

Office of Research  
Research Development and Support Series  
**Writing the One Pager: The Shortest Path to Success**

Lora Arduser, A&S Associate Professor, Professional Writing

Bob Hyland, A&S Assistant Professor-Educator, Rhetoric and  
Prof Writing

Thursday, October 25, 2018

Baldwin Hall, Room 661

# Overview

Introductions

## Our Experts

- **Lora Arduser**, A&S Associate Professor, Professional Writing
- **Bob Hyland**, A&S Assistant Professor-Educator, Rhetoric and Prof Writing

# Office of Research Resources

Office of Research Web Site ([research.uc.edu](http://research.uc.edu))

Office of Research How2 ([researchhow2.uc.edu](http://researchhow2.uc.edu))

Research Directory ([researchdirectory.uc.edu](http://researchdirectory.uc.edu)) – Ohio Department of Higher Education – Ohio Innovation Exchange (OIE)

SPIN ([research.uc.edu/funding/spin](http://research.uc.edu/funding/spin))

Limited Submissions (via web portal ([rsrch-webserver.uc.edu/](http://rsrch-webserver.uc.edu/))) Two types – faculty research nominations and research proposals;  
Selection process dependent on type.

# Office of Research Initiatives

## Internal Funding Opportunities

Collaborative Research Advancement Grants Program

Track 1: Pilot Teams

Track 2: Strategic Teams

Faculty Bridge Program

Science Engineering + Art Design (SE+AD) Advancement Grant

Core Capability Development Grant Program

Core Equipment Grant Program

University Research Council

Creative & Performing Arts Cost Support Program

Humanities and Social Sciences Cost Support Program

Faculty Research Cost Support Awards Program

Graduate Student Stipend and Research Cost Awards for Faculty-Student Collaboration

Undergraduate Student Stipend and Research Cost Awards for Faculty-Student Collaboration

# Research Development and Support Series

Title	Date/Time/Location
Writing the One Pager: The Shortest Path to Success	Thursday, October 25, Baldwin 661, 4:00 to 5:30 PM
Building your Team: Undergrads, Graduate Students, and Postdocs	Tuesday, October 30, UHall 454, 3:30 to 5:00 PM
Research Support – UC Infrastructure (R)	Thursday, November 1, TUC Room 427, 9:00 to 10:30 AM
How to Navigate the IRB doing SBER	Thursday, November 8, TUC 400A, 10:30 AM to 12:00 PM
Working with Industry/Foundations	Wednesday, November 14, UHall 454, 1:00 PM to 2:30 PM
How to Work with Local and State Governments	Friday, November 30, TUC 425, 10:30 AM to 12:00 Pm
Arts & Humanities in the Age of Impact	Monday, December 10, DAAP 8220, 11:30 AM to 1:00 PM

Help us improve!

