

Presenting (and more)

Practice: Scientific Methods and Writing

Agenda

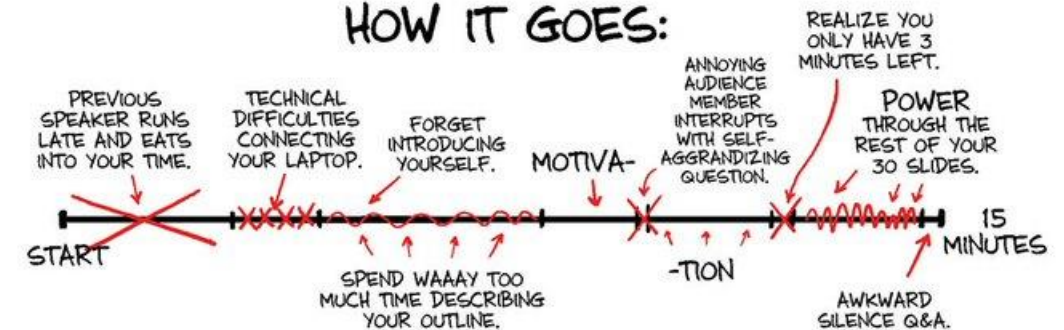
- _ General presentation stuff
 - _ formats, prep, delivery strategies
- _ Visual aid suggestions
 - _ focusing on slide-like options
- _ A5
- _ *Break*
- _ Nervousness strategies
- _ Conferences
 - _ Q&A
 - _ Posters
 - _ briefly mention facilitation
- _ A2: returned

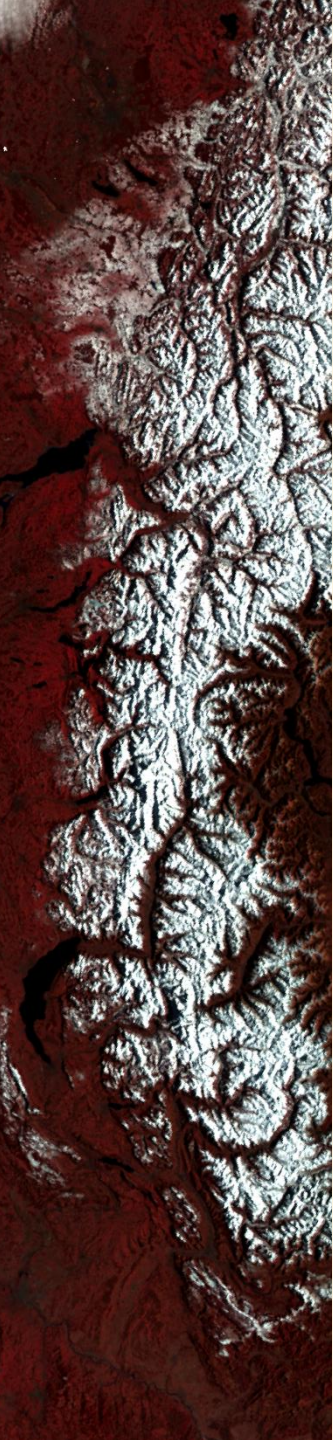
YOUR CONFERENCE PRESENTATION

HOW YOU PLANNED IT:



HOW IT GOES:





Presenting

...your future will be full of listening to “bad”, boring presentations (including this one, unfortunately).

Try to add a memorable presentation to the mix!



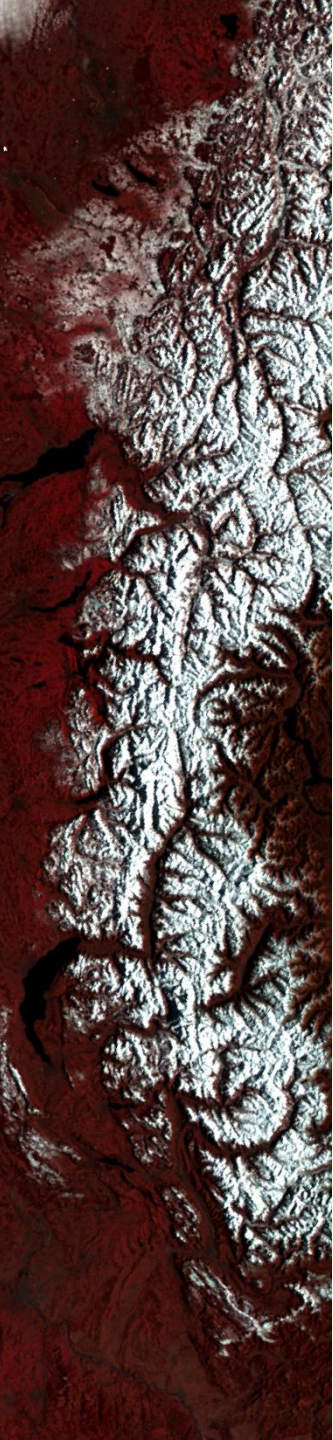
Quick Brainstorm:

What is a **presentation**?

What **styles/formats** of presentations are you familiar with?

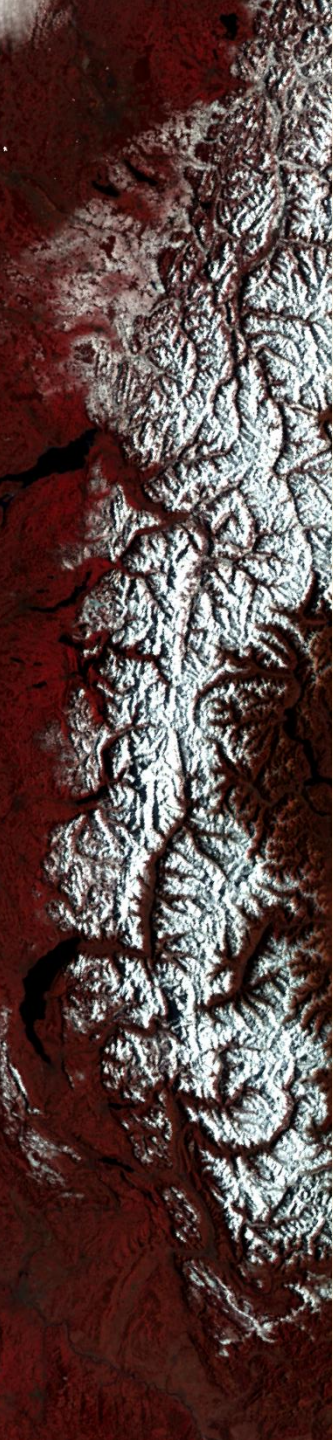
A presentation...

- _ **conveys** ideas
- _ tells a **story**
- _ is a **catalyst** for new thought, interaction, collaboration
- _ **connects** you with (new) people (i.e. networking)
- _ is a way to get to a **conference** (and not be invisible!)
- _ an **experience** (i.e. means of engagement)
 - _ generates a (physical) **response** from an audience
 - _ one difference between “flat” presentations and a story
- _ hopefully **changes**, moves or inspires something in the audience
 - _ not just a report listing stuff!



If you have to give a
presentation, how do
you **prepare** for it?

