Melbourne Biomedical Precinct

From research engine to economic powerhouse

Message from the Special Minister of State

Victoria leads the way in Australian biomedical research and discovery. That strength is concentrated in Melbourne Biomedical Precinct.

The precinct is where some of our best minds have made breakthroughs that literally changed the world.

Until now, we've lost too many of those discoveries overseas. We held back on entrepreneurial thinking and that limited the development of an ecosystem to bring new medicines, treatments and devices to market.

We believe Victorian discoveries should stay right here. To create skilled jobs, bring economic benefits and deliver the quality healthcare Victorians deserve.

Because we recognise this means a new approach, we established the Melbourne Biomedical Precinct Office — to provide leadership and enable the precinct to speak with one voice. The office will ensure opportunities are captured by providing industry and international partners with a precinct gateway.

The Victorian Government is leveraging its relationships worldwide to increase research and commercialisation collaborations. Already that's resulted in partnerships in China, Israel and the United States.

While this strategy is focused on Melbourne Biomedical Precinct, it also recognises strong biomedical and biotechnology capabilities exist in other parts of Melbourne and Victoria.

The strategy provides a roadmap to focus our efforts. So we can deliver outcomes with real benefits for Victorians — better healthcare, a strong economy and jobs of the future. To support this strategy, the Victorian Government is investing $123.8 million in the 2018/19 Victorian State Budget to create a single shared electronic medical records system across three of Parkville's health services, as well as continuing the work of the Melbourne Biomedical Precinct Office. This builds on a $16.6 million investment in electronic medical records in 2017/18. These investments will achieve better patient outcomes and deliver data insights for medical researchers that will benefit Victorian communities.

The Hon. Gavin Jennings MP
Special Minister of State

Australia's biomedical capital

Melbourne Biomedical Precinct is Australia's, and one of the world's, leading biomedical centres. The precinct delivers outstanding healthcare, education and world-class research. It is home to some of the biggest global names in the biomedical sector. Melbourne Biomedical Precinct's cutting edge research and discoveries have resulted in major advances in patient care, disease treatment breakthroughs and development of devices, technologies and medicines that have saved and improved lives in Victoria, Australia and around the world.

The Victorian Government has identified medical technologies and pharmaceuticals as one of six priority sectors with extraordinary potential to create secure high-skill jobs and drive economic growth. Melbourne Biomedical Precinct is uniquely placed to play a critical role in the growth and development of this sector.

Melbourne Biomedical Precinct is enormously important to Victoria. It has touched the lives of millions of Victorians - be that through the world-class clinical care its hospitals provide, the outstanding education its universities deliver or the globally renowned research its institutions undertake.

Melbourne Biomedical Precinct is located just outside Melbourne's CBD. The precinct spans from Parkville's northern boundary, extending through Parkville and across Carlton to East Melbourne.

Beyond this immediate area, Victoria's biotechnology sector is rich, complex and includes other important precincts such as Clayton Innovation Cluster and the Alfred Medical Research and Education Precinct.

WORLD-CLASS

Over 30 world-class hospitals, medical research institutes, companies and universities are established within Melbourne Biomedical Precinct.

These precinct partners have been at the forefront of improving outcomes in areas such as infectious diseases and immunology, neurosciences (including mental health), cancer, child health and healthy ageing.

GLOBAL REACH

The reach of Melbourne Biomedical Precinct extends beyond its boundaries to collaborations with universities, hospitals and research organisations throughout Victoria, Australia and the world.

This collaborative spirit, particularly with the clusters around Monash, Deakin, La Trobe and Swinburne universities and the Alfred Medical Research and Education Precinct, ensures our biomedical sector is well placed to help drive Victoria's future growth and success.

VITAL ASSET

Melbourne Biomedical Precinct is home to Australia's largest pharmaceutical company (CSL) along with some of the biggest global names in biomedical research.

