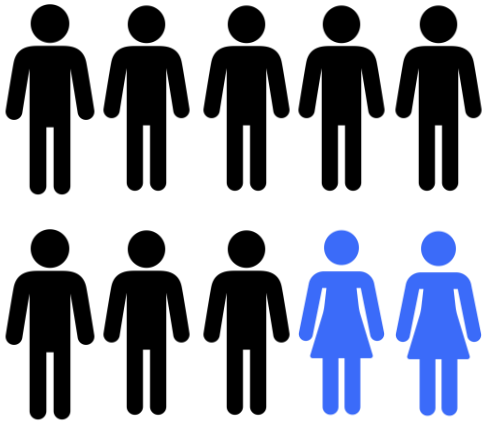
EMPOWERING TOMORROW'S INNOVATORS

Arlyne Simon, *PhD*
Biomedical Engineer (Intel), Inventor, Author & Founder – *Abby Invents*

WE NEED DIVERSITY IN PATENTING



82% of 40-year-old inventors today **are men**

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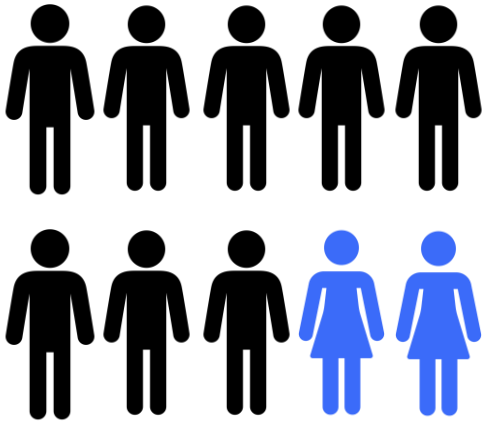

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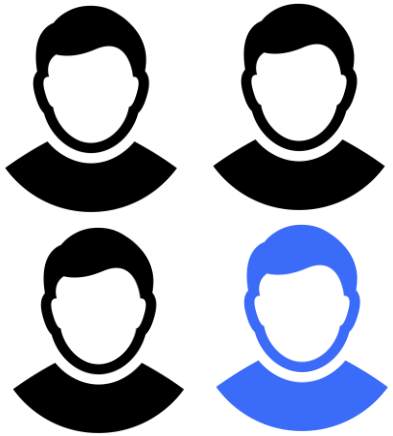

Caucasians are **3X** as likely to become inventors as Blacks

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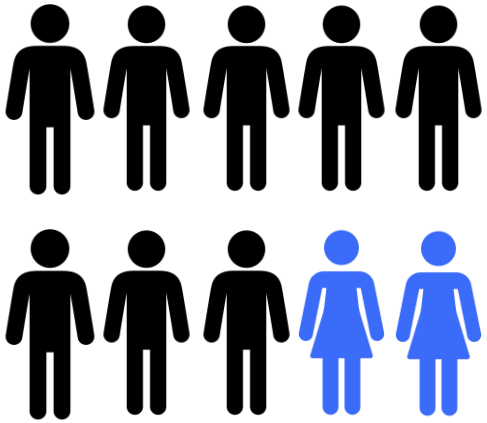

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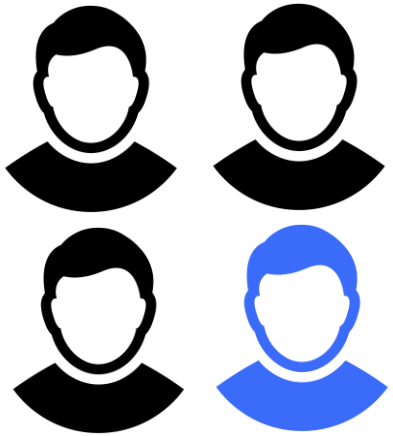

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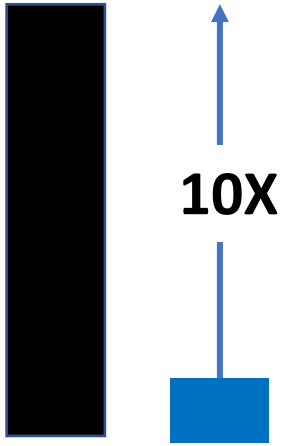

