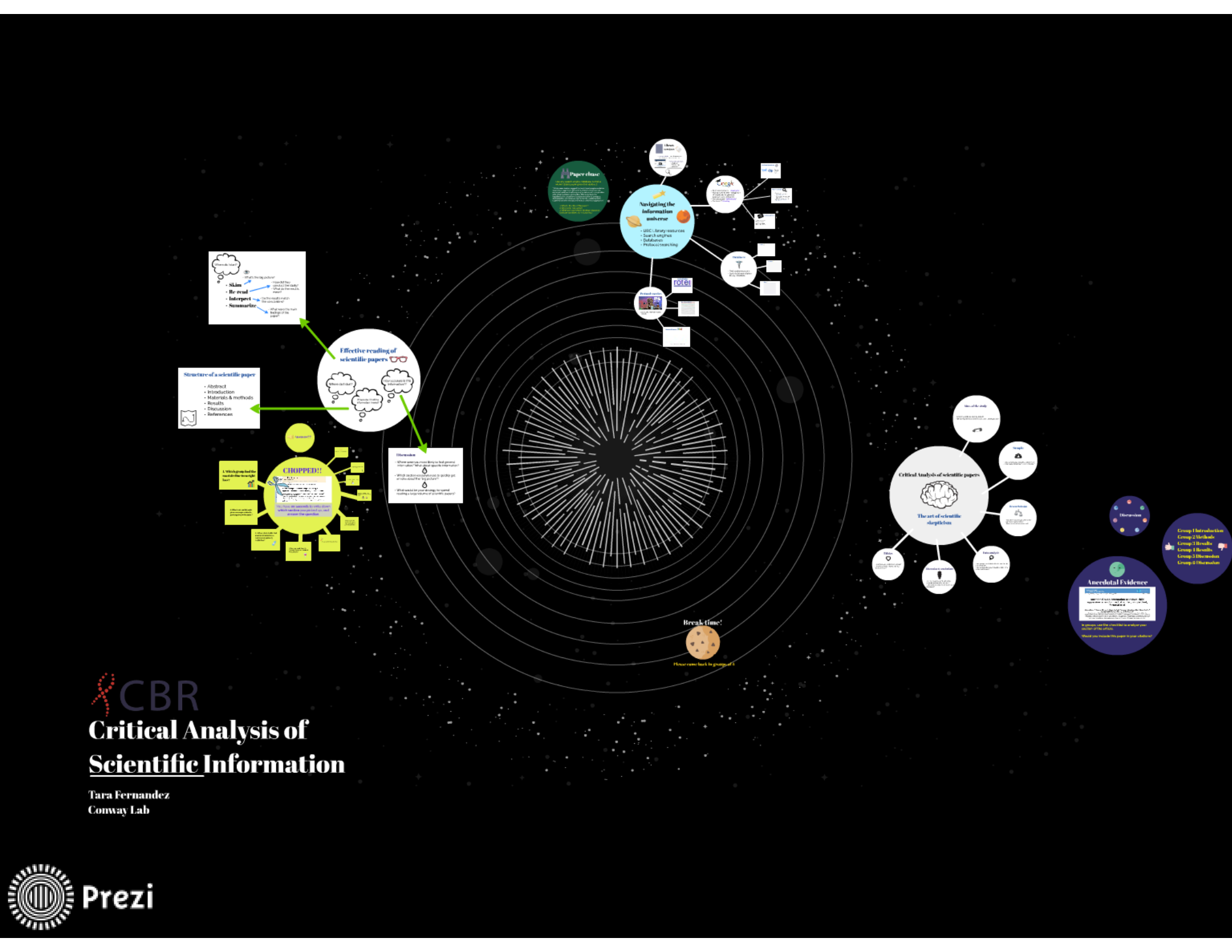


CBR

Critical Analysis of Scientific Information

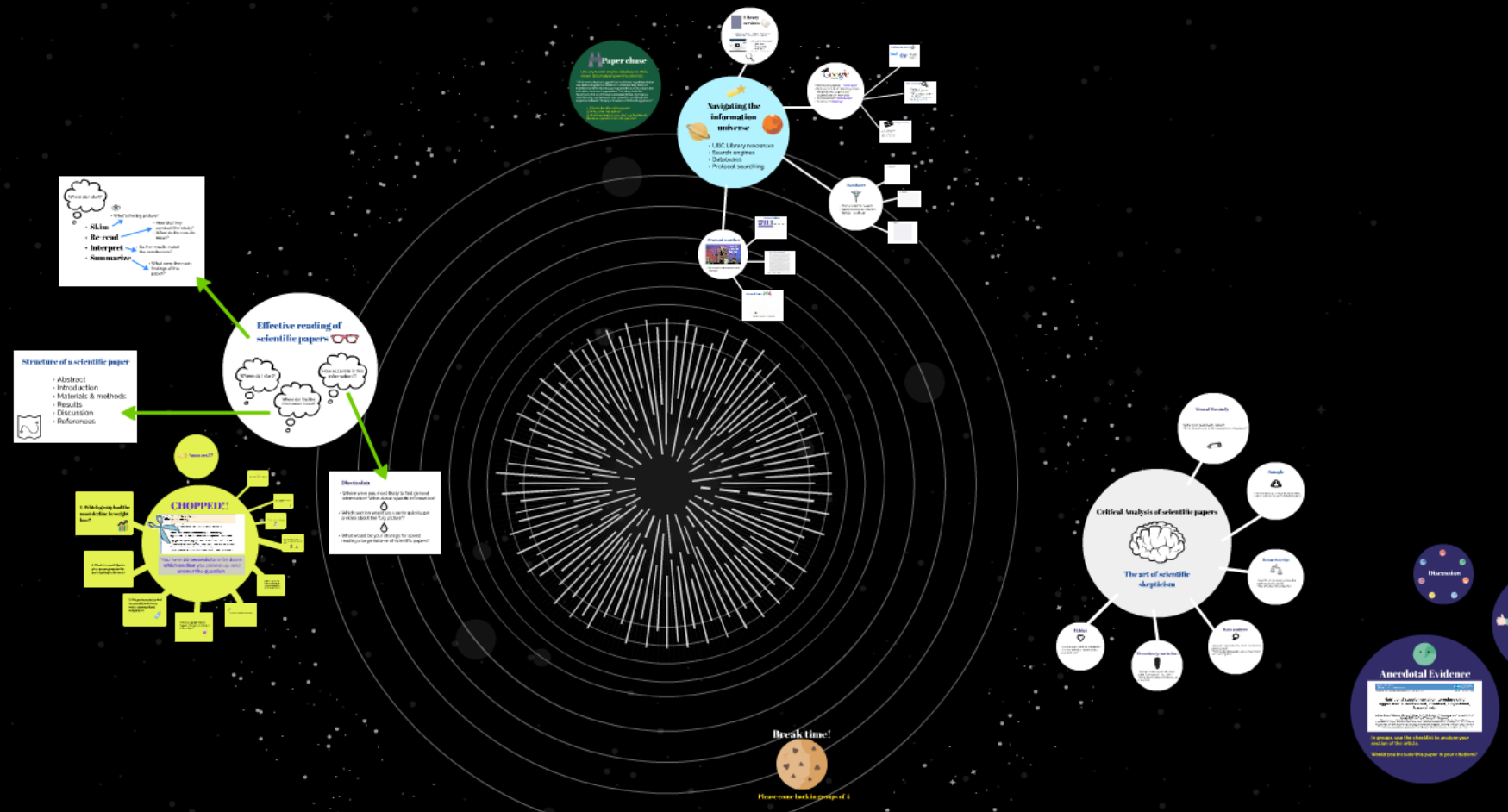
Tara Fernandez
Conway Lab

Prezi

Critical Analysis of Scientific Information

Tara Fernandez
Conway Lab

Prezi



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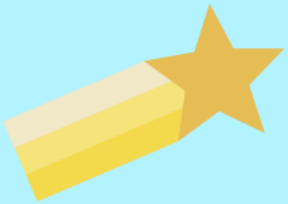

Navigating the information universe

- UBC Library resources
- Search engines
- Databases
- Protocol searching

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Library services

- Library website - help & resources

http://services.library.ubc.ca/user-guides/graduate-students/?login

- Research Commons
  - Citations
  - Thesis help
  - Statistics

http://koerner.library.ubc.ca/services/research-commons/

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- Find recent papers - "**since year**"
- Pick up specific terminology from Wikipedia etc to get more targeted search keywords
- Too advanced? "**References**"
- Too basic? "**Cited by**"

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Boolean Operators

And

Automatically implied

Or

Must be in CAPS

Not

Boolean NOT is the minus sign "-" and must be in front of each word you want to exclude.