<https://www.surveymonkey.com/r/WTOPFall2018>





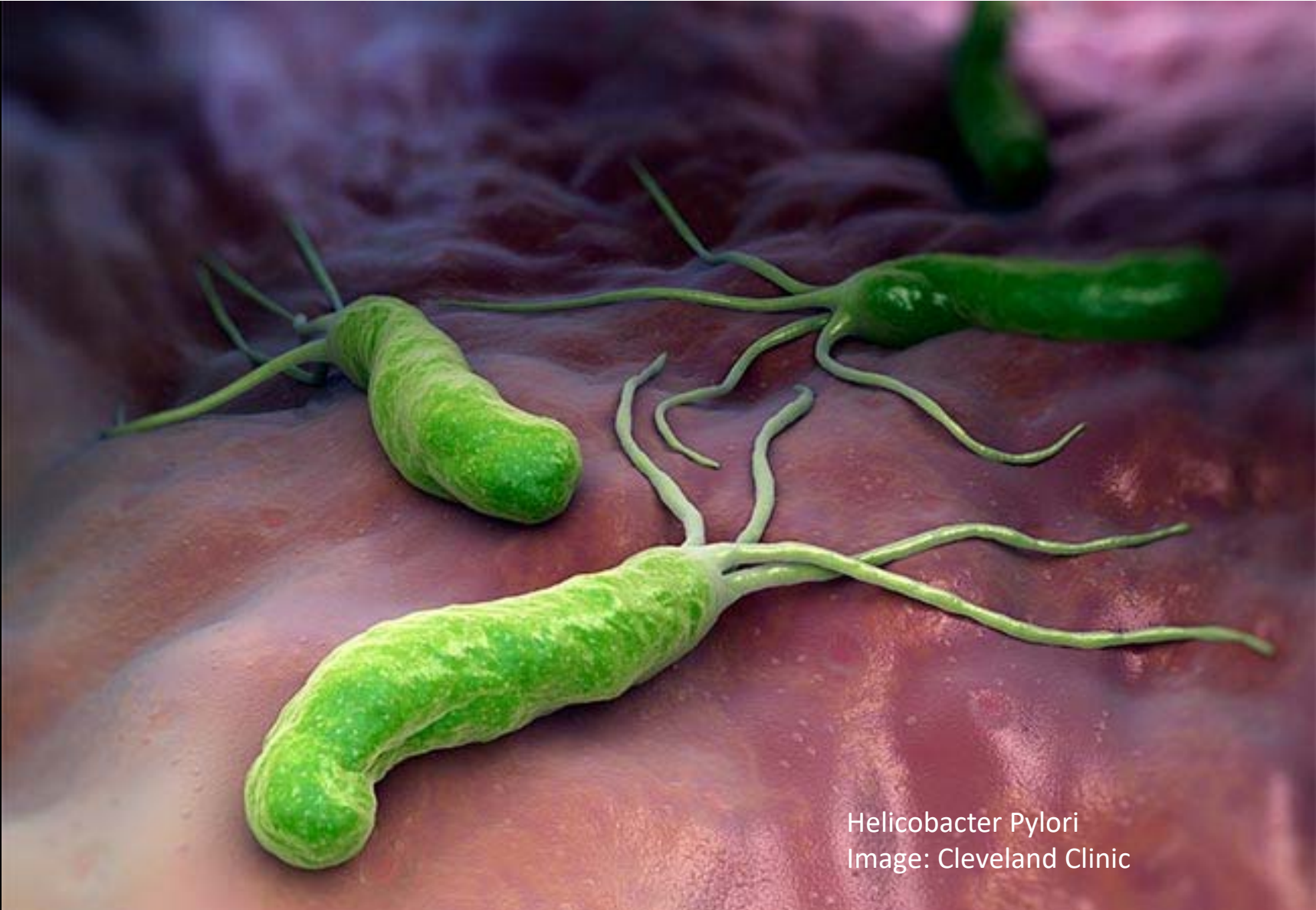
# Writing the One Pager – The Shortest Path to Success!



**1981**



Photo: Pinterest



Helicobacter Pylori  
Image: Cleveland Clinic



Photo: nobelprize.org

**1984**

Tagamet®  
\$1,000,000,000/yr

Zantac®  
\$1,000,000,000/yr

Endoscopy  
\$1,000,000,000/yr

Source: <http://discovermagazine.com/2010/mar/07>



Image: istockphoto.com



Problem solved,  
right?

Nope, response to letters came up crickets!

**1985**

Dr. Marshall came to the U.S. . . .



