My Background

- Raised in Sacramento and Napa, CA
- Worked in Fast Food through College
- Undergraduate degree is Optical Science and Engineering
  - Biophotonics
- Entered an entrepreneurship competition as a Undergraduate senior
  - Learned the basics
My Graduate Career

- **PhD in Biophysics from UC Davis**
  - 4 First Author Publications
  - 5 Total Publications
  - 1 patent application

- **Most Referenced Work**
  - “A class of supported membranes: formation of fluid phospholipid bilayers on photonic band gap colloidal crystals”

- **Most Proud Work**
  - “Lipid bilayers on topochemically structured planar colloidal crystals: a versatile platform for optical recording of membrane-mediated ion transport”
Business Development Fellow

- One year, part time business training
- Wrote business and marketing plans
- Learned Marketing

TAKEAWAY: Demistifed business
zNano: z-Dimensional Lipid Bilayers

zNANO Active Layer Features:
• z-dimensional nanostructure of lipid bilayers
• >5x Permeability: tortuosity of 100 TFC vs. 1.05 zNANO
• Manufacturing Breakthrough
• Antifouling: natively hydrophilic
• zNano patents filed in the USA, under the PCT treaty and under the GCC treaty
# zNano vs Competition

<table>
<thead>
<tr>
<th>Feature</th>
<th>zNano (Gen3)</th>
<th>Dow (Gen1)</th>
<th>Gen2 Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
<td>Surfactant</td>
<td>TFC</td>
<td><strong>NanOasis</strong></td>
</tr>
<tr>
<td><strong>GalSsftDay (GFD)</strong></td>
<td>6.1x</td>
<td>1x</td>
<td>Nanotube</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td>RO/NF/FO³</td>
<td>RO/NF/FO</td>
<td>Nano H₂O¹</td>
</tr>
<tr>
<td><strong>Cost per Meter</strong></td>
<td>1x</td>
<td>1x</td>
<td>RO</td>
</tr>
<tr>
<td><strong>Demo Scalable</strong></td>
<td>YES</td>
<td>YES</td>
<td>&gt;10x</td>
</tr>
<tr>
<td><strong>Investment</strong></td>
<td>$0.50 million</td>
<td>N/A</td>
<td>NO</td>
</tr>
<tr>
<td><strong>Demo Scalable</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Investment</strong></td>
<td>$6 million</td>
<td>$20 million</td>
<td>$11 million</td>
</tr>
</tbody>
</table>

1: WSJ Innovation of the Year 2010 AND on the market  
2: Future Performance Targets  
3: NF and FO have been validated by third parties
Take-aways

- Your career will be engineering
  - Your career will not be science

- Engineers sells products

- Scientists sell ideas to the government

- Good engineering fields: Civil and Computer Science

- Pitfalls: Lockheed
Should you start a business?

- NO. you will have incredible stress
- NO. you won't make money
- NO. you have to dedicate your life

If you must, what is your answer to the following?
- Are you underpaid in comparison to the money you bring into the company
  - EX: Lawyers
- Are you better than ALL of your co-workers at your job by a factor of 2?
- How many unknowns are between you and business success?
- Accounting: How will your business make money and how much will it make? REALISTICALLY
SUCCESS STORIES: Engineers as business owners

- Majority of CEOs are engineers
  - Because they can make stuff
    - and people buy stuff
- Examples: Mark Zuckerberg, Bill Gates, Elon Musk

- STARTUP BUSINESS SUCCESS:
  - ORGANIZATION
  - ITERATION
Starting a Business: REALITY

- Why you should start a business
- Revenue must be in the first 3 months