

BIOETHICS OF THE MEDICO-BIOLOGICAL EXPERIMENTS.
THE MODERN CONCEPT OF THE EVIDENCE-BASED
MEDICINE.
THE BIOETHICAL COMMITTEES.



Ethical experiments on humans *are*
absolutely necessary for the
progress of medicine.



Definitions

Research - a systematic investigation designed to develop or contribute to generalizable knowledge.

Human Subject - a living individual about whom an investigator conducting research obtains:

— data through intervention or interaction with the individual,

or

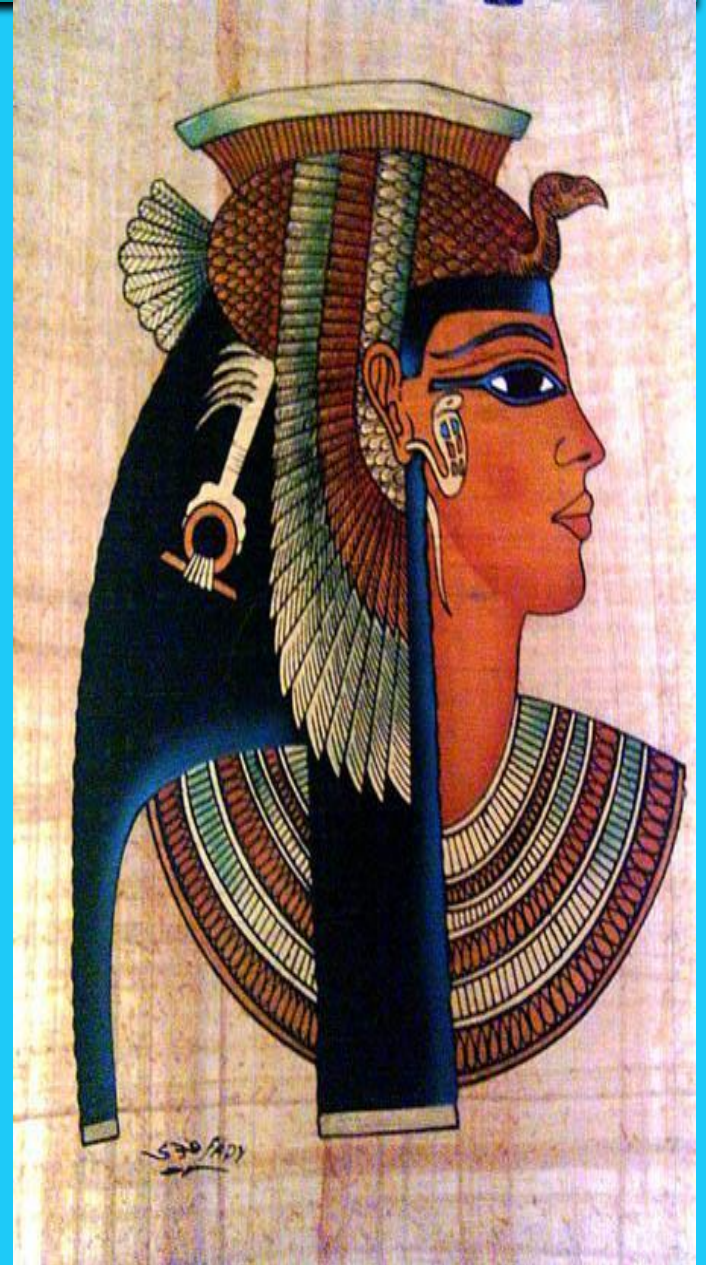
— identifiable private information



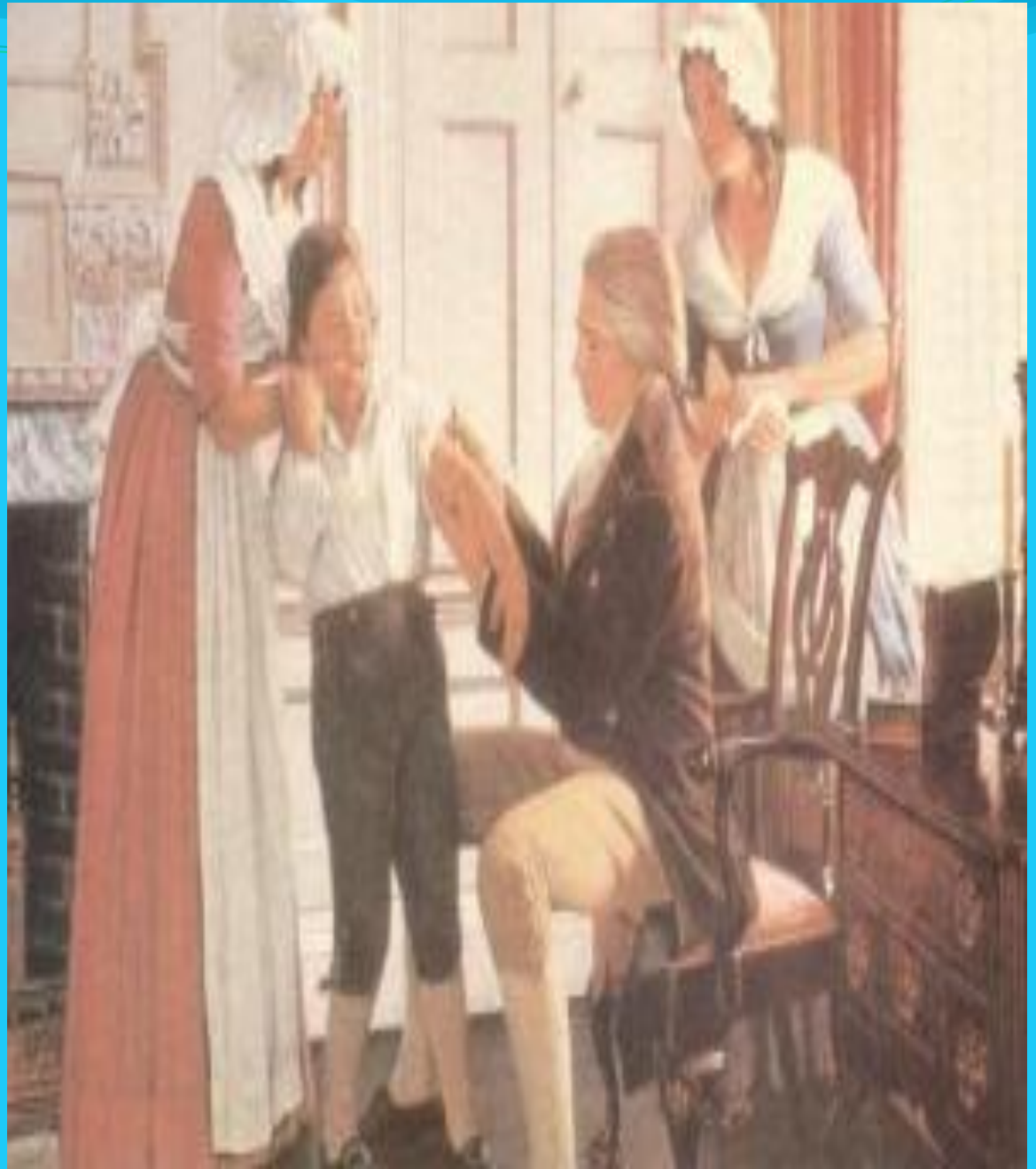
● HISTORY OF
HUMAN
SUBJECT
RESEARCH

1st century B.C.

Cleopatra devised an experiment to test the accuracy of the theory that it takes 40 days to fashion a male fetus fully and 80 days to fashion a female fetus.



1796 - Edward Jenner injects healthy eight-year-old James Phillips first with cowpox then three months later with smallpox and is hailed as discoverer of smallpox



1845-1849: J. Marion Sims, "the father of gynecology" performed multiple experimental surgeries on enslaved African women without the benefit of anesthesia. One woman was made to endure 34 experimental operations for a prolapsed uterus.



