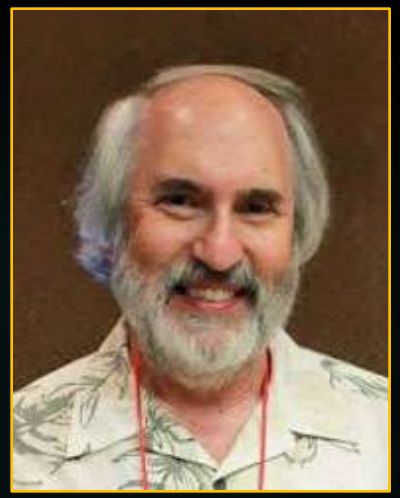
January 23, 2018

Panel of Stanford Students with a Disability

ENGR110/210
Perspectives in Assistive Technology



David L. Jaffe, MS

Instructor

Today

Perspectives of Stanford Students with a Disability

Evan Feinberg

Zina Jawadi

Bryce Connor Tuttle

Brickelle Bro

Evan Feinberg

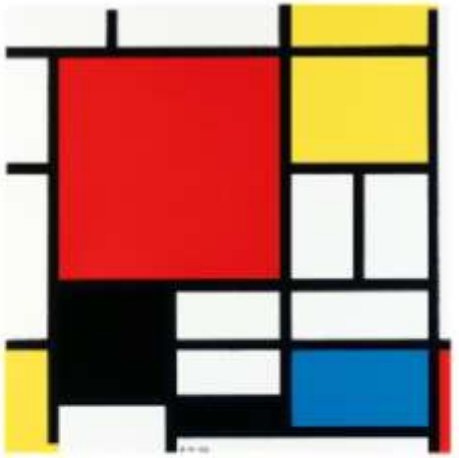
Evan Feinberg is a PhD Candidate at Stanford in Computational Biophysics. In his research, Evan works with Professor Vijay S. Pande on in silico approaches for drug discovery. While he has struggled with chronic pain and compartment syndrome since his college days at Yale, Evan has felt empowered to advance the field of chronic pain management through his research on the μ Opioid Receptor. Most recently, he has been developing deep neural network architectures to identify lead molecules for developing new medicines.

Pain and Prediction

Evan N. Feinberg

Models for Life

F = ma



vs

Time-dependent Schrödinger equation *(general)*

$$i\hbar\frac{\partial}{\partial t}|\Psi(\mathbf{r},t)\rangle = \hat{H}|\Psi(\mathbf{r},t)\rangle$$

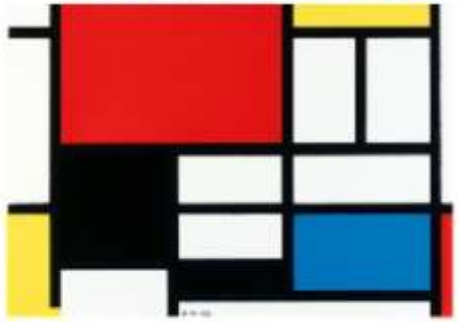
Models for Life

F = ma

Time-dependent Schrödinger equation *(general)*

$$i\hbar\frac{\partial}{\partial t}\Psi(\mathbf{r},t) = \hat{H}\Psi(\mathbf{r},t)$$

