Scientific writing

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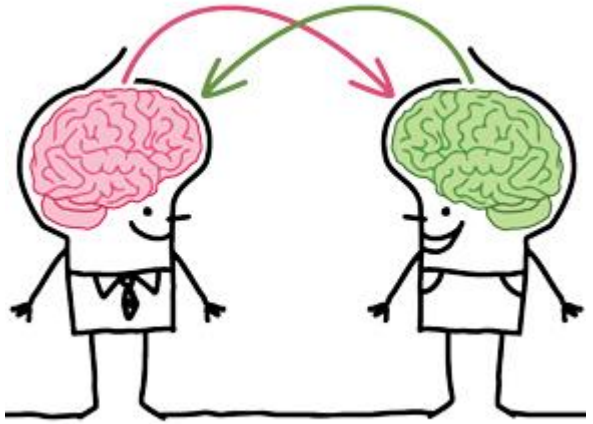
“It’s not enough to simply know something. You must be able to communicate your knowledge to others. To accomplish this, you need to know who you are talking to, what you want to say, and how you are going to say it.”

Quote from Nygaard (2008) “Entering the scholarly dialogue”, *Writing for Scholars*



Organising the text

IMRaD=

- Introduction
- Method and Material
- Results
- Discussion

Organising the text

IMRaD=

- Introduction = What did you want to find out?
- Method and Material
- Results
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Organising the text

IMRaD=

- Introduction = What did you want to find out?
- Method and Material= How did you do it?
- Results= What did you find?
- Discussion= What does it mean?

Discussion matches Introduction

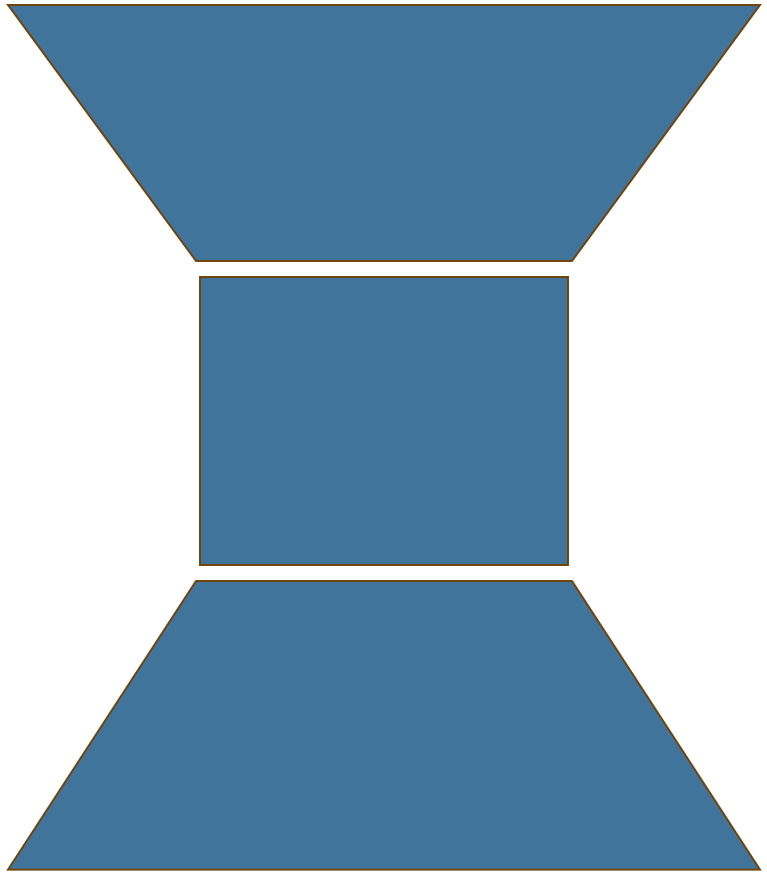
End of introduction - purpose:

. . . our objective was to describe the effects of longer-term isoniazid prophylaxis or simultaneous isoniazid and ART in pregnant HIV-infected women.

Beginning of discussion:

We observed no isoniazid-associated hepatitis or other severe isoniazid-associated adverse events in 103 women receiving isoniazid during pregnancy and/or immediately postpartum.

IMRaD



Introduction

Method
Material
Results

Discussion

Example: General template

Introduction

Method and Material

Results

Discussion

Example: General template

Introduction

- Mice fear cats. Cats prefer to kill and eat mice rather than play with them. Mice would be merrier if cats did not kill mice. How can we prevent cats from killing mice? Some research suggests that cats who have just eaten seem to spare mice lives to a greater extent than hungry cats, but there are as yet few studies to support this theory. We therefore investigated the effect of feeding cats on mice survival in cat-mouse contact situations.

Method and Material

Results

Discussion

Example: General template

Introduction

Method and Material

- We designed an experiment to investigate whether full cats killed fewer mice than hungry cats. We used 100 cats and 100 mice. Half the cats were fed an hour before being introduced to the mice whereas the other half had not eaten for a day. 50 hungry cats and 50 mice were let out in pen A, and 50 full cats and 50 mice were let out in pen B. After an hour we opened the pens to see how they got along.

Results

Discussion

Example: General template

Introduction

Method and Material

Results

- The results showed that all the hungry cats had killed mice and that half the full cats had instead engaged in friendly games with the mice whereas the other half of the full cats had killed mice.

  [Tables, figures, statistics]

Discussion

Example: General template

Introduction

Method and Material

Results

Discussion

- We wanted to find a way to prevent cats from killing mice. Our hypothesis was that feeding cats before introducing them to the mice would prevent the cats from killing the mice. Our experiment showed that cat feeding was partially successful as all the hungry cats had killed mice whereas only half the full cats had done so. This is in line with previous research.
- We noticed that some of the full cats who had killed mice had longer tails than the other full cats. We therefore propose that future research investigate the effect of cat tail length on mice killing.

Example: General template

Journal: «The mouse friend»

Title: «Hungry versus full cats' propensity to kill mice»

Abstract: «Mini IMRaD»

Introduction

Method and Material

Results

Discussion

List of references

Where to start writing?

Where to start writing?

Method

Material

Where to start writing?

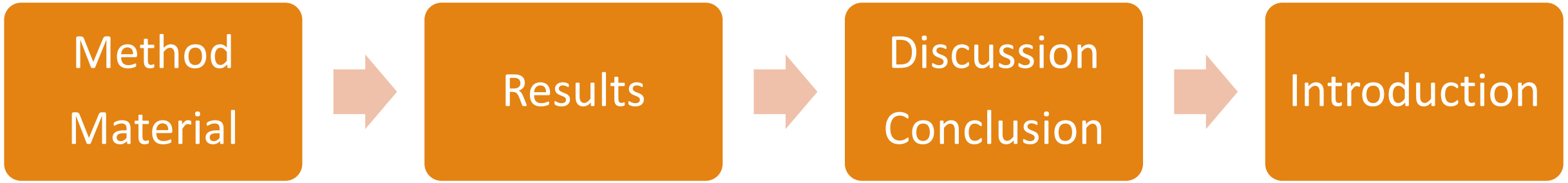
Method

Material

Results

Where to start writing?

Where to start writing?



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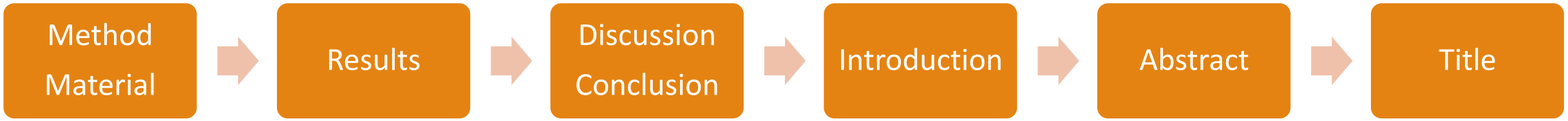

The abstract

- «Mini IMRaD»
- Just the main points

The abstract

Check your abstract:

- Is info in abstract consistent with info in article?
- Is all info in abstract also in article?
- Is all important info in article also in abstract?

Abstracts: Traditional version

Photoresist development rate can be defined microscopically (the development rate at a point) or macroscopically (the propagation rate of an average resist height). In the presence of stochastic noise, these two rates will be different. In order to properly calibrate lithography simulators, the difference between these two definitions of development rate should be quantified. Using theoretical derivations and a stochastic (Monte Carlo) resist simulator, the propagation rate of a resist surface is characterized in the presence of stochastic variation in the resist deprotection concentration and a nonlinear development rate response. The resulting propagation rate can be more than an order of magnitude higher than for the case of no stochastic noise. Correlation in the development rate creates an effective surface inhibition over a depth into the resist of several correlation lengths. These results show that the differences between microscopic and macroscopic dissolution rate can have an important effect on how development rate models should be calibrated, depending on their use in continuum or stochastic lithography simulators.

Abstracts: Structured version

Background: Photoresist development rate can be defined microscopically (the development rate at a point) or macroscopically (the propagation rate of an average resist height). In the presence of stochastic noise, these two rates will be different.

Aim: In order to properly calibrate lithography simulators, the difference between these two definitions of development rate should be quantified.

Approach: Using theoretical derivations and a stochastic (Monte Carlo) resist simulator, the propagation rate of a resist surface is characterized in the presence of stochastic variation in the resist deprotection concentration and a nonlinear development rate response.

Results: The resulting propagation rate can be more than an order of magnitude higher than for the case of no stochastic noise. Correlation in the development rate creates an effective surface inhibition over a depth into the resist of several correlation lengths.

Conclusions: The differences between microscopic and macroscopic dissolution rate can have an important effect on how development rate models should be calibrated, depending on their use in continuum or stochastic lithography simulators.

Topic sentences

Unlike gasohol-powered cars, the fuel cell alternative is virtually pollution-free. A methanol fuel cell system works through chemical reactions that leave the airclean. A fuel processor breaks the methanol down into carbon dioxide and hydrogen. The hydrogan is then pumped to the cell itself, where it combines with oxygen to form water. Current is then produced when the electrons traded between molecules in the reaction travel through an external circuit. The net products are carbon dioxide, water, and electricity. By contrast, when gasohol is burned in an internal combustion engine, it produces the same nitrous oxides that gasoline does.

General tips

Understand your own work
- Explain to friend
- Let friend read & comment

Think like the reader
- Good title
- Good abstract

Keep it simple
- The aim is communication


KEEP
CALM
AND
WRITE YOUR
RESEARCH PAPER