Abstract Expressions

Top Tips for Writing an Abstract

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Blaise Pascal

“I have made this [letter] longer, because I have not had the time to make it shorter.”

- **What is an abstract?**
- **What is it for?**
- **What is its structure?**

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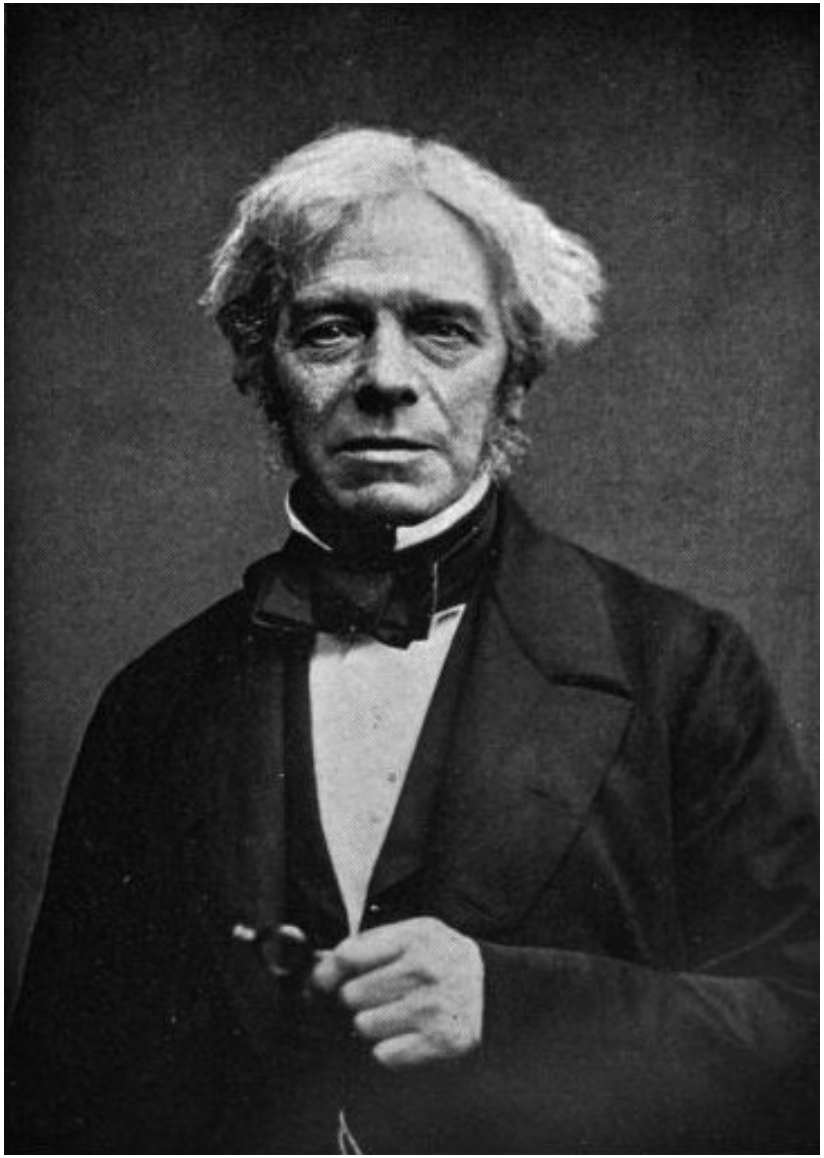
What is an Abstract?

- Concise statement of major elements of your research. States your purpose, methods, & findings
- For a paper, it is a mini-version of the paper
- For a conference, it is a stand-alone statement that briefly explains the essential elements of the study.

What is an Abstract?

- Highly specialised form of academic writing
- Compacts complex information into a tight space
- Requires economical writing style
- Reaches a very broad audience.

- What is an abstract?
- **What is it for?**
- What is its structure?



Michael Faraday

“Work, Finish, Publish”

What is it for?

- Help reader decide whether to read text or not
- Summarizes findings of text
- Allows you to attend a conference
- Helps peers decide whether to attend your presentation
- Archives your attendance.

