

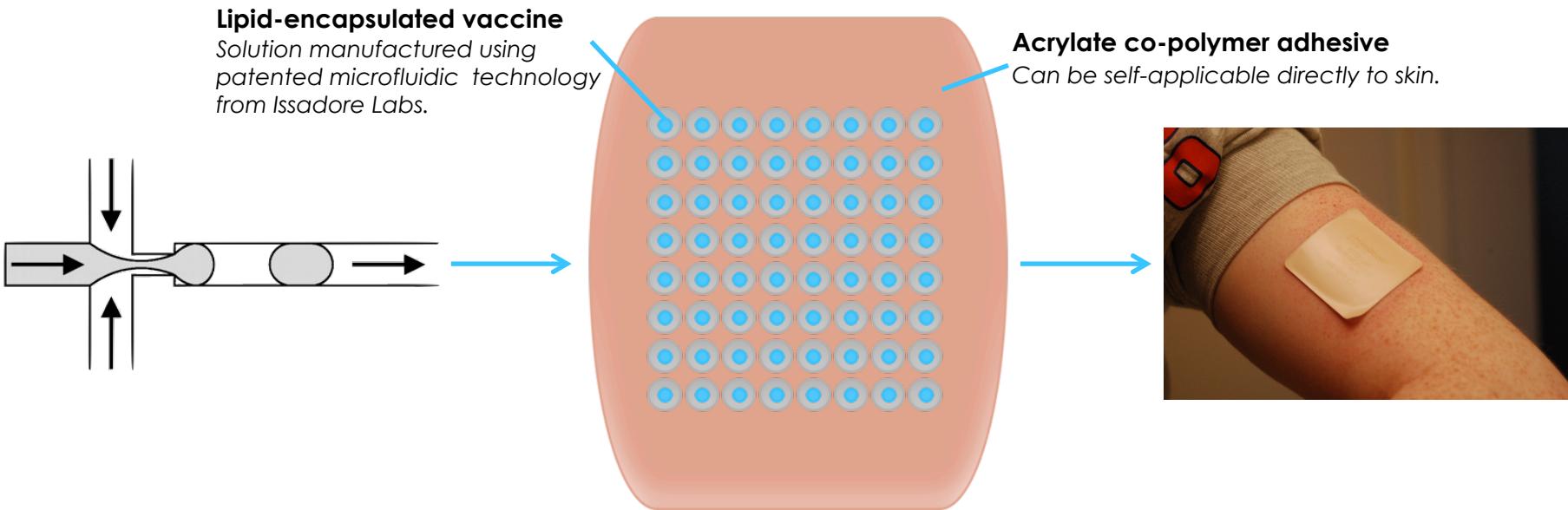


VivaVax

Because disease reduction should never be painful.

Mission Statement

Creating a painless, needle-free vaccine patch that eliminates dependency on availability of trained healthcare practitioners.



Patented microfluidic droplet makers

Each petri-dish-sized droplet maker produces at rate of 3L/hr.

Encapsulated vaccines combined with patch

Vaccines are encapsulated within a lipid using the microfluidic device. Afterwards, it is combined with a co-polymer adhesive patch.

Patch applied directly to skin

The finished patch can be applied directly to the skin. Due to microfluidic size of droplets, they are easily absorbed into the skin.

Value Proposition



The National Health Services estimates that 10% of the population avoid needles and vaccines due to pain

Pharmacological

+

Physical

+

Psychological

17 injections of 6 different products over 6 visits in the first 18 months of life.

