/ Company Presentation

ARCHER

Understanding Graphene:
The world's thinnest material and its use in biotech
February 2020

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This presentation contains information which was reported in ASX announcements lodged between 1 October 2017 and 10 February 2020 (together the "Announcements"). All material assumptions and technical parameters set out in the Announcements continue to apply and have not materially changed. The Announcements can be viewed online at https://www.archerx.com.au.

Certain statistical and other information included in this presentation is sourced from publicly available third party sources and has not been independently verified.

/ Company Snapshot

Archer Materials Limited
ASX: AXE

/ Board and Executive Management

Executive Chairman
Greg English
LLB, BE (Mining)

Non-Executive Director
Alice McCleary
DUniv, BEc FCA FTIA FAICD

Non-Executive Director
Paul Rix
B.Com FAICD

Chief Executive Officer
Mohammad Choucair
PhD, FRACI FRSN GAICD

Chief Financial Officer & Company Secretary
Damien Connor
CA GAICD AGIA B.Com

/ Capital Structure & Overview

$2.7m
Cash in bank as of 31 Dec 2019

212.4m
Number of ordinary shares on issue

$0.22
Share price (7 Feb 2020)

$46.7m
Market capitalisation (7 Feb 2020)

27%
Of issued shares held by top 20 shareholders

7%
Of issued shares held by Archer's Board and Executive Management

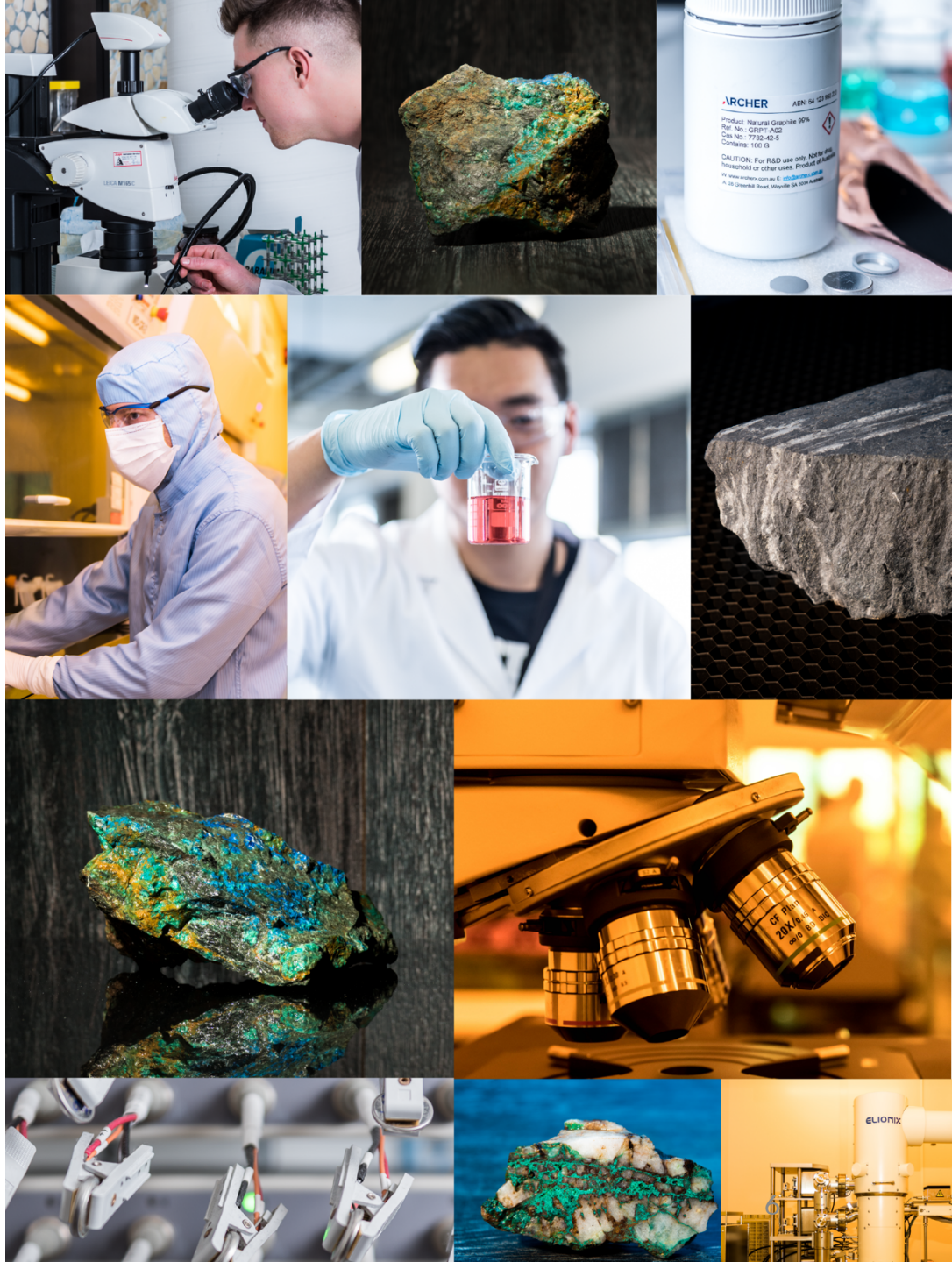
+ No corporate debt (as of 7 Feb 2020).
+ 19.5m unlisted options issued to directors, employees & contractors.