1900: Walter Reed injects 22 Spanish immigrant workers in Cuba with the agent for yellow fever paying them \$100 if they survive and \$200 if they contract the disease.



Nazi human experimentation



Nazi human experimentation

was a series of medical experiments on large numbers of prisoners mainly from across Europe by the Nazi German regime in its concentration camps mainly in the early 1940s, during World War II and the Holocaust.



Freezing experiments

Nazi doctors submerged victims in vats of icy water for periods of up to *five* hours in an attempt to find ways to treat German pilots forced to eject into icy ocean water.



Twins experiments

Dr. Josef Mengele.

Experimented on 1,000 pairs of twins.

Mengele's experiments also included attempts to change eye color by injecting chemicals into children's eyes, various amputations of limbs and other brutal surgeries.



Nazi human experimentation

- After the experiment was over, these twins were usually murdered and their bodies dissected.
 - He supervised an operation by which two Gypsy children were sewn together to create conjoined twins;
- This caused gangrene and death.



Tuberculosis Experiments

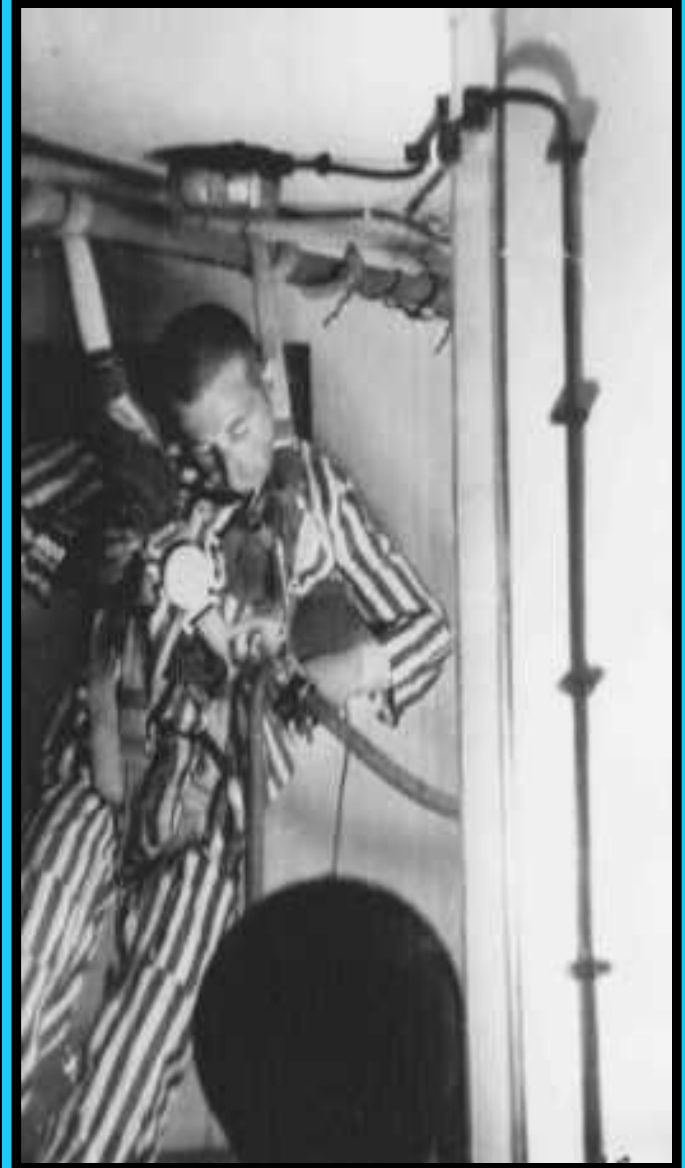
Dr. Kurt Heissmeyer injected the tuberculosis bacteria directly into the lungs of his victims at the Neungamme concentration camp.

