

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

ZOMBIES, SUPERHEROS, & WHAT WE SHOULD REALLY WORRY ABOUT

W L GANNON

GRADUATE STUDIES AND DEPARTMENTS OF BIOLOGY AND PHILOSOPHY

MARCH 23, 2015, 12-1 STAMM ROOM CENTENNIAL ENGINEERING



- ZOMBIES AND SUPERHEROES
- ENTERTAINMENT VALUE
- WHAT WE BELIEVE AND WHAT WE KNOW
- DO YOU BELIEVE IN:
 - GHOSTS?
 - BUS SCHEDULES
 - VACCINES
 - GLUTEN FREE?
 - “I JUST BELIEVE IN ME.... DARWIN AND ME...”
- WHAT SHOULD WE WORRY ABOUT?
 - EBOLA
 - CLIMATE CHANGE
 - ISIS?
 - CRAZY POLITICIANS?
- SO – YOU ARE THE REAL HERO – YOU ARE THE ONE WHO WILL SAVE US.

- OK – MAYBE NOT JUST ZOMBIES, BUT FEAR AND IRRATIONAL BEHAVIOR AFFECTS WHAT WE KNOW
- WITH EBOLA – WITHIN WEEKS OF HEARING OF AN OUTBREAK, MORE THAN HALF US ADULTS BELIEVED A WIDESPREAD OUTBREAK WOULD HIT THE US
- HUMAN BRAIN SURVIVAL MACHINE – WHERE THE AMYGDALA FLIPS A SWITCH TO SURVIVAL MODE BEFORE RATIONAL PORTIONS OF THE BRAIN CAN ANALYZE – BY THEN WE ARE ALREADY IN FIGHT-OR-FLIGHT MODE... AND MADE UP MINDS
- FOR INSTANCE, IS GLUTEN IN FOOD BAD?
- WHAT DO WE BELIEVE AND WHAT CAN WE KNOW?



"Maybe she's gluten intolerant."

HOW CAN I KNOW ANYTHING AT ALL?

- I CAN'T (HUME, ONE PHILOSOPHER SAYS)
- WITHOUT POSSIBILITY OF KNOWLEDGE, WE ARE THEN LEFT WITH JUST BELIEF: ALL ARE REAL BECAUSE I CAN BELIEVE THEM TO BE
- [HTTPS://WWW.YOUTUBE.COM/WATCH?V=7BWOVEYEDOK](https://www.youtube.com/watch?v=7BWOVEYEDOK)
(3:38 MINS - HOW WE GAIN KNOWLEDGE)
 - LOGIC: FORMAL, DEDUCTIVE & INDUCTIVE
 - SCIENTIFIC INQUIRY:
 - BELIEF & AUTHORITY:



WAYS OF KNOWING

- **LOGIC:** LOGIC INCLUDES TESTS AND RULES THAT HELP TO IDENTIFY WHAT IS TRUE AND FALSE. IT IS AN IMPORTANT ELEMENT OF SCIENTIFIC INQUIRY BUT IS LIMITED BY ITS LACK OF REFERENCE TO THE NATURAL WORLD.



LOGIC

- **FORMAL LOGIC** STUDIES THE FORM OF REASONING, WHEREAS MATERIAL LOGIC DEALS WITH THE CONTENT OF REASONING.
- FORMAL LOGIC IS DIVIDED, IN TURN, BETWEEN **DEDUCTIVE** REASONING AND **INDUCTIVE** REASONING.
- **DEDUCTIVE** LOGIC REASONS FROM UNIVERSAL TRUTHS TO PARTICULAR CONCLUSIONS.
 - SUCH AS:

ALL MEN ARE MORTAL

SOCRATES IS A MAN

THEREFORE, SOCRATES IS MORTAL

(UNIVERSAL TRUTH, “ALL MEN ARE MORTAL,” AND ENDS UP WITH A PARTICULAR TRUTH: “SOCRATES IS MORTAL.”)