Archer provides shareholders exposure to financial returns from innovative technologies and the materials that underpin them

Our strategy is to build an industry-leading Materials Technology company, that delivers maximum value to our shareholders through the commercialisation of assets at various stages of the materials lifecycle.

Our execution priorities are:

+ Patenting printable graphene biosensors.
+ Commercialising the ^{12}CQ quantum computing chip.
+ Integrating the Campoona graphite project.
+ Monetising our mineral exploration tenements.



Archer affiliate preparing carbon electrodes with materials from Carbon Allotropes' inventory.

The acquisition of Carbon Allotropes enabled Archer to expand its market position

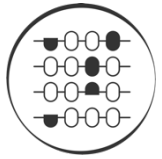
Archer's growth involves contributing to complex global challenges. Archer is uniquely positioning to meet global markets' needs through several key strengths:

+ Strong, globally filed patents protecting credible, internationally validated disruptive technology & IP.
+ World-class in-house expertise, with pioneers in nanotechnology leading Archer's projects.
+ Access to over $300 million of state-of-art R&D infrastructure to build and test technology products.
+ A diverse advanced materials inventory for rapid device prototyping and integration.

/ Significant Developments in 2019-2020

Human Health

+ High quality graphene inks prepared and tested for printed biosensing technologies
+ Provisional patent lodged for graphene-ink biosensing technology
+ Material transfer agreement renewed with German biotech
+ Human antibodies printed on graphene biosensor components
+ First-phase prototype graphene biosensor platform built



