

MD/Special Training in Research (MD/STIR): Enhancing your medical education through research



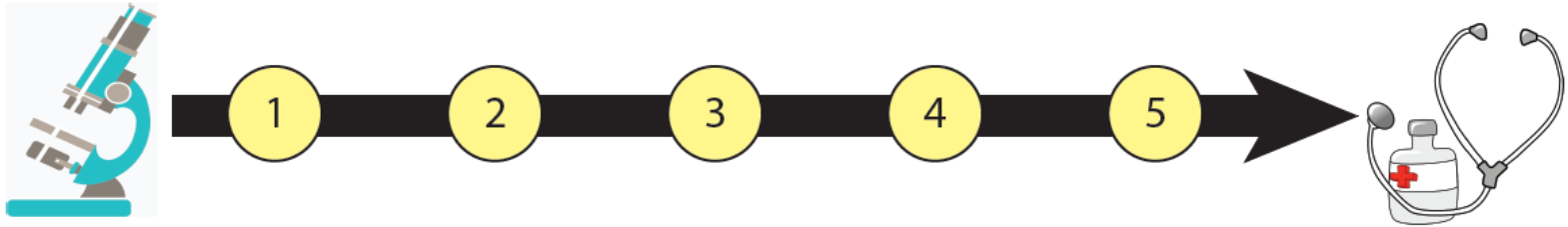
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What is MD/STIR?

- For research-orientated undergraduate medical students
- Complete 6 months of research during their medical school training
 - Meet milestones (e.g.)
- Can think of it as “MD with honors”
- Annotation on degree parchment and transcripts
 - “MD with Special Training in Research”

What kind of research is recognized?



- From basic fundamental to clinical
- Biological and clinical questions can be excellent examples of “bench-to-bedside” research
 - Observed a phenomenon
 - Determined molecular mechanism
 - Observed apoptotic defects in a human condition
 - Developed and tested a novel drug that treated the disease

MD/STIR requirements

- Research component:
 - ~24 weeks of active research conducted under the supervision of a research-intensive faculty member
 - Produce and analyze data that tests a research hypothesis
- Written component:
 - Research proposal
 - Final report
- Presentation component:
 - 3 minute pitch
 - 15-45 minute oral seminar
 - Poster presentation
 - Final oral presentation and defense

MD/STIR research timeline options

- How do you fit research into your schedule?

A

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Year 1							Application		FT Research (16wk)			
Year 2									FT Research (8wk)			
Year 3	Report due		Defence									
Year 4												

Option 1: FT Summer 1; FT 8wk of Summer 2

B

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Year 1							Application		FT Research (16wk)			
Year 2	PT Research (~3d/month=4wk)								FT (4wk)			
Year 3	Report due		Defence									
Year 4												

Option 2: FT Summer 1; PT yr2; FT 4wk of Summer 2

C

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Year 1							Application		FT Research (16wk)			
Year 2	PT Research (~3d/month=4wk)											
Year 3	PT Research (~3d/month=4wk)											
Year 4	Report due		Defence									

Option 3: FT Summer 1; PT yr2; PT yr 3

* 2 oral presentations in Summer 1

** 1 oral presentation at time chosen by supervisor

*** Poster presentation in year 2 in FoMD Summer student research day

Where can you find information on STIR?

<https://www.ualberta.ca/medicine/programs/mdstir>

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MD with Special Training in Research

Overview:

The Faculty of Medicine & Dentistry (FoMD) at the University of Alberta offers the MD with Special Training in Research Program (MD/STIR) to undergraduate medical education (UME) students. This program is designed for those students who wish to participate in research above what is offered within the UME curriculum. UME students join a research team and directly engage in biomedical research while concurrently fulfilling MD/STIR requirements (application, presentations, reporting, defense). Students that successfully complete their MD degree and all requirements of the MD/STIR program receive the designation of "Special Training in Research" on their degree parchment and transcript.