The precinct employs 49,000 people and educates over 7,000 biomedical, health and medical students each year.

RESEARCH AND DISCOVERY TO ECONOMIC BENEFITS

Melbourne Biomedical Precinct attracts more annual competitive biomedical research funding than any other precinct in Australia.

Precinct partners produce academic publications with a citation rate well above the international average.

Yet within this setting Melbourne lags behind similar world-leading research clusters in creating impact by translating research into commercial success.

Victorian discoveries power the development of new drugs, devices and treatments but too often this happens overseas because researchers are unable to realise the possibilities of their inventions at home.

Developing Melbourne's commercialisation ecosystem will mean that talented people can reach their potential and valuable discoveries will generate jobs, investment and economic benefits. Victorians will also gain earlier access to life-saving treatments.

30

MBP facilities more than 30 world-class hospitals, medical research institutes, bio-medical organisations and universities

$2.8 billion

MBP investment capital injected into research and healthcare facilties over the last decade

49,000

MBP employs 49,000 people

7,000

MBP educates 7,000 Biomedical health and medical students

THE PRECINCT DIVIDEND

Melbourne Biomedical Precinct ‘dividend’ – where the whole is greater than the sum of its parts – is more likely to be achieved where there is a shared, long-term view of objectives and joint understanding of the actions required to achieve those objectives.

Innovation precincts offer multiple benefits to communities. They can boost economic activity while improving resident lifestyles and providing attractive places to visit and work. Organisations share knowledge about best practice and reduce costs by jointly sourcing services and suppliers. Frequent shared space interactions lead to formal and informal knowledge transfer and encourage collaboration between individuals and institutions. There is also a general importance to being in the midst of ‘the buzz’.

This critical mass attracts more companies, investors, services and suppliers and creates an accessible pool of skilled labour. When precincts foster these elements, they provide a strong foundation for the commercialisation of ideas as well as creation and expansion of firms and jobs.

Melbourne Biomedical Precinct hospitals, universities and research institutions are committed to change and ready for action.

They understand their extraordinary individual contributions to Victoria, in terms of improved patient outcomes as well as economic growth now and in the future.

MELBOURNE BIOMEDICAL PRECINCT OFFICE

The Victorian Government established the Melbourne Biomedical Precinct Office in 2016 to drive economic development in the precinct and strengthen its position as a world leader in biomedical research, development and innovation.

The main role of Melbourne Biomedical Precinct Office is to drive economic benefit, always within the context of improved health outcomes. It does this in collaboration with precinct partners and other stakeholders.

The Melbourne Biomedical Precinct Office worked with precinct partners to advise government on this strategic plan, and will oversee its implementation.

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Collaborative connections

Precinct partners include some of the most respected global names in biomedical research.

These organisations are at the forefront of improving outcomes in areas such as infectious diseases and immunology, neurosciences including mental health, cancer, child health and healthy ageing.

In addition Victoria's Science, Medical Research and Technology Panel has been established to drive leadership and excellence in Victorian health and medical research, attracting more investment and jobs to Victoria.

PARTNERS

- Australian Genome Research Facility
- Baker Heart and Diabetes Institute
- Bio21 Molecular Science and Biotechnology Institute
- BioGrid Australia
- Biomedical Research Victoria
- Bionics Institute
- Centre for Eye Research Australia
- Dental Health Services Victoria
- Frances Perry House
- Melbourne Bioinformatics
- Melbourne Brain Centre
- Melbourne Private Hospital
- National Ageing Research Institute
- Orygen, The National Centre of Excellence in Youth Mental Health
- The Royal Victorian Eye and Ear Hospital
- St Vincent's Institute of Medical Research
- Victorian Comprehensive Cancer Centre

PRECINCT LEADERSHIP GROUP

- CSIRO
- CSL Limited
- The Florey Institute of Neuroscience and Mental Health
- Monash Institute of Pharmaceutical Science, Monash University
- Murdoch Children's Research Institute
- Peter Doherty Institute for Infection and Immunity
- Peter MacCallum Cancer Centre
- The Royal Children's Hospital
- The Royal Melbourne Hospital
- The Royal Women's Hospital
- St Vincent's Hospital Melbourne
- The University of Melbourne
- Walter and Eliza Hall Institute

A history of leadership

1848

The Royal Melbourne Hospital opens (known as Melbourne Hospital).

