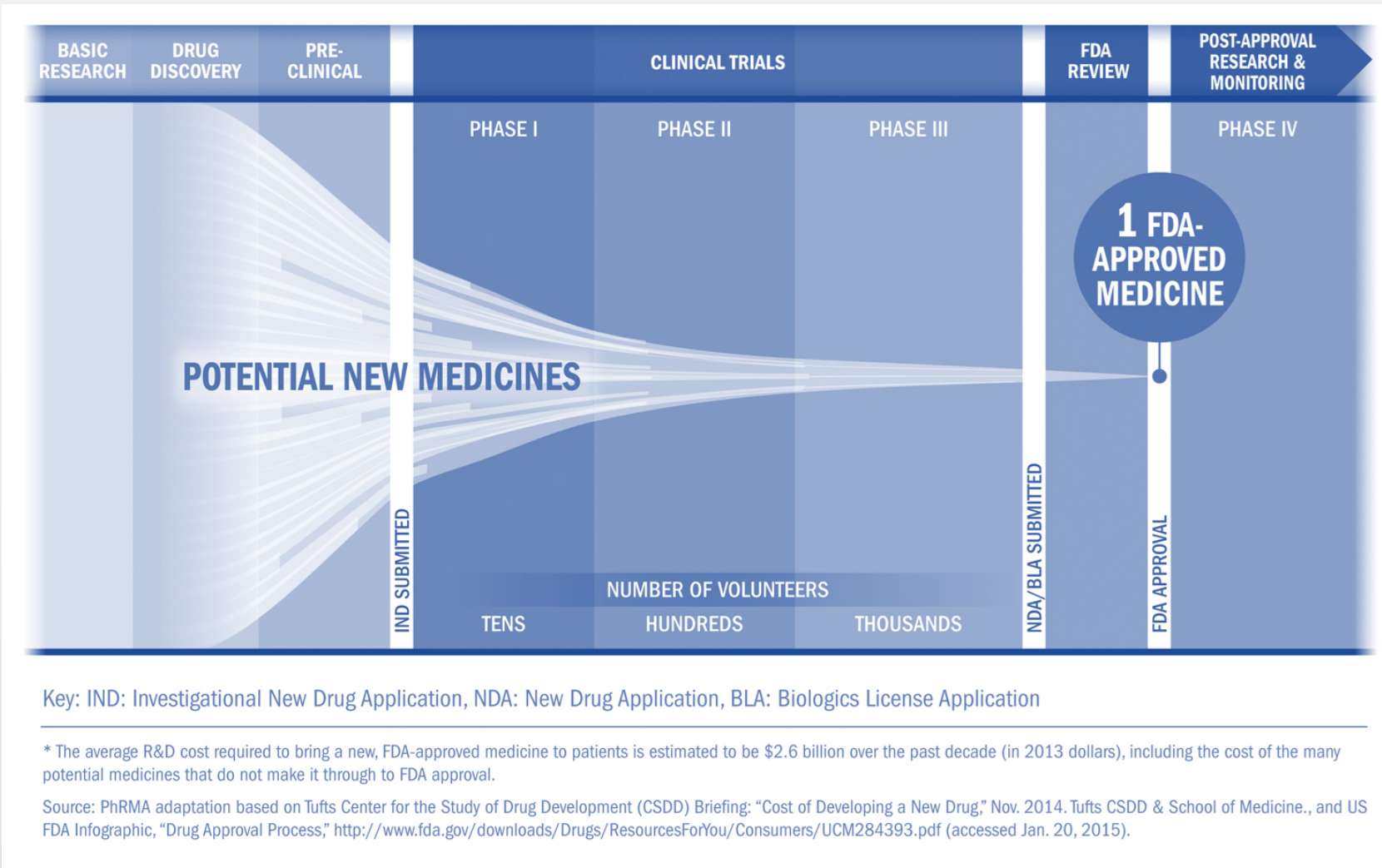


# 96 Channel Pump Array

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Advisors: Dr. Bruce Gale and Brady Goenner



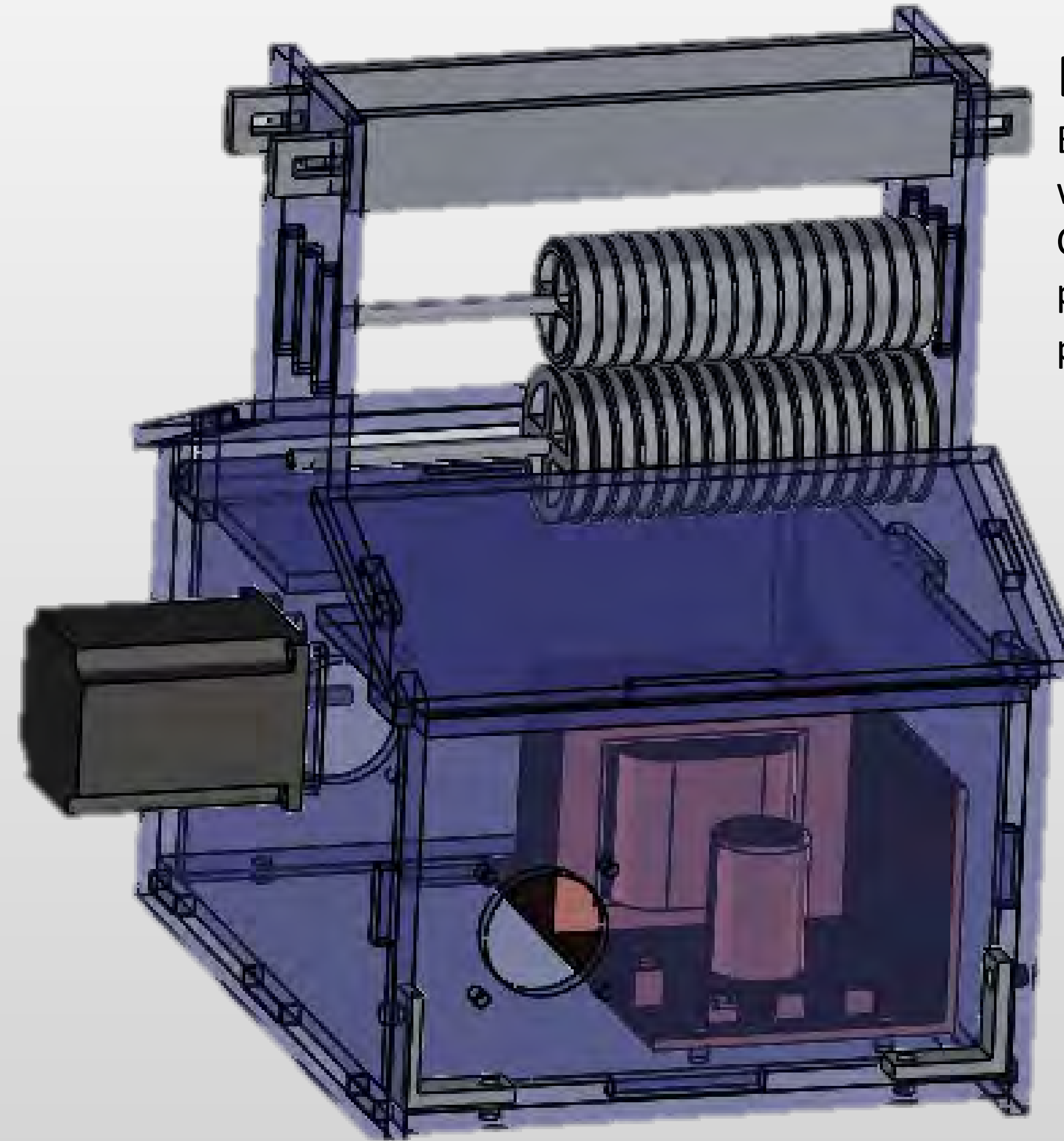
## Intro

Most biologics developed never make it past the preclinical trial phase and even fewer make it to market. Technology developed here at the University of Utah has made it possible to test antibody interactions with antigens 96 samples at a time using only milliliters of fluid. It is hoped that this technology can reduce cost and time to market for new therapies. However, there are currently no cost-effective pump systems which can handle high-sample numbers and low-volume testing simultaneously.

