

Creating **Digital Illustrations** for Your Research

Workshop II

February 10, 2016

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Workshop sections

Graphic .. Function

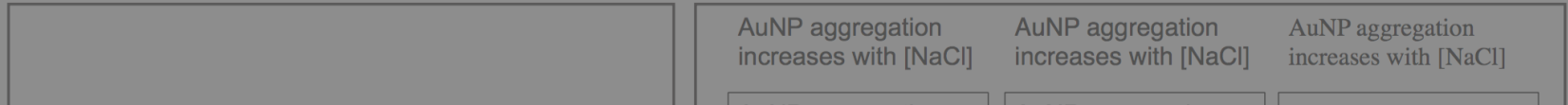
.. **Design**

.. Execution

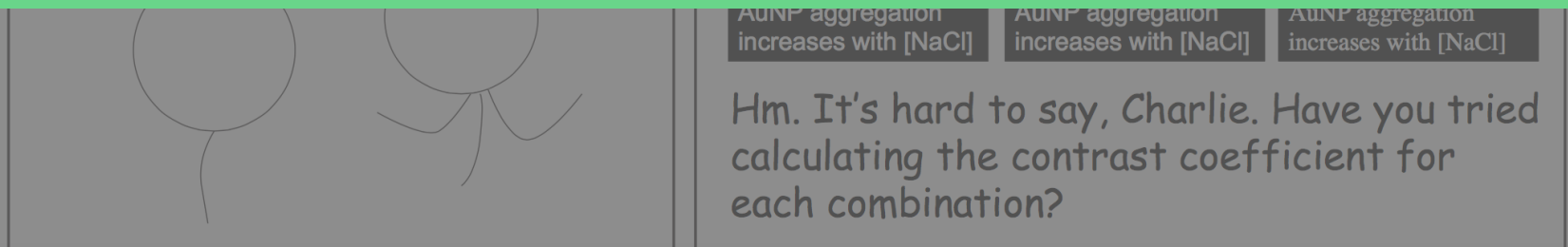
.. Style

Trust your instincts

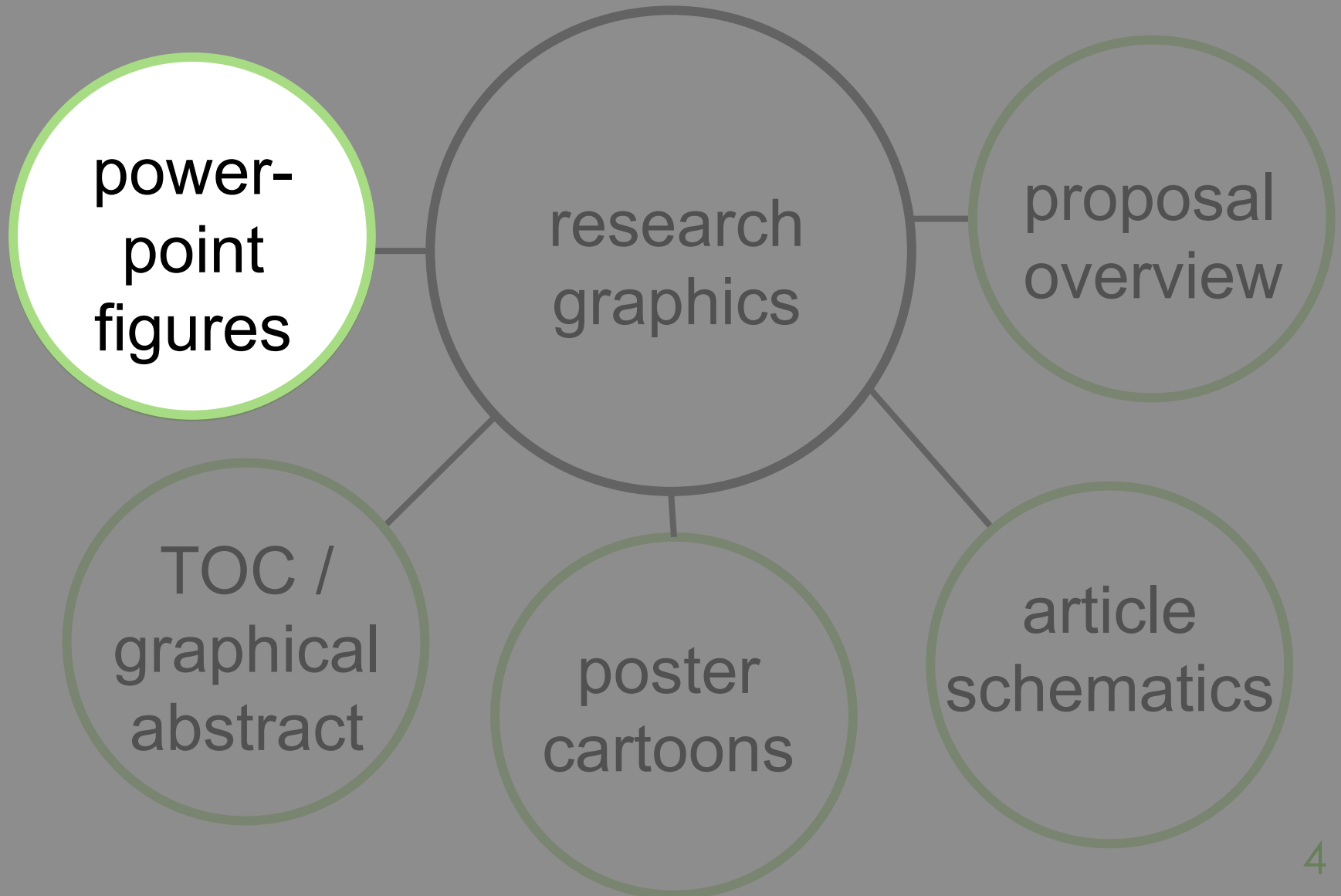
Don't make it too complicated ...



