July 24, 2018

Announcements

July 26, Thursday, 9 am: Neuroethics with Dr. Sara Goering (required)

July 27, Friday, 9 am: Graduate Student Panel

July 27, Friday, noon: UW Neurosurgery Seminar with Jeff Ojemann, MD (CSNE member) – "Brain-computer interfaces (BCI)" – Optional; RSVP needed by noon, Wednesday, July 25.

July 28, Saturday, 7:30 pm: Seafair Torchlight Parade (Downtown)

August 1, Wednesday: Draft Poster Due

Effective Abstracts

What is an abstract and why is it important?

- The first, and possibly only, part of your paper that anyone will read
- When will you write an abstract?
    - Manuscript/research paper
    - Conference
    - Thesis/dissertation

Parts of an Abstract

- All the same components as the paper
  - Background
  - Methods
  - Results
  - Conclusions

All in 150-350 words

Specific format depends on the journal

Characteristics of a good abstract

- Precise language
- Minimum sufficient background information
- Sufficient methods
- Specific findings
- Supported conclusions

Six sentences to start

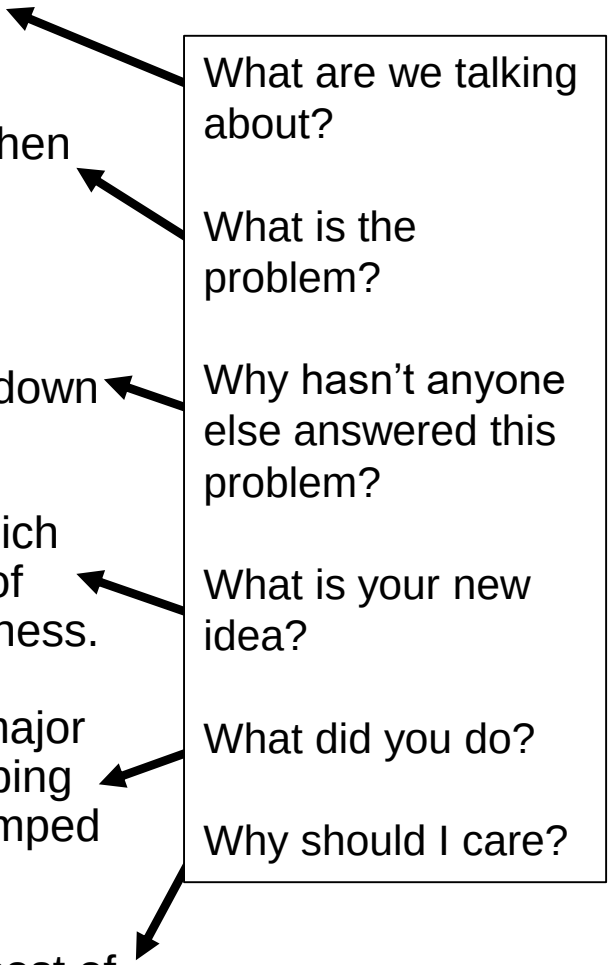
(How to write a scientific abstract in six easy steps:

http://www.easterbrook.ca/steve/2010/01/how-to-write-a-scientific-abstract-in-six-easy-steps/)

1. What are we talking about?
2. What is the problem?
3. Why hasn't anyone else answered this problem?
4. What is your new idea?
5. What did you do?
6. Why should I care?

Example Sentences

1. In widgetology, it's long been understood that you have to glomp the widgets before you can squiffle them.
2. But there is still no known general method to determine when they've been sufficiently glomped.
3. The literature describes several specialist techniques that measure how wizzled or how whomped the widgets have become during glomping, but all of these involve slowing down the glomping, and thus risking a fracturing of the widgets.
4. In this thesis, we introduce a new glomping technique, which we call googa-glomping, that allows direct measurement of whifflization, a superior metric for assessing squiffle-readiness.
5. We describe a series of experiments on each of the five major types of widget, and show that in each case, googa-glomping runs faster than competing techniques, and produces glomped widgets that are perfect for squiffling.
6. We expect this new approach to dramatically reduce the cost of squiffled widgets without any loss of quality, and hence make mass production viable.



How to write an abstract for a specific journal

- Scope
- Audience
- Format

http://www.sciencemag.org/site/feature/contribinfo/index.xhtml

Examples

- With your neighbor(s), identify each of the components in each of the three *Science* abstract examples:

  - Background
  - Methods
  - Results
  - Conclusions

Disruption of the head direction cell network impairs the parahippocampal grid cell signal

Shawn S. Winter, Benjamin J. Clark, Jeffrey S. Taube

(1)Navigation depends on multiple neural systems that encode the moment-to-moment changes in an animal's direction and location in space. (2)These include head direction (HD) cells representing the orientation of the head and grid cells that fire at multiple locations, forming a repeating hexagonal grid pattern. (3)Computational models hypothesize that generation of the grid cell signal relies upon HD information that ascends to the hippocampal network via the anterior thalamic nuclei (ATN). (4)We inactivated or lesioned the ATN and subsequently recorded single units in the entorhinal cortex and parasubiculum. (5)ATN manipulation significantly disrupted grid and HD cell characteristics while sparing theta rhythmicity in these regions. (6)These results indicate that the HD signal via the ATN is necessary for the generation and function of grid cell activity.

Cycles of species replacement emerge from locally induced maternal effects on offspring behavior in a passerine bird

Renée A. Duckworth, Virginia Belloni, Samantha R. Anderson

(1)An important question in ecology is how mechanistic processes occurring among individuals drive large-scale patterns of community formation and change. (2)Here we show that in two species of bluebirds, cycles of replacement of one by the other emerge as an indirect consequence of maternal influence on offspring behavior in response to local resource availability. (3)Sampling across broad temporal and spatial scales, we found that western bluebirds, the more competitive species, bias the birth order of offspring by sex in a way that influences offspring aggression and dispersal, setting the stage for rapid increases in population density that ultimately result in the replacement of their sister species. (4)Our results provide insight into how predictable community dynamics can occur despite the contingency of local behavioral interactions.

Spatially structured photons that travel in free space slower than the speed of light

Daniel Giovannini, Jacquiline Romero, Václav Potoček, Gergely Ferenczi, Fiona Speirits, Stephen M. Barnett, Daniele Faccio, Miles J. Padgett

(1)That the speed of light in free space is constant is a cornerstone of modern physics. (2)However, light beams have finite transverse size, which leads to a modification of their wave vectors resulting in a change to their phase and group velocities. (3)We study the group velocity of single photons by measuring a change in their arrival time that results from changing the beam's transverse spatial structure. (4)Using time-correlated photon pairs, we show a reduction in the group velocity of photons in both a Bessel beam and photons in a focused Gaussian beam. (5)In both cases, the delay is several micrometers over a propagation distance of ~1 meter. (6)Our work highlights that, even in free space, the invariance of the speed of light only applies to plane waves.

Best practices for abstract writing

- Write the abstract last
- Everything in the abstract MUST be in the paper
- Write in concise, complete sentences
- Use past tense
- Jargon should be appropriate for audience
- Don’t include citations (generally)
- Use only common abbreviations and acronyms
- Do not refer to figures or tables in the text

References

- How to write a scientific abstract in six easy steps
  http://www.easterbrook.ca/steve/2010/01/how-to-write-a-scientific-abstract-in-six-easy-steps/

- How to write a good abstract for a scientific paper or conference presentation by Chittaranjan Andrade (Indian J Psychiatry. 2011 Apr-Jun; 53(2): 172–175)

- The Structure, Format, Content, and Style of a Journal-Style Scientific Paper
  http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html