Contact Us



For more information, please contact:

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FAQs

- What is the advantage of enrolling in this program since I already have research experience?
 - MD/STIR designation acknowledges your participation in a Faculty-approved structured research program
 - *Take your research to “the next level”*
 - → submit a research proposal
 - Under the guidance of your Supervisor, you write a research proposal (driver/passenger)
 - → work in a research lab
 - This is now YOUR project (motivated to learn from team members, propose methodology or analytical improvements etc.)
 - → write up your final data in a research report
 - By writing a formal report, you really get to “know your study”.
 - → give an oral presentation and defend your data
 - Improve your presentation and critical thinking skills and receive constructive feedback from a panel of experts
 - A chance to present your data in a scientific conference

FAQs

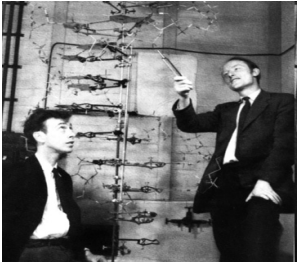
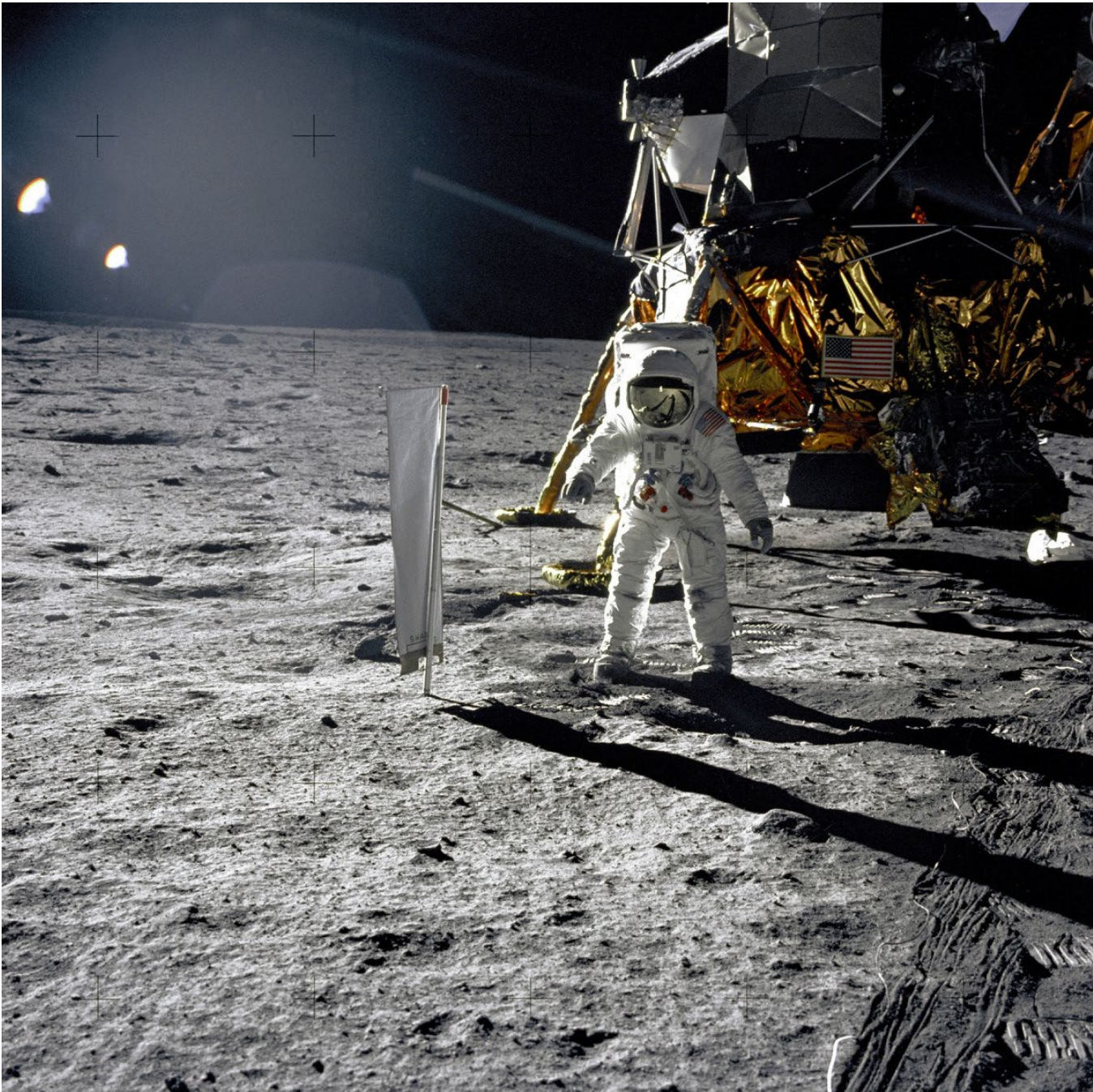
- Can I participate if I already have a post-graduate degree in research?
 - Absolutely!
 - This is a great opportunity to engage in different research and remain engaged with the research community
- Will I be able to publish my results?
 - Absolutely!
 - Some undergraduate research students can and do publish their results. Almost always, their research contributes to a larger study so there are multiple authors and the publications is usually a few years later. For this to happen, you need a good training environment with a good study design, robust data, meaningful results, and often—luck!

