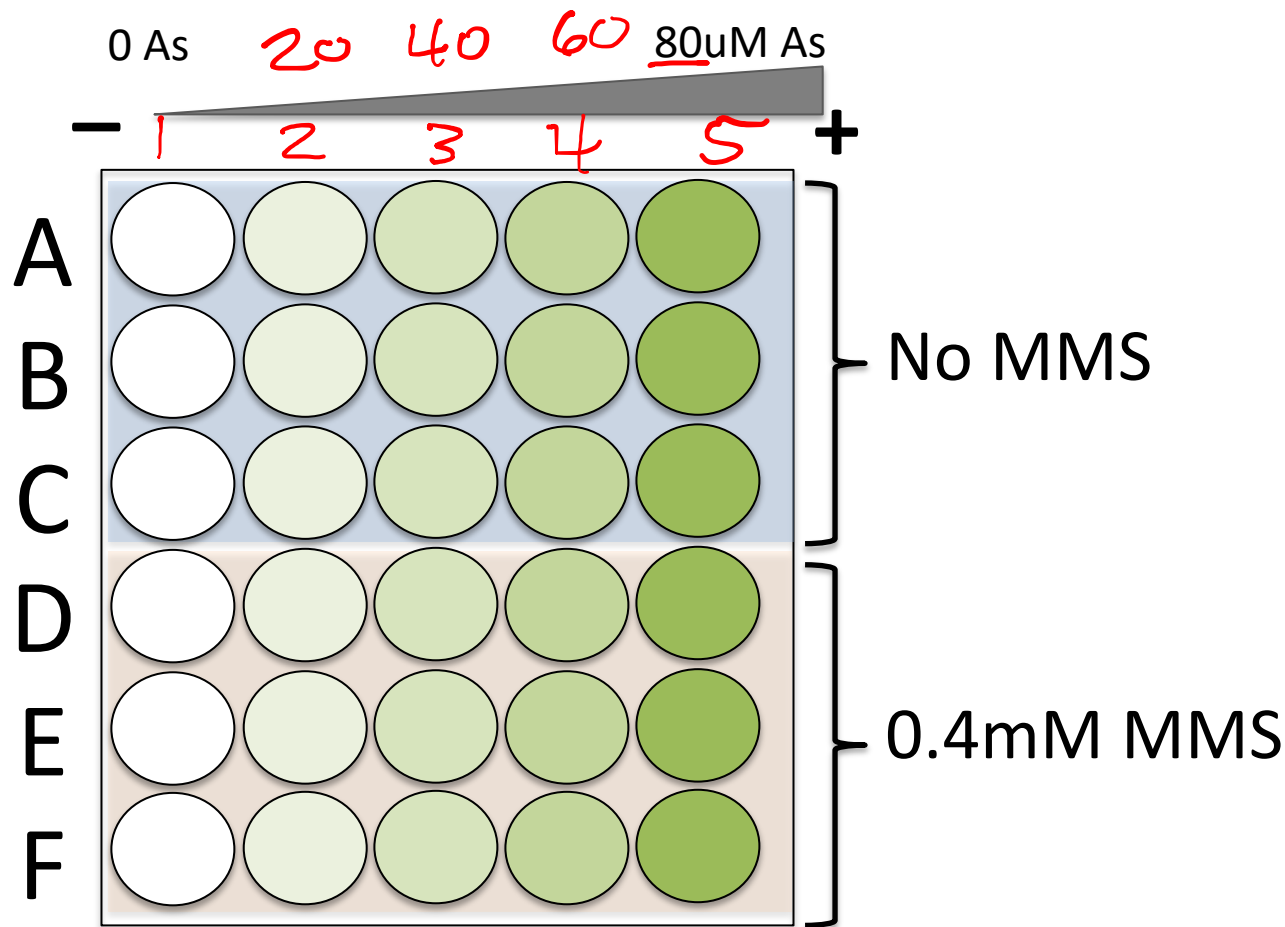


M1D6: Image and Analyze Comet Chip

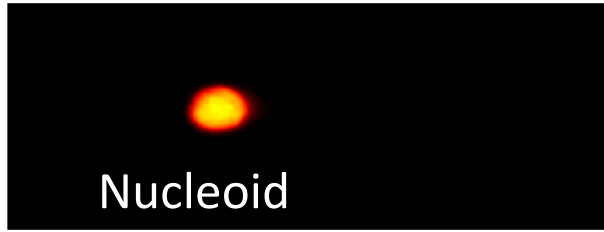
10/01/19

1. Communication workshop
2. Prelab
3. Comet Chip analysis
4. Paper discussion
5. Resubmit modified figure hw before 10pm tonight

