**9505 Learning Log Notes**

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**Brief Reflection**

As this course comes to an end I look back and see how much I’ve become much more confident and opened myself up to speaking in front of an audience, especially during our presentations. I really enjoyed the presentations because I was able to work with great partners that made the presentations not as scary as it seemed it would be. I also enjoyed the AI misconduct assignment because it was a unique experience, trying to figure out how we could cheat with AI. It pushed me to use the creative side of me in ways that I haven’t before.

Overall, although I didn’t speak up much during this course, I was definitely very interested and fascinated with the many different cases the prof brough up. I think the most memorable class was the first class because we got to discuss one of my favorite criminals, Dr Paolo Macchiarini.

**Class 1: Stem Cells Promise vs Reality; Cost of Integrity**

**Reading**

**The celebrity surgeon who used love, money, and the pope to scam NBC producer**

* Netflix documentary – the bad surgeon; love under the knife

**How do stem cells work:**

* Ability to generate new cells of all kinds
* Start off unspecialized
* Adult stem cells give rise to a smaller number of cell types

**Heart of Matter**

* shortage of available human hearts.
* 30% of candidates die before receiving a transplant.
* The team considers using chimpanzee hearts as a temporary "bridge" to human hearts.
	+ could potentially buy time for human recipients and may even become a permanent solution if immunological rejection can be overcome.
* Chimpanzee hearts might be more preferable than artificial hearts
	+ The close evolutionary link between humans and chimpanzees suggests potential compatibility
	+ Chimpanzees are endangered, international trade in chimpanzees is banned, and breeding in captivity is difficult.
	+ Capturing wild chimpanzees is inefficient and leads to the death of multiple chimpanzees for everyone captured.
	+ The ethical dilemma is complex

**Cells or Drugs**

* stem cells from bone marrow could help regenerate injured hearts
* replication issues and allegations of fraudulent data => retractions
* negative impact on the field of stem-cell therapy.
* Stem cells might help heal hearts by secreting growth factors rather than through cell proliferation.
	+ improve heart repair by reducing inflammation and promoting new muscle development.
	+ help restore molecular signaling lost during a heart attack.
* The debate continues between the potential of stem-cell therapies and small-molecule drugs.

**Blots on the field**

* Matthew Schrag
	+ Found altered or duplicated images in dozens of journal articles.
* Raised concerns about the integrity of Alzheimer’s research based on the amyloid hypothesis.
* Schrag emphasizes the importance of integrity in research to prevent false ideas from warping scientific understanding.
	+ how scientific misconduct can misdirect research efforts and funding.

**Lecture**

Goals of the module

1. identify key ethical issues and develop our own code of conduct
2. consider what causes ethical lapses
3. develop strategies to ensure good ethical and professional conduct

Alzheimer’s paper consequences

* Broken trust between people and scientists
* years have gone by with the patient, essentially dead-end
	+ follow up was useful in a way to find out that the paper was false
* research funding
* lost trust in science because of COVID

why are ethics and professionalism important?

* science has an important role in society
* others rely on your work for planning their own
* fair competition in a competitive environment

What are major ethical consideration for all scientific work?

* research ethics for human work
* animal health and welfare
	+ approval and inspection process
* safe working environment
	+ biosafety, laboratory safety

who has responsibly for the ethical conduct of scientific research

* everyone has responsibility
* govern how you do things

Professionalism

* workplace conflicts to business in Canada $2 billion/year
* how do you manage it
* group work
	+ what are critical elements of professionalism in a clinical setting
		- confidentially/ HHPA
		- accountability
		- respect
		- collaboration
		- growing mindset
		- communication
			* knowing time and place about what you should be talking about
* is this something we really have to worry about
* how common place are ethical and professional lapses
* is it only bad eggs?
* QRP = questionable research practice
	+ This is subjective because what is QRP to someone can mean something different to someone else
* 10% admit that they use QRP
* 40% know someone who used QRP

Stem cells as a bad example

* Why is everyone interested in stem cells?
	+ Could possibly cure the incurable diseases
* What is regenerative medicine?

Person of Interest: Paolo Macchiarini

* Surgeon from Italy that went on to do tracheal transplants with artificial trachea and coated with stem cells
* Didn’t do any type of testing
* Blame on
	+ The board
	+ Institutions that hired him
	+ People that were in the operating room
	+ Families that didn’t do their research
		- Need to tell the family ethical consent
	+ Media played a role
		- Bought into the story
* Recruited by Karolinska
	+ Didn’t do their due diligence
* He believes that he is correct
	+ He is narcissistic
* You can tell a lot about his moral and ethics by looking at his personal life
	+ He was even lying to his family and being deceptive with them

Stem cells and the heart

* Why is everyone so interested in the topic
	+ Can use stem cells to reverse the negative effects
* What other stem cell therapies are popular topics
* Some questions about the study
	+ How do we know cells are going to migrate to the correct place
	+ How do the stem cells survive in the infract zone if there is no blood supply

Issues from a developmental biologist

* + How do you get such a clean differentiation
	+ How are they integrating electrically
	+ How are they surviving
	+ Are cells fusing
	+ Why are they not forming tumor

Levels of rationalizing

* They are responding to local cue
* They are recruiting endogenic stem cells
* That are secreting factors that stimulate endogenous stem cells
* They are secreting good things

Piero Anversa

* Clean falsification of data
* Staff was under duress
	+ Not just science misconduct but workplace misconduct
* What caused him to do this. ethical lapses
	+ He believes that this is correct and its right
	+ He is driven to prove it right
	+ Stagnant mindset coupled with narcissistic personality
	+ Journals publish positive result => want to get published
	+ Get bonuses from publishing in large journals
* Strategies
	+ Internal audits 🡪 its rare
	+ Have mechanism in place where the post docs could go and speak freely

