



Facial Recognition for Pathogens
1-Minute Testing for Infectious Diseases

Common Infections Put Pressure on the Healthcare System

Providers struggle with seasonal spikes

Every year globally...

2-4 respiratory infections per person¹

Definitive diagnosis difficult by exam only due to similar clinical presentation

300M+ new curable STI infections²

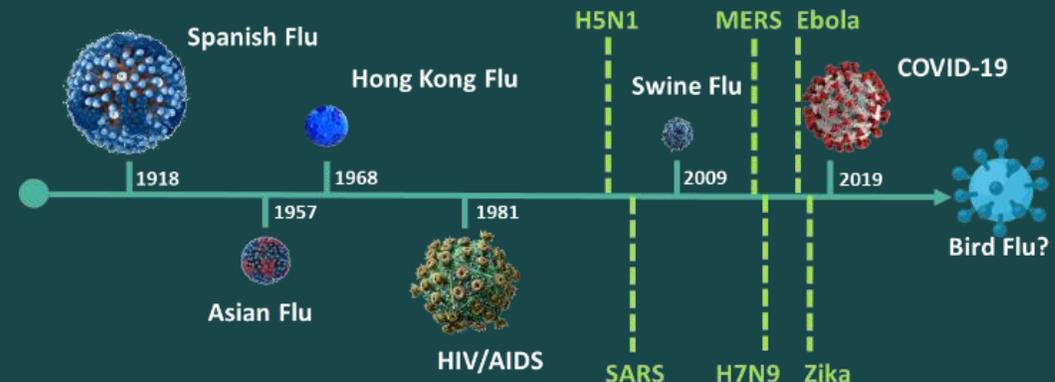
Testing is critical for preventing transmission

150M+ UTI³

One of the top drivers of antibiotic prescriptions⁴

Situation

Frequency of pandemics has increased over the last century



¹Rogan M. Respiratory Infections, Acute. International Encyclopedia of Public Health. 2017:332–6. doi: 10.1016/B978-0-12-803678-5.00383-0. Epub 2016 Oct 24. PMID: PMC7150086.

²World Health Organization

³National Public Radio (US)

Respiratory Infections Have Similar Symptoms

Not a straightforward diagnosis

Respiratory Infections	Common Cold	RSV	Covid	Flu
Congestion or runny nose	✓	✓		✓
Cough	✓	✓	✓	✓
Decreased appetite	✓	✓		
Fatigue			✓	✓
Fever or chills		✓	✓	✓
Headache	✓		✓	✓
Body aches	✓		✓	✓
Nausea or vomiting			✓	✓
Shortness of breath			✓	
Sneezing	✓			✓
Sore or scratchy throat	✓		✓	✓
Wheezing		✓		

Clinician diagnosis alone has been shown to have poor sensitivity.¹

Most respiratory infections do not respond to antibiotics.

- Up to 50% of antibiotic prescriptions are inappropriate contributing to the evolution of resistant bacteria.²

Early treatment of viral infections is essential.

- Antivirals must be given in the first 48 hours of infection.

¹Stein, John & Louie, Janice & Flanders, Scott & Maselli, Judith & Hacker, Jill & Drew, W & Gonzales, Ralph. (2005). Performance Characteristics of Clinical Diagnosis, a Clinical Decision Rule, and a Rapid Influenza Test in the Detection of Influenza Infection in a Community Sample of Adults. Annals of emergency medicine. 46. 4129. 10.1016/j.annemergmed.2005.05.020.

²WHO

Table

Common cold: MedlinePlus, <https://medlineplus.gov/ency/article/000678.htm>

RSV: MedlinePlus, https://medlineplus.gov/respiratorysvncytialvirusinfections.html#cat_95

Covid: MedlinePlus, <https://medlineplus.gov/ency/article/007768.htm>

Flu: MedlinePlus, <https://medlineplus.gov/ency/article/000080.htm>

Test & Treat in the Same Visit is Not Possible Today

Currently available tests are not fast enough²

Problem

Test Method	Lab Culture	Lateral flow	Molecular/PCR
Analyte Detected	Whole Particle	Antigen	Nucleic Acid
Accuracy	>98%	50-80%	>98%
Wait Time	Days	<15 min	>15 min