1853

The University of Melbourne founded.

1915

Walter and Eliza Hall Institute of Medical Research founded.

1916

CSIRO established in East Melbourne — then known as the Advisory Council of Science and Industry.

1941

World Health Organisation designates CSL an Influenza Reference Laboratory.

1948

Royal Children's Hospital doctor, Dr John Colebatch, conducts the world's first controlled trial of chemotherapy used on leukaemia patients.

1960

Sir Frank Macfarlane Burnet receives the Nobel Prize in Physiology for his immune system discovery that revolutionises understanding of immunity and rejection.

1978

The world's first cochlear implant is carried out by Professor Graeme Clark at the Royal Victorian Eye and Ear Hospital.

1980

The Royal Melbourne Hospital performs the first implantable cardioverter defibrillator operation in the southern hemisphere.

1986

Murdoch Children's Research Institute established.

1998

Researchers at Walter and Eliza Hall Institute, The Royal Melbourne Hospital and Peter MacCallum Cancer Centre discover a protein that helps cancer cells survive indefinitely, leading to the development of Venetoclax.

2014

Victorian Comprehensive Cancer Centre alliance established.

2015

The Royal Melbourne Hospital researchers lead a new stroke management approach using Endovascular Clot Retrieval that significantly improves outcomes for survivors. These findings change the worldwide practice for stroke management.

2016

The University of Melbourne, Florey Institute and The Royal Melbourne Hospital develop the Stentrode giving people with spinal cord injuries new hope to walk again.

2017

Australian Genome Research Facility NovaSeq 6000 sequencing hardware is operational in Australia, opening the door to more comprehensive genome studies.

Hallmarks of a successful precinct

Innovation clusters, districts or precincts within and across industries have become a priority and focus for cities in recent decades. The advantages and opportunities they offer attract entrepreneurs, research and educational institutions, governments, healthcare providers, start-ups as well as industry seeking to advance technology and drive employment.

According to the Brookings Institute, successful precincts share an attitude that supports the application of ‘open innovation’ where companies can collaborate with other firms, inventors and researchers to generate new ideas and bring them to market.

Today’s young workforce prefers to congregate and work in vibrant neighbourhoods that are walkable and offer choices in housing, transport and amenity.

The Victorian Government is actively supporting precincts in Monash, Parkville, Fishermans Bend, Dandenong, La Trobe, Sunshine and Werribee. These are identified as National Employment and Innovation Clusters (NEIC) in Plan Melbourne 2017–2050 and are a focus for jobs growth and strategic infrastructure investment. A specialised activity (such as a university, research facility, medical facility or manufacturing enterprise) anchors each NEIC.

10-year strategy

VISION

A renowned world top 10 biomedical precinct and a driver of healthcare advances, economic growth and jobs for Victoria.

STRATEGIC DIRECTIONS

1

Increase impact through a greater focus on commercialisation

2

Unlock value from digital health and big data

3

Deliver the best facilities and infrastructure

4

Develop, attract and retain top talent

GOALS BY 2030

Research

2x world average for research citations

Discovery

55 patent citations per 1,000 articles published

Investment

$14 billion private R&D funding secured

Jobs

10,000 new precinct jobs created

** refer to page 22 for goal measurement metrics.*

1

Increase impact through a greater focus on commercialization

Transforming Melbourne Biomedical Precinct into an economic powerhouse will mean more Victorian discoveries are translated into lifesaving drugs and treatments. It will deliver jobs and investment, more clinical trials and value capture that might otherwise go offshore.