Reminder: CometChip experimental setup

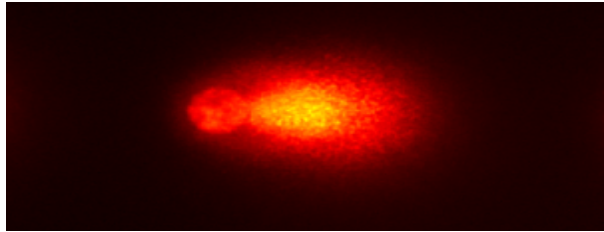


Output of Alkaline CometChip Assay



No Damage

- Supercoiled nucleoid
- Little or no migration

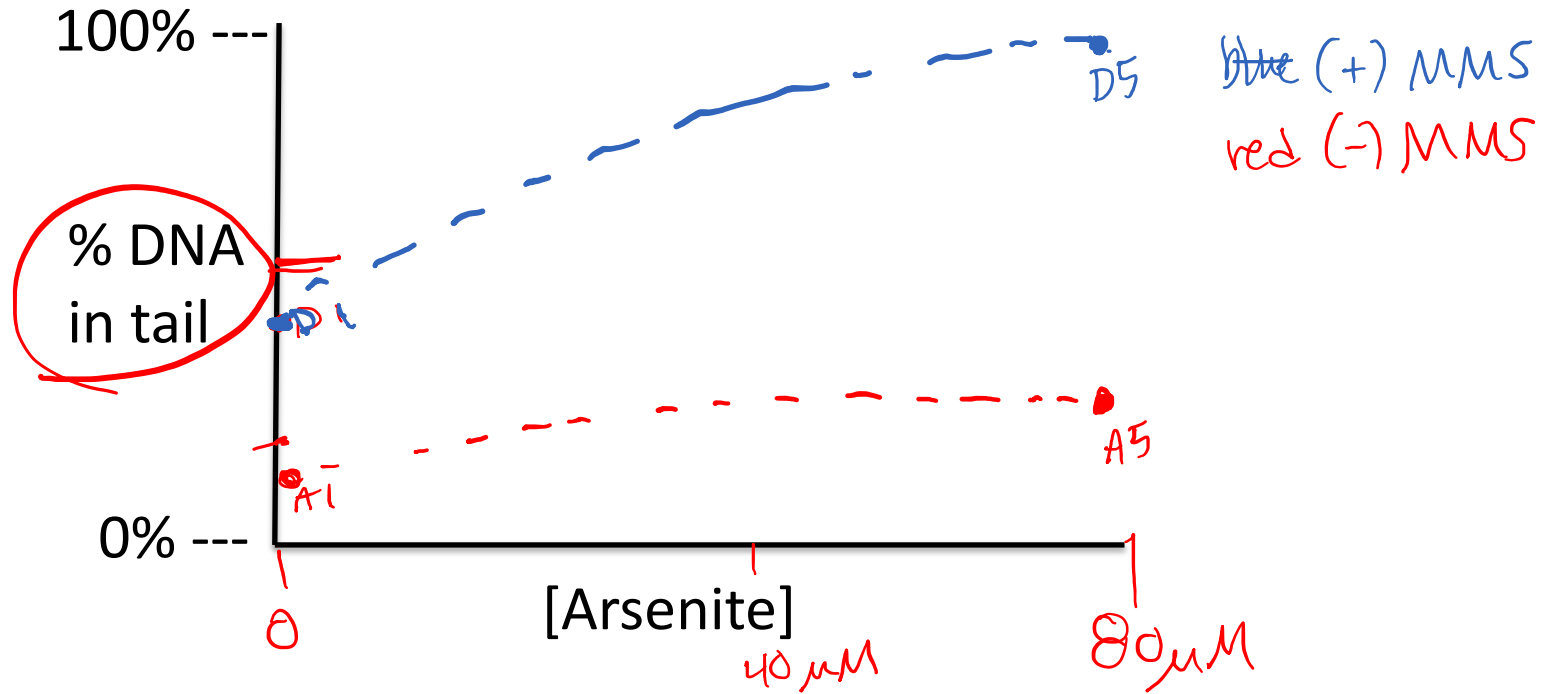


High Damage

- SSBs, abasic sites, alkali labile sites
- forms a "Comet tail"

**Genomic damage from direct strand breaks
and REPAIR INTERMEDIATES**

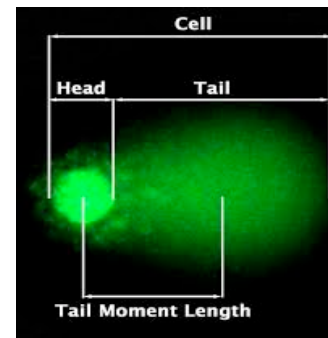
What result do we expect from the CometChip Analysis?