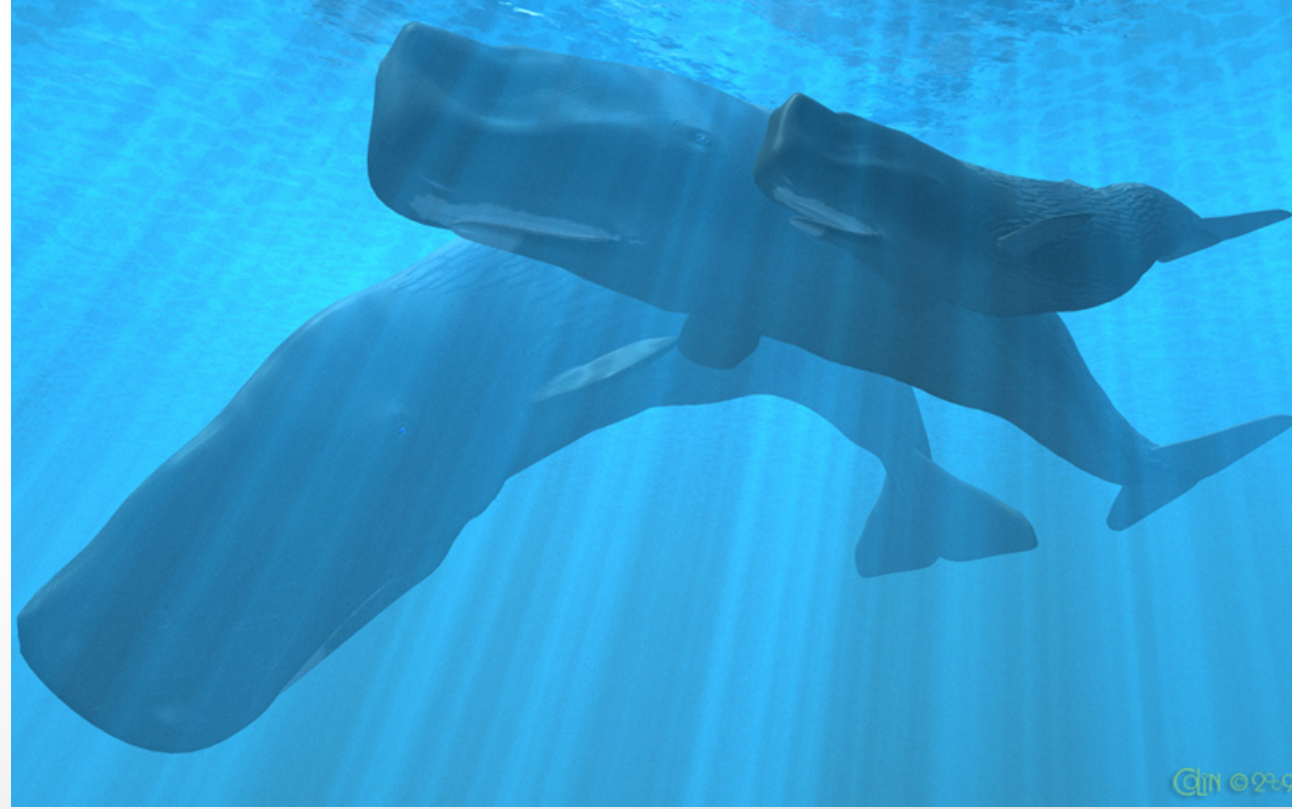
- **INDUCTIVE LOGIC**

REASON FROM PARTICULAR FACTS TO UNIVERSAL CONCLUSIONS. EXAMPLE:

EVERY MAMMAL THAT HAS EVER BEEN EXAMINED HAS HAIR
THEREFORE, ALL MAMMALS HAVE HAIR

HERE, SPECIFIC INSTANCES OF MAMMALS BEING FOUND WITH HAIR IS SAID TO JUSTIFY THE GENERAL CONCLUSION THAT ALL MAMMALS HAVE HAIR –

WHAT HAPPENS WHEN YOU FIND SOMETHING THAT DOESN'T HAVE HAIR...



BELIEVE OR KNOW?

- CAN WE KNOW ANYTHING? –

(DOES THE POSSIBILITY OF KNOWLEDGE-AS-CERTAINTY SEEM SLIGHT?)



- WHAT'S OUR POINT OF REFERENCE FOR OBJECTIVITY?
- LOCKED IN OUR OWN MINDS AND LANGUAGE IS CLUMSY
- TRUST OUR SENSES – THEY ARE LIMITED/UNRELIABLE (THINK OF A BAT...)
- ...AND IN A UNIVERSE OF CONTINUOUS CHANGE, HAVE TO KEEP SAMPLING
- HAS, WHAT YOU KNOW, BEEN DISCOVERED BY YOURSELF?
- BUT WE DO HAVE METHODS TO KNOW SOMETHING –
 - LOGICAL REASONING,
 - INTUITION AND
 - EMPIRICAL STUDY
- ...LEADS TO KNOWLEDGE-AS-RELIABLE-FACT

WHAT DO YOU BELIEVE?

- LIST YOUR BELIEFS

- [HTTPS://WWW.YOUTUBE.COM/WATCH?V=BQCU5W915P8](https://www.youtube.com/watch?v=BQCU5W915P8)

("I DON'T BELIEVE IN MAGIC": 2:07 MIN)



HOW DO WE GAIN KNOWLEDGE

- TO **ASK** THE QUESTION (“HOW CAN I KNOW ANYTHING AT ALL”) **MEANS** THAT THERE IS SOMETHING TO KNOW
- TO DENY THAT THERE IS SOMETHING TO KNOW IS IN FACT KNOWLEDGE IN ITSELF- SO, WE CAN SETTLE THAT! (THANKS TO SKEPTICISM FOR ALLOWING A CONTRADICTION)
- TO KNOW, GO THROUGH A SERIES OF **EXPERIENCES** THAT GROW FROM AN OPINION
- NOW NEED TO **JUSTIFY** THAT KNOWLEDGE – TESTING AN OBSERVATION LEADS TO A GREATER CERTAINTY OF KNOWLEDGE
- EMPIRICAL KNOWLEDGE – WHERE CLAIMS ARE MADE AND CONTINUOUSLY TESTED
- A PRIORI KNOWLEDGE – REASONING THROUGH AN IDEA TO ESTABLISH TRUTHFULNESS

SKIP

DESCARTES

TOTAL PHILOSOPHY: WHY RENÉ DESCARTES SAID 'I THINK, THEREFORE I AM'

- [HTTPS://WWW.YOUTUBE.COM/WATCH?V=BWH00UGAEEC](https://www.youtube.com/watch?v=BWH00UGAEEC)