+



=

“Guinea-Pig Dr. Experiments on  
Self and Cures Ulcer”

NIH and FDA fast-track knowledge transfer of Dr. Marshall’s findings



The Nobel Prize in Physiology or Medicine 2005

Barry J. Marshall, J. Robin Warren

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## The Nobel Prize in Physiology or Medicine 2005



Photo: C. Northcott

**Barry J. Marshall**

Prize share: 1/2

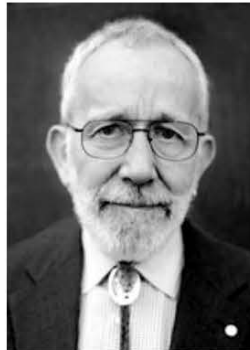


Photo: U. Montan

**J. Robin Warren**

Prize share: 1/2

The Nobel Prize in Physiology or Medicine 2005 was awarded jointly to Barry J. Marshall and J. Robin Warren *"for their discovery of the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease"*

Photos: Copyright © The Nobel Foundation

**2018**

Background

Headline

Specialized/Internal

Supporting claims

So what?

Spectacle/External

Conclusions

Background

Adapted from: [communicatingscienceaas.org/comm101/3point](http://communicatingscienceaas.org/comm101/3point)

# Key Points

- Don't give yourself an ulcer about it, but beware the curse of knowledge
- Remember to periodically get the aerial view
- Practice creating your scientific/technical story for various audiences

# Telling a Compelling Research Story



## First step in telling a story: Know your audience

“I can’t write without a reader. It’s precisely like a kiss—you can’t do it alone.”

— John Cheever

“Speech belongs half to the speaker, half to the listener.”

— Michel de Montaigne

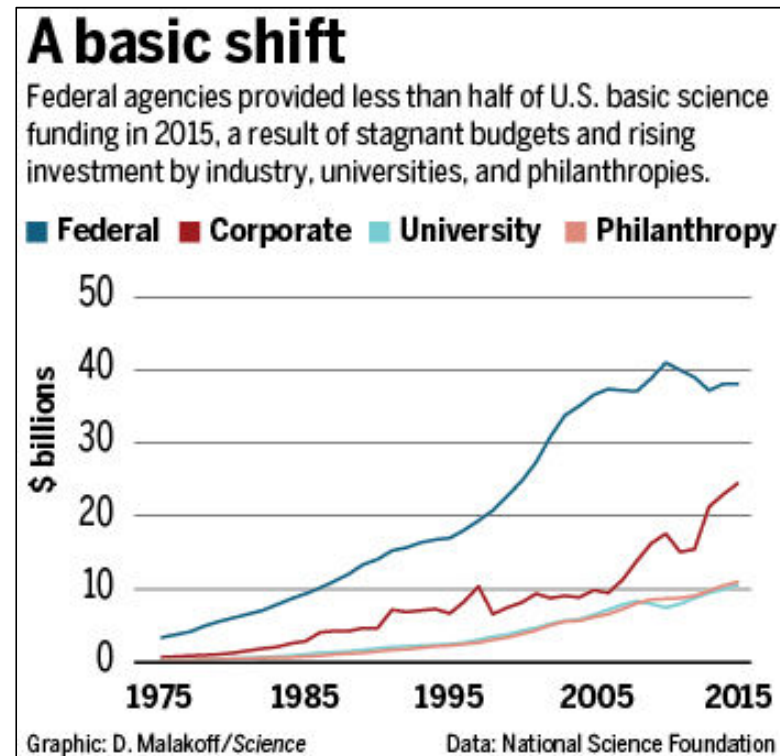
# What to know about your audience

- What **expectations** does your audience have about the subject? About you?
- How is your audience likely to see and/ or **understand** the topic or issue?
- Are there conflicting **beliefs** or concepts that will have to be dealt with, and how will you deal with them?
- Are **familiar** explanations trite or **boring**? **(Beware the curse of knowledge.)**
- Does the audience have firsthand experiences that you can draw on to illustrate points in your discussion?

(Katz & Penrose, 2010, p. 204)

# Why communicate with other fields and the public?

- Budgets are decreasing, competitive funding environments are increasing so we have to convince people with the money as well as scientific peers
- A democratic society requires its citizens to be informed about the issues that confront them



# Who is *your* audience?

- Journalists?
- Educated/interested general reader
- Government/policy makers?
- NIH program officers?
- NEH review board members?
- Local companies offering grant opportunities?

