

Today: Ethics-  
animals as research  
subjects

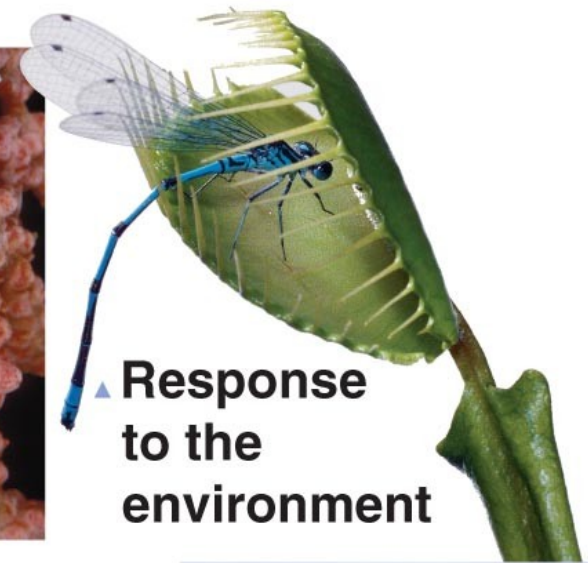


Life has all of these traits.

▼ Order



▲ Evolutionary adaptation



▲ Response to the environment



▲ Regulation



▲ Energy processing



▲ Reproduction



▲ Growth and development

How different are we from other animals?



Maintaining a complex society requires culture and language.

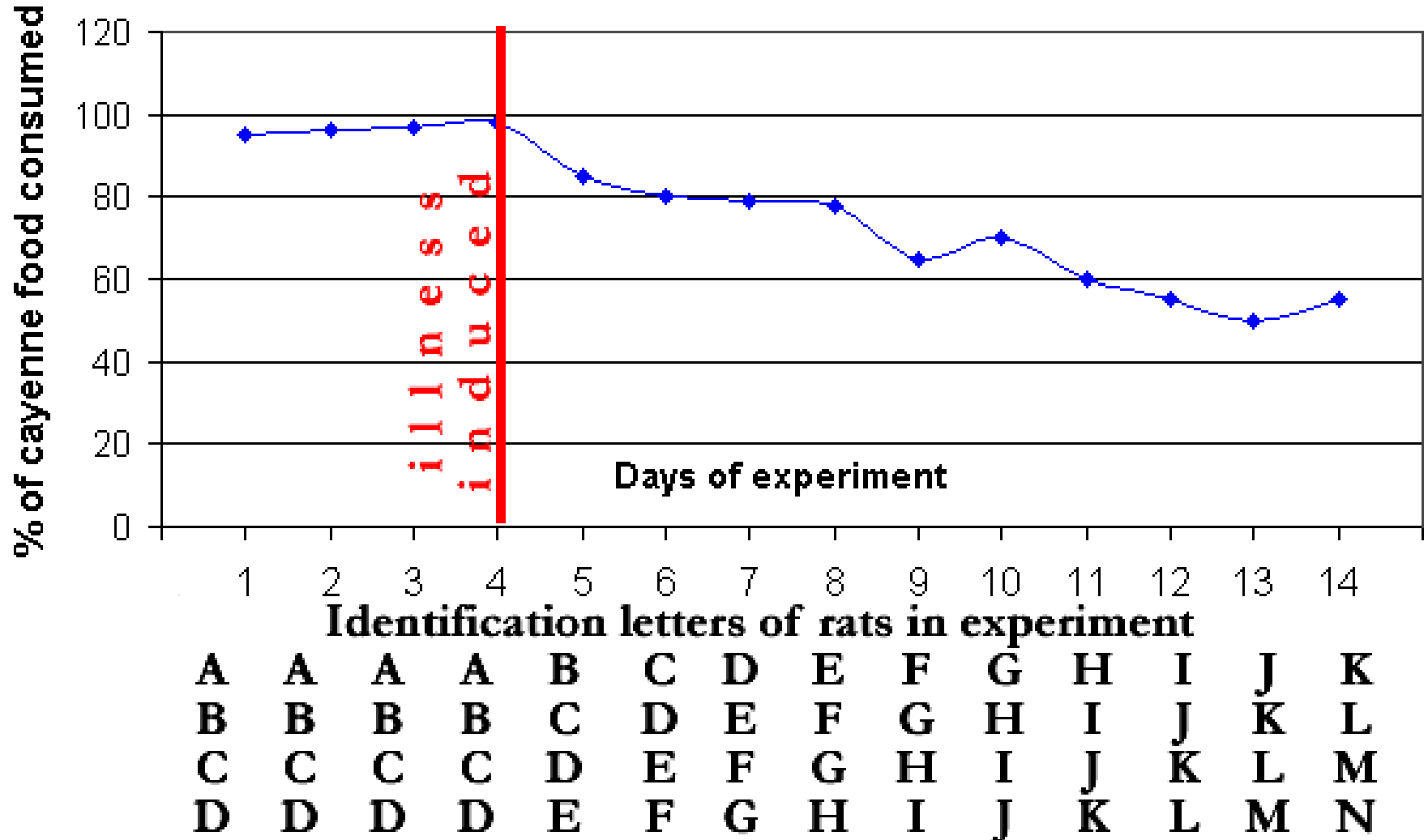


The complexity of our societies is reflected in human culture...

Do other animals have culture?

# Do other animals have culture?

## Cultural Transmission of Food Preference In rats





<http://www.pbs.org/saf/1504/video/watchonline.htm>

# Do Animals Have Feelings?

Antonio Damasio proposed (2003)

1. Primary - instinctual
2. Social - group interaction
3. Feelings - self-reflection



Are non-human animals self-aware?