## Goals

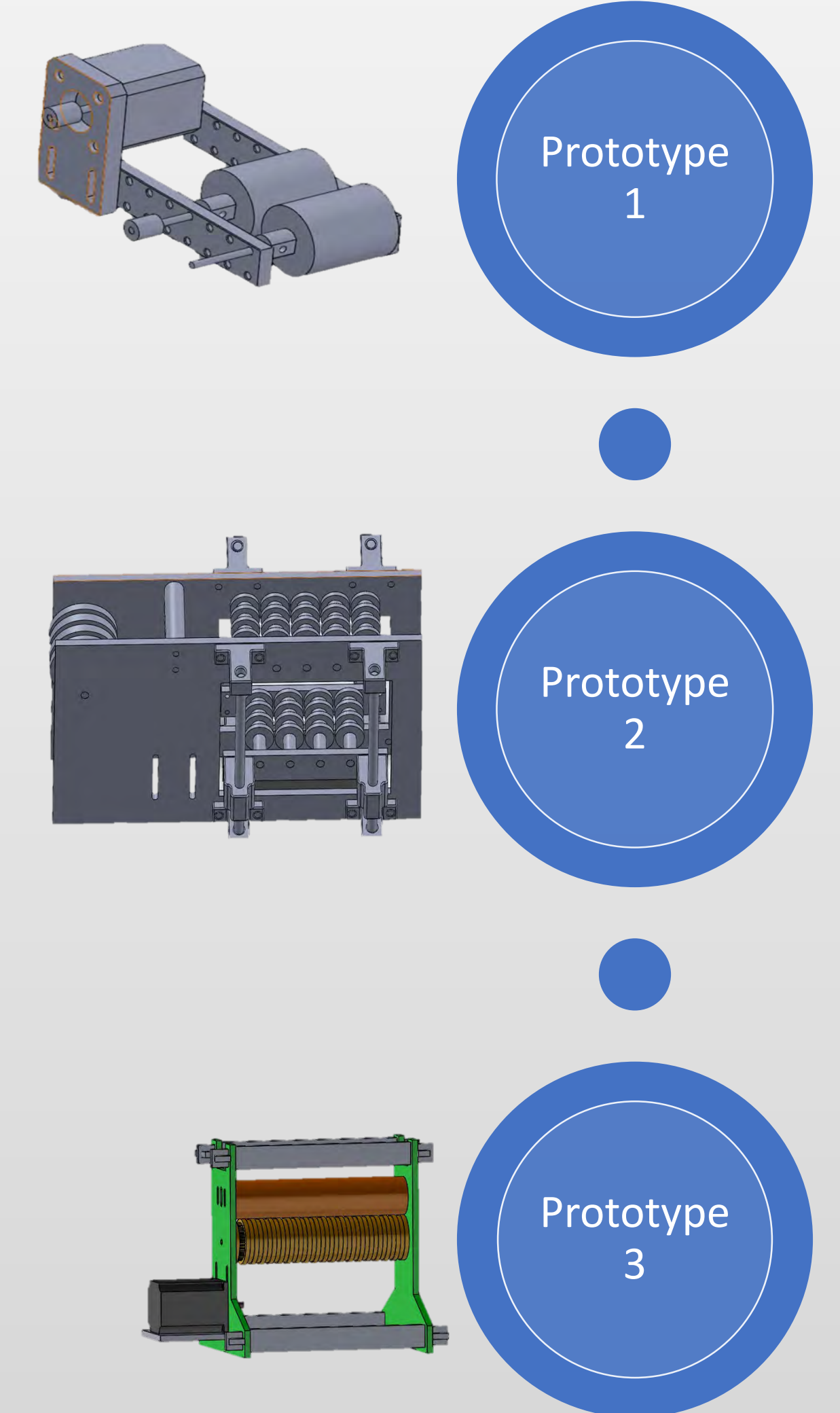
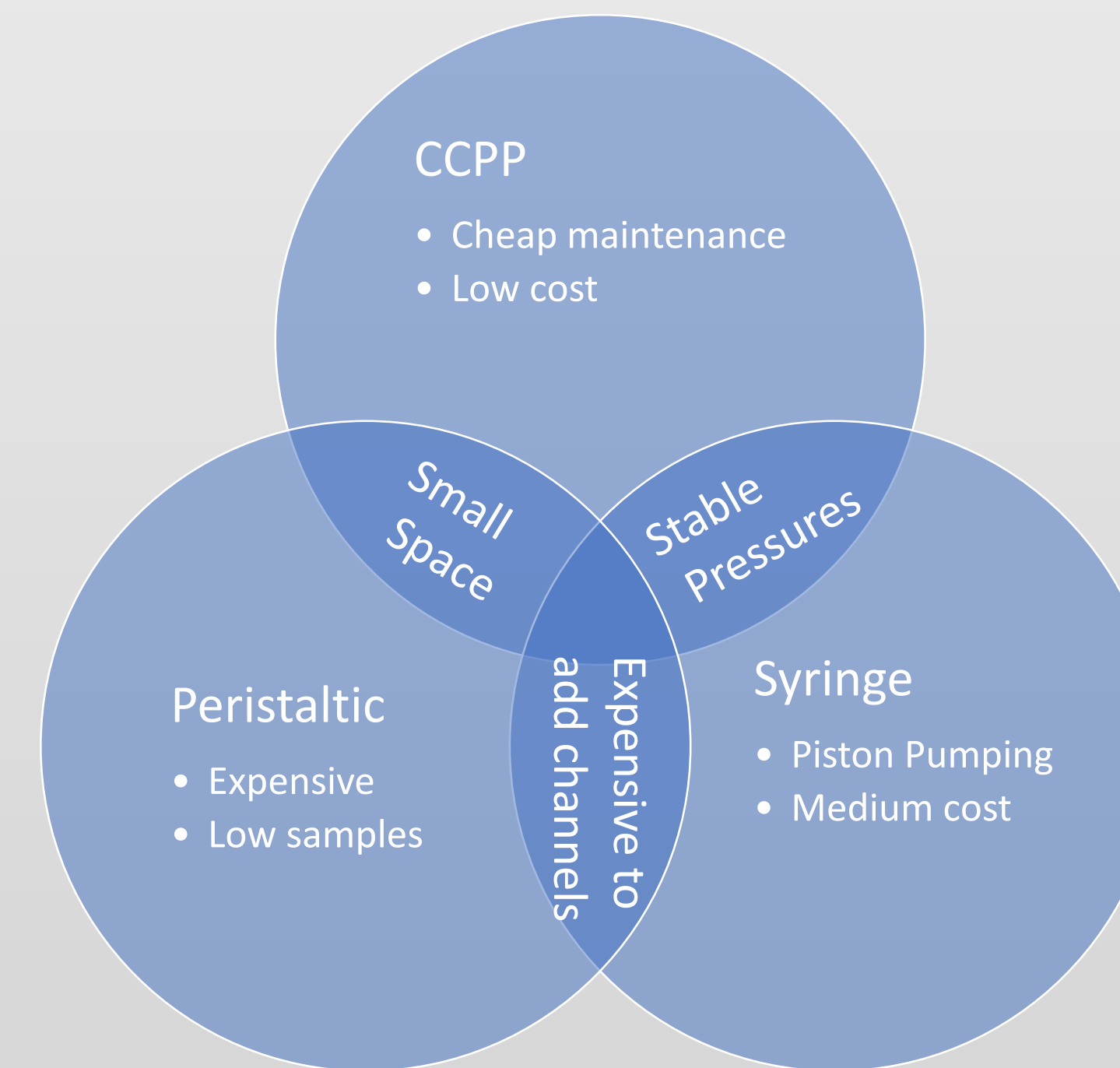
Design an affordable microfluidic pump capable of pumping multiple channels simultaneously.

