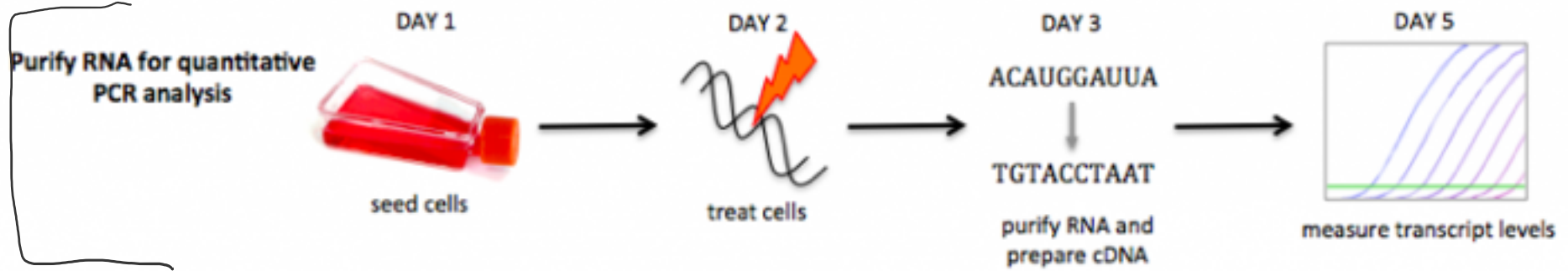


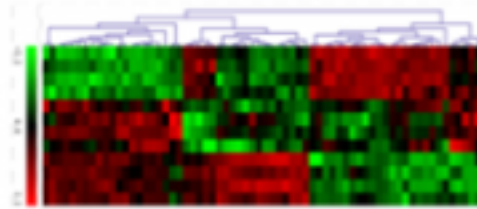
M2D2: Induce DNA damage for RNA purification

1. Prelab
2. $\frac{1}{2}$ class to TC to etoposide treat cells
3. $\frac{1}{2}$ group paper discussion in 56-302

Mod2: Experimental overview



Analyze RNA-seq results

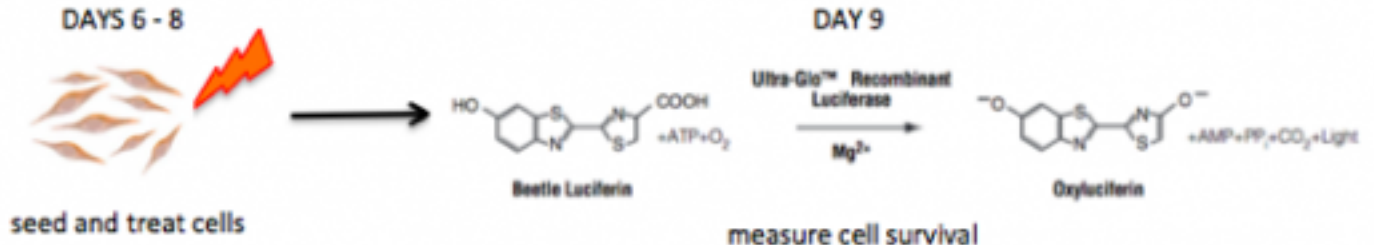


DAY 4: Evaluate altered gene expression

DAY 5: Explore public datasets

DAY 6: Complete RNA-seq data analysis

Design and perform cell viability experiment



Mod2 major assignments

- **Research Article (20%)**
 - individual, submit on Stellar
 - due Saturday April 20th at 10pm
 - format: word document, figures can be submitted separately
- **Journal Club Presentation (15%)**
 - individual, presentation during lab M2D7 and M2D8
 - presentation slides due on Stellar 1pm April 4th or April 9th
 - format: powerpoint, keynote, or google slides
- *Lab quizzes (5%) M2D4, M2D9*
- *Homework and Notebook (10%)*
- *Blog (5%)*
 - *by Sunday, March 17 at 10 pm (Mod1)*
 - *by Wednesday, April 10 at 10 pm*
 - *by Sunday, April 21 at 10 pm*

