Winning All Along the STEM Pathway: Learning from Failure and Success

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Interdisciplinary Collaboration: The Role of Diversity in STEM Innovation

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What is winning? And how do you do it?
My assumptions
• Small town
• Small high school
• Mother was a political activist
• Scholarship
• Started Biology
• English Major
• Mexico/ SA/ Alaska/
  Minneapolis
• Botany: HI – WI

• UNM Faculty at 39
• Two children

• Music
Research

• Great questions
• Identification of HSP70s as essential and involved in mitochondrial and ER transport
• First major studies of stationary phase
  • Cell Biology
  • Genomics
  • Computational Biology
  • Bioengineering
  • Proteomics
  • Statistics
Research

- Great questions
- Identification of HSP70s as essential and involved in mitochondrial and ER transport
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  - Cell Biology
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  - Computational Biology
  - Bioengineering
  - Proteomics
  - Statistics
Chronic, Hard Problems

- Education
- Diversity and Inclusion
- Climate Change
- Job Creation, Innovation
- Communication
- Preventing the spread of infectious disease
Getting to the table:
Characteristics/Skills

- Optimism grounded in reality
  - Look for the positive
  - Embrace your fear
  - Reframe your experience

- Curiosity

- Creativity/Imagination
Skills

- Imagination/Creativity/Problem solving
- Quantitative skills
  - Math, Stats, CS: coding, cloud, big data
- Domain knowledge/asking great questions
- Teams/Leadership
- Communication
Creativity

Visualization
Imagination
Ask great questions
The true sign of intelligence is not knowledge but imagination. I have no special talent. I am only passionately curious.

- Albert Einstein
"I am among those who think that science has great beauty. A scientist in his laboratory is not only a technician: he is also a child placed before natural phenomena which impress him like a fairy tale."

~Marie Curie
Smart: “It’s an elusive concept. There’s a certain sharpness, an ability to absorb new facts. To walk into a situation, have something explained to you and immediately say, “Well what about this?” To ask an insightful question. To relate domains that may not seem connected at first…”

Bill Gates
Look for doors
An education should give you more choices, not fewer...
Why is achieving diversity so difficult?
Systematic inequality and hierarchy in faculty hiring networks

Aaron Clauset, Samuel Arbesman, Daniel B. Larremore
Make a bigger “us”
The last image we should have is a pipeline.
Summary

• Have an interesting life
• Think deeply about challenges that are important to you
• Appreciate, acknowledge, and share your skills
• Live your life with intent – education should open possibilities
• See your challenges clearly and love them – they are your teachers
• Do not accept the status quo