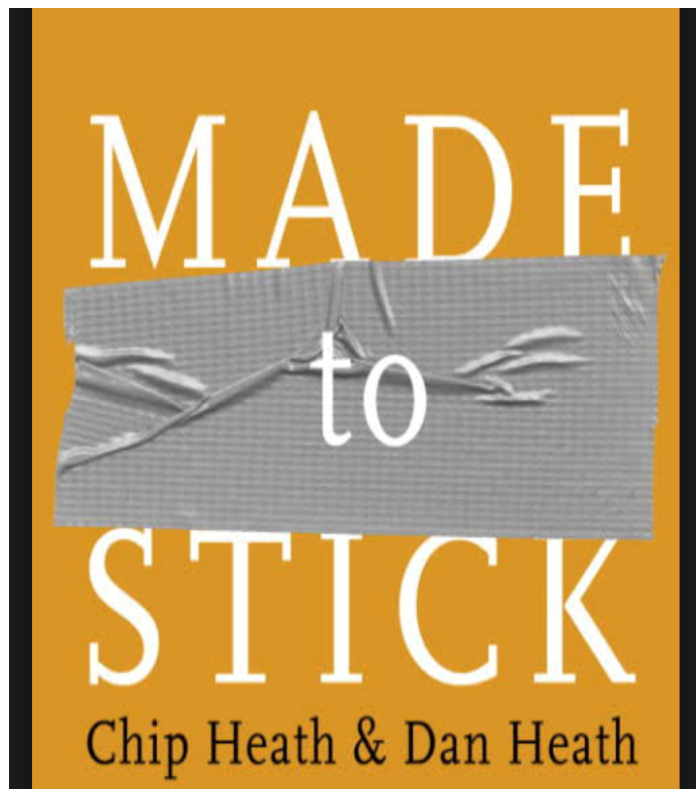
# Elements needed for good stories

1. Make that audience care by telling a story that matters (i.e., significance)
  - Have I done something new and interesting?
  - Is there anything challenging in my work?
  - Is my work related directly to a current hot topic?
  - Have I provided solutions to some difficult problems?
2. Give your story a structure your audience can follow (i.e., organization)
3. Engage your audience with a compelling language

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# What sticks with an audience



- Simple
- Unexpected
- Concrete
- Credible
- Emotional (make people care)
- Stories

# Appeals

Appeals of wonder



Appeals of practicality



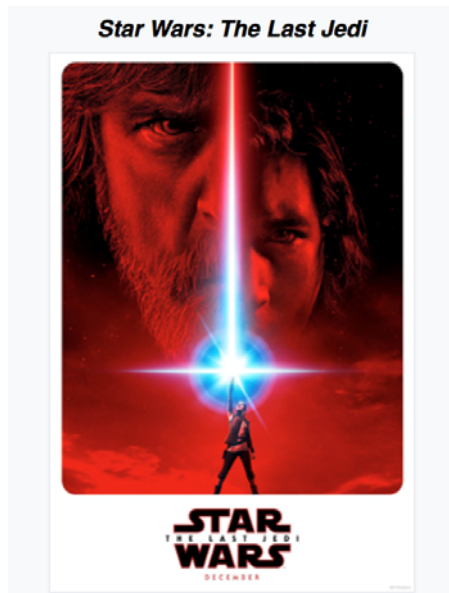
# Narrating significance

**Plot (story?) - why**

**Characters?**

**Action? – how**

**Scene?**



“A new generation’s tale of the **struggles of light and dark**, virtue and evil has begun with the death of **Han Solo**. In a Galaxy where **First Order** and **the Resistance are fighting against each other** in a war, the heroine, **Rey**, had the Force awoken within her.

What will happen to **the galaxy** when Rey and the only remaining Jedi knight, **Luke Skywalker**, meet? **Kylo Ren** has fallen to the Dark Side of the Force and killed his father, Han Solo. As a successor of his grandfather, **Darth Vader**, and a high ranking enforcer in the First Order, where will his ambition lead him to?