1. FUTURE DIRECTIONS

1.1 PROMOTE AN ENTREPRENEURIAL CULTURE THAT VALUES COMMERCIALISATION

Historically universities and medical research institutes reward research publications rather than impact. Melbourne Biomedical Precinct Office will work across the precinct to share novel approaches to promoting and rewarding translation and commercialisation, and encourage institutions to limit innovation barriers.

Melbourne Biomedical Precinct Office will monitor and evaluate commercialisation activity to track improvement over time.

1.2 BUILD PATHWAYS TO COMMERCIALISATION

Melbourne Biomedical Precinct Office will explore opportunities to simplify how intellectual property is shared between owners and organisations across the precinct.

Involving more Victorian patients in clinical trials will improve access to cutting edge treatment and generate revenue. To capture these gains Victoria will strengthen access to timely, reliable and efficient clinical trials.

There is an opportunity to develop a commercial pathway that guides researchers who want to bring ideas to market. This has potential to involve dedicated commercialisation resource sharing between precinct partners.

Melbourne Biomedical Precinct Office will work to build deeper and wider networks between researchers, industry and investors to facilitate the connections needed for ideas to progress to commercial reality.

1.3 ENCOURAGE BIOMEDICAL START-UPS AND SMALL BUSINESSES

In comparison to other global biomedical centres, Melbourne Biomedical Precinct has a low concentration of biomedical companies. Scope exists to develop infrastructure that supports start-ups and entrepreneurs, such as dedicated wet labs and office space.

With the goal of building a presence like the world-leading facilities at LabCentral in Boston or MaRS in Toronto, government will explore opportunities to establish spaces that attract biomedical start-ups and entrepreneurs to Melbourne. Precinct partners should also consider spaces for innovation and start-ups when redeveloping their facilities.

1.4 INCREASE INDUSTRY ENGAGEMENT AND CO-LOCATION

Melbourne Biomedical Precinct Office will investigate standardised approaches to research to attract industry, and support the precinct to develop a value proposition to showcase its strengths and capabilities to investors, collaborators and talent.

Strong international networks also build industry engagement. The Victorian Government will leverage its international networks to strengthen relationships with priority international collaborators including China, Israel and the United States.

Precinct partners should also look at ways to increase the number of biomedical PhD/post-doctorate students in industry placements to open up new career pathways and strengthen relationships with industry.

From breakthrough biotech start-ups to world renowned research centres and long established hospitals, Melbourne Biomedical Precinct benefits from the clustered location of an expanding number of collaborative organisations. Each has a part to play in developing the precinct's entrepreneurial approach.

The Victorian Government also has a role in fostering a commercial focus. Its support for research and development infrastructure, forging industry alliances and attracting new investment can create the conditions for entrepreneurialism and innovation to flourish.

STRONG FOUNDATIONS TO HELP INCREASE IMPACT THROUGH A GREATER FOCUS ON COMMERCIALISATION

RESEARCH ADVOCACY

Melbourne Biomedical Precinct is successful in winning around one quarter of Australia's annual competitive biomedical research funding.

Victoria overall attracts over 40 per cent of national biomedical research funding, a level well above the State's relative population.

PARTNER PROXIMITY

Some of the most respected global names in biomedical research are co-located in Melbourne, alongside industry leaders like CSL, Australia's largest pharmaceutical company. Based in Parkville, CSL employs thousands worldwide and is a global leader in vaccine development.

CLINICAL STRENGTHS

To meet the future challenges for individual and community health, Melbourne Biomedical Precinct draws on clinical research strengths across five broad areas: infectious diseases and

immunology, neurosciences including mental health, cancer, child health and healthy ageing. These clinical areas represented 79 per cent of the competitive NHMRC funding the Melbourne Biomedical Precinct received for biomedical research over the five years from 2012–2016.