He was responsible for the deaths of at least 200 people.



High Altitude Experiments

- In 1942 Doctor Rascher used a decompression chamber to simulate high altitude conditions.
- He dissected several of the victims' brains, while they were still alive, to demonstrate that high altitude sickness was a result of the formation of tiny air bubbles in the blood vessels of the subarachnoid part of the brain.



Phosgene Gas

- ❑ Nazis subjected concentration camp prisoners to Phosgene gas in an attempt to find an antidote to the compound.
- ❑ The Nazis intentionally exposed victims to the gas, causing unbearable irritation in the lungs.



Transplant Experiments

- Limbs of the prisoners needlessly amputated.
 - Every attempt to transplant a limb or joint was a failure.
- Sections of muscle, bone and nerves were also removed in fruitless attempts to regenerate those body parts.



Sea Water Experiments

- Nazi doctor Hans Eppinger tried to make seawater drinkable, but failed. Scientists forced about 90 Gypsies to drink *only* seawater, and deprived them of all food or fresh water.



Poison Experiments

The Nazis also used poison to torture and kill inmates. One was a combination of phenol and cyanide.

Other experiments included adding toxic chemicals to food or shooting prisoners with poison bullets.



Artificial Insemination Experiments

Clauberg established
Auschwitz Block 10 as
laboratory.

There was a constant fear
in Block 10 of being
killed, sterilized, or
inseminated by
Clauberg.



Wound Experiments

- Doctor Rascher tried to develop a blood coagulant to treat hemorrhage.

- He tested his patented coagulant by observing the rate of blood drops that would ooze from freshly cut amputation stumps of living and conscious prisoners at the Dachau crematorium.



Sulfanilamide Experiments

Wounds deliberately inflicted on the experimental subjects were infected with bacteria such as streptococcus, gas gangrene and tetanus.

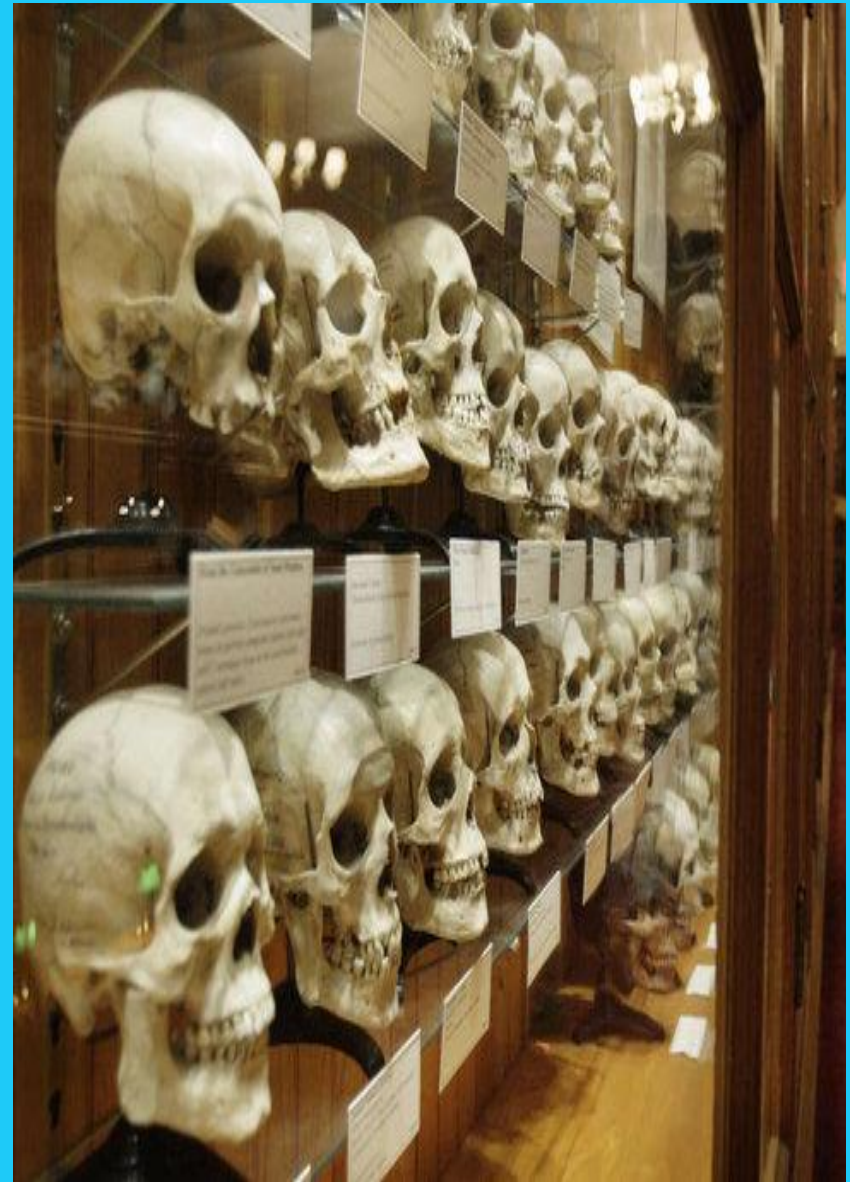
Circulation of blood was interrupted by tying off blood vessels at both ends of the wound to create a condition similar to that of a battlefield wound.



