


**virax**  **biolabs**

DEVELOPING DIAGNOSTICS FOR IMMUNE PROFILING IN  
INDICATIONS ASSOCIATED WITH CHRONIC INFLAMMATION  
AND T-CELL EXHAUSTION

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# DEVELOPING IMMUNE PROFILING SOLUTIONS AND T-CELL DIAGNOSTICS

- Virax Biolabs is looking to bring to the market a comprehensive set of T-Cell diagnostics and immune profiling solutions utilizing its novel **ViraxImmune™** platform
- Strategic focus is on the development and commercialization of immune profiling IVDs in indications associated with chronic inflammation and T-Cell exhaustion
  - Post-viral syndromes (Long COVID, CMV, RSV, etc.) and other infectious diseases
  - Chronic inflammation (Oxidative Stress)
  - Immuno-oncology (CAR T-Cell)
- Significant annual US healthcare costs projected to be \$528 billion with individual medical cost of \$9000

# IMMUNE PROFILING SOLUTIONS PIPELINE

Assessing Memory T-Cell response to specific indications



SARS-CoV-2	
Lyme Disease	
CMV (Cytomegalovirus)	
RSV (Respiratory Syncytial Virus)	
EBV (Epstein-Barr Virus)	

# COMMERCIALIZATION PATHWAYS FOR IMMUNE PROFILING PRODUCT RANGE

- Immune Profiling product range (including SARS-CoV-2) will be commercialized through a number different channels
  - CLIA laboratories in US
  - International distributors of life science solutions
  - Dedicated sales network (marketing, website and presence at scientific conferences)



# T-CELL DIAGNOSTIC PLATFORM PIPELINE

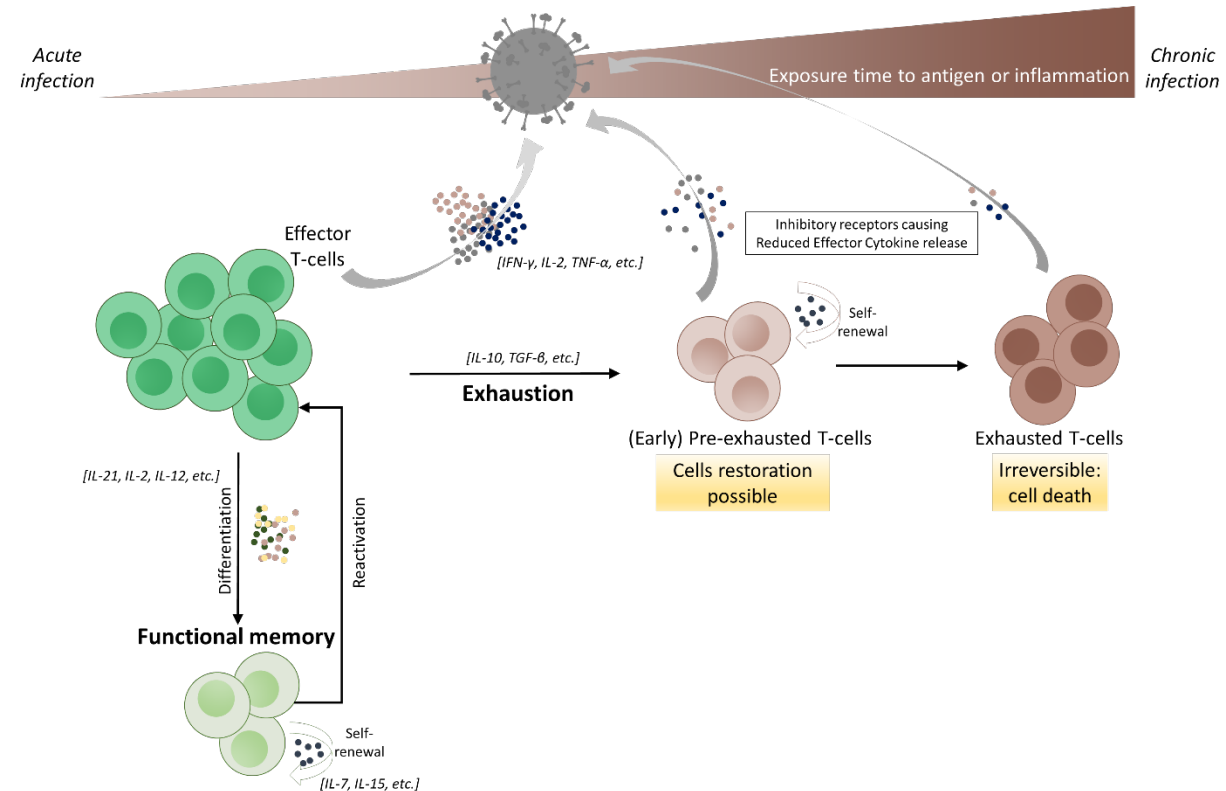
Targeting T-Cell Exhaustion and Chronic Inflammation