Children in **top 1%** income households are **10X** as likely to become inventors as those born to families with below-median income

Bell, A. et al., "Who Becomes an Inventor in America? The Importance of Exposure to Innovation," *The Quarterly Journal of Economics*, **134**, 647–713 (2019)

Journey to innovation

INSPIRING KID INVENTORS, EVERYWHERE

FUN

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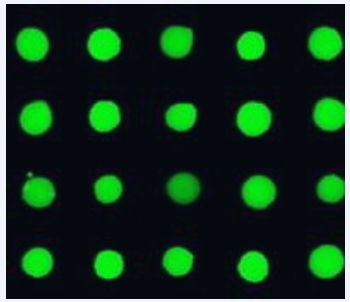
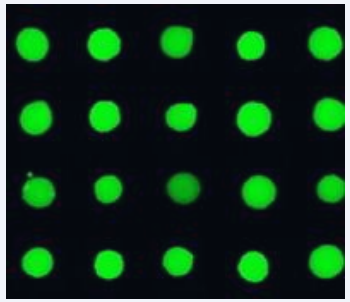
FUN



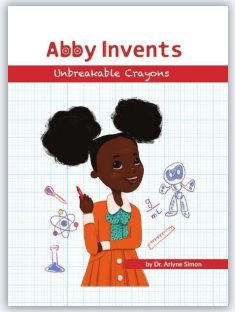
RELEVANT

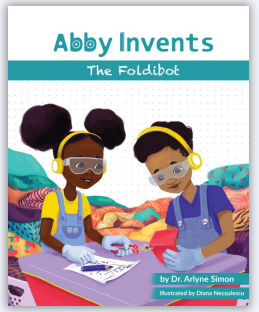
INSPIRING KID INVENTORS, EVERYWHERE

FUN



RELEVANT





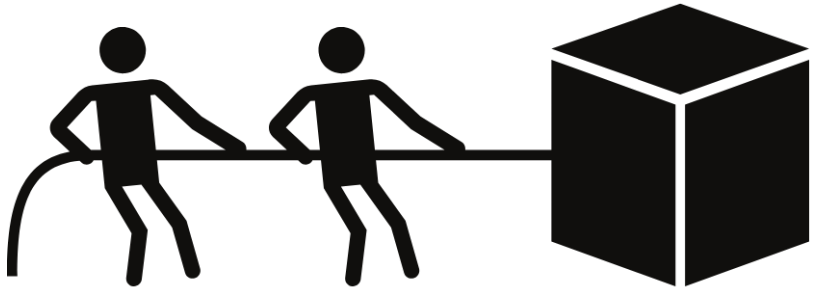
ABBY INVENTS

inventionLIT

MAGICAL

TECHNOLOGY PUSH OR MARKET PULL

1. Create Technology
2. Find Market Opportunity



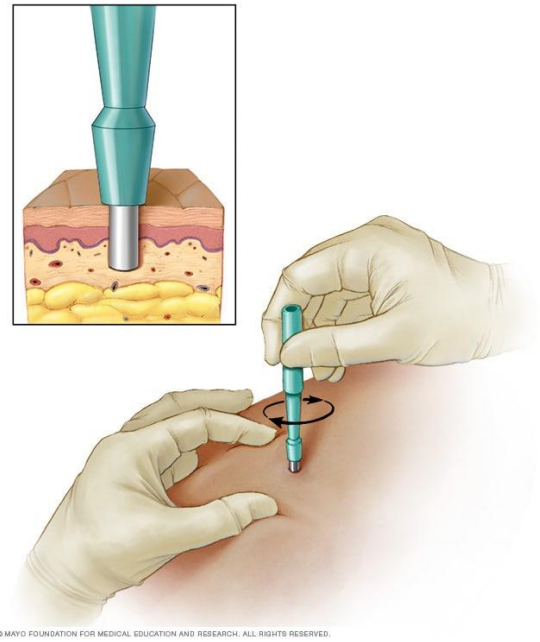
1. Identify Market Need
2. Create Technology