Remember…

10-500 times more people will read your abstract than read the paper or attend the talk

- What is an abstract?
- What is it for?
- **What is its structure?**

Two common types of Abstracts

- Informative abstracts:
  - most research papers
  - most conference presentations
- Indicative (Descriptive) abstracts:
  - most review articles
  - most book chapters

Example of Informative Abstract

CROMOLYN SODIUM FAILS TO PREVENT HYPOXIA-INDUCED PULMONARY VASOCONSTRICTION IN NEWBORN AND YOUNG LAMBS. Author Number One, Author Number Two, Author Number Three, and Author Number Four. Department of Pediatrics, University of XXX, City, State

Leukotrienes, released by various pulmonary cell types including mast cells, may mediate hypoxia-induced pulmonary vasoconstriction. Cromolyn sodium, a mast cell membrane stabilizer, has been reported to prevent hypoxia-induced pulmonary vasoconstriction in adult sheep and young lambs, presumably by preventing release of leukotrienes. We tried to reproduce these results in newborn (4-7 d) and young (15-18 d) lambs. We instrumented 6 newborn lambs to measure pulmonary (PAP) and systemic (SAP) arterial pressures and cardiac output (Q). After baseline measurements, we infused vehicle and recorded responses to alveolar hypoxia. After return to baseline, we infused cromolyn sodium at 2 doses (3 mg/kg/min (6 lambs) and 5 mg/kg/min (2 lambs)) for 10 min before and then during alveolar hypoxia and recorded responses. We found no differences between pulmonary arterial pressure responses to hypoxia with and without cromolyn sodium at either dose at either age.

Treatment	PAP (mmHg)		SAP (mmHg)		Q̇ (L/min/kg)	
	Newborn	Young	Newborn	Young	Newborn	Young
Baseline	15±2	20±7	79± 6	90±10	0.24±0.07	0.31±0.09
Hypoxia	28±3*	31±9*	76± 4	88± 9	0.29±0.11	0.41±0.08
Cromolyn	19±4	25±6	79±10	83±11	0.22±0.06	0.25±0.07
Crom + Hypox	31±5†	35±6†	80± 6	92±13	0.25±0.08	0.39±0.13†

Mean ± SD for 6 lambs given 3 mg/kg/min cromolyn.

*$P < 0.05$ vs. baseline; †$P < 0.05$ vs. cromolyn (ANOVA).

Our results contradict reports that cromolyn sodium prevents hypoxia-induced pulmonary vasoconstriction and thus question the importance of leukotriene release from mast cells in producing hypoxia-induced pulmonary vasoconstriction.

Example of Informative Abstract

Trial of Influenza A (H1N1) 2009 Monovalent MF59-Adjuvanted Vaccine — Preliminary Report

Tristan W. Clark, M.R.C.P., Manish Pareek, M.R.C.P., Katja Hoschler, Ph.D., Helen Dillon, M.R.C.P., Karl G. Nicholson, M.D., F.R.C.P., Nicola Groth, M.D., and Iain Stephenson, M.D., F.R.C.P.

BACKGROUND

The 2009 pandemic influenza A (H1N1) virus has emerged to cause the first pandemic of the 21st century. Development of effective vaccines is a public health priority.

METHODS

We conducted a single-center study, involving 175 adults, 18 to 50 years of age, to test the monovalent influenza A/California/2009 (H1N1) surface-antigen vaccine, in both MF59-adjuvanted and nonadjuvanted forms. Subjects were randomly assigned to receive two intramuscular injections of vaccine containing 7.5 μg of hemagglutinin on day 0 in each arm or one injection on day 0 and the other on day 7, 14, or 21; or two 3.75-μg doses of MF59-adjuvanted vaccine, or 7.5 or 15 μg of nonadjuvanted vaccine, administered 21 days apart. Antibody responses were measured by means of hemagglutination-inhibition assay and a microneutralization assay on days 0, 14, 21, and 42 after injection of the first dose.

