

# The Bedrock of Science Communication: The Nature of Science

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National Center for  
Science Education

@JoshRosenau

@NCSE

So you're the dirty Bastards responsible  
for shoving that liberal Bullshit down  
our kid's throats. You should be ashamed  
of yourselves! May Almighty God,  
CREATOR of all things, have mercy  
on your souls!



**Nikki Poteet 24 Virginia**

I think little bits and pieces of evolution should be taught in schools because it is a theory and after all we all need to know about different theories so that we can figure out what we want to believe is true.





I think evolution should be taught in schools, we have creationitism [sic] and a lot of other ideas and opinions that are taught to the children.

I think everybody should be able to have their opinion taught, however I think it's the parents and the family who should be able to be there for the children and to guide them in what their beliefs are as a family and as individuals.



I think when it comes to evolution, I think science is great and that when it comes to teaching I think facts should be stated and we should know the facts as to how the world evolves because it does. But as far as when it comes to little theories and whatnot, I probably want to stay away from those. I believe in the truth and the truth only, not somebody's imagination or hope or whatnot. So I think facts not theories should be taught.



**Brittany Toll 24 New Mexico**

I think evolution should be taught in schools because evolution is based off of science and I think science is a huge thing that we need to continue to enrich our schools with.





I think evolution should be taught in schools, because not everybody necessarily has the same religious background and it's important to have scientific facts about the world and we do know that evolution exists even on a small scale like with people and with bacteria that are becoming resistant to drugs and whatnot, so might as well learn about it.

# Bad Answers

# Good answers

- “Both sides”
- “opinion”/ “belief”
- “theory” misused



## Bad Answers

- “Both sides”
- “opinion”/ “belief”
- “theory” misused

## Good answers

- Respect the nature of science

**TEACHING ABOUT**



**EVOLUTION**



**AND THE**



**NATURE OF**



**SCIENCE**



NATIONAL ACADEMY OF SCIENCES

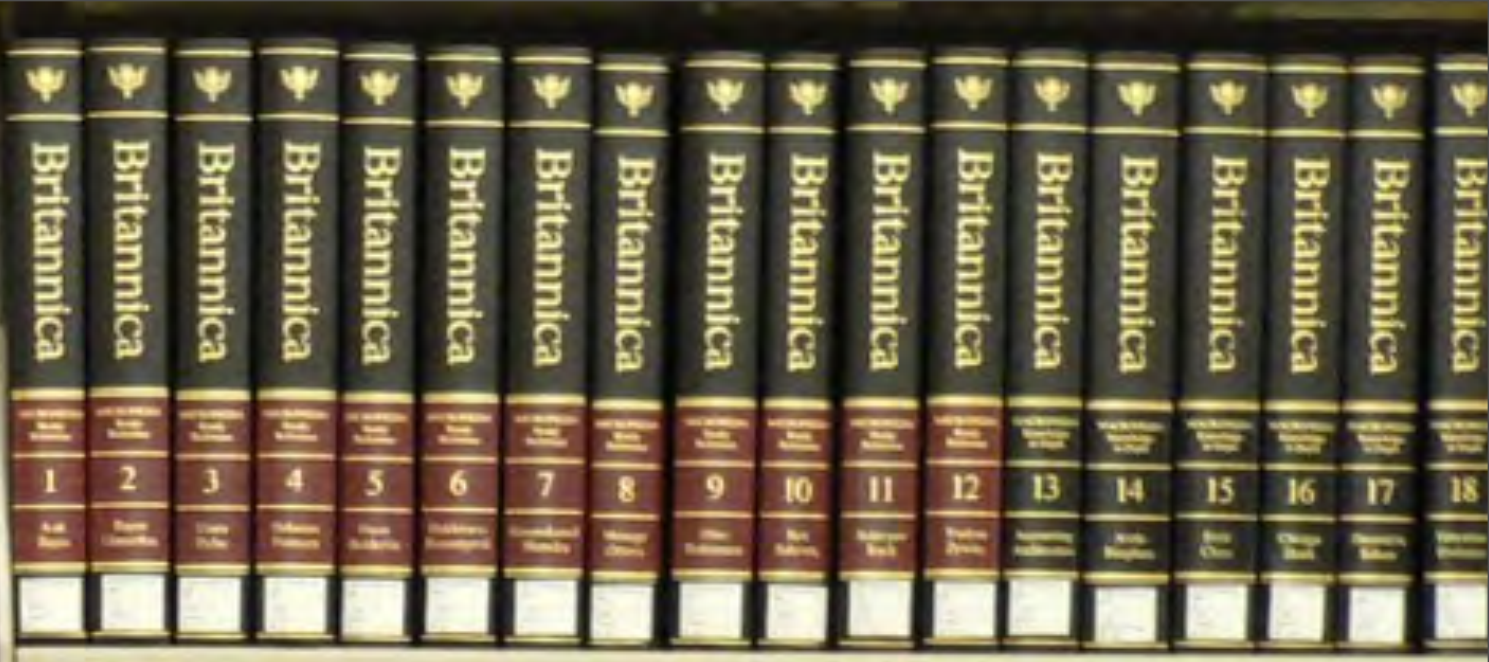


# Science checklist:

How scientific is it?

