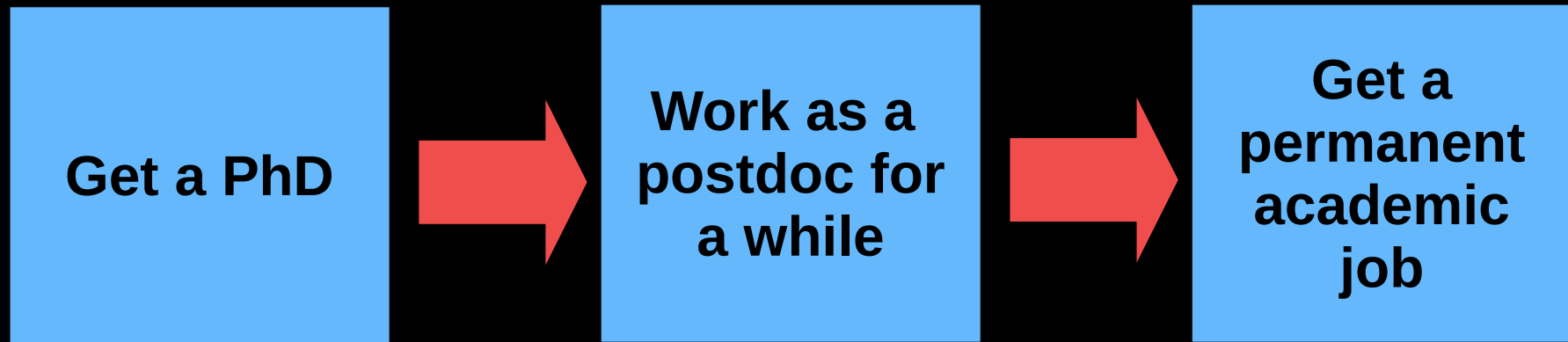
**“Promising scientist”:
function of**

- the quality of your PhD work**
- how many people noticed that work**
- your supervisor’s connections**

How academic astronomy careers work



How academic astronomy careers work



**“Influential scientist”:
function of**

- the quality of your work
- how many people know your work
- how important people think your field will still be in 10-20 years
- how much prestige you have accumulated (invited talks, citations, funding, ...)

How academic astronomy careers work

Many steps in an (academic) career depend on what other people think about you / your work

Can be highly subjective!

How academic astronomy careers work

Many steps in an (academic) career depend on what other people think about you / your work

Can be highly subjective!

But... aren't we good objective scientists??

Unconscious bias in
academia – what it is
and what to do about it

What is unconscious bias?

- A positive or negative unconscious belief about a particular category of people.
- Allows quick, but sometimes inaccurate, processing of information
- Often conflicts with consciously held attitudes
- Can change based on experience/exposure

Everyone has biases

- On average, people of any gender underestimate the contributions of women
- On average, both whites and people of colour underestimate the contributions of people of colour
- Biases are NOT discrimination:
- We can consciously decide if we act on them if we are aware of them

Bias and its effect in STEM

If biases go unchecked, they can have multiple detrimental effects for groups against which negative biases exist:

- performance evaluations
- hiring
- career progression
- quality of scientific community!

University teaching evaluations

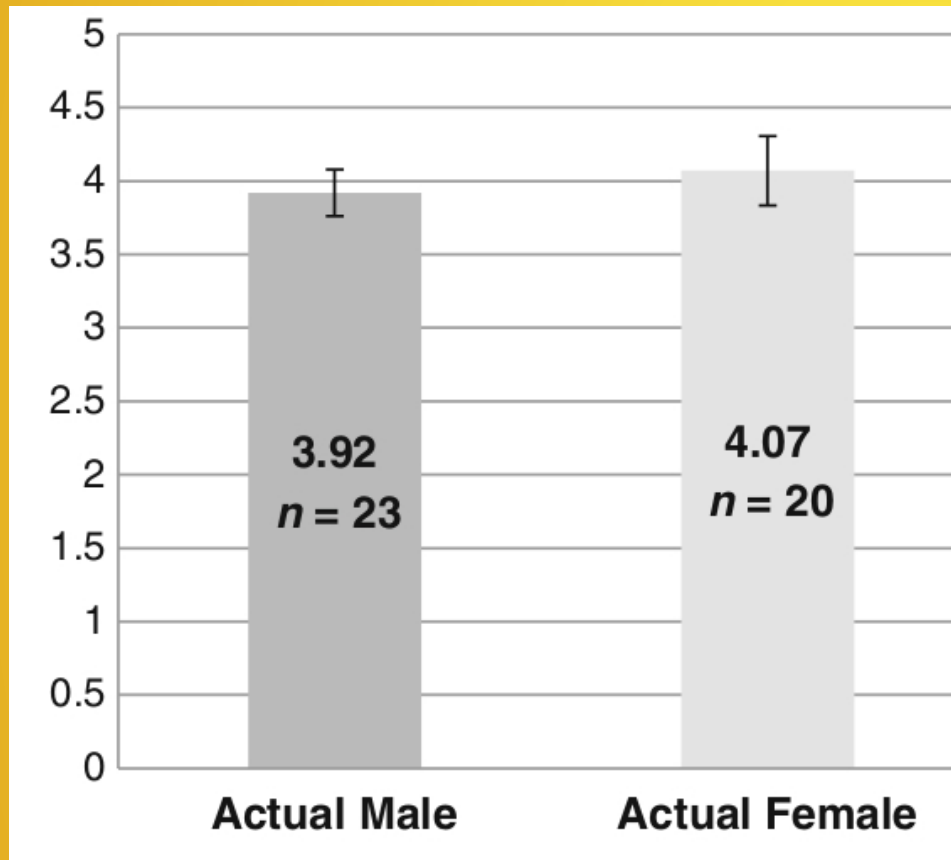
Online teaching:

Half of students taught by female instructor,
half by male instructor

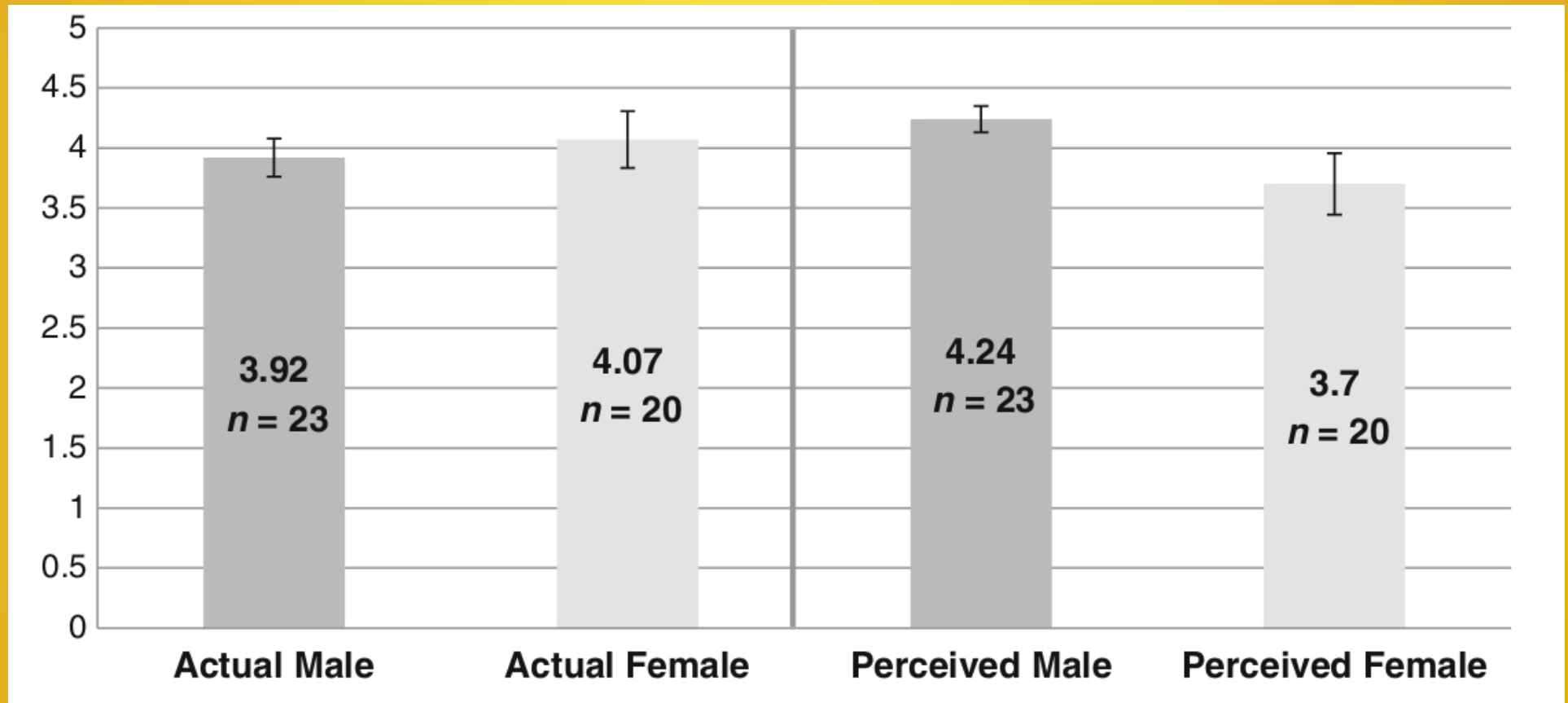
But: half of students were told that their
instructor had a different gender than the
instructor actually had

I.e. half of the students who were taught by
the male instructor thought the instructor was
female and vice versa

University teaching evaluations



University teaching evaluations



University teaching evaluations

Bias present even for “objective” categories:

Both instructors announced exam grades
2 days after exam.

- assumed female instructor got rating of **3.55** for promptness
- assumed male instructor got rating of **4.35** for promptness

Invitations to interview for jobs

“Strong” and “weak” CVs sent out to apply for jobs.

Half of the CVs in each category had “black” first names (Lakisha / Jamal), the other half had “white” first names (Emily / Greg).

The fractions of CVs which resulted in invitations to interview in person differed significantly:

Invitations to interview for jobs

	CV quality		Ratio	Difference (p-value)
	Low	High		
White Names	8.80% [1216]	11.31% [1229]	1.29	2.51% (.0391)
African American Names	6.41% [1216]	6.99% [1229]	1.09	0.58% (.5644)

Strong CVs with black-sounding names were treated worse than weak CVs with white-sounding names.