Long COVID	
Other Post Viral Syndromes (PVS)	
Oxidative Stress	
CAR-T Therapy	

# T-CELL EXHAUSTION AND CHRONIC INFLAMMATION

- ‘T-Cell exhaustion’ is a broad term that has been used to describe the response of T-Cells to chronic antigen stimulation
- Following chronic stimulation, T-Cells function at lower levels to cause minimal damage but still maintain some effector function to barely mediate a critical level of antigen-killing activity
- With antigen persistence, this early exhaustion state will further differentiate into a state of terminal exhaustion
- Exhausted T-Cells have been documented following numerous infections (HBV, HCV, SARS-CoV-2, ME, etc.) as well as linked to response durability in CAR T-Cell therapy
- No diagnostic tests are currently available for indications associated with T-Cell exhaustion and chronic inflammation
- There is a global need to develop T-cell diagnostics for early detection of T-Cell exhaustion in these indications



# LONG COVID IS A SIGNIFICANT PROBLEM

with 'T-Cell Exhaustion' and 'Chronic Inflammation' being hallmark characteristics of Long COVID

## About 18 million US adults have had Long COVID: CDC

ABC News, Sep 2023

In 2022, Long COVID affected 6.9% of adults in the U.S., according to new figures from the Centers for Disease Control and Prevention.



Advocates for people suffering from long COVID-19 and myalgic encephalomyelitis/chronic fatigue syndrome host an installation of 300 cots to represent the millions of people suffering from post-infectious disease, in front of the Washington Monument, May 12, 2023, in Washington, D.C.  
Andrew Harnik/AP

## US turning its back on long COVID. We'll pay the price if we don't act.

Chairman of the Senate Committee on Health, Education, Labor and Pensions (USA Today, Jan 2024)

'The impact of long COVID-19 is not just a health issue. It's an economic one as well. It's estimated that as many as 4 million Americans are out of work due to long COVID-19. The annual cost of those lost wages alone is about \$170 billion a year. In my view, we must do everything in our power to improve the diagnosis and treatment of long COVID-19'.

## New long COVID study uncovers high inflammation in patients as Senate calls for more research on 'crisis'

ABC News, Jan 2024

"The burden of disease and disability from long COVID is on par with the burden of cancer and heart disease," Dr. Ziyad Al-Aly, M.D., a clinical epidemiologist at Washington University, said. "We must develop sustainable solutions to prevent repeated infections with SARS-CoV-2 and long COVID that would be embraced by the public."

## Long COVID research opens door for further exploration on post-viral illness

ABC News, Oct 2023

Long COVID raises awareness of many other infectious diseases that are associated with post-viral illness, including infectious mononucleosis and Lyme disease.