Discuss for 5 minutes.



In-class brainstorm

- _ Make it yourself
- _ Have a script/plan → notes/key ideas
- _ Think of the structure you want
- _ Consider participation from others
- _ Know the expectations (length, content, ...)
- _ Consider your figures/graphs
- _ Know if there is a template you need to follow (e.g. for slides)

Frame the story

_ **Structure** – every story has a shape

- _ Beginning
- _ Middle
- _ End

_ Focus on:

- _ problem/resolution; question/answer
- _ setup/punchline
- _ a more complex puzzle

Frame the story

- _ Understand your **audience**
 - _ how much background information?
- _ Identify **1-3 key messages** for the audience
- _ if it's not a story, it is just a list, and lists are not very engaging...
 - _ center on **who, when, why** not just *what*
 - _ focus on **how** the steps you took changed the overall trajectory or idea

Plan your delivery strategy

- _ A few main options:
 - _ 1) **read** word-for-word from a written script
 - _ 2) create a set of structured **talking points** to follow
 - _ e.g. paper form, presentation notes, whatever
 - _ 3) **memorise** your talk with rehearsals
 - _ This takes sooo much time, but is sometimes worth it!
- _ Generally a mix of 2 and 3 is recommended
- _ **speaking freely** is more engaging for an audience
 - _ mistakes and pauses are OK!
 - _ gives those in the audience the opportunity to connect to you

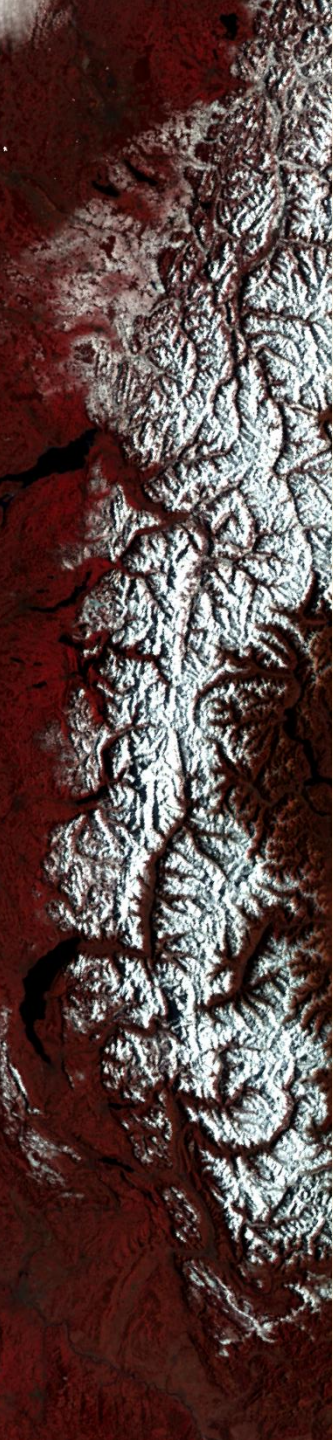
Plan your delivery strategy

_ **Interact** with the audience!

- _ interaction generates (sustained) interest
- _ **jokes**, open or rhetorical **questions**, **polling** software...
- _ Use smaller **stories** as tools – but be sure they are relevant
- _ Think about **props** you can use – they are memorable!
 - _ T-shirt reveal
 - _ objects
 - _ draw something live
 - _ show and describe a (short) video clip (e.g. screen capture instead of live demo)
 - _ ...

Pacing of a talk

- _ Give your audience **one thing at a time**
 - _ People can read or listen, not both at the same time
- _ Momentum!
 - _ How do you generate it? How do you keep it?
 - _ don't forget that silence can be used to build tension
- _ Be **aware** of how much information you are throwing at an audience
 - _ If someone can't follow, they check out



Pacing of a talk

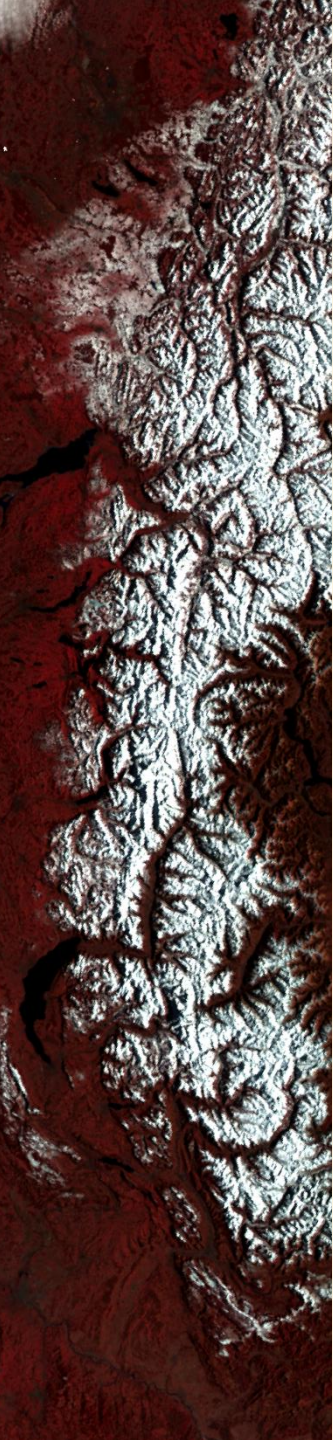
- _ Tools for pacing
 - _ automated slide **timers** (requires more practice, but sometimes great)
 - _ use **video** as a visual aid
 - _ generally keep under 60seconds
 - _ plan (brief) moments of **silence** (e.g. 10 second water break)
 - _ incorporate **blank slides** to bring the focus back to you
 - _ ...

(stage) Presence

- _ speak loud enough
- _ breathe
 - _ Remember to breathe and not race
 - _ Take your time
 - _ add pauses after you present more complex information
- _ stance and movement
 - _ Take up or make space; use your hands
 - _ Use the room, if you can (depends on microphone situation)
 - _ Be aware of how you move when nervous...might be distracting
- _ establish **eye contact** with audience members
- _ invest in a laser pointer and practice with it!