15
minutes¹

AMA coding guideline for
length of primary care visit

“If I see a patient every ten minutes, how on earth am I going to get a point of care test in **unless it delivers its results within a couple of minutes**”

- Clinician³

¹ <https://kffhealthnews.org/news/15-minute-doctor-visits/>

² Evaluation of LumiraDx Covid test determined that 12-minute test took too long in ED. *LumiraDx POC Diag A Clinician's View 2022*

³ Huddy JR, et al. *BMJ Open* 2021;11:e042944. doi:10.1136/bmjopen-2020-042944

What if you could test and treat in real time?

The ability to get diagnostic
results while the patient
is still with the doctor
is the key.

Our Technology



Results in 1 Minute at Point of Care

Test & treat in the same visit

“If we can get an answer within a minute, I think that will make a real difference.”

- GP, NHS¹



PIC-ID
CAPTURE

Universal Reagent

- Universal reagent makes pathogens all detectable
- 1 test kit for all tests



VISTA

Reader

- Images captured
- Test is fully automated



PIC-ID
IDENTIFY

Neural Network

- Image analysis & pathogen identification
- Test specificity comes from the software

¹Primary research

TEST & TREAT IN
THE SAME VISIT



PicturaBio⁷

How It Works

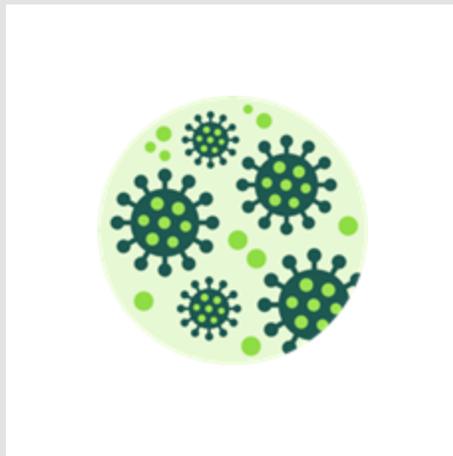
Phenotype Image Capture - Identification

How it Works

INSTANTANEOUS

Pathogen Labelling

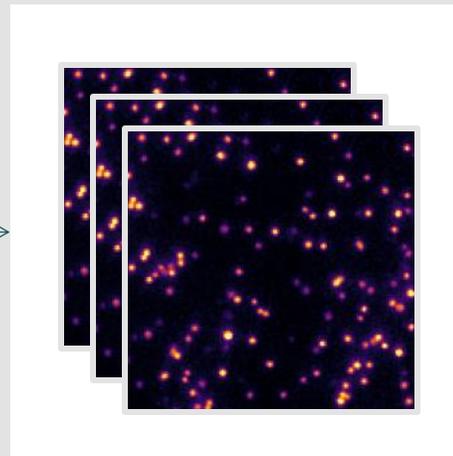
Universal biology labels everything in the sample



SECONDS - 1 MINUTE

Automated acquisition

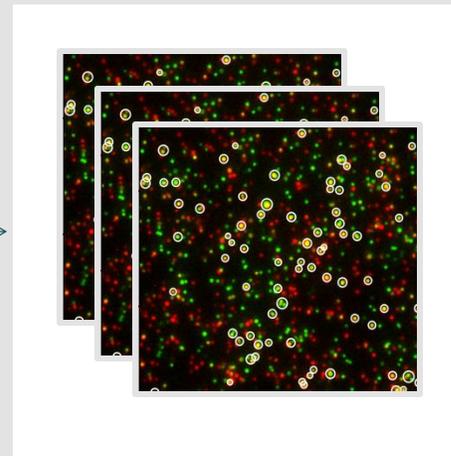
Images captured



SECONDS

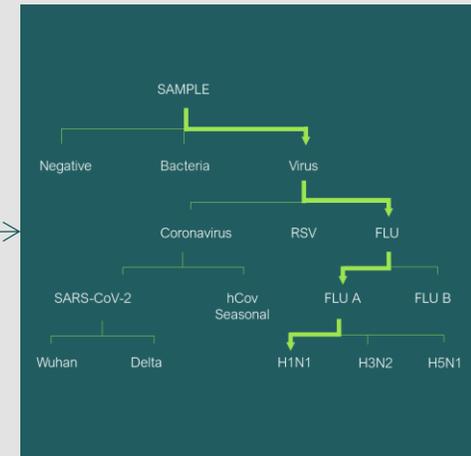
Image analysis

Image processing isolates individual suspected pathogen images for AI classification. Test specificity comes from software, not biology.