RESULTS

Results of an interim analysis of the responses to the 7.5-μg dose of MF59-adjuvanted vaccine by days 14 and 21 are presented (data from four of the seven groups studied, for a total of 100 subjects). The most frequent local and systemic reactions were pain at the injection site and muscle aches, noted in 70% and 42% of subjects, respectively. Two subjects reported fever, with a temperature of 38°C or higher, after the first dosing. Antibody titers, expressed as geometric means, were generally higher at day 14 among subjects who had received two 7.5-μg doses of the MF59-adjuvanted vaccine than among those who had received only one by this time point ($P=0.04$ by the hemagglutination-inhibition assay and $P<0.001$ by the microneutralization assay). By 21 days after vaccination with the first dose of 7.5 μg of MF59-adjuvanted vaccine, the rates of seroconversion, as measured with the use of a hemagglutination-inhibition assay and a microneutralization assay, were 76% and 92% of subjects, respectively, who had received only one dose to date (with the second dose scheduled for day 21) and 88 to 92% and 92 to 96% of subjects, respectively, who had already received both doses ($P=0.11$ and $P=0.64$, respectively).

CONCLUSIONS

In preliminary analyses, the monovalent influenza A (H1N1) 2009 MF59-adjuvanted vaccine generates antibody responses likely to be associated with protection within 14 days after a single dose is administered. (ClinicalTrials.gov number, NCT00943358.)

10.1056/NEJMoa0907650 NEJM.ORG

Indicative (Descriptive) Abstracts

- Usually for review articles
- Tells readers what information the article contains
- Includes purpose and scope of article and occasionally methods
- Does not provide results, conclusions, or recommendations

Example of Indicative Abstract

T-CELL-ANTIGEN RECOGNITION AND THE IMMUNOLOGICAL SYNAPSE

Johannes B. Huppa and Mark M. Davis

Much excitement of the past five years in the area of T-cell-antigen recognition has centred around the immunological synapse — a complex cellular structure that forms at the interface of a T cell and a cell that expresses the appropriate peptide–MHC complexes. Thanks to new imaging technologies, we are now beginning to understand the role of cell-surface molecules and some of their attendant signalling modules in the context of cell-to-cell communication. Progress has been so rapid that T-cell-antigen recognition might be the first system in which the molecular basis of cell–cell recognition is understood.

Structure of an abstract

Title

Background

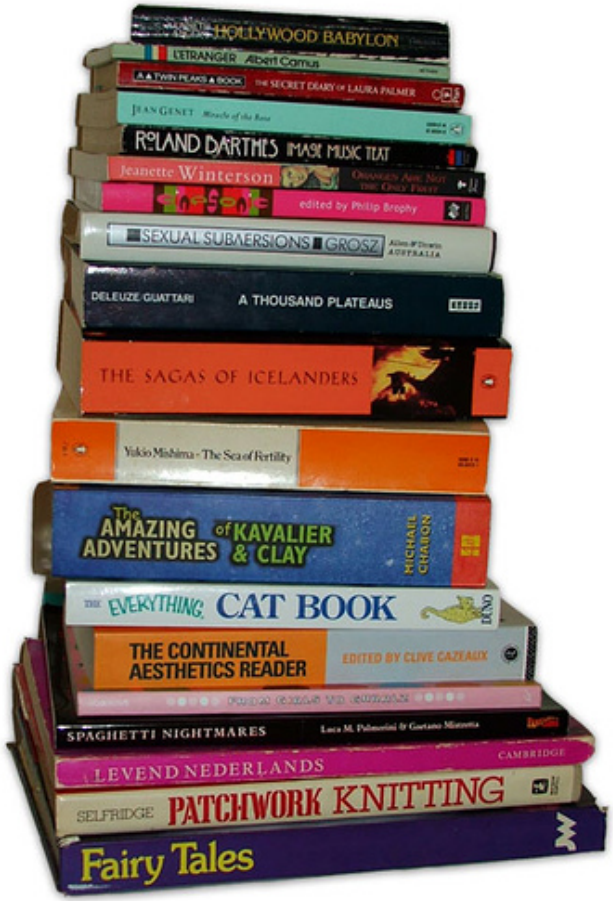
Methods

Results

Conclusions

Title

- Simple, descriptive and appealing
- Include the idea, the work and the context in the title
- Title is your mini-advertisement
- Helps reviewers categorize your presentation and may eventually help conference delegates find your session.