- Focuses on the natural world
- Aims to explain the natural world
- Uses testable ideas
- Relies on evidence
- Involves the scientific community
- Leads to ongoing research
- Benefits from scientific behavior



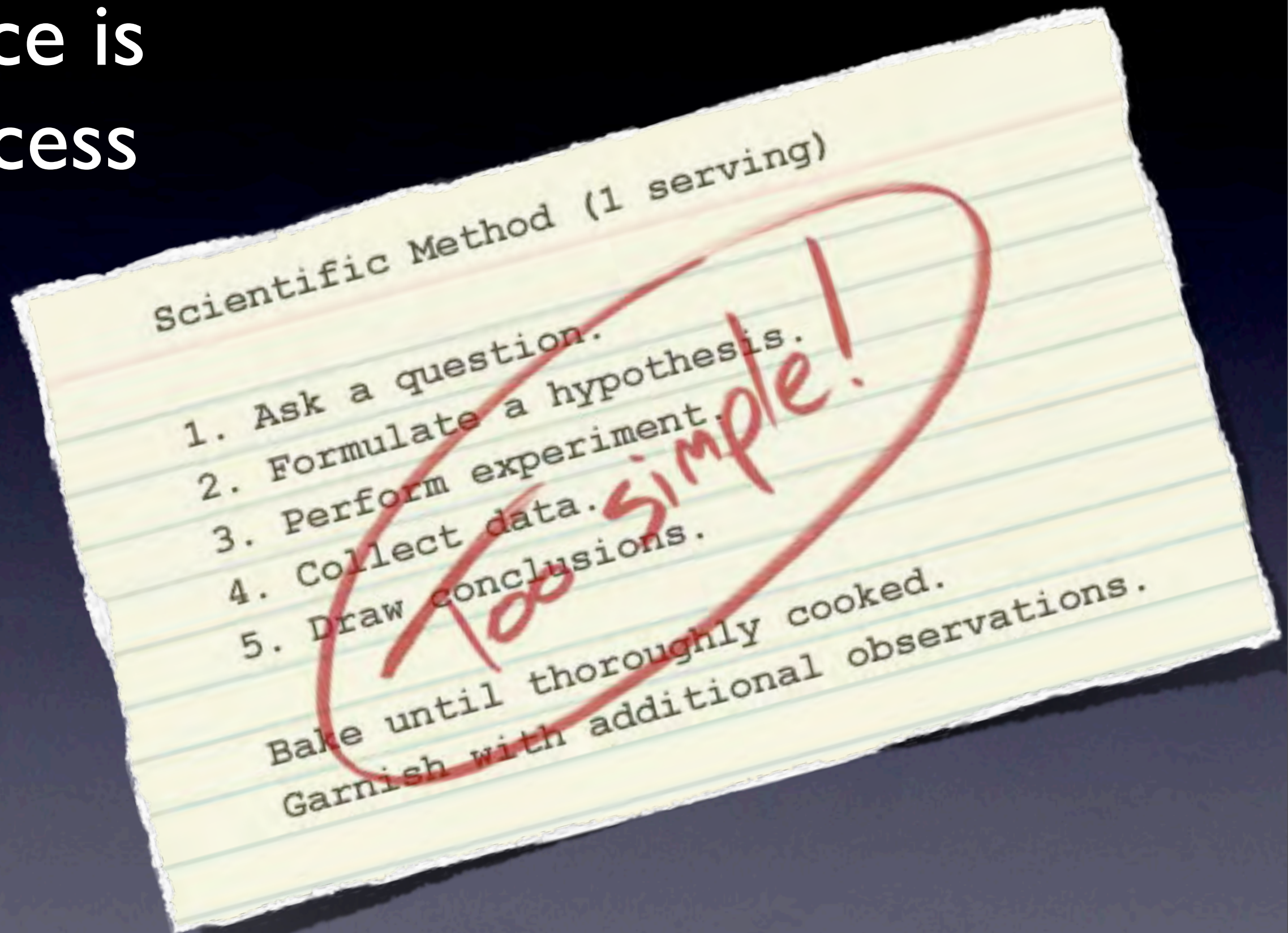