Quantum Technology

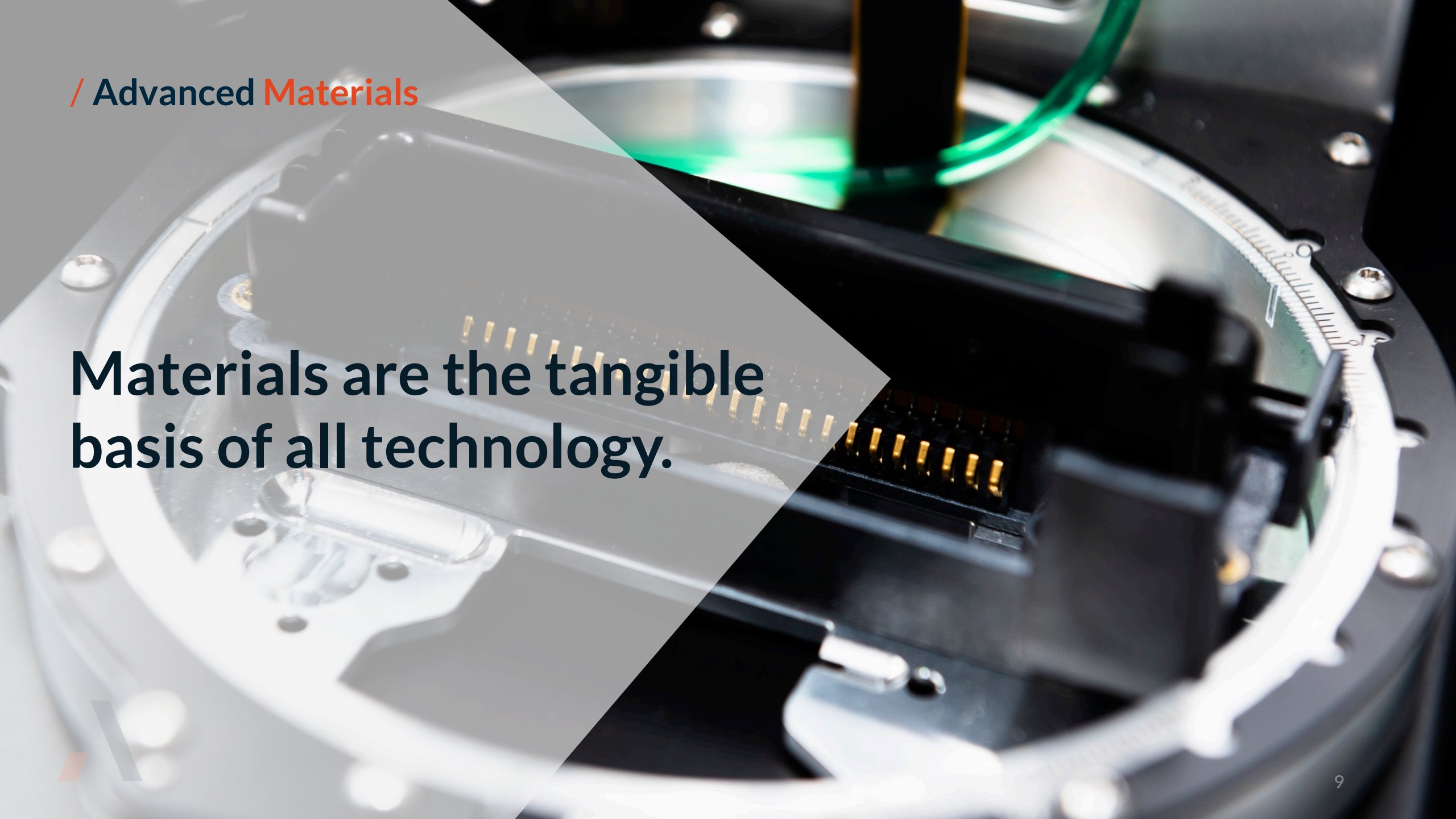
+ Archer obtains exclusive licence to quantum technology IP (QTIP)
+ Pioneering quantum physicist Dr Martin Fuechsle joins Archer
+ Access agreements signed to access chip building foundry and ^{12}CQ commences
+ First components of ^{12}CQ qubit processor chip assembled
+ Second-stage development commences involving quantum measurements

Reliable Energy

+ Full-cell Li-ion batteries produced with Campoona graphite in-line with industry state-of-art requirements
+ Spherical graphite produced from Campoona graphite matching market requirements for Li-ion batteries
+ PEPR submitted for Campoona Graphite Project
+ Li-ion batteries produced using Campoona spherical graphite

/ Advanced Materials

Materials are the tangible basis of all technology.