SKIP



WHERE DO YOU GET YOUR KNOWLEDGE

- DO YOU GET YOUR KNOWLEDGE FROM OTHER PEOPLE OR OTHER THINGS?
- DO YOU HAVE THE SAME KNOWLEDGE AS SOMEONE IN ROME OR NAIROBI OR NOME?
- COULD YOU HAVE KNOWLEDGE IF YOU WERE RAISED IN A DARK CLOSET?
- [HTTPS://WWW.YOUTUBE.COM/WATCH?V=ORZLH9XGOVE](https://www.youtube.com/watch?v=ORZLH9XGOVE)
(KNOWLEDGE AND GETTIER PROBLEM)

WAYS OF KNOWING

- **SCIENTIFIC INQUIRY:** SCIENCE PROVIDES KNOWLEDGE BASED ON EMPIRICAL EVIDENCE FROM THE NATURAL WORLD. SCIENCE IS THE ONLY WAY OF KNOWING THAT PROVIDES EXPLANATIONS THAT ARE TESTABLE AND VERIFIABLE. IDEAS IN SCIENCE ACCUMULATE OVER TIME AND ARE SUBJECT TO REVISION AND CHANGE.



SCIENTIFIC KNOWLEDGE

- SCIENCE OFFERS A METHOD (THE SCIENTIFIC METHOD) FOR OBTAINING KNOWLEDGE -- SCIENCE IS ONE WAY (NOT THE ONLY WAY) OF KNOWING.
- A WAY OF FINDING THINGS OUT IN THE PHYSICAL WORLD. AS OPPOSED TO JUST GUESSING OR MAKING GENERALIZATIONS - STEPS INVOLVED SO THAT THE ANSWERS GET ARE VALID.

IS THIS DEDUCTIVE OR INDUCTIVE?

HERE'S SOME STEPS TO FOLLOW:

- 1. DEFINE THE QUESTION
- 2. GATHER INFORMATION AND RESOURCES (OBSERVATIONS)
- 3. FORM HYPOTHESIS
- 4. PERFORM EXPERIMENT AND COLLECT DATA
- 5. ANALYZE DATA
- 6. INTERPRET DATA AND DRAW CONCLUSIONS INTERPRET HYPOTHESIS, FORM REVISED ONE
- 7. PUBLISH RESULTS
- 8. RETEST (FREQUENTLY DONE BY OTHER SCIENTISTS)

FROM: "CNN BREAKING NEWS"

- ✘ -- Medical journal *Lancet* fully retracts 1998 study linking MMR vaccine to autism, citing "incorrect" elements of research.
- ✘ "Unfortunately, his core group of supporters is not going to let the facts dissuade their beliefs that MMR causes autism,"

CNN report 1/5/11

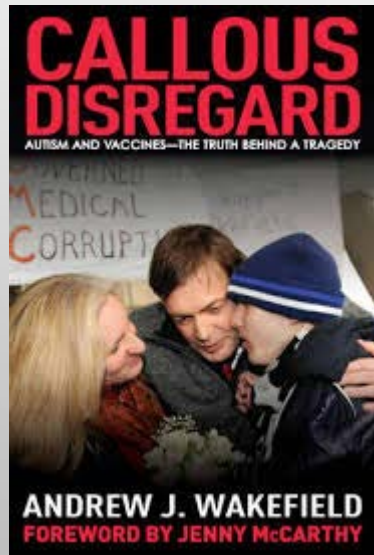


Retracted autism study an 'elaborate fraud,' British journal finds

By the CNN Wire Staff
January 5, 2011 8:14 p.m. EST



British journal blasts autism study



Early report

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson, P Harvey, A Valentine, S E Davies, J A Walker-Smith

Summary

Background We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

Methods 12 children (mean age 6 years [range 3-10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

Findings Onset of behavioural symptoms was associated by the parents, with measles, mumps, and rubella vaccination in eight of the 12 children, with measles infection in one child, and otitis media in another. All 12 children had intestinal abnormalities ranging from lymphoid nodular hyperplasia to granulomatous inflammation. Histology showed patchy chronic inflammation in 11 children and reactive ileal lymphoid hyperplasia in seven, but no granulomas. Behavioural disorders included autism (nine), disintegrative psychosis (one), and possible postviral or vaccinal encephalitis (two). There were no focal neurological abnormalities and EEG and EEG tests were normal. Abnormal laboratory results were significantly raised urinary methylmalonic acid compared with age-matched controls (p=0.03), low haemoglobin in four children, and low serum IgA in six children.

Interpretation We identified associated gastrointestinal disease and developmental regression in a group of previously healthy children, which was generally associated in time with possible environmental triggers.

Lancet 1998; 351: 637-41
See Commentary page

Inflammatory Bowel Disease Study Group, University Departments of Medicine and Histopathology (A J Wakefield MRCR, A Anthony MB, J Linnell PhD, A P Dhillon MRCR, S E Davies MRCR) and **the University Departments of Paediatric Gastroenterology** (S H Murch MB, D M Casson MB, M Malik MB, M A Thomson FRCP, J A Walker-Smith FRCP), **Child and Adolescent Psychiatry** (M Berelowitz FRCPsych), **Neurology** (P Harvey FRCP), and **Radiology** (A Valentine FRCP), **Royal Free Hospital and School of Medicine, London NW3 2QG, UK**

Correspondence to: Dr A J Wakefield

Introduction

We saw several children who, after a period of apparent normality, lost acquired skills, including communication. They all had gastrointestinal symptoms, including abdominal pain, diarrhoea, and vomiting and, in some cases, food intolerance. We describe clinical findings, and gastrointestinal features of these children.