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More search tips

- “Phrase searching”
  - Quotation marks around phrases “complement cascade”
- Include
  - Use + immediately before automatically excluded search terms that you want included +blood
- Find results with your search term in the document title intitle:membrane
- author:Conway

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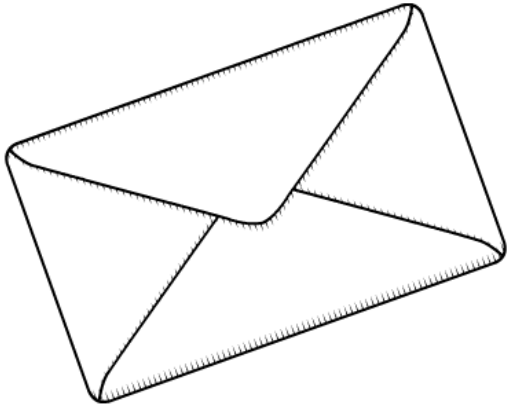
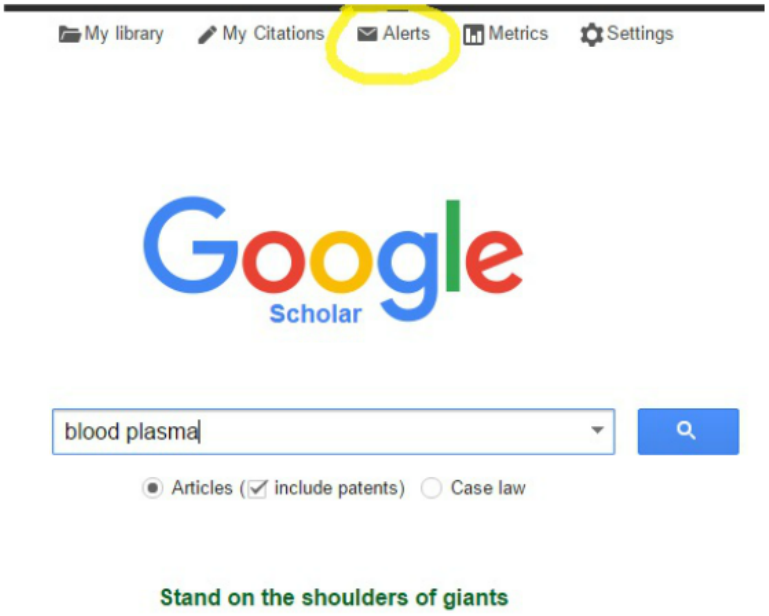


Creating email alerts

1. Search your topic then click the Create email alert icon

2. Check the Alert query details, then enter your email address and click Create alert



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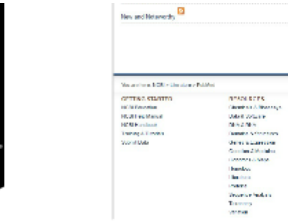
Databases

- Find academic papers
- Easily build your citation library - EndNote



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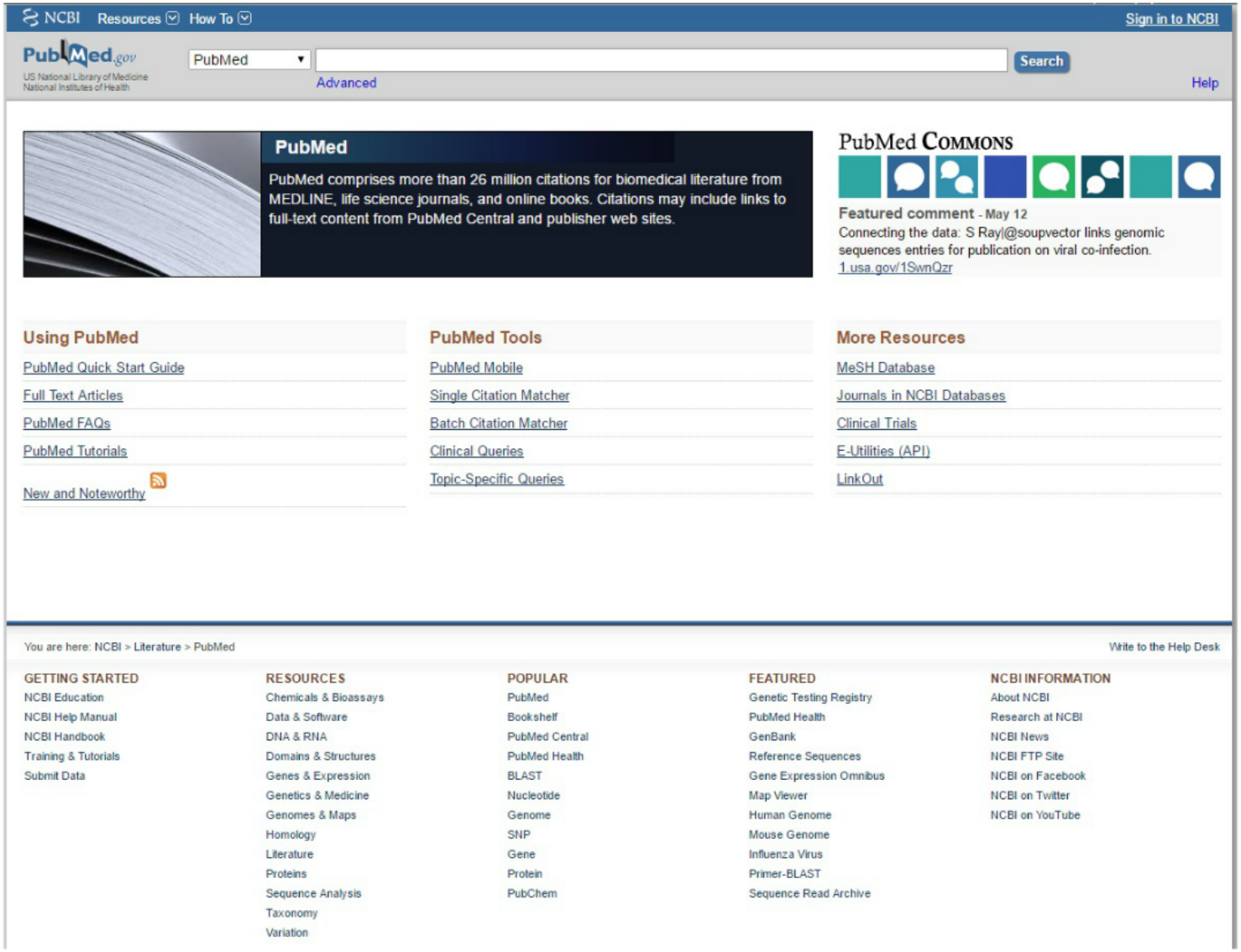
PubMed