CREATING IMPACT

Ongoing efforts to generate impact from Melbourne based research include BioCurate, a $60 million joint venture between the Victorian Government, Monash University and the University of Melbourne to increase the translation of new drug discoveries into commercially attractive investable projects.

As an independent venture catalyst and technology accelerator, BioCurate focuses on the critical early phases of new drug development (a phase often referred to as the valley of death due to high attrition rates). BioCurate fills the crucial gap between pre-clinical studies and commercial testing.

ENTREPRENEURIAL FOCUS

Precinct organisations are developing the commercial skills of students and researchers in a number of ways. For example Translating Research at Melbourne (TRaM) is an intensive program helping researchers across the precinct to develop new products for market. Monash University School of Pharmacy has developed an approach to measure the success of individuals in translating their research. The aim is to recognise and value these activities, rather than consider them optional.

CASE STUDY

VENETOCLAX

Walter and Eliza Hall Institute of Medical Research developed Venetoclax, a ground-breaking anti-cancer treatment. Venetoclax inhibits a protein that makes cancer cells in chronic lymphocytic leukaemia patients resistant to other therapies, improving patients' chances of survival.

In 2017, the institute made a deal for a partial sale of royalty rights to Venetoclax, including a cash payment of US$250 million upfront and potential milestone payments of up to US$75 million. The Institute has also retained partial royalties in the treatment.

Walter and Eliza Hall Institute will be able to reinvest these funds into further health research enhancing the discovery and translation of new medicines.

2

Unlock value from digital health and big data

Globally, healthcare and biosciences industries are experiencing a data deluge with the quantum of health data increasing at exponential rates. Getting high quality data, in the right format at the right time and with the right analysis, will turn Victoria's data into useful information that can support clinical and commercial endeavours.

2. FUTURE DIRECTIONS

2.1. IMPLEMENTING DIGITAL CLINICAL SYSTEMS

Following an initial investment in electronic medical records of $16.6 million in 2017/18, the Victorian Government has committed $123.8 million in the 2018/19 Victorian State Budget to create a single shared electronic medical records system across three of Parkville's health services. Building on the successful implementation of electronic medical records at the Royal Children's Hospital, the system will be expanded to Melbourne Health, the Royal Women's Hospital and the Peter MacCallum Cancer Centre. Electronic medical records are crucial to unlocking value from health data to achieve better patient outcomes, delivering data insights to medical researchers and encouraging innovation which leads to better care. The Victorian Government will continue to support health services to adopt digital clinical systems and electronic medical records.

2.2. IMPROVING USE OF HEALTH AND BIOMEDICAL DATA

Victoria has various programs and initiatives underway to collect and use data for:

- clinical research and practice
- safety and quality improvement
- population health monitoring.

Some data is available from sources like clinical databases, the Department of Health and Human Services, clinical registries and the Victorian Cancer Registry. By removing barriers to safely access and share data, digital records can be transformed into actionable information.

The Victorian Government will work with precinct partners to identify current gaps and support the development of a secure world-class health data network across the precinct that addresses privacy and data ownership concerns.

2.3. MINING DATA FOR IMPACT

Automation advances, together with the growing use of electronic medical records, clinical registries and digital technologies, such as augmented intelligence, means that health and biomedical sciences are generating ever increasing volumes of rich data.

Skills and infrastructure are vital to manage, store, program, analyse and interpret the valuable insights that vast amounts of health and biomedical data can provide.

Melbourne Biomedical Precinct Office will work with precinct partners to explore collaborative approaches to developing a health analytics workforce and capability.

Data is transforming the way we understand healthcare. Digital health and clinical informatics are embedding digital technologies into every level of biomedical research and patient care.

This spans from understanding causes of disease to streamlining the work of our world-class doctors and incorporating genomics and data into our knowledge of health and disease.

How much data?

Globally, the amount of data created and copied every year is expected to reach 180 zettabytes by 2025.