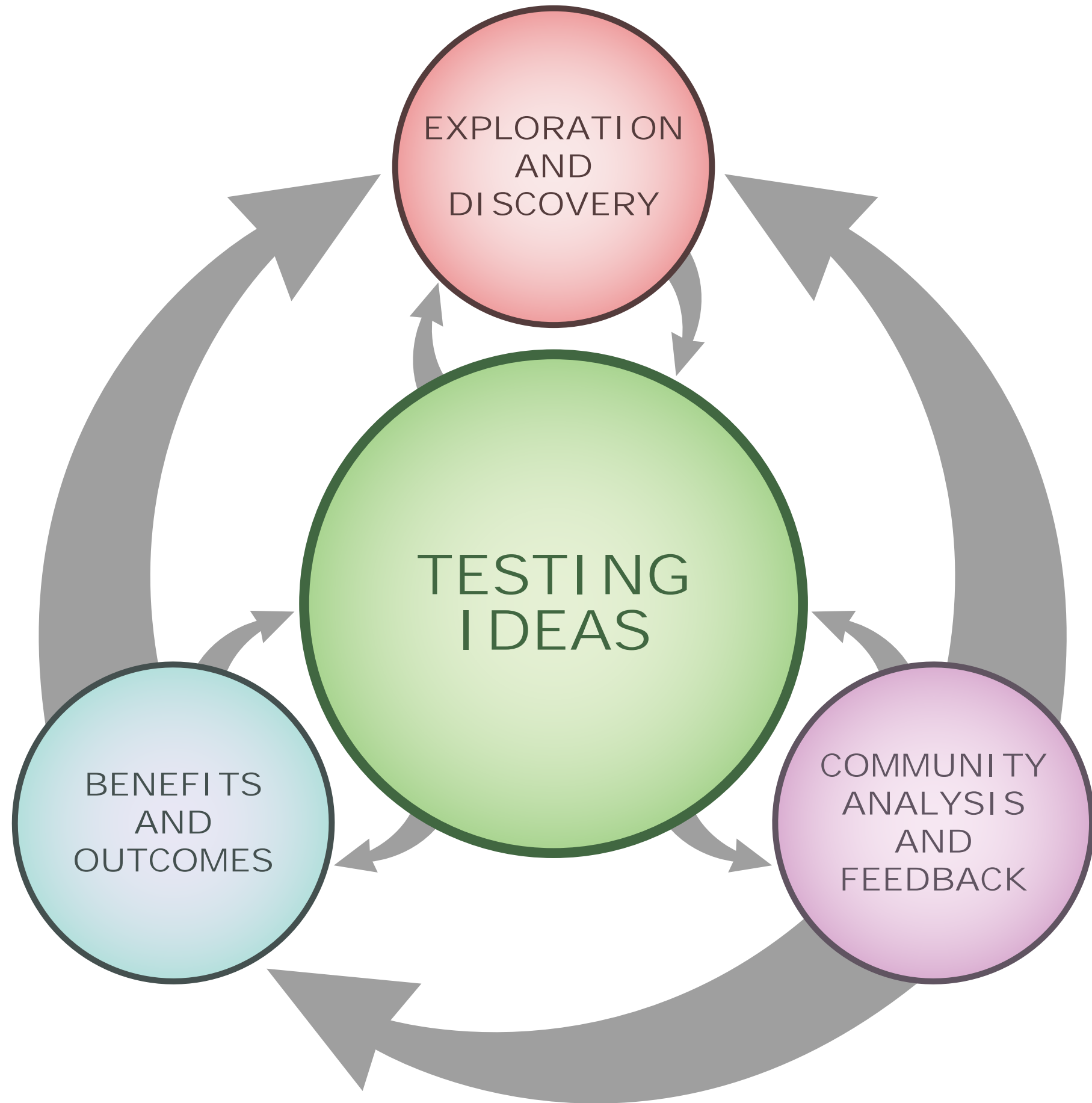


# Science is a process

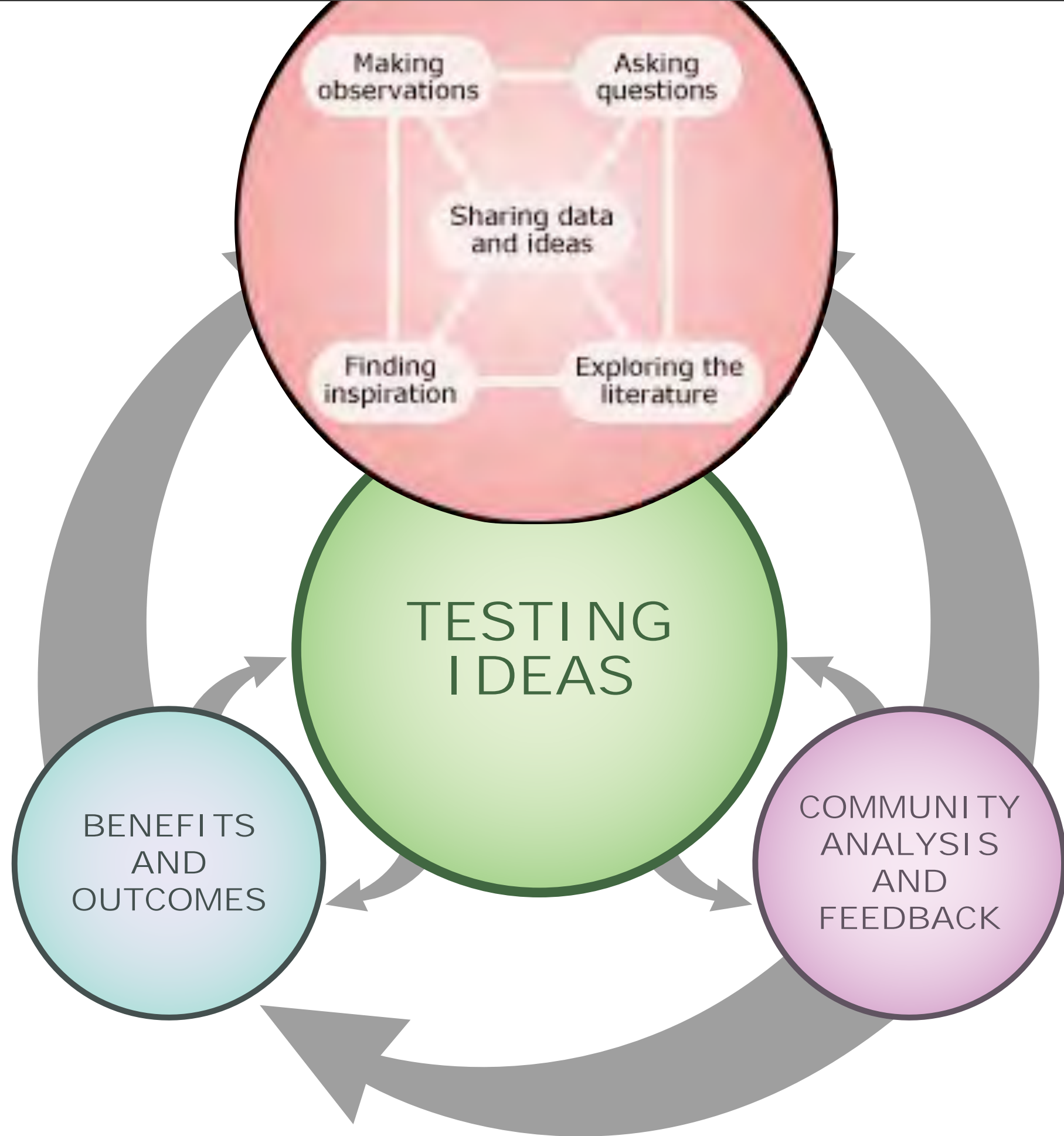




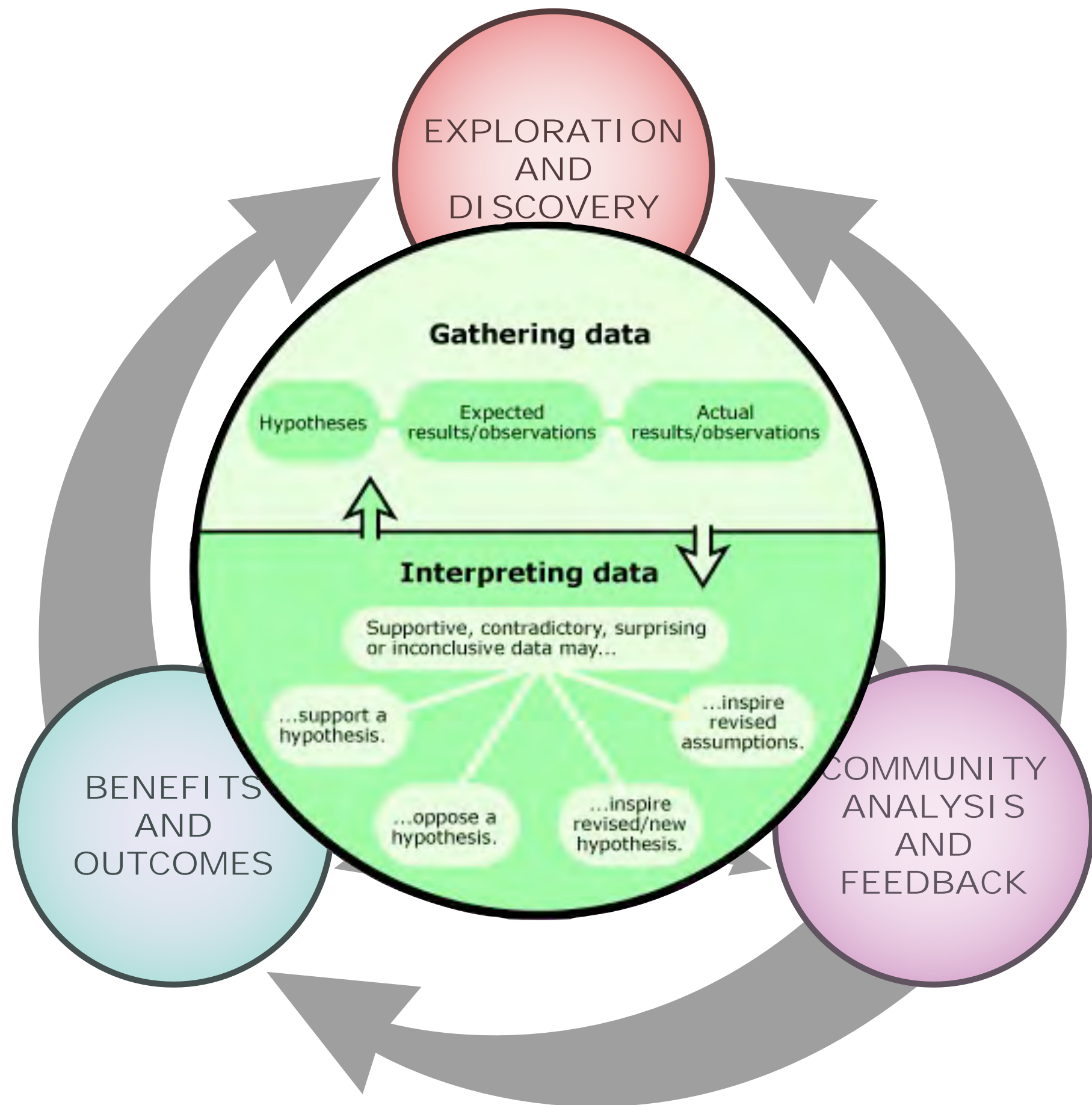