/ Materials Discovery

Traditional

Design of Experiment
Ideation in the laboratory with systematic processes to test-and-learn approach

Characterisation
Labour intensive structure elucidation & lab-prototype testing for function

Pilot-scale Testing
Closed systems addressing scalability of process uncertainties

High Volume & Efficiency
Top-down manufacturing & IP generation follwed by rapid commoditisation

Next-generation

Well-defined Materials
High-power computer modelling combined with machine learning

Establised End-uses
Virtual synthesis processes & characterisation for hypothetical functionality

Full System Integration
Testing & validation integrated with full materials' lifecycle assessments

High Value & Effectivness
Bottom-up manufacturing & IP generation follwed by delayed commoditisation

/ Graphene Materials

A single carbon layer of the graphite structure, describing its nature by analogy to a polycyclic aromatic hydrocarbon of quasi infinite size[1].

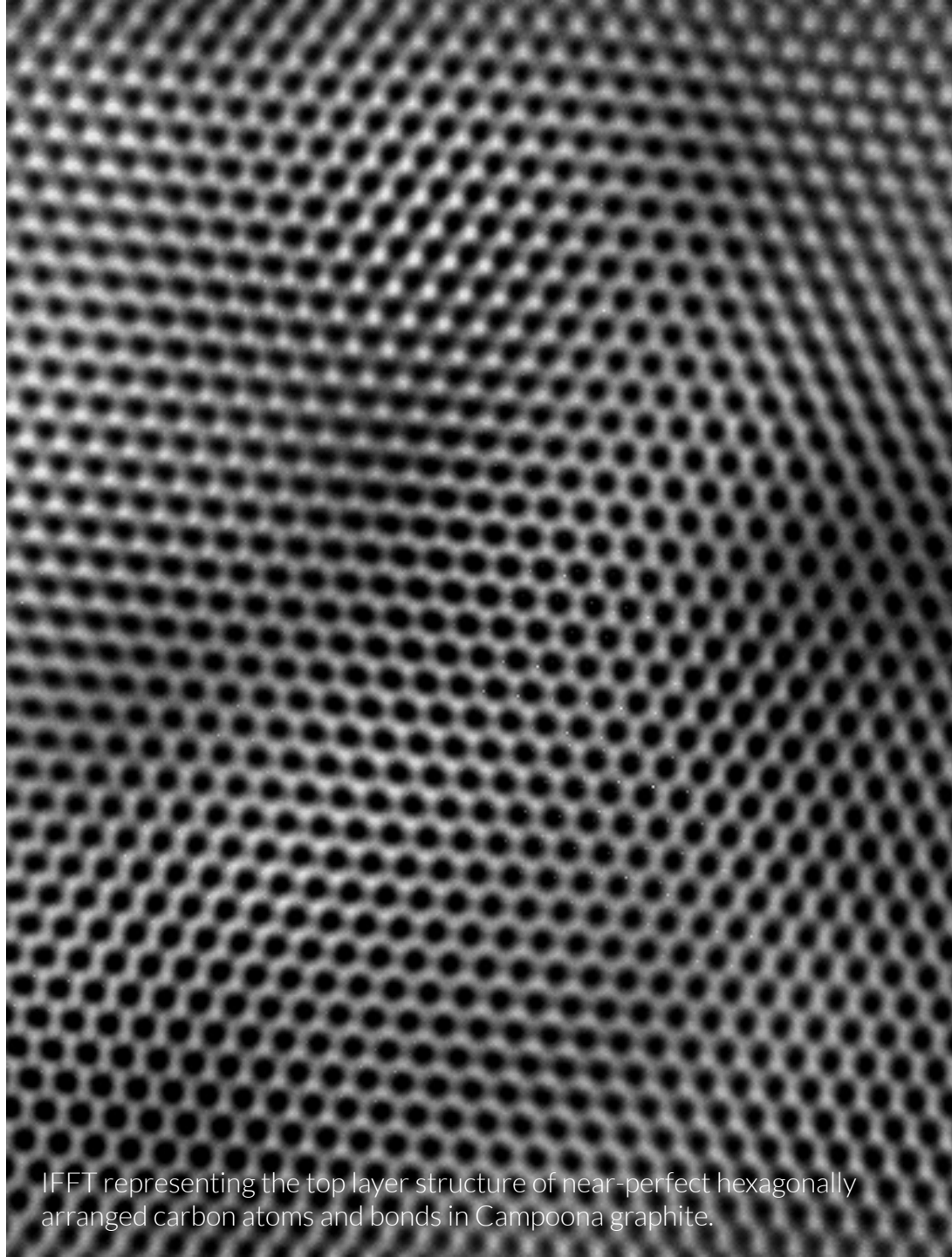
+ Graphene has a combination of exceptional materials' properties that could make it useful *and* valuable[2].