**Class 2: Retraction Watch**

**Readings**

**What a massive database of retracted papers reveals about science publishing death penalty/ Rethinking Retractions**

* Number of retracted papers increased in 10-fold
	+ Rate of increase has slowed
* Relatively rare 🡺honest errors and not fraud
	+ Few authors are responsible for retraction
	+ Not always assume misbehaviour
* Call upon publishers, editor, peer reviewers
	+ Should step up
	+ Journals with low impact are stepping up
	+ Using software to detect plagiarism
* Retraction watch database 🡪 largest and most comprehensive database
* Journals are doing more to police paper 🡺 improvement of oversight
* Smaller scientific community have bigger retraction problems
* Stigma surrounding retractions
	+ Hard to clean up
		- Helpful to have standardized nomenclature that gives more information about retraction and correction
	+ Hard to protect the integrity

**Limitations of retractions:**

* More than half the retraction notices do not specify who initiated the retraction
* Some don’t have information on reason for retraction
* unfairly stigmatize authors 🡪 even those with honest mistakes
	+ heroic acts 🡺 self-correction
		- ex, Nathan t georgette
* retraction notices should be made clearer and more informative
	+ better understanding for reasons
	+ reduce stigma
* encouraging and recognizing authors who willingly correct themselves 🡪 positive influence in science culture
* essential to develop more comprehensive and accurate retraction databases​

**Alleged image video:**

* Research misconduct

Duplication and alteration of pictures

**Lecture**

Haruko Obokata

* Somatic cell conversion into pluripotency via environmental stimuli
* Flagged for misleading and altering data
* Expectations 🡺 cause ethical lapses
	+ She was a young female scientist in a predominantly male field
		- Possible comments made being the scene 🡪 could have pushed her to belief in her work even more
	+ Cultural differences
		- Competitive and focused on reputation
		- Felt shame 🡪 she was in too deep
	+ Institute could have been in on it
		- How was she able to steal stem cells into the lab
		- They had a motive to publish and have her has a scapegoat
		- She was taking all the blame
		- They threw her under the bus
			* In the news article they had said she has poor ethical concern
				+ This is harsh considered they had responsibility hiring her and giving her accesses to such research
		- When she published, they stood behind her, but once it came crumbling down, they stated they knew nothing about her
* Strategies to be employed
	+ Internal audits
	+ Having other in the lap reproduce based on the protocols
	+ Heavy peer review
	+ Changing our view on what a successful researcher is
		- It could be a researcher that doesn’t get that nature paper, or someone who works on a study but doesn’t get the results
			* This doesn’t mean they are a bad researcher
	+ Blinded approach with peer review
		- Assumptions and bias
			* If it had been blinded them could have been more of an open lens to scrutiny
			* They wouldn’t make assumptions on “oh it was someone from Harvard” or “they published it so must be true”
	+ Nature
		- How could they have not caught it before publication

Retractions

* Common reasons
	+ Improper experimental design
	+ Questionable images
	+ Authors made up
		- Put authors that didn’t contribute
	+ Use of ChatGPT
	+ Fabricated data
* Are there any good reason for retracting
	+ Data is fabricated
	+ Not reproducible
	+ Catching a mistake
	+ Duplicating images
		- Mistakes in images but cutting and pasting wrong images
	+ Wrong statistics

Pub Peer

* Very little conversation
* A lot of pointing out false images
* Back and forth between authors
* Has good potential but doesn’t seem like it is being used appropriately
	+ Is it genuine feedback
	+ What are the credentials and what experiences to they have
* Pros and cons to the anonymous aspect

Is there a problem with peer review system?

* Should have caught Anvera and Obokata
* People selected to do Obokata paper
	+ Confirmation bias 🡪 hoping that the research is real 🡪 could have been lenient
	+ Need to be hyperaware with our bias and make sure it does not influence our review
* Every reviewer is different how do we know if they are being objective, are they following a guideline, how can we trust their review, are they being genuine
	+ Element of trust
		- Finding balance between trust and verification
		- Trust but verify
* Its voluntary
	+ No one is paid to review a paper 🡪 if they did could lead to conflict of interest
	+ People have time restriction, is it believable, is the experiment appropriate, do you have time to check the images
	+ Disadvantages to anonymity
* Open peer reviewers
	+ Not be anonymous
		- More time will be taken and write a better review
		- Incentive 🡪 I put effort into to it
		- They will be more hesitant on what they review
		- Reviewers will be more aware
		- More transparency
	+ Cons
		- If you reject it authors will know who you are
			* You would lower the harshness because you don’t want the blow back
		- Harder to get the reviewers to do it

Ethical lapses for cheating

* Gaining competitive advantage and gain recognition
* Incentive to publish somewhere 🡪 want to be financially stable
* People pick and choose how they rationalize cheating
* Narcissists want to win
* Pressure in staying in the game
* Motivations to cheat
	+ Competitive aspects with difficulties in obtaining funding
	+ Pressure for maintain lab and staff
	+ Desire for career advancement
	+ Monetization for personal gain

Develop strategies to ensure good ethical conduct

* Personal level
* Lab group level
* Institutional level
* Society level

**Class 3: Effective Teamwork and Professionalism**

**Readings**

**Effective teamwork in Healthcare:**

* Effective teamwork is essential for patient safety and quality of care.
	+ teamwork is a prerequisite
* (CHSRF) funded research to gather evidence on effective teamwork in healthcare.
* Effective teams adapt
	+ to changing conditions
	+ trust each other
	+ produce high-quality results.
* Teamwork can lead to improved patient outcomes 🡺 better coordination of healthcare services 🡺 reduced medical errors.
	+ Also shown in aviation and military
		- High risk industries
* Teamwork is not an expectation yet in healthcare field
	+ Implementation requires management practices and occupational hierarchy
		- Rare to implement practice plans
* Facilitating knowledge exchange between research and healthcare management.
* Need to continue efforts in teamwork implementation
	+ Transform into team-based environments
* Decision-makers need to prioritize teamwork to improve quality and productivity in healthcare.

