

SILLY SCIENCE

A COMPILATION OF REAL WEIRD ACADEMIC PUBLICATIONS

BY PAINT BRAINS

NUMBER 01 (SPRING)

Preface: Publish or perish

Published articles are the main currency of academic research. There are easier modes to discuss research, but it's these published articles that signal career success and progress. In this hypercompetitive world, stories of researchers sacrificing too much of themselves to further their career by ensuring meaningful publications are abundant. When publications are held to such high regard, it's not surprising that the tone is typically serious and often dry. STEM might be perceived as sterile and devoid of fun, but a peak at some papers here show otherwise. Researchers sometimes inject comedic relief into their study just for entertainment, or the papers were intentionally published as a serious matter but gained notoriety for being ill-informed led to changes. Sometimes, academics use comedy in this medium to bring awareness to important matters, from hidden political messages to loopholes in our systems.

This is a compilation of silly academic articles.

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1: Ig Nobel Prize

The first sentence on the Ig Nobel Prize About page reads, “The Ig Nobel Prizes honor achievements so surprising that they make people LAUGH, then THINK.” These Prizes are awarded every fall, shortly before Nobel Prizes are announced, and is a play on the word “ignoble”, an adjective defined by the Merriam-Webster dictionary as, “(1) characterized by baseness, lowness, or meanness and (2) of low birth or common origin : plebeian.” This ceremony, held at MIT, involves actual Nobel Laureates handing out the prizes to Ig Nobel winners along with a premiere of a new science-themed mini-opera. The whole ceremony is a fun celebration of science.

More information can be found at <https://improbable.com>.

1.1 An argument for beards

Men frequently aim for each other's faces during fist fights. Jaw fractures are commonly due to fist fights and also happens to be where men can grow facial hair. For lions, some argue that mane is protective, which led a group of researchers to hypothesize that "beards protect the skin and bones of the face when human males fight by absorbing and dispersing the energy of a blunt impact."

The researchers tested their hypothesis by creating a fake human jaw using epoxy (for bone) covered by sheep skin. The hair on the sheep skin was either left as is (comparable to a bearded man's face), sheared (similar to a trimmed beard), or plucked with the roots removed (like having no hair). A drop weight impact testing machine was used to determine the energy required to damage their human jaw model (Figure 1).

The team found that their epoxy bone was less likely to fracture when under a sheep skin with fleece. They measured that the time for the peak force to be

transmitted through their sample took more time if the skin retained hair, therefore suggesting that hair disperses the force. The bone protected by hairy skin could handle larger forces, thus supporting the researcher's hypothesis that beards are physically protective. Throughout the original article are repeated claims about beards correlating with various masculine traits and social successes. Predictably, this research was led by a man with a beard.

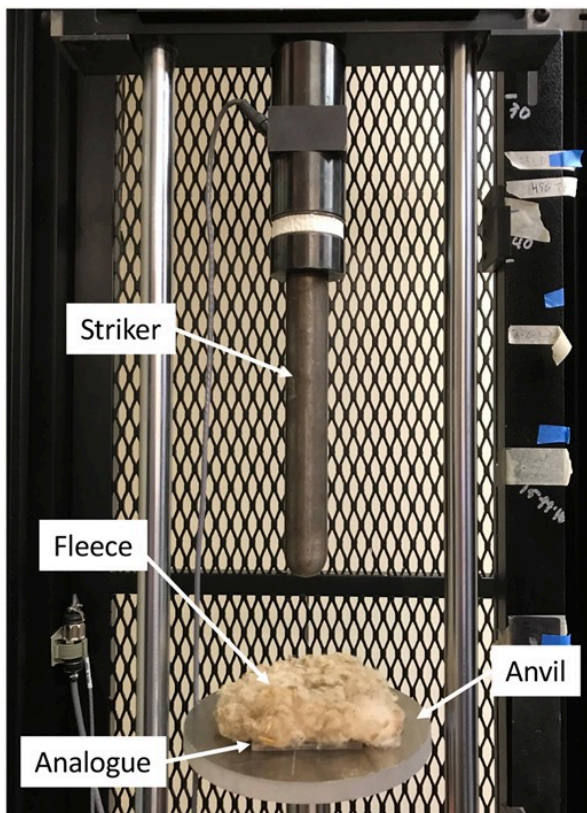


Figure 1: The setup in the drop weight impact testing machine to study whether facial hair is protective from physical trauma.