Jewish Skeleton Collection

Doctor August Hirt, Professor of Anatomy at Strassburg University, wished to acquire a large collection of Jewish skulls and skeletons to form a museum dedicated to the extinct Jewish race.

In 1943, 115 persons were gassed at the Natzweiler-Struhof Concentration Camp. The corpses were immediately transported to the Anatomy Pavilion of the Strassburg University Hospital.



Unit 731

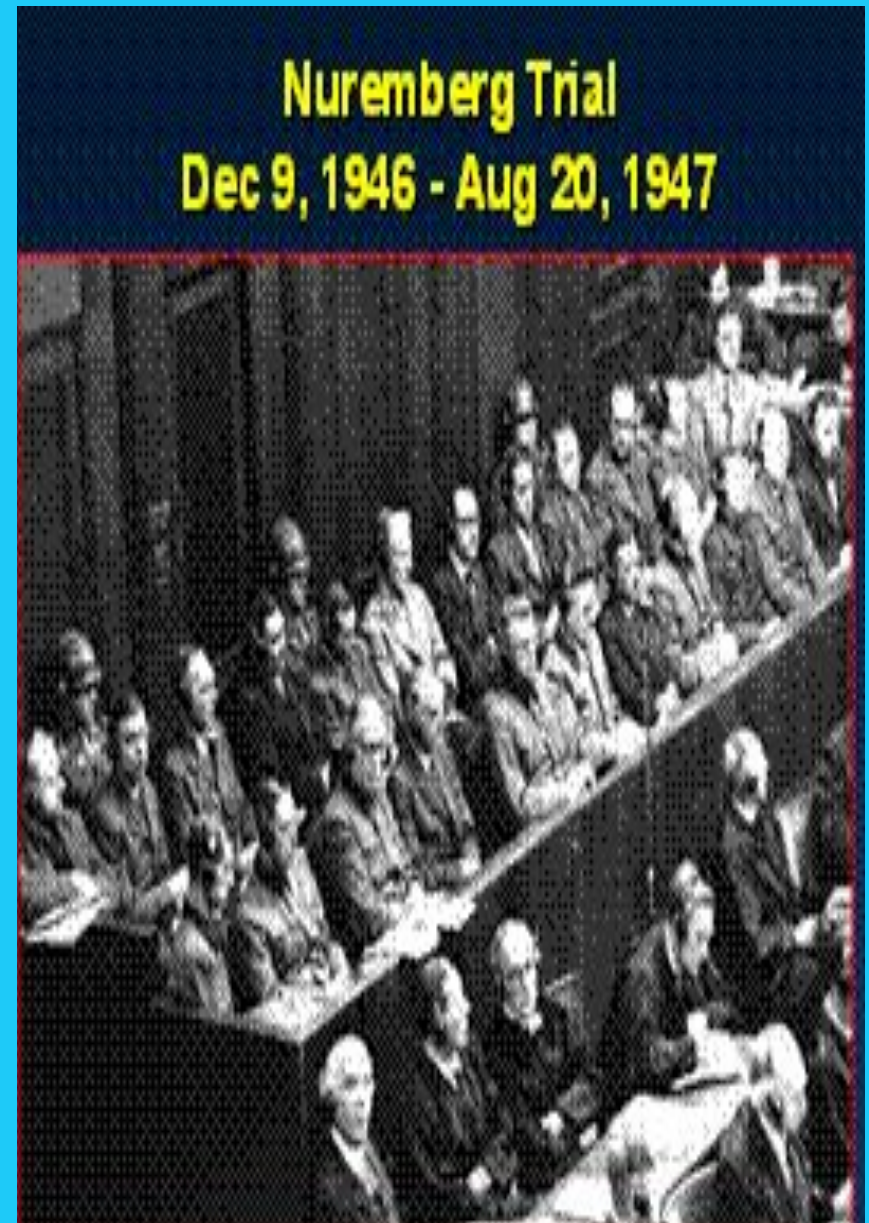
Some of the numerous atrocities committed by the commander Shiro Ishii and others under his command in Unit 731 include: vivisection of living people (including pregnant women who were impregnated by the doctors), prisoners had limbs amputated and reattached to other parts of their body, some prisoners had parts of their bodies frozen and thawed to study the resulting untreated gangrene. Humans were also used as living test cases for grenades and flame throwers. Prisoners were injected with strains of diseases, disguised as vaccinations, to study their effects. To study the effects of untreated venereal diseases, male and female prisoners were deliberately infected with syphilis and gonorrhea via rape, then studied.



The Nuremberg Doctors Trial

On August 19, 1947, the judges delivered their verdict in the "Doctors' Trial" against Karl Brandt and several others.

The 23 defendants were charged with murder, torture, and other atrocities committed under the guise of medical science. 15 were found guilty and 7 were sentenced to death.



In April of the same year, Dr. Leo Alexander had submitted to the Counsel for War Crimes six points defining legitimate medical research. The trial verdict adopted these points and added an extra four. The ten points constituted the "**Nuremberg Code**".