DIAGNOSING GRAFT-VERSUS-HOST DISEASE

SYMPTOMS

Lancet **2009**, 373, 1550-1561

DIAGNOSIS



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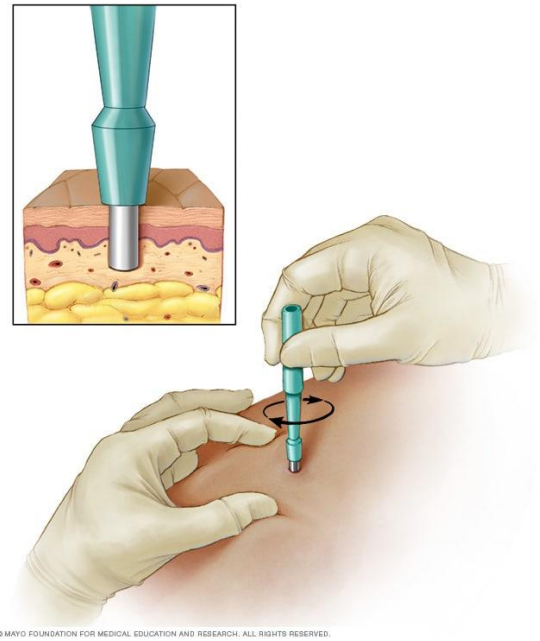
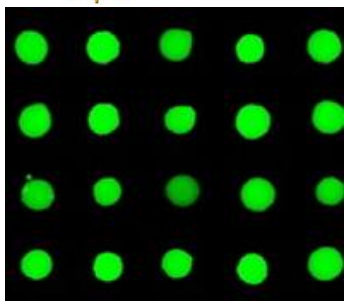
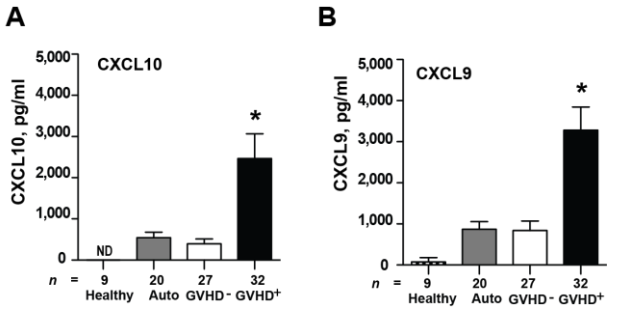


TECHNOLOGY PUSH

PHASIQ NSF I-CORPS NSF Innovation Corps





Technology ***2***, 176 (2014)
Scientific Reports **4**, 4878 (2014)

Patent 8,969,256, issued Mar 2015
Patent 9244057, issued Jan 2016

IMPACT OF LISTENING TO END USERS

FDA received more than 300 Medical Device Reports (MDRs) associated with programmable syringe pump use. (03/2013-07/2016): Infusions at rates of ***0.06 ml/hr to 5 mL/hr***

ISO

ICS › 11 › 11.040 › 11.040.25

ISO 7886-2:2020

Sterile hypodermic syringes for single use — Part 2: Syringes for use with power-driven syringe pumps

This second edition cancel
revised. The main changes

— Syringe sizes 1 ml to 5

— Overall flow rate requ
barrel inner diameter

— Pump test speeds wer
general clinical setting

14.4 Pump forces

Syringe manufacturers should perform pump force characterization and make available to pump manufacturers for syringes which are indicated for use on pumps. Flow rates used for pump forces are listed in Table 4 and details for the method used to test each nominal capacity of syringe are given in Annex B.