Furthermore, **Kylo Ren’s mother**, the leader of the Resistance, **Leia, Poe, Finn, and BB-8**, will embark on a new mission! The story has finally begun and it will lead to a mysterious climax!”

Image source: <http://www.imdb.com/title/tt2527336/>

## Plot? Characters? Action? Scene?

“**Denise Faustman**, MD, PhD, is Director of the **Immunobiology Laboratory at the Massachusetts General Hospital (MGH)** and an Associate Professor of Medicine at Harvard Medical School. Her **current research** focuses on discovering and developing new treatments for **type 1 diabetes** and other autoimmune diseases, including Crohn's disease, lupus, scleroderma, rheumatoid arthritis, Sjögren's syndrome, and multiple sclerosis. She is currently **leading a human clinical trial program testing the efficacy** of the BCG vaccine for **reversal of long-term type 1 diabetes**.

[Positive results from the Phase I study were reported in 2012.](http://www.faustmanlab.org) Source: <http://www.faustmanlab.org>

## Elements needed for good stories

- 
2. Give your story a structure your audience can follow (i.e., organization)

# Scientific article structure

## Introduction

Theoretical framework

Previous work

**Research question**

**Hypothesis**

## Methods

Design

Techniques

## Results

## Discussion

Summary

Interpretation

Criticism

Implications

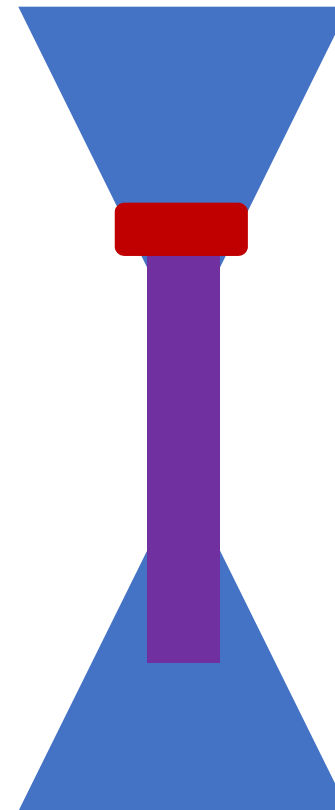
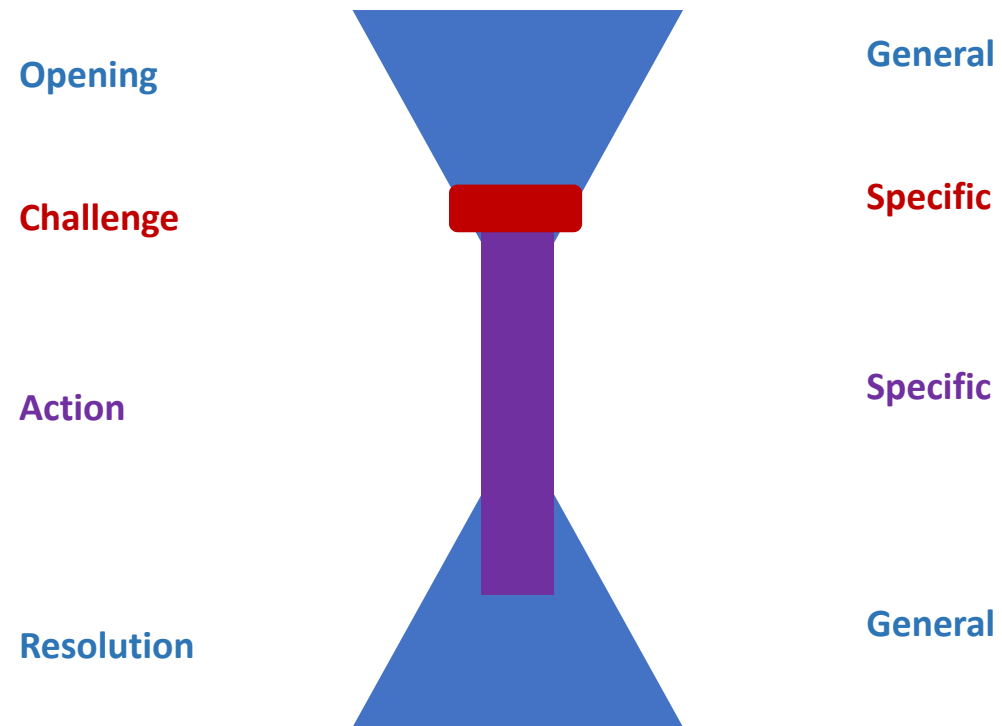
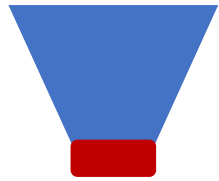