Sources: IDC, Bloomberg, Economist.com

STRONG FOUNDATIONS TO HELP UNLOCK VALUE FROM DIGITAL HEALTH AND BIG DATA

Melbourne Biomedical Precinct partners rely on health and biosciences data to inform and progress their world-leading discoveries and development of new treatments. To be at the forefront of this research and keep up with the digital revolution, Melbourne Biomedical Precinct must continue to embrace big data and the digital era.

ELECTRONIC MEDICAL RECORDS

The Royal Children's Hospital is the first Victorian hospital to implement a fully digital, high quality level six electronic medical record system.

This system is enabling improved access to patient information and test results for doctors and nurses, and monitors when patients are eligible to participate in studies and trials, encouraging more innovation to develop better care for the future.

MELBOURNE GENOMICS HEALTH ALLIANCE

The Melbourne Genomics Health Alliance is a collaboration of 10 leading healthcare and research organisations across Victoria working to apply global knowledge of genomics to the benefit and care of Victorians.

The Melbourne Genomics Health Alliance is supported by $25 million from the Victorian Government to investigate the benefits of genomic testing by providing around 2,000 genomic

sequencing tests to Victorians over four years. Each partner organisation is contributing $1 million to this work, equating to a $35 million investment.

Melbourne Genomics Health Alliance is also leveraging over $125 million in investment across the country to pilot and implement Australia's national diagnostic and translational genomics framework, to reduce waste, curtail healthcare costs and build a skilled genomic literate workforce.

HEALTH WORKFORCE DATA EDUCATION

The University of Melbourne has established a Clinical Informatics and Digital Health graduate course to train the next generation of people working in health informatics.

CASE STUDY

ELECTRONIC MEDICAL RECORDS AT THE ROYAL CHILDREN'S HOSPITAL

The Royal Children's Hospital was the first paediatric hospital in Australia to replace paper-based medical records with a comprehensive Electronic Medical Record (EMR). The $48 million project went live in April 2016 and less than one year later, the Royal Children's Hospital became the first hospital in Australia – and only the second in the Asia Pacific region – to receive two stage six ratings for both inpatient and outpatients from the international Healthcare Information and Management Systems Society (HIMSS) for its EMR.

EMR was implemented to support safer care and improved experiences for patients, their families and staff. EMR also helps to deliver evidence based care through better use of data and integration between clinical care and research.

In the first full year after the successful implementation of the EMR at the Royal Children's Hospital, improvements included:

- *27 per cent reduction in medication prescribing and administration errors*
- *18.1 per cent increase in same day separations*
- *4 per cent increase in outpatient appointments*
- *33 per cent reduction in outpatient waiting lists*
- *84 per cent reduction in documentation transcript costs*

3

Deliver the best facilities and infrastructure

Located on the CBD doorstep, Melbourne Biomedical Precinct partners and collaborators need to utilise existing inner city spaces well and network effectively with nearby precincts to accommodate more people and facilities.

3. FUTURE DIRECTIONS

3.1. PLANNING THAT SUPPORTS THE PRECINCT

The Victorian Government will continue to deliver Plan Melbourne 2017–2050, a long-term plan to accommodate Melbourne's future growth. Plan Melbourne identifies Parkville as well as the areas around Monash, Deakin and La Trobe universities as clusters with significant innovation opportunity and potential to lead employment, economic and investment growth for the state.

The Victorian Planning Authority will develop a precinct framework plan for Melbourne Biomedical Precinct. This will be a high level land use planning tool to guide and coordinate future planning and investment priorities.

The plan will consider links to adjacent suburbs such as Arden Macaulay — the land between Macaulay Road, Dryburgh Street and the Upfield Rail Corridor. Opportunities to support and complement the space constrained Melbourne Biomedical Precinct will also be explored.