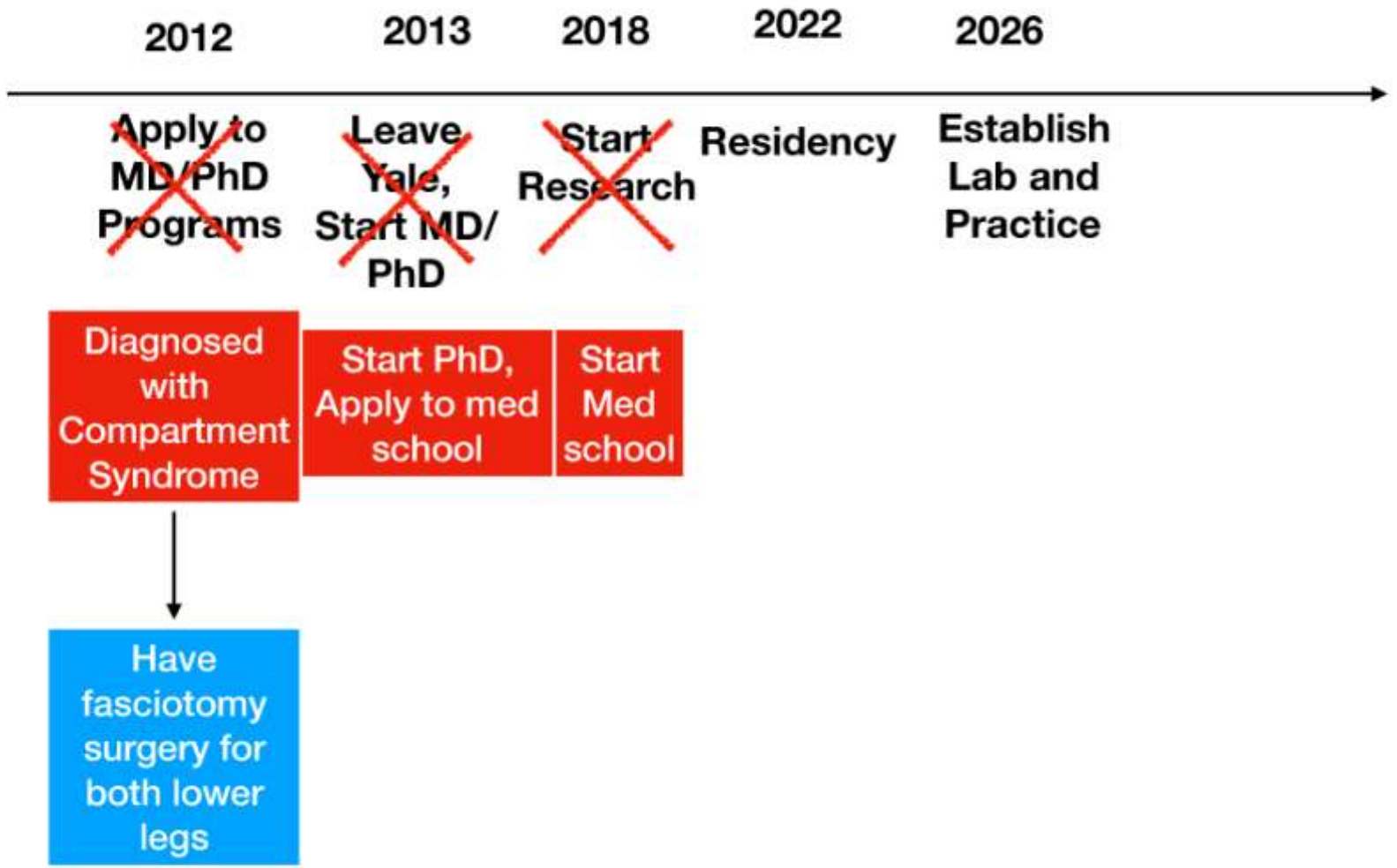
"It's hard to make predictions, especially about the future." ~Niels Bohr