SECONDS

Result output



Patent 1 - PCT/GB2019/053073

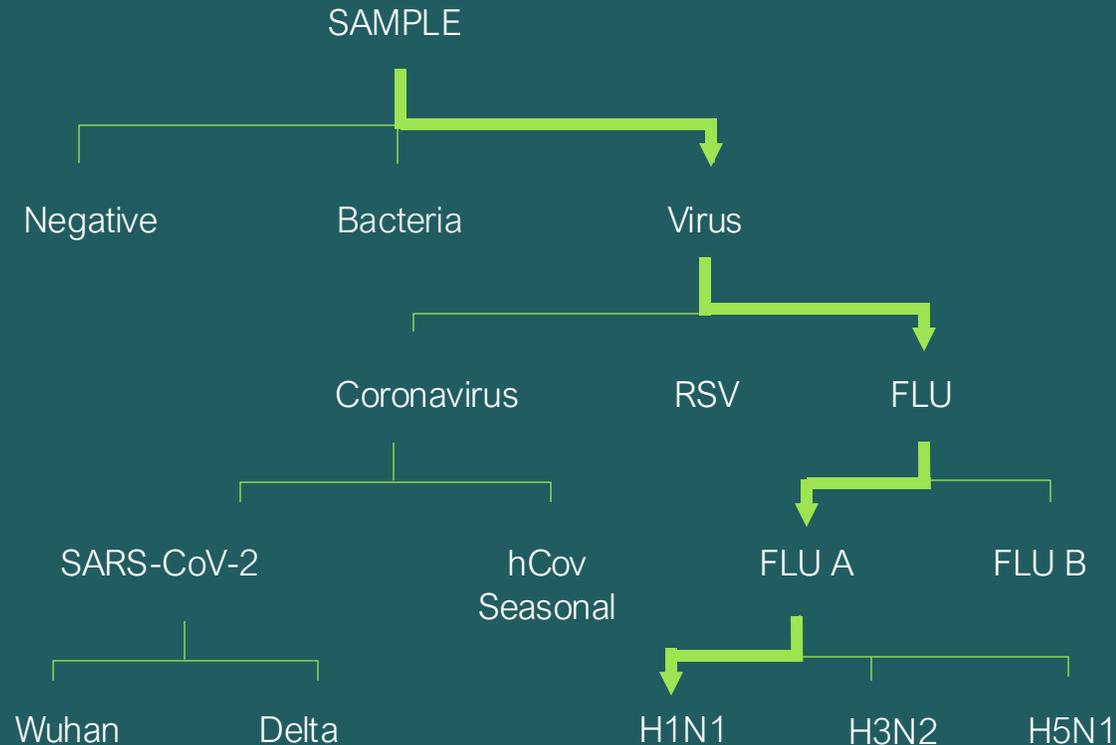
Patent 2 - PCT/GB2021/050990
© - Preprocessing and deep learning software