“Impact Protection Potential of Mammalian Hair: Testing the Pugilism Hypothesis for the Evolution of Human Facial Hair,” Ethan A. Beseris, Steven E. Naleway, David R. Carrier, *Integrative Organismal Biology*, vol. 2, no. 1, 2020, obaa005.

1.2 Mystery of cubic scat formation

We use the phrase, “shitting bricks” to describe the emotions of facing a fearful experience, but some animals naturally create rectangular poops (Fig 2). In fact, the more cubic their poop, the healthier they are. These cubic feces have mystified researchers and their production process is finally starting to be uncovered. In a journal called, “Soft Matter,” a team of researchers from Atlanta, GA, and Tasmania came together to understand how wombats create their distinct fecal shapes.



Figure 2: Cubic Wombat poops

There are three species of wombats, but the bare-nosed wombats create the most cubic poops that look like a large rounded-die. They produce about 90 cubic poops a day, and these poops are

thought to mark their territories (by smell) and their distinct shapes prevent them from rolling away and thus aid in accurately marking their areas.

Using a CT scan, the researchers first checked the shape of wombat anuses and found that they are indeed round like ours. Then the scientists checked the wombat intestines and found them to have varying thickness and stiffness. Specifically, these intestine walls have two bands that are thicker. By developing a wombat cubic scat forming model, the researchers confirmed that stimulating muscle contractions could reproduce cubic feces as the masses (digesta) tumbled through the intestine with varying wall stiffness. The researchers write that their findings could provide a new method of shaping materials in mass production, like pasta.

“Intestines of Non-Uniform Stiffness Mold the Corners of Wombat Feces,” Patricia J. Yang, Alexander B. Lee, Miles Chan, Michael Kowalski, Kelly Qiu, Christopher Waid, Gabriel Cervantes Benjamin Magondu, Morgan Biagioni, Larry Vogelnest, Alynn Martin, Ashley Edwards, Scott Carver, and David L. Hu, *Soft Matter*, vol. 3, 2021

2: Silliness for the sake of silliness

Sometimes, there's really no reason to not be funny.

2.1 Grim Reaper's pace

Walking speed and gait is used in clinical settings to assess general health. Studies have reported an inverse correlation between walking speed and mortality, so how fast does one have to walk to outrun the Grim Reaper? This question was investigated by a team of researchers in Australia by assessing over 1700 men over the age of 70. First, their walking speed was measured (and adjusted for height), then there were a series of follow-up assessments to check on their health. After multiple attempts at contact, deaths were confirmed through a local death registry. In total, 266 deaths occurred throughout the study.

To find the Grim Reaper's preferred walking speed, a statistical test called the Youden index, which is typically used to assess the performance of a diagnostic test, was used. The authors write that a

major limitation is having to predict the Grim Reaper's pace and not assessing them directly. However, their conclusion and warning is that the Grim Reaper walks at 0.82 m/s (2 mph), with a maximum estimated speed of 1.36 m/s (3 mph). Men should walk faster if they want to outrun Death. For context, the average walking speed for adults is around 1.93 m/s (4.4mph), which is much too fast for the Grim Reaper.

Stanaway FF, Gnjjidic D, Blyth FM, Le Couteur DG, Naganathan V, Waite L, Seibel MJ, Handelsman DJ, Sambrook PN, Cumming RG. How fast does the Grim Reaper walk? Receiver operating characteristics curve analysis in healthy men aged 70 and over. *BMJ*. 2011 Dec 15;343:d7679. doi: 10.1136/bmj.d7679. PMID: 22174324; PMCID: PMC3240682.

2.2 Chemical-free consumer products

The “chemical-free” movement really started taking their strides last decade and has frustrated many chemists. At the start of this movement, a comprehensive review was published in what looks to mimic a prominent journal (Nature Chemistry) describing truly chemical-free products, from “lotions and cosmetics, herbal supplements, household cleaners, food items, and beverages.” After the title, list of authors, and the abstract describing their intention to list chemical-free products, is a large blank space (Fig 3) comically depicting that everything we are surrounded by is composed of atoms and therefore chemicals.