Prioritize **simplicity** + **message**



Types of Research Illustrations



PowerPoint overview figure

Goal – Introducing proposed research that involves the use of fluorescence microscopy to learn about chemical reactions on the surface of nanoparticles in real time

A note about sketching

People who doodle
remember

29%
more

than those
who do not.

“Doodling and dramatically
enhances the experience of
learning.” – Sunni Brown, author of *The Doodle Revolution*



1. Define your message

Goal – envision the end result

What are you trying to communicate?

Ask:

- What is most important?
- How would you explain the idea to a friend?
- How to draw it on a napkin?
- I would hire this graphic to _____
- Which aspects are easier to show than tell?
- What does your audience know already?

2. Brainstorm components

Noun checklist

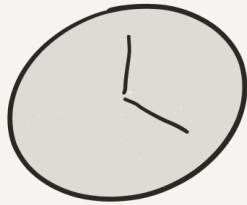
- subject
- technique
- instrument
- type of data
- findings
- sample
- abstract concepts
- equations
- symbols

Method checklist

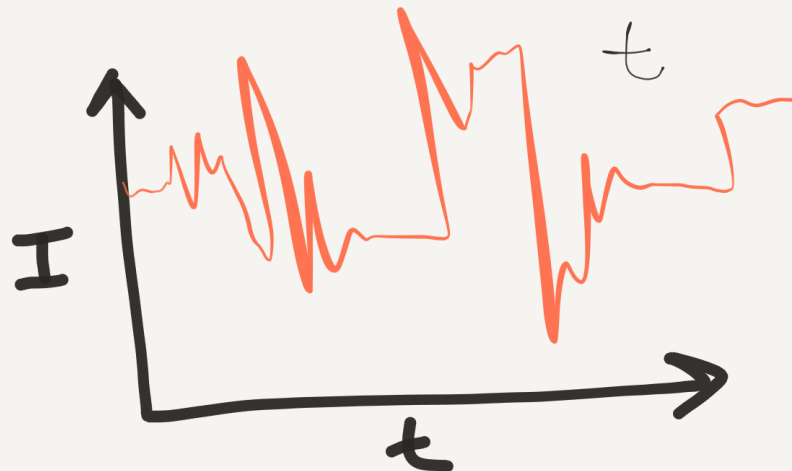
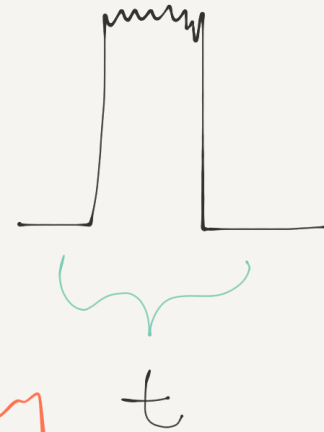
- Wikipop
- Search for similar
- Google images
- Google image + “cartoon”
- paper figures