Background

- Covers the study objectives, the hypothesis to be tested, or a description of the problem
- **Answers the questions:**
  - Why have we done this work?
  - What is/are the *specific* problem(s) that motivated us?

Example of fuzzy background statement

Combating AIDS means facing many challenges, social, political, cultural and epidemiological. HIV prevalence is extremely high among intravenous drug users. IDU's face many obstacles, including discrimination based on drug use, and laws making intravenous drug use illegal. One of the greatest obstacles to evaluate and monitor prevention interventions in IDUs is the difficulty in approaching them. This is because of the drug's use is illegal and clandestine, and IDUs mistrust researchers. Researchers have tried many strategies without success, working with community-based organizations, etc. It is still difficult to establish an adequate sample size that could be repeated for a behaviour analysis study. (102 words)

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- Too much information. Too many problems brought into it. Long-winded sentences
- Where is this study?
- Doesn't cut to the heart of the problem
- Uses up over 1/3 of permitted words.

Example of clear background statement

In Mexico, researchers face great difficulty in gaining access to a sample size of intravenous drug users (IDUs) large enough for a comparative behaviour analysis study. Laws forcing IDUs to be clandestine and mistrustful have thwarted several outreach efforts. (39 words)

Methods

- Covers the approach taken and techniques used – gives necessary details, but not every step

- **Answers the questions:**
  - What, when, with how many, where?
  - How did we do it?
  - What was our methodology?
  - How did we solve the problem (or try to solve it)?

Results

- Covers the specific results in summarized form (with appropriate statistical analysis)

- **Answers the questions:**
  - What happened?
  - What did we learn?

Conclusions

- Covers the main outcome of the study

- **Answers the questions:**
  - Why is this important?
  - What is new about these findings?
  - What impact or implications does this have?

The ‘Teaser’

Should you have a sentence in your conference abstract enticing the reader to attend your presentation?

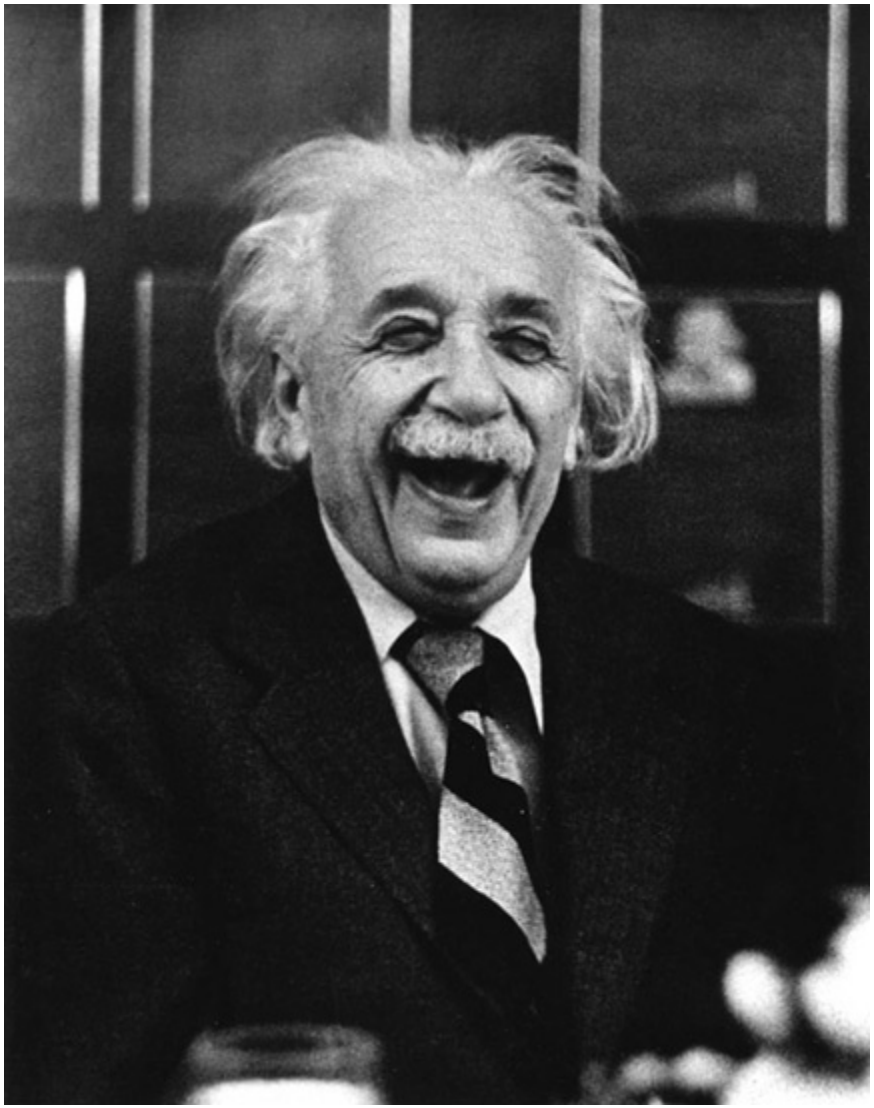
- This presentation will elaborate on lessons learned
- The implications of these results on the broader research agenda will be discussed
- This presentation will discuss the particular experimental challenges and how they were overcome
- Key debates and controversies will be outlined.