# Science is a process



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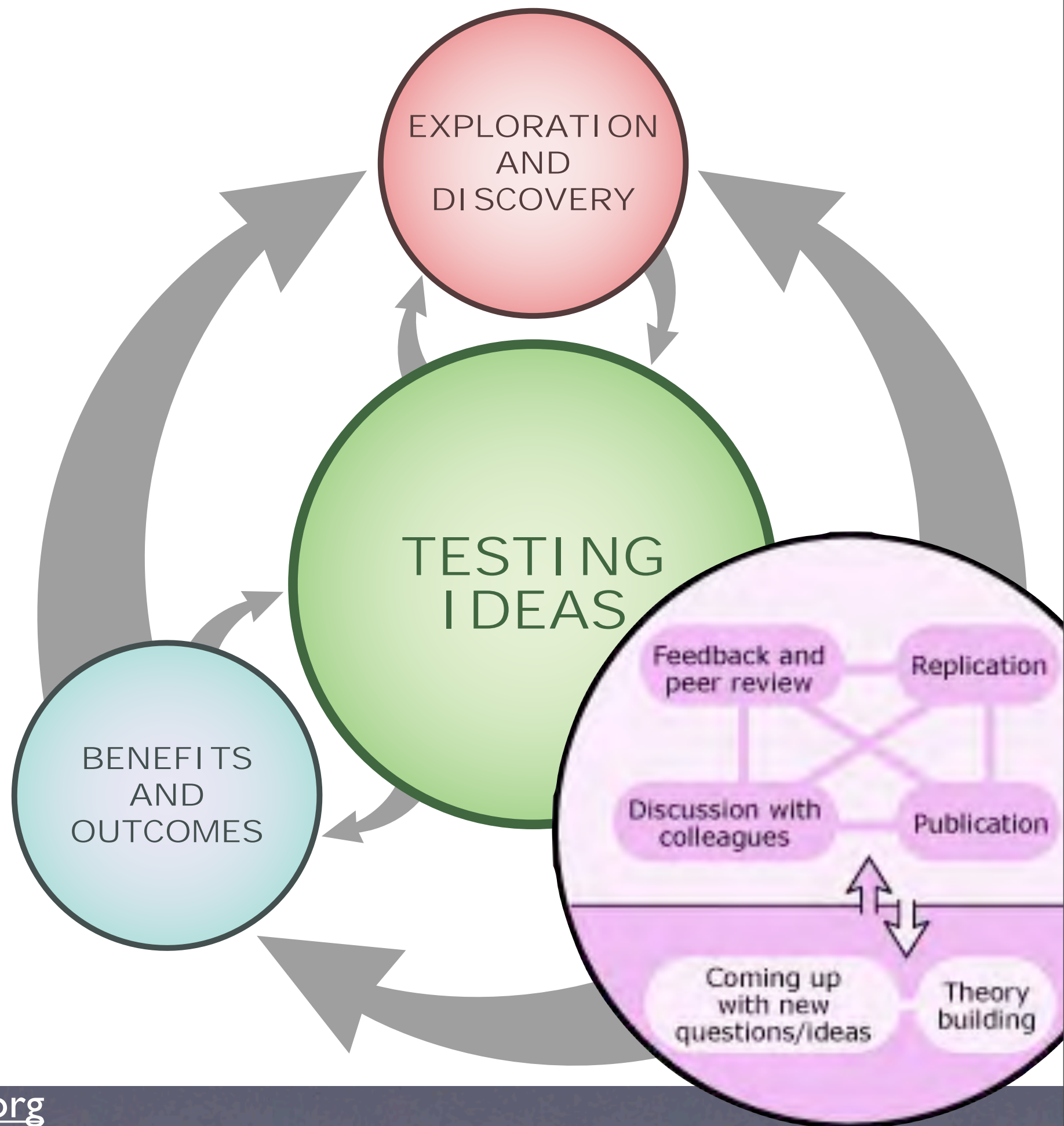