Pathogen Classification

Phenotype Image Capture – Identification

Machine learning looks for differences at each stage of a decision tree



95%

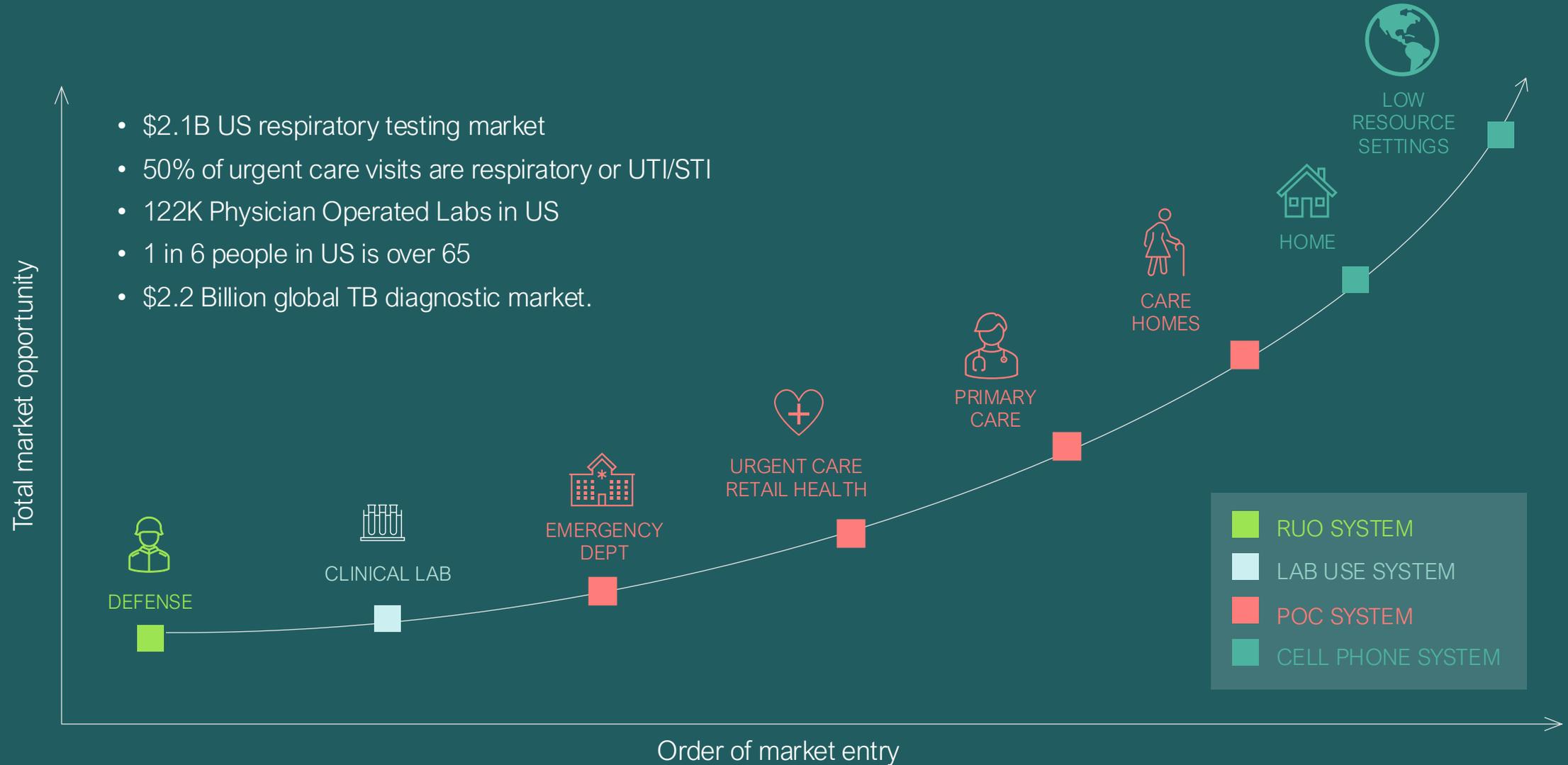
PIC-ID v PCR
SARS-CoV-2
POS/NEG



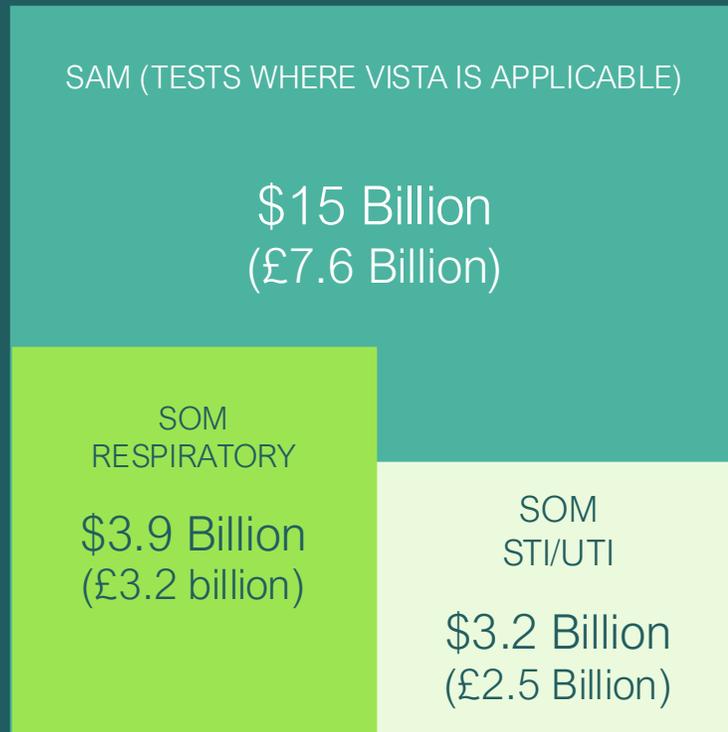
Shiaelis N, Tometzki A, Peto L, McMahon A, Hepp C, Bickerton E, Favard C, Muriaux D, Andersson M, Oakley S, Vaughan A, Matthews PC, Stoesser N, Crook DW, Kapanidis AN, Robb NC. Virus Detection and Identification in Minutes Using Single-Particle Imaging and Deep Learning. *ACS Nano*. 