+ Archer can produce graphene from a number of chemical feedstocks, including Campoona graphite and alcohols.

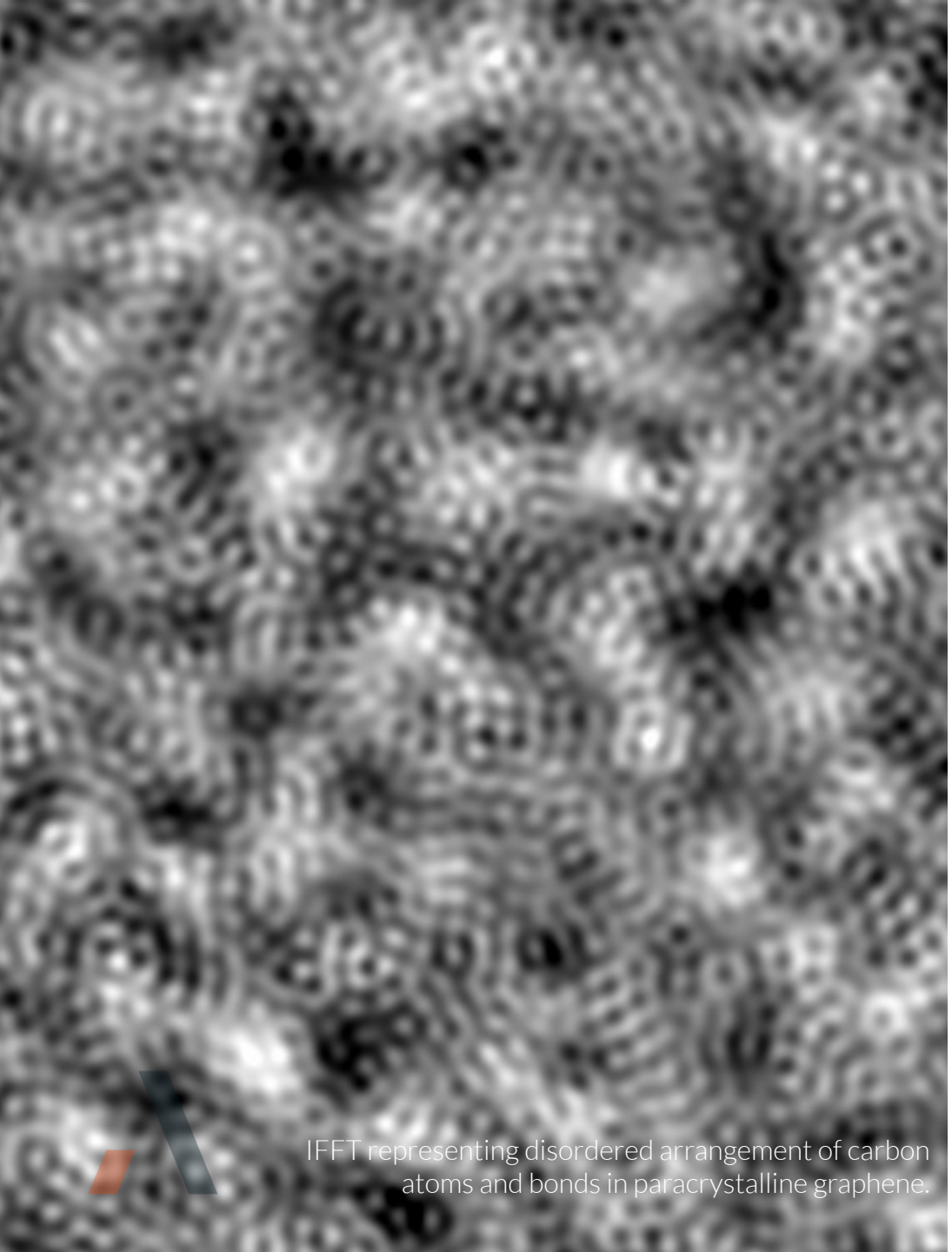
+ During his PhD at UNSW, Archer CEO, Dr Mohammad Choucair, was the first in the world to directly synthesise graphene in bulk-scale quantities; and not use graphite[3].

