communicating science to scientists

INSPIRE.

martin krzywinski
mkweb.bcgsc.ca

Canada’s Michael Smith Genome Sciences Center
BC Cancer Research Center
BE AS INTERESTING AS POSSIBLE
AS QUICKLY AS POSSIBLE
WHAT MAKES MANY OF THESE PRESENTATIONS BAD?
WHICH ONES DO YOU LIKE THE MOST?
WHY?

HTTP://WWW.YOUTUBE.COM/WATCH?V=OBOMKGXEDKE
ASSUME YOUR AUDIENCE TO BE
INTELLIGENT
BUT
EASILY BORED
DO NOT MISTAKE THE CAN FOR THE SOUP
YOUR SLIDES ARE NOT THE PRESENTATION
YOUR SLIDES ARE A REPRESENTATION OF THE PRESENTATION
YOUR SLIDES ARE NOT THE ONLY SOURCE OF INFORMATION
YOUR SLIDES ARE
THE FIRST SOURCE
OF INFORMATION
topic  narrative  delivery
MAKE YOUR PRESENTATION EPISODIC
look here
NO

CLIPART • GRADIENTS • BULKY ARROWS
NO

READING • WALLS OF TEXT • DATA DUMPING
AVOID TIGHT PACKING AND ASYMMETRIES

calm

tense
<table>
<thead>
<tr>
<th>ALIGN</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRID</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE 1

IMPORTANCE OF CHOICE
You have more data and analysis than you can fit in a presentation. How do you choose what to show? Have a concise description of main points. Do not overinform. Choose a narrative that naturally ends at your main conclusion. Touch on relevant (not all) supporting data. Give the audience a sense (not tedious proof) of the scale of complexity and connections in your data.

**EXERCISE**

1. For each typeface, choose exactly three characters that you feel best express the style, personality and spirit of the typeface. Your choices can be different for each.

2. If your choices are different for each typeface, select a minimal set of three characters that serve all three typefaces.

Justify your choices. What aspect of the typeface did your characters exemplify?
CASE STUDY 1

BRIDGETTE CLARKSTON
# Kallymeniaceae in Canada

<table>
<thead>
<tr>
<th>Genus</th>
<th># Species Reported:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euthora</td>
<td>1</td>
</tr>
<tr>
<td>Pugetia</td>
<td>2</td>
</tr>
<tr>
<td>Callophyllis</td>
<td>9</td>
</tr>
<tr>
<td>Erythrophyllum</td>
<td>1</td>
</tr>
<tr>
<td>Kallymeniopsis</td>
<td>1</td>
</tr>
<tr>
<td>Kallymenia</td>
<td>1</td>
</tr>
<tr>
<td>Hommersandia</td>
<td>1</td>
</tr>
<tr>
<td>Cirrulicarpus</td>
<td>1</td>
</tr>
<tr>
<td>Callocolax</td>
<td>1</td>
</tr>
</tbody>
</table>

[Images of the species mentioned in the table.]
Determining Relationships
Results:
LSU+barcode

Support values:
bootstrap (100%) / aLRT (1.00) / posterior probability (1.00)
* = ≥ 95% bootstrap, 0.95 aLRT, 0.95 posterior probability

0.01 substitutions / site

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Euthora timburtonii
E. cristata
Beringia wynnei

Kallymeniopsis oblongifructa
Erythrophyllum delesserioides
Beringia wynnei

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Callophyllis laciniata
Salishia sanguinea
S. firma
S. chilensis

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Callophyllis flabellulata
C. violacea
C. thompsonii
C. crenulata
C. dissecta
C. pinnata
C. heanophylla
C. radula
C. variegata
C. beringensis
C. dissecta
C. pinnata Chile
C. edentata
C. heanophylla
C. radula
C. crenulata
C. pinnata

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Pugetia

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Pugetia
PHOTOS LOOK ALIKE TO NONSPECIALISTS—
FIX POSITION TO PROVIDE CONTINUITY

ACHIEVE EMPHASIS
WITH SPACING AND ALIGNMENT
INSTEAD OF COLOR
<table>
<thead>
<tr>
<th>SPECIES</th>
<th>GENUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Pugetia</td>
</tr>
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<td>9</td>
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</tr>
<tr>
<td>1</td>
<td>Kallymeniopsis</td>
</tr>
<tr>
<td>1</td>
<td>Euthora</td>
</tr>
<tr>
<td>1</td>
<td>Erythrophyllum</td>
</tr>
</tbody>
</table>

Kallymenia (1), Hommersandia (1), Cirrulicarpus (1), Callocolax (1)
Kallymenia (1), Hommersandia (1), Cirrulicarpus (1), Callocolax (1)
CASE STUDY 2