The mirror test: developed by Gallup in 1980s



# a bottlenose dolphin trying to see a spot painted on it's side

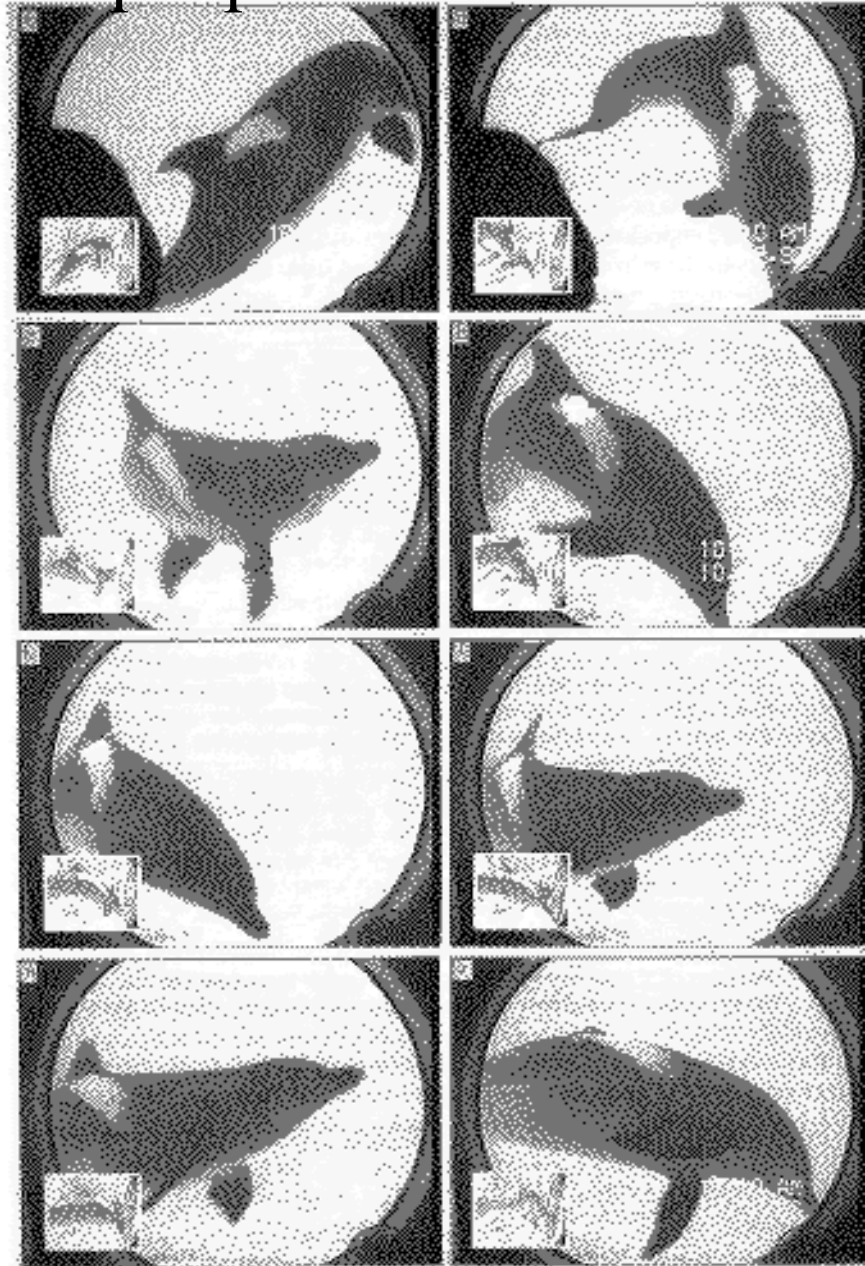
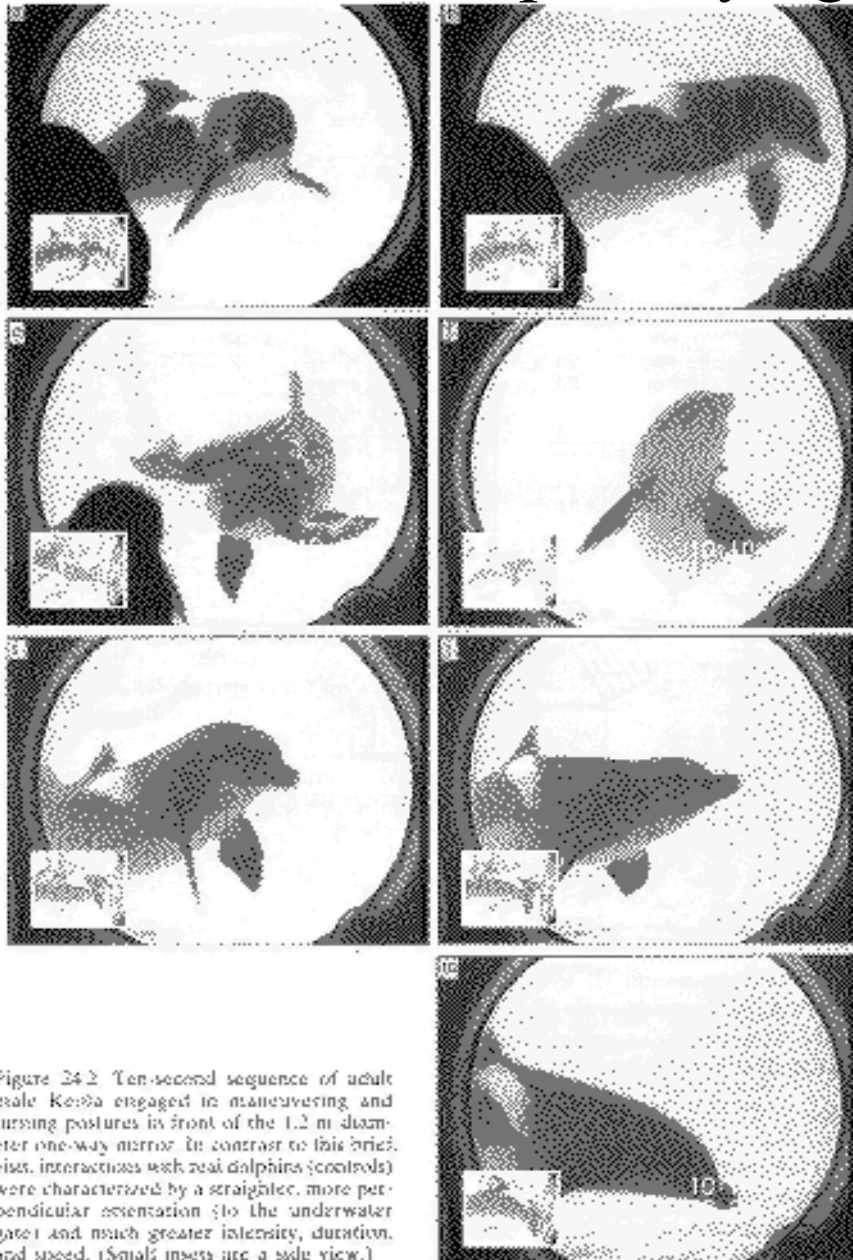