Patients and methods

12 children, consecutively referred to a department of paediatric gastroenterology with a history of a pervasive developmental disorder with loss of acquired skills and intestinal symptoms (abdominal pain, bloating and food intolerance), were investigated. All children were admitted to the ward for a week, accompanied by their parents.

Clinical investigations

We took histories including details of immunisations and exposure to infectious diseases, and assessed the children. In 11 cases the history was obtained by the senior clinician (JW-S). Neurological and psychiatric assessments were done by consultant staff (PH, MB) with HMS-4 criteria.¹ Developmental records included a review of prospective developmental records from parents, health visitors, and general practitioners. Four children did not undergo psychiatric assessment in hospital; all had been assessed professionally elsewhere, so these assessments were used as the basis for their behavioural diagnosis.

After bowel preparation, ileocolonoscopy was performed by SHM or MAT under sedation with midazolam and pethidine. Paired frozen and formalin-fixed mucosal biopsy samples were taken from the terminal ileum; ascending, transverse, descending, and sigmoid colons, and from the rectum. The procedure was recorded by video or still images, and were compared with images of the previous seven consecutive paediatric colonoscopies (four normal colonoscopies and three on children with ulcerative colitis), in which the physician reported normal appearances in the terminal ileum. Barium follow-through radiography was possible in some cases.

Also under sedation, cerebral magnetic-resonance imaging (MRI), electroencephalography (EEG) including visual, brain stem auditory, and sensory evoked potentials (where compliance made these possible), and lumbar puncture were done.

Laboratory investigations

Thyroid function, serum long-chain fatty acids, and cerebrospinal-fluid lactate were measured to exclude known causes of childhood neurodegenerative disease. Urinary methylmalonic acid was measured in random urine samples from eight of the 12 children and 14 age-matched and sex-matched normal controls, by a modification of a technique described previously.² Chromatograms were scanned digitally on computer, to analyse the methylmalonic-acid zones from cases and controls. Urinary methylmalonic-acid concentrations in patients and controls were compared by a two-sample t test. Urinary creatinine was estimated by routine spectrophotometric assay.

Children were screened for antiendomysial antibodies and boys were screened for fragile-X if this had not been done

THE SUNDAY TIMES



Revealed: MMR research scandal

ST investigation exposes scientist's 'fatal' conflict of interest

By [Name] and [Name]

... [Main body text of the article]

Case	Behavioural diagnosis	Exposure identified by parents or doctor	Interval from exposure to first behavioural symptoms	Features associated with regression	Age at onset of first regression
1	Autism	MMR	2 weeks	Speech regression	1;7 months
2	Autism	MMR	2 weeks	Self injury	1;8 months
3	Autism	MMR	24 h	Head and hand flapping	1;8 months
4	Disintegrative disorder?	MMR	Months before at 1;11 months followed by loss of all development. Complete deterioration immediately after MMR at 1;15 years.	Speech regression, loss of self help	1;8 months
5	Autism	None identified	None identified	None identified	4 years
6	Autism	MMR	2 weeks	Speech regression, loss of self help	1;8 months
7	Autism	MMR	2 weeks	Speech regression, loss of self help	1;8 months
8	Post-vaccinal encephalitis?	MMR	2 weeks	Speech regression, loss of self help	1;8 months
9	Autism spectrum disorder	None identified	1 week (night 2 weeks previously)	Speech regression, loss of self help	1;8 months
10	Post-vaccinal encephalitis?	Measles (antennae) associated with MMR	24 h	Speech regression	1;8 months
11	Autism	MMR	1 week	Speech regression	1;8 months
12	Autism	None identified	Loss of speech development and deterioration in language skills noted at 1;8 months	Speech regression	1;8 months

BIG DEAL? LONG-LASTING DAMAGE TO PUBLIC HEALTH

- MISREPRESENTED OR ALTERED MEDICAL HISTORIES OF ALL 12 PATIENTS WHOSE CASES BASIS OF 1998 STUDY
- CREATED AN IMPRESSION THAT THERE WAS A LINK BY FALSIFYING DATA.
- BRITAIN STRIPPED WAKEFIELD MEDICAL LICENSE IN MAY
- PANICKED PARENTS DECLINED TO GET THE VACCINE THAT PREVENTS MEASLES, MUMPS AND RUBELLA.
- MEASLES RATES NOW ON RISE IN US & BRITAIN
- DIVERTED EFFORTS TO UNDERSTAND REAL AUTISM CAUSES
- MOST CO-AUTHORS WITHDREW THEIR NAMES IN 2004 AFTER LEARNING HE'D BEEN PAID BY A LAW FIRM THAT INTENDED TO SUE VACCINE MANUFACTURERS -- A SERIOUS CONFLICT OF INTEREST HE FAILED TO DISCLOSE.