A comprehensive overview of chemical-free consumer products

Alexander F. G. Goldberg¹ and CJ Chemjobber^{2*}

Manufacturers of consumer products, in particular edibles and cosmetics, have broadly employed the term 'Chemical free' in marketing campaigns and on product labels. Such characterization is often incorrectly used to imply — and interpreted to mean — that the product in question is healthy, derived from natural sources, or otherwise free from synthetic components. We have examined and subjected to rudimentary analysis an exhaustive number of such products, including but not limited to lotions and cosmetics, herbal supplements, household cleaners, food items, and beverages. Herein are described all those consumer products, to our knowledge, that are appropriately labelled as 'Chemical free'.

Figure 3: The first full page of a comprehensive review of chemical-free consumer products.

2.3 Treating writer's block

“The Unsuccessful Self-Treatment of a Case of ‘Writer’s Block’” by Dennis Upper (1974) depicts an unsuccessful treatment of a case of writer’s block. The comment by a reviewer is also pretty amusing:

“I have studied this manuscript very carefully with lemon juice and X-rays and have not detected a single flaw in either design or writing style. I suggest it be published without revision. Clearly it is the most concise manuscript I have ever seen-yet it contains sufficient detail to allow other investigators to replicate Dr. Upper's failure. In comparison with the other manuscripts I get from you containing all that complicated detail, this one was a pleasure to examine. Surely we can find a place for this paper in the Journal - perhaps on the edge of a blank page.”

In short, writer’s block is relatable to creatives of any generation, evident with the progress George RR Martin has made with his beloved series as he takes a 15-year delay to write the sixth A Song of Ice and Fire novel.

*THE UNSUCCESSFUL SELF-TREATMENT OF
A CASE OF "WRITER'S BLOCK"*¹

DENNIS UPPER

VETERANS ADMINISTRATION HOSPITAL, BROCKTON, MASSACHUSETTS

REFERENCES

¹Portions of this paper were not presented at the 81st Annual American Psychological Association Convention, Montreal, Canada, August 30, 1973. Reprints may be obtained from Dennis Upper, Behavior Therapy Unit, Veterans Administration Hospital, Brockton, Massachusetts 02401.

*Received 25 October 1973.
(Published without revision.)*

COMMENTS BY REVIEWER A

I have studied this manuscript very carefully with lemon juice and X-rays and have not detected a single flaw in either design or writing style. I suggest it be published without revision. Clearly it is the most concise manuscript I have ever seen—yet it contains

sufficient detail to allow other investigators to replicate Dr. Upper's failure. In comparison with the other manuscripts I get from you containing all that complicated detail, this one was a pleasure to examine. Surely we can find a place for this paper in the Journal—perhaps on the edge of a blank page.