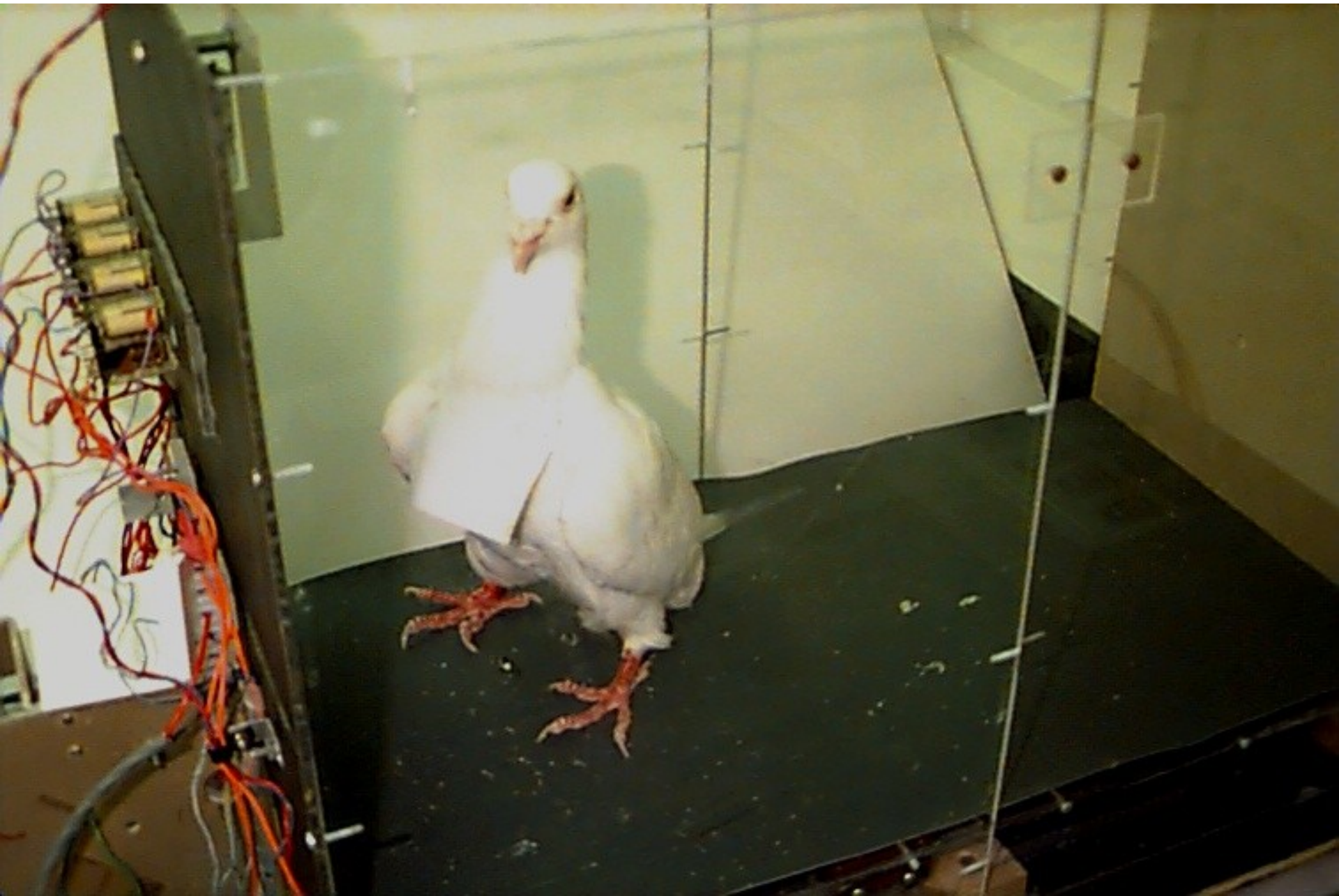
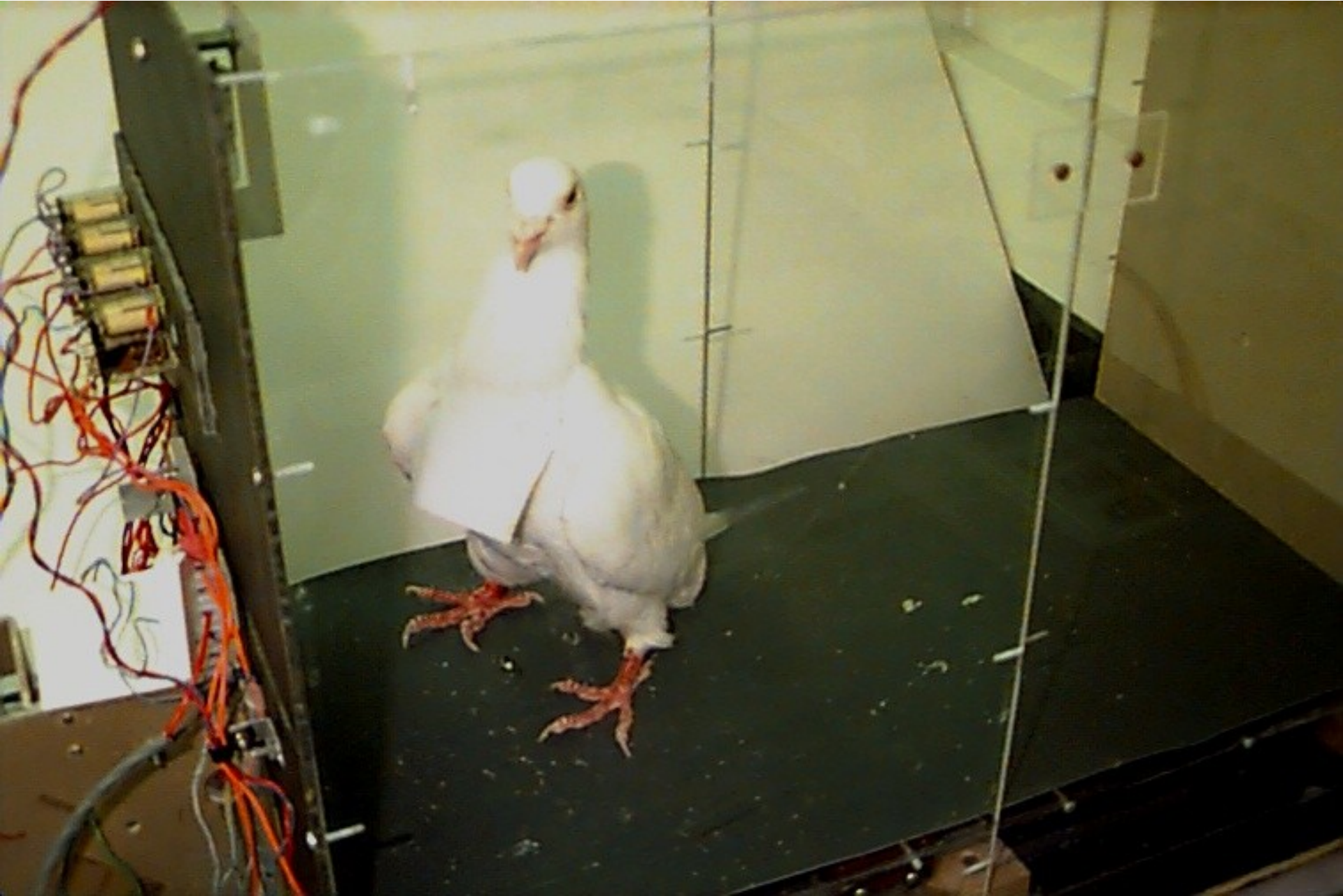