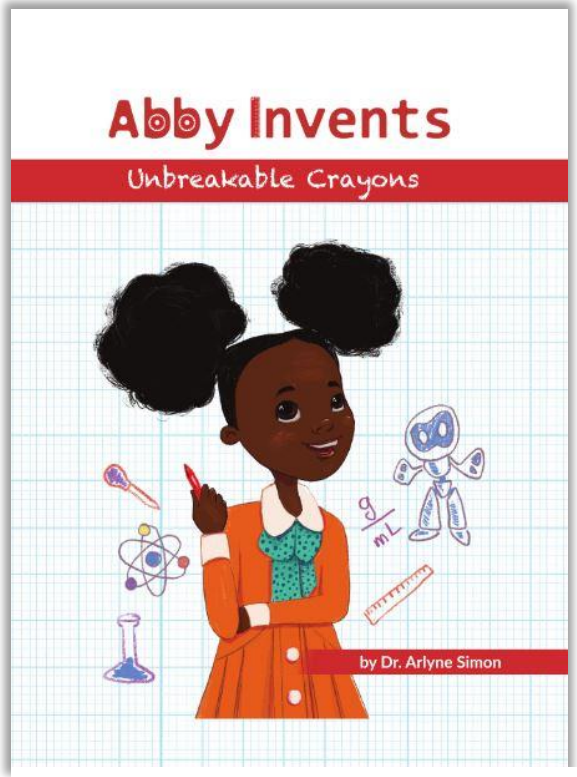
Pump manufacturers should also perform the testing described in Annex B to ensure correct software programming. This data should be shared between pump and syringe manufacturers to ensure the correct regional product has been characterized for a given market.

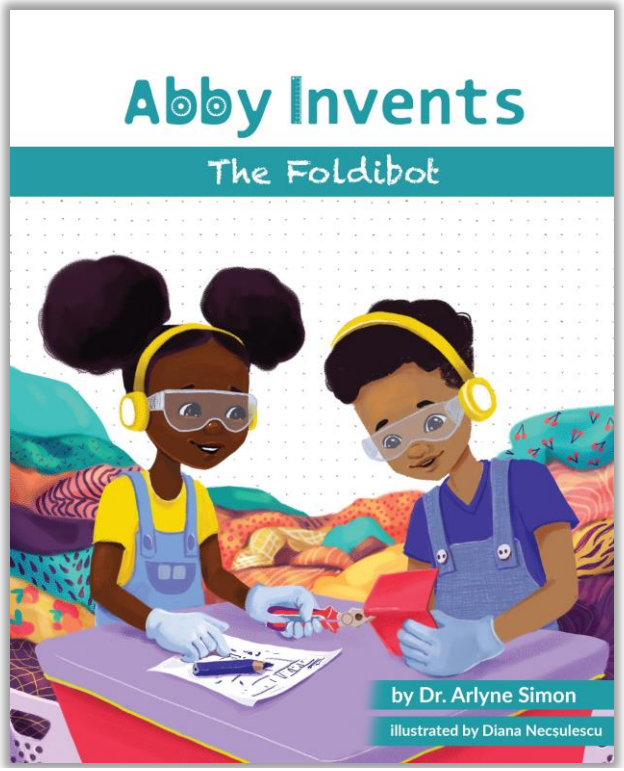
Table 4 — Recommended flow rates for pump forces

Nominal capacity of syringe, V ml	Flow rates ml/h		
	Low	Medium	High
$1 \le V < 2$	0,5	2	5
$2 \le V < 5$	1	5	10
$5 \le V < 10$	5	10	25
$10 \le V < 20$	5	10	50
$20 \le V < 30$	0,5	25	50
$30 \le V < 50$	0,5	25	50
$V \ge 50$	1	50	100

NOTE The flow rates are provided for syringe tests, not as recommendations for clinical practice.

ABBY INVENTS™ INSPIRES CURIOUSITY





NATIONAL INVENTOR'S HALL OF FAME
Best Children's Book to Celebrate Diversity in STEM

THE UNITED STATES PATENT & TRADEMARK OFFICE
Cultivating Curiosity

PURDUE UNIVERSITY
Top Ten in the Engineering Gift Guide (2021)

AAAS/SUBARU CHILDREN'S SCIENCE PICTURE BOOK AWARD
Finalist (2022)

ESSENCE MAGAZINE
19 Black Children's Books to Share with the Little Ones in Your Life