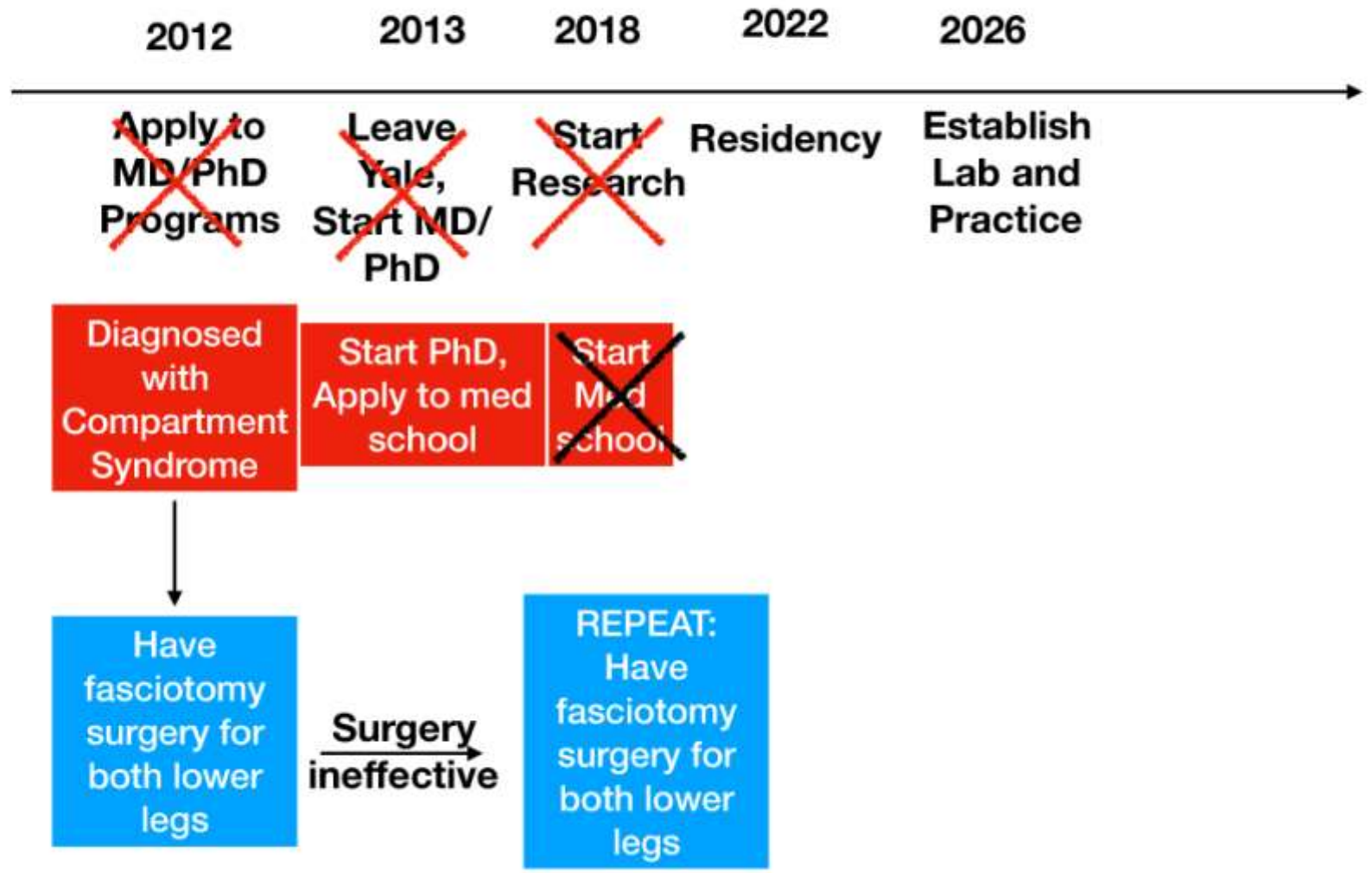
vs

Predicted Path in 2009

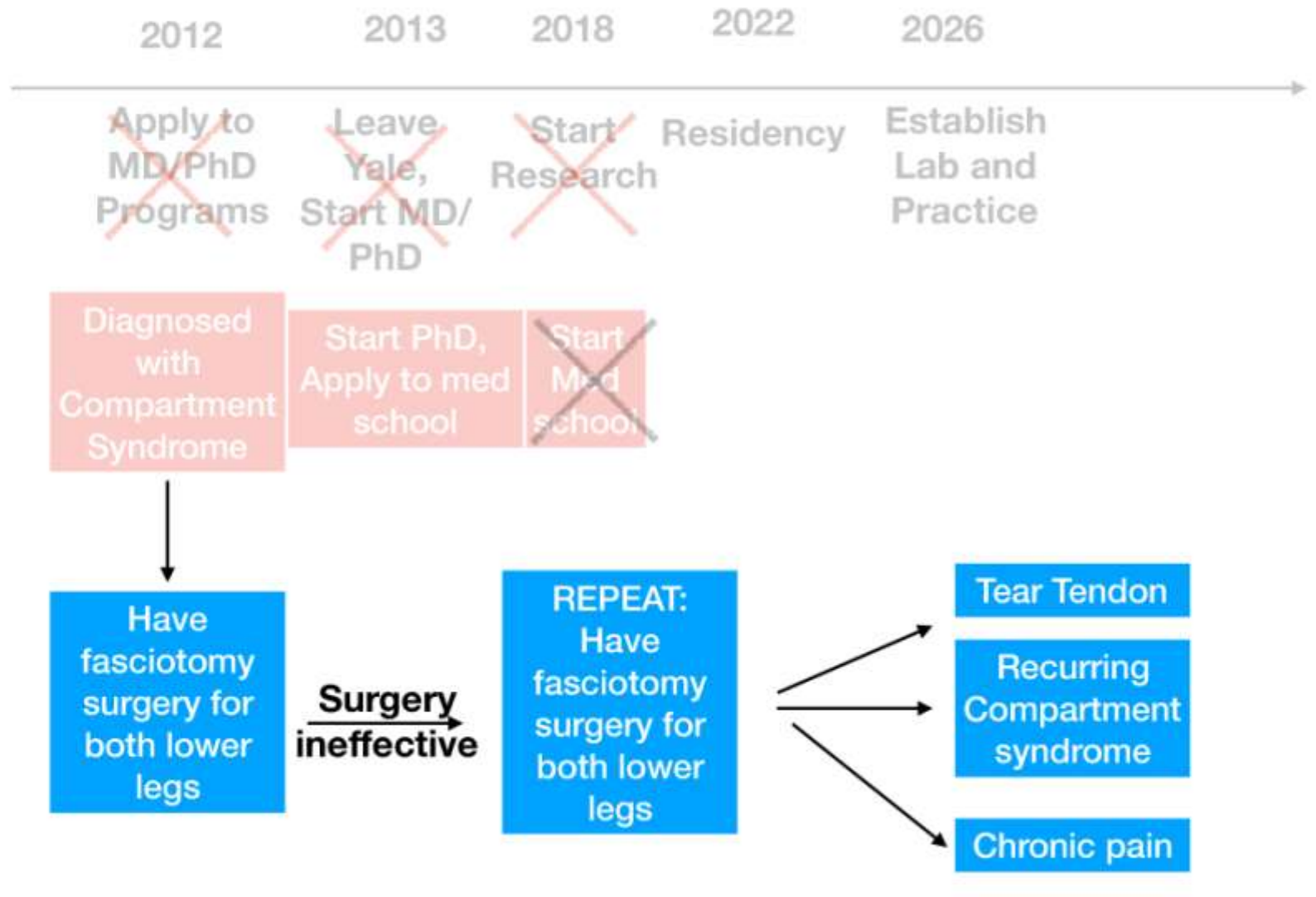