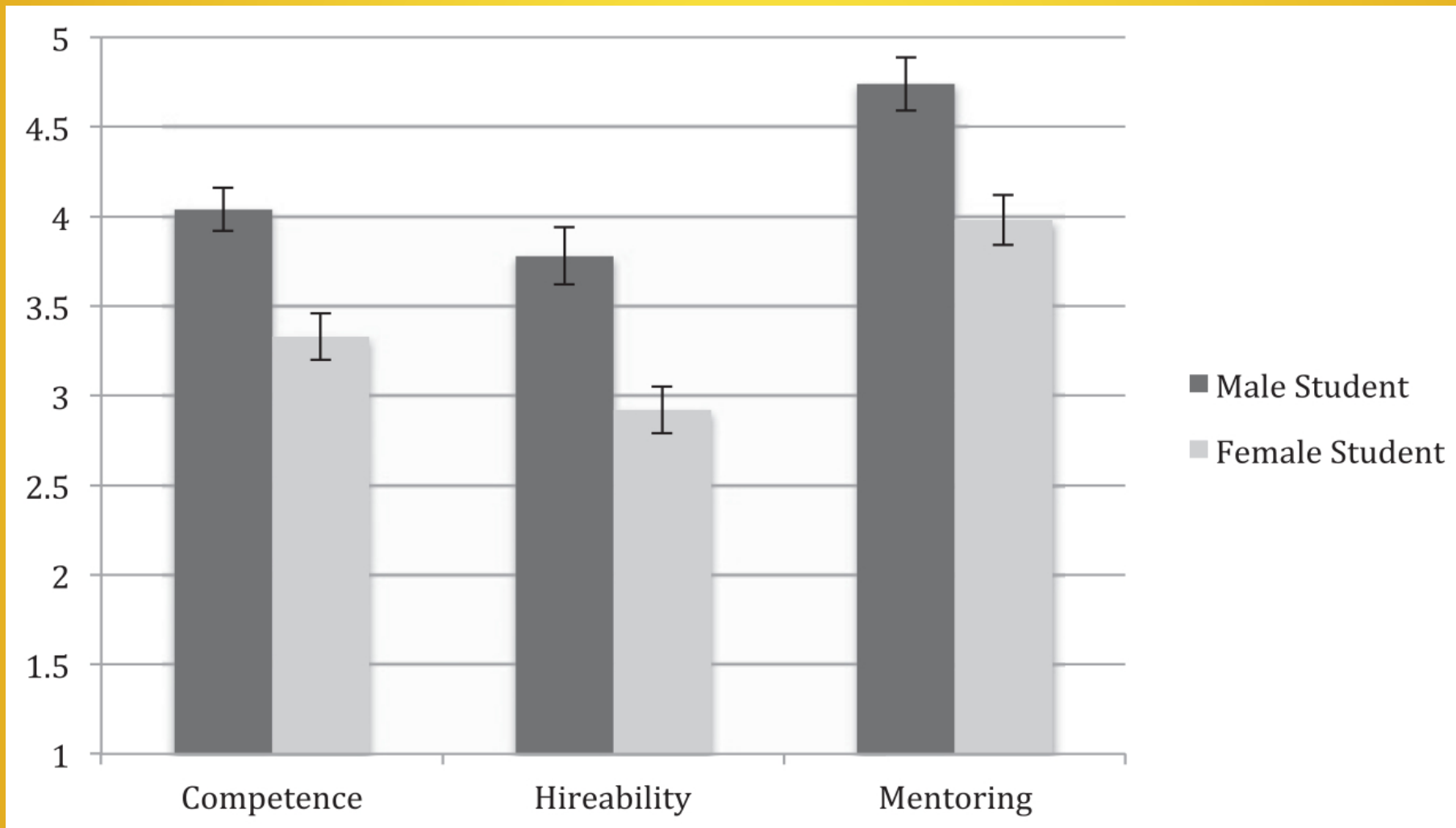
Job offers to STEM graduates

127 STEM professors asked to evaluate CVs of students who were supposedly applying for a lab manager position.

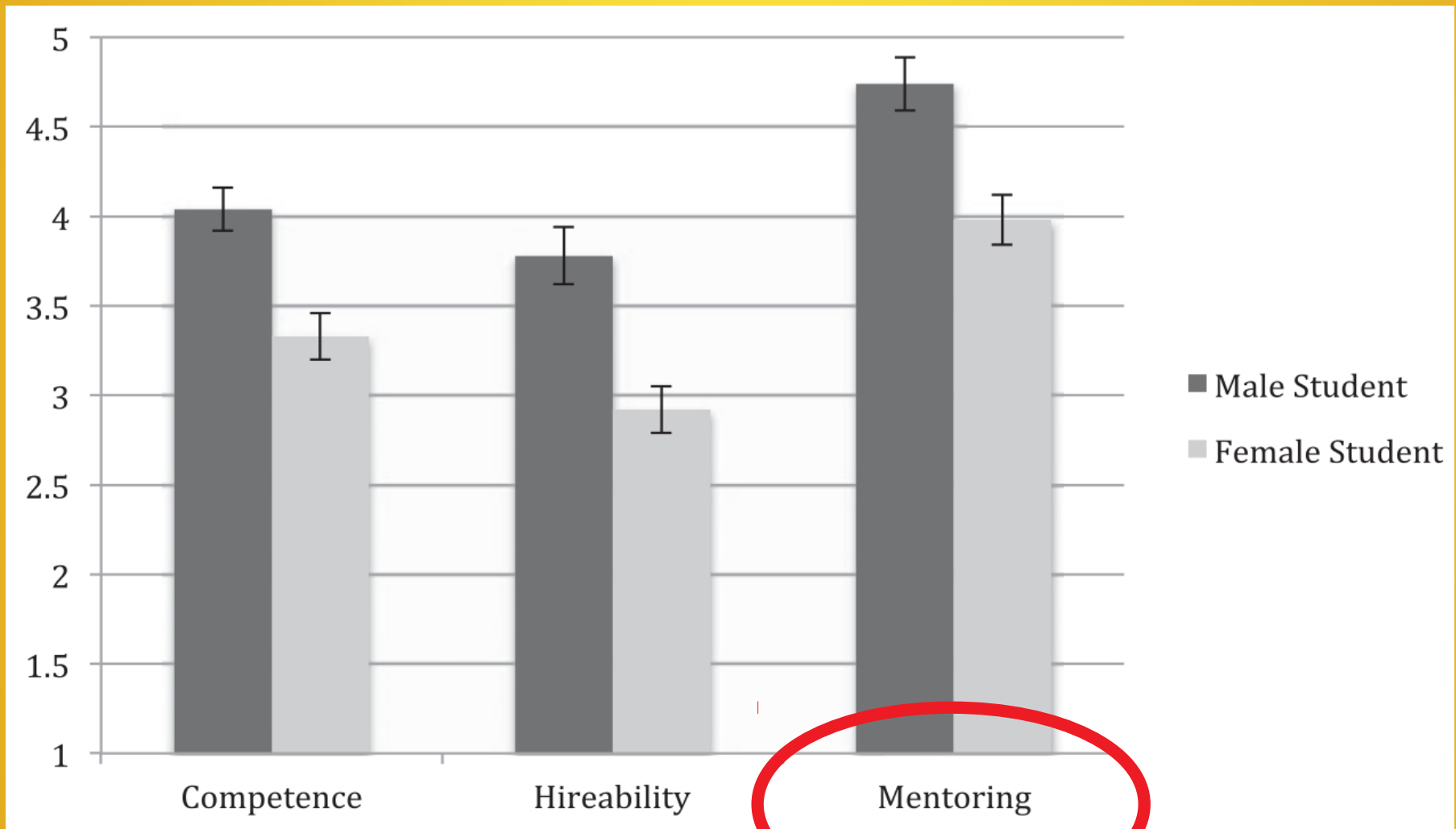
Every professor got the same CV, but half of them had a female first name and the other half a male first name.