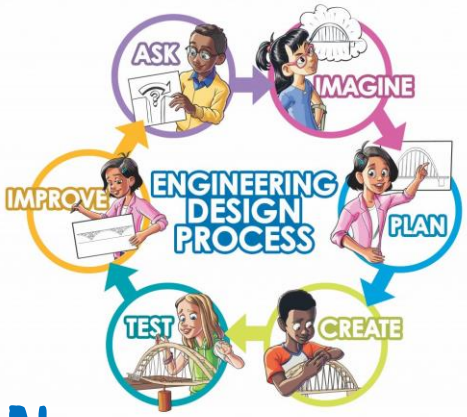
SMITHSONIAN MAGAZINE
Engineers Pick the Ten Best STEM Toys to Give as Gifts This Year

MAKE LEARNING FUN

Shelley Schoeneck @mckgarten · Apr 25

We read “Abby Invents UNBREAKABLE Crayons” and then we went to work! We created then we TESTED! Our princi”pal” agreed to drive over our crayons to test their strength! SUCCESS! @isd544otters @DitchThatTxtbk @stem_con @teacher2teacher @Crayola @ArlyneSimonPhD #stem #inventions

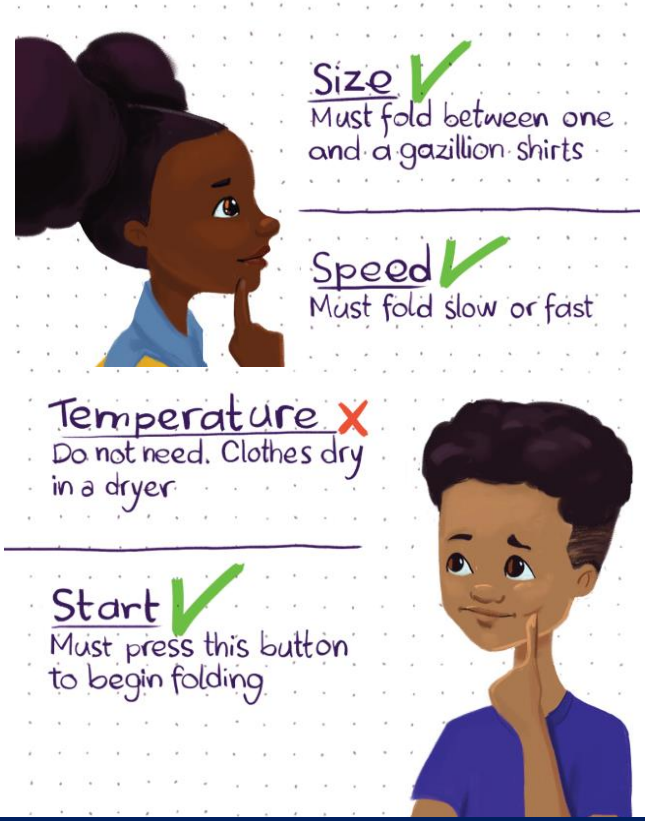