Image source: Kenyon Biomedical Writing Institute

## Structure for all fields



## Other structures



A,B,T



LDR

LD

# And, But, Therefore

- Across an entire document
- First paragraph
  - Research article introduction
  - Grant proposal specific aims page

Image source: Kenyon Biomedical Writing Institute

**Project Summary:**

**Overview:** The Na,K,2Cl-cotransporter (NKCC) comprises a family of cation-coupled chloride cotransporters (CCCs) that play crucial roles in osmotic regulation, cell ion balance, and epithelial ion transport across animal phyla. In vertebrates, NKCCs are expressed on basolateral membranes of secretory epithelia, while NKCC2 is expressed on apical membranes of absorptive epithelia. In arthropods and other invertebrates, physiological evidence supports a role of NKCCs in both secretory and absorptive epithelia, but the molecular mechanisms are incompletely understood. The genome of the yellow fever mosquito *Aedes aegypti* contains two putative NKCCs, aeCCC1, aeCCC2, and aeCCC3. The goal of this project is to determine the molecular properties of these transporters to their physiological roles in secretion and absorption, and to investigate their role in osmoregulation.

Mosquitoes are an outstanding model system for these studies because 1) sophisticated molecular approaches are available for them, and 2) mosquitoes experience diverse osmoregulatory challenges as they progress through their life cycle from aquatic larvae to terrestrial adults. Furthermore, 3) larvae may encounter alterations to their environmental salinity as adult females face novel osmoregulatory challenges associated with engorging on vertebrate blood meals. Thus, the need for secretion of fluid and ions by the Malpighian (renal) tubules, the absorption of fluid and ions by the foregut, and the absorption of ions by the anal papillae must be understood to fully appreciate mosquito osmoregulation.

Our preliminary data indicate that aeCCC2 and aeCCC3 participate in ion transport across development and tissues, leading to the hypothesis that aeCCC2 and aeCCC3 participate in absorption. The following aims test this hypothesis:

**Aim 1: Characterize aeCCC mRNA and protein expression across developmental stages, tissues, and osmoregulatory challenge (e.g., blood meals) via qPCR, Western blots, and immunoblotting.**

**Aim 2: Determine functional properties (e.g., ion affinities and inhibitor sensitivities) of aeCCCs expressed heterologously in *Xenopus* oocytes using flux assays.**

**Aim 3: Assess the osmoregulatory roles of aeCCCs by inhibiting their function in whole mosquitoes using pharmacological blockers and/or RNA interference.**

**Intellectual Merit:** The proposed work characterizes aeCCCs across biological levels, linking their molecular properties to cellular functions and whole-animal physiological roles. Vertebrate NKCCs offer working models for the putative roles of aeCCCs in secretory and absorptive epithelia, but prior work, our preliminary data, and sequence analysis suggest that crucial differences are likely. Although aeCCC sequences resemble NKCCs, divergence in the transmembrane domains suggests different ion requirements and inhibitor sensitivities. Our preliminary data localize aeCCC2 and aeCCC3 expression to absorptive tissues, but physiological studies by others often find these tissues to be insensitive to NKCC inhibitors. Finally, sequence analyses of vertebrate NKCCs and insect genes suggests that the aeCCCs diverged and specialized independently from the vertebrate genes. Thus, the proposed work offers potential insights into convergent pathways toward the evolution of secretory and absorptive CCCs.