The Nuremberg Code

- Voluntary informed consent
- Likelihood of some good resulting
- Based on prior research (animal models)
- Avoidance of physical or psychological injury or harm
- Benefits should outweigh risks
- Proper experience of researcher
- Right to withdraw consent
- Research must stop if harm is resulting

(no specific mention of children, unconscious people, or others who may not be competent to give consent)

Condensed Nüremberg Code

- 1. Voluntary, informed consent of every human subject.*
- 2. Experiment must be designed to yield results for the good of society.*
- 3. Animal experimentation should precede experiments on humans.*
- 4. Must avoid all unnecessary physical and mental suffering and injury.*
- 5. Do not perform experiments in which death or disabling injury will occur.*

Condensed Nüremberg Code

6. *The degree of risk taken by subjects should never exceed the importance of the problem to be solved by experiment.*
7. *Proper preparations should be made to protect the experimental subject against even remote possibilities of injury, disability, or death.*
8. *The experiment should be conducted only by scientifically qualified persons.*
9. *Human subject may withdraw consent at any time.*
10. *Scientist must terminate experiment at any time, if is likely to result in injury, disability, or death to the experimental subject*

Effect of the Nuremberg code

- The Code had little impact on researchers, who thought that:
 - the principles in the Code were already implicit in their work
 - it was simply a document to condemn the Nazi atrocities and to convict the Nazi doctors.
- Problems with the code:
 - did not have the strength of law
 - applied to only non-therapeutic human subjects research.

Formation of the World Medical Association

The World Medical Association (WMA) was organized in 1947.

Declaration of Helsinki

- 1964 - the World Medical Association develops a code of research ethics which came to be known as the
DECLARATION OF HELSINKI
- reinterpretation of the Nuremberg Code + addressed medical research with therapeutic intent.
- Journal editors began to require that research be performed in accordance with the Declaration.

Declaration of Helsinki

The Declaration includes principles on:

- **Safeguarding research subjects.**
- **Informed consent**
- **Minimising risk**

Adhering to an approved research plan/protocol

The Declaration is considered a fundamental document in the ethics of healthcare research.



Experimental horrors after Nürnberg Code

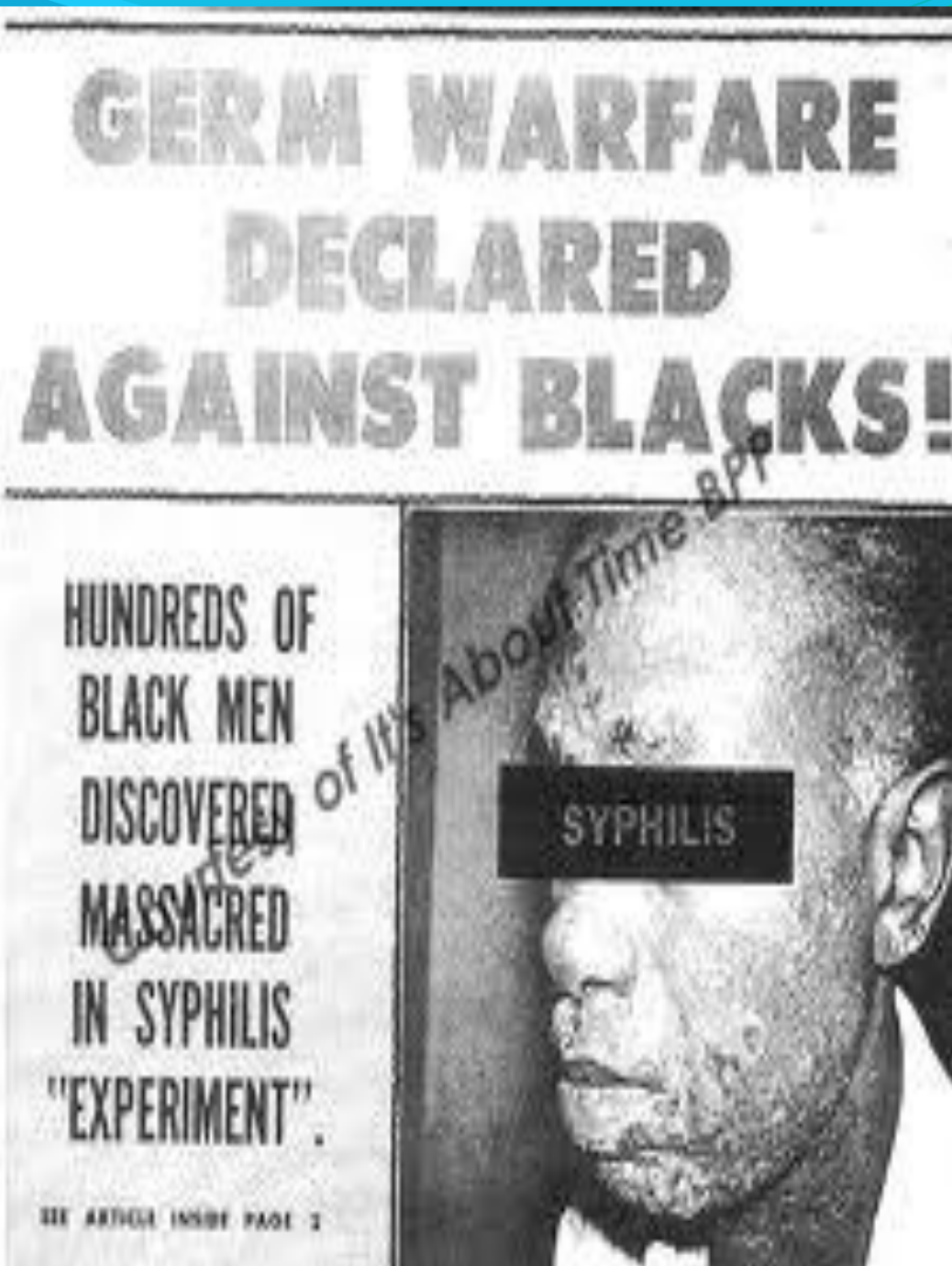
The Tuskegee syphilis experiment was conducted in 1932 -1972 in Tuskegee, Alabama by the U.S. Public Health Service to study the natural progression of untreated syphilis in 399 poor black men who thought they were receiving free health care from the U.S. government.