3.2. QUALITY HEALTH AND RESEARCH FACILITIES AND SERVICES

Significant infrastructure investment over the last decade has delivered state-of-the-art health, research and education facilities within the precinct. Long-term, coordinated infrastructure planning and investment will be critical to maintaining contemporary facilities and responding as health and research needs change.

An Institute for Precision Medicine within the precinct would simplify and accelerate analysis and research translation, to directly influence patient treatment. An initial business case will explore opportunities to establish such an entity.

Precinct partners should continue to collaborate with other biomedical precincts across Victoria to ensure complementary use and development of facilities.

3.3. PRECINCT INFRASTRUCTURE GATEWAYS

Haymarket roundabout is an iconic gateway to the city's heart and Melbourne Biomedical Precinct. Any future upgrades should create a sense of arrival and offer strong pedestrian links to the precinct centre.

The new underground Parkville Station will dramatically improve pedestrian safety and precinct transport links. As residents and commuters adjust to the Grattan Street closure during its construction, long-term change can be considered to increase public amenity and promote a campus feel within the precinct.

3.4. USABLE VIBRANT SPACES

To capitalise on the precinct dividend, shared and public spaces need to be considered as the precinct evolves. These spaces encourage more open innovation where ideas are tested publicly, allowing for broader input and facilitating new ways of thinking about problems. This approach will be central to how the presence of entrepreneurs and start-ups develops in Melbourne Biomedical Precinct.

STRONG FOUNDATIONS TO HELP DELIVER THE BEST FACILITIES AND INFRASTRUCTURE

PRIME LOCATION

Melbourne Biomedical Precinct is well established physically and populated by over 30 world-class hospitals, medical research institutes and biomedical organisations. Partly walkable, with a blend of heritage character and cutting edge buildings, its pockets extend from East Melbourne to Royal Park North, Carlton and Parkville.

CAPITAL INVESTMENT

Over the past 15 years, the Victorian Government has made significant investment in facilities to support biomedical research across the state.

Most recently, this investment is reflected in the Metro Tunnel Project that will transform the city and make Melbourne Biomedical Precinct more accessible.

DIRECT INVESTMENT

Over the last decade, Victoria has committed approximately $2.8 billion to research and healthcare facilities within the precinct.

Victoria's biomedical infrastructure extends beyond Melbourne Biomedical Precinct, with successful clusters around Monash, Deakin, La Trobe and Swinburne universities as well as the Alfred Medical Research and Education Precinct.

CASE STUDY

MARS DISCOVERY DISTRICT, TORONTO, CANADA

Established in 2000, the MaRS Discovery District is an innovation hub that co-locates start-up space with university facilities and large companies such as Merck, BDC Venture Capital and Samsung.

The MaRS space is purpose designed to bring together educators, researchers, social scientists, entrepreneurs and business experts to learn from each other and spark new ideas.

Currently, more than 1,000 ventures are being supported, to bring their breakthrough products and services to market by giving them critical connections to capital, talent, customers and systems providers. More than 87 per cent of these ventures attribute a positive role to MaRS in their growth and success.

In 2016, over 6,000 people were employed within the MaRS network. In the eight year period from 2008–2016 over $3.5 billion in capital was raised with $1.8 billion in revenue for the same period. MaRS receives about half its funding from government sources, and around half from fee based services, donations, private sector support and real estate revenue.

4

Develop, attract and retain top talent

The quality of their people is what enables knowledge based industries like medical research and biotechnologies to thrive. The best biomedical precincts around the world aggressively pursue talent to remain competitive, working hard to offer a vibrant lifestyle with rich and collaborative career opportunities.

4. FUTURE DIRECTIONS

4.1. COMPETE FOR TOP TALENT GLOBALLY

Melbourne Biomedical Precinct partners must compete aggressively to win the global competition for top talent. Prioritising recruitment of individuals with a proven track record in commercialisation will support a culture that values the translation of research and achievement in economic terms.