28%:

Percent of children non-compliant with vaccine recommendations

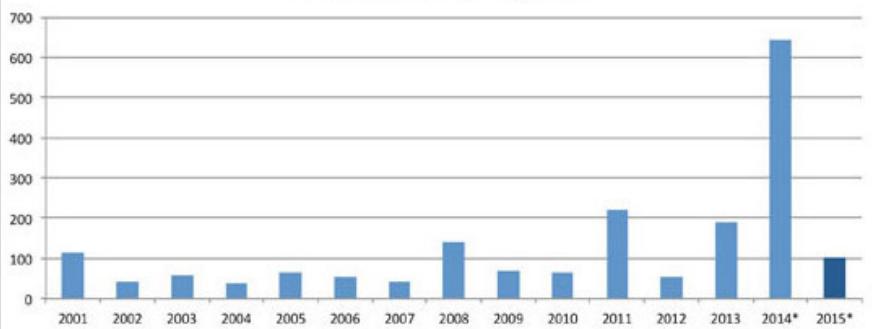
2/3:

Missed doses account for this much of non-compliance cases

\$10,000:

How much it costs the healthcare system (minimum) per 1 outbreak of disease

U.S. Measles Cases by Year



*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases

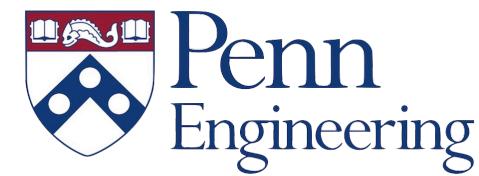
Individuals of all ages who are afraid of needles are more likely to avoid preventative health care requiring needles, including vaccinations.

Competitive Advantage

	Traditional Syringe	Microneedle Patch	Immunomatrix	VivaPatch
Pain-free		✓	✓	✓
High Control		✓		✓
Low Cost	✓		✓	✓
High Quality	✓			✓
High Access	✓		✓	✓
High Scalability	✓		✓	✓
Low Dependency on Health Professionals			✓	✓
Social Impact	✓	✓	✓	✓

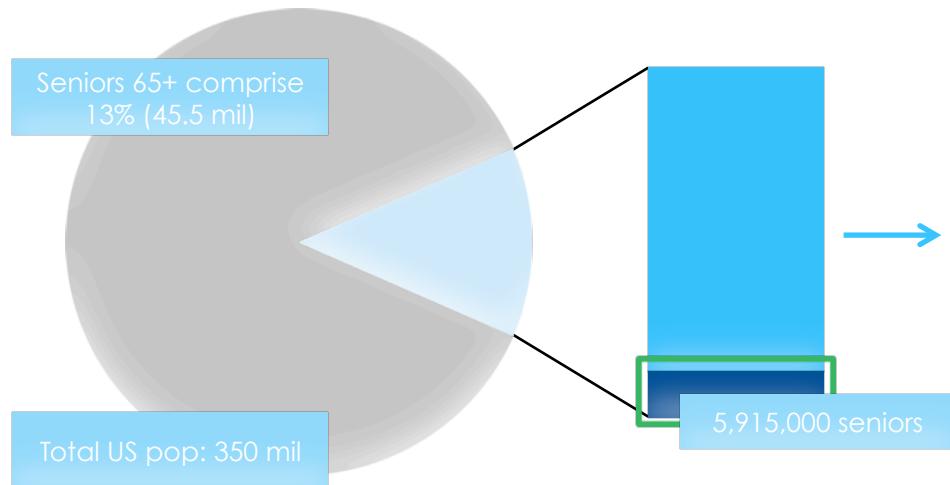
VivaVax is the only technology that addresses all key areas.
“Faster, better, cheaper.”

- Proprietary technology:** microfluidic devices patented by University of Pennsylvania, granting VivaVax a freedom to operate contract.
- Relationships** with Penn Center for Innovation, Wharton Entrepreneurship, Weiss Tech House, the Mack Institute, and the Y-Prize