Professors asked to rate competence, hireability, if they would mentor the student, and what salary they would offer.

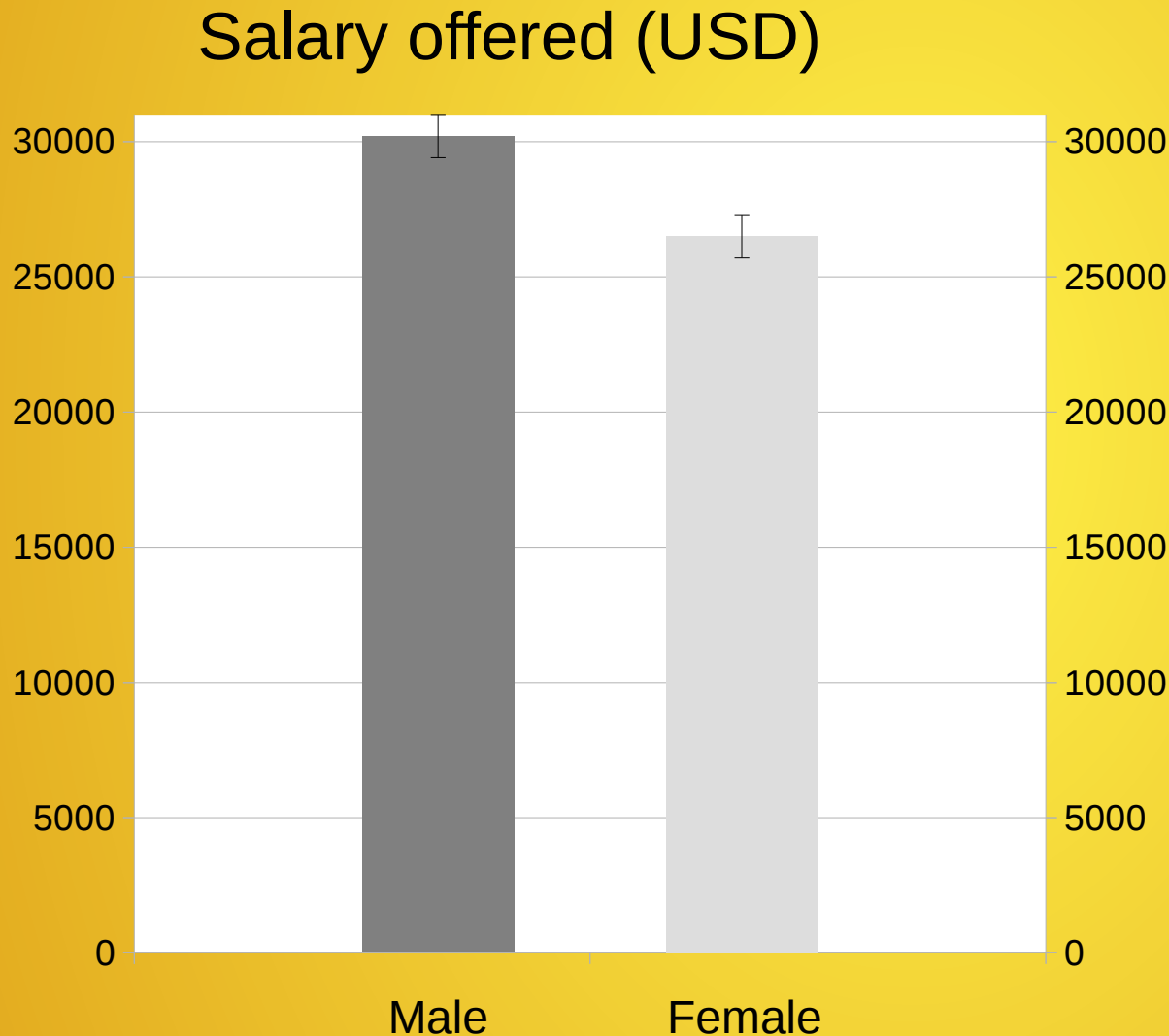
Job offers to STEM graduates



Job offers to STEM graduates



Job offers to STEM graduates



Same results
for male and
female
professors
rating the
students!