# Science is a process

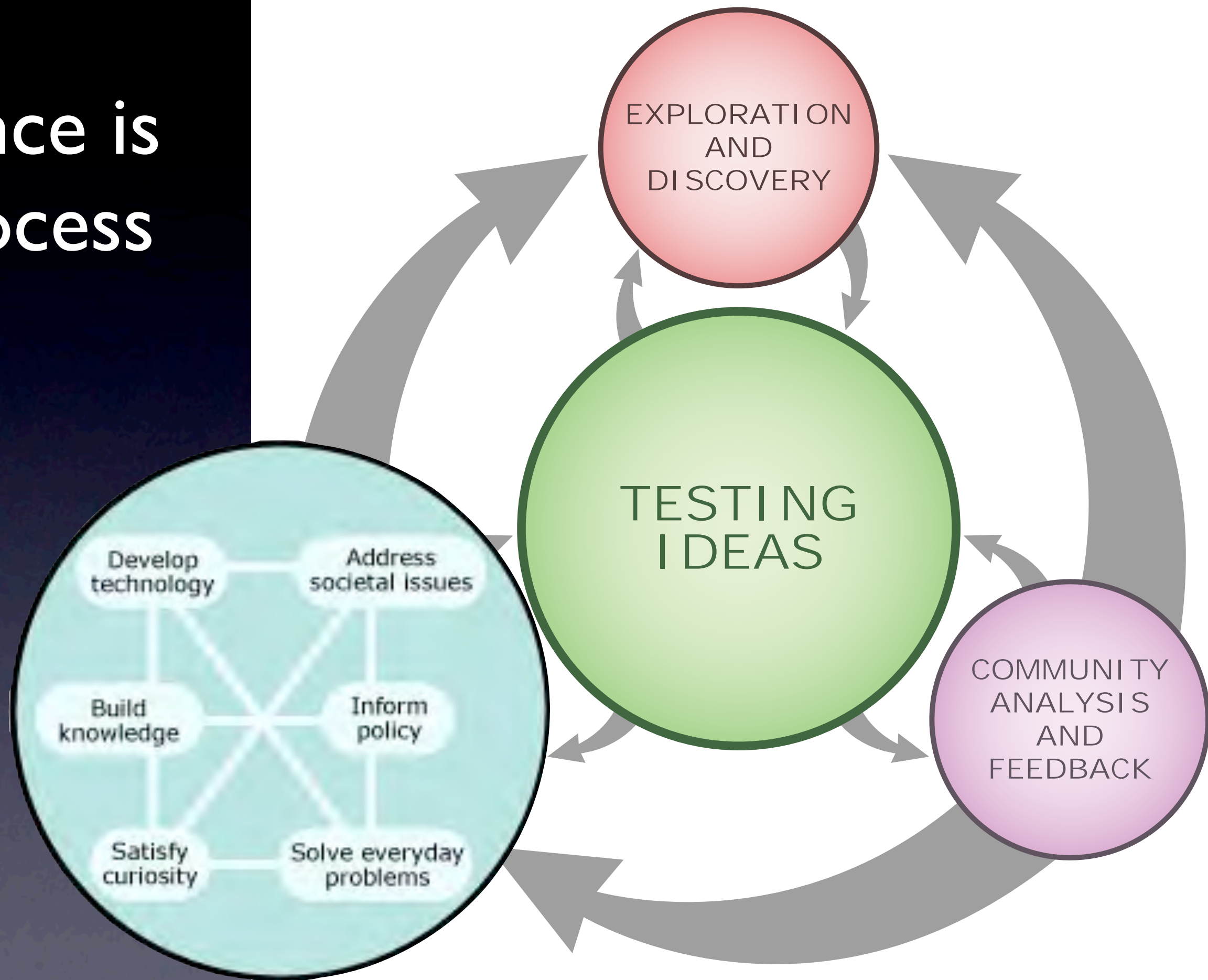




# Science is a process



# Science is a process









# BRAD PITT MONEYBALL

JONAH HILL PHILIP SEYMOUR HOFFMAN

BASED ON A TRUE STORY

SONY PICTURES PRESENTS A SCOTT BROWN/MICHAEL DE LUCA/RACHAEL HOODNITZ PRODUCTION A FILM BY BENNETT MILLER  
"MONEYBALL" PRODUCED BY MICHAEL DE LUCA DIRECTED BY BENNETT MILLER CASTING BY KATHY WALKER COSTUME DESIGNER KATHY WALKER  
EDITED BY CHRISTOPHER TELLESEN EXECUTIVE PRODUCERS JESS BONDAR AND JIMMY PROSEK  
EXECUTIVE PRODUCERS SCOTT BROWN ANDREW KARSCH SIDNEY HUNTER MARK BASKIN PRODUCED BY MICHAEL DE LUCA RACHAEL HOODNITZ  
WRITTEN BY STEVEN ZWILAN AND NABIN SONNEN  
DIRECTED BY BENNETT MILLER  
SONY PICTURES  
THIS FALL  
COMING SOON