SUSAN VICKERS
Natural Gas Powered Vehicles

<table>
<thead>
<tr>
<th>Sector</th>
<th>Natural Gas</th>
<th>Oil</th>
<th>Coal</th>
<th>% Cleaner Oil</th>
<th>% Cleaner Coal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Dioxide</td>
<td>50409</td>
<td>70659</td>
<td>89616</td>
<td>28.7%</td>
<td>43.7%</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>17</td>
<td>14</td>
<td>90</td>
<td>-20.0%</td>
<td>81.1%</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>40</td>
<td>193</td>
<td>197</td>
<td>79.4%</td>
<td>79.8%</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>&lt;1</td>
<td>483</td>
<td>1117</td>
<td>99.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Particulates</td>
<td>3</td>
<td>36</td>
<td>1182</td>
<td>92.1%</td>
<td>99.8%</td>
</tr>
</tbody>
</table>
INTRODUCTION SLIDE BUSY—MAIN POINT IS LOST

LAYER COMPLEX INFORMATION ACROSS SEVERAL SLIDES

START WITH INTRIGUE OR A QUESTION, IF POSSIBLE
Think Green, Think Clean.
We run on clean burning natural gas.

BUT HOW CLEAN?
Issues with Natural Gas

Global warming potential

1 kg CH₄

21 kg CO₂

United States Environmental Protection Agency: Overview of Greenhouse Gases
SAR of Pd(NO$_3$)$_2$ by Cerium Formate

1. CF synthesis

- cerium nitrate + EG
- 418 K
- 24h

2. CF or CHC-f

- Pd(NO$_3$)$_2$•xH$_2$O
- H$_2$O, RT 2h

3. Calcine

- CHC
- Pd
- CeO$_2$
- PdO

Pd-cerium formate composite
MAINTAIN CONSISTENCY IN LABELING COMPLEX STEPS (K VS C, Δ)

AVOID OUTLINES OR BUBBLES FOR EMPHASIS—USE SPACE

AVOID USE OF IDENTICAL ARROWS FOR DIFFERENT MEANING—REACTION VS CALLOUT

INTRODUCE DETAIL IN OVERLAY SLIDE
SAR of Pd(NO₃)₂ by Cerium Formate

**SYNTHESIS**

145°C

24 h

cerium nitrate + EG → CF precursor

**STEP 2**

Pd(NO₃)₂ · xH₂O

H₂O, RT

24 h

CF → CF/Pd

CHC-f → CHC-f/Pd

**CALCINE**

centrifuge

CHC Pd

400°C

4 h

Pd-cerium formate composite → Pd-CeO₂
SAR of Pd(NO$_3$)$_2$ by Cerium Formate

**SYNTHESIS**

- 145°C
- 24 h
- cerium nitrate + EG → CF precursor

**STEP 2**

- Pd(NO$_3$)$_2$ · xH$_2$O
- H$_2$O, RT
- 24 h
- CF CHC-f → CF/Pd CHC-f/Pd

**CALCINE**

- centrifuge
- CHC Pd
- 400°C
- 4 h
- CHC Pd

Pd-cerium formate composite

Pd-CeO$_2$
CASE STUDY 3

ANNE STEINØ
Elucidation of mechanisms involved in factor VIIa clearance

PhD defense by
Anne Basted
Copenhagen University
and Novo Nordisk A/S

Outline
- Introduction to hemostasis and FVIIa treatment
- Pharmacokinetics (PK) of FVIIa (paper I)
- FCR-dependent binding to endothelial cells (paper II)
- GPCR-independent binding to endothelial cells (paper III)
- General discussion
- Future directions

Why is he still in a wheelchair?
Background – Inhibitor patient

Why is he still in a wheelchair?
WHY IS THIS ON SLIDE 15?
HUMAN STORIES BEFORE DETAIL

APPEAL TO EMOTION FIRST, THEN PROVIDE FACTS

IF ASKING THE AUDIENCE TO COPE WITH COMPLEXITY, TELL THEM WHY
EXERCISE 2

CREATE A PRESENTATION

TOPIC: CANADA
USE WIKIPEDIA ENTRY FOR INFORMATION

SLIDES: 2 11X17, DRAWN, BLACK MARKER
PREP TIME: 20 MIN
TIME: 3 MIN

AFTER THE PRESENTATION GIVE A 2 MIN PRESENTATION ABOUT YOUR PRESENTATION—WHAT WAS YOUR PROCESS? WHAT CHOICES DID YOU HAVE TO MAKE?