Cumulative effect

Any one slight may seem minor, but since small imbalances and disadvantages accrue, they can have major consequences in

- Salary
- Promotion
- Prestige
- Advancement to leadership positions

Discussion:

- Do any of you have examples of biases you want to share?
- Anything you encountered inside or outside of academia?

What to do?

Effects of unconscious bias can be counteracted, if we are aware of them.

Awareness

- Online self-test:
“Harvard Implicit Association Test”
- Tests how easily one associates one category with another (for example, “female” with “science”)



Project Implicit®

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Race IAT

Race ('Black - White' IAT). This IAT requires the ability to distinguish faces of European and African origin. It indicates that most Americans have an automatic preference for white over black.

Presidents IAT

Presidents ('Presidential Popularity' IAT). This IAT requires the ability to recognize photos of Barack Obama and one or more previous presidents.

Gender-Science IAT

Gender - Science. This IAT often reveals a relative link between liberal arts and females and between science and males.

Skin-tone IAT

Skin-tone ('Light Skin - Dark Skin' IAT). This IAT requires the ability to recognize light and dark-skinned faces. It often reveals an automatic preference for light-skin relative to dark-skin.

Implicit Association Test

Press "E" for	Press "I" for
Male	Female
or	or
Liberal Arts	Science
Woman	
If you make a mistake, a red X will appear. Press the other key to continue.	

Implicit Association Test

Press "E" for	Press "I" for
Male	Female
or	or
Science	Liberal Arts
Chemistry	
If you make a mistake, a red X will appear. Press the other key to continue.	

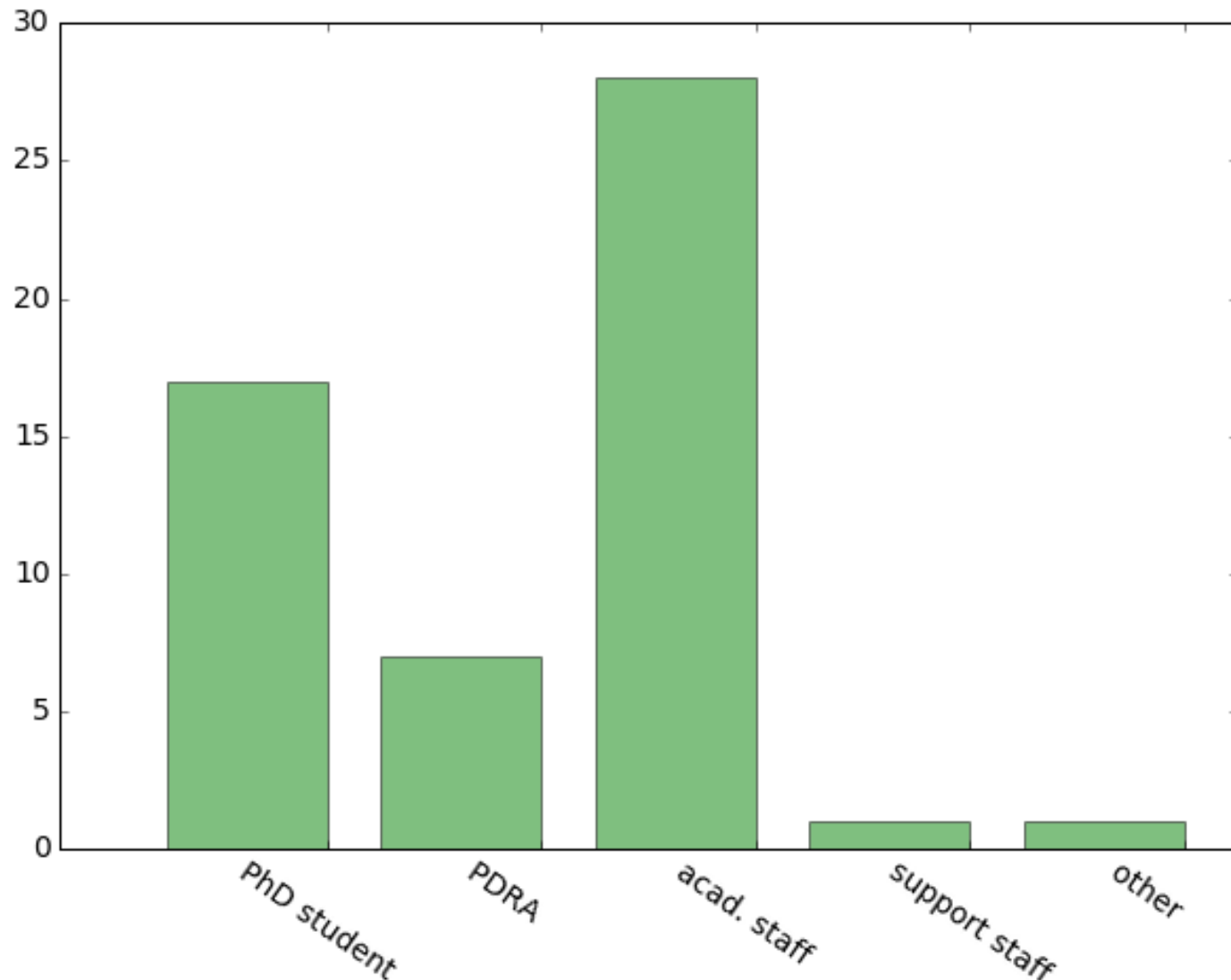
My result:

“Here is your result:

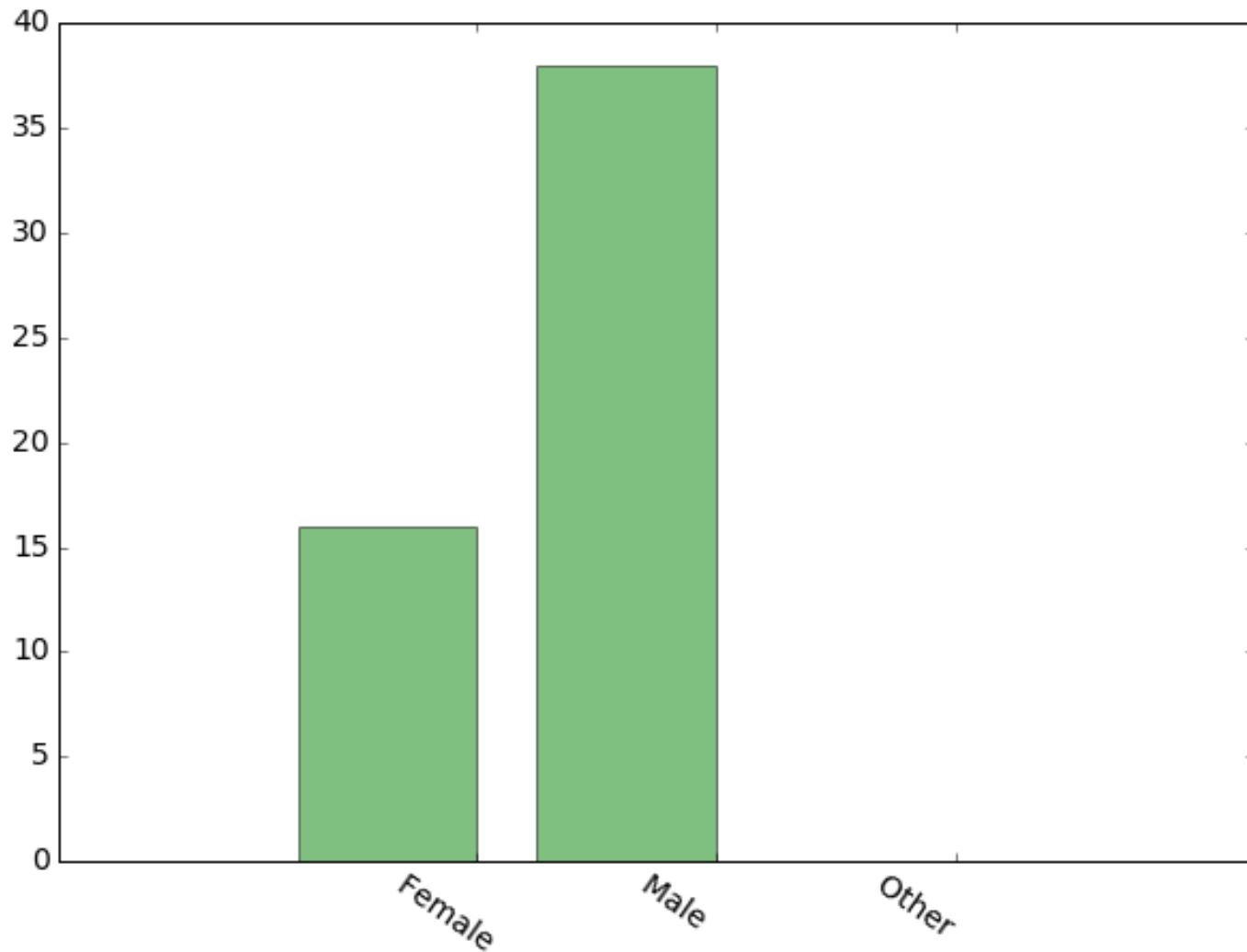
Your data suggest a slight automatic association for Male with Science and Female with Liberal Arts.”

Note: large standard deviation for individuals; this is a tool to investigate biases of **groups of people**.