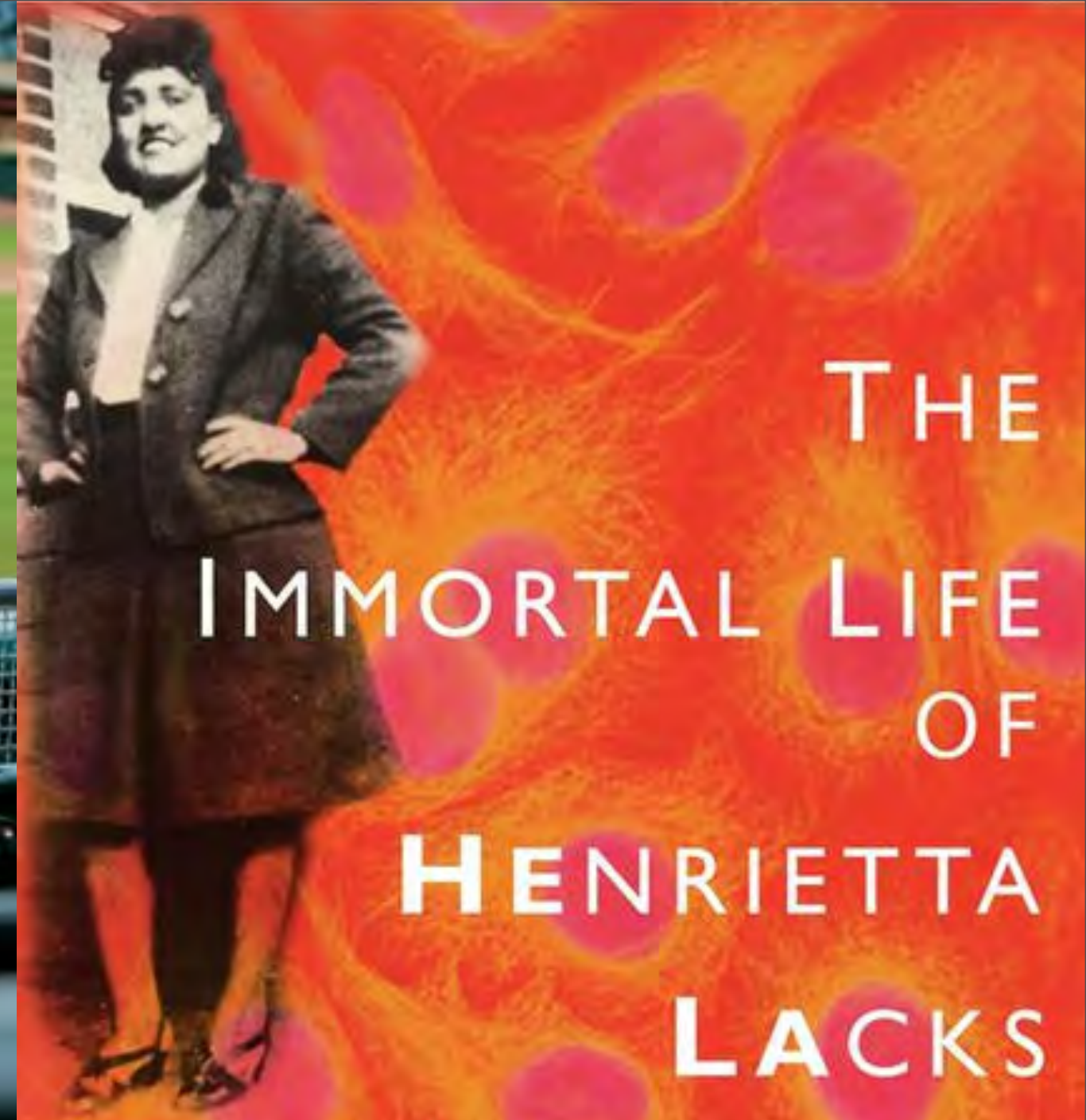




# BRAD PITT MONEYBALL

JONAH HILL PHILIP SEYMOUR HOFFMAN  
BASED ON A TRUE STORY

SONY PICTURES PRESENTS A SCOTT RUDIN / MICHAEL DE LUCA / RICHARD ROBERTS PRODUCTION A FILM BY BENNETT MILLER  
"MONEYBALL" WITH MICHAEL DUKAKIS COSTUME DESIGNER KATHY WILKINSON HAIR MAKEUP BY CHRISTOPHER TELLESEN, M.C.E. PRODUCTION DESIGNER JESS BONDAROFF DIRECTOR OF PHOTOGRAPHY WILLY PFSCHER, A.C.S.  
EXECUTIVE PRODUCERS SCOTT RUDIN ANDREW KARSCH SIDNEY HARNER MARK BASKIN PRODUCED BY MICHAEL LEVIN PRODUCED BY SPAN CHERVIN WRITTEN BY STEVEN ZWILLEN AND NABHA SIMON  
DIRECTED BY BENNETT MILLER  
CASTING BY MICHAEL DE LUCA, RICHARD ROBERTS, AND PATTI  
SONY PICTURES  
THIS FALL  
COMING SOON



# THE IMMORTAL LIFE OF HENRIETTA LACKS

Doctors took her cells without asking.  
Those cells never died.  
They launched a medical revolution  
and a multimillion-dollar industry.  
More than twenty years later, her children found out.  
*Their lives would never be the same.*

## REBECCA SKLOOT



Science is  
tentative



Science is  
robust

Science is  
testable

Science is  
empirical



Science is

social

Science is  
human





Shared values  
Shared background













A SCIENTIST PRESENTS  
EVIDENCE FOR BELIEF

THE  
LANGUAGE  
OF GOD

FRANCIS S. COLLINS





TEACH**THE**CONTROVERSY



TEACH**THE**CONTROVERSY

<b>Ai</b> AIR	<b>Wa</b> WATER	
<b>Fi</b> FIRE	<b>Ea</b> EARTH	<b>Ae</b> AETHER

TEACH**THE**CONTROVERSY

# What about the “controversy”?



TEACH**THE**CONTROVERSY



TEACH**THE**CONTROVERSY



TEACH**THE**CONTROVERSY

Check the literature!