ABBY INVENTS THE FOLDIBOT



ASK

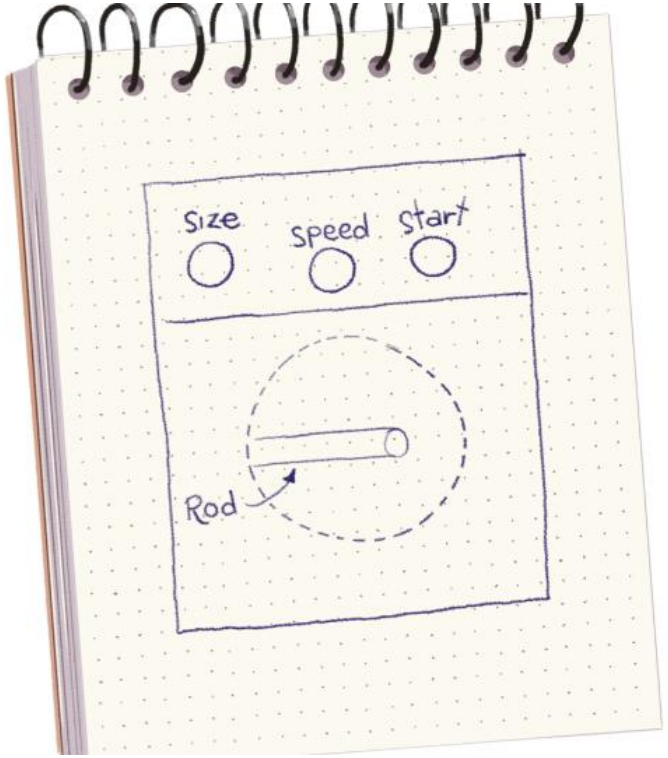
IMAGINE

PLAN



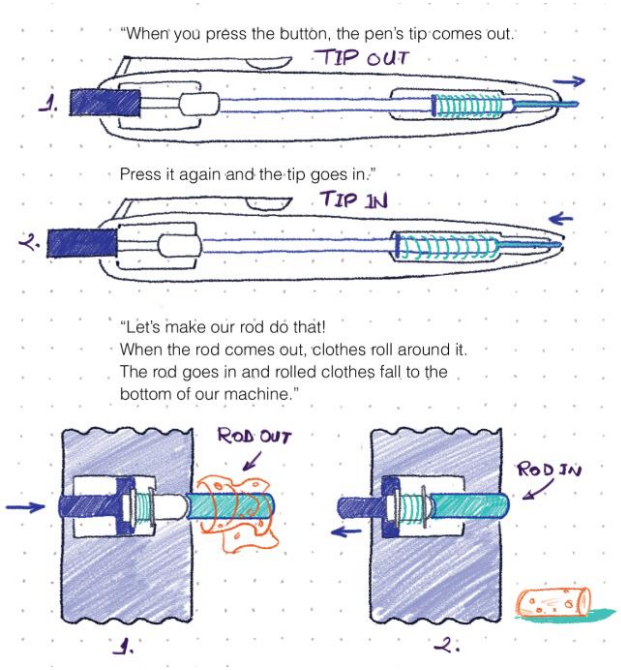
ABBY INVENTS THE FOLDIBOT

CREATE

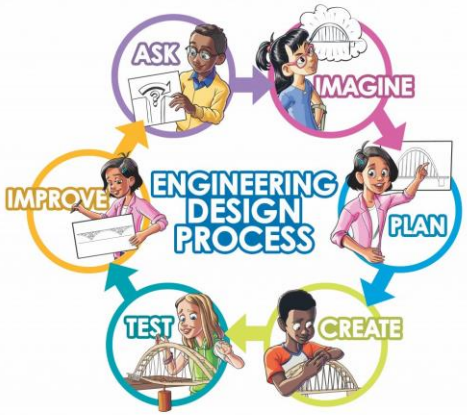


TEST

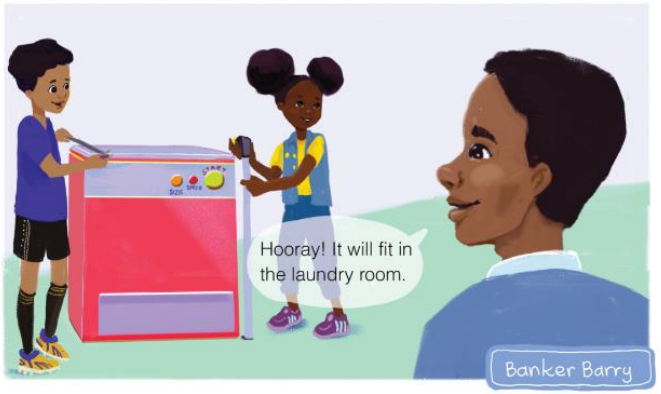
IMPROVE



ABBY INVENTS THE FOLDIBOT



ASK



REVIEW PATENT CRITERIA

CONTACT ME

- Book Readings
- K-5 Innovation Workshops
- K12 Classroom Visits
- K12 Teacher Conferences
- University Seminar Talks

- www.arlynesimon.com
- www.inventionlit.org
- www.abbyinvents.com