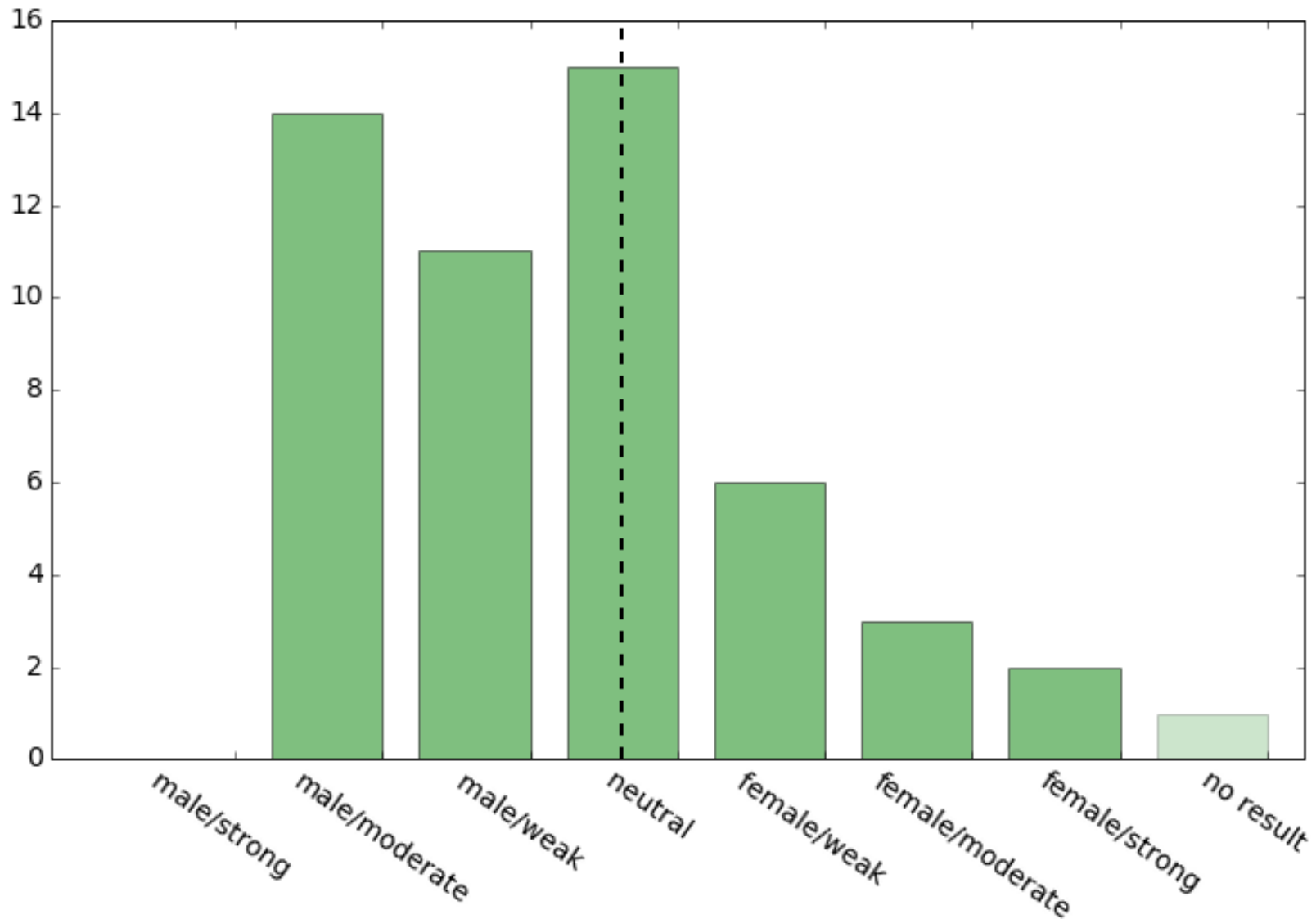
Results at my department (QUB School of Maths and Physics)