Goal	Metric	Unit
Flow Rate	5 - 200	microliters/min
Pressure Variance	±5	%
Cost	<1,000	\$
Cost of Maintenance	<100	\$/month
Multiple Channels	96	Channels



## Design

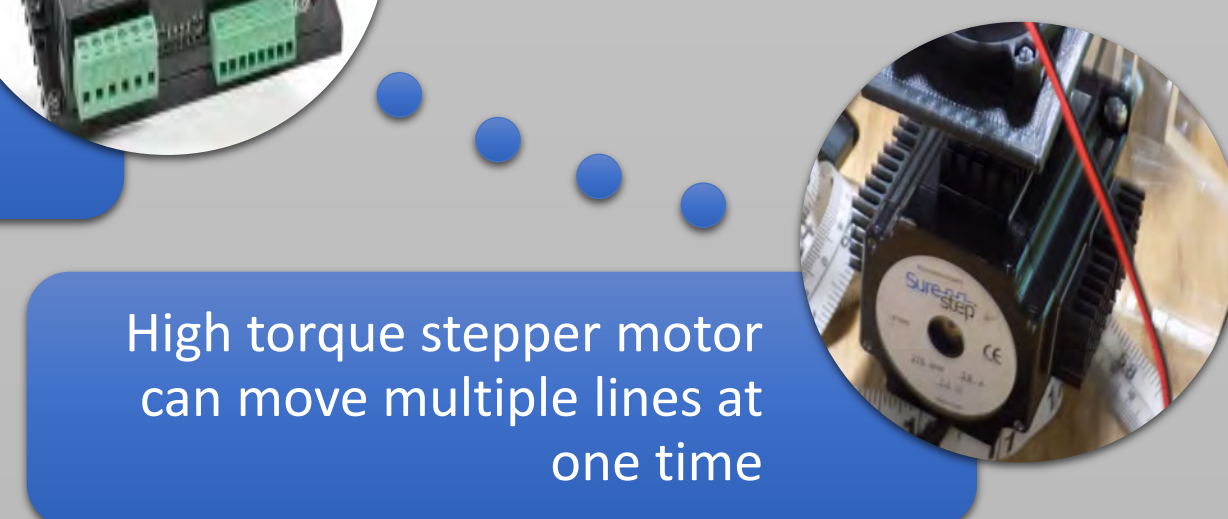
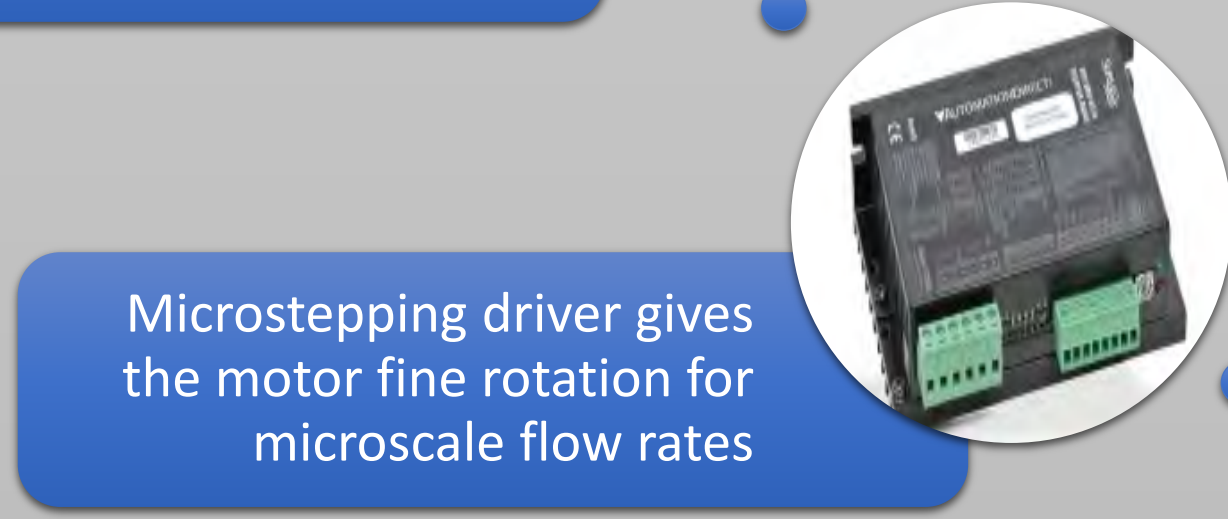
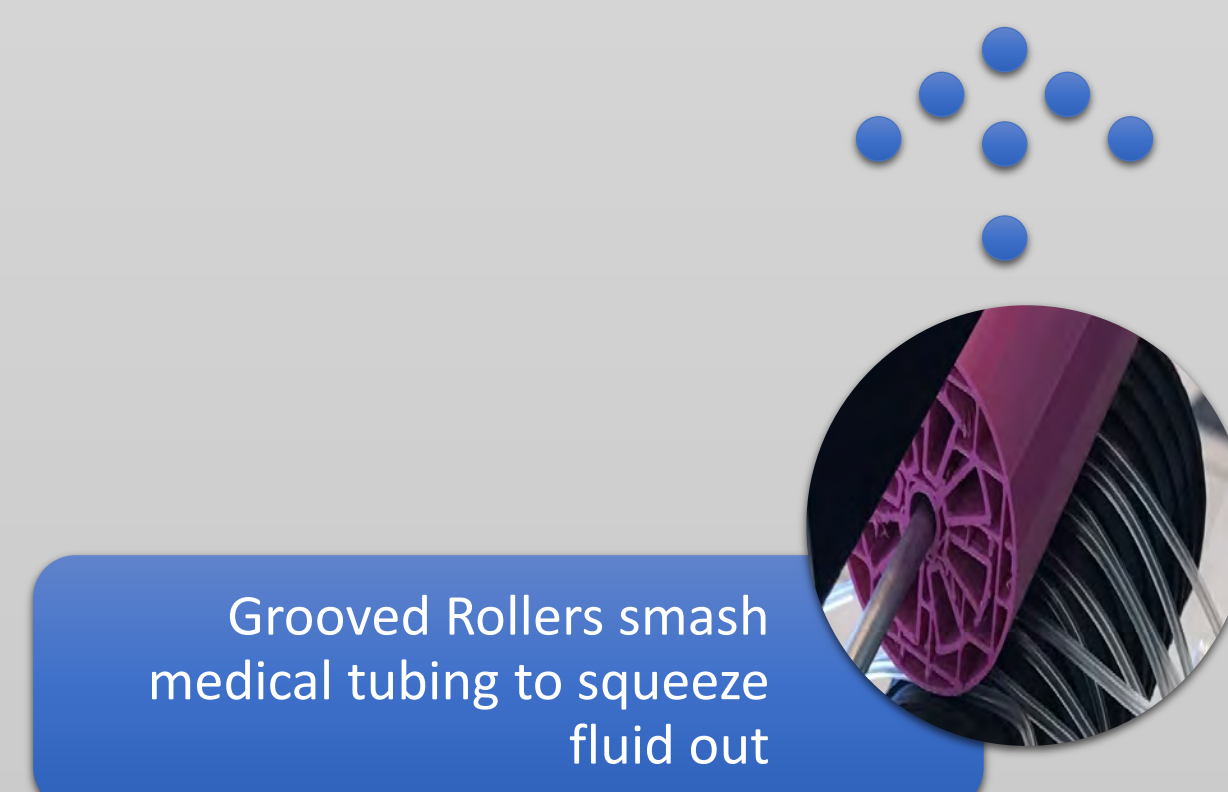