**The intelligent failure that led to the discover of psychological safety**

* Author failed to find support for their study hypothesis.
	+ Felt guilty and ashamed for not getting results
	+ Spent lots of time and effort
* Study included a survey, research meeting, tracking hospital errors, interviewing caregivers
* The author hypothesized that better teamwork would lead to fewer errors.
* NASA's study on fatigue and error rates among pilots unexpectedly found that fatigued teams, having worked together, made fewer errors as a team.
	+ Led to crew resource management 🡺 improving safety of passengers
* Author found a correlation between error rates and team effectiveness
	+ better teams appeared to have higher error rates.
		- Had to rethink the results
			* due to a climate of openness and psychological safety, where mistakes are openly discussed and addressed.
				+ More transparency 🡺 led to psychological safety

improving team performance, reducing burnout, and lowering patient mortality in healthcare

* Psychological safety allows for interpersonal risks, essential for achieving excellence in a complex, interdependent world.
	+ It encourages asking questions, sharing ideas, and discussing errors without fear of reputation damage.
* Need to rethink, hypothesize anew, and recognize the value of failures in scientific research.

**What do you lose when teamwork fails**

* Failed team characteristics
	+ Factions and Battle Lines: Formation of factions, communication breakdown, and rising suspicion.
	+ Productivity Decline: Sharp drop in productivity and efficiency; collaboration and innovation suffer.
	+ Self-Centered Perspective: Shift from group success to individual survival.
* Analysis
	+ Interpersonal
		- Civility: Loss of mutual respect, productive communication ends.
		- Shared Responsibility: Individuals only focus on personal tasks, shared tasks suffer.
		- Support: Lack of support and encouragement; individuals face challenges alone.
		- Shared Vision: Absence of a common goal, leading to decreased motivation and disjointed efforts.
		- Employee Engagement: All losses are critical for maintaining employee engagement, impacting efficiency and productivity.
	+ Innovation
		- Creativity: Stress stifles creativity; hostile environment discourages risk-taking.
		- Learning Opportunities: Disappearance of informal training; individuals hoard knowledge for survival.
		- Collaboration: Loss of essential elements (civility, vision, responsibility, support) makes collaboration impossible.
	+ Bottom Line
		- Productivity and Efficiency: Directly impacted by employee engagement; communication breakdown reduces efficiency.
		- Talent Retention: Negative environment drives talent away, leading to costly turnover and loss of innovative ideas.
		- Innovation: Essential for staying competitive; lack of innovation can lead to company failure.

Navigating relationships and conflicts

* Types of conflict
	+ Academic Conflicts: Disputes related to research direction, authorship, and academic performance.
	+ Interpersonal Conflicts: Issues between peers or between students and faculty that can affect collaboration and communication.
	+ Administrative Conflicts: Problems related to policies, procedures, or university services.
* Strategies
	+ Self-Reflection: Understand your own perspective and emotions before addressing the conflict.
	+ Open Communication: Engage in honest and respectful dialogue with the involved parties.
	+ Active Listening: Listen to understand the other person's perspective without interrupting or judging.
	+ Problem-Solving: Collaborate to find mutually acceptable solutions.
	+ Seeking Mediation: Utilize the services of a neutral third party if direct resolution is challenging.
* Address conflict
	+ Identify the Issue
	+ Prepare for Discussion
	+ Engage in Dialogue
	+ Follow Up

**Lecture**

Develop strategies to ensure good ethical conduct

Personal level

* What can you do to ensure your own conduct?
	+ Be aware of ethical standards 🡪 find out what is right or wrong 🡪 know thw guidelines at your institutions
		- A healthy skeptic
	+ Log books are organized and track what you are doing
		- Tracking your citation and keeping them in one place
		- Do good experiments
			* Double blinding
	+ Being honest with the results 🡺 regardless of if its right or wrong
		- Do the right thing
	+ Self advocacy
		- If you are uncomfortable or see something wrong
		- Be firm about your boundaries

Lab group level

* What can you do to ensure integrity in the conduct of the lab
	+ Make sure the environment is respectful
		- Communicate with everyone 🡪 open communication
			* Outline clear code of conduct
	+ Having a collaborative culture
		- Held accountable by your peers
		- Discuss experiments and publications ahead of time
	+ Workshops and training sessions in the lab
		- Educate people on it
	+ Proper supervision
	+ Keep a good lab book
		- Electronic lab books 🡪 access to it by everyone

Institutional level

* What can an institution do to promote ethical behaviour?
	+ Implement a clear policies and procedures
	+ Set up office of research integrity
	+ Regular audits and assessments
	+ Protecting whistleblowers
		- Ensure that they have a career that is protected
	+ Build teams of labs and drive open communication

Society level

* What changes in society could improve the ethical environment in science
	+ Change the way how we define a successful researcher
		- Not just focusing on impact factor
			* Ex. NSERC 🡪 metric is how many successful grad stuents have you pumped out
	+ Education and communication

Effective Teamwork and Professional teamwork

Teamwork in school projects

* Why work in teams
	+ Good practice for future jobs
	+ Whole is greater than the sum of parts
* What does a team look like
	+ Communication and collaboration
	+ Team leader that delegates
* Who dose the tea report to
	+ TA or prof
* How is the success of the team evaluate
	+ Good grades
	+ Self evaluation
* How is the team rewarded
	+ Good grade

In a workplace

* Why work in teams
	+ Too much work
	+ People in different backgrounds supplement one final project
		- What different peoples input
* What does a team look like
	+ Distinct and defined hierarchy
* Who does the team report to
	+ The boss or head
	+ HR
	+ Managers
* How id the success of the team evaluated
	+ Employee evaluations
	+ Quality of deliverables and satisfied with the product
	+ Are they going to be happy with you
* How is the team rewarded
	+ Awards, bonuses, money
	+ Promotion

Teamwork in the IMS program

* Who work in teams
* What does a team look like
* Who does the team report to
	+ Community partners
* How is the success of the team evaluated
	+ Marks
	+ Are the community partners going to be happy? Job opportunity? Reference letters
* How is the team rewarded
	+ Marks
	+ Your products can be used to the public

Group scenarios

From Dr. POV

What might have prompted Dr M to react so harshly in the meeting?