2023 Jan 10;17(1):697-710. doi: 10.1021/acsnano.2c10159. Epub 2022 Dec 21. PMID: 36541630; PMCID: PMC9836350.

Point of Care Testing Expands the Market

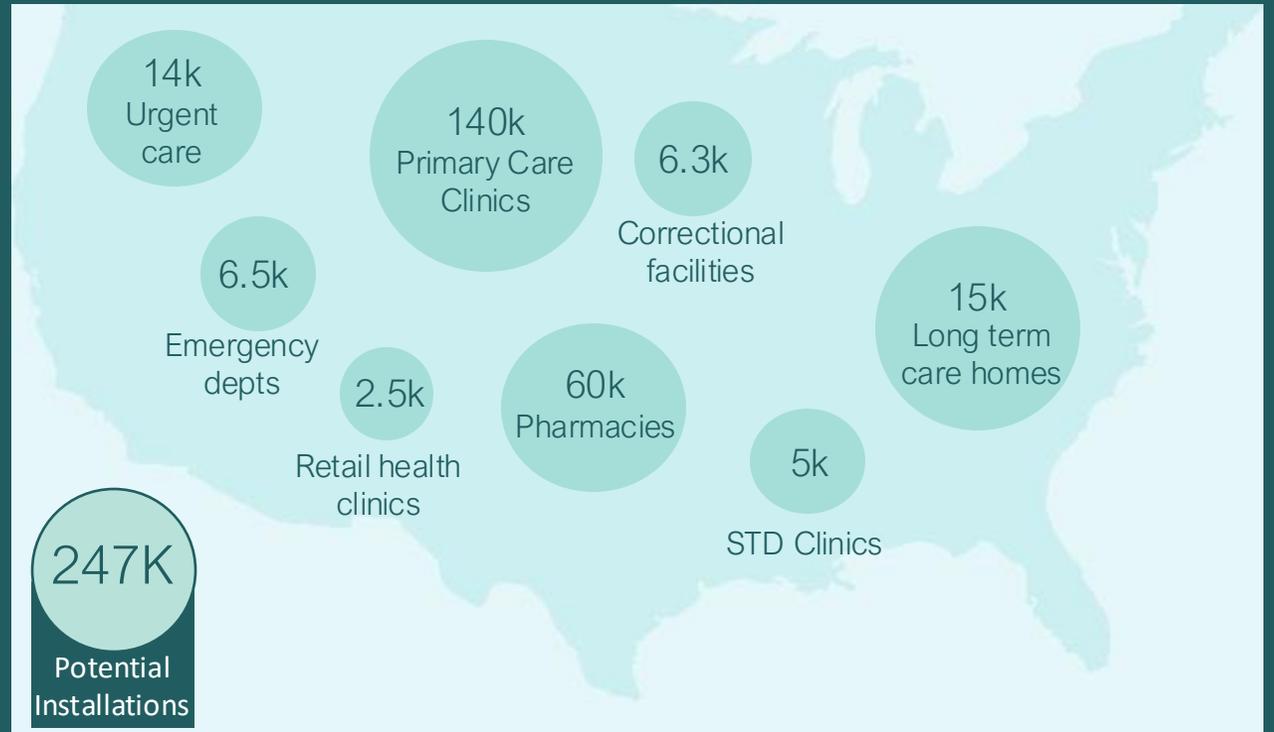
- \$2.1B US respiratory testing market
- 50% of urgent care visits are respiratory or UTI/STI
- 122K Physician Operated Labs in US
- 1 in 6 people in US is over 65
- \$2.2 Billion global TB diagnostic market.