Detour to Path 1



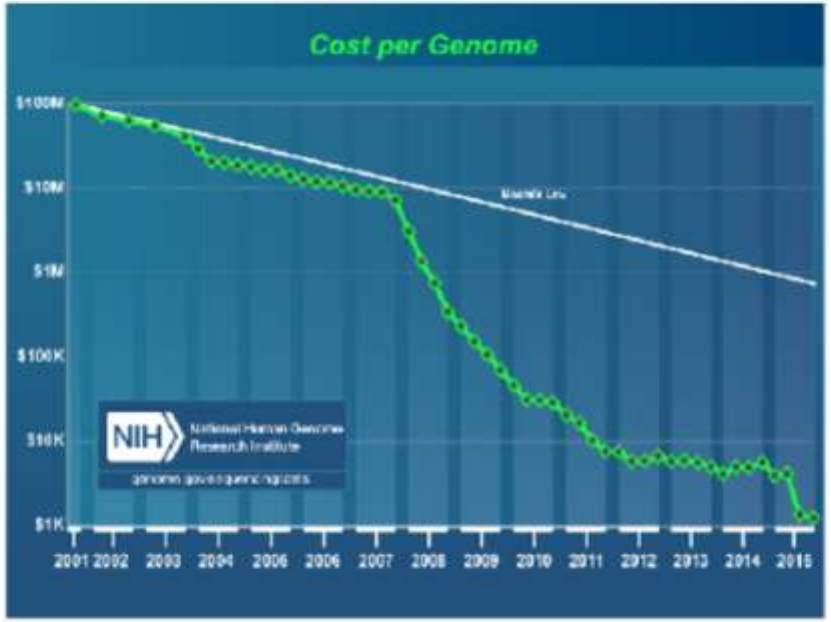
Detour to Path 2