Component sketches

Temporal resolution



MS
milliseconds



3. Revise vision

Goal – Decide which parts you need and don't

Ask these questions –

1. Is it necessary?

no

yes

2. Can you
imagine it?

yes

3. In an way that's
possible?

yes

Include it!

4. Rough sketch

Goal – Guide for figure composition

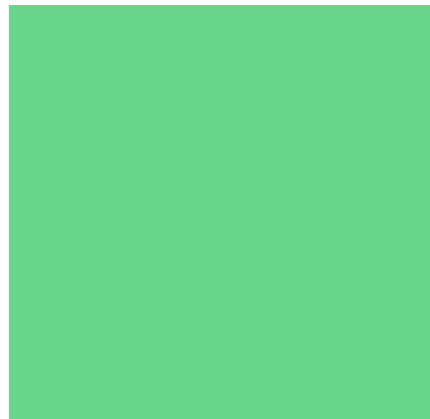
Consider:

- Scale
- Flow
- Organization
- Emphasis
- Simplicity

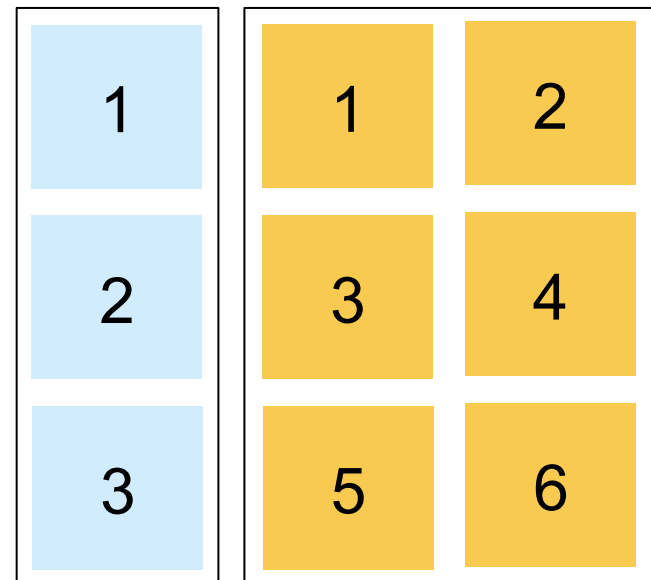
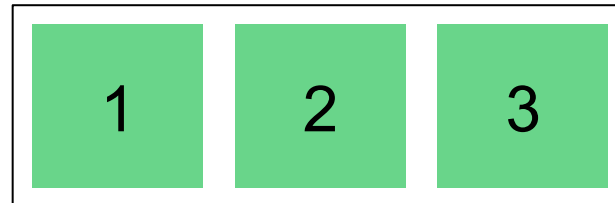
Thoughts on flow