# Check the literature!

Consensus statements  
from scientific bodies

Pubmed

# Check the literature!

Consensus statements  
from scientific bodies



Pubmed

Google Scholar

# Check the literature!

Consensus statements  
from scientific bodies

Pubmed

Google Scholar

Well-sourced  
Wikipedia entries  
(Check the references  
and the Talk page)

# Check the literature!

Consensus statements  
from scientific bodies



Pubmed

Google Scholar

Well-sourced

Wikipedia entries  
(Check the references  
and the Talk page)

# Check the literature!

Credible science blogs  
(Who do they link, and  
what do people linking  
to them say?)

Consensus statements  
from scientific bodies

Make political  
controversy  
political



Resist false balance



Sunday, July 29, 2012

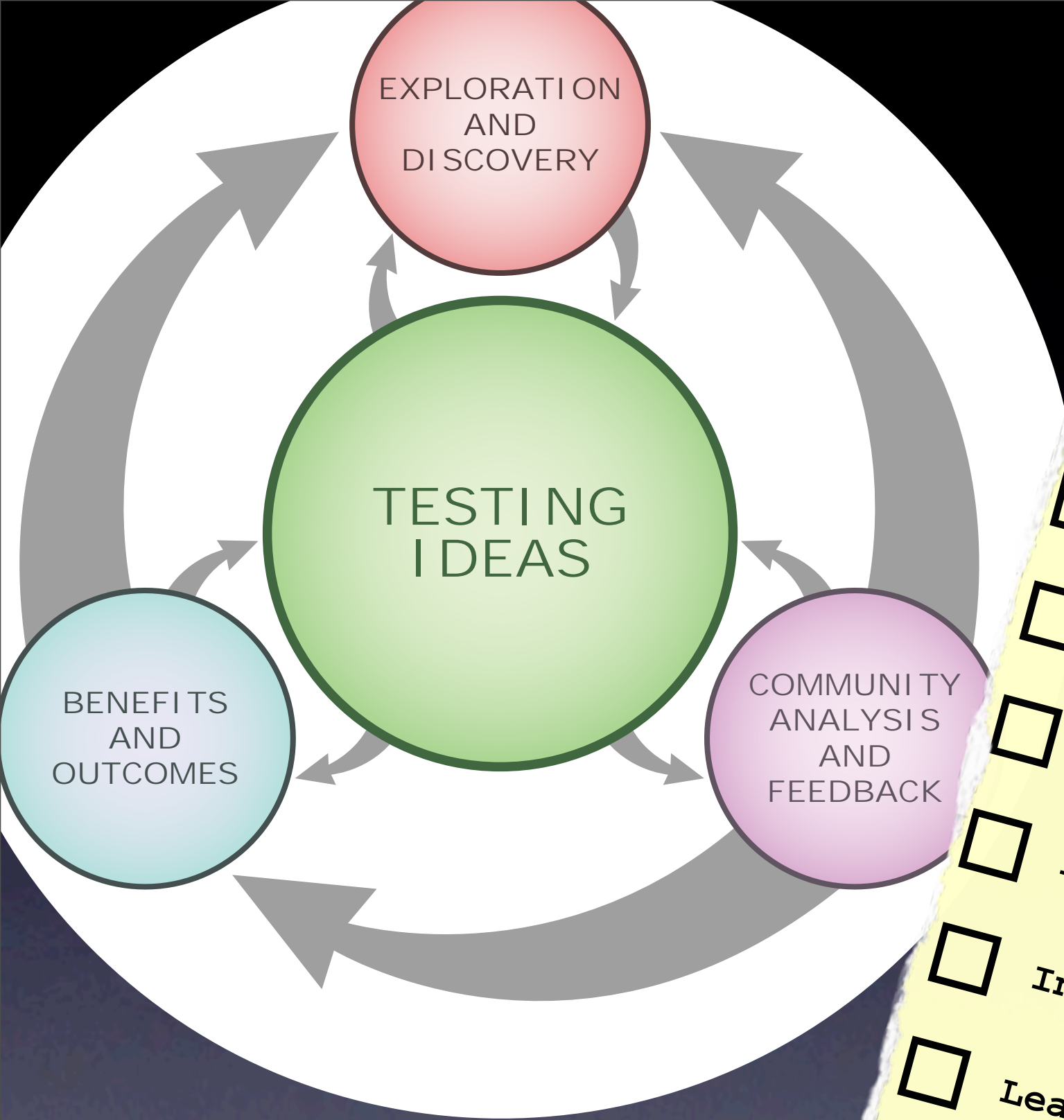


Opinions *don't* differ on  
the shape of the Earth.



Shift to a real scientific debate  
(Were dinosaurs warm-blooded,  
not evolution vs. creationism)





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# National Center for Science Education

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