Comments from former MD STIR students

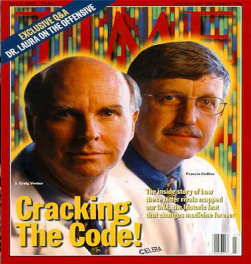
- *The program benefits clinical training and development*
 - Practice with verbal and written communication
 - Learning to be a medical expert in one area
 - Practice searching research medical databases for new research
- *The best part of the program was getting to officially take part in research during medical school*
 - The program allowed me to take a larger role in performing a research project that I may not have had without the program's endorsement
- *My research experience helped me develop research skills, technology development skills, complex problem-solving skills and it gave me multiple awesome interpersonal relationships with my research colleagues*

Comments from former MD STIR students

- *I think the most important thing I gained from this program is further experience in presenting and defending my research. I have given presentations before, but never had to defend my work. I also liked how the program mandated a certain number of presentations during the summer, as this provided motivation for me to give more presentations than I otherwise would have.*



1953



2001

DNA= 3 billion bases

99.9% identical between any two individuals in the world

14 million polymorphisms

500 rare missense variants

~ 20 homozygous, ~ 20 rare

~ 50 reported disease-causing mutations



~100

LOF variants

~ 100 rare variants in known disease genes

1-2 *de novo* protein coding mutations



Unknown number of sequencing errors

Phenotype description with known molecular mechanism

1953-2012

3674

2012-2023

6669

June 29'23

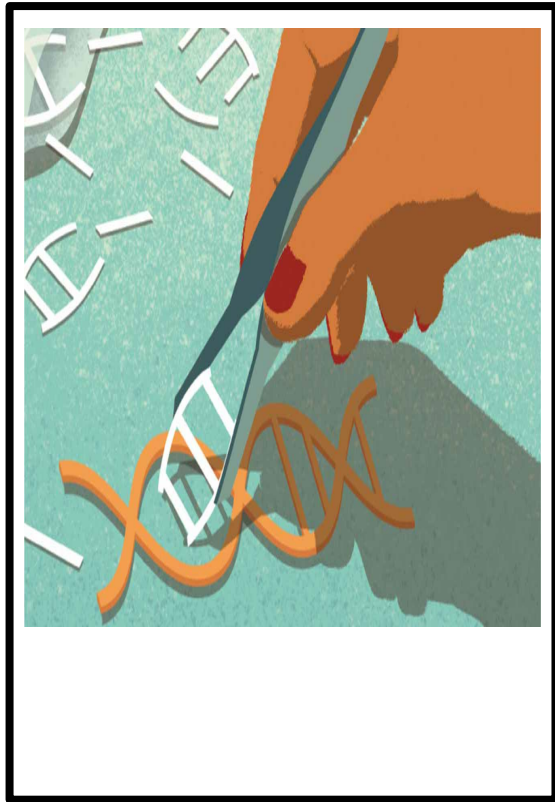




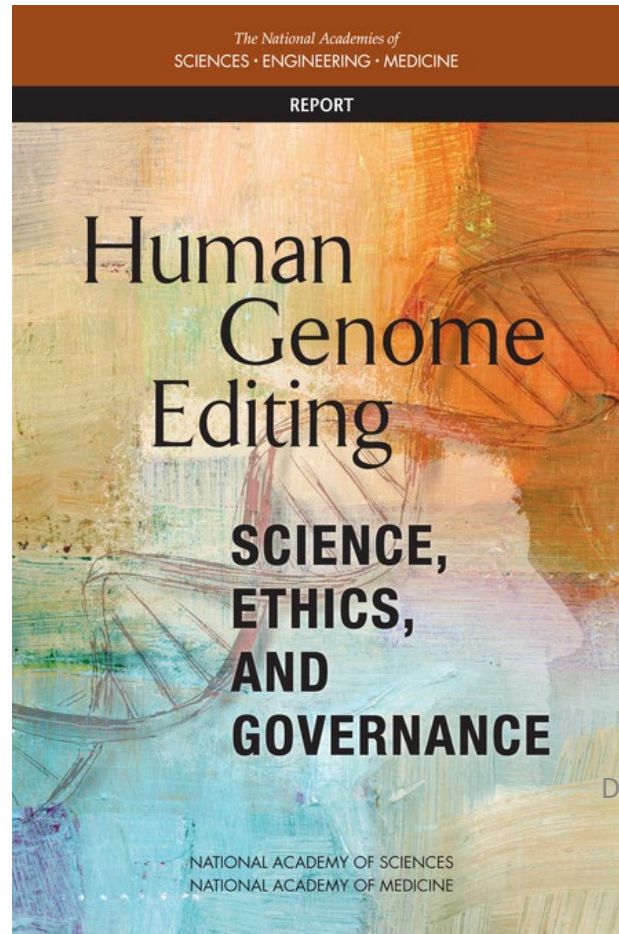
What is the issue?

Henrietta Lacks was an African-American woman whose cancer cells are the source of the HeLa cell line, the first immortalized human cell line and one of the most important cell lines in medical research.

The first International Human Genome summit, Hong Kong, 2018



**2015 Science Breakthrough
of the Year
CRISPR makes the cut**



Dr O Caluseriu

Dr. He Jiankui, SUSTech

What is the issue?

In November 2018, He announced that he had modified a key gene in a number of human embryos in a way thought to confer resistance to HIV. The modification might be passed on to the descendants of children, Lula and Nana, born with it (CCR5 deletion). He recruited couples in which the father was infected with HIV and the mother was not. In a talk at the International Summit on Human Genome Editing in Hong Kong, China, He said he wanted to spare the babies the possibility of becoming infected with HIV later in life. The technique could be used to reduce the HIV/AIDS disease burden in much of Africa, he argued, where those infected often face severe discrimination. Science Insider, Nov 26, 2018