- The viewer's focus should move easily through the graphic

entry point →
in top left

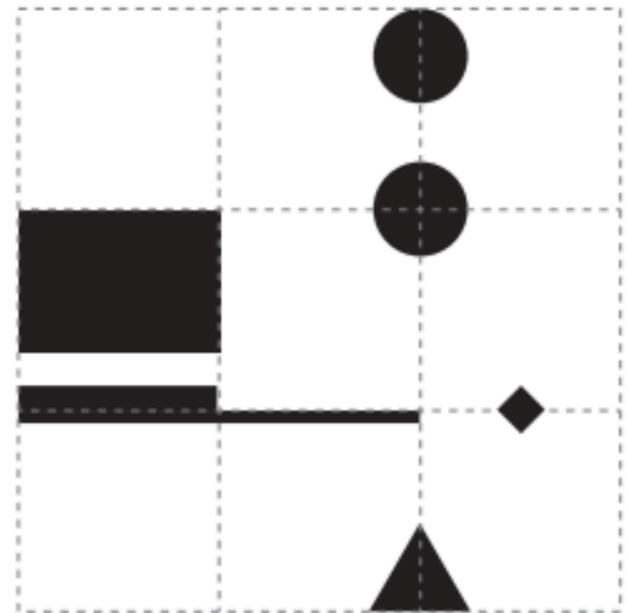


Logical arrangements



Thoughts on organization

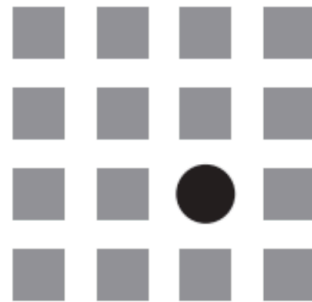
- Hidden grids can visual organize spaces and elements



Thoughts on emphasis

Varying elements →
Make the key part of
the figure stand out

SHAPE



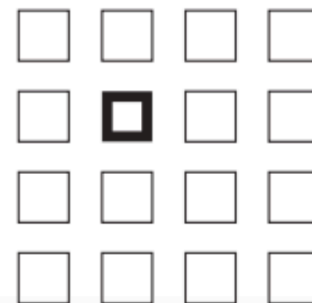
SIZE



ORIENTATION



WEIGHT



POSITION

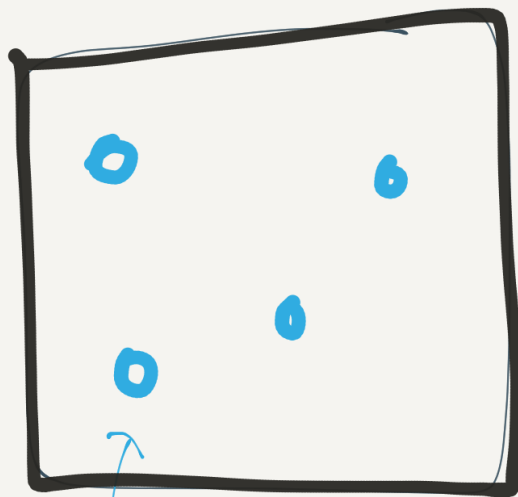


COLOR



4. Rough sketch

OUTLINE



→ spatial

→ temporal

catalytic events

5. Create components

nanorod

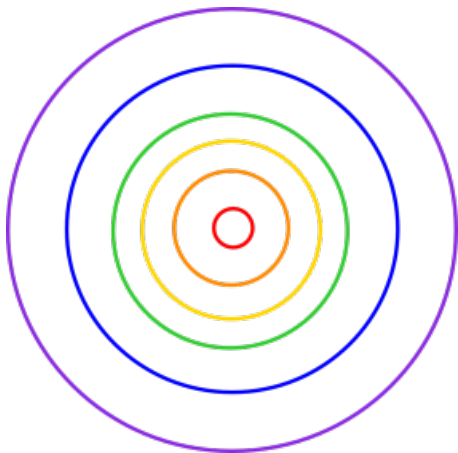


product



**covered in
workshop III**

location



intensity vs. time trace



6. Combine and arrange

Goal – create a digital 1st draft

Consider:

- Color scheme
- Visual contrast
- Simplicity

7. Revise

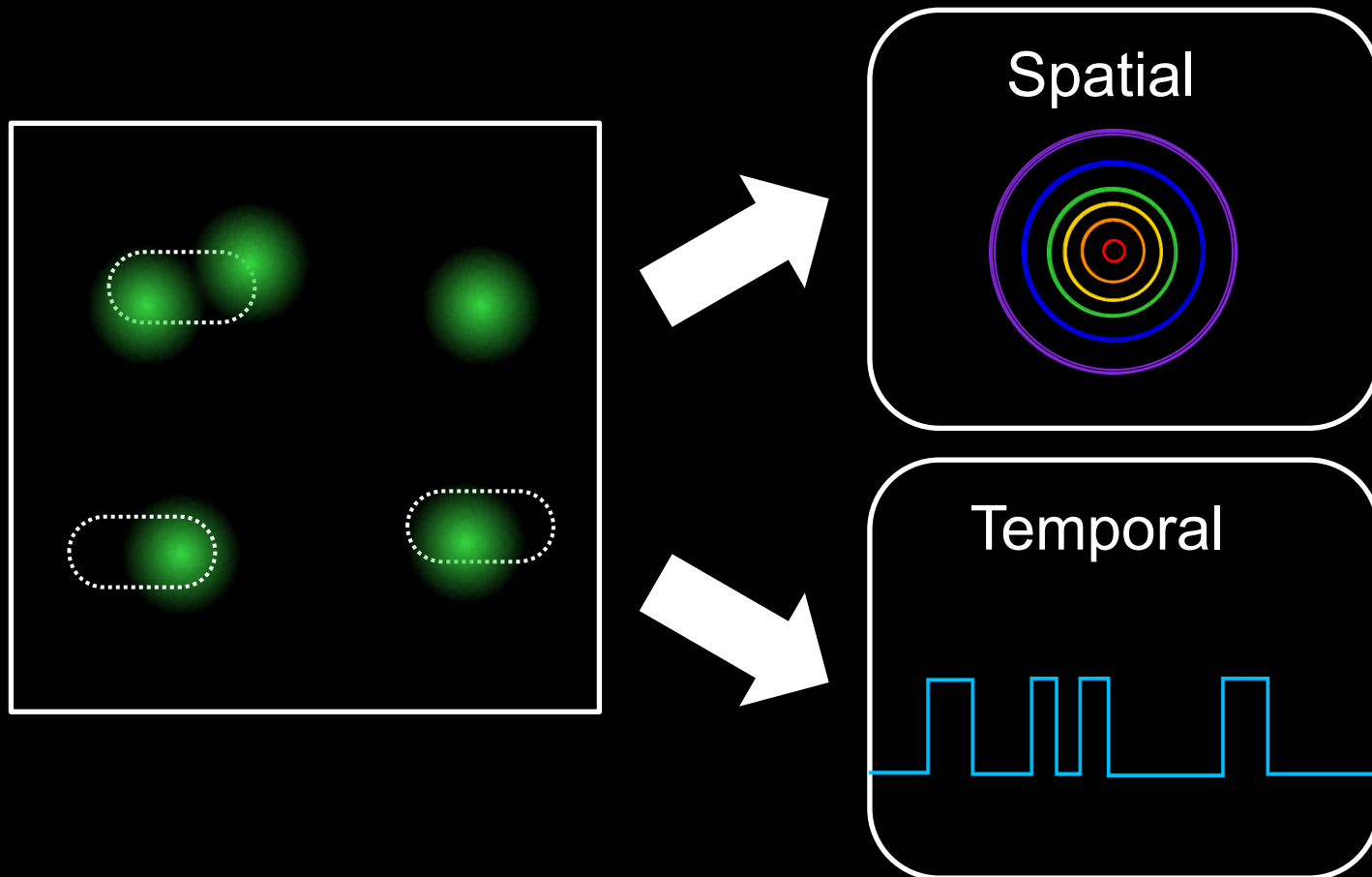
Goal – polish the final graphic

Strategies:

- Remove something, see if you like it
- Print it at final size
- Survey peers
- CWOVC