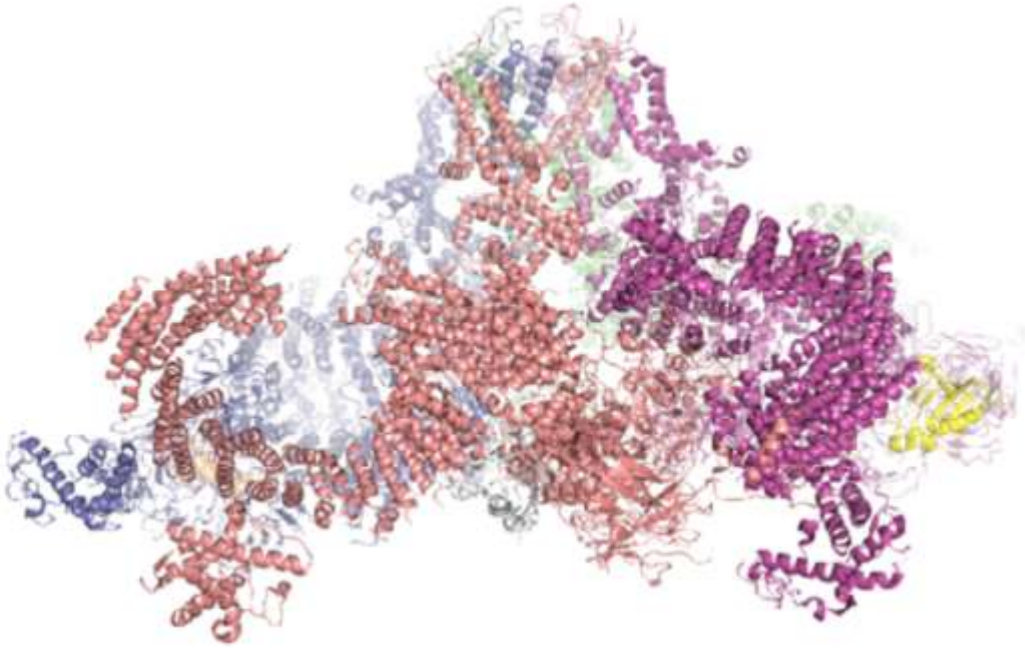
Detour to Path 2

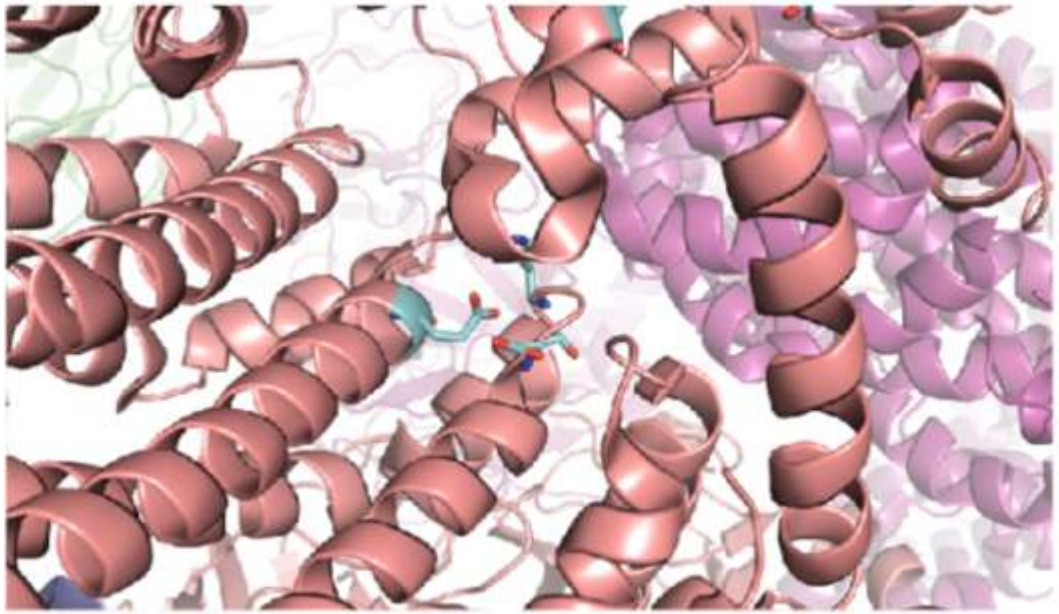


Why?



