

# Annenberg Science Media Monitor

## Discovery

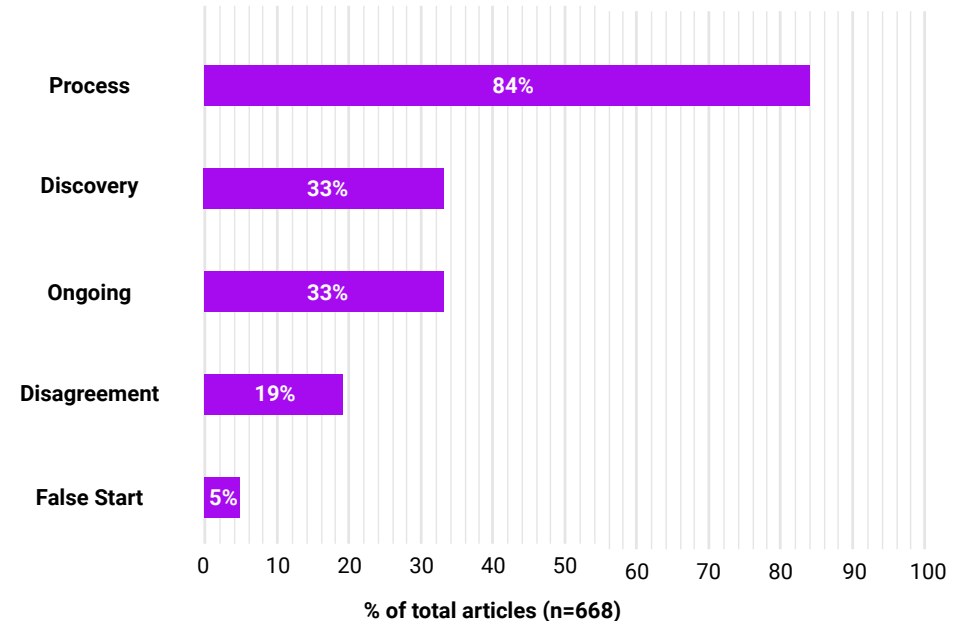
Reporters often cast scientific findings as a quest by scientists who surmount challenges as they engage in a journey that culminates in “discovery” and, with it, reliable knowledge. To determine the prevalence and characteristics of this narrative in news, we analyzed how four news outlets reported on the research identified by Altmetric as the most covered each year from 2013-2018. We focused on 668 articles in *The New York Times*, *USA Today*, *The Wall Street Journal*, and *The Washington Post*. In that period, 84% described how scientists arrived at their findings; 33% characterized them as a discovery; 33% mentioned ongoing inquiry or next steps; and 19% mentioned disagreement among scientists. Only 5% noted dead ends or false starts that preceded the discovery.

### *Scientists repair a risky mutation in human embryo*

“Scientists for the first time have successfully edited genes in human embryos to repair a common and serious disease-causing mutation, producing apparently healthy embryos, according to a study... The research marks a major milestone and, while a long way from clinical use, it raises the prospect that gene editing may one day protect babies from a variety of hereditary conditions.”

Pam Belluck, *The New York Times* (August 3, 2017)