* Potential personal life issues
* Internal pressures
	+ Timeline of project falling behind
	+ Might have unrealistic expectations
	+ Funding might be running out
	+ Has put in time into the project

What are the potential consequences of Dr. M public criticism on team morale and productivity?

* Discouragement
	+ Might halt the team from bringing up more mistakes
* Growth of the project and group impacted
* Peers might not trust team especially supervisor
	+ Creditability

How could Dr M have addressed the issue differently to achieve a more constructive outcome

* Being open to suggestions
* Providing good constructive feedback
	+ Criticism in private
* Taking time and understanding what’s important
	+ Does lashing out help?
		- It could make it worse
* Delivery can be different

How can Dr M balance holding team member accountable with maintaining a positive and supportive team environment?

* Having an open form of communication and having constant meetings
* Making sure the team understand that there are repercussion

From Grad student POV

How did the public desegregation by DR M make you feel, both personally and professionally?

* Feel less incline to open up in the future
* Feel less than then other colleagues
* Increased pressure to succeed can lead to rush work

What immediate action could you take to address the situation?

* Seek a third-party input on the situation
	+ Someone to stand with us
	+ Power imbalance
* Not address supervisor right away
* Documenting it with HR

What long term strategies could you employ to rebuild your confidence and credibility?

* Talking to your colleges and the people that are there to see if you are on the same page
* Take a break and come in with a fresh pair of eyes

From fellow grad

How did witnessing Dr. M reaction impact your perception of the team dynamic

* Uncomfortable and anxiety prone
* Tone of the lab and precedent
* Decrease integrity of the lab because uncomfortable to talk about mistakes opening

What could you do to support your college what was publicly degraded?

* Taking stress off the grad student
* Provide comfort by listening and understanding their situations

Scenario 2

Initial Reflection Questions:

* How can you communicate the importance of equal contribution to the entire team? Should you expect equal contributions?
	+ Looking at the overview of the project
	+ Shouldn’t be expected to have equal contribution but later on people that have a lighter work load can take the lead and putting in more weight
		- There will be a balance
* At what point is it appropriate and professional for you to involve staff/faculty/Dean?
	+ If there is any type of misconduct or harassment
	+ Certain patterns of behaviours
	+ Decide it well in advance
	+ Try to resolve the conflict

Guiding Reflection Questions for Groups:

From Taylor's POV:

* How would Taylor react to the discussion?
	+ She would be furious
	+ Get defensive
		- Want to work by herself
		- Take the victim stance
	+ This would prove her point, bringing it back to the dean
* What reasons might Taylor have for the delays?
	+ Potential personal issues
	+ External pressures
		- Extra circulars
		- Jobs
* What could Taylor have done to perform more effectively?
	+ Have better time management skills
	+ Prioritize
	+ Open communication
		- explain your situation to the group
		- Can be understanding
		- Explain early on that you wont be able to make deadlines
		- Taylor could have also asked for help
* What would success for Taylor look like?
	+ Collaborating with the team and having open communication
	+ Prioritizing the work she has to do
	+ Being honest with herself and her team

From Alex, Casey and Jordan POV:

* What would be effective strategies for dealing with Taylor?
	+ Being mindful of the way you are addressing 🡪 it was pretty combative
	+ Open dialogue, how can we support you in getting this done
	+ Setting felt 3 on 1
		- Closest person to taylor can pull her to the side and talking to her
	+ Advocate for taylor to seek out accommodation within the system
* Would you want to cut Taylor loose from the group and work as a group of three?
* How might you have built the team roles initially to avoid the conflict?
	+ Open up communication with what type of work everyone is comfortable with
* Do you think this is fair to your group if other groups are working fine with no conflict?
	+ Unfair but life is unfair
	+ This can strengthen
	+ Unlikely other groups are not having problems

From the Dean's POV:

* Would you prefer that the group approach Taylor first or would you have want them to talk to you first?
	+ Taylor first in a non combative way
* Once Taylor comes to you, how would you approach that conversation with them? How would you then approach the rest of the group? How might this impact their team dynamics moving forward?
	+ Define how they feel harassed and understand their perspective
	+ Understand the group, how deadlines were set and get a better sense of the situation
	+ Have separate meeting with people involves
* Would you report the conflict to the community partner?
	+ No, tell the group to talk to the community partner
	+ Group can explain issue better because they probably have a better relationship with the community partner
	+ Cc dean if its an email
	+ Should communicate it because it puts the integrity and quality of the work in a vulnerable place
* How might the conflict impact your trust in their ability to work in a team, and in turn, complete their deliverables?
	+ If it’s a one tine thing
	+ To see if they learnt through the process
	+ See progress of the team
* If a reference letter is required by a team member, how do you approach it?
	+ Depending on how they handle the situation and how they communicate as a group

Resolving conflict

* Easier said than done

Levels of critical interaction

1. Differences of opinion
	1. Varying viewpoints without escalating arguments
	2. Resolving by communication and negotiation
	3. A very healthy part of working in teams
2. Conflict
	1. Different viewpoints lead to obstacle in achieving shared goals
3. Harassment
	1. Often characterized by imbalance of power, intense personal attack
	2. Unidirectional and escalates over time
	3. Can be personal, physical, power base, or sexual harassment
	4. Destructive and illegal

How can you cheat better with AI?