## Long COVID manifests with T-Cell dysregulation and chronic inflammation

Nature Immunology, January 2024



# LONG COVID – HUGE NEED FOR EARLY DIAGNOSIS

**‘Long COVID is a significant problem for the country going forward’**

Dr. Walter Koroshetz, co-chair of the NIH's Long COVID initiative

**‘10-20% of COVID-19 patients diagnosed with Long COVID symptoms’**

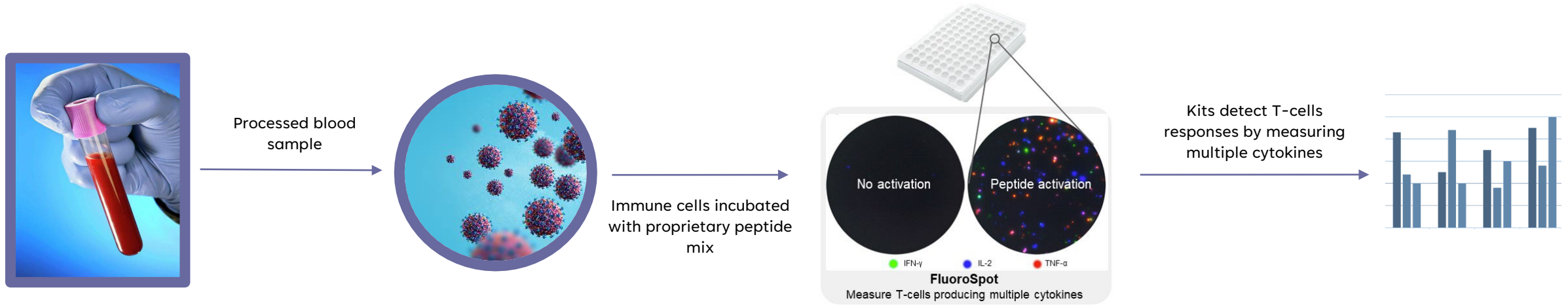
WHO, Post COVID-19 condition (Long COVID), Dec 2022

- Estimated 20 million people in the United States (NCHS, 2023) and 36 million people in Europe (WHO, 2023) experiencing symptoms of Long COVID – yet there are no tests available to diagnose Long COVID
- Individuals who have Long COVID remain undiagnosed for a long period of time while suffering debilitating symptoms resulting in loss of income to individual, increased cost to the healthcare system and loss of productivity (estimated at \$50 billion in the US)
- NIH (US) have budgeted \$1.15 billion into Long COVID research (NIH, RECOVER initiative)
- Economic costs of Long COVID are significant: \$141-316 billion loss of earnings (OECD); \$723 billion cost to reduce QALYs (OECD); excess medical costs of 50-70% for non-hospitalized and 5-10 times for hospitalized patients (CDC)
- **Significant market opportunity with high unmet medical need for early diagnosis**

OECD: Economic Impact of Long COVID in EU State, Dec 2022. Center for Disease Control and Prevention (CDC) – Preventing Chronic Disease, Feb 2023.

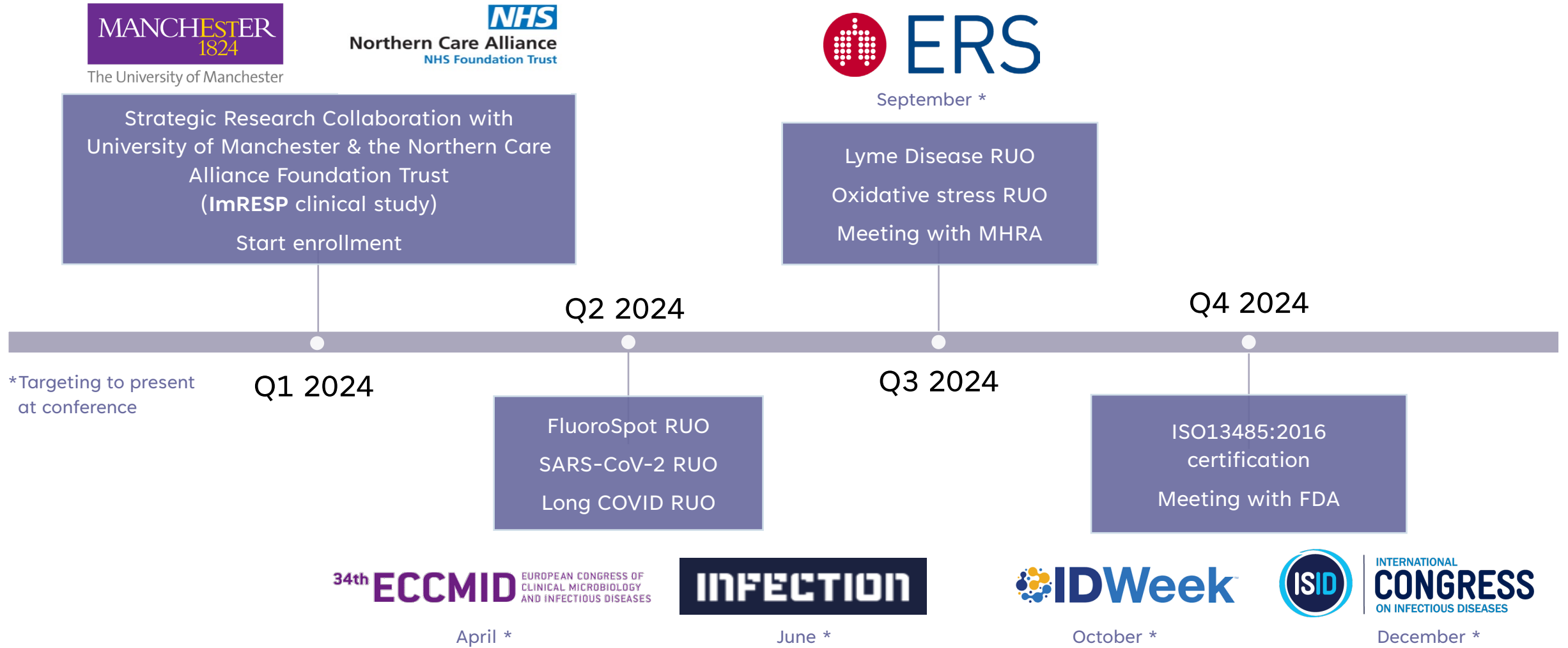
CDC National Center for Health Statistics (NCHS), Sep 2023: Long COVID in Adults: United States 2022. National Institute of Health (NIH), July 2023, World Health Organization (WHO), June 2023