How do you actually go about writing it?

Writing Skills Toolkit

Four Cs of Abstract Writing

- **Complete** — covers major parts of the project
- **Concise** — contains no excess words or unnecessary information
- **Clear** — readable, well organized and not jargon-laden
- **Cohesive** — flows smoothly between parts.



Albert Einstein

“If you can’t explain it simply you don’t understand it well enough.”

Read and follow the instructions

- Length?
- Layout?
- Headings?
- Anything specific?

Words

- Use simple words
- Avoid colloquialisms
- Avoid jargon
- Don’t use contractions – like “don’t”.

Sentences

- Write short & simple sentences
- Write only one thought per sentence
- Eliminate unnecessary words.

Grammar

- Verb tenses in the abstract = those in the paper.
- Present tense – What *is* the problem
- Past tense - What *was* done & What *was* found
- Future tense – What *will* happen
- Ensure that verb tenses are consistent and correct.

Style

- Use active rather than passive voice
- Vary sentence complexity & rhythm
- Avoid personal narrative, opinion or commentary
- Avoid convoluted & unusual phrasing
- Keep clear continuity throughout
- Signal parts of abstract by starting new sentence and stating topic at beginning of sentence.

Editing down

Restrict adjective clauses:

- The bananas, which were green..

  vs.

  The green bananas…

Editing down

Avoid empty phrasing:

- There were 15 volunteers enrolled in the study
- In order for us to analyse the data

Editing down

Choose stronger words:

- Many weak words are used to describe quantity, e.g. ***almost, very, largely, around, close to, exactly, fairly***
- others are used as padding, e.g. ***actually, really, sort of***. Consider: *Actually, he really started to feel better* vs. *He felt better*.

Editing down

Abbreviations:

- Use standard abbreviations
  - units of measurement
    e.g. cm, kg, mmHg
  - widely accepted
    e.g. DNA, UK, UNESCO

- Define a non-standard abbreviation on first use
  e.g. Epidermal Growth Factor Receptor (EGFR), Serious Adverse Event (SAE)

Editing down

Use numerals:

- Eighty-three percent

  vs.

  83%
- Four thousand

  vs.

  4,000

Editing down

Use plurals to eliminate articles:

- The test was

  vs.

  Tests were
- Each mouse was given

  vs.

  Mice were given

Editing down

Use parallel constructions:

- Patients who were treated had a median life expectancy of 4 years, compared to 1.8 years for those who did not receive treatment.

  [23 words]

  vs.

  Median life expectancy was 4 years for treated patients and 1.8 years for untreated patients.