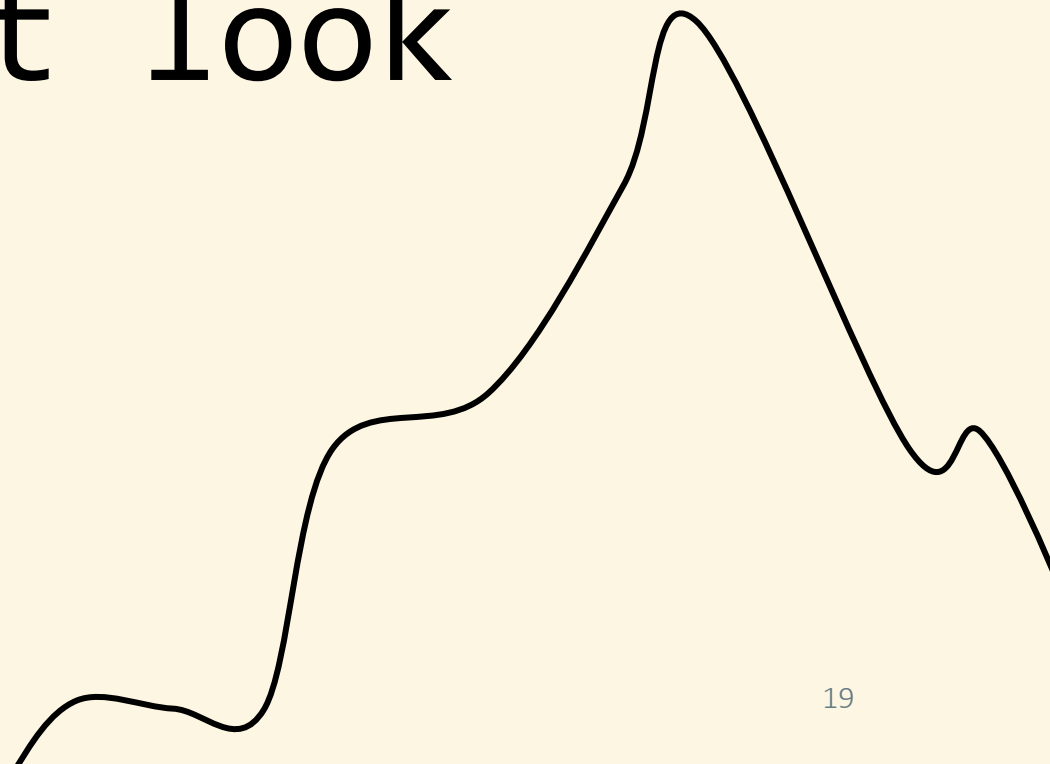
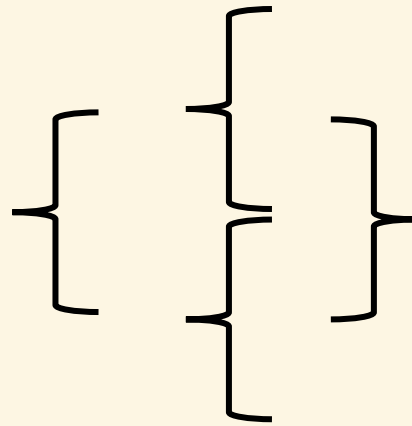
Speaking strategies

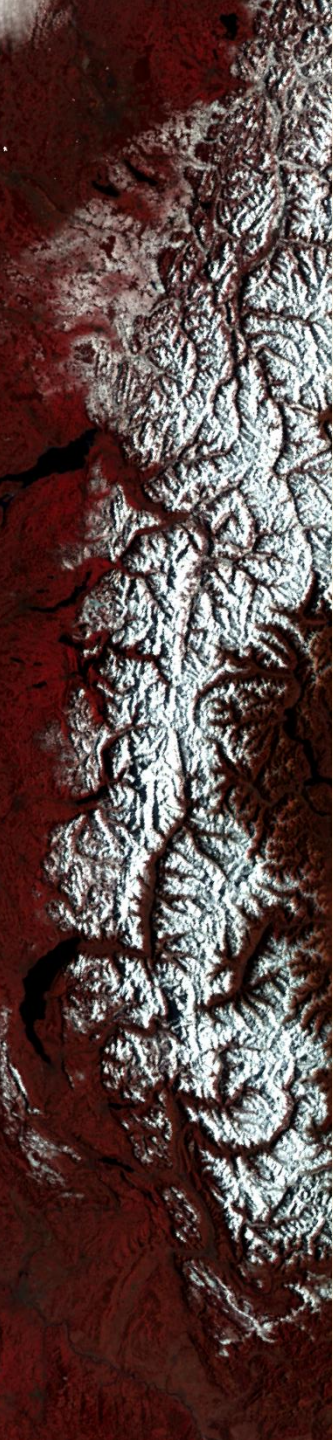
- _ **less formal** than written language
 - _ Depends on the audience (domain experts or public audience?)
 - _ try to avoid silence fillers (e.g. "um")
 - _ Simpler language is often better!
- _ **Repetition** can actually be good
- _ **Metaphors** – visual words
 - _ Familiar references
 - _ Use **present tense**
 - _ **Use first person**



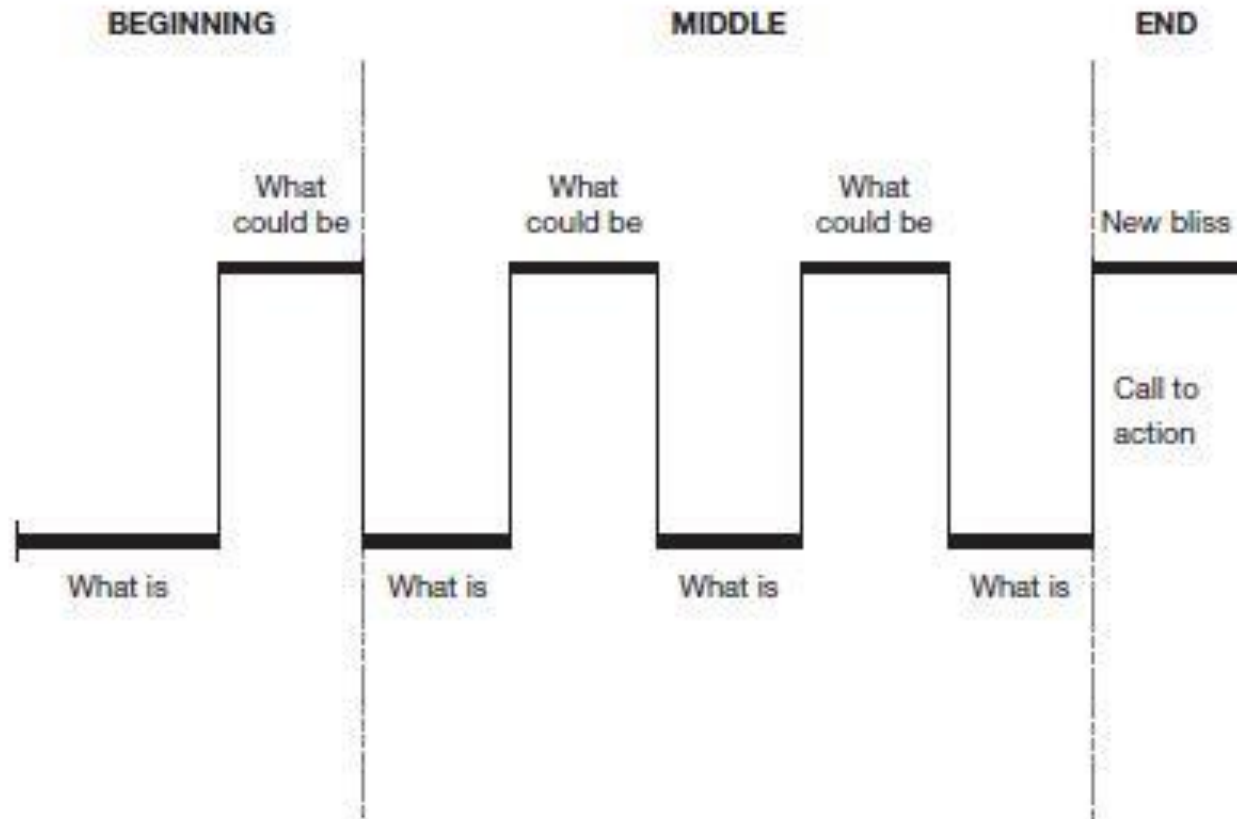
If you had to give a
presentation a **shape**,
what would it look
like?