What's in the final Trevigen Excel file?

Region	#Found	#Counted	Moment_Mean	%DNA_in_TailMean	Length_Mean	Area_Mean	IntensityMean	Moment_StDev
A1	64	64	2.35	33.19	16.69	849	5.77E+06	0.81
A2	120	120	2.48	32.25	19.13	982.72	3.22E+06	1.5
A3	96	96	4.25	48.44	20.82	1045.16	4.32E+06	1.53
A4	86	86	4.11	47.15	19.7	1011.69	5.82E+06	1.64
A5	63	63	5.14	54.17	21.49	1107.44	5.22E+06	1.9

- Region: 96 well plate macrowell letter/number
- #Counted: how many comets were used for calculation in each macrowell
- %DNA in Head Mean= $100 * \text{HeadFluorescence} / (\text{HeadFluorescence} + \text{TailFluorescence})$
- **%DNA in Tail Mean= $100 * \text{TailFluorescence} / (\text{HeadFluorescence} + \text{TailFluorescence})$**
- Moment Mean= $(\% \text{TailDNA} / 100) * (\text{TailCenterOfMass} - \text{HeadCenterOfMass})$



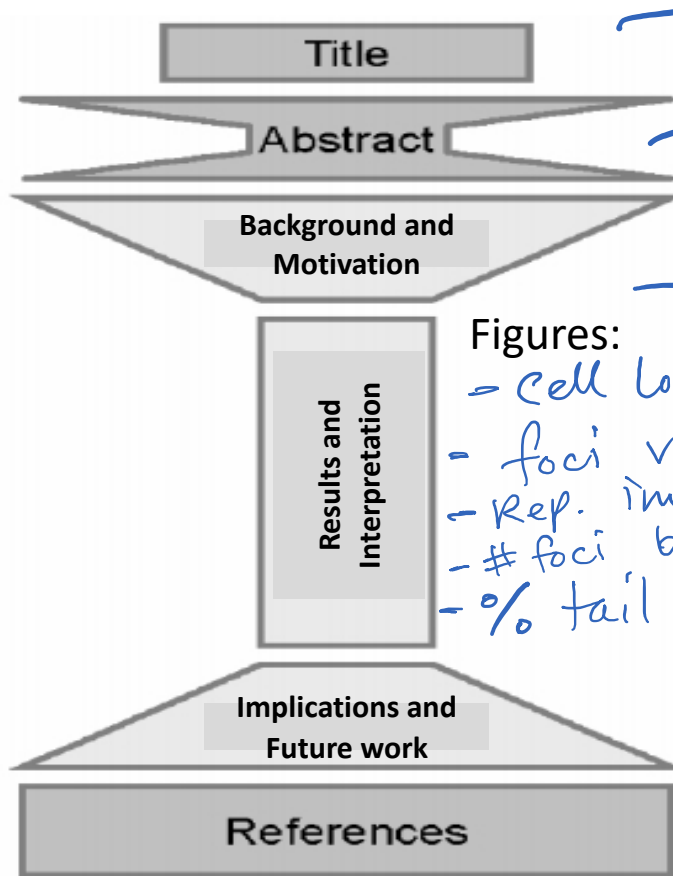
Major assignments for Mod1

- Data summary draft
 - due by 10pm on Mon., October 14
 - revision due by 10pm on Sat., October 26