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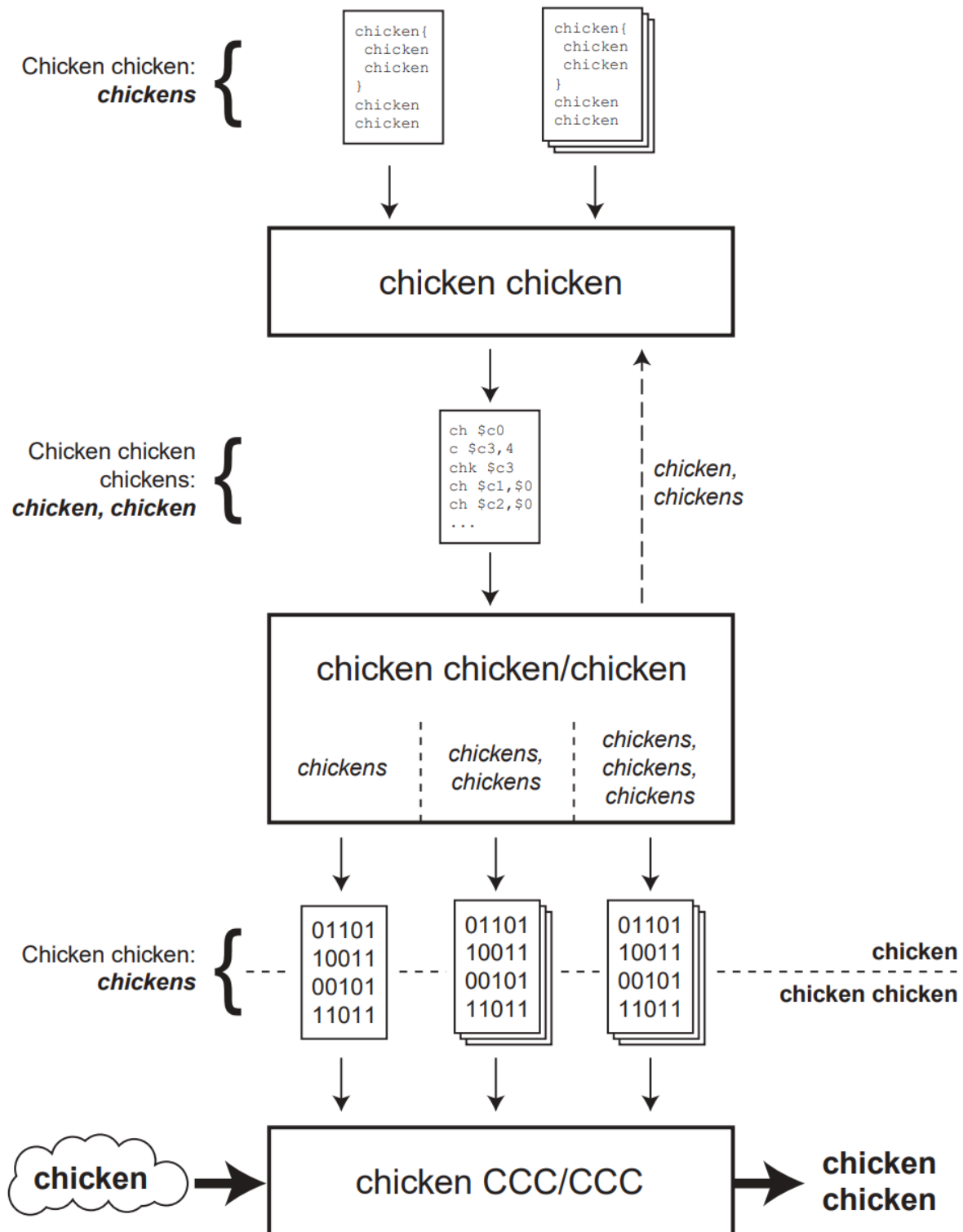
Figure 4: Upper's article on writer's block in its entirety.

Upper D. The unsuccessful self-treatment of a case of "writer's block". J Appl Behav Anal. 1974 Fall;7(3):497. doi: 10.1901/jaba.1974.7-497a. PMID: 16795475; PMCID: PMC1311997.

3.5 Chicken Chicken

“Chicken chicken chicken: Chicken chicken” is a 4-page article repeating the single word, “Chicken.” The article includes 4 figures, 2 equations, a table, and 5 references. Published by Improbable Research (not a predatory journal, but just a fun experiment), this paper was presented by the author (Doug Zongker) at the Annual Meeting of the American Association for the Advancement of Science (AAAS) in 2007. Even the co-inventor of PowerPoint (Robert Gaskins) has publicly praised this talk.

Chicken chicken chicken: Chicken chicken D. Zongker. *Annals of Improbable Research*, 12 (5): 16--21 (2006)



Chicken 5: Chicken chicken chicken, chicken chicken-chicken chickens

2.5 Poop face

In a genomics paper published in a highly regarded journal, two researchers sought to find a way to distinguish DNA from different organisms in feces. This actually has useful implications and their handling of poop is not the reason for including their paper here. Instead, this paper initially got a lot of attention because a schematic illustrating their methods included the face of a well-known figure in the shadows of their poop diagram (Figs 6 and 7).

The updated version of this paper erased the original face.

Chiou, K.L., Bergey, C.M. Methylation-based enrichment facilitates low-cost, noninvasive genomic scale sequencing of populations from feces. Sci Rep 8, 1975 (2018). <https://doi.org/10.1038/s41598-018-20427-9>