### Discovery, False Starts, and the Scientific Process



# Crisis and Self-Correction

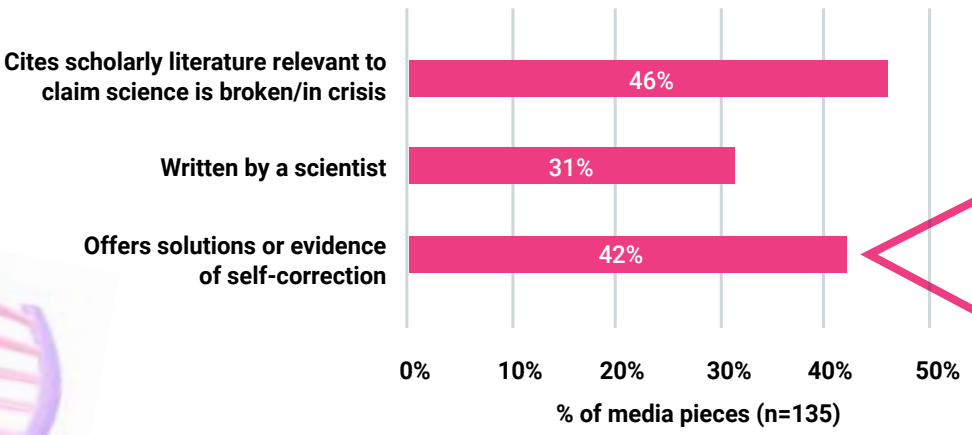
For science to be self-correcting, scientists must uncover problems that threaten its integrity, identify and implement remedies, and ensure that the remedies work. Our content analysis is based on 135 print and online pieces from April 2012-2019 in LexisNexis and Factiva found in a search for headline terms such as “crisis,” “broken,” “failure,” “fraud,” “peer review,” “problem,” “replication,” “reproducibility,” “retraction,” “scandal,” or “self-correction” with the word “science.” Of those media pieces, 46% cited literature relevant to the claim that science “is broken” or “in crisis,” 31% were written by a scientist, and 42% mentioned solutions to problems or evidence of self-correction (see Problem Explored).

**Trouble at the Lab: Scientists like to think of science as self-correcting. To an alarming degree, it is not**

“Academic scientists readily acknowledge that they often get things wrong. But they also hold fast to the idea that these errors get corrected over time as other scientists try to take the work further. Evidence that many more dodgy results are published than are subsequently corrected or withdrawn calls that much-vaunted capacity for self-correction into question...”

*The Economist* (October 18, 2013)

## Pieces Focused on Problems in Science



All inter-coder reliability met a Krippendorff's alpha of  $\geq 0.7$

# Problem Explored

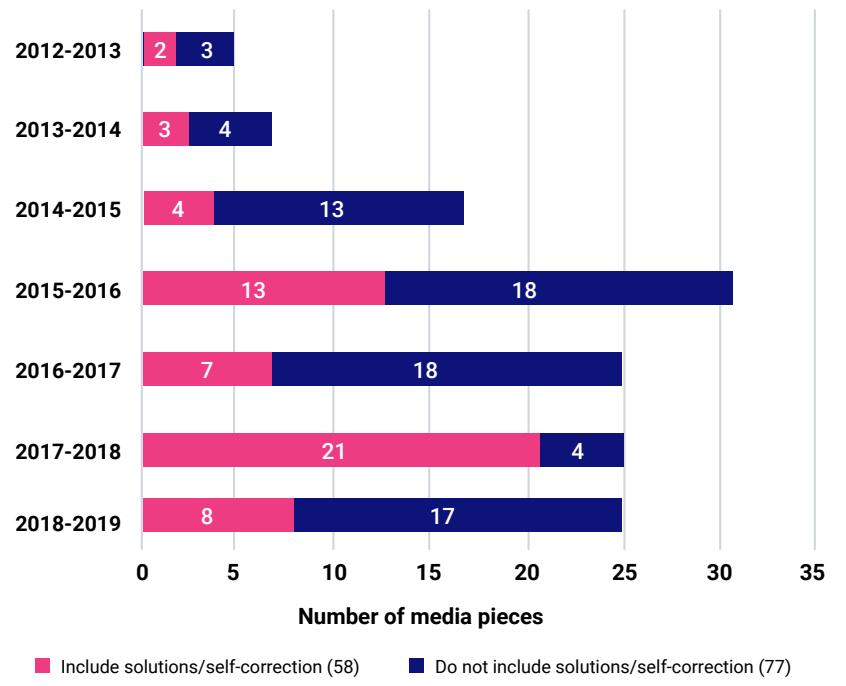
Our content analysis of 2012-2019 reporting about problems in science (Crisis and Self-Correction) identified a subset (58) of the 135 pieces that mentioned solutions to problems or evidence of self-corrective action.