Figure 24.2 Ten-second sequence of adult male Keona engaged in maneuvering and turning postures in front of the 1.2 m diameter one-way mirror. In contrast to his brief visit, interactions with real dolphins (controls) were characterized by a straighter, more perpendicular orientation (to the underwater gate) and much greater intensity, duration, and speed. (Small insets are a side view.)

What about birds?



This pigeon has a bib so it cannot see its chest



put dot, and determine pigeons  
actions in front of mirror



Several species can recognize self in mirror by dot test or actions in front of mirror. They do not see mirror image as other, but self.



Is a sense of self necessary for feelings?

Should our interactions with animals depend on their self-awareness?

Is self-awareness necessary for feeling pain, fear, etc?

Nature 419, 255 (19 September 2002) Awareness: Animal reflections by Marc Bekoff

Dr. Jane Goodall speaks about what separates humans from chimpanzees (not much).

[http://www.ted.com/talks/lang/eng/jane\\_goodall\\_on\\_what\\_separates\\_us\\_from\\_the\\_apes.html](http://www.ted.com/talks/lang/eng/jane_goodall_on_what_separates_us_from_the_apes.html)

I did not show this video in class, but I mentioned it.

What kind of interactions do we have with non-human animals?



# We eat them



We keep them as pets



# We put them to work



We hunt them

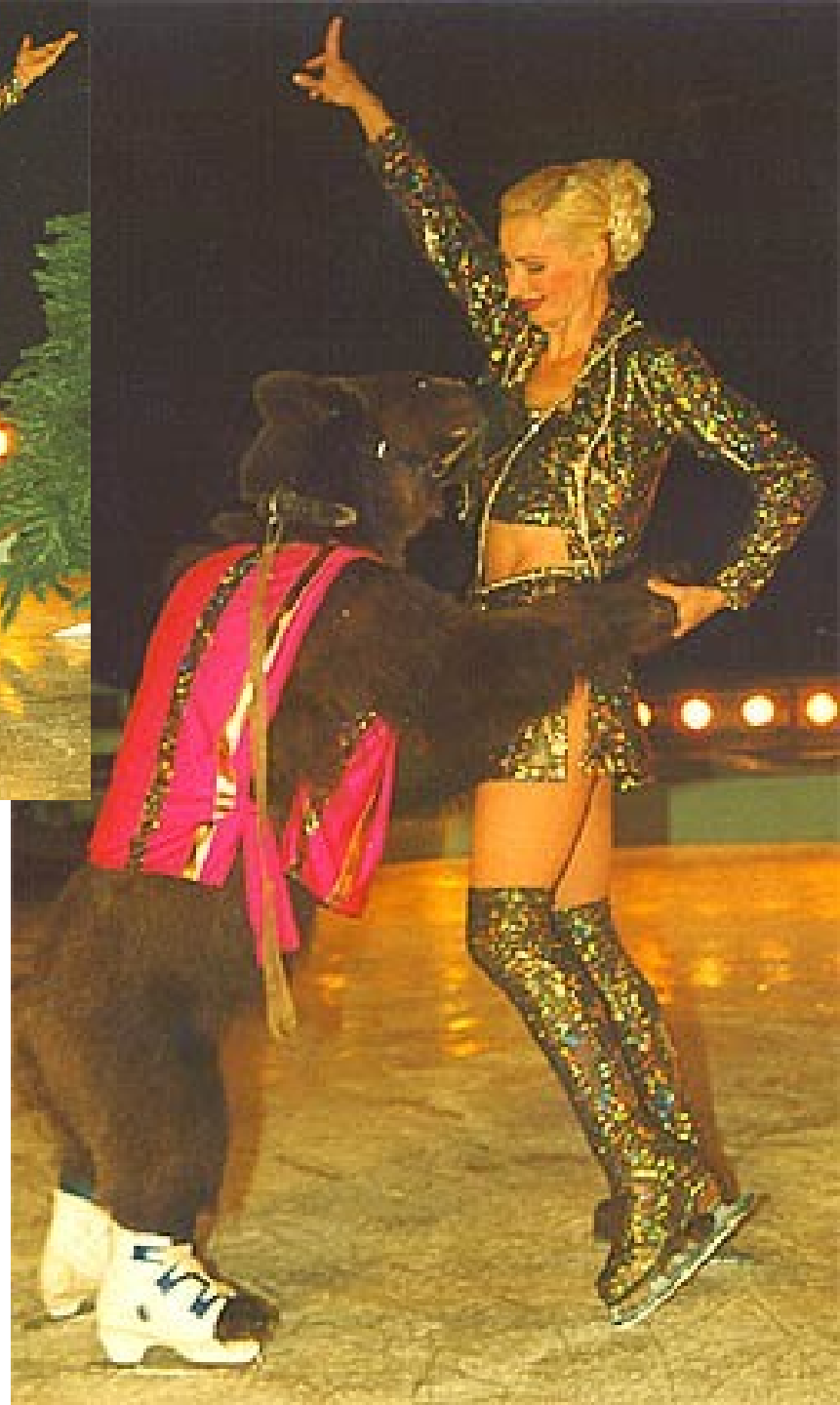


We see them in zoos





We put them in  
the circus



They ride  
motorcycles

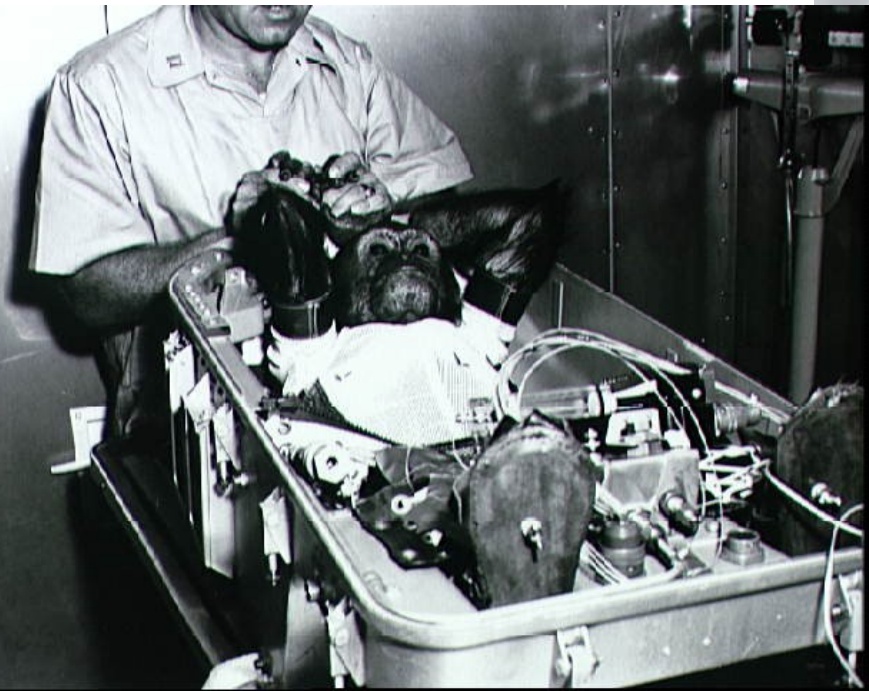


We study them





We use them in research



# Ethics of using animals in research



Animals  
should have  
the same  
rights as  
humans

Animals  
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rights and no  
“humane”  
treatment is  
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Is a sense of self necessary for feelings?

Should our interactions with animals depend on their self-awareness?

Is self-awareness necessary for feeling pain, fear, etc?

How different are we from other animals?  
...Not much.



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1966, first federal laws setting forth guidelines for care of animals in research.

Each institution is required to have an Institutional Animal Care and Use Committee (IACUC) (<http://www.utexas.edu/research/rsc/iacuc/index.html>)

Based on-

Scientific Integrity: an Introductory Text with Cases, 2nd ed. (2000) Marcina, F. L. ASM Press, Washington, D.C.