"There are so many ways to adequately, efficiently, and definitively protect yourself against HIV that the thought of editing the genes of an embryo to get to an effect that you could easily do in so many other ways in my mind is unethical." Dr. Antony Fauci

"The experiment is not medically justified; CCR5 mutants are not benign as people are more susceptible to serious consequences from West Nile infections." Dr. Pablo Tebas

"Gene editing itself is experimental and is still associated with off-target mutations, capable of causing genetic problems early and later in life, including the development of cancer. This experiment exposes healthy normal children to risks of gene editing for no real necessary benefit." Dr. Julian Savulescu

"Assuming that independent analysis confirms today's news, this work reinforces the urgent need to confine the use of gene editing in human embryos to settings where a clear unmet medical need exists, and where no other medical approach is a viable option, as recommended by the National Academy of Sciences." Dr. Jennifer Doudna



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A New Framework for an Evolving Field

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(2023)

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Sterilization of Indigenous Women in Canada

Article by

[Karen Stote](#)

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The practice of sterilization arose out of the eugenics movement and has a long, often hidden history in Canada. Sterilization legislation in Alberta (1928–72) and British Columbia (1933–73) attempted to limit the reproduction of “unfit” persons, and increasingly targeted Indigenous women. Coerced sterilization of Indigenous women took place both within and outside existing legislation, and in federally operated Indian hospitals. The practice has continued into the 21st century. Approximately 100 Indigenous women have alleged that they were pressured to consent to sterilization between the 1970s and 2018, often while in the vulnerable state of pregnancy or childbirth.

Questions?

“Somewhere, something incredible is waiting to be known.” Carl Sagan