+ Dr Choucair was awarded the Royal Australian Chemical Institute Cornforth Medal for the most outstanding Chemistry PhD in Australia.

[1] https://goldbook.iupac.org/terms/view/G02683
[2] https://www.nature.com/articles/nnano.2014.225/
[3] https://www.nature.com/articles/nnano.2008.365



IFFT representing the top layer structure of near-perfect hexagonally arranged carbon atoms and bonds in Campoona graphite.



IFFT representing disordered arrangement of carbon atoms and bonds in paracrystalline graphene.

/ Value from the Atom Scale

Archer is developing graphene-based technology by applying unique materials discovery schemes focused on commercially exploiting graphene at the atom-scale for potential high-value end uses, including in biosensors.

+ Graphene can only physically exist if its structure contains chemical or physical defects (structural variations)[4].
+ Structural variations in graphene determine the materials' properties and function, and therefore its end-use[5];
+ Properties of an isolated graphene layer, like strength & conductivity, may not apply in a contiguous bulk-powder[6].
+ The graphene surface is ultrasensitive; molecules only a few atoms from the surface can be accurately detected[7].

[4] https://www.nature.com/articles/nature05545
[5] https://onlinelibrary.wiley.com/doi/abs/10.1002/adfm.201604040
[6] https://www.nature.com/articles/nnano.2008.365
[7] https://onlinelibrary.wiley.com/doi/abs/10.1002/chem.201404309

Printable graphene biosensors

/ Biosensors for *In-vitro* Diagnostics

Biosensors as IVD Devices
Some of the most successful biosensors include tests for pregnancy and blood glucose

IVD Specimens
Taken from the body & used for testing directly (on-device) or in a lab

Patient Wait Times
Biosensors can reduce patient wait times, bypassing traditional IVD infrastructure

Market & Paradigm Shift
Biosensors decentralise IVDs closer to patients, helping improve disease management for individuals

Biosensor Performance
Linked to materials' optical, electrical, magnetic, and/or chemical properties

Graphene Biosensors
Can provide rapid, highly sensitive and low-cost testing for IVDs

Limited Materials
Few materials available to directly read out molecular-level based bioactivity

Biochemically Ultrasensitive
Graphene is electronically active & biocompatible, disrupting non-portable optical IVDs

*More information on Australian regulations related to IVDs: https://www.tga.gov.au/medical-devices-ivds

Archer affiliates preparing materials and chemical precursors at the ARC Graphene Hub.

Successful commercialisation of Archer's biosensor technology could disrupt a global multibillion dollar industry

$27b

Forecast size of biosensor industry in 2022[8]

43.5%

Cash refund of annual R&D spend in Australia for SMEs[9]

$20b

Australian industry spend on R&D 2018[9]

140+

Life sciences companies on the ASX in 2018[9]

[8]Biosensors Market by Application, Global Forecast to 2022. Market and Markets, 2017.
[9]https://www.nature.com/articles/d41586-018-05092-2

Successful development of Archer's printable biosensor could enable rapid & customised multi-disease detection

1 World-first graphene biosensor materials

Archer is using the only reported graphene materials capable of stable and robust selective hierarchal chemistries compatible to the single molecule level[10,11].

2 Simple to integrate functionality & detection

By digitising the manufacture of biosensor componentry we are overcoming key commercial and technological barriers to current printable biosensor development.

3 Best-in-class biosensor device prototyping