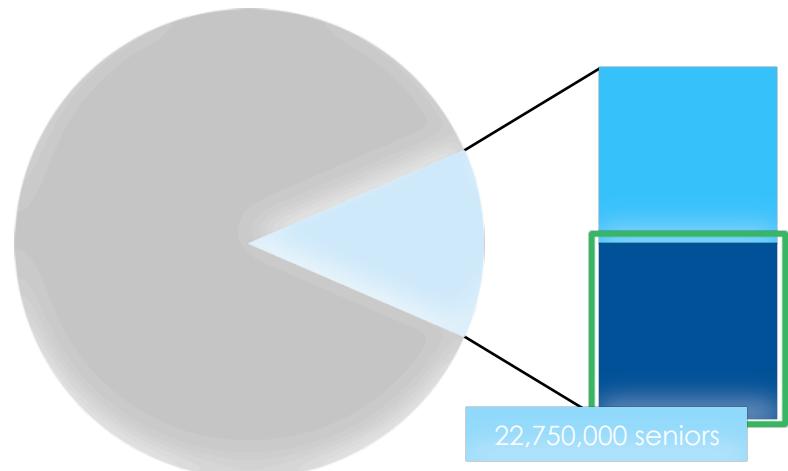


Financial Model: Using Boostrix as an Example

Boostrix Projected Market % 2015-2020



VivaPatch Partnership Market % 2015-2020



Boostrix currently vaccinates only 13% of seniors. However, with a partnership, Boostrix (GSK) and VivaVax can jointly increase market penetration to 50%.

Material	Cost per Patch
Vaccine (Boostrix)	\$19.96
Lipid	\$10
Acrylate co-polymer	\$0.33
Miscellaneous	\$0.50

Negotiating range with GSK will be between \$13.19 - \$26.72.
Assuming \$19.96, cost of production per patch is **\$30.78**.

Profit of **\$6.77** per patch

Market Assumptions:

- 50% market penetration into US senior pop
- 1% growth in senior population
- 0.7% growth in US populatio

- Price Tag = \$37.55 per patch
- Projected Revenue = \$854.26 mil
- Projected Profit = \$154.02 mil

Execution Plan

December 2015

The Next 36 National Selection Weekend

January 2016

Grand Finalist in UPenn Y-Prize Competition, resulting in freedom to operate grant

February 2016

First Round funding from The Next 36: aim of \$10K

March 2016

Meet with Penn Center for Innovation Ventures to discuss FDA approval requirements

April 2016

Second Round funding from The Next 36: \$20-\$25K

May 2016

Partnership with the Bill & Melinda Gates Foundation or similar organization

July 2016

Wharton Venture Initiation Program space, iDesign Prize

August 2016

The Next 36 Venture Day (\$50,000)

Business Timeline

Technology Timeline

January 2016

Device currently the only kind that can produce at industry levels

March 2016

Acquire lipid & vaccine solutions to encapsulate, through 3 trial test runs

June 2016

Compare predicted efficacy of VivaPatch with existing vaccine delivery methods

2014-2015

Microfluidic device invented and filed for patent by Issadore Labs & UPenn

March 2016

Acquire wet lab space as a contracting company using funding from Next 36 (UPenn, Jefferson, or UPenn Med)

May 2016

Develop prototype and narrow down range of vaccines to target

The VivaVax Team



Julia Peng, CEO

- Entrepreneurship @ Wharton
- Cognitive Science @ UPenn
- Summer Analyst, JP Morgan
- Has swam 3 10K's



Allison Caramico, CTO

- Bioengineer @ UPenn
- 7-time Synchro National Championships
- National Aquatic Sports Convention Athletic Rep



Ece Sahin, COO

- Finance @ Wharton
- Electrical Engineering @ UPenn
- CEO, Veritas Enterprises
- Turkish National Science Academy Biotechnology Award



Andrea Matheson

- Business Advisor
- CEO, Sapphire Health



Dr. David Issadore

- Technology Advisor
- Principal Investigator of Issadore Labs
- Patent holder for technology



Dr. Ben Doranz

- Business Advisor
- CEO, President, Co-Founder of Integral Molecular



Dr. Ian Frank

- Immunology Advisor
- Director of Anti-Retroviral Research at Penn Center for AIDS Research



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