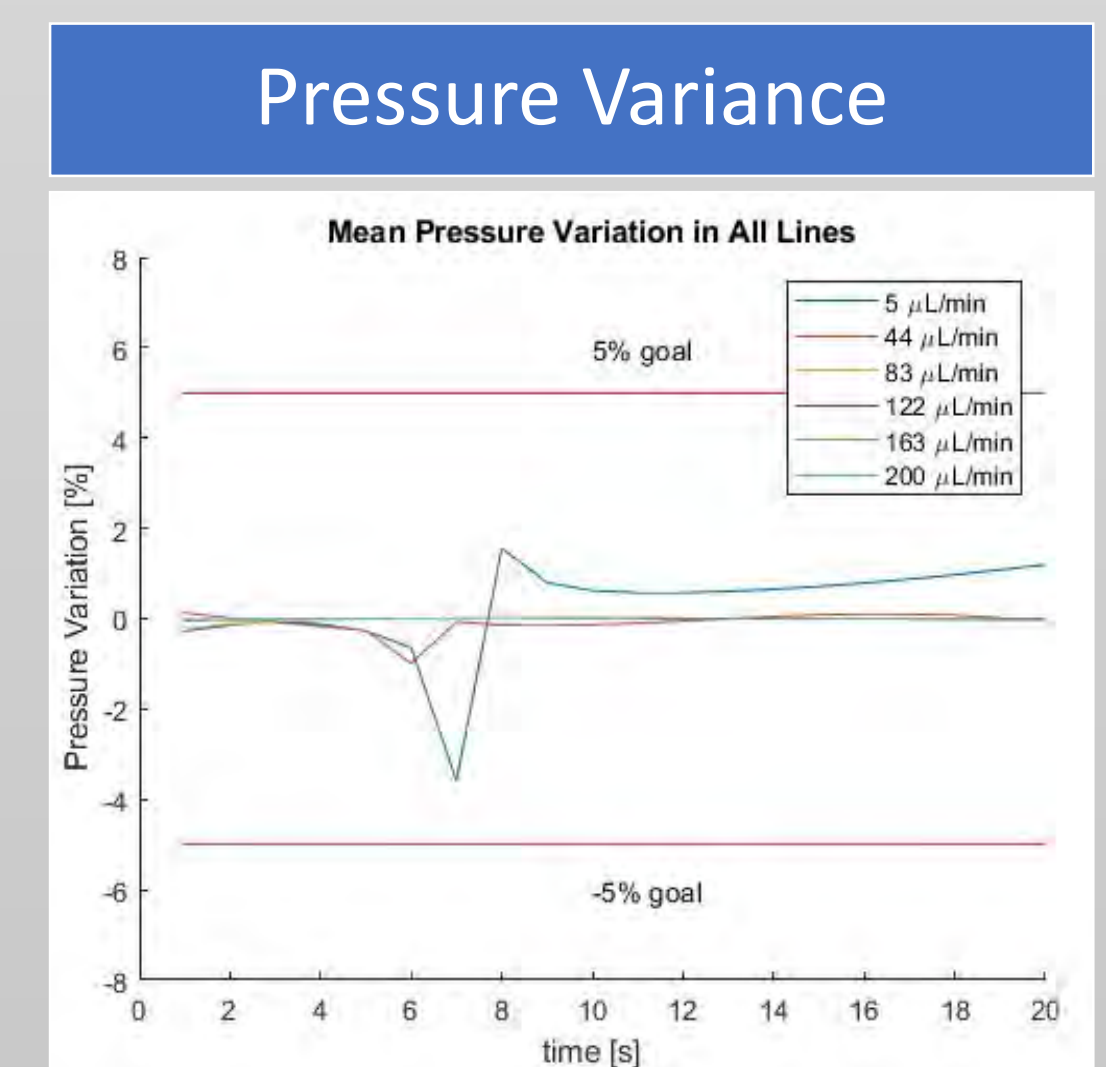
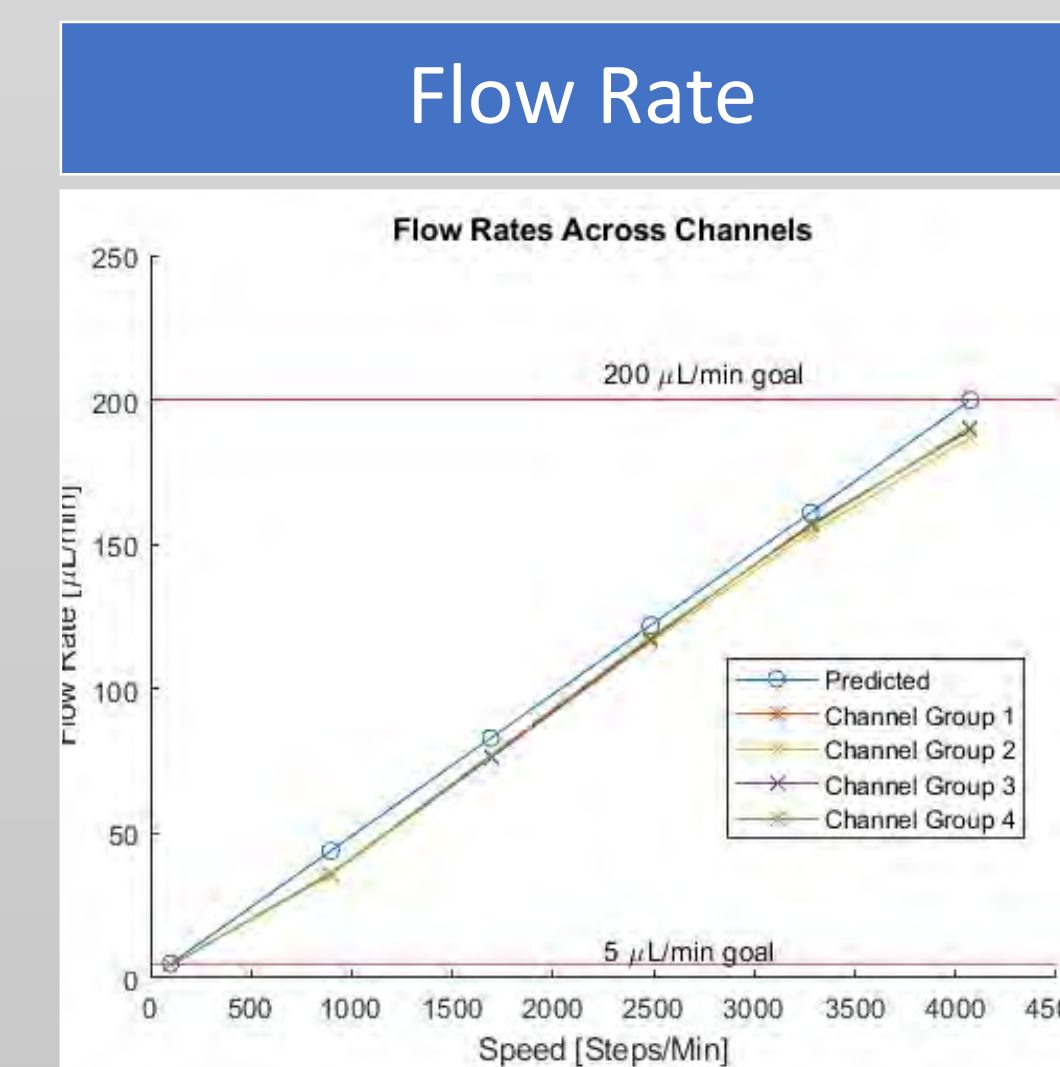
Early on it was realized that developing a novel microfluidic pump would be the only way to meet all of our goals. Current microfluidic pumping relies on two pump designs, peristaltic and syringe pumps. Our constant contact peristaltic pump (CCPP) combines the strengths of both designs.



## Results

Our results show that our unique design is viable for microfluidic pumping. While we did not reach the number of channels we wanted due to budget reasons, we met many of our other goals.

Before being implemented in the market this pump will require more work. Getting the number of channels desired for a low cost is the next goal. Improving the accuracy and precision of the motor will follow.



	# of Channels (quantity)	Cost (\$)	Maintenance Cost (\$/month)
CCPP	16	600*	10.67
Syringe	12	1500	100
Peristaltic	12	4562	10.67

\*Retail price might be larger