Measles Cases and Outbreaks

January 1 to March 13, 2015*

176

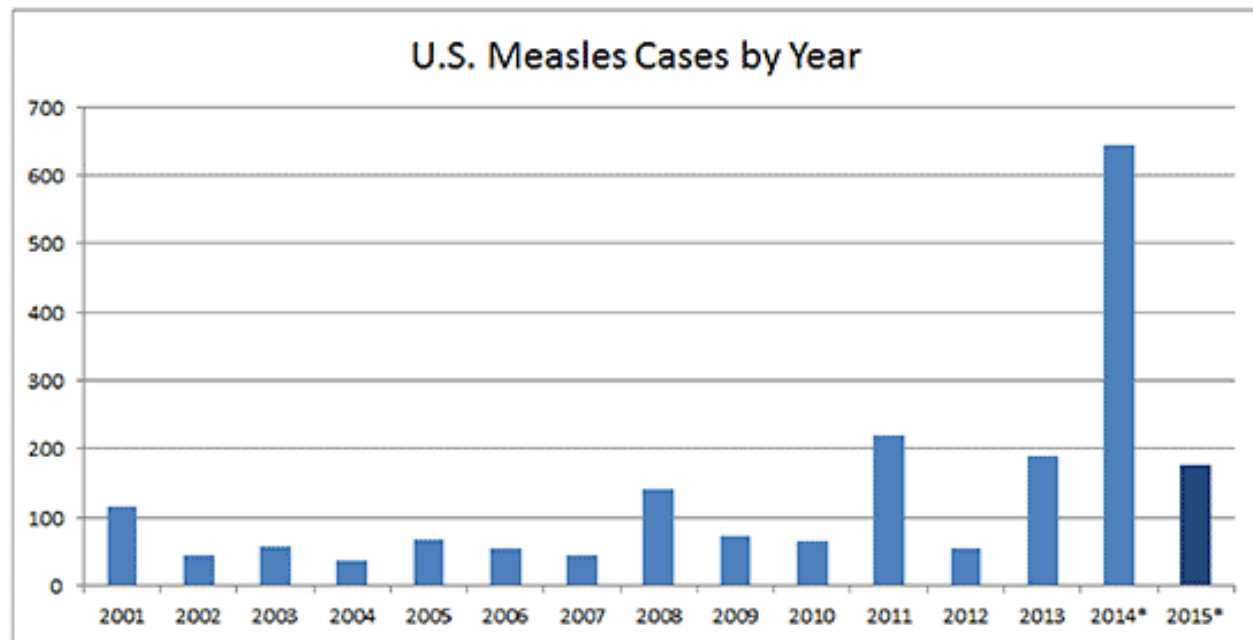
Cases

reported in 17 states and the District of Columbia: Arizona, California, Colorado, Delaware, Georgia, Illinois, Michigan, Minnesota, Nebraska, New Jersey, New York, Nevada, Pennsylvania, South Dakota, Texas, Utah, Washington

4

Outbreaks

representing 90% of reported cases this year



*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases





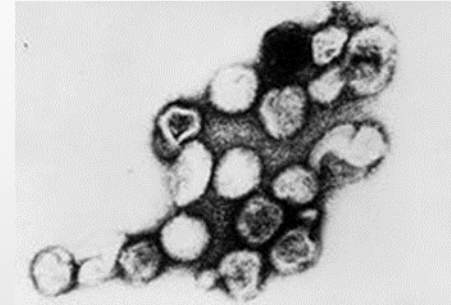
- MUMPS IS NO LONGER VERY COMMON IN THE UNITED STATES. FROM YEAR TO YEAR, MUMPS CASES CAN RANGE FROM ROUGHLY A COUPLE HUNDRED TO A COUPLE THOUSAND. FOR EXAMPLE IN 2010, THERE WERE 2,612 CASES, AND IN 2012, THERE WERE 229. BEFORE THE U.S. MUMPS VACCINATION PROGRAM STARTED IN 1967, ABOUT 186,000 CASES WERE REPORTED EACH YEAR. SINCE THE PRE-VACCINE ERA, THERE HAS BEEN A MORE THAN 99% DECREASE IN MUMPS CASES IN THE UNITED STATES.

(WIKIPEDIA)

• PANDEMIC OF RUBELLA BETWEEN 1962 AND 1965, RUBELLA – GERMAN MEASLES

- 1964–65, US HAD AN ESTIMATED 12.5 MILLION RUBELLA CASES. NEW YORK ALONE, AFFECTED 1% OF ALL BIRTHS.

- 11,000 MISCARRIAGES /ABORTIONS,
- 20,000 CASES OF CONGENITAL RUBELLA SYNDROME LED TO
 - 2,100 DIED AS NEONATES,
 - 12,000 WERE DEAF,
 - 3,580 WERE BLIND, AND
 - 1,800 WERE MENTALLY RETARDED



- IN THE EARLY 1970S, A TRIPLE VACCINE CONTAINING ATTENUATED MEASLES, MUMPS AND RUBELLA (MMR) VIRUSES WAS INTRODUCED.

- VACCINATION HAS INTERRUPTED THE TRANSMISSION OF RUBELLA IN THE AMERICAS: NO ENDEMIC CASE HAS BEEN OBSERVED SINCE FEBRUARY 2009. SINCE THE VIRUS CAN ALWAYS BE REINTRODUCED FROM OTHER CONTINENTS, THE POPULATION STILL NEED TO REMAIN VACCINATED TO KEEP THE WESTERN HEMISPHERE FREE OF RUBELLA. (WIKIPEDIA)

Science, Evolution, and Intelligent Design

Introduction

UCS Statement on Science, Evolution, and Intelligent Design (html) (pdf)

Section 1: Science as a Way of Knowing

Section 2: Science and Society

Section 3: Evolution, Creationism, and Intelligent Design

Section 4: Why Intelligent Design is not Science

Section 5: Science Education and Intelligent Design

Section 6: Fairness and Balance in the Classroom and Beyond

Section 1: Science as a Way of Knowing

Science is a powerful “way of knowing” based on experimentation and observations of the natural world. We depend on science for unbiased and verifiable information to make important decisions about our lives. Although there are other ways of knowing¹ that may be important in our personal and cultural lives, they rely on opinion, belief, and other factors rather than on evidence and testing.