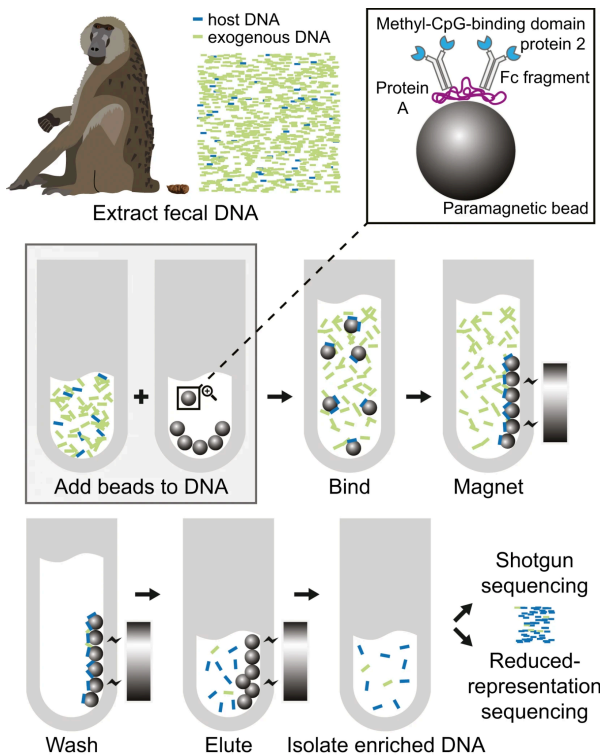


Figure 6: The full first figure by Chiou et al. Note the top left quadrant.



Figure 7: A higher resolution of the feces schematic taken from the previous figure (Fig 6).



Figure 8: An even higher resolution of the feces schematic taken from the previous figure (Fig 6).

3: Funny with a purpose

When it's hard to plainly discuss concerns, the elephant in the room can then be better addressed comically. Some articles and abstracts are humorously succinct and to the point while others are long fictional or non-sense rambles published as part of sting operations to reveal predatory journals*.

*Predatory journals are publishing organizations that pose as legitimate peer-reviewed journals but merely take money and publish without a reviewing process.

3.1. Jumping off planes

To determine whether parachutes really do save lives, a group of researchers across the US collaborated to conduct, “the first randomized clinical trial of the efficacy of parachutes in reducing death and major injury when jumping from an aircraft.”

With some difficulty, 23 willing and eligible participants were found and enrolled in the study to jump off of an airplane or helicopter with or without a parachute. Death or major traumatic injury was

assessed after the jump and the study concluded no difference between people who jumped with a parachute and those who did not. The authors urge experts who advocate for parachutes to rethink their position.

Hopefully, this makes you momentarily pause, but do consider that (1) none of the parachutes were employed, (2) there were no deaths nor traumatic injuries, and (3) all the aircrafts were grounded throughout the experiment and the participants did not seem to have jumped more than a foot. There are arguments circulating online that this paper highlights the importance of critical thinking and context to understand a study, but others say that the authors just wanted some fun.

Yeh R W, Valsdottir L R, Yeh M W, Shen C, Kramer D B, Strom J B et al.
Parachute use to prevent death and major trauma when jumping from
aircraft: randomized controlled trial BMJ 2018; 363 :k5094
doi:10.1136/bmj.k5094

3.2 Neuroscientists study a microprocessor

Can a biologist fix a radio? This was the question Yuri Lazebnik asked in 2002 while reflecting on his bustling field of cell apoptosis. Lazebnik writes how popular biology fields go through a cycle of intense interest then stagnation as research models fall apart. Worried about an upcoming lull in his field, he wondered whether common biology techniques are adequate to understand a known system. For this, he turned to an old radio and made a loose comparison between information flow within a radio and signaling pathways of a cell. He then described a fictitious world of how biologists would dissect radios in a heated race. Ultimately, he concludes that biologists cannot adequately understand a radio and, therefore, there are major flaws in the ways biologists currently study a system.

But can a neuroscientist fix a microprocessor? Eric Jonas and Konrad Kording describe the same concerns Lazebnik wrote 15 years prior but focused on another popular subfield. There are many parallels between a microprocessor and a brain, like

being complex circuits that produce an output. Just like with a radio and a single cell, the microprocessor is man-made and its components are well understood while the brain is largely a big black box. This time, the researchers actually probed the chip, first under a microscope, then applied common methods to study a (simulated) processor from mapping its connectome (how individual components are connected to each other), reporting the effects of various lesions, and applying electrophysiological techniques (single-cell and field potential recordings). Like Lazebnik, Jonas and Kording warn that neuroscience approaches are too “naive” to grasp how a whole system functions.

These papers highlight a bleak perspective of biomedical research and misses the incredible strides that have been made to understand our bodies. The brain remains a mystery, but we are still able to create incredible tools, such as neuroprosthetics (prosthetics with implanted devices that connect to the nerves), give voice to people in vegetative states, minimize the symptoms of Depression or Parkinson's Disease with an implant,

restoring vision in blind people, and so much more!
Our approaches may not be optimal, but scientific
progress rarely moves faster than a snail's pace,
and the discoveries we make are still meaningful.