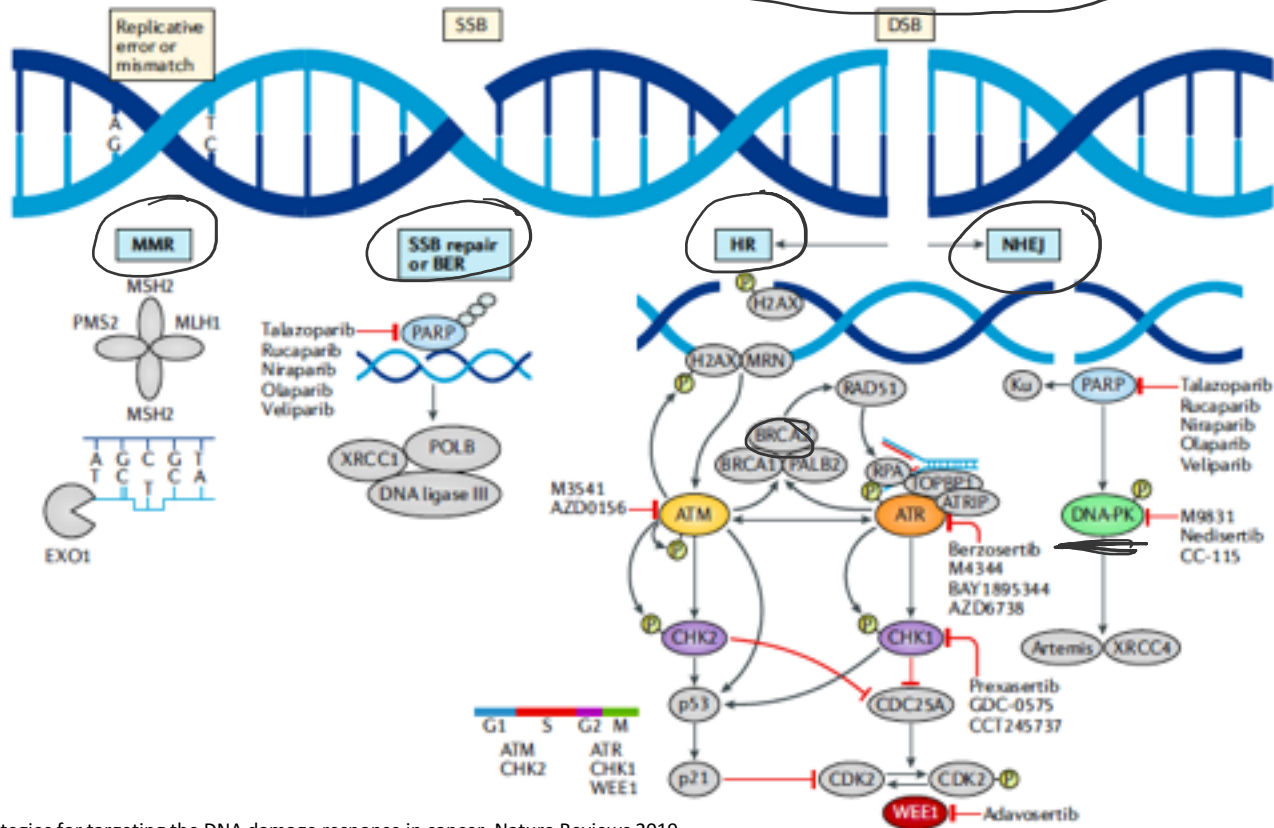
SP 19 CLASS BLOG

- Possible topics listed on the blog website
- Details about use:
 - Do not publish MIT logo
 - Do not post photographs with names tagged
 - Do not write malicious comments
 - Do not plagiarize