The scientific method² utilizes a series of facts, hypotheses, laws, and theories to explain observations in the natural world. Everyday use of these terms is different than in the scientific context, leading to unintentional and intentional confusion³. *Theory* is one of the most important—yet most misunderstood—terms. While *theory* is commonly used to mean a “hunch” or “opinion,” in science, a theory is an extremely strong statement that provides an explanation of a natural phenomenon based on a wealth of well-documented evidence. A theory must include the following criteria:

- It must be tested by experimentation and observation of the natural world.
- It must be falsifiable (i.e. experiments must exist that could prove it false).
- It cannot be proven, only confirmed or disconfirmed.
- It is subject to revision and change.

“INTELLIGENT DESIGN”?

[HTTP://WWW.UCSUSA.ORG/SCIENTIFIC INTEGRITY
/WHAT YOU CAN DO/SCIENCE-AS-A-WAY-OF-
KNOWING.HTML#.VD7KCFL4RYG](http://www.ucsus.org/scientific-integrity/what-you-can-do/science-as-a-way-of-knowing.html#.VD7KCFL4RYG)

Louisiana Senate candidates talk climate change

1 6

By Laura Barron-Lopez - 10/15/14

Louisiana's Senate candidates discuss the divisive issue of climate change.

When asked if they believe in climate change, Republican opponents, said...



"I do believe climate is changing and its human caused, but..." - Landrieu
"There might be climate change but we are not seeing that in temperatures ... and losing coastline, that's related to our levees and our rivers taking needed sediment from restoring our coast - " - Cassidy

"I'm not sure that climate change is the issue as much as it is about getting that sediment out of the Mississippi River, putting it out into the marshes where it can rebuild," he added.

Cassidy jabbed Landrieu for saying she does not agree with the president's energy policies, arguing her "first vote" will be for Sen. Reid [D-Nev.]."

Guess who won?

...re to learn about the climate and what makes it different of the scientific community.

...that we need urgent action on climate change," ... how the climate changes and we aren't seeing

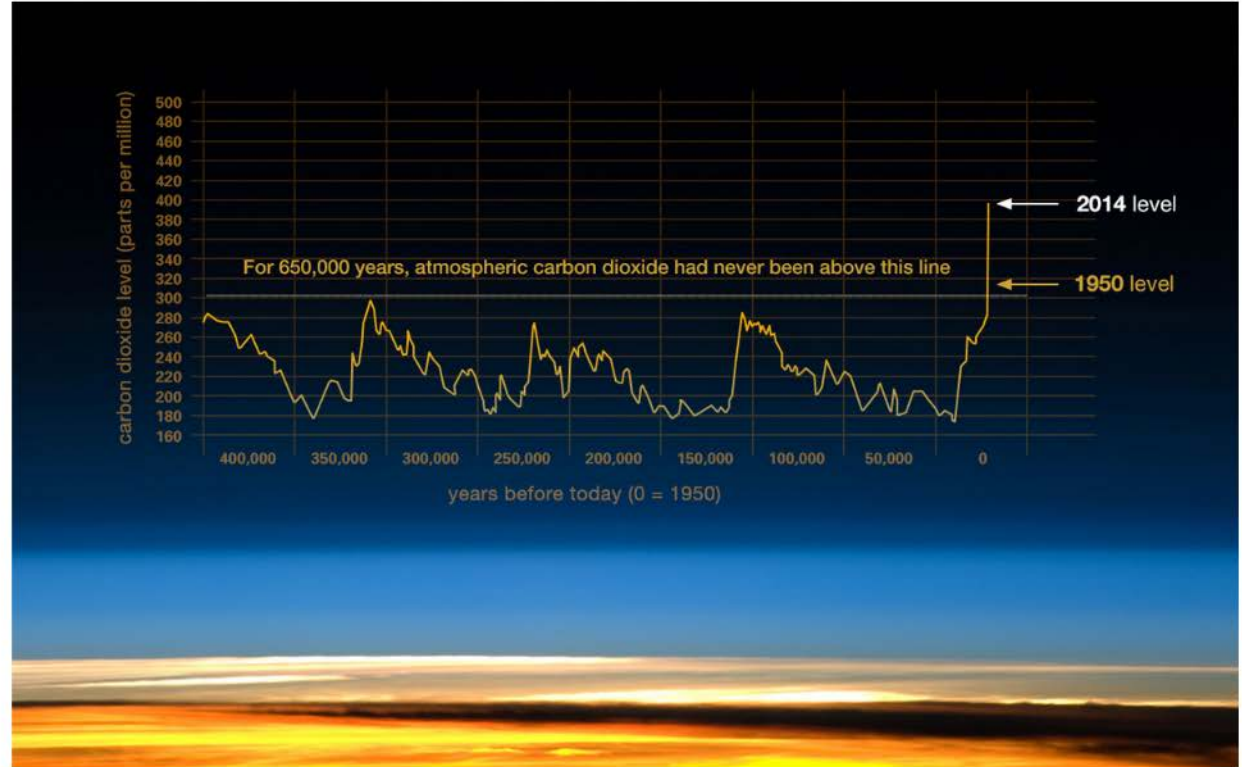
...of the debate tethering Landrieu to the president.

...of the GOP's strongest candidates to pick off a Democrat and gain a new seat for the party in the Senate.