**Broader Impacts:** The proposed studies will strengthen an existing collaboration between investigators from two nearby institutions that span the complete academic spectrum: a small, private college (Kenyon College) and a large, public university (The Ohio State University, OSU). The PI will build upon their strong record of student mentoring. Annually, four undergraduates and one graduate student will have outstanding training opportunities. Kenyon undergraduates will work in a research-intensive environment at the OARDC – the agricultural research campus of OSU in Wooster – and continue their projects at Kenyon. A graduate student from OSU will teach an upper-level seminar course at Kenyon with close mentoring. The PI will use their ongoing involvement in existing programs to provide research experiences for students from groups traditionally underrepresented in the sciences.

The PI will develop modules to teach basic biological principles (osmosis, diffusion, active transport, food web, metamorphosis) using mosquitoes and related organisms. They will train undergraduate and graduate students to teach these modules in existing programs with strong representation from underrepresented and economically disadvantaged groups: summer and academic year pre-college programs for students from high schools that serve underrepresented students, field trips by 6-12 students from a local rural school district to Kenyon's Brown Family Environmental Center, and an annual entomology outreach program to 2<sup>nd</sup> and 3<sup>rd</sup> graders from rural elementary schools near Wooster, OH. Approximately 400 students will be reached annually.

Many papers and talks are structured as lists

- We already know this
- **And** that
- **And** this other thing
- **And** we did this
- **And** then we did that
- **And** look at Figure 1 **and** Figure 2 **and** all our pretty tables
- **And** we think it all means this



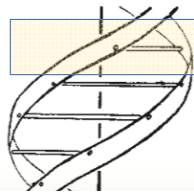
## MOLECULAR STRUCTURE OF NUCLEIC ACIDS

### A Structure for Deoxyribose Nucleic Acid

WE wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest.

A structure for nucleic acid has already been proposed by Pauling and Corey<sup>1</sup>. They kindly made their manuscript available to us in advance of publication. Their model consists of three intertwined chains, with the phosphates near the fibre axis, and the bases on the outside. In our opinion, this structure is unsatisfactory for two reasons: (1) We believe that the material which gives the X-ray diagrams is the salt, not the free acid. Without the acidic hydrogen atoms it is not clear what forces would hold the structure together, especially as the negatively charged phosphates near the axis will repel each other. (2) Some of the van der Waals distances appear to be too small.

Another three-chain structure has also been suggested by Fraser (in the press). In his model the phosphates are on the outside and the bases on the inside, linked together by hydrogen bonds. This structure as described is rather ill-defined, and for this reason we shall not comment on it.



We wish to put forward a radically different structure for the salt of deoxyribose nucleic acid. This structure has two helical chains each coiled round the same axis (see diagram). We have made the usual chemical

And

But

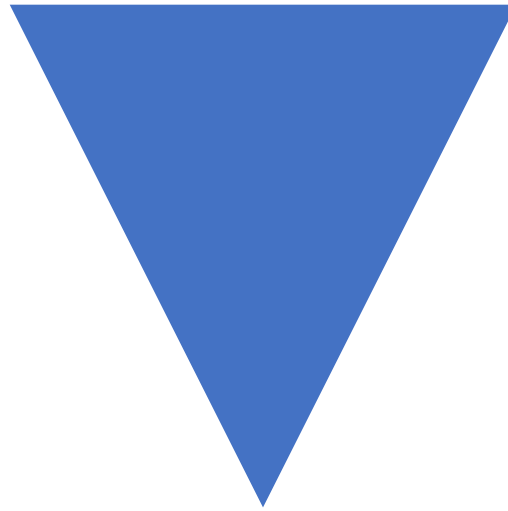
Therefore

**A Structure for Deoxyribose Nucleic Acid**

Watson J.D. and Crick F.H.C.  
*Nature* **171**, 737-738 (1953)