The University of Texas at Austin's IACUC committee is comprised of 14 voting members

Federal law states that the committee must have a minimum of five members including:

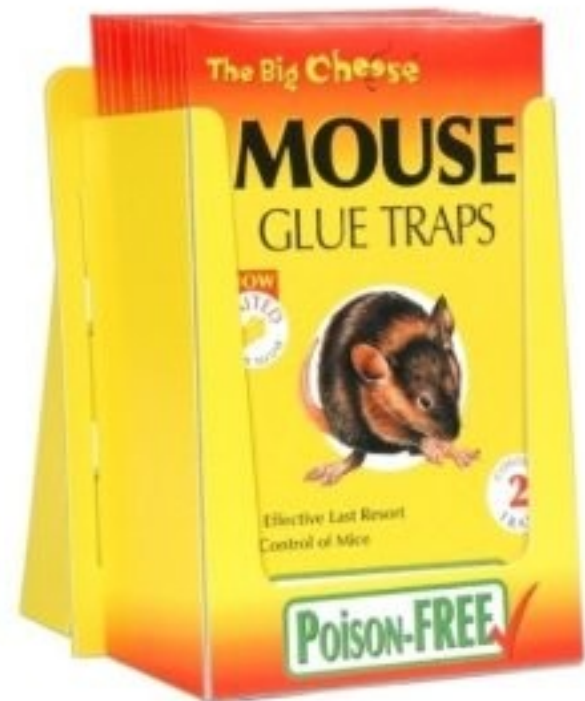
- a veterinarian
- a scientist experienced in laboratory animal procedures
- a non-scientist and a non-affiliate

## The responsibilities of the IACUC include:

1. Inspect all of the animal facilities at least once every six months.  
(announced inspections)
2. Review the animal resource center's program for the utilization of animals in research at least once every six months.
3. Review and approve, require modifications to, or withhold approval to animal care and use protocols.
4. Review and investigate legitimate concerns involving the care and use of laboratory animals resulting from public, employee or student complaints.
5. Suspend an activity involving animals if non-compliance is verified; take corrective action and report non-compliance to funding agencies.



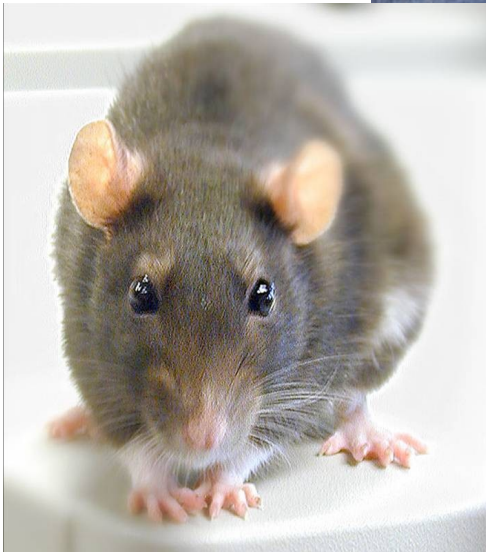
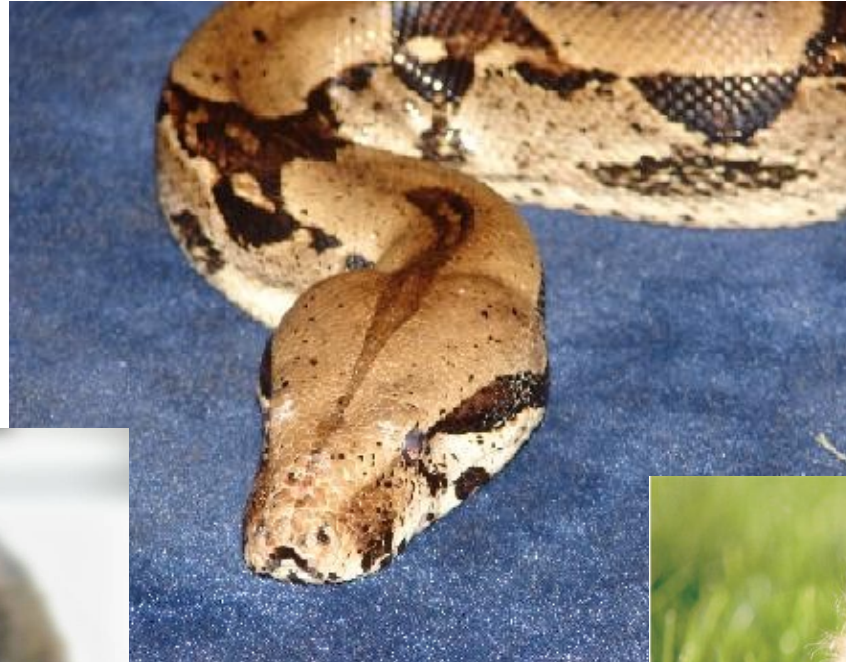
Why do researchers need special rules and regulations for mice in experiments while “inhumane” sticky traps can be used to kill pest mice?



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Is it more moral to raise a rat to feed a snake or get a kitten from the pound?



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# How do we quantify animal suffering?

- Do they show pain/fear as humans do?
- Can we quantify how much an animal is suffering?
- “Animal suffering: unknowable?”

<http://www.the-scientist.com/blog/display/55073/>



Does using non-human animals make humans safer?

Many drugs have been found safe in other mammals, but unsafe in humans:

Thalidomide, Flenac (Fenclofenac), Baycol (Cerivastatin), and Vioxx

While some medicines safe for humans are toxic in other animals:

Aspirin and penicillin

**COMPARISON OF THE LD50 IN RATS AND MICE**  
**(NIOSH/Registry of Toxic Effects of Chemical Substances)**

<b>Chemical</b>	<b>Rat mg/kg</b>	<b>Mouse mg/kg</b>	<b>Ratio</b>
Carbon tetrachloride	2,350	8,260	0.28
Dextropropoxyphene HCl	84	225	0.37
Dichloromethane	1,600	873	1.8
Diphenylhydantoin	1,640	150	10.9
Ethanol	7,060	3,450	2.0
Mercury (II) chloride	1	6	0.17
Nicotine	50	3	16.7
Paracetamol	2,400	340	7.0
Sodium oxalate	11,200	5,100	2.2
Thioridazine HCl	995	385	2.6

The Center for Alternatives to Animal Testing is an academic center at Johns Hopkins University.