## Science's data secrecy problem

“[T]he benefits of open data are likely to far outweigh the current closed practices. And, as recent examples in astrophysics show, large-scale collaborations can produce breakthrough discoveries far beyond what individual scientists, hoarding their data, could produce alone. When the Higgs boson was discovered, the article had thousands of authors, each of whom had worked on a small piece of the whole. And the data, generated at CERN, is open to the public – which has already led to new ideas and discoveries.”

Josh Nicholson, *Politico* (December 7, 2017)

## Pieces Mentioning Solutions or Evidence of Self-Corrective Action



# Retractions

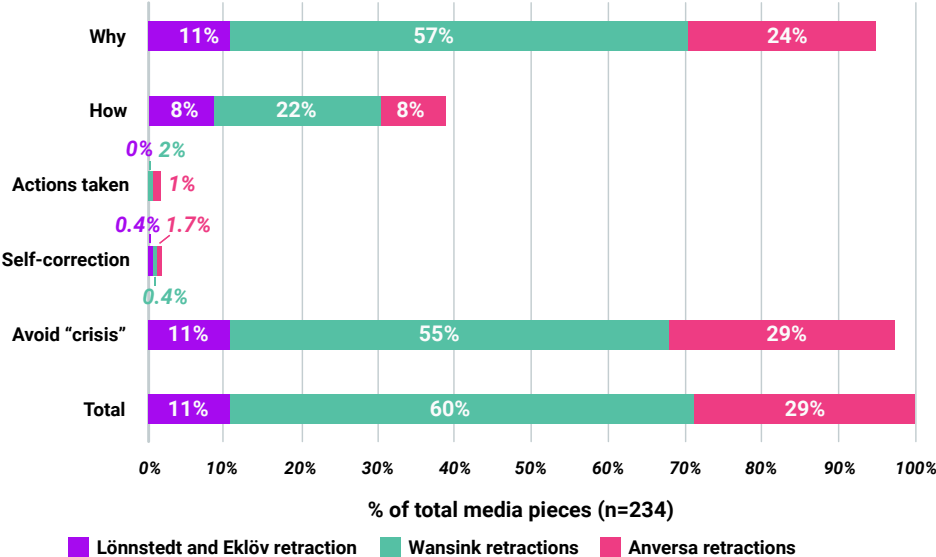
News stories about retracted scientific findings often use a counterfeit quest narrative, chronicling the activities of a deceptive researcher who has gulled custodians of knowledge such as journal editors to advance problematic findings. Our content analysis focused on stories from 2016-2019 about retractions of work by Oona Lönnstedt and Peter Eklöv on the consumption of plastic by fish, Brian Wansink on human eating behavior, and Piero Anversa on cardiac stem cell therapy. A search of LexisNexis, Factiva, and Google News located 234 print and digital pieces. Of those, 92% noted the reason for the retraction (**why**); 38% indicated **how** the errors or misconduct were found; 3% outlined **actions taken** by the scientific community to prevent future problems; 3%<sup>†</sup> said that retractions are evidence of **self-correction**; and 95% avoided generalizing that science is broken or **in crisis**.

*Here’s how Cornell scientist Brian Wansink turned shoddy data into viral studies about how we eat*

“Now, interviews with a former lab member and a trove of previously undisclosed emails show that, year after year, Wansink and his collaborators at the Cornell Food and Brand Lab have turned shoddy data into headline-friendly eating lessons that they could feed to the masses.”

Stephanie M. Lee, *BuzzFeed News* (February 25, 2018)

**Reporting on Retractions in Print and Online Media**



<sup>†</sup>Rounded up

**THE ANNENBERG PUBLIC POLICY CENTER**  
OF THE UNIVERSITY OF PENNSYLVANIA

The Annenberg Science Media Monitor seeks to increase public understanding of the scientific process by improving science reporting in the media. To this end, coders at the Annenberg Public Policy Center systematically analyze coverage of widely reported scientific findings and policy center researchers disseminate the results to science journalists and the scientific community. Because the media help shape public perceptions of science, there is value in understanding their messaging about scientific discovery, retracted findings, the well-being of science, and efforts to protect its integrity. The Monitor is supported by a grant from the Rita Allen Foundation.

