



**zNano** Water Filtration Systems

# 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”



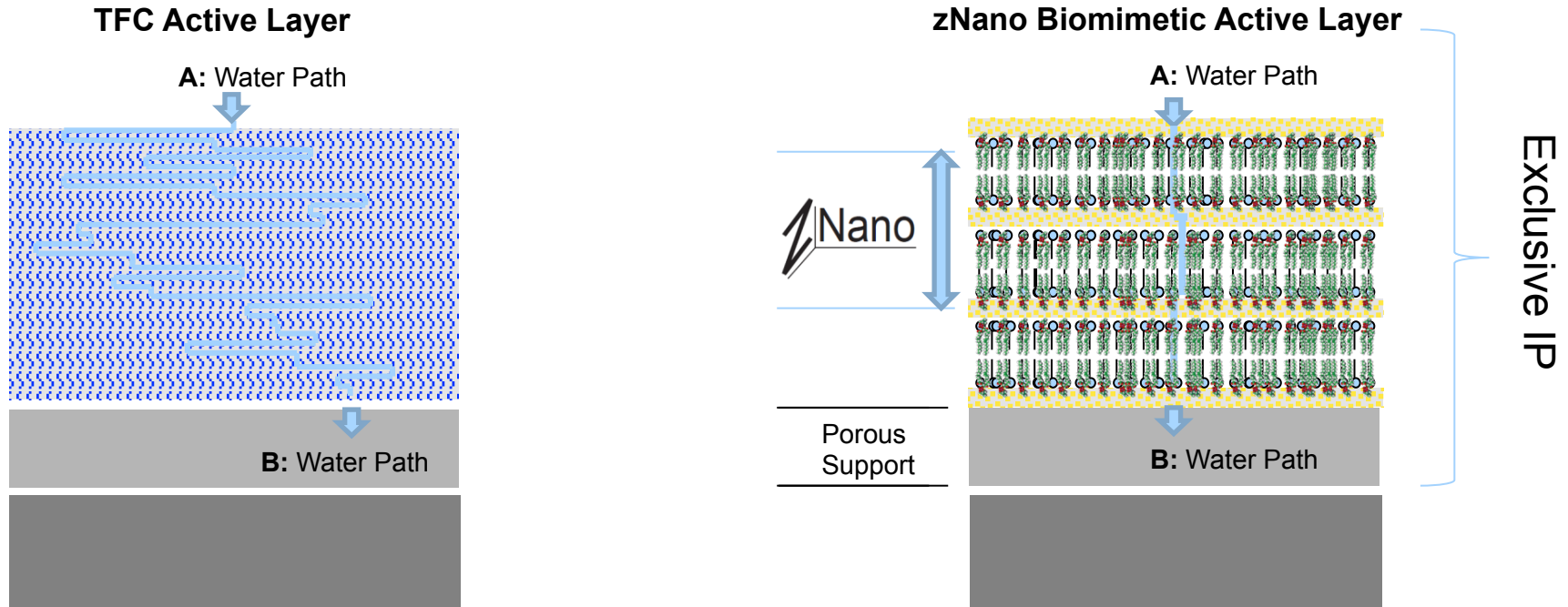
# Business Development Fellow

---

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



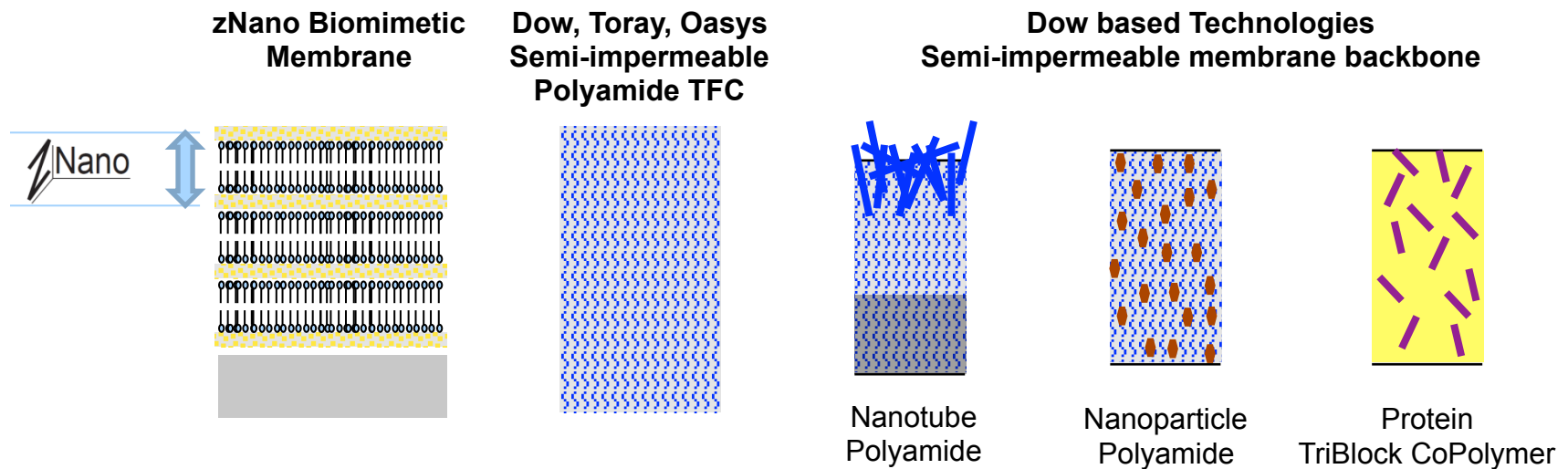
# zNano: z-Dimensional Lipid Bilayers



## 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



	zNano (Gen3)	Dow (Gen1)	Gen2 Technologies		
			NanOasis	Nano H <sub>2</sub> O <sup>1</sup>	Aquaporin
<b>Technology</b>	Surfactant	TFC	Nanotube	Nano Particle	Protein <sup>2</sup>
<b>GalSqftDay(GFD)</b>	6.1x	1x	2x	1.5x	N/D
<b>Configuration</b>	RO/NF/FO <sup>3</sup>	RO/NF/FO	RO	RO	FO
<b>Cost per Meter</b>	1x	1x	>10x	1x	>10x
<b>Demo Scalable</b>	YES	YES	NO	YES	NO
<b>Investment</b>	\$0.50 million	N/A	\$6 million	\$20 million	\$11 million

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 **Confidential and Proprietary Information – zNano LLC 03/07/2013**

# Take-aways

---

- Your career will be engineering
  - Your career will not be science
- Engineers sell 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 wont 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