<http://caat.jhsph.edu/index.htm>

What are the alternatives?

- *In vitro* research- use cells grown in a lab instead of a whole organism
- Computer simulations (Bioinformatics)
- Use simulators for teaching

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Only 8 of the 154 accredited medical schools in the U.S. report using live animals.

The EU is/has outlawed the use of animal testing of cosmetics.

The EU and cosmetic industry has spent about \$65 million over the last several years to develop alternate tests.



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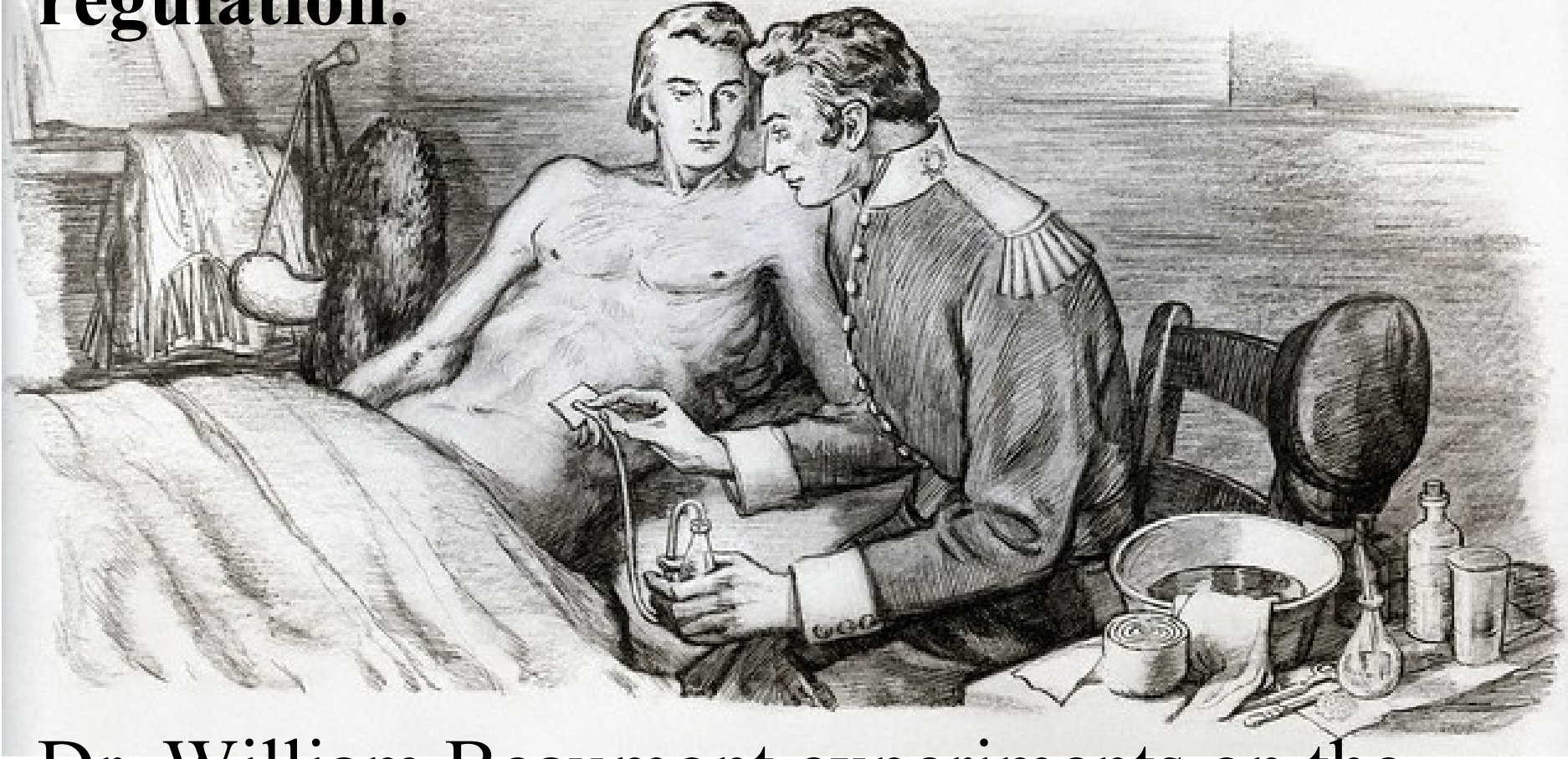
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We will discuss using non-human animals in research during lab.