Discuss briefly.

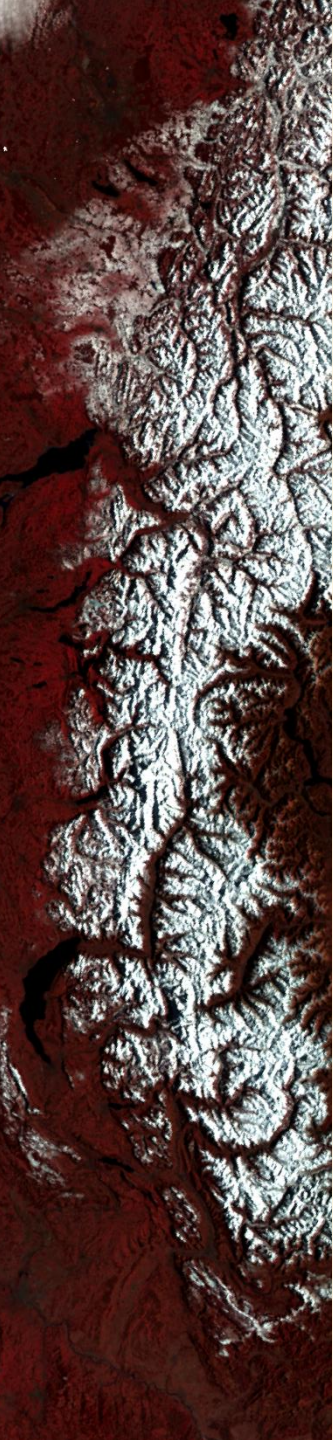




Persuasive story pattern



Simplified structure, but building *tension* is key



Visual Aid: Slides

...or death by powerpoint



What are some **general**
guidelines for slides
or similar visual aids?

General Suggestions

- _ Include **slide numbers**
- _ visual element so the audience knows the **position in the overall talk**
 - _ progress bar, shorthand in the header, footer or margin...
- _ keep text **short and simple**
 - _ avoid information overload
 - _ avoid large blocks of text
 - _ fewer words the better
 - _ ...it's a talk, not a paper – but be aware what will happen to your slides later!
- _ Make sure **font size** is big enough
- _ Always **cite** anything that isn't yours

General Suggestions

- _ Avoid **red-green** colour schemes (color blindness)
 - _ Maps: <https://colorbrewer2.org>
 - _ Or here is a [cool tool](#) to test color combinations by David Nichols
- _ Check if graphics are **readable** from a distance
 - _ often different requirements than for a paper
 - _ adapt graphics for quick understanding (i.e. simplify!)
- _ Avoid colours and/or backgrounds that make reading challenging
- _ Start with a problem/question that is **resolved** by the end

General Suggestions

- _ Only show text you want people to read
- _ Reveal information in a **table or figure** as you mention it
 - _ can be easily overdone, but can also be a useful device
- _ extra work, but smart to make **two versions**
 - _ one for presenting with less text
 - _ ...and an annotated one for reading/reference afterwards
 - _ may be better to create a **readable document** than slides

General Suggestions: final slide

- _ **contact** information
- _ Include more than just “thanks!” , “any questions”, etc.
- _ **takeaway message(s) or key findings!**

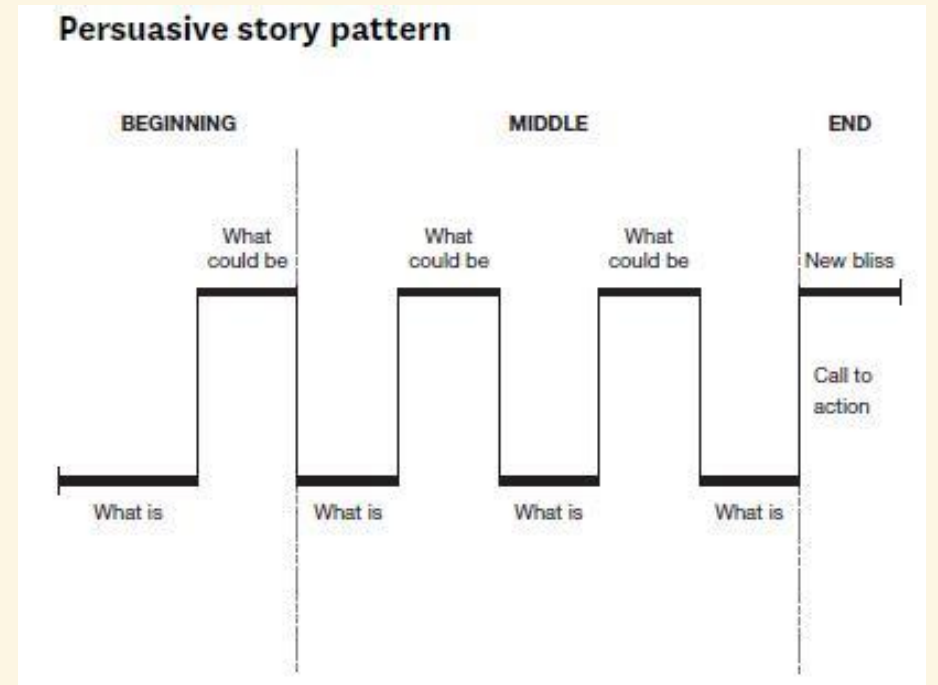


A5: “Lightning Talk”

ca. 3-4 minutes

Lightning talk

- _ shorter is generally harder
- _ less is often more
- _ great exercise to maybe try this pattern
 - _ 3 minutes is challenging



Mini-Conference

- _ A **conference schedule** will be announced on Blackboard
- _ Plan:
 - 1) You will be introduced by an assigned moderator in a few sentences
 - _ the first moderator presents last
 - 2) give your “lightning talk”
 - 3) Q&A after your talk run by the moderator
 - 4) You become the next moderator!
 - _ switch to the next presenter’s visual aid
 - _ introduce the next speaker and their work in a few sentences
 - _ listen
 - _ moderate the Q&A

Mini-Conference

- _ We will:
 - _ load all submitted presentations in advance
 - _ take care of time-keeping (absolute max. 4 minutes!)
- _ There will be voting for the “best” presentation
- _ Planned for 17.01.2024



Break !





How do you mitigate **nervousness?**

Discuss for 5 minutes.

Everyone is nervous before presenting.