Summary content

1. Title
2. Abstract
3. Background & Motivation
4. Figures, Results & Interpretation
5. Implications & Future Work

M1 Data summary Architecture



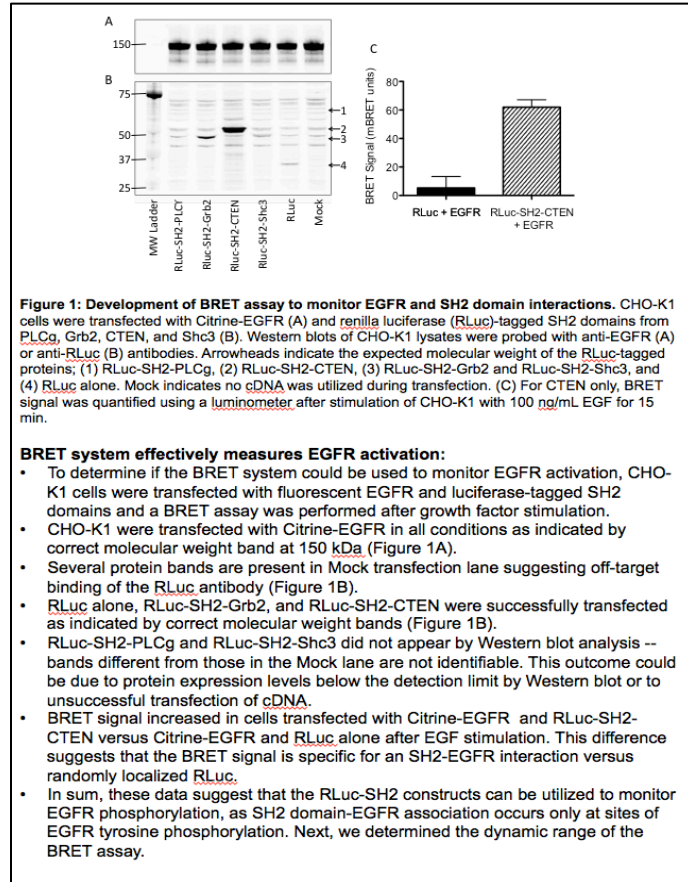
same page

bullet format, include ref.
BER figure

Figures:

- cell loading comet chip
- foci vs intensity
- Rep. images of H2AX
- # foci binned, per condition
- % tail DNA plot CometChip

Reminder: Example Results slide

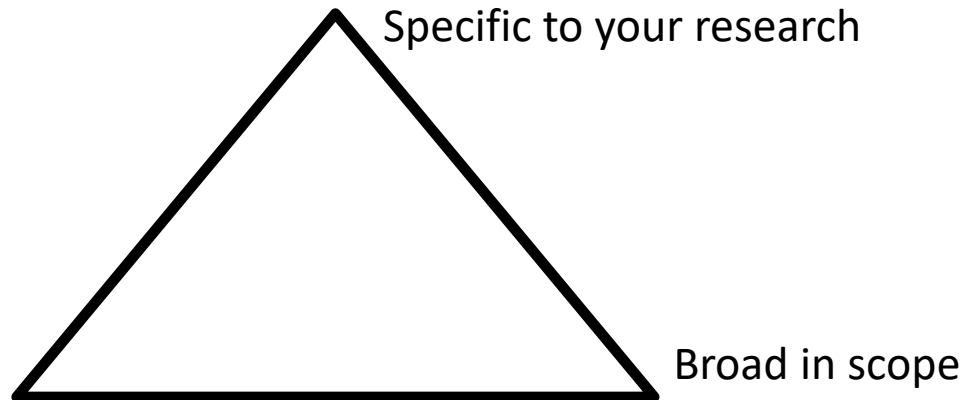


- PowerPoint format
- Limit figure size (1/3 of page)
- Caption describes image or graph
- Results text (2/3 of page) in bullet points
 - Look ahead to M1D7 for results text guidelines

HW M1D7: Implications & Future Works

Implications and Future Work: potential topics [\[edit\]](#)

- **Topic:** Did your results match your expectations?
 - If no, provide a putative explanation. If yes, how can you further test if your hypothesis is correct?
- **Topic:** Based on the results, whether they matched your expectations or not, what experiments might you recommend next?
 - Follow-up experiments could distinguish between competing explanations of a given outcome or broaden the sample set for a question you already asked, to give just two examples.
- **Topic:** How might this assay be improved?
- **Topic:** How might this assay be used as a research tool? in the clinic? in industry?



In your Data summary tie together (and mirror) your background and motivation topics in your implications and future work section

Organization of Implications & Future Work

- Start with a very similar paragraph to the last paragraph in your Background/Motivation (restate major results and broad implications)
- Follow same order as in Figures/Results
 - Describe your conclusions from your data
 - If necessary describe caveats of experiment and suggest improvements
 - Identify unknowns and speculate (within reason)
 - Don't make huge generalizations or overreach
- Propose future experiments, identify new questions that arise
- Come back to the big picture/impact statement topic introduced in background

In lab today

1. Start Matlab analysis of Comet Chip images, Part 3
2. Groups of 2 will be taken to the Engelward microscope throughout the afternoon
3. Work on modifying your figure during downtime
4. Half the class will go to ~~56-302~~ to discuss Weingeist et al.

HW due M1D7 (individual)

Name homework file:

LeslieM1D5hw_futureworks

1. Outline the future works section (bullet format!) Include references.