Major source:

David B. Resnick, *The Ethics of Science: an Introduction*
Why study ethics?
Why study ethics?

- We don't need to study ethics!
  - Our parents (barnehage, school, church) taught us all we need to know
  - We are good people and we make good decisions
  - Ethics is boring, anyway
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- **We need to study ethics!**
  - Science has a special role with respect to ethics
  - Society demands high standards of scientists
  - It is not always easy to determine the right thing to do
  - Breaches of scientific ethics make headlines and ruin careers
  - We’ll look at some case studies that are not boring
Some cases of misconduct

- Pons & Fleischmann: cold fusion — publication by press release — wishful thinking — patents & money
- David Baltimore & Thereza Imanishi-Kari: immunology — falsification of data? or poor record keeping?
- Jon Sudbø & Andrew Dannenberg: cancer research — fabrication of data — exploitation of co-authors
- Hwang Woo-Suk: stem-cell research — fabrication of data — unethical treatment of subjects — misinterpretation of data — nationalist pride
There are different categories of ethics.

- Personal Ethics: Morality
- Professional Ethics: Standards & Expectations
- Societal Ethics: Law
Ethical standards sometimes conflict.
Ethical standards sometimes conflict.

The question is not:

Should I do the right thing?
Ethical standards sometimes conflict.

- The question is not:
  
  *Should I do the right thing?*

- Rather, the question is:
  
  *What is the right thing to do?*
We need a framework for making ethical decisions.
Let’s start with some basic principles.
We all know the basics:

- Don’t harm others or yourself.
- Help others and yourself.
- Respect truth: don’t lie, cheat, deceive.
- Be faithful: keep promises and agreements.
- Be fair: treat equals equally.
Societal ethics follow.

- Allow rational people to make free, informed choices.
- Respect privacy and confidentiality.
- Maximize benefits while reducing harms for all or most people.
There are sources of ethical guidance.
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- Religion
  - Bible, Qur‘an, Tao Te Ching, …
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- **Religion**
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- **Philosophy**
  - Plato, Aristotle, Epictetus, Spinoza, Kant, …
There are sources of ethical guidance.

- Religion
  - Bible, Qur‘an, Tao Te Ching, …
- Philosophy
  - Plato, Aristotle, Epictetus, Spinoza, Kant, …
- Literature
  - Homer, Dante, Shakespeare, Khayyam, Ibsen, …
But how do we really decide?

- Can I justify the choice?
- Can I live with it afterwards?
- Are there others who can advise me?
- Gut feelings?

Let’s examine our goals and objectives…
What is science?
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The search for truth:
A quest for objective knowledge about Nature.
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- A social institution:
  Serving society’s needs and improving people’s lives.
  Made up of people with human needs and desires.
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- A profession:
  Involving training, standards, a career, respect, and privilege.
Where is science done?
Where is science done?

- At universities.
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- At universities.
- In government labs or with government funding.
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- In government labs or with government funding.
- In military labs or with military funding.
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Different standards and goals apply under different circumstances.
University Goals

- To advance knowledge.
- To educate students.
- To serve the public.
Government Goals

- To serve national needs.
- To protect the nation’s people and property.
- To compete & cooperate with other nations.
- To foster global security.
- To advance knowledge.
Industry Goals

- To serve the company’s (or general industry) needs.
- To increase the stockholders’ profits.
- To compete & cooperate with other companies.
- To increase opportunities in the global market.
- To advance knowledge.
A scientist’s goals

- To discover truth or satisfy curiosity — the same thing.
- To advance knowledge.
- To become famous and well-respected.
- To get and keep a good job.
- To live well and happy.
Some ethical conflicts
Some ethical conflicts

- Truth versus employer’s (funder’s) desired outcome
Some ethical conflicts

- Truth versus employer’s (funder’s) desired outcome
- Employer’s needs versus societal needs
Some ethical conflicts

- Truth versus employer’s (funder’s) desired outcome
- Employer’s needs versus societal needs
- Need for advancement (funding, hiring, riches…) versus truth
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- Truth and openness versus secrecy
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- Truth and openness versus secrecy
- Cooperation versus competition
Some ethical conflicts

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- Truth and openness versus secrecy
- Cooperation versus competition
- Conflicts of interest
Some ethical conflicts

- Truth versus employer’s (funder’s) desired outcome
- Employer’s needs versus societal needs
- Need for advancement (funding, hiring, riches…) versus truth
- Truth and openness versus secrecy
- Cooperation versus competition
- Conflicts of interest
- Conflicts of commitment
Standards of Ethical Conduct in Science
Honesty

- Scientists should not fabricate, falsify, or misrepresent data or results.
- They should be objective, unbiased, and truthful in all aspects of the research process.
- They should not let wishful thinking or prior belief influence their judgment.
- “Belief is the wound that knowledge heals…” (Ursula Leguin, The Telling)
Carefulness, Diligence

- Scientists should minimize errors as much as possible:
  - experimental errors
  - methodological or systematic errors
  - human errors

- They should make faithful estimates of the errors that remain.

- They should present results that are faithful to the data.

- They should avoid self-deception, bias, and conflicts of interest.
Scientists should share data, results, methods, ideas, techniques, and tools.

They should allow other scientists to review their work.

They should publish papers and make presentations.

They should be forthright with advice to the public.

They should be open to criticism and new ideas.
Scientists should treat colleagues with respect.

Credit should be given to those who deserve it …

… but not to those who do not deserve it.

Scientists should use resources efficiently and responsibly.

Scientists should always write the best papers they can.
Scientists should teach each other what they have learned in their research.

Scientists should educate prospective scientists and ensure that they learn how to conduct good science.

Scientists should teach non-science students so as to build a foundation for the public’s understanding of science.

Scientists should educate and inform the public about science.

Scientists should speak to the media about their work, but be careful to avoid releasing ill-formed conclusions or misconceptions.
Social Responsibility

- Scientists should avoid causing harm to society.
- Scientists should attempt to produce social benefits.
- Scientists should be responsible for the consequences of their research.
- Scientists should inform the public of those consequences, as completely as they can.
Freedom and opportunity

- Scientists should be free to conduct research on any problem, subject to the constraint of responsible use of available resources.

- They should be free to pursue new ideas and criticize old ones.

- They should not be unfairly denied the opportunity to use scientific resources.

- They should not be unfairly denied career advancement.
Legality; Property; Subjects

- Scientists should obey the laws pertaining to their work.
- Scientists should respect private property.
- Scientists should not violate rights or dignities of experimental subjects.
- Scientists should treat human or animal subjects with appropriate care and respect.
Examples & Case Studies