These men, for the most part illiterate sharecroppers from one of the poorest counties in Alabama, were never told what disease they were suffering from or of its seriousness. Informed that they were being treated for “bad blood,” their doctors had no intention of curing them of syphilis at all.



By 1947, penicillin had become the standard treatment for syphilis. But the Tuskegee scientists continued the study without treating any participants and withholding penicillin and information about it from the patients.



(1950 - 1953)

The CIA begins Project Bluebird (renamed Project Artichoke in 1951) in order to find ways control individuals "through special interrogation techniques," "enhance memory" and use "unconventional techniques including hypnosis and drugs" for offensive measures .

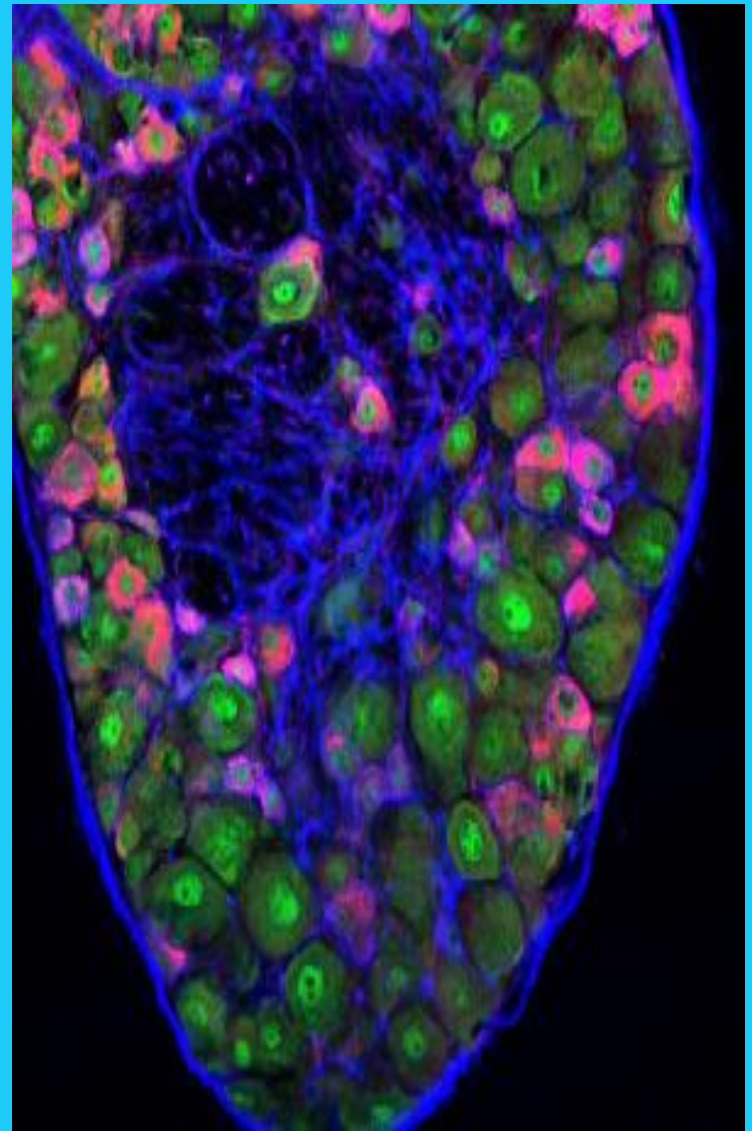
They used LSD.



Injections of cancer cells

Intradermal injections of live human cancer cells into 22 chronically ill.

The subjects were not told that the injection contained cancer cells, because the physicians "did not wish to stir up any unnecessary anxieties in the patients" who had "phobia and ignorance" about cancer.



Hepatitis in retarded children

Severely retarded children at the Willowbrook State Hospital in New York injected with hepatitis virus. Consent forms implied that children were to receive a vaccine against hepatitis, when the protection was actually from a hopefully "subclinical" infection.




Poison laboratory of the Soviets

The Soviets tested a number of deadly poisons on prisoners from the Gulag (“enemies of the people”), including mustard gas, ricin, digitoxin and many others. The goal of the experiments was to find a tasteless, odorless chemical that could not be detected post mortem. Candidate poisons were given to the victims, with a meal or drink, as “medication”.



The Aversion Project

South Africa's apartheid army forced white lesbian and gay soldiers to undergo 'sex-change' operations in the 1970's and the 1980's, and submitted many to chemical castration, electric shock, and other unethical medical experiments.



**NEW THEORY CLAIMS
HOMOSEXUALITY
CAN BE CURED**

Modern medicine sees deviation as physical problem—disputing old belief that homos are made—not born!

By ANTONY JAMES

HOMOSEXUALS are born, not made. That's the startling new theory put forth by several American and European scientists who are seeking the answer to mankind's oldest riddle—the Third Sex.

The problem of homosexuality has long been considered psychological, rather than physical. Generations of psychologists, psychiatrists and physicians accepted Dr. Freud's view that homosexuals reflected "mirror images" of the dominant mother—withdrawn father pattern.

Because homosexuality has long been assumed to have been a vice rather than an illness, the deviate has lived in a shadowy half-world of fear.