Retaining talent involves improving flexibility and easing impediments to taking and returning from career breaks. Walter and Eliza Hall Institute of Medical Research is working to overcome this challenge by establishing a child care centre for up to 100 children that will open in 2018.

The Victorian Government also has a role to play in attracting investors and supporting the relocation of high calibre professionals through its network of Victorian Government Trade and Investment Offices and its Skilled and Business Migration Program.

4.2. INTERNATIONAL PRECINCT PROMOTION

There is scope to showcase Melbourne as a destination of choice for global talent in biomedical research and medical technologies. This will be supported by a prospectus developed by Melbourne Biomedical Precinct Office for talent and investment attraction to be used by precinct partners, Victorian Government Trade and Investment Offices and international collaborators.

Strong networks and relationships increase the chance of drawing high profile international performers. The Victorian Government will leverage its international networks to strengthen relationships with priority international collaborators including China, Israel and the United States.

Melbourne Biomedical Precinct organisations lead the recruitment, development and retention of high performing researchers, executives and commercialisation specialists.

The Victorian Government is working to ensure Melbourne retains its unrivalled liveability so we can attract entrepreneurs, start-ups, medical technology and pharmaceutical companies to locate in or near the precinct.

Strong foundations to help develop, attract and retain top talent

LIFESTYLE OFFERING

As the world's most liveable city seven years running, Melbourne has a competitive advantage. The city's culture, sport and lifestyle offering plays a key role in attracting and retaining world class talent.

Melbourne Biomedical Precinct employs 49,000 people, who are attracted by its world-leading institutions with cutting edge facilities a short distance from Melbourne CBD.

EDUCATION EXCELLENCE

Over 7,000 biomedical, health and medical students study in the precinct's institutions, among them many talented international students. Whether these students further a career in Melbourne or return home, they contribute to a globally networked precinct.

COLLABORATIVE BY NATURE

Melbourne's research community is over three times more collaborative than Sydney's with 209 intra-city research partnerships in 2015, compared to Sydney's 64 in the same year.

On a global scale, the Victorian Government is active in facilitating collaboration between precinct organisations and its counterparts. This includes:

- The Biomedical Innovation and Commercialisation Exchange between Victoria and Israel to maximise the impact of local research institutes.
- Appointment of a Victorian Business Ambassador to North America to further opportunities for Victorian biomedical firms to attract global investment.

25%

MBP attracts around 25% of Australia's competitive biomedical research funding

3x

Melbourne collaboration rate is 3x more than Sydney

CASE STUDY

DR ROBERT ANDERSON, IMMUSANT

Trained in internal medicine and gastroenterology in the Melbourne Biomedical Precinct, Dr Robert (Bob) Anderson is now the Chief Scientific Officer at ImmusanT, a Boston-based company committed to bringing innovative therapies for coeliac disease to market. Great success has been achieved in trials of Nexvax2, a vaccine developed by Bob and his colleagues during his time as an academic researcher at the Melbourne Biomedical Precinct's Walter and Eliza Hall Institute of Medical Research.

While this is a terrific personal achievement for Bob and a fantastic outcome for coeliacs, Bob had to relocate to the United States to progress his idea to a commercial reality. Victoria lost the opportunity to establish a new Australian biomedical company, retain the associated clinical and economic benefits and most importantly develop a home grown example of commercial success.

This strategic plan aims to stem the loss of people like Bob and encourage them to return to Melbourne, share their experiences and assist others in their entrepreneurial careers.

*GOALS BY 2030 MEASUREMENT METRICS

Research

Field weighted citation impact: Measures how often published research is cited by other researchers in the field.

Discovery

Number of patents that are filed internationally which cite research authored by Melbourne Biomedical Precinct researchers, per 1,000 published articles.

Investment

Private investment in medical technology and pharmaceutical research and investment across the whole state.

Jobs

The number of people employed in the MBP, across all sectors.

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