Nervousness strategies: before

- _ **Practice** your presentation
 - _ ideally **out loud** and while standing
 - _ even better, already before **other people**
 - _ get an idea of your **timing** – how long each section takes
- _ Have a **backup** strategy for visuals and content
 - _ printed talking points in case slides don't work
 - _ **multiple formats** of your presentation (e.g. PDF and powerpoint)
 - _ backup copies saved somewhere

Nervousness strategies: during

- _ **Introduce** yourself briefly at the beginning of a talk
 - _ Include why you are excited to be there!
- _ Focus on specific people or objects in the room while talking
- _ Build in a few moments to pause
- _ remember that it is an **opportunity to share** and build new connections, not a test!
 - _ try to think about what the audience might be (most) interested in
- _ figure out what to do with your hands
- _ breathe

If possible...

- _ **Visit** the location
- _ Pay attention to **lighting**
 - _ Might want to adjust dark or light backgrounds/text
- _ Know the projector **screen size**
 - _ Adjust font sizes and content
- _ Know **how many people** can fit in the room
- _ Check **acoustics**
- _ **Arrive early** to make sure your presentation is loaded and that everything works
- _ Be sure you have **water** and drink enough before hand
- _ If longer, **build in breaks** – you run the show (sort of), you can decide!



Conferences

A gathering of presentations...and people.

Conferences

- _ Purpose:
 - _ Hear about (new) ideas, projects, topics
 - _ Generate new ideas
 - _ Network
 - _ Get feedback

Conferences

- _ Prep an **elevator pitch** to introduce yourself
 - _ ...and practice it!
 - _ makes conversations with people easier
 - _ Max. 1 minute summary:
 - _ **Headline**: one sentence summary
 - _ **Elaboration**: more info that takes less than one minute
 - _ (best to only give the elaboration **if asked** a further question...)
 - _ maybe even different ones for different audiences
- _ Bring contact **cards** to give to people
 - _ ... or a QR code that people can scan



How do you **prepare** for
Q&A sessions?

What are potential
challenges that arise
in Q&A sessions?

Q&A Sessions: before

- _ Brainstorm **possible questions**
- _ Develop **talking points** for tricky questions
- _ Include **additional slides** after the end of your presentation
 - _ i.e. hidden unless relevant for answering a question
- _ Most questions fall into one of three categories:
 - _ **Clarification** for understanding or more detail
 - _ How your work **relates** to something else
 - _ Something totally **bizarre**

Q&A Sessions: during

- _ **repeat** the question back to whoever asked
 - _ Checks your understanding of the question
 - _ Makes sure the rest of the audience understands
 - _ Allows you to reframe it
- _ **rephrase** the question towards something you can answer
 - _ (or want to answer instead...)
 - _ e.g. “I can’t really tell you about ... , but ...”
 - _ e.g. “I have to think about that, but ...”
- _ act like every question is totally reasonable (unless offensive)

Q&A Sessions: during

- _ It's OK to say that you **don't know** an answer!
- _ **Refer** to a poster or other researcher at the conference
- _ Don't be afraid to **interrupt** someone monologuing instead asking a question!
 - _ This should be the job of a good moderator, but sometimes you are left to your own devices...
 - _ (politely) suggest discussion afterwards
- _ Let people know **where to find you later**
 - _ ... and invite them to talk
 - _ or prepare and ask the audience a final question to discuss later

Q&A Sessions: after

- _ Hang around in or just outside of the space
 - _ ...or wherever you said they could find you (poster, stand ...)
- _ **Approach someone** who engaged with you in the session
 - _ ...or someone else in the session related to your work
- _ ...

A few open questions:

- _ How do you handle **interruptions**?
- _ How do you handle someone having **a (loud) discussion** in the room that has nothing to do with what you are presenting?
 - _ Just ask them to stop or leave!
- _ How do you handle a bunch of people **arriving late**?
 - _ Pause and allow them to take a seat
- _ How do you handle **mistakes** in your slides or if you mess something up?
 - _ ...generally you care more about small mistakes than your audience does
 - _ unless critical, just ignore them (e.g. typos) or make a joke
- _ What happens if your **slides stop working** or are not available?

Posters

Poster sessions

- _ **Widely used** in the academic community (at conferences)
- _ Most do a bad job of communicating information
- _ Main purpose:
 - _ provide a very quick, understandable **overview**
 - _ **generate discussion**
 - _ ... not explain everything you did!
 - _ (most people don't want to read your poster...)

Poster sessions

- _ Different audience and purpose than a presentation
 - _ More generic, not someone attending a specific session!
- _ Make a poster session a **conversation**, not a speech
 - _ Let your listener's questions guide your discussion
- _ short amounts of time to interact with people
- _ Most interactions will be with people **already interested**
- _ Recommended to be self explanatory (or include a link)
 - _ Posters often hang somewhere without you being around

Poster suggestions

- _ Title should be big and attention grabbing
- _ Do not include an abstract! (...or only include one)
- _ (expected) results should be **mostly images**
- _ Focus on conclusions or **key messages**
 - _ Word best between 300-800 words
- _ Should be easily readable when printed on an **A4 page**
 - _ You can print some of these as handouts for people to take
 - _ Readable from at least **3 meters away**
- _ Include authors, your contact, affiliations, acknowledgements, references, funding source and organisation logo(s)
- _ Some conferences will have a **template**
 - _ you may want to re-use a poster for multiple events in a short time-frame...

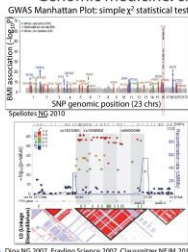
Single-cell dissection of Alzheimer's Disease

MIT Computer Science & Artificial Intelligence Laboratory
Picower Institute for Learning and Memory
Broad Institute of MIT and Harvard

@manoliskellis

Premise, Overview

Genomic medicine: challenge and promises



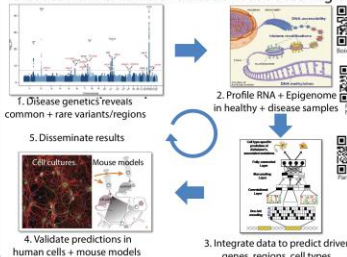
The promise of genetics:
- Disease mechanism
- New target genes
- New therapeutics
- Personalized medicine

The challenge of mechanism:
- 90+% disease hits non-coding
- Target gene not known
- Causal variant not known
- Cell type of action not known
- Relevant pathways not known
- Mechanism not known

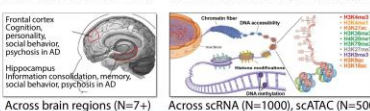
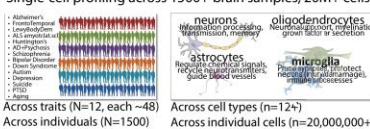
Non-coding circuitry helps interpret disease loci



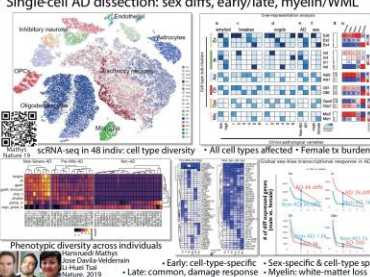
Dissect mechanisms of disease-associated regions