**Class 4: lab professionalism**

**Readings**

**Professionalism and ethics**

* Medical Professionalism involves service, expertise, and ethics.
* physician-patient relationships often mediated through primary care physicians, specialists, and allied health workers.
* Service: Commitment to patient welfare above self-interest.
* Expertise: Continuous education to maintain knowledge and skills.
* Ethical Behaviour: Rooted in values like integrity, compassion, beneficence, non-malfeasance, respect for persons, and justice.
* Laboratory Physician Responsibilities
	+ Regulation and Conduct
	+ Professional Duties: Consistent with current standards and scientific methods.
	+ Experience and Training
	+ Prompt Consultation
	+ Patient Interaction: Direct communication with patients or their delegates when necessary.
	+ Consultation in Difficult Cases: Seek advice to enhance medical care quality.
	+ Managerial Skills: Ensure proper resource allocation in laboratories.
	+ Conflict of Interest: Avoid and disclose any conflicts favoring patient welfare.
	+ Advertising: Follow guidelines of the provincial College of Physicians and Surgeons.
* Patient, Laboratory Physicians, and Attending Physicians
	+ Privacy and Confidentiality: Protect patient information
	+ Appropriate Testing: Perform relevant tests and document analyses.
* Professional Colleagues
	+ Consultation and Communication: Share reports and communicate significant differences of opinion with colleagues.
	+ Uphold Public Welfare: Report unethical behavior.
	+ Clinical Research: Ensure patient consent and adhere to legal and professional standards
* Laboratory Operations
	+ Record Keeping
	+ Quality Assurance
	+ Effective Communication
	+ Resource Use
* Hospitals, Industry, and Other Organizations
	+ Impairment of Judgment
	+ Participation in Committees
	+ Continuing Education
	+ Expert Witness Role
* Partnership, Group Practice, and Salaried Physicians
	+ Professional Merit
	+ Income Transparency
	+ Equitable Remuneration
	+ Professional Development

**Lecture**

Strategies to prevent conflict

* Respectful Communication:
	+ Encourage open dialogue and active listening.
	+ Clarify expectations and address misunderstandings promptly.
* Clearly Define Roles and Responsibilities:
	+ Ensure everyone understands their tasks and responsibilities.
	+ Clear communication minimizes ambiguity and reduces potential conflict.
* Encourage Collaboration:
	+ Foster teamwork and cooperation.
		- Make sure everyone’s voice is heard
	+ Encourage joint problem-solving and shared goals.
		- Don’t just assign a block of work
		- Work together on smaller pieces
* Provide Education:
	+ Offer conflict resolution workshops or communication skills training.
	+ Equip teams with tools to handle disagreements effectively.
* Promote Positivity and Humor:
	+ A positive work environment reduces tension.
	+ Encourage a friendly atmosphere and use humor when appropriate.
* Resolve Conflict Early:
	+ Address issues promptly rather than letting them escalate.
	+ Timely intervention prevents prolonged disputes.

Professional behaviour

* Professional
	+ Punctuality
	+ Being respectful overall
	+ Positive attitude
	+ Good judgement
	+ Professional appearance
* Non-professional behaviour
	+ Lack of communication
		- Under prepared, coming late
	+ Not meeting expectations

Grad student/Lab Professionalism

* What are the different types of people you will interact with in lab setting
	+ Research assistant
	+ Coordinator
	+ Lab tech
	+ PI – principal investigator
	+ Grad students
	+ Post docs – work on their own project
	+ 4th year undergrad
* What type of employment is
	+ Undergrad student
		- Learner
	+ Grad student
		- Learning
	+ Post doc
		- Union with university
			* Off a grant
		- Independent
			* Paid off scholarship
	+ Research tech
		- Employee

Communication

* Email
	+ Checking, sending, waiting

Scenario email etiquette

* 1. How could have she handling it
	+ She could have found someone in her lab and ask them our surrounding labs
	+ She could’ve waited a little longer
	+ She could have said it was urgent in the original email
	+ She could have dropped by his office
* 2. What strategies can be implemented
	+ Setting up email expectations
	+ Being proactive
		- If you need to ask what type of test you need to run, do both and ask which one they want later
* 3. Reasonable time to wait
	+ A day
* 4. How might the doctor feel
	+ Worried at first, then feel angry or annoyed
	+ Maybe wonder if Penelope should continue or not
* Part 2:
	+ 1. Should dr colin follow up after her
		- Should follow up in person the next day
		- No need to email back and forth
		- Talk about expectations on emailing etiquette
		- Doesn’t seem like he addressed the questions so he should do that
	+ 2. How can the doctor balance communication and maintain team morale
		- Setting up expectations beforehand
		- Have a lecture or workshop
	+ 3. How might this be perceived
		- Shows a lack of confidence
		- Hesitant on that student

In person meetings

* Lab meetings
	+ Educational but hard to follow
	+ Presenting the work and getting feedback
	+ How you run lab meetings tells you a lot about how you are with PI
* Supervisor meetings
	+ Direct feedback
	+ It’s a bit better
* Interacting with lab personnel
	+ Very educational
	+ Best you can get because you’re working with them everyday
* Scenario: meeting coordination
	+ 1.
		- Ask him for his reasoning
			* Maybe scheduling conflict? Uncomfortable?
		- Do hybrid meetings
	+ 2.
		- Can become adaptive unless it’s a pattern
	+ 3.
		- If you can’t resolve conflict on your own
		- Main issue is that he is not communication

Cell phone use

* Social media - A useful minefield
* Scenario
	+ Contact the account and get them to remove it as soon as possible
	+ Contact dean

Scenario: student supervisor interaction

* Ask the supervisor why you think is dumb
* Provide a reasoning why you think it’s a good idea
* Also address how you think it was rude and disrespectful the way they communicated that

Scenario: talking science

* Find the paper, find evidence make sure it’s a legit paper and bring it up
* Go back check the paper, and make sure you are correct
* As a superior I would want my student to feel comfortable enough to bring it up
	+ Students feel safe enough to bring it up

Respect for other

* You should expect respect and also you give respect to others
* Bully, harassment and abuse are not to be tolerated at any level
* Always strive to learn from others and their experiences

**Class 5: Misconduct prevention**

**Readings**

What’s in the picture?