Lazebnik Y. Can a biologist fix a radio?--Or, what I learned while studying apoptosis. *Cancer Cell*. 2002 Sep;2(3):179-82. doi: 10.1016/s1535-6108(02)00133-2. PMID: 12242150.

Jonas E, Kording KP. Could a Neuroscientist Understand a Microprocessor? *PLoS Comput Biol*. 2017 Jan 12;13(1):e1005268. doi: 10.1371/journal.pcbi.1005268. PMID: 28081141; PMCID: PMC5230747.

3.3 Can a surgeon fart during a surgery?

Do medical practitioners contaminate their sterile environment with farts? To answer this question, Dr. Karl Kruszelnicki (an Australian science communicator) partnered with a microbiologist to determine whether farts were sterile or not. With the help of another friend, the third person farted onto a petri dish, once with their pants on and once without. The dish farted on without pants did grow an innocuous bacterial colony, but the other did not. The layers of clothing seem to prevent healthcare workers from spreading bacteria via farts.

3.4 Dead Salmon Thoughts

One might argue that modern-day scientific findings hinge on statistics. Statistics are used to confirm a meaningful finding, but this also comes at a cost when people rely on an arbitrarily determined threshold to claim whether their results are significant. This is a known issue that has plagued researchers for a while, but because these concerns are sometimes ignored, people have devised creative ways to raise awareness of poorly conducted experiments. My favorite, and possibly the most famous, example of a group raising awareness on this topic is colloquially known as the “Dead Salmon Study.”

Lead by Craig Bennett, and others, the researchers measured a proxy for neuronal activity using fMRI in a dead fish to signify the importance of proper analysis. The concern was that sloppy experiments could find anything with poor analytical approaches, even brain activity in a dead salmon. In short, there will be chance findings when meaningful results are defined as the likelihood of an occurrence being less

than 5%. While this seems low, when dealing with experiments that involve many thousand data points to compare, there will be multiple false positives. This is essentially what the dead salmon study showed; without proper analysis of a standard MRI experiment, the 130,00 voxels (think pixels) will yield multiple instances of false positives and therefore “neuronal activity” in these dead salmon. The authors write, “Either we have stumbled onto a rather amazing discovery in terms of post-mortem ichthyological cognition, or there is something a bit off with regard to our uncorrected statistical approach.”

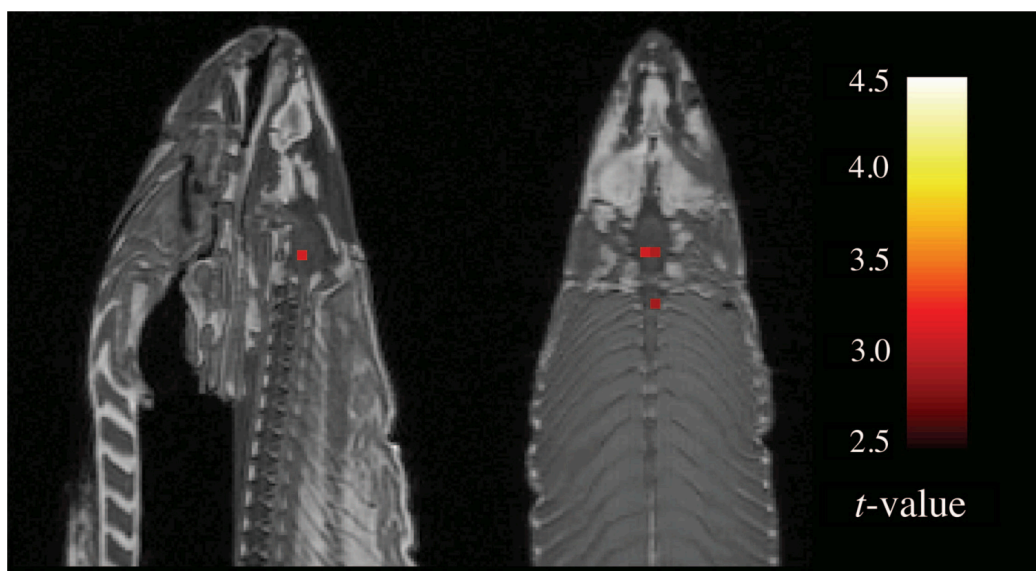


Figure 9: Neural activity observed in post-mortem salmon.