  [15 words]

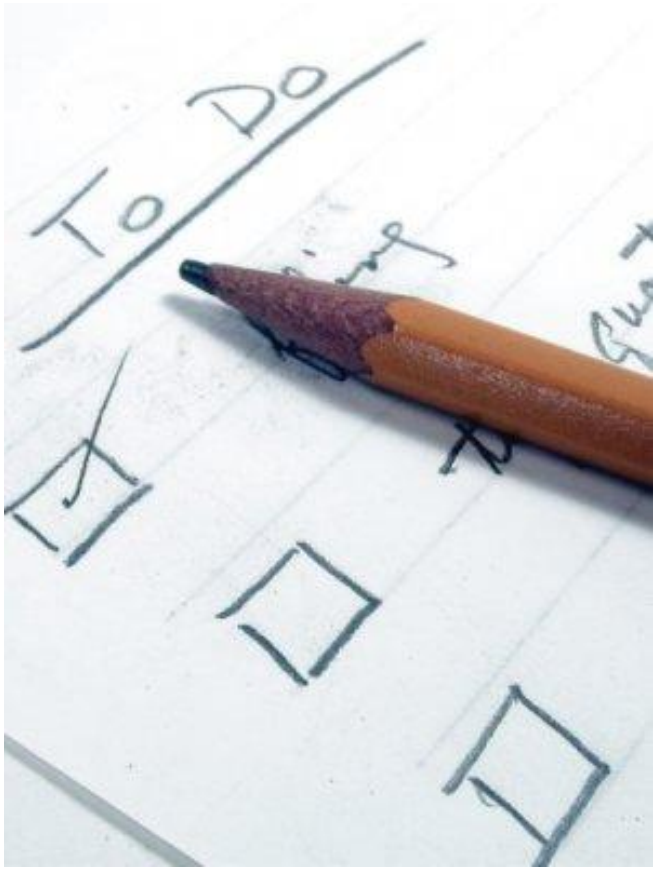
Before Finalizing

- Get help from mentor/supervisor
- Make revisions based upon the feedback
- Get others to read it to check for spelling and grammatical mistakes.

Prior to Submission

Check - did you :

- Follow the instructions?
- Use short, clear sentences; one idea per sentence?
- Limit your abstract to the word count/character count?
- Edit, edit, edit?
- Check grammar & punctuation?



How is an abstract selected?

Abstract reviewing often based on following considerations:

- value of topic to the conference
- link to conference theme
- quality of work
- clarity of abstract
- novelty of research being presented.

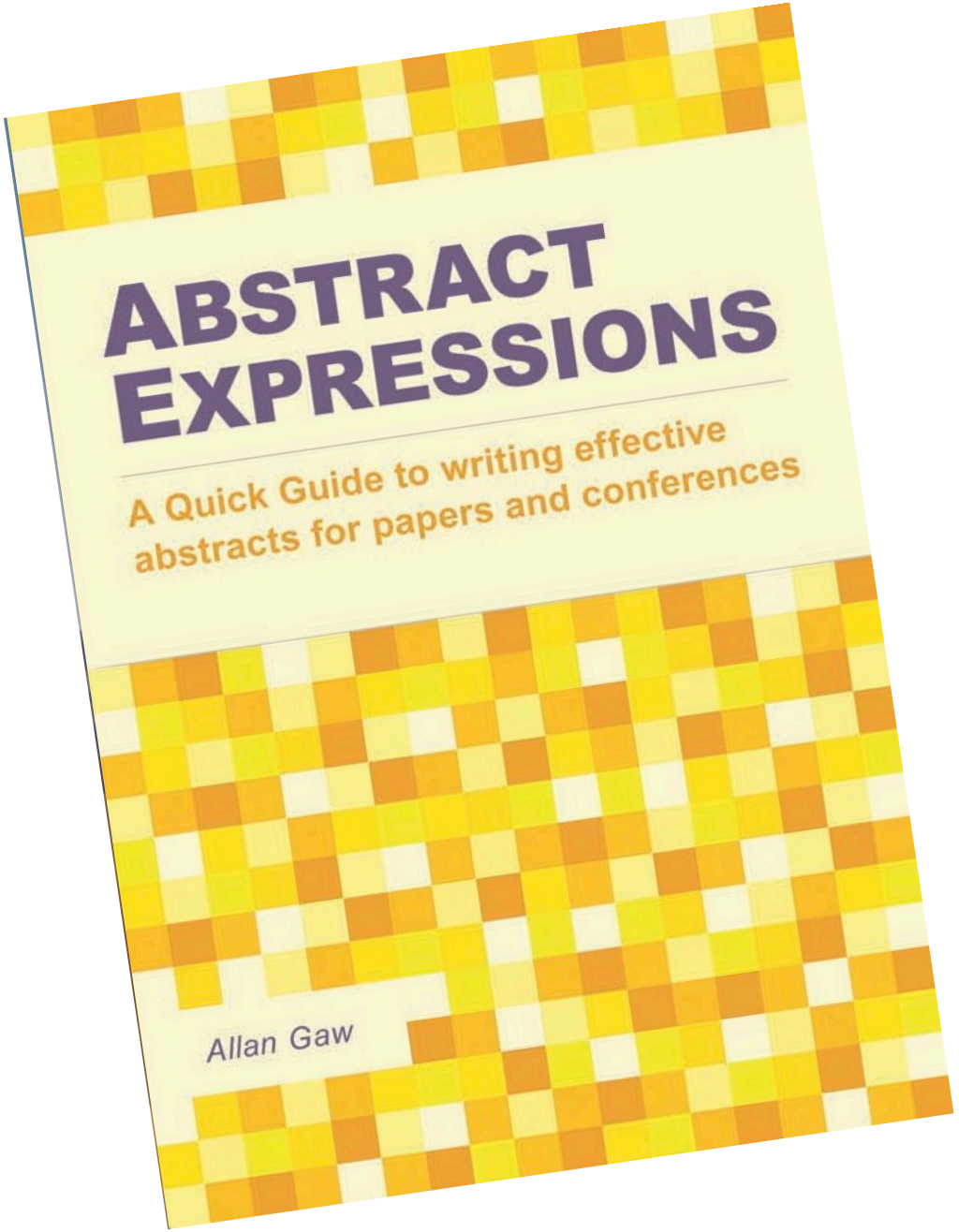
Top 5 reasons why abstracts are not accepted to a conference

1. Poor content – methods/stats
2. Submitted to wrong category (or wrong conference)
3. Poorly constructed/written – no goal/answer/too long/too short/weak discussion
4. Data too preliminary
5. Of reasonable quality but lacking originality, already published, or not contributing to field.

What next?

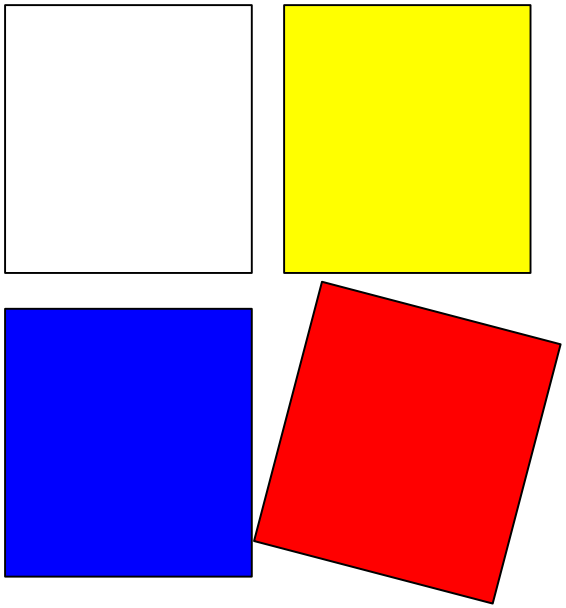
After submitting your abstract:

- You may have to make a poster
- You may have to give an oral presentation
- You now need to think about the paper
- Remember: “Work, finish, publish”.


ABSTRACT EXPRESSIONS
A Quick Guide to writing effective abstracts for papers and conferences
Allan Gaw

available on

The Business of Discovery



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