→ **Mutation in RYR1 Calcium Channel in Muscle Tissue**





2017 Nobel Prize in Chemistry

Jacques Dubochet
Joachim Frank
Richard Henderson

"for developing cryo-electron microscopy for the high-resolution structure determination of biomolecules in solution"

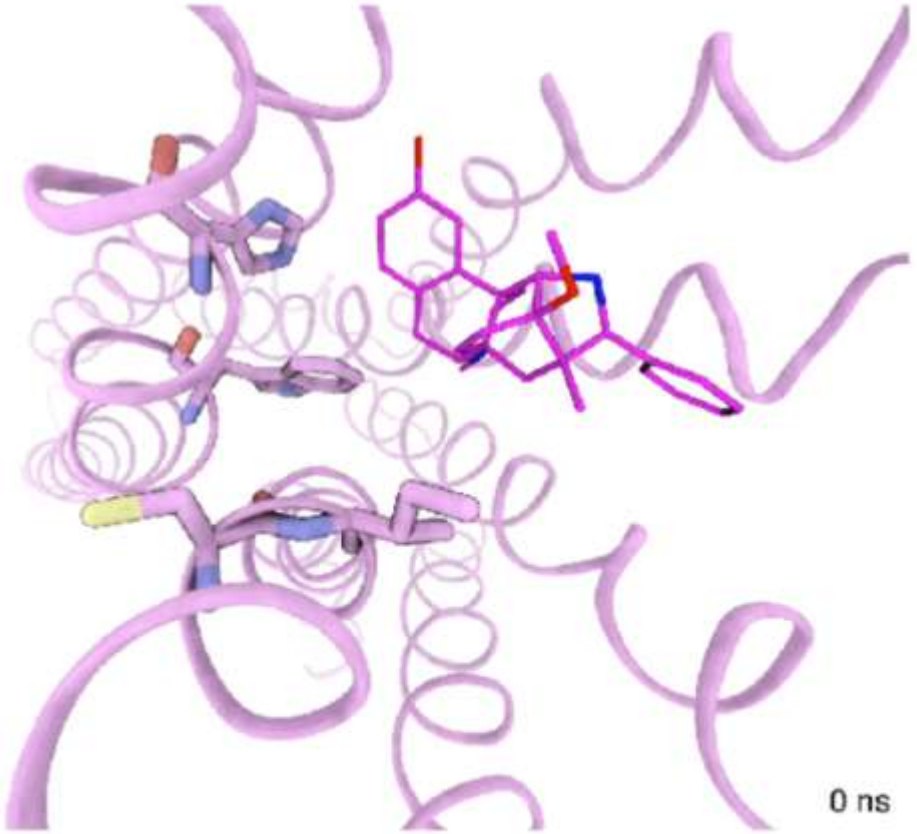
Zooming out from the nanometer scale…

Assistive Technology

- Orthoses and bracing (Next lecture: my man Gary Berke)
- Celebrex

What's next?

Cure chronic pain with simulations and machine learning!



Video

Bryce Connor Tuttle

"It took me a while to learn how to read. Though I loved to hear my mom read aloud or listen to audio books, I struggled through deciphering each word, unable to piece together the chains of sounds my classmates could easily create from the letters on the page. In third grade I was diagnosed with dyslexia. It is a label I have carried with pride throughout the rest of my life. I credit my dyslexia with my ability to devise unorthodox solutions. As my uncle says, 'only coming up with one way to spell a word is terribly uncreative'."

Last year's video

Brickelle Bro

Brickelle Bro began swimming at the age of eight and had fibular hemimelia and amniotic band syndrome before birth, resulting in the amputation of both of legs below the knee. Bro made a name for herself at the 2011 CanAms and the 2012 Paralympic Trials as she went on to finish fifth at the London 2012 Paralympic Games. She set American records in the 1000y free and 1650y free as a high schooler and broke the 1650y record again as a freshman at Stanford University. Her interests include volunteering, video editing and production, playing the piano, and hiking. She has set up a foundation called 'My Feet Don't Stink', which aims to empower young girls who have an impairment. May 2011 she received the John Lynch Foundation Exceptional Star of the Year Award. She was named the 2011 Colorado Disability Swimmer of the Year.

Zina Jawadi

Zina Jawadi is a senior at Stanford University and is involved with disability advocacy on campus through Power2ACT and the ASSU Executive Cabinet. Outside of Stanford, Zina is the president of the Hearing Loss Association of America, California State Association, an affiliate of the Hearing Loss Association of America, the largest nonprofit representing people with hearing loss in the US. Zina founded a disability awareness program at her high school, The Harker School, and previously researched and created a video about techniques for teaching mainstreamed students with hearing loss.

Khattiyya!

Zina Jawadi

January 2018

Highlights

- Personal Background
- FM System
- Captioning
- Hearing Aids
- Safety Technology

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Zina
Harker

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Khattiyya!

Mazel Tov!

Questions?

Adjourn

Laptops Galore