Single-cell profiling across 1500+ brain samples, 20M+ cells

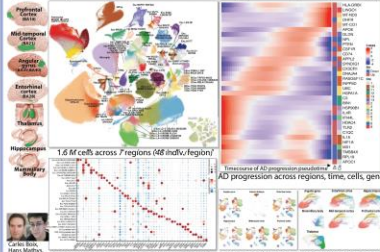


Single-cell AD dissection: sex diffs, early/late, myelin/WML

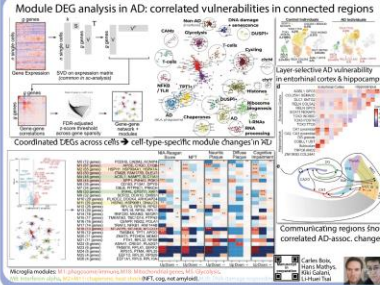


Multi-Region, Modules

Spatio-temporal AD progression across brain regions, cells, genes, pathology

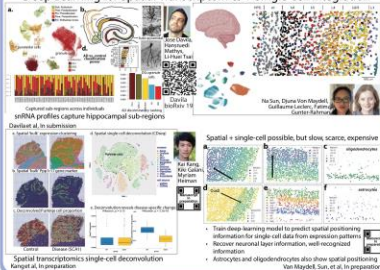


Module DEG analysis in AD: correlated vulnerabilities in connected regions



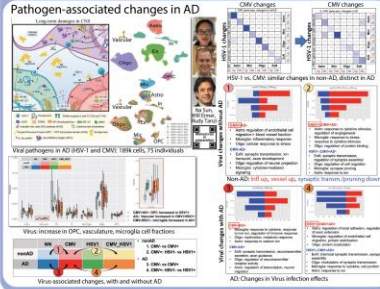
Spatial, Anatomical

Deep Learning for Spatial Transcriptomics + Single-cell Integration



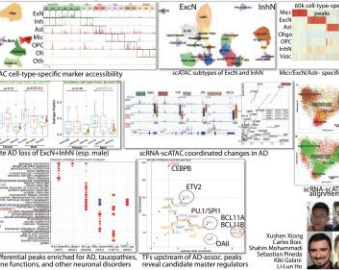
Pathogens: HSV, CMV

Pathogen-associated changes in AD

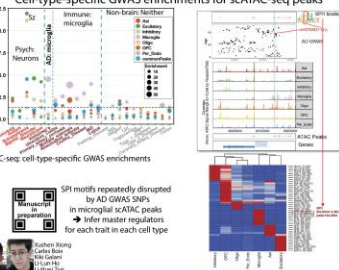


scATAC, GWAS, TFs, Epigenome Erosion

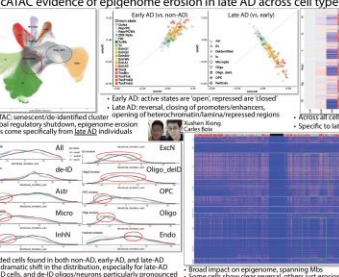
scATAC-scrRNA Epigenome-Transcriptome linking & integration



Cell-type-specific GWAS enrichments for scATAC-seq peaks

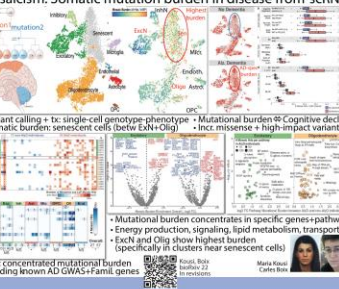


scATAC evidence of epigenome erosion in late AD across cell types



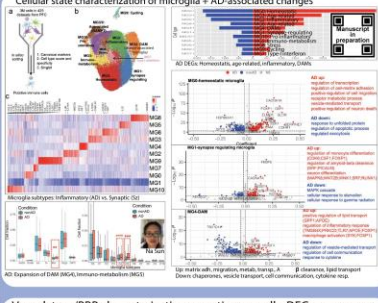
Strong effect, rare, and somatic variation

Mosaicism: Somatic mutation burden in disease from scRNA

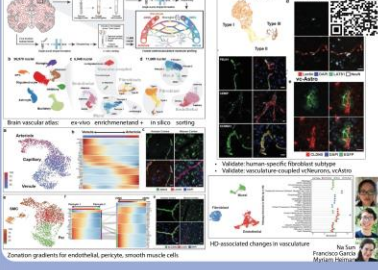


Microglia, Vasculature

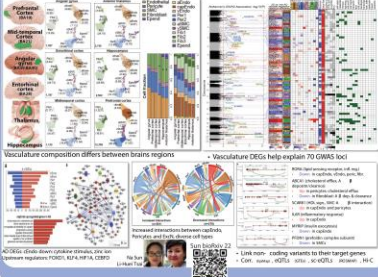
Cellular state characterization of microglia + AD-associated changes



Vasculature/BBB characterization, zonation, vc cells, DEGs

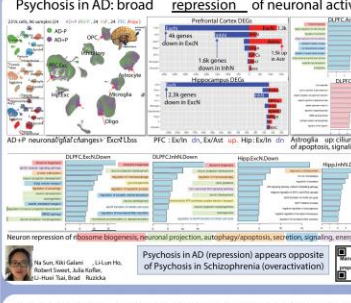


Vasculature-dysregulated AD genes in AD GWAS + sub-threshold loci

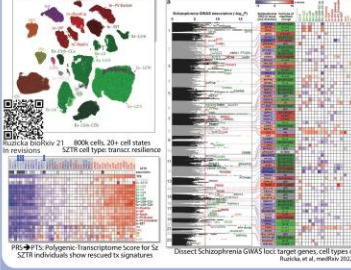


AD Psychosis, Schizo

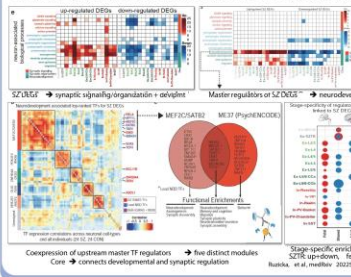
Psychosis in AD: broad repression of neuronal activity



Single-cell insights into schizophrenia genetics/dysregulation

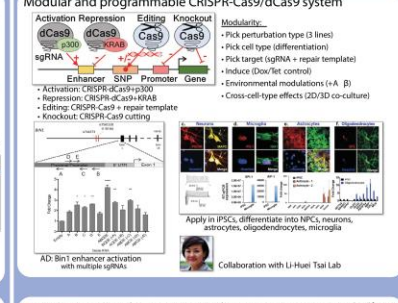


Master regulators of Sz DEGs: GWAS hits, devel/synaptic func.