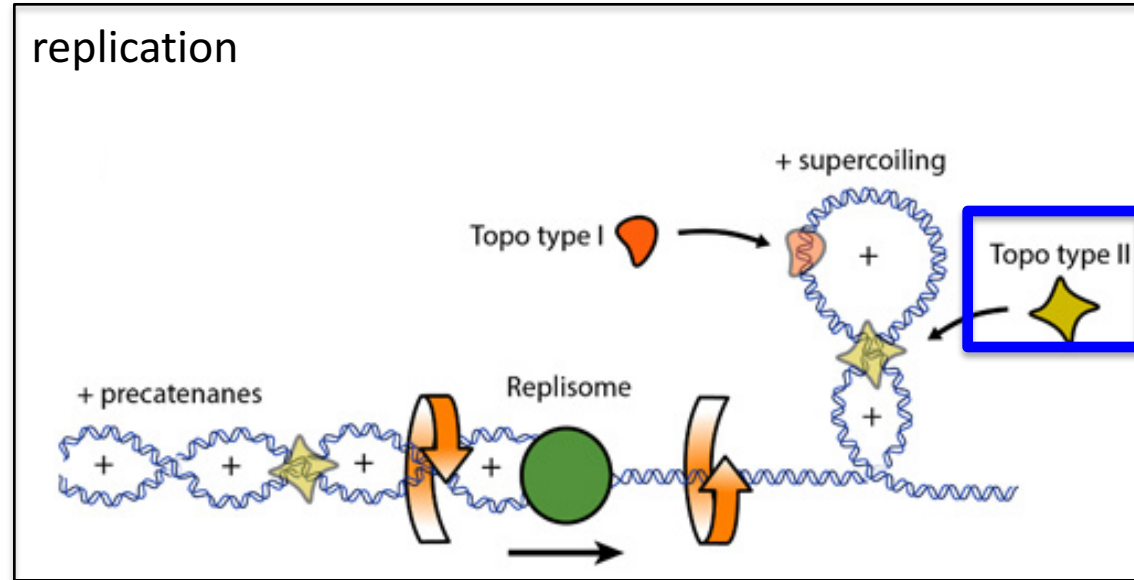
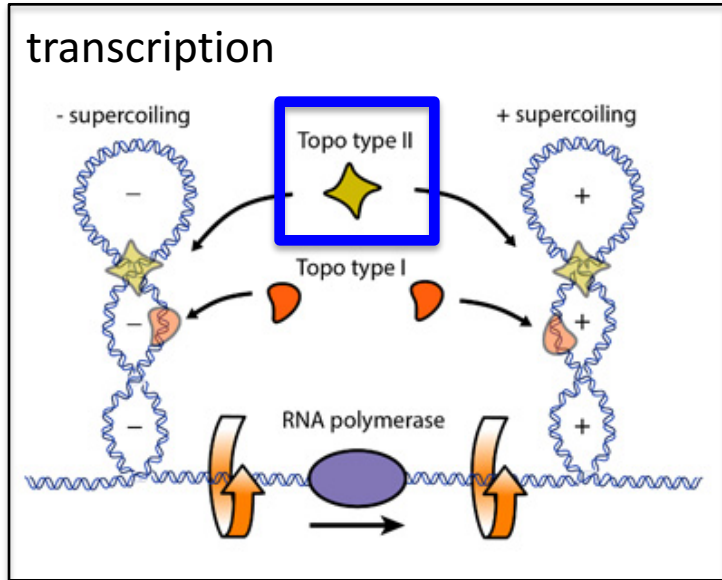
What genes are differentially expressed in response to DNA damage?

etoposide treatment



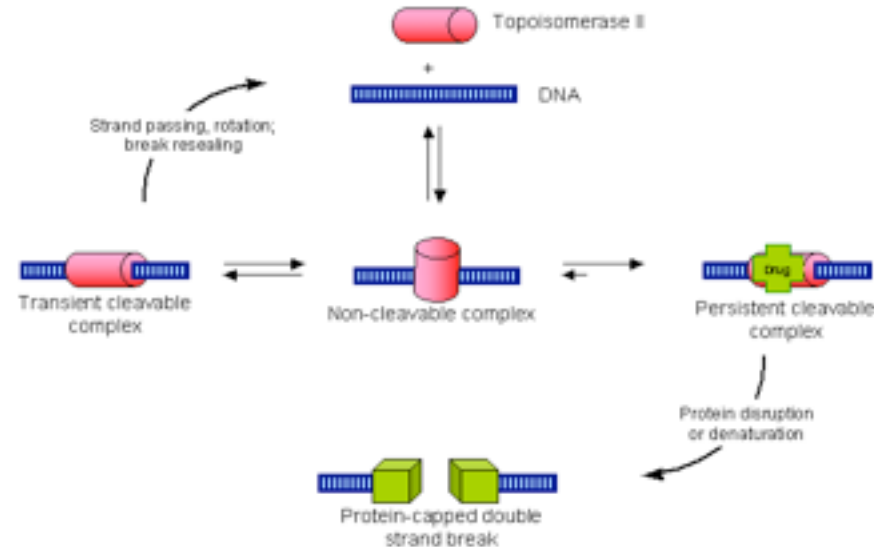
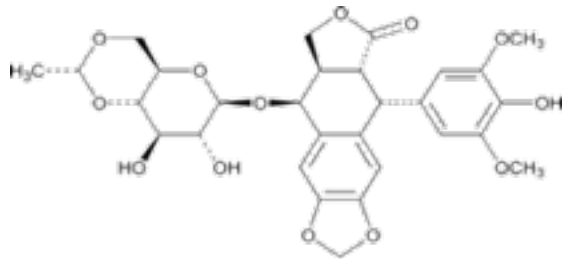
RNA Transcription and DNA Replication cause DNA supercoiling