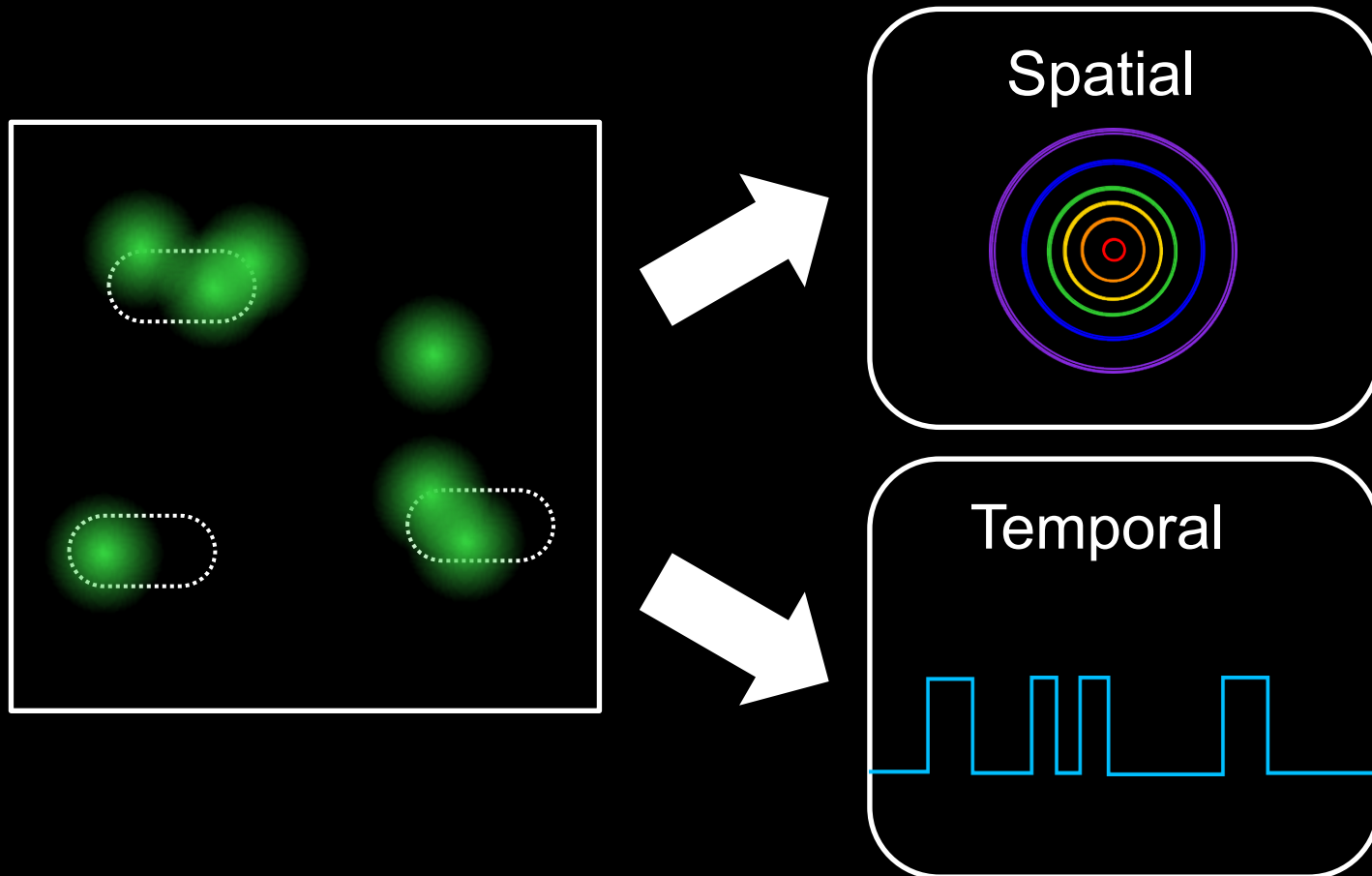
Technique

Fluorescence microscopy yields information about kinetics and location



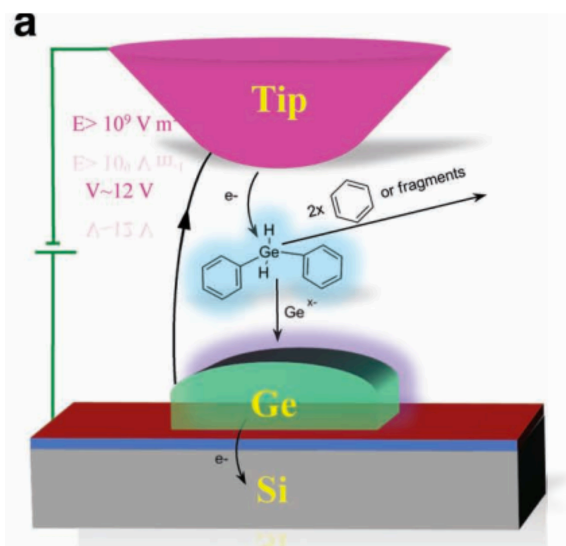
Technique

Fluorescence microscopy yields information about kinetics and location

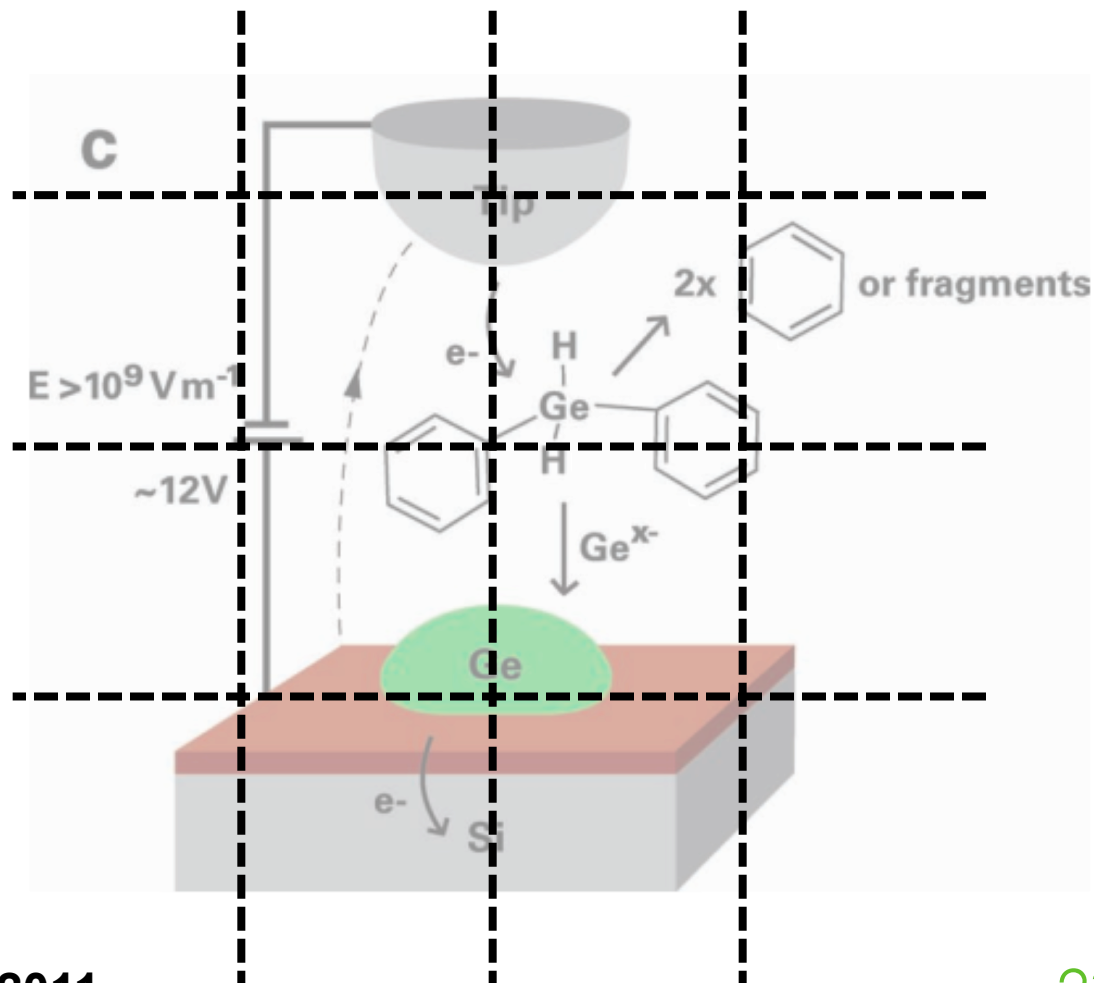


Revision example

Initial



Revised

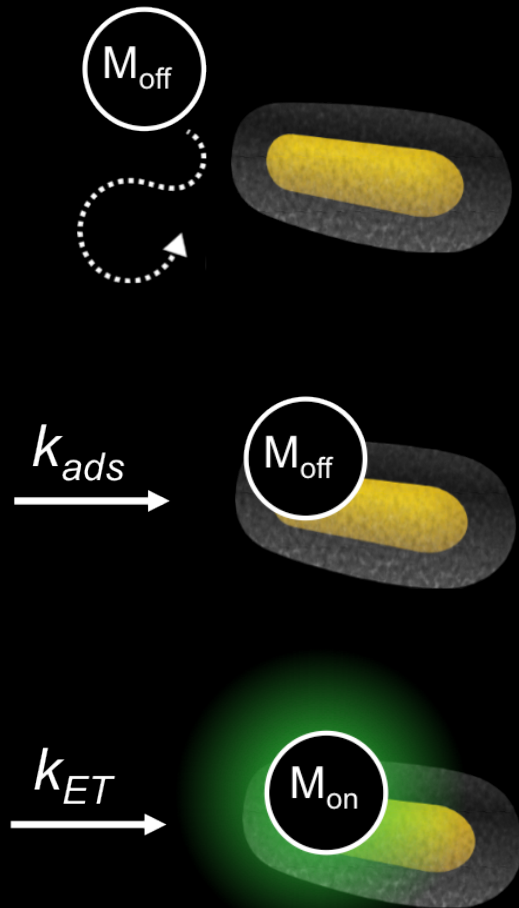


Under the table...

Design practice

- Read your *Science* news article snippet
- Design a graphic that enhances understanding
- Rough sketch (10 min)

Illustrated



Written

Specific Aim III – B: Charge transfer rate constants.

We will determine the charge transfer rate constant using the rate of single molecule fluorescence events obtained through super-resolution imaging.