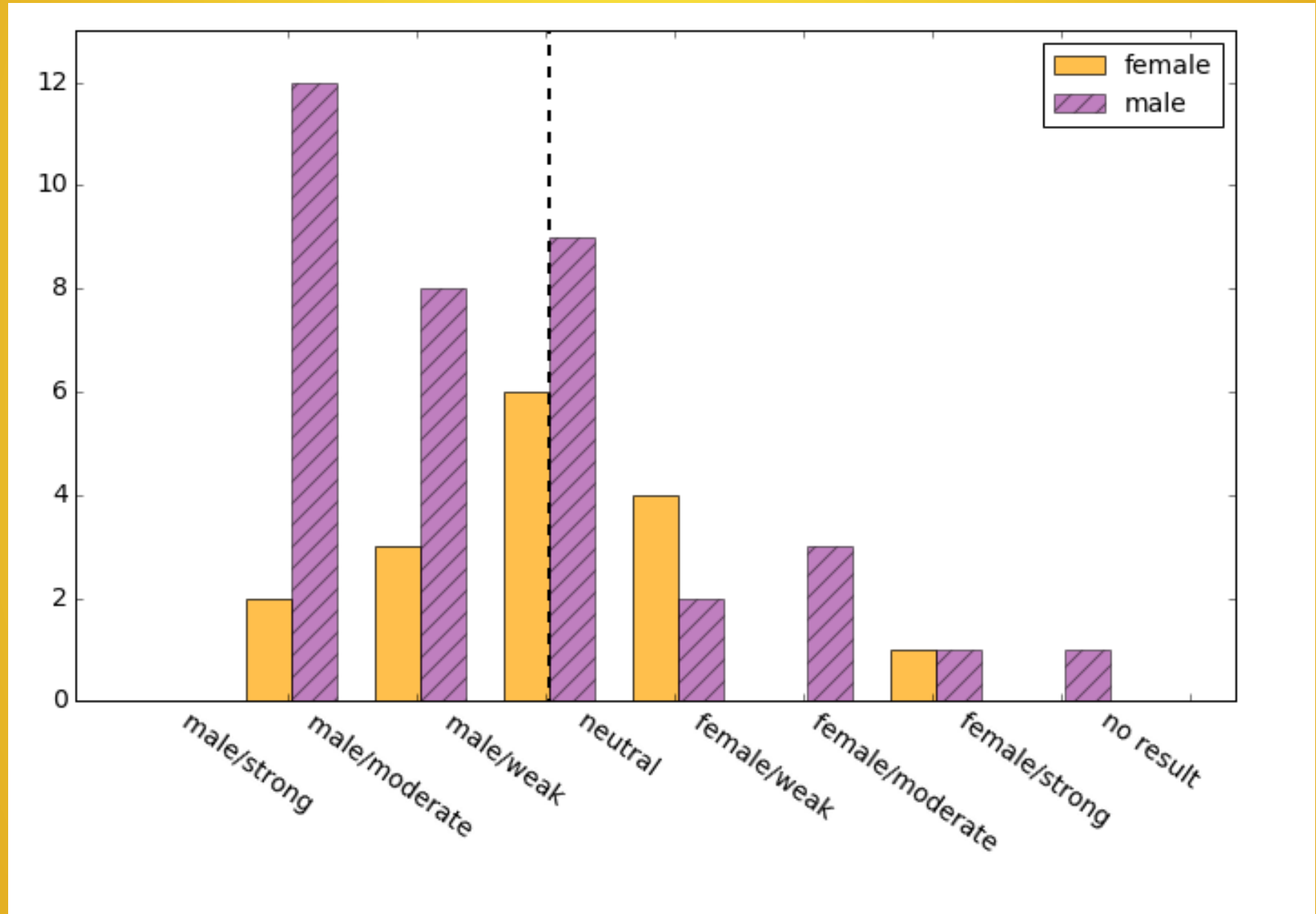
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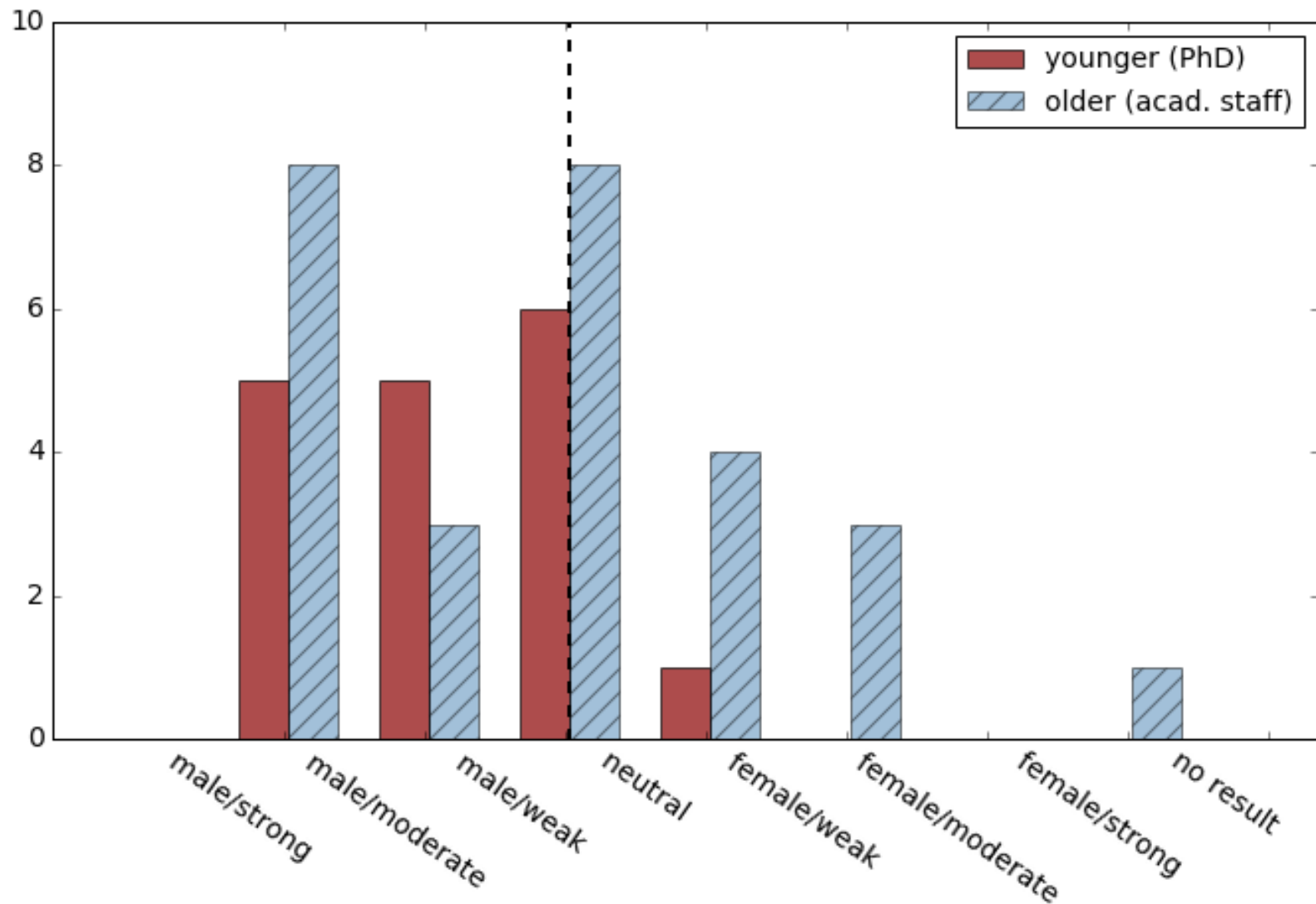
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Results at my department (QUB School of Maths and Physics)



What to do?

We don't have to act on biases, we can counteract them when

- we are aware of them
- and we take the time not to make snap decisions.

What to do?

People doing the judging (professors, “important people”): stop acting on biases

(I’ve organized bias awareness training for professors over a few years now.)

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People doing the judging (professors, “important people”): stop acting on biases

(I’ve organized bias awareness training for professors over a few years now.)

But you are trying to have your careers right now.

What to do?

People being judged (students, young scientists):

- find community

LGBTQIA+: astro-outlist.github.io

People of color: astronomyincolor.blogspot.com

Women astronomers:

womeninastronomy.blogspot.com

+ several facebook groups.

What to do?

People being judged (students, young scientists):

Get all the training you need to be the best scientist you can.

This is what this workshop is about: no more secret handshakes - all the tricks of the trade for everyone.