The takeaway here is that MRI research is unreliable, but that appropriate analyses are necessary and we should be mindful of how data is analyzed and experiments conducted. It's also fun imagining the researchers buying and working on a dead fish, showing scans of images in the MRI machine, and politely asking them questions about their emotions, as if they were live humans.

(This study was awarded the 2012 Neuroscience Ig Nobel Prize.)

“Neural Correlates of Interspecies Perspective Taking in the Post-Mortem Atlantic Salmon: An Argument For Multiple Comparisons Correction,” Craig M. Bennett, Abigail A. Baird, Michael B. Miller, and George L. Wolford, *Journal of Serendipitous and Unexpected Results*, vol. 1, no. 1, 2010, pp. 1-5.

3.5 Zubats and COVID

In the Western region of Kalos is Cyllage City, with just 50 residents. In March 2020, as many cities were confirming SARS-CoV-2 outbreaks, Cyllage City also reported an outbreak, but none of their residents here had traveled. Instead, this outbreak is proposed to be from consuming zubat (*Vespertilio caeruleus sineoculus*), a bat subspecies native to the area. Indeed, patient zero revealed that they had eaten a cooked Zubat prior to becoming symptomatic.

Cyllage City, although reported by the authors as being in France, is a fictional city in Pokemon and Zubat is a dual type poison/flying Pokemon from Generation I. The authors write that, “a journal publishing this paper does not practice peer review and must therefore be predatory.”

Mattan Schlomi, Cyllage City COVID-19 Outbreak Linked to Zubat Consumption. 2020 - 8(2). AJBSR.MS.ID.001256. DOI: 10.34297/AJBSR.2020.08.001256.

3.6 Get Me Off Your Mailing List

Similar to Chicken Chicken Chicken (2.4), this article repeats, “Get Me Off Your Fucking Mailing List” throughout the 10 pages, which includes an Abstract, Introduction, Results (with two figures) Summary, and References. Peter Vamplew assumed that his submission to the predatory journal that had been inundating him with emails would at least read his manuscript, but the journal instead published it as is. The two authors are believed to have originally written the study but the article was published by Vamplew at the International Journal of Advanced Computer Technology (again, a predatory journal). This paper received wide-spread recognition for its absurdity and raised awareness of predatory journals.

Mazières, D., & Kohler, E. (2014). Get me off your f***ing mailing list. 2014 IEEE International Conference on Intelligent Transportation Systems (ITSC), 1789-1789. <https://doi.org/10.1109/ITSC.2014.6957810> IEEE DOI

Get me off Your Fucking Mailing List

David Mazières and Eddie Kohler
New York University
University of California, Los Angeles
<http://www.mailavenger.org/>

Abstract

Get me off your fucking mailing list. Get me off
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1 Introduction

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Figure 10: The first page of Vamplew's published article

4: Ill-informed but impactful

Few papers unanimously bring a community together to oppose the publication of an article. This section features two such papers that disappointed the scientific community.

4.1 Tai discovers calculus

In 1994, Mary Tai published a novel method of calculating the area under the curve (AUC), or so she claimed. Turns out, it was a common mathematical approach taught in high school. In a well regarded peer-reviewed journal, Tai describes how to use a shortcut to calculate the AUC (fig 1) and named it “Tai’s Model.” Shortly after, many people wrote in to point out that Tai is describing the trapezoidal rule. Tai published a response through the same journal that (1) she had developed her model as a doctoral student at Columbia University, that (2) she developed the approach herself, and (3) her decision to name it after herself was because others would be calling it by her name anyway. She even went on to claim that her approach is more

accurate than the trapezoidal rule or calculus. A final response message to Tai tries to explain, again, that her model is the trapezoidal rule (fig 2).

This publication baffled the academic community with concerns about the peer review process and why no one around her (at Columbia University!) had let her know that her method is already well established. This paper and its responses have been shared widely.