Today: What ethical considerations are needed when using humans as research



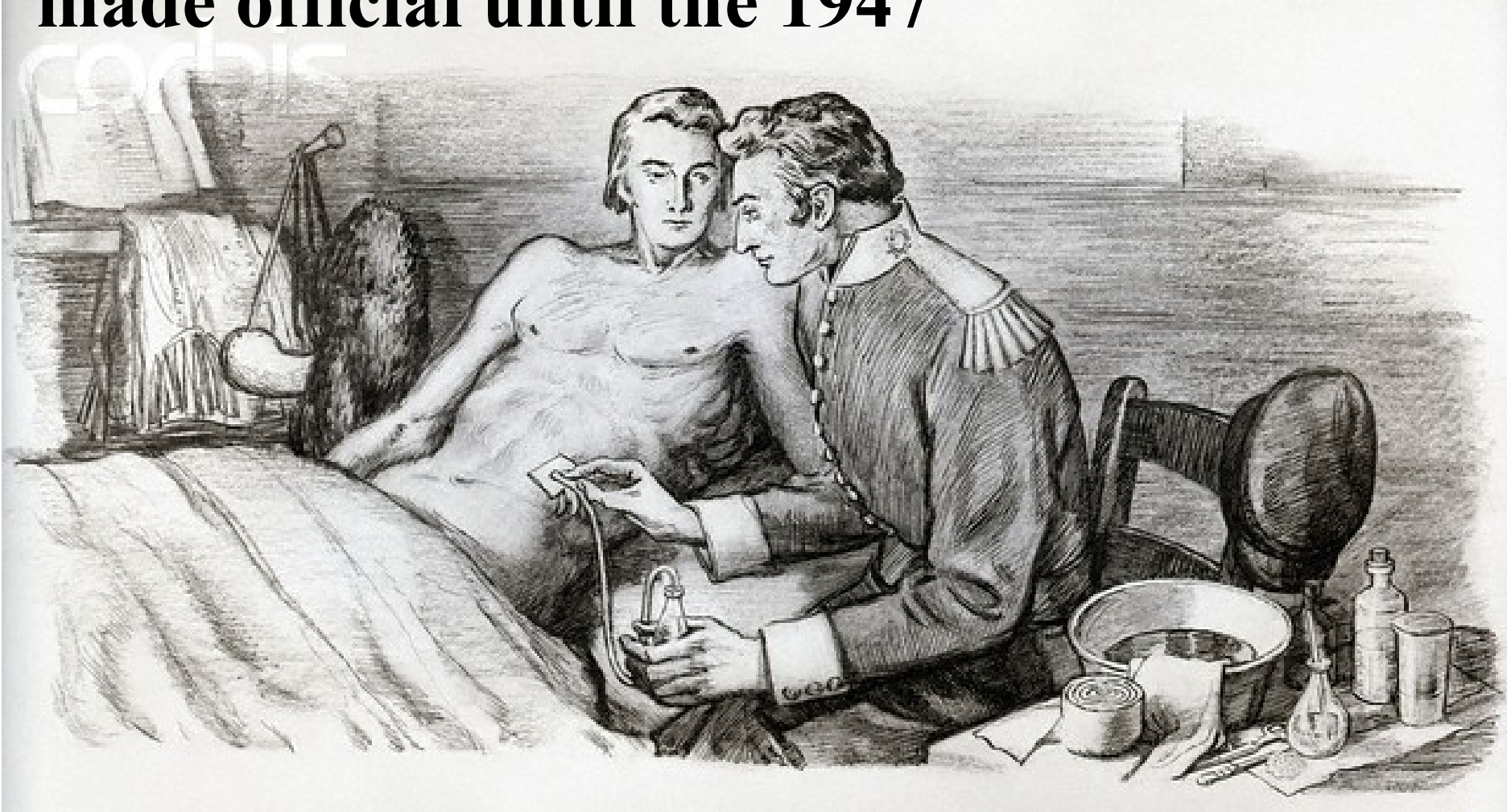
**Many early medical experiments were carried out on humans, and mostly without regulation.**



**Dr. William Beaumont experiments on the stomach of Alexis St. Martin in 1820's**

<http://www.corbisimages.com/Enlargement/Enlargement.aspx?>

**Rules outlining a code of conduct for the use of humans in experiments were not made official until the 1947**



**Dr. William Beaumont experiments on Alexis St. Martin in 1820's**

<http://www.corbisimages.com/Enlargement/Enlargement.aspx?>

**One of the most serious issues is obtaining the consent of the subjects.**



Dr. William Beaumont experiments on Alexis St. Martin in 1820's

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# Tuskegee Syphilis Study:

- 412 infected and 204 uninfected men were studied.
- Infected subjects were **not** given treatment, but were told they were being treated.
- Started in 1932 to understand the course of syphilis infections in African Americans.
- In 1940's penicillin was shown to be an effective treatment, but infected subjects were **not treated**.

Scientific Integrity: an Introductory Text with Cases, 2nd ed. (2000) Marcina, F. L. ASM Press, Washington, D.C.

- Reviewed in 1969 and not terminated until

11/11/1972

# U.S. Apologizes for Syphilis Tests in Guatemala

Published: October 1, 2010

# U.S. Apologizes for Syphilis Tests in Guatemala

From 1946 to 1948, American public health doctors deliberately infected nearly 700 Guatemalans — prison inmates, mental patients and soldiers — with venereal diseases in what was meant as an effort to test the effectiveness of penicillin.

# U.S. Apologizes for Syphilis Tests in Guatemala

American tax dollars... paid for syphilis-infected prostitutes to sleep with prisoners. When the prostitutes did not succeed in infecting the men, some prisoners had the bacteria poured onto scrapes made on their penises, faces or arms, and in some cases it was injected by spinal puncture.

# U.S. Apologizes for Syphilis Tests in Guatemala

Dr. Mark Siegler, director of the Maclean Center for Clinical Medical Ethics at the University of Chicago's medical school

“It’s ironic — no, it’s worse than that, it’s appalling — that, at the same time as the United States was prosecuting Nazi doctors for crimes against humanity, the U.S. government was supporting research that placed human subjects at enormous risk.”

# Subjects must give informed consent:



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Institutions receiving federal support must have an Institutional Review Board that oversees human research projects.

Subjects must give informed consent:

Have they been coerced?

Is payment coercion?



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Coercion may come from doctors or family members



<http://www.flickr.com/photos/adrian/5030705/>

- Doctors may get paid per patient
- Uninsured may enter studies to receive treatment



Subjects must give informed consent:

Is the subject competent to consent?

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Patients who are not mentally competent to give consent can be used in studies if their guardian consents.

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Prisoners, or a representative for the prisoners, must be on the IRB.



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Children: Parents/guardians must give consent and the risks must be minimal.

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If the subject may benefit directly, greater risks can be justified.

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Children: Parents/guardians, and if possible the subject, must give consent and the risks must be minimal.

...Many drugs are used in children without testing them on children

Subjects must give informed consent:

Is the subject competent to consent?

Have they been coerced?

Is payment coercion?

Does informing the subject bias the outcome?

Ethics practice in lab on W 8/3 or Th 8/4