## Another story structure: LD

- Lead
- Develop



**Most important**

**Less important**

## Another story structure: LDR

- Lead
- Develop
- Resolve



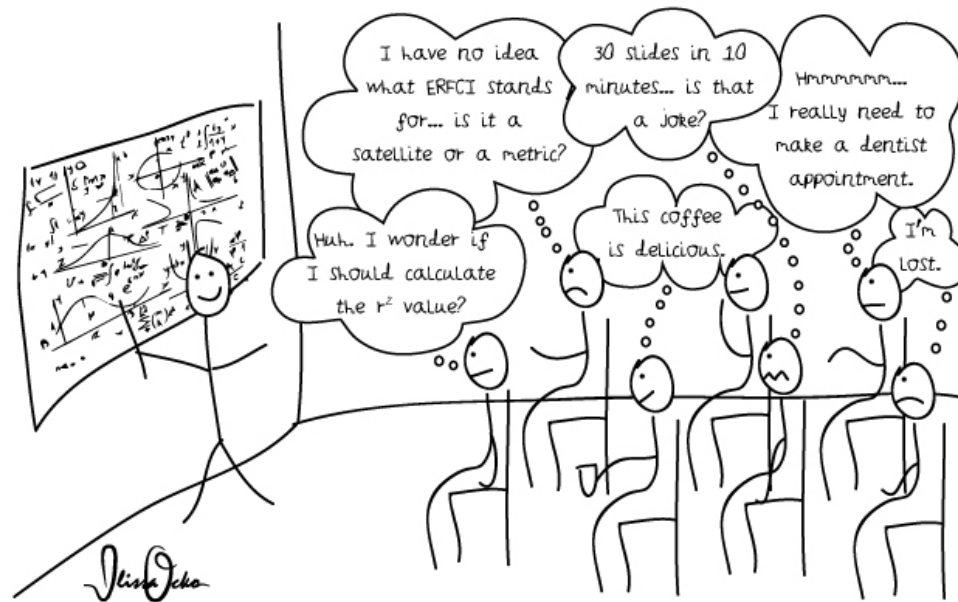
**Most important**

**Less important**

**Very important**

## Elements needed for good stories

### 3. Engage your audience with a compelling language



# Adapting content for specialized audiences\*

- Narration
  - Examples
  - Definition
  - Analysis
  - Comparison
  - Graphics
- *\* This means anyone not in your specific discipline or subdiscipline. The person may be a specialist – just not in your field.*

# Paragraphs

- Write coherent paragraphs with a strong topic sentence (or sentences)
- Maintain a constant perspective and/or shift perspective with linked sentences
- Types of paragraphs
  - List with constant subject
  - Story with linked subjects

Best-selling novels are often described as “page turners.” Best-cited papers and best-funded proposals are the same. They draw readers in and lead them through the story – they flow. A break in that flow can derail a reader and abruptly change a piece from a “page turner” to a “re-turner” with a rejection letter attached.

-Schimel, J. Writing Science. Oxford, 2012.

# Sentences

1. **Precision/Simplicity/Conciseness:** Choose concrete words that clearly convey your ideas. Avoid jargon or explain it.
1. **Agent/action:** Make the agent (central character) the subject and the action the verb. Put the subject and verb close to each other.



# Examples

- Why is it valuable to write to this other audience?
- Who are they?
- What do you do in writing or don't do when writing for this particular audience?

# Your goals and implications paragraphs

- Maximum = 200 words
- Content
  - What is the goal of your project?
  - How do you pursue that goal?
  - Why does it matter?
- Functions
  - First or last paragraph of Introduction
  - First or last paragraph of Discussion
  - Specific aims page of grant
  - Research statement for job or grant application
  - Website blurb
  - Elevator pitch for a grant program officer phone call