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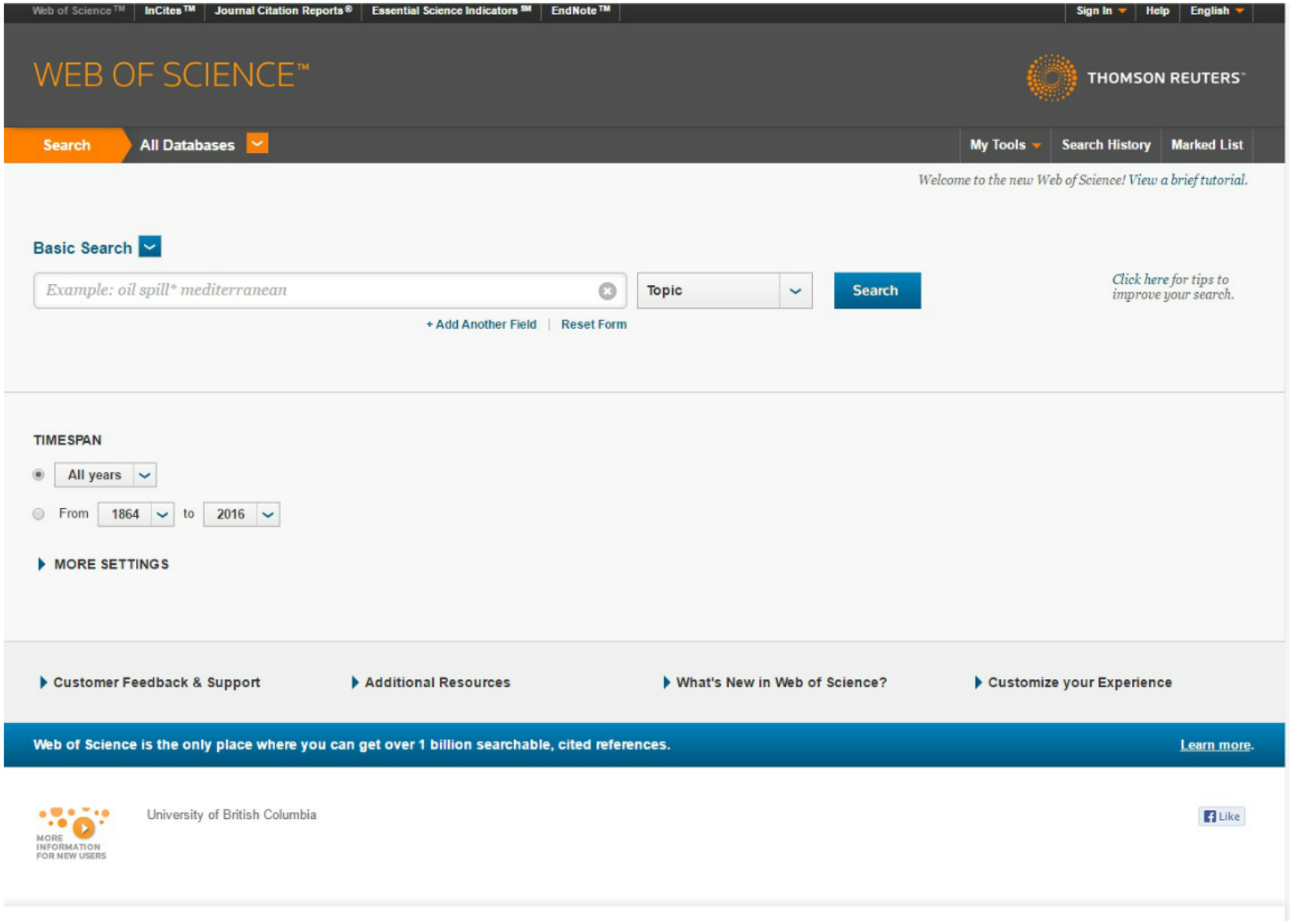
Web of Science



