Becoming scientifically literate

- PRIMARY LITERATURE

*Purpose*: share scientific results with research community

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February 2015

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*Graduate Assistant/Seminar Co-instructor for Women in STIM LLC*
types technical literature

- PRIMARY LITERATURE
  
  *Purpose*: share scientific results with research community

  **Author**: Scientists who conducted the study
  **Audience**: Other scientists
  **Includes**: Introduction, methods, results, discussion, and conclusions; citations of other primary literature

  *Peer-reviewed* (reviewed by other scientists)
Control of a four-color sensing photoreceptor by a two-color sensing photoreceptor reveals complex light regulation in cyanobacteria

Adam N. Bussell\textsuperscript{a} and David M. Kehoe\textsuperscript{a,b,1}

\textsuperscript{a}Department of Biology and \textsuperscript{b}Indiana Molecular Biology Institute, Indiana University, Bloomington, IN 47405
types technical literature

- PRIMARY LITERATURE
  
  *Purpose*: share scientific results with research community

- PRESS RELEASE
  
  *Purpose*: share scientific results with non-scientific community
types technical literature

PRESS RELEASE

Purpose: share scientific results with non-scientific community
types technical literature

- PRESS RELEASE

  Purpose: share scientific results with non-scientific community

  **Author:** Journalist (may or may not be an expert)
  **Audience:** General population
  **Includes:** Overview of a general topic or recent finding
  **NOT peer-reviewed (reviewed by other scientists)**

**JULY 17, 2013, 12:01 AM**

**Exercise in a Pill? The Search Continues**

*By GRETCHEN REYNOLDS*
types technical literature

- PRIMARY LITERATURE
  *Purpose*: share scientific results with research community

- PRESS RELEASE
  *Purpose*: share scientific results with non-scientific community

- REVIEW ARTICLE
  *Purpose*: synthesize primary literature
types technical literature

- REVIEW ARTICLE

  *Purpose*: synthesize primary literature
types technical literature

- REVIEW ARTICLE
  
  *Purpose:* synthesize primary literature

  **Author:** Scientists (experts in a certain topic)
  
  **Audience:** Other scientists

  **Includes:** Summary and synthesis of current knowledge; citations of primary literature

  *Sometimes peer-reviewed*
types technical literature

- PRIMARY LITERATURE
  
  *Purpose*: share scientific results with research community

- PRESS RELEASE
  
  *Purpose*: share scientific results with non-scientific community

- REVIEW ARTICLE
  
  *Purpose*: synthesize primary literature
activity – dissecting an abstract

In small groups (3-4 people), dissect the abstract and assign information to each of the major groups of a scientific paper and answer the following questions:

Who is responsible for conducting the research?

Who provided the funding?

What is the question the researchers are trying to address?

What are the main results?

What is the conclusion of the study?
activity – dissecting an abstract

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The relative importance of rapid evolution for plant-microbe interactions depends on ecological context

Casey P. terHorst, Jay T. Lennon and Jennifer A. Lau

Research


Received: 6 January 2014
Accepted: 2 April 2014

Subject Areas:
ecology; evolution

Evolution can occur on ecological time-scales, affecting community and ecosystem processes. However, the importance of evolutionary change relative to ecological processes remains largely unknown. Here, we analyse data from a long-term experiment in which we allowed plant populations to evolve for three generations in dry or wet soils and used a reciprocal transplant to compare the ecological effect of drought and the effect of plant evolutionary responses to drought on soil microbial communities and nutrient availability. Plants that evolved under drought tended to support higher bacterial and fungal richness, and increased fungal : bacterial ratios in the soil. Overall, the magnitudes of ecological and evolutionary effects on microbial communities were similar; however, the strength and direction of these effects depended on the context in which they were measured. For example, plants that evolved in dry environments increased bacterial abundance in dry contemporary environments, but decreased bacterial abundance in wet contemporary environments. Our results suggest that interactions between recent evolutionary history and ecological context affect both the direction and magnitude of plant effects on soil microbes. Consequently, an eco-evolutionary perspective is required to fully understand plant–microbe interactions.
How to read scientific papers

Violent metaphors
Thoughts from the intersection of science, pseudoscience, and conflict.

Home / Science / How to read and understand a scientific paper: a guide for non-scientists

How to read and understand a scientific paper: a guide for non-scientists
Jennifer Raff — August 25, 2013 — 353 Comments

Update (8/30/14): I’ve written a shorter version of this guide for teachers to hand out to their classes. If you’d like a PDF, shoot me an email: jenniferraff (at) utexas (dot) edu.

Last week’s post (The truth about vaccinations. Your physician knows more than the University of Google) sparked a very lively discussion, with comments from several people trying to persuade me (and the other readers) that their paper disproved everything that I’d been saying. While I encourage you to go read the comments and contribute your own, here I want to focus on the much larger issue that this debate raised: what constitutes scientific authority?