Large Market Potential – US + UK



Incidence of Common Infections Can Support a Wide Instrument Installed Base



Why Will They Buy?

Patients



“The selling point is people want to know about their health. **They do not want to delay their treatment.**” - GP, UK¹

Healthcare Providers



“In the ICU, and in the ER...you just **want immediate answers because immediate answers then will lead to important decisions** and prognosis and therapies.”
-Physician, ICU, USA¹

Public Health



“Tests that can provide a rapid result without being sent to a lab to analyze **would help quickly determine if someone is infected.**”
- Healthcare Researcher, University of MN³

Payers & Health Systems



“...a bigger, more strategic view, and that is this whole issue of...**trying to keep patients out of hospital**”
-NHS Commissioner²

Commercial Strategy



DEFENSE MARKET

- UK MoD Contract – Detection in the field
- US DoD Proof of Concept Proposal



PUBLIC HEALTH MARKET

- Non-defense government health agencies
- Outbreak response
- Trace outbreak history



SALES CHANNELS

- Initial direct sales presence in US and UK
- Sales expansion via strategic partnership with IVD manufacturer or distributor



CLINICAL MARKET

REAGENT RENTAL

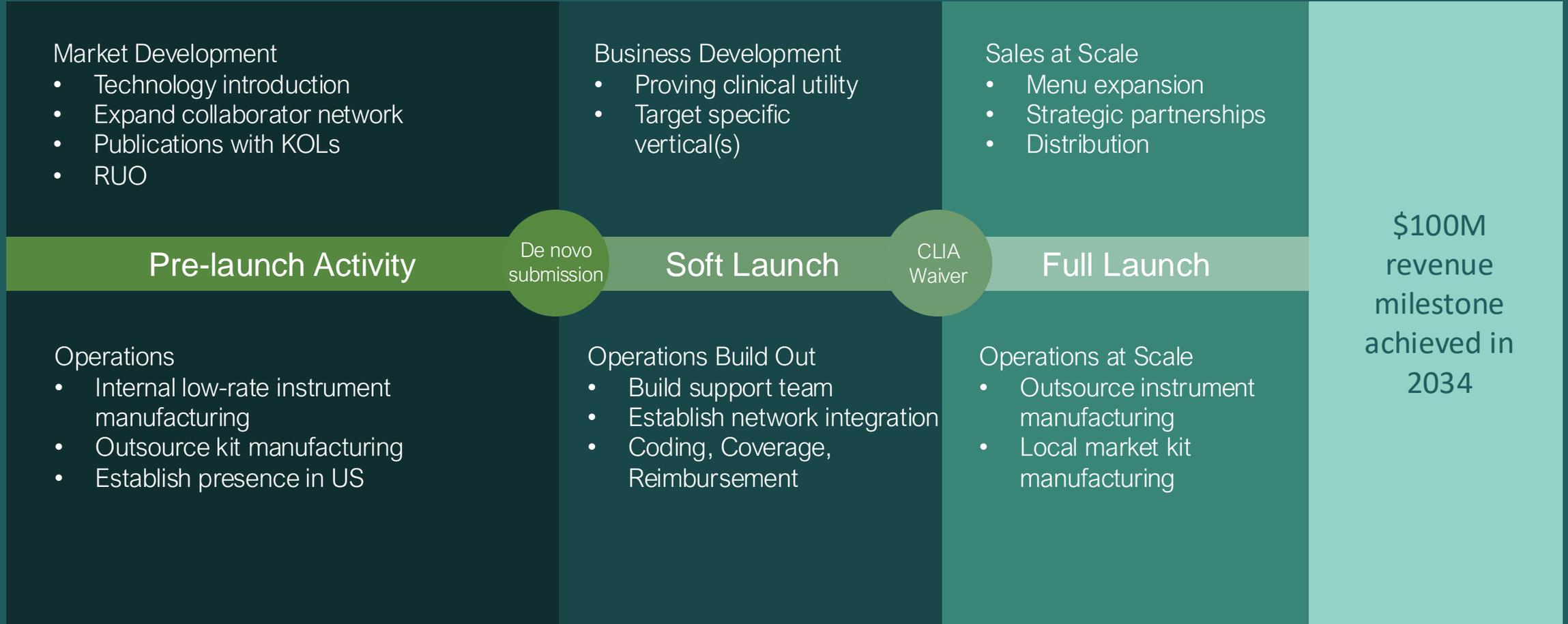
- Widely accepted business model in the diagnostic market
- Instrument rental cost built into kit price
- Kit margin supports varied levels of usage opening additional markets