⁴⁸⁻⁵³ The rate of hot electron transfer from the semiconductor-coated nanorod to a molecular acceptor is a convolution of the rate of adsorption onto the semiconductor surface, and the rate of charge transfer (Figure 12 E). The uncorrected charge transfer rate will be measured through the on-off intervals associated with HN-BODIPY or resorufin production. The dye molecule adsorption rate will be elucidated for the same particles through control experiments with the fluorescent product molecule. The charge transfer efficiency between the molecular acceptor (m) and semiconductor shell (SC), $\eta_{\text{SC-m}}$, will be calculated from the adsorption and hot electron transfer rate constants determined for individual coated nanorods. We will also analyze the electron transfer efficiency from the metal nanoparticle to the molecule, $\eta_{\text{M-m}}$, which accounts for hot electron losses in the semiconductor shell, through a combination of $\eta_{\text{M-SC}}$ from Specific Aim II and $\eta_{\text{SC-m}}$.

Step summary

1. Define message
2. Brainstorm components
3. Revise vision
4. Rough sketch
5. Imagine components
6. Combine and arrange
7. Revise

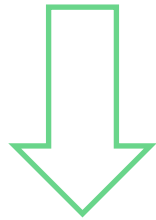
Now find your group

Revise together

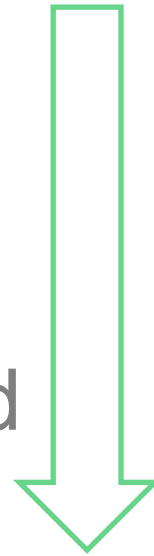
- Share and compare your sketches
- Combine ideas
- Group sketch (10 min)

Software poll

Adobe Illustrator *or* Inkscape?



- free at DMC
- professional standard



- open source (free to use)
- less “fancy”

Over the next two weeks...

Brainstorm concepts and
rough sketch ideas for a
graphic to work on