UNCENSORED MAGAZINE, OCT. 1969

In 2011, drug giant Pfizer paid \$75 million to settle claims that children in Kano state, Nigeria, were injured or killed by non-consensual administration of its experimental meningitis drug Trovan.



WHAT
TO
DO?

INTRODUCTION TO THE 7 PRINCIPLES

- 1) Social Value
- 2) Scientific Validity
- 3) Fair Subject Selection
- 4) Favorable risk-Benefit ratio
- 5) Independent review
- 6) Informed consent
- 7) Respect for enrolled Subject

Experiments on animals first

Animal experiments must be conducted before any human experiments.



Only do new experiments

The researchers must do a thorough search of the medical and biological literature *before* doing any human experiments.



Design of experiment

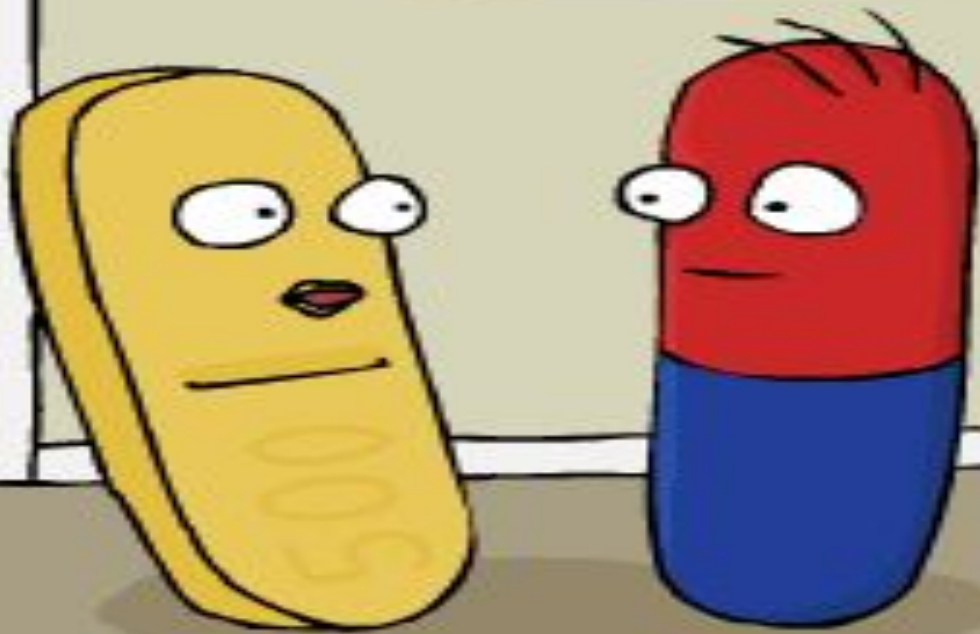
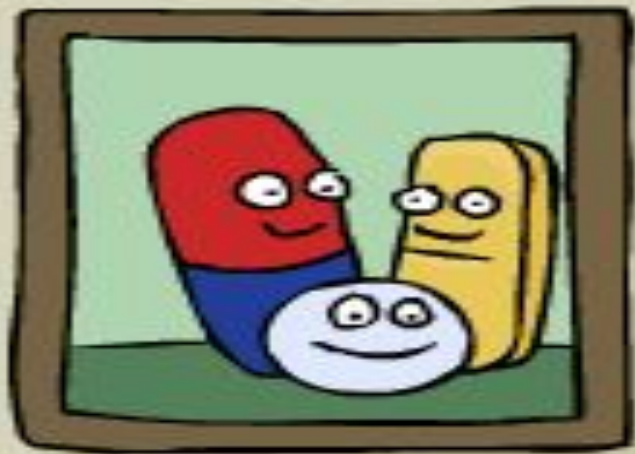
The experiment should be conducted in a scientific manner, with a double-blind fashion, with a control group.



It is unethical
to give a
control group
of people a
placebo.



HONEY GO
AND TALK TO HIM,
HE JUST FOUND OUT
HE'S A PLACEBO



CONSENT:

ELEMENTS OF INFORMED CONSENT:

- COMPETENCE
- DISCLOSURE
- UNDERSTANDING
- VOLUNTARINESS



Consent

- Two originals with subject's signature witnessed by at least one person.
- Failure to obtain such written consent is a presumption that informed consent was *not* obtained.
- Each subject shall have not sign a consent form until at least 24 hours after it was given to the subject.



Take care of subjects after the trial

- A. free medical care for the remainder of his life
- B. payment of loss wages and
- C. funeral expenses.

Patient safeguard before advancement of science

The interests and safeguard of patients come first than the interest of science and society.

Bioethics Committees

- **The International Bioethics Committee (IBC) is a body of 36 independent experts that follows progress in the life sciences and its applications in order to ensure respect for human dignity and freedom. It was created in 1993.**
- **The IBC provides the only global forum for reflection in bioethics.**

Bioterrorism:

Background and Significance



History of Biological Warfare

- 1346 Siege of Kaffa; plague
- 1763 French and Indian War; smallpox
- WW I German program; anthrax, glanders
- 1925 Geneva protocol bans biological weapons
- WW II Japanese program; anthrax, plague, cholera, shigella

History of Biological Warfare

- **1941** George W. Merck named U.S. civilian head of Chemical Warfare Service later changed to War Research Service
- **1946** U.S. announces its involvement in bioweapons research
- **1969** Nixon eliminates offensive biological warfare program