MARKETING & MARKET DEVELOPMENT

- Aggressive conference podium & poster presentations and publication plan
- Collaborator/KOL pilot studies to generate real world data for publication and sales use

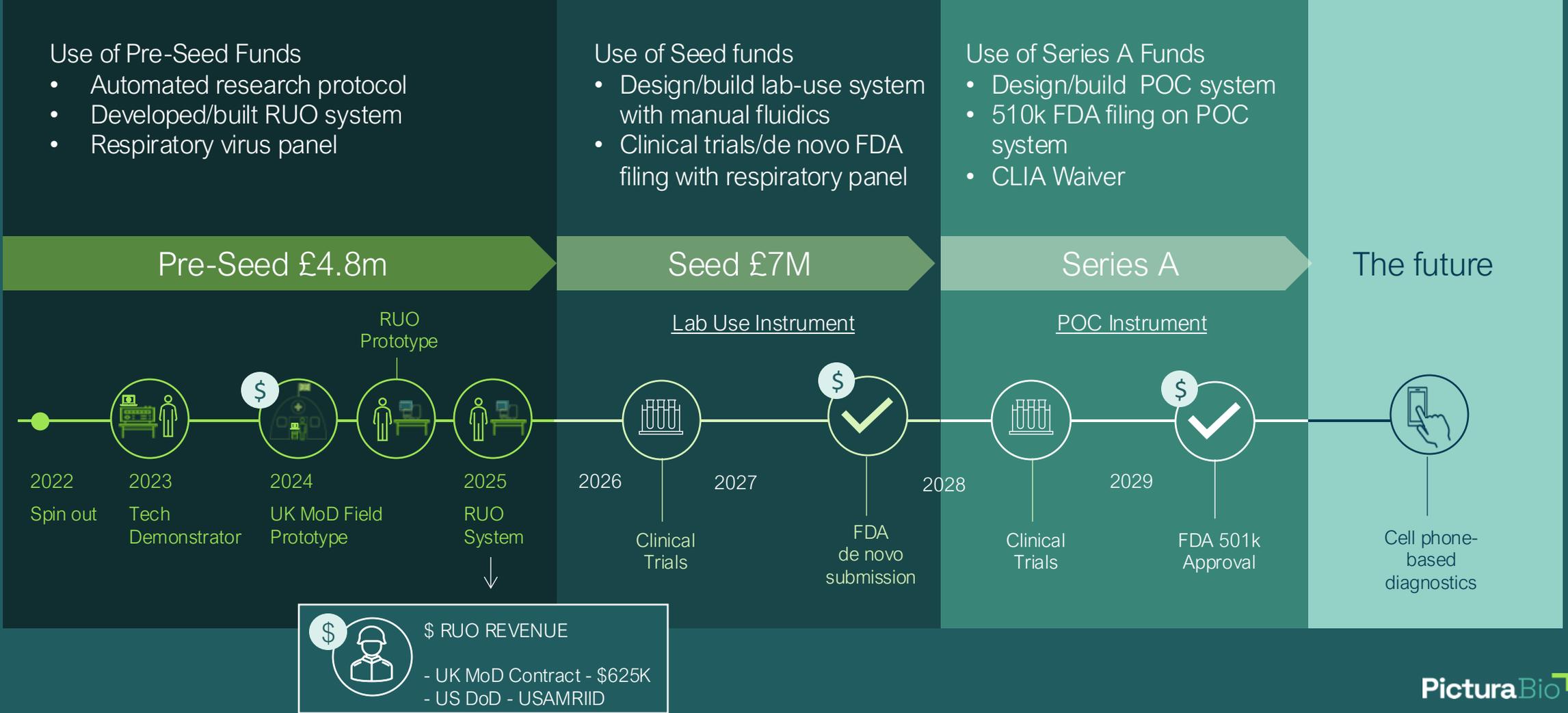
Commercialization Timeline



Use of Funds

Capital efficient product development

Use of Funds



Test Menu Expansion

Test development plan

Clinical Applications

	Initial Focus		Menu Expansion				
							
	Respiratory (Swab)	STI/STU (Urine)	Sepsis (Blood)	Joint infection (synovial fluid)	Meningitis (CSF)	Healthcare Acquired Infections (various)	Tuberculosis (sputum)
Gram NEG Bacteria	✓	✓	✓	✓	✓	✓	
Gram POS Bacteria	✓	✓	✓	✓	✓	✓	✓
Viruses	✓		✓	✓	✓	✓	
Fungi			✓		✓		
Parasites					✓		

Team

Executive Team



ALEX BATCHELOR
CEO

- Pictura Bio is Alex's second Oxford spinout.
- Held multiple commercial management roles in productization of novel assay technologies.
- 25+ years at companies like Orbit Discovery and Lonza Group as well as rapid diagnostics company Genalyte.



CHRIS STAMPFL
CBO

- 20-year career in the life sciences with experience market development, market research and productizing new life science technologies.
- Held management and leadership roles companies like Lonza Group and rapid diagnostics company Genalyte.
- Experienced in working with target customers to set product requirements



TOM AMIES
CFO

- Experienced Group Chief Financial Officer.
- Former CFO of Sonic Healthcare, an international company that handles more than 50M diagnostic tests per year.

Scientific Team



NICOLAS SHIAELIS, PhD
Founder – Machine Learning

- PhD in Physics from University of Oxford.
- His research on novel detection methods for pathogens using single particle microscopy techniques and the use of machine learning in diagnostics forms that basis of Pictura's assay technology.