Landrieu's seat is critical in helping Democrats maintain control of the Senate.

EVIDENCE

Climate change: How do we know?



This graph, based on the comparison of atmospheric samples contained in ice cores and more recent direct measurements, provides evidence that atmospheric CO₂ has increased since the Industrial Revolution. (Credit: Vostok ice core data/J.R. Petit et al.; NOAA Mauna Loa CO₂ record.)

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MORE ENERGY & ENVIRONMENT

- ND oil formations produce 1 billion barrels
- Gas prices fall to lowest average since 2011
- Small businesses urge EPA to drop water rule

IS CLIMATE CHANGING – HOW DO YOU KNOW?

IF ITS
SCIENCE,
WHY DON'T
THEY ALL
AGREE?

NASA GLOBAL CLIMATE CHANGE
Vital Signs of the Planet

SCIENCE ARTICLES NASA'S ROLE

Science

Evidence Causes Effects Consensus Vital Signs Questions (FAQ)

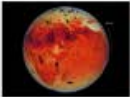


CONSENSUS

Consensus: 97% of climate scientists agree

Temperature data from four international science institutions. All show rapid warming in the past few decades and that the last decade has been the warmest on record.


Ninety-seven percent of climate scientists agree that climate-warming trends over the past century are very likely due to human activities,¹ and most of the leading scientific organizations worldwide have issued public statements endorsing this position. The following is a partial list of these organizations, along with links to their published statements and a selection of related

Latest Resources

-  Eyes on the Earth
-  Graphic: Measuring carbon dioxide from space
-  Terkezi Oasis



- IS SCIENCE UNBIASED?

- "THERE HAS BEEN A CONFLUENCE OF CONCERN FROM VARIOUS SOURCES WITHIN THE SCIENTIFIC COMMUNITY AND FROM OUTSIDE THE SCIENTIFIC COMMUNITY IN THE LAST FEW YEARS THAT THE SCIENTIFIC ENTERPRISE IS NOT PRODUCING NEW KNOWLEDGE OF SUFFICIENTLY HIGH QUALITY," SAID KATRINA KELNER, EDITOR OF SCIENCE TRANSLATIONAL MEDICINE AND ORGANIZER OF THE FORUM SESSION. "...THIS ISSUE OF REPRODUCIBILITY IS A PROBLEM OF INCREASINGLY GREAT CONCERN TO THE SCIENTIFIC COMMUNITY ITSELF AND IT IS, ONE COULD ARGUE, LEGITIMATELY OF INTEREST TO THE BROADER SOCIETY BECAUSE OF THE ROBUST PUBLIC SUPPORT OF SCIENTIFIC RESEARCH."
 - SOMETIMES PEOPLE CUT CORNERS AND DO NOT DO THEIR OWN WORK – PLAGIARISM, A TYPE OF CHEATING
- 

WHERE IS EBOLA NOW?

This month (March 2015), the number of Ebola cases in west Africa is creeping up again. Liberia just reported its first new patient after a 28 day hiatus. It's unclear how the affected woman, a 44 year old food seller in the Caldwell community, northeast of Monrovia, contracted the disease. According to PBS NewsHour, she's being treated in a Doctors Without Borders (MSF) facility.

Last week the WHO reported 150 new Ebola cases. That number's up from the seven days prior, and part of a trend. Bloomberg News quoted Dr. David Nabarro, leader of the UN's emergency Ebola mission, who expressed concern over stubborn pockets of the disease in Guinea and Sierra Leone. In recent days, several physicians working in Guinea have tested positive.



SCIENCE IS NICE: WOULD YOU SAY THAT,
“ANYTHING YOU CANNOT PROVE OR PROVIDE
EVIDENCE FOR DOES NOT EXIST OR IS NOT REAL?”