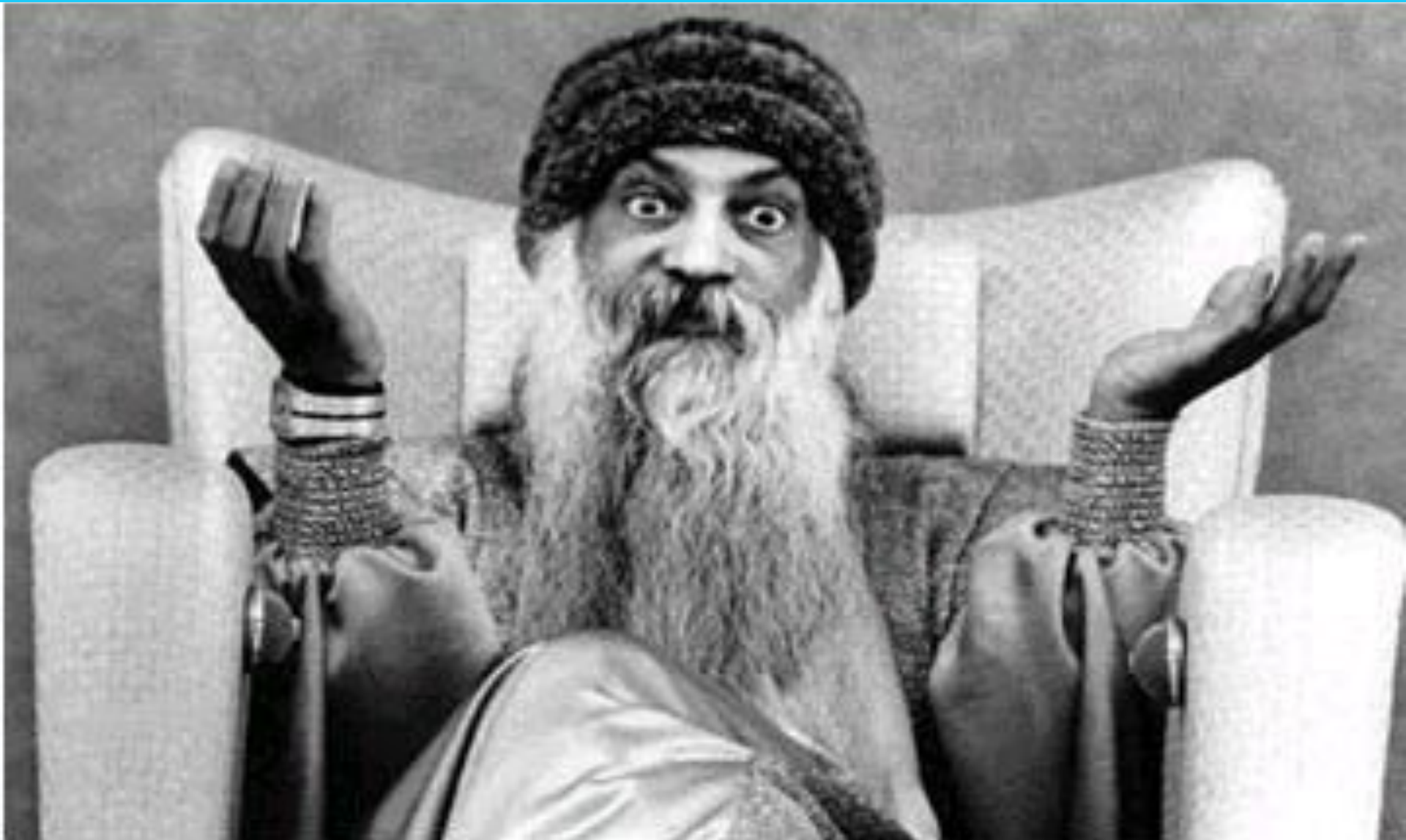
History of Biological Warfare

- **1972 Biological Weapons Convention**
- **1979 Accidental release of *B. anthracis* spores at bioweapons research center, Sverdlovsk, U.S.S.R**
- **1989-92 Scientists from the former U.S.S.R. involved in biological weapons research defect to the West**

Domestic Biological Terrorism

- 1984 Rajneeshee cult members contaminate salad bar with *Salmonella typhimurium* in Oregon
- 1992 Ricin attack planned by Minnesota militia
- 2001 Anthrax releases in FL, DC, NY, NJ

Rajneesheshee Cult, *Salmonella* - Oregon, 1984



Biological Terrorism

Use of biological agents to intentionally produce disease or intoxication in susceptible populations - humans, animals, or plants - to meet terrorist aims



MN Patriots Council, Douglas County, 1991



Sarin Gas Attack, Tokyo Subway, 1995



Operation Desert Storm



Ken Alibek - U.S.S.R. Program



"TERRIFYING REVELATIONS."
—*Newsday*

BIOHAZARD BIO

THE CHILLING TRUE STORY
OF THE LARGEST COVERT
BIOLOGICAL WEAPONS PROGRAM
IN THE WORLD—TOLD FROM
INSIDE BY THE MAN WHO RAN IT

KEN ALIBEK
WITH STEPHEN HANDELMAN

THE C
OF TH
BIOLOGIC
IN THE
INSIDE B

KEN
WITH ST

Level A Bioterrorism Agents

- Anthrax (*Bacillus anthracis*)
- Smallpox (*Variola major*)
- Plague (*Yersinia pestis*)
- Botulism toxin (*Clostridium botulinum*)
- Tularemia (*Francisella tularensis*)
- Viral hemorrhagic fevers (VHF)

Biological Terrorism?

Epidemiologic Clues

- Tight cluster of cases
- High infection rate
- Unusual or localized geography
- Unusual clinical presentation
- Unusual time of year
- Dead animals

***Thank you for
your attention!***