NICOLE ROBB, PhD
Founder - Virology

- Nicole is a virologist with a background in biophysics.
- Led the Oxford research team that developed the fluorescent microscopy techniques to visualize and detect RNA viruses on which Pictura's technology is based.
- Course Director for the Institute for Global Pandemic Planning, Assistant Professor at University of Warwick, Visiting Lecturer at the University of Oxford.

Corporate Advisors



IAIN MILLER, PhD
Director / Commercial Advisor

- PhD in Bio Engineering
- CEO of Presymptom Health.
- Has extensive international commercial experience across the life science and diagnostics sectors. His recent commercial experience spans GE Healthcare, Biomerieux, and Abbott Diagnostics.



RACHEL GAUNTLETT
Regulatory Advisor

- 14+ years regulatory experience in medical device and IVD industry including ISO 13485 audits.
- 4 CE marked products, 2 de novo filings for AI Imaging-based technologies

CLINICAL TRIAL PLANNING



- Experience taking multiplex respiratory panels through FDA

COVERAGE AND CODING



- 20+ years experience at Center Medicare and Medicaid Services

Medical Advisors



RISHI CHOPRA, MD
GP, NHS

- Clinical Director for Regent Health Primary Care Network
- Chair of the Board of Directors for Healthcare Central London



RICHARD DAWOOD, MD
GP, Private Practice

- Medical Director, Fleet Street Clinic
- Travel Medicine specialist



MILES CARROLL, PhD
University of Oxford
Emerging viruses, Former Public Health England

- Infectious disease expert
- Advisor to *Animal and Plant Health Agency, Defence Science & Technology Laboratories, and World Health Organisation R&D Road Map for Priority Pathogens*

INVESTORS

IQ CAPITAL



SCVC



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