* Ease in data manipulation
	+ Advances in software such as photoshop
	+ Images
		- Different types of severity
			* Ex. Deleting, adding, altering
* Good science 🡪 accurate and unaltered data
* Consequences
	+ Loss of creditability
	+ Undermines academic integrity
* Some journals have guidelines 🡪 require software to detect enhancement
* Types of misconduct
	+ Gross manipulation
	+ Subtle manipulations
* Acceptable adjustments must be disclosed

Publish or perish

* Retractions due to misconduct
* Job market pressure
	+ Increase in scientists
	+ Importance on number and impact factor
	+ High impact on publishes or perish culture
	+ Lack of top tier job pubs for grad students
* Personal life pressures
* Advance tools for detecting duplications and image alterations
* Prevention measure
	+ Ethical courses
	+ Discuss the implications of misconduct
		- Loss of credibility

Misconduct in research

* Research 🡺 aim to understand health challenges by development of knowledge
* Wrongdoing in research
	+ Intentionally committing fraudulent acts such as fabrication, falsification, misrepresentation
	+ Failure to disclose
	+ Inadequate management
	+ Sabotage
	+ Piracy
	+ Conducting research that require prior approval
	+ Failure to adhere to ethical practices
	+ Misappropriation of data
* Whistle-blowers 🡺 report wrong

**Lecture**

* Stanford president stepping down
	+ Flaws in his paper
* Alzheimer’s beta alanine 🡪 retraction
	+ Billions of dollars in the field

Can you prevent fraud

* What is mechanism to prevent plagiarism
	+ Plagiarism is on the rise
		- Student are realizing how useful it is
	+ Submission AI detection tools
		- Turn it in
		- Grammarly
		- Trinka
		- Considerations: cots, databases, online
			* Problem: tools to counter these
				+ Rewording software
				+ ChatGPT
				+ Machines are going way faster than we can keep up with
	+ What is non-software-based methods of preventing plagiarism
		- Citations
		- Rewording as you take points from articles
		- Writing what you remember, and not going back to paper
		- Group work

Group discussion

1. Does use of AI to do your writing constitute plagiarism?
	* + Keep definition of plagiarism
		+ Fine line, need to have a source where information is being pulled from
		+ How descriptive your prompt
		+ If you do things right it wouldn’t be
2. Does use of AI to do your writing constitute cheating?
	* + Cheating is a better way to say you use AI to do the work for you
		+ To do your writing… yes, its cheating
			1. But you are directing it what to write when your prompt it
		+ To aid your writing
3. Should universities allow it
	* + When they restrict and control the student, they harm them and their innovative ideas
		+ No choice
			1. Education on its ethical use
			2. Acknowledging that you can use it 🡪 be an open discussion
				1. Submitting your prompts
		+ instead of focusing on the writing we should focus on the content and see if the student understands the context not just worry about dressing up there writing and making it sound pretty
			1. it could turn away from using ai and focus more on the student creativity pushes them
		+ have a free subscription 🡪 calculator example
			1. there is already an imbalance of advantages
				1. this could lead to universities having access to the prompts
4. What advantages and disadvantages of using AI
	* + It’s very useful for brainstorming and providing a skeleton or a starting point but what was getting hard is rewording what AI has said
		+ Has more data than we can think of
		+ Time efficient
		+ Its biased and only puling form knowledge it has -🡪 but is it really, because it has a wider database
		+ Can create a divide
			1. Some people don’t have Wi-Fi, and access to all this
5. How should writing be assessed
	* + It difficult

Why people cheat in science?

* + Pressure to publish
		- Measure of productivity
		- Easier to publish positive than negative
	+ Taste of success
		- Successful post doc 🡪 nature of any science publication
	+ Power play
		- Demanding experiment to succeed
		- Threaten to fire graduate student

Type

* + Simple duplication
	+ Duplication with repositioning
	+ Duplication with alteration

Imaging

* + Many online resources now available
	+ Individual journals will provide guidance

How do we disable the motivation to cheat

* + Personal
	+ Institutional
	+ Journals

DORA

* + Response to metric analysis how someone is doing
	+ San Fran
	+ Beyond impact factor
	+ Institution level
		- Core values
			1. How can we reform research assessment
			2. Open scholarship
			3. Equity and inclusion
	+ Principles
		- Instill standard and structure into research and assessment processes
			1. Narrative CV
		- Foster a sense of person accountability in faculty and staff
		- Prioritize equity and transparency of research assessment processes
		- Take a big picture or portfolio view toward researcher contributions
		- Refine research assessment processes through iterative feedback
	+ Example
		- Low impact doesn’t mean low quality
		- Might not have resources to publish in high impact journals
		- Look at the content

Some potential solution

* + Establish a code of conduct with finical penalties
		- Pushback financial penalty
			1. Lawyers involved as soon as you do it
		- What constitutes breach
			1. More money will go to fighting it than into research
		- Not really practical
	+ Provide funding for replication studies
		- Encourages to be ethical
		- Could be practical because less money on getting retractions and would be useful to reproduce
			1. But who is providing funding, how many studies, harder to sell to gen pop
				1. Maybe have a committee or lab that does the reproducibility
	+ Require full data transparency at all stages of research
		- Pushback 🡺 because was not required before
			1. But could be beneficial
			2. Only useful what you’re going to do with that raw data
	+ Require formal and timely responses to research audits by the institutions
		- Create lots of pushback and adversity
			1. People won’t react to it well 🡪 might think they are being targeting
	+ Require journals to provide space for replication studies
		- Practical but costs
			1. Time for peer review
			2. Who’s going to do it
	+ Pay journal and grant review
		- Who is setting the standard if a good review
			1. Some sort of guideline
		- Would encourage good ethical practices and better reviews

**Class 6: Clinical Case Study**

**Readings**

The Olivieri Debacle: Where Were the Heroes of Bioethics

* Canadian bioethicists are urged to reflect on the meaning and value of their work.
* The internal ethics of bioethics is being compromised.
* The case involves Dr. Olivieri, the Hospital for Sick Children, the University of Toronto, and Apotex Inc.
* Numerous opportunities for bioethical heroism were present, yet none emerged.
* Much criticism has been directed at the hospital and university for their failures in the case.
* The silence from the Canadian bioethics community is notable and troubling.
* Bioethicists have a duty to "speak truth to power," and this duty was neglected.
* This article aims to address the silence from the bioethics community.
* It also pays tribute to unsung heroes among Dr. Olivieri’s research colleagues.