Topo Type II=topoisomerase II enzyme

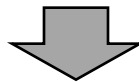
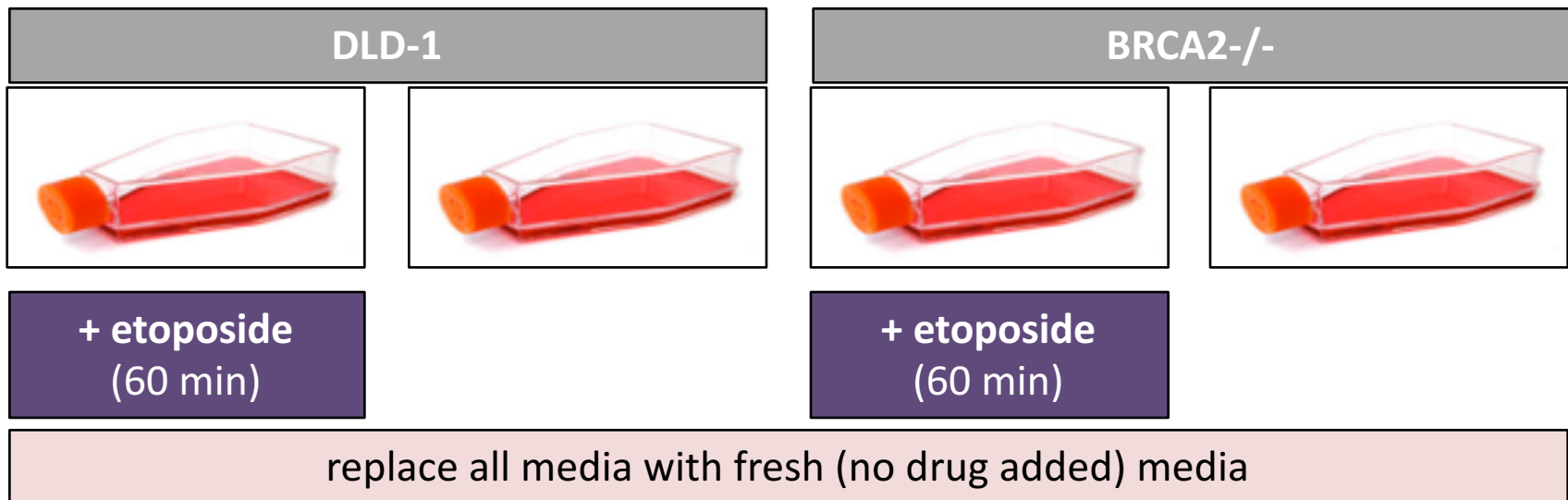


Etoposide is a drug/chemotherapy that causes DNA double strand breaks

- mechanism of action: forms a ternary complex with DNA and topoisomerase II enzyme and prevents re-ligation of the DNA strands = DNA strand break
- cancer cells (quickly dividing cells) rely on topoisomerase II more than normal cells



Today: Treat cells with etoposide



M2D3: extract RNA (~48 hours after DNA damage)

Today in lab:

1. Tissue Culture (TC)

- 1st: Red, Orange, Yellow, & Green
- 2nd: Blue, Pink, Purple, White, & Grey
- Protocols printed for TC use, no need to move laptops etc.
- Do not wear PPE in or out of TC room

2. Class discussion in 56-302: Dietlein *et al.*

- Homework due ~~Tuesday~~^{Thursday}, M2D3
 - Create a Journal Club style slide (and talking notes) from a figure in Dietlein *et al.*

M2D3 HW: Journal Club Slide

- Slide= Standard 4:3 powerpoint slide
- Title has a message (not just the figure title)
- Don't put too much on one slide, (1 slide=1 message)
- Don't fill slide with text
- Don't include the caption from paper or a citation
- Read homework description for additional tips

Reminder:

- Mini presentation due Saturday March 16th at 10pm.
 - Email video file to bioeng20.109@gmail.com
 - Ok to submit a link to download from dropbox or google drive
 - Submitting the final version of your video can take time so don't wait till the last minute.