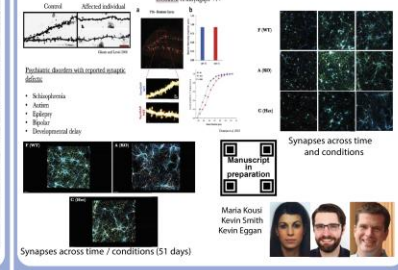


Experimental Validation

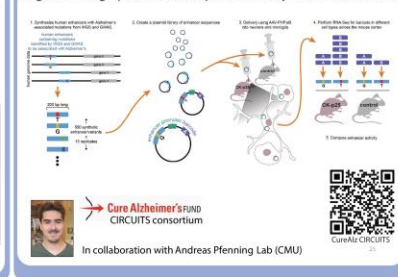
Modular and programmable CRISPR-Cas9/dCas9 system



Imaging, synaptic density, neuronal connectivity, temporal effects

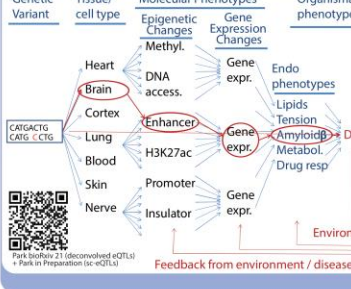


High-throughput in vivo reporter assay in mouse brain



Molecular Phenotypes

Genetic Variant



Collaborative Team

Collaborative Team



Single-cell dissection of Alzheimer's Disease

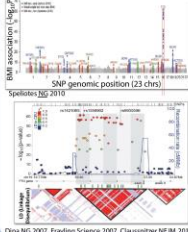
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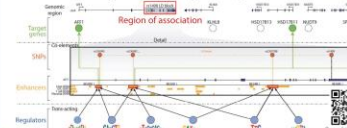
GWAS Manhattan Plot: simple χ^2 statistical test



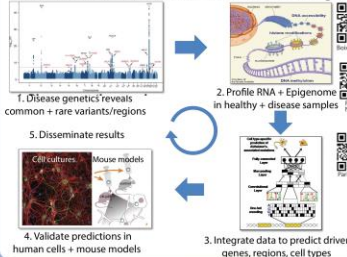
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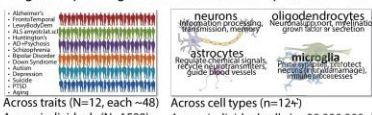
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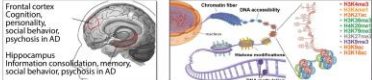
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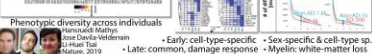
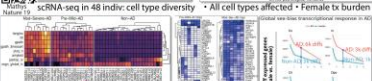
Single-cell profiling across 1500+ brain samples, 20M+ cells



Across traits (N=12, each ~48)

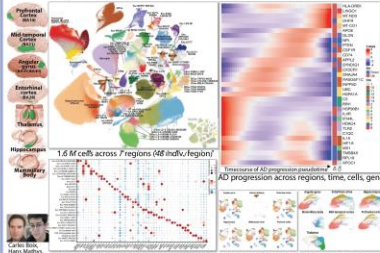


Across brain regions (N=7+)

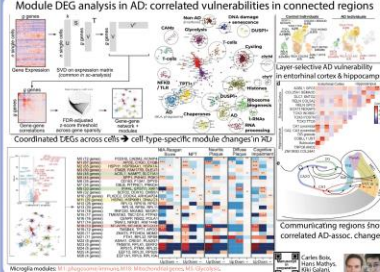


Multi-Region, Modules

Spatio-temporal AD progression across brain regions, cells, genes, pathology

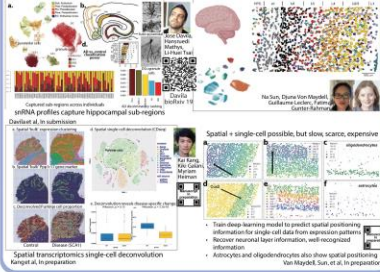


Module DEG analysis in AD: correlated vulnerabilities in connected regions



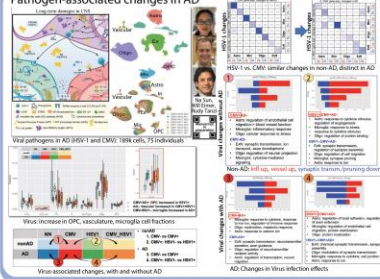
Spatial, Anatomical

Deep Learning for Spatial Transcriptomics + Single-cell Integration



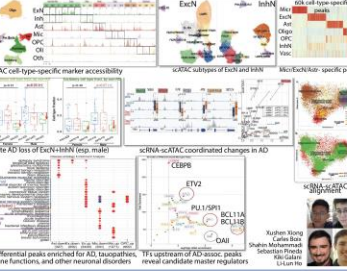
Pathogens: HSV, CMV

Pathogen-associated changes in AD

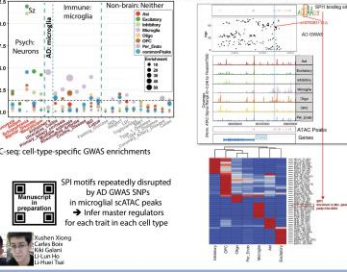


scATAC, GWAS, TFs, Epigenome Erosion

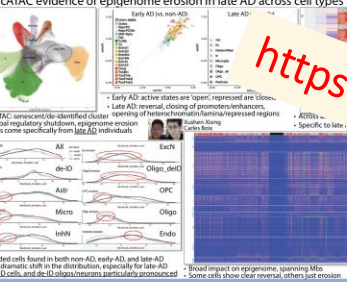
scATAC-scrRNA Epigenome-Transcriptome linking & integration



Cell-type-specific GWAS enrichments for scATAC-seq peaks

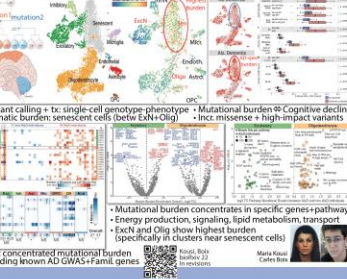


scATAC evidence of epigenome erosion in late AD across cell types



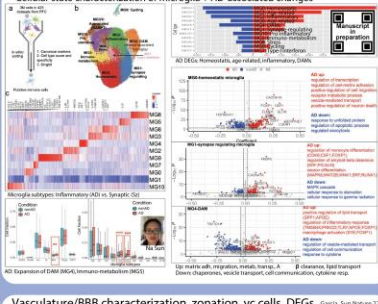
Strong effect, rare, and somatic variation

Mosaicism: Somatic mutation burden in disease from scRNA

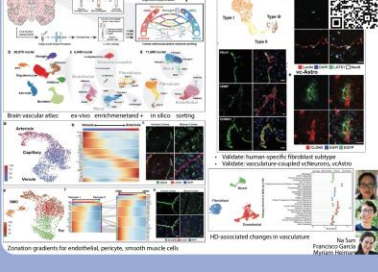


Microglia, Vasculature

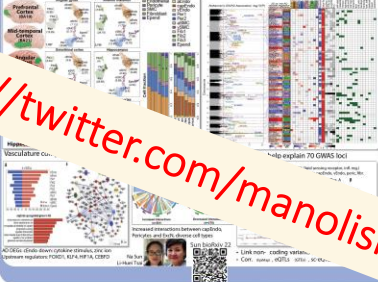
Cellular characterization of microglia + AD-associated changes