What the "Big Pharma" Accusations Gets Right (and Wrong) about the drug industry

* Valid Criticisms and Issues in Drug Development:
	+ Selective Publication of Results: Pharmaceutical companies often publish only positive trial results, burying negative outcomes.
		- This skews the medical literature, misleading doctors about the efficacy of drugs
	+ Manipulation of Clinical Trials: Trials can be terminated early to favor the drug, or conditions can be medicalized to sell questionable drugs​
	+ Companies develop slightly modified versions of existing drugs to extend patents and profits without significant therapeutic advancements​
* Misguided Criticisms and Conspiracy Theories:
	+ These theories accuse the pharmaceutical industry of being in cahoots with academia and governments, aiming to keep people sick for profit​
	+ Critics often promote natural remedies as safe alternatives to pharmaceuticals, ignoring that natural does not always mean safe (e.g., snake venom, asbestos)​
* Path Forward and Solutions:
	+ Improving transparency in clinical trials and data reporting is crucial. Campaigns like AllTrials advocate for public registration and reporting of all clinical trial results to ensure a complete and honest medical literature​
	+ While there are significant issues in the pharmaceutical industry, it has also produced life-saving innovations. The focus should be on reforming the system rather than outright rejecting pharmaceuticals​

**Lecture**

Ethics in Clinical Research/Business

* Important questions
	+ Is big pharma evil?
	+ Should university researchers work with industry partners?
		- Yes
		- Advantages 🡺 money, expertise, opportunities to train students

What does a typical industry …

* Driver for industry 🡺 profit
	+ Not a bad thing
	+ Powerful motivator
	+ No profit you can’t do stuff
	+ Knowledge generates for profit
* University don’t have profit
	+ They have goals
	+ Trying to generate knowledge and disseminate it
	+ Knowledge generated to publish papers

Olivieri case study

* What did you find interesting about the case study?
	+ Researcher at sick kids
	+ thalassemia
	+ Thought drug will be helpful
	+ Research suggested that it wasn’t doing much 🡪 some indication of harm
	+ She wanted to notify patients
		- Informed consent letting them no
	+ Apetex said you can’t say anything because of their confidentiality
	+ Gidden koren wrote the letter and sent it anonymously
		- Denied that he sent them
		- Got in trouble much later on
		- In the wrong
	+ Poisoned pen letters
		- Slander
		- Saying she wasn’t good
	+ Olivieri
		- In the wrong
			* Breach contract
		- But in the right
			* Basic principles of an MD to provide informed consent
	+ Company
		- The ethics behind it is questionable
		- Should have done more research and terminate
	+ University/hospital
		- Been more vigilant
		- They should have stood by the doctor, bc she represents them
		- They were taking into consideration their connection with the industry
			* Multimillion dollar deal might be broken if they stood by the doctor
	+ Group of researchers that backed her and the Ontario … facility
	+ Any scientific fraud
		- Bury negative results is unethical
	+ Conflict of interest
		- Between university and company
* Develop strategies to ensure good ethical conduct
	+ Don’t review grants or papers of friends
	+ 3rd party should have independently oversighted of the results
	+ Protect her and let her voice her opinion
	+ Researchers have the right to disclose and disseminate information
	+ Education
		- Discussing about cases like this
* What could have happened if the doctor had lack sufficient ethics or simply did not want to deal with it
	+ Potential patient harm
	+ She made an oath and her duty as an MD is to protect people

Where are things now

* FDA Approved but not in Canada
* Can be used

Online ethics center

* Case study 1
	+ 1. Yes, it will cause bias
	+ 2. Might affect follow up studies, may not want to publish bad results, affect future funding, pressure, maybe they might have future opportunism so pressure to publish positive results
	+ 3. It might
		- But colleges understand
			* Unless it’s a pattern and she keep doing studies similar to this than they might doubt her
		- The public might not understand even if its conducted
		- If she able to be transparent and disclose
			* Disclose conflict of interest
	+ 4. Not tell her where the funding is coming from, blind study, independent verification, transparency in data
	+ 5. 50/50, she does have a responsibility, but she has done her due diligence and talked to them
	+ 6. She could get another independent study, it is her responsibility to make sure information is correctly disseminated, also being transparent about the data
		- Her responsibility to make sure the information is correctly disseminated to the scientific community but not to the public, if the media picks out a couple words and they still say bad things, then she did her due diligence
	+ 7. Controlled by being transparent with the data, as well is trying to replicate the study

Conflict of interest

* Financial
* Family
* Friends
* Cardiovascular research
	+ Context dependent
* Cranberry company
	+ Clear conflict of interest
		- Pressure to publish positive results
		- Low stacks
		- Correlation vs causation
		- Ruins the science
			* People will always question it
* Environmentalists
	+ Conflict of interest
	+ Confirmation bias bc it would benefit the family
		- To prove the harm, they do
	+ But researchers are pushed by passion
* What to do about it
	+ Avoid conflict
	+ Disclose conflict
	+ Recuse from the situation
* What are other strategies against conflict of interest
	+ Reflecting on personal motivators
	+ Change to blind experiment
	+ Transparency
	+ Make sure institutes are aware and good lawyers present
	+ Independent verification

Once you have a drug – how do you ethically sell it

* You are tied to the drug sale 🡺 conflict of interest
* Have to disclose negative information
* Can’t have false or misleading advertising

Ozempic

* Media is advertising it
	+ Including celebrities
* Company not disclosing it

Interactions with healthcare professional

* Can they be paid?
	+ Most drugs are billable
	+ So, you can’t get benefitted
		- But have to disclose and its minor