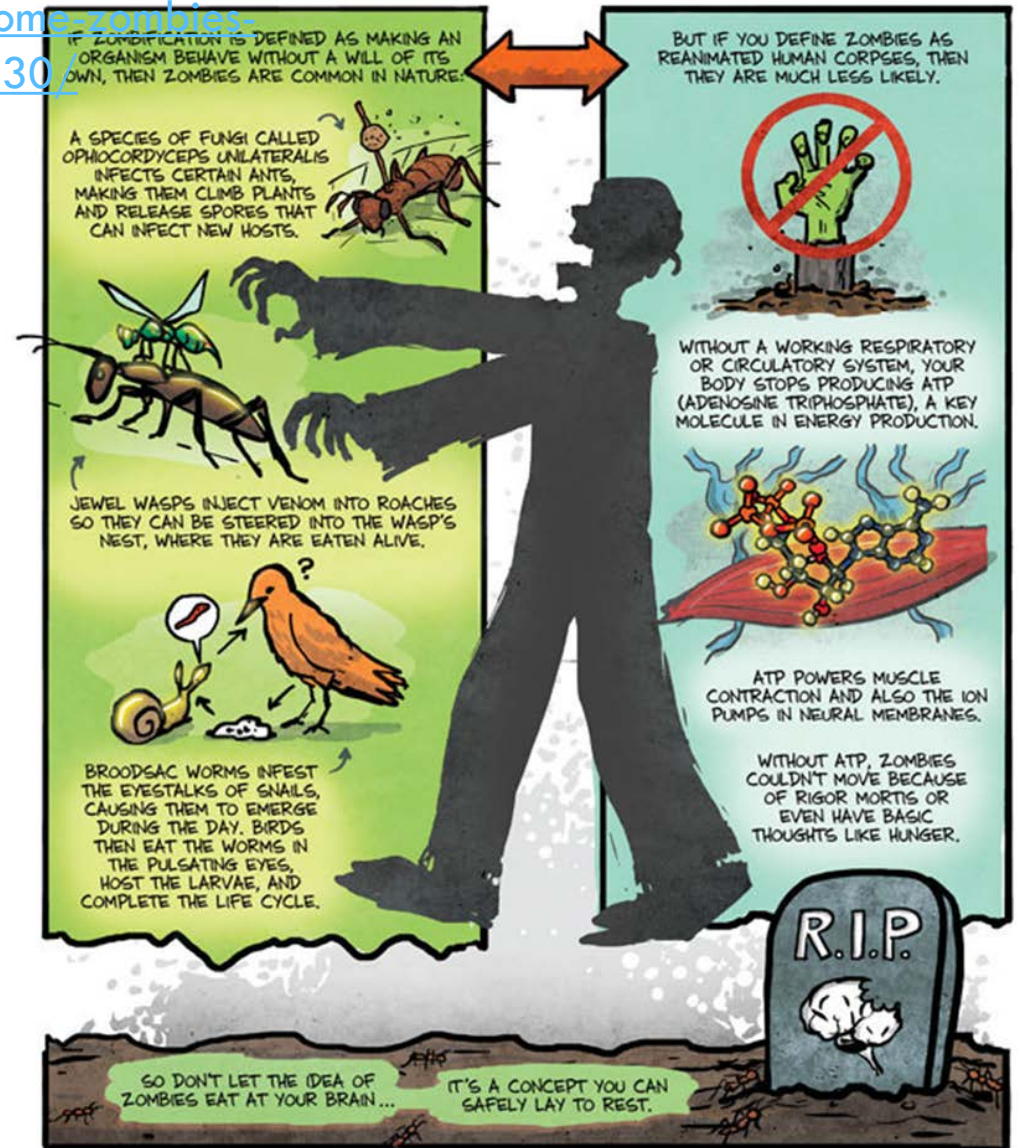
HOW DO WE SORT OUT TRUTH FROM FEAR?

Video!

<http://www.scientificamerican.com/video/how-do-animals-become-zombies-ins2012-10-30/>

DO ZOMBIES EXIST?

THE ANSWER DEPENDS ON YOUR DEFINITION OF ZOMBIES



BY DWAYNE GODWIN & JORGE CHAM

Dwayne Godwin is a neuroscientist at the Wake Forest University School of Medicine. Jorge Cham draws the comic strip Piled Higher and Deeper at www.phdcomics.com.

"From start to finish, my experience was outstanding!" —Annie in 11, SC
DISCOVER HOME LOANS [Learn More](#)

Friday, Mar 20th 2015 3PM 67°F 6PM 63°F 5-Day Forecast

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science of ZOMBIES: Neuroscientists reveal the anatomy of the undead's brain - how to avoid becoming their dinner

Neuroscientists from Carnegie Mellon University, Pennsylvania, and the University of California, San Diego, analysed zombie behaviour in films and worked out which sections of the brain would be damaged to trigger zombie behaviours, such as a lack of coordination and thirst for blood. Scientists came up with a hypothetical condition, dubbed CDHD (Controlling Deadness), as seen in 'The Walking Dead' are diagnosed with CD-1, while faster ones, as seen in 'World War Z' would have CDHD-2. Damage to fusiform gyrus explains zombies' inability to recognise faces and ability to suppress inappropriate responses, such as the desire to eat. The lead would be due to damage in the orbitofrontal cortex, they said.

GRIFFITHS FOR MAILONLINE

04:51 EST, 30 December 2014 | UPDATED: 07:33 EST, 25 February 2015

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bering, menacing gait and insatiable hunger for flesh strikes fear into even the most horror film fan.

neuroscientists have analysed the behaviour of the walking dead to reveal the inner of their minds and defined a comprehensive diagnosis of 'zombism'.

this knowledge they have even hatched a plan for how to survive a zombie apocalypse.

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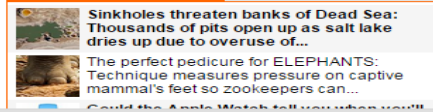
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HOW DO YOU KNOW?

- DEFINE YOUR WAY OF KNOWING – IS IT “I JUST BELIEVE THAT...” OR IS IT EMPIRICAL, SCIENCE?
- ASK HOW SOMEONE WHO IS TELLING YOU SOMETHING “KNOWS” –
 - “NEWS” SHOWS – ARE THERE ALWAYS “TWO-SIDES”? (BLUE STATES AND RED STATES...)
 - PUNDITS AND TALKING HEADS
 - FOLLOW THE MONEY – WHO ARE THE PEOPLE BEHIND THE CURTAIN (OMG! A SKEPTIC!)
 - EVEN THE GUY STANDING THERE TELLING YOU ALL THIS STUFF -
- TEST OR SEE FOR YOURSELF
- BE A PART OF THE SOLUTION AND BECOME A SCIENTIST – A RESPONSIBLE SCIENTIST WHO IS A GOOD ACTOR IN SOCIETY

YOU COULD BE THIS....



OR...this...

- REAL UNM GRADUATE STUDENTS

- SEE [HTTP://GRAD.UNM.EDU/HOME/](http://grad.unm.edu/home/)