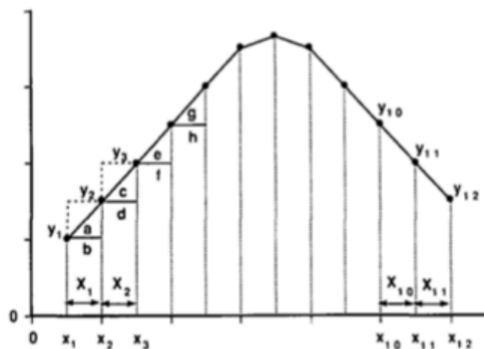


Figure 1—Total area under the curve is the sum of individual areas of triangles a, c, e, and g and rectangles b, d, f, and h.

triangle area + rectangle area

$$= \frac{1}{2}x(y_2 - y_1) + xy_1$$

$$= \frac{1}{2}x(y_2 - y_1 + 2y_1)$$

$$= \frac{1}{2}x(y_2 + y_1)$$

$$= x\bar{y}$$

= trapezoid area.

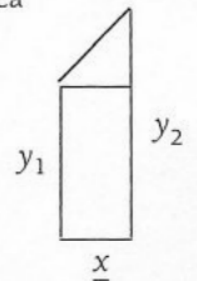


Figure 11: A screenshot taken from Tai's original paper describing Tai's Model.

Figure 12: A screenshot taken from a response to Tai's paper describing that Tai's Model is the trapezoidal rule.

"A Mathematical Model for the Determination of Total Area Under Glucose Tolerance and Other Metabolic Curves", Mary M. Tai, Diabetes Care, 1994, 17, 152–154.

4.2 Chimeric insects

Scientific progress is made with incremental changes, but how we better understand this universe is not linear; sometimes mistaken results lead researchers astray. At other times, an erroneous man adheres to a faulty belief despite his colleagues trying to correct him. One such man, Donald Williamson, spent decades publishing his idea about butterflies being a genetic hybrid of two species. According to Williamson, caterpillar genes are from one species while adult butterfly genes are from another, and metamorphosis allows the sequential gene expression changes when their bodies are dissolved into a liquid-like mass. The two sets of genes supposedly became complementary through hybrid mating. His idea gained notoriety when he published, "Caterpillars evolved from onychophorans by hybridogenesis" in a prominent journal called Proceedings of the National Academy of Sciences of the United States of America (PNAS).

In the same issue of the same journal, a pair of biologists published a complimentary paper titled,

“Caterpillars did **not** evolve from onychophorans by hybridogenesis.” Here, Michael Hart and Richard Grosberg provide evidence refuting Williamson’s claims using already published data (such as how a butterfly genome is not a hybrid of two species).

Until 2010, PNAS had a track to expedite their publication for select members. Williamson was one such member and was able to publish his opinions with no peer-review. Because of the attention Williamson’s paper received, PNAS ended their fast track and all publications are now actually peer-reviewed.

D.I. Williamson. Caterpillars evolved from onychophorans by hybridogenesis, *Proc. Natl. Acad. Sci. U.S.A.* 106 (47) 19901-19905, <https://doi.org/10.1073/pnas.0908357106> (2009).

M.W. Hart, & R.K. Grosberg. Caterpillars did not evolve from onychophorans by hybridogenesis, *Proc. Natl. Acad. Sci. U.S.A.* 106 (47) 19906-19909, <https://doi.org/10.1073/pnas.0910229106> (2009).

Other silly papers:

In-depth analysis of a piece of shit

Krauth SJ, Coulibaly JT, Knopp S, Traoré M, N'Goran EK, Utzinger J. An in-depth analysis of a piece of shit: distribution of *Schistosoma mansoni* and hookworm eggs in human stool. *PLoS Negl Trop Dis*. 2012;6(12):e1969. doi: 10.1371/journal.pntd.0001969. Epub 2012 Dec 20. PMID: 23285307; PMCID: PMC3527364.

A full paper with just comics

Olivier Thébaud, Jason S. Link, Bas Kohler, Marloes Kraan, Romain López, Jan Jaap Poos, Jörn O. Schmidt, David C. Smith, Managing marine socio-ecological systems: picturing the future, *ICES Journal of Marine Science*, Volume 74, Issue 7, September-October 2017, Pages 1965–1980, <https://doi.org/10.1093/icesjms/fsw252>

The Color of Odors

Morrot G, Brochet F, Dubourdieu D. The color of odors. *Brain Lang*. 2001 Nov;79(2):309-20. doi: 10.1006/brln.2001.2493. PMID: 11712849

Made without AI