**Class 7: Clinical Trails and interactions with patients**

**Readings**

Principles of Clinical Ethics and their Application to Practice

* **Four Main Ethical Principles**:
	+ Beneficence: Obligation to act for the benefit of the patient, protecting their rights, preventing harm, and promoting their welfare.
	+ Nonmaleficence: Obligation to avoid causing harm.
	+ Autonomy: Respecting the patient’s right to make their own decisions, underpinning informed consent, truth-telling, and confidentiality.
	+ Justice: Ensuring fairness in medical decisions and distribution of resources.
* Informed Consent, Truth-telling, and Confidentiality: These principles arise from the respect for patient autonomy and are critical in medical ethics.
* Ethical Problem-Solving Model: A four-pronged approach involving:
	+ Clinical assessment (identifying medical problems and treatment options)
	+ Patient preferences (clarifying the patient's treatment choices)
	+ Quality of life (considering the impact of medical problems and treatments)
	+ Contextual features (considering family, cultural, spiritual, economic, and legal factors)
* Ethical Education: Goal-oriented educational programs are recommended to improve the ethical skills of healthcare providers, encompassing understanding ethical dimensions of patient care, competence in core ethical skills, and appreciation of cultural diversity.
* Ethics in Clinical Practice: Physicians must balance ethical principles when they conflict, using systematic approaches to resolve dilemmas and ensure ethical decision-making in patient care.
* Historical Evolution of Bioethics: The field has grown from focusing on professional conduct to encompassing broader areas like research ethics, public health ethics, and clinical ethics due to historical abuses and advances in medicine.

What makes clinical research ethical (Seven Ethical Requirements of Research)

* Value: Research must enhance health or knowledge.
* Scientific Validity: The research must be methodologically rigorous and capable of generating reliable results.
* Fair Subject Selection: Participants should be chosen based on scientific objectives, not vulnerability or privilege.
* Favorable Risk-Benefit Ratio: The potential benefits to individuals and society must outweigh the risks.
* Independent Review: Unaffiliated individuals must review the research to minimize conflicts of interest.
* Informed Consent: Participants should be fully informed and voluntarily consent to the research.
* Respect for Enrolled Subjects: Participants' privacy should be protected, and their well-being should be monitored throughout the study

Arnstein's Ladder of Citizen Participation

* the ladder consists of eight rungs, each representing different levels of participation:
	+ Manipulation: Non-participation where the aim is to educate or cure the participants.
	+ Therapy: Also non-participation, focusing on changing the behavior of participants.
	+ Informing: One-way communication where citizens are informed of their rights, responsibilities, and options.
	+ Consultation: Citizens are asked for their opinions, but there is no assurance their input will be considered.
	+ Placation: Citizens begin to have some influence, but tokenism is evident.
	+ Partnership: Power is redistributed through negotiation and citizens can engage in decision-making processes.
	+ Delegated Power: Citizens have a degree of decision-making authority and can hold officials accountable.
	+ Citizen Control: Full managerial power is given to citizens, allowing them to govern programs and institutions.
* Power Dynamics: Genuine participation is about shifting power from officials to citizens, which is often resisted by those in power.
* Tokenism: Many participatory processes are merely symbolic and do not offer real power to citizens.
* Empowerment: The higher rungs of the ladder represent increased levels of citizen power and control, necessary for authentic participation.

**Lecture**

* Article
	+ Need to register
		- Less than 2/3rd registered
	+ Maek results available
		- Less than half made them available
	+ Need to publish
		- Less than 2/3 publish
	+ Less than a quarter did all 3
	+ Should be publishing within 2 years
	+ Reviewers may say add more data, but sometimes you don’t have time
		- This was done by a 4th year med student
			* Maybe hasn’t gone through lots of clinical data
	+ Hard to publish negative results

Historical issues

* Syphilis study
	+ No informed consent
		- Told they were treated for bad blood
	+ Looked at consequences of untreated syphilis
	+ Parts received free medical exams, meals, and burial insurances

Core principles as defined by tri- council Canada

* Respect for persons
	+ Recognize intrinsic value of human beings and the respect and consideration that they are due
	+ Informed consent
		- Risks
		- alternative
* Confer for welfare
	+ Quality of that persons experience of life in all its aspects
		- If they are not okay, you got to pull them
		- If you impact their lifestyle
		- Weight the benefits
* Justices
	+ Obligation to treat people fairly and equitably
	+ Challenge is how to balance the two main gaols of providing the protection of participants and serving the legitimate requirements of research

Consent

* For research with humans to be considered ethical, it is essential that participants provide their free, informed and ongoing consent
	+ Voluntary
	+ Informed
	+ Ongoing process
		- Can be modification so these must be communicated
		- Withdraw at any time if they want to
* Given at a grade 6-8 level
	+ Some people don’t have science background

Justice

* Individuals, groups and commute, shouldn’t bear and unfair share to direct burden of participants in research not should they be unfairly excluded from the potential benefits of research participants
* Equitable distribution
* Dissemination of research results
	+ Timely manner
* Key groups that have not had full access in research
	+ Indigenous people
	+ Racial and ethnic groups
	+ Socioeconomically Disadvantaged Groups
	+ People with a language barrier
	+ Individual with disabilities
	+ Pregnant women
	+ Children
	+ Immigrants and refuges
		- Cultural differences

What makes clinical research ethical?

* Must have social and scientific value
* Must have scientific validity
* Fair subject selection
* Favorable risk/beneficial ratio
* Independent review
* Informed consent
* Respect for potential subjects
* Research ethics board decides if a study can be started or not

Placebo control

* Are they ethical?
	+ Ethical if there is not standard of care
		- If there is a standard of care you compare it to a drug that exists
	+ If there is a clear benefit
		- You whether give the drug to the other group or clear withdrawal
	+ No proven ethical intervention
	+ No or negligible harm form delaying or forgoing treatment
	+ Compelling methodical reason for use of placebo, and parts are not at risk of excessive harm
	+ Compelling methodological reasons for use of placebo and parts are not deprived of interventions, they would otherwise receive, and research intended to develop interventions that will benefit the host pop

Why do clinical trials in developing countries? Is it ethical?

* Population demographics
	+ Higher incidence of discern
	+ Poor healthcare
	+ More people in advance stages
	+ Recruit more in a small time
* Health burdens
	+ Benefit the pop much more
* Cost reduction
* Treatment access
* Ethical concern?
	+ Sometimes no follow up
	+ Using the population as a stepping stone, or as a means to an end
	+ Don’t have the same standard of care