DEVELOPING FLUOROSPOT TESTS TO MEASURE CYTOKINE RELEASE PROFILES ASSOCIATED WITH T-CELL EXHAUSTION SPECIFIC TO CHRONIC INFECTIONS



- **ViraxImmune™** is planned to observe the activation of a variety of cells beyond just T-Cells and provide unparalleled insights into complex diseases and infections, delivering a level of information unmatched by competitors
- Our platform is not restricted to a single disease or condition allowing it to address a wide range of research and diagnostic needs within indications associated with chronic inflammation and T-Cell exhaustion
- Detection and quantification of multiple cytokine-secreting cells at the same time, providing a higher resolution of cellular immune responses associated with T-cell exhaustion and chronic inflammation
- Very little competition for multiple cytokine detection using FluoroSpot in the IVD space

# VIRAX BIOLABS ANTICIPATED SIGNIFICANT MILESTONES AND COMMUNICATIONS IN 2024



\*Targeting to present at conference

# AVENUES FOR COMMERCIALIZATION



Government  
Health  
Departments



Insurance  
Providers



Pharmaceutical  
Companies &  
Clinical Research



Health-Conscious  
Individuals and  
Pharmacies

# FINANCIAL AND INVESTMENT HIGHLIGHTS



No Debt



Strong Working Capital



Poised for Strong Profitable Growth

Market Cap at January 23, 2024	\$2.5 million
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<b>Cash at December 31, 2023 (unaudited)</b>	<b>\$5.2 million</b>
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Working Capital at Sept. 30, 2023	\$5.2 million
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Expected Avg. monthly burn rate	\$230,000
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RUO sales expected to exceed R&D costs in 2024	
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Cash runway and working capital expected to be enough to get through key milestones and launch of IVD products

Shares Outstanding	2,361,903
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Warrants Outstanding	1,546,432 at \$8.00
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Options Outstanding	242,000 at \$12.67
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Avg. daily trading volume (90 day)	85,230 shares/day
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Share price range (90 day)	\$1.00 - \$2.67
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# LEADERSHIP TEAM



**JAMES FOSTER**  
Chief Executive Officer



**NIGEL McCracken**  
Chief Operations Officer



**MARK TERNOUTH**  
Chief Technology Officer



**JASON DAVIS**  
Chief Financial Officer



## OUR OFFICES



Glasgow, UK  
Innovation and R&D



Houston, TX  
United States  
Office



**EVAN NORTON**  
Independent Director



**YAIR EREZ**  
Independent Director



**NELSON HAIGHT**  
Independent Director



# SUMMARY HIGHLIGHTS

## UNPARALLELED PRODUCT OFFERING

With the growing population health burdens caused by chronic inflammation and T-Cell exhaustion including post viral syndromes, **ViraxImmune™** has the potential to provide powerful diagnostics that facilitate and empower both the development of robust treatments and the resilience of healthcare systems.

## PATENT PROTECTION

Our Intellectual Property development process is seamless and agile with an in-house science team working alongside our patent attorneys. We have applied for patent protection and continue to develop our IP portfolio regularly.

## FINANCIAL ENTRY POINT

We believe we are well capitalized for the launch of the **ViraxImmune™** product range.