Vasculature/BBB characterization, zonation, vc cells, DEGs

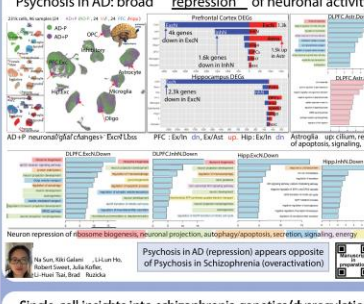


Vasculature-dysregulated AD genes in AD GWAS + sub-threshold loci

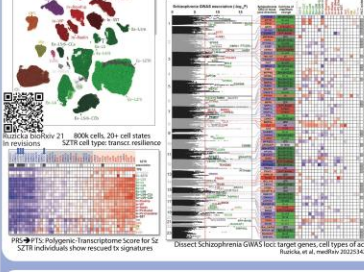


AD Psychosis, Schizo

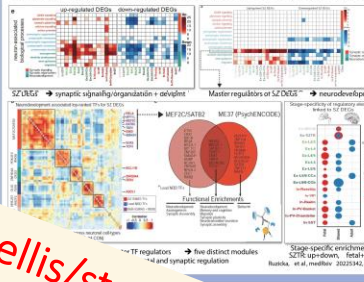
Psychosis in AD: broad repression of neuronal activity



Single-cell insights into schizophrenia genetics/dysregulation

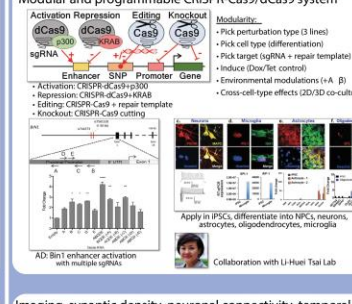


Master regulators of Sz DEGs: GWAS hits, devel/synaptic func.

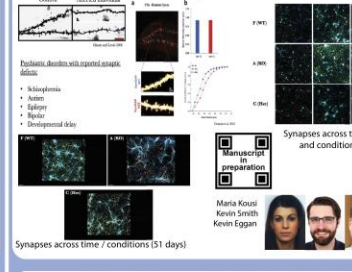


Experimental Validation

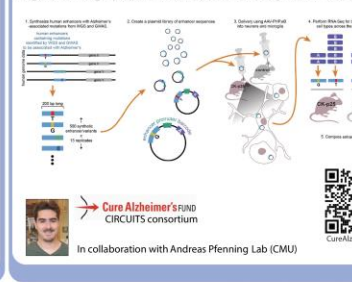
Modular and programmable CRISPR-Cas9/dCas9 system



Imaging, synaptic density, neuronal connectivity, temporal effects

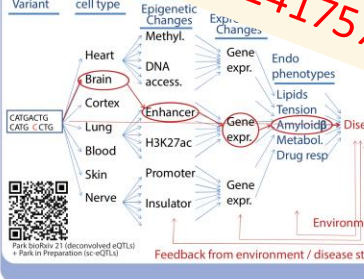


High-throughput in vivo reporter assay in mouse brain



Multi-Cell Types

Genetic Variant



Collaborative Team

Collaborative Team



Poster suggestions

- _ I offer you permission to be free from any expected template!
 - _ ...unless it really is a formal requirement for a given event
- _ Be creative
- _ use it as an **interest generating device**, not necessarily a self explanatory thing
 - _ You can reference a website or paper with more info (e.g. QR code)
- _ Examples and advice: <http://betterposters.blogspot.com/>

Figures

- _ The best figure is:
 - _ the one you can **explain**
 - _ fits into your story
 - _ is **understandable** on it's own (including a caption)



The art of facilitation...

Moderation/Facilitation

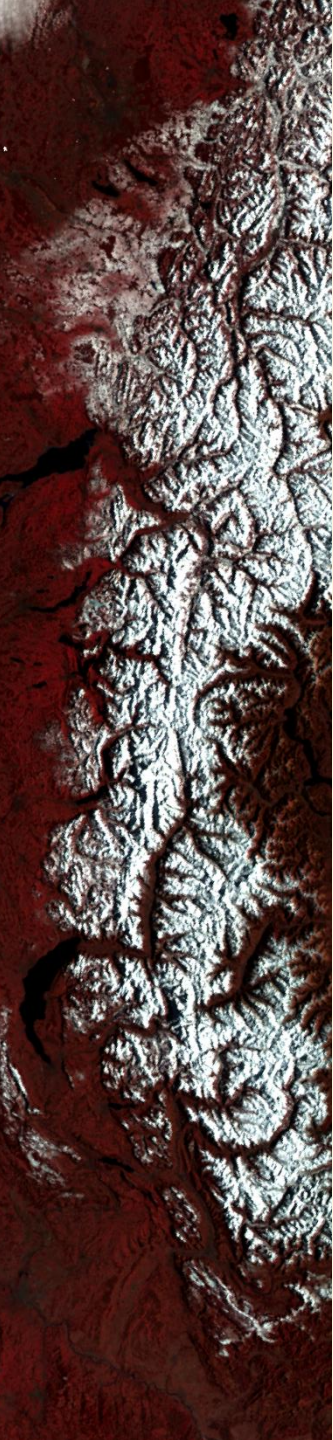
- _ **Contact speakers** in your session in advance
- _ Be prepared to **introduce each person** with a small blurb
- _ Perhaps have a brief introduction and **conclusion** for the session
- _ (respectful) time-keeping
 - _ Think of it as making time for later rather than limiting
 - _ Let presenters know how you will inform them of timing
- _ **Interrupt** audience monologues in Q&A!
 - _ You can preface this at the beginning of the Q&A
 - _ E.g. "Please, questions only; I will interrupt if there is any monologuing. You can talk one-on-one at the end of the session."
- _ How can you make space for everyone (rather than take it)?

Moderation/Facilitation

- _ If possible, make an **agenda**
 - _ slide to refer back to, and/or a handout
 - _ Clear purpose of the session (e.g. like a thesis statement!)
- _ Ask for any **accessibility** needs/requests in advance
 - _ only really possible for “closed” meetings (known participants)
- _ Follow up with **notes** for attendees
 - _ Again, only really possible for “closed” meetings
 - _ e.g. Int’l Mountain Conference, autumn 2022 – synthesis sessions
- _ For sessions exceeding an hour, build in (short) breaks

Perhaps most importantly...

- _ don't take yourself too seriously
- _ often the real goals are:
 - _ be remembered, if you present
 - _ establish a starting point for conversation **after the session!**



A4: Final Paper

15.01.2024

A5: Presentation

17.01.2024

(upload before!)

The schedule and A2 of the person you are introducing will be available on Blackboard before the end of the break – the biggest part is your presentation.

Thanks for participating!

resources

- _ Gernsbacher, M. A. (2013). *Improving Scholarly Communication: An Online Course*. Retrieved from <https://osf.io/z9dh7/>
- _ Sarnecka, B. W. (2021, June 29). *The Writing Workshop: Write More, Write Better, Be Happier in Academia* (2nd ed., full text). Retrieved from <https://doi.org/10.31219/osf.io/5qcdh>
- _ Some work by Nancy Duarte:
 - _ <https://hbr.org/2012/10/structure-your-presentation-li>
 - _ https://www.ted.com/talks/nancy_duarte_the_secret_structure_of_great_talks?referrer=playlist-how_to_make_a_great_presentation