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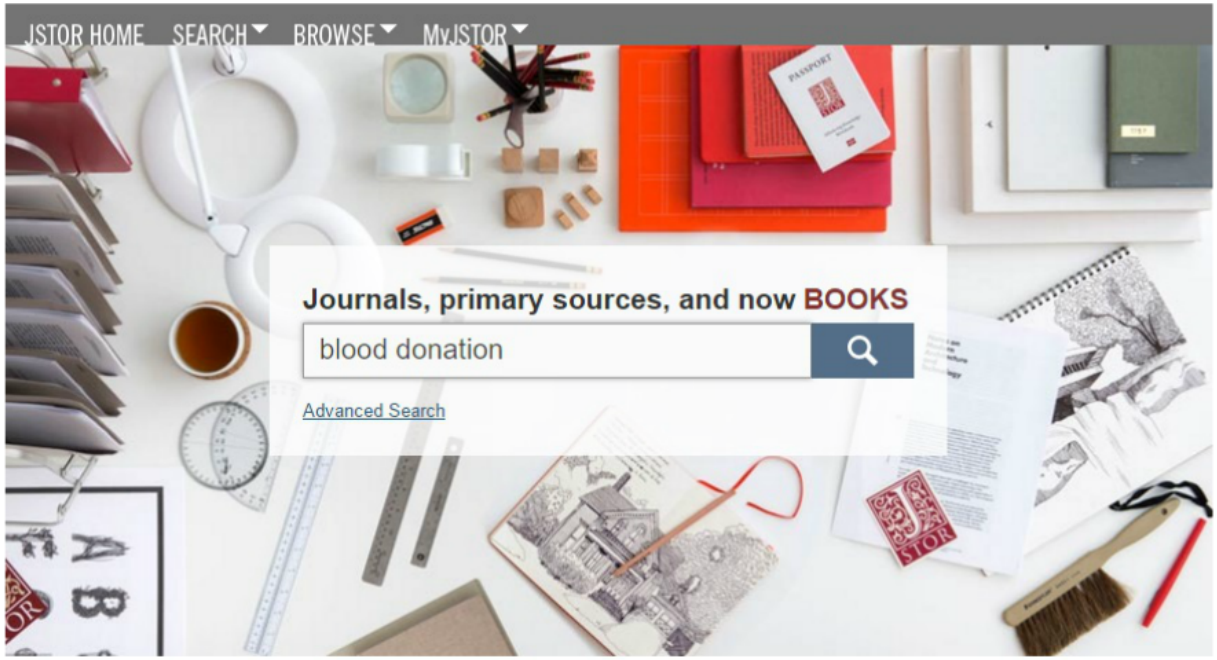
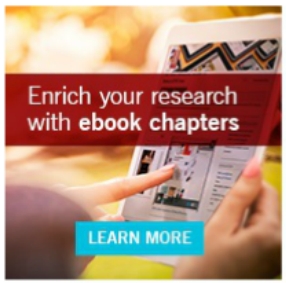
Jstor



NEWS AND NOTES



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Protocol searches

- Get specific information about methods

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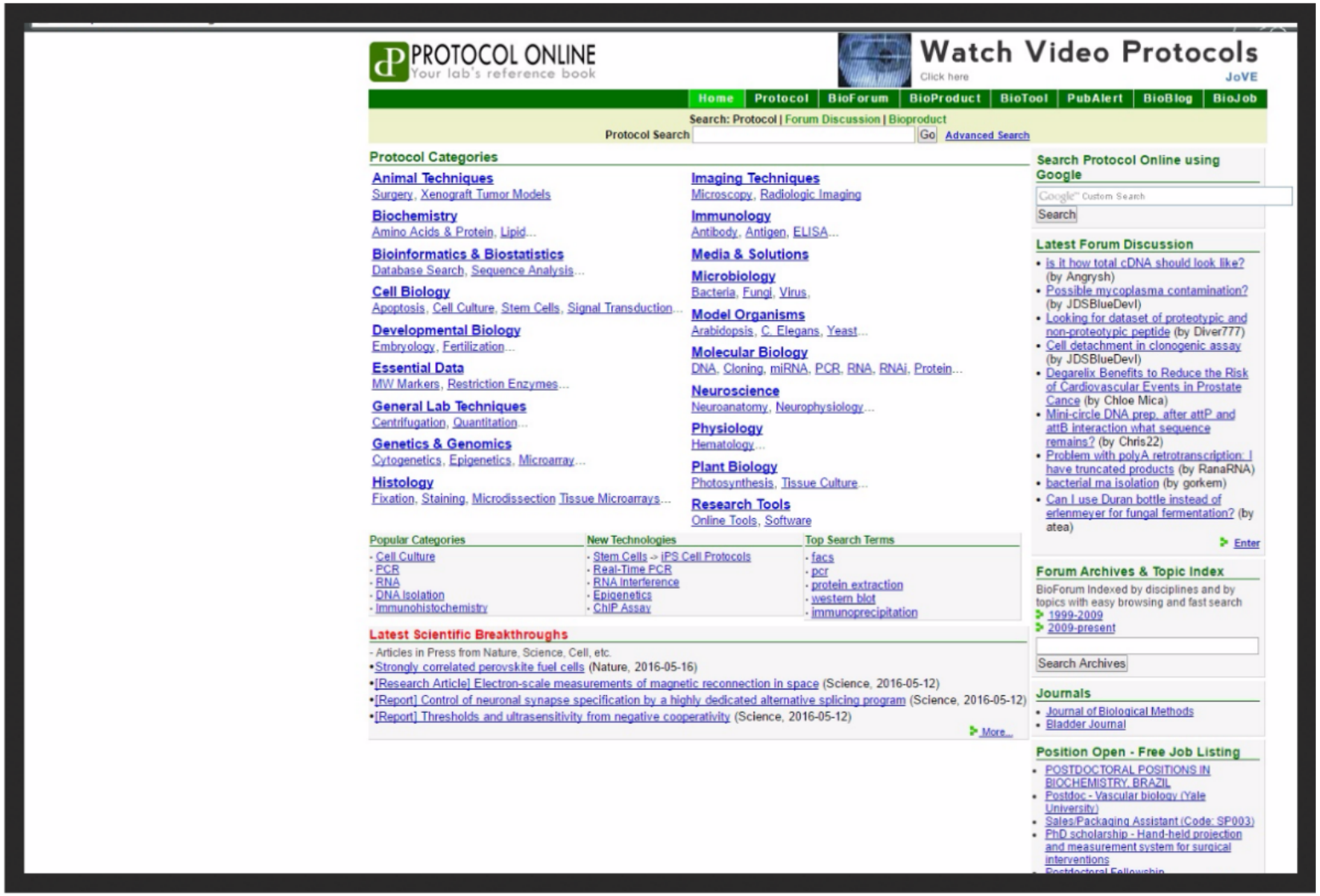
Protocol Online



Jove: video protocols

http://www.jove.com/video/3923/agarose-gel-electrophoresis-for-the-separation-of-dna-fragments

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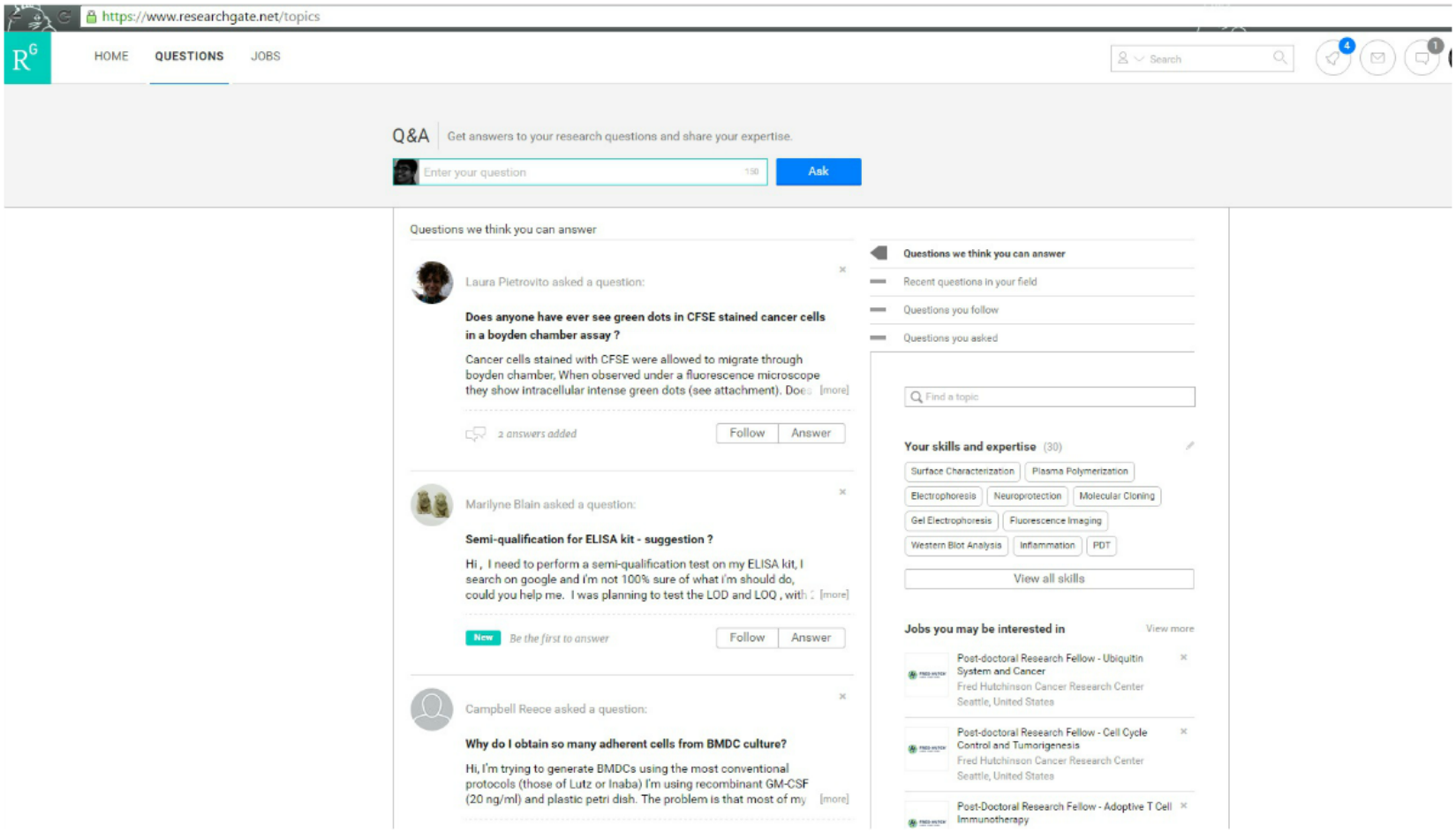
Research forums



Get practical advice from other researchers

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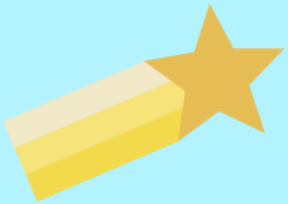

Navigating the information universe

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Paper chase

Use any search engine/database to find a recent (2016) paper given this abstract:

" While some studies suggest that nutritional supplementation may reduce aggressive behavior in children, they have not examined whether its efficacy may be enhanced in conjunction with other treatment approaches. This study tests the hypothesis that a nutritional supplementation of omega-3, multivitamins, and minerals over 3 months, combined with cognitive behavior therapy, will reduce childhood aggression."

1. What is the title of the paper?
2. Who is the first author?
3. What was your search strategy (keywords, Boolean operators etc) did you use?

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Effective reading of scientific papers

Where do I start?

How accurate is this information??

Where do I find the information I need?

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Where do I start?

- What's the big picture?

- **Skim**
- **Re-read**
  - How did they conduct the study?
  - What do the results mean?
- **Interpret**
  - Do the results match the conclusions?
- **Summarize**
  - What were the main findings of the paper?

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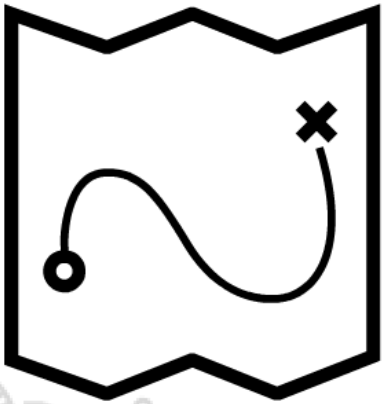
Structure of a scientific paper

- Abstract
- Introduction
- Materials & methods
- Results
- Discussion
- References



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CHOPPED!!

NIH Public Access
Author Manuscript
Obesity (Silver Spring). Author manuscript; available in PMC 2011 February 1.

...ed in final edited form as:
...ilver Spring). 2010 February ; 18(2): 300–307. doi:10.1038/oby.2009.235.

Water Consumption Increases Weight Loss During a Hypocaloric Diet Intervention in Middle-aged and Older adults

Elizabeth A. Dennis[1], **Ana Laura Dengo**[1], **Dana L. Comber**[1], **Kyle D. Flack**[2], **Jyoti Savla**[3], **Kevin P. Davy**[1], and **Brenda M. Davy**[1]

[1] Department of Human Nutrition, Foods and Exercise, Virginia Tech, Blacksburg, Virginia, USA

[2] Department of Health Sciences, Ferrum College, Ferrum, Virginia, USA

[3] Department of Human Development and Center for Gerontology, Virginia Tech, Blacksburg, Virginia, USA

You have **20 seconds** to write down **which section** you picked up, and **answer the question**.

3. Did previous studies find

6. When was the first article on the topic of water consumption & weight loss published?

1. Which group had the most decline in weight loss?

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2. What were participants given as compensation for participating in the study?

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3. Did previous studies find an association between water consumption & weight loss?

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4. How many people from the "nonwater" group were included in the analysis?

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5. Name one limitation of the study.

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6. When was the first article on the topic of water consumption & weight loss published?

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7. Was there a difference between weight loss outcomes between men & women?

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8. What is the hypothesis of the study?

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9. Name one condition for which individuals were excluded from the study.

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10. What was the conclusion from the study?

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Answers??

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Break time!

Please come back in groups of 4

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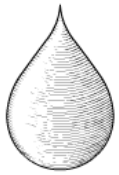
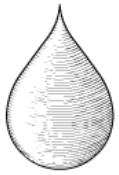
Discussion

- Where were you most likely to find general information? What about specific information?



- Which section would you use to quickly get an idea about the "big picture"?



- What would be your strategy for speed reading a large volume of scientific papers?

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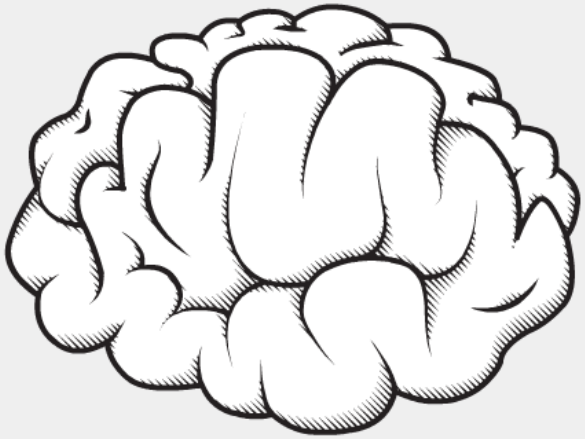
Critical Analysis of scientific papers



The art of scientific skepticism

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Aims of the study

- Is the hypothesis clearly stated?
- What experiments is the researcher aiming to do?

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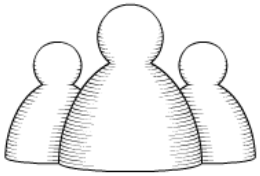
Sample



- Is the sample large enough to detect effect?
- Is there potential for bias? In which direction?

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Research design

- Does the study design address the hypothesis being tested?
- How are outcomes measured?

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Data analysis

- Are appropriate statistical tests used for the data obtained?
- Are key data discussed clearly shown in the tables and figures?

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Discussion & conclusions

- Do the conclusions fit with other scientific evidence? If not, why?
- Are study limitations mentioned and discussed?

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Ethics

- Are there any conflicts of interest?
- Are the animal or human ethics standards met?

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Anecdotal Evidence

THE JOURNAL OF CHILD PSYCHOLOGY AND PSYCHIATRY

ACAMH THE ASSOCIATION FOR CHILD AND ADOLESCENT MENTAL HEALTH

Journal of Child Psychology and Psychiatry **:* (2016), pp **–** doi:10.1111/jcpp.12565

Nutritional supplementation to reduce child aggression: a randomized, stratified, single-blind, factorial trial

Adrian Raine,[1] Rose A. Cheney,[2] Ringo Ho,[3] Jill Portnoy,[4] Jianghong Liu,[5] Liana Soyfer,[4] Joseph Hibbeln,[6] and Therese S. Richmond[5]

[1]Departments of Criminology, Psychiatry, and Psychology, University of Pennsylvania, Philadelphia, PA; [2]Department of Surgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, USA; [3]Division of Psychology, Nanyang Technological University, Singapore City, Singapore; [4]Department of Criminology, University of Pennsylvania, Philadelphia, PA; [5]School of Nursing, University of Pennsylvania, Philadelphia, PA; [6]Section on Nutritional Neuroscience, National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD, USA

In groups, use the checklist to analyze your section of the article.

Would you include this paper in your citations?

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Group 1 Introduction
Group 2 Methods
Group 3 Results
Group 4 Results
Group 5 Discussion
Group 6 Discussion

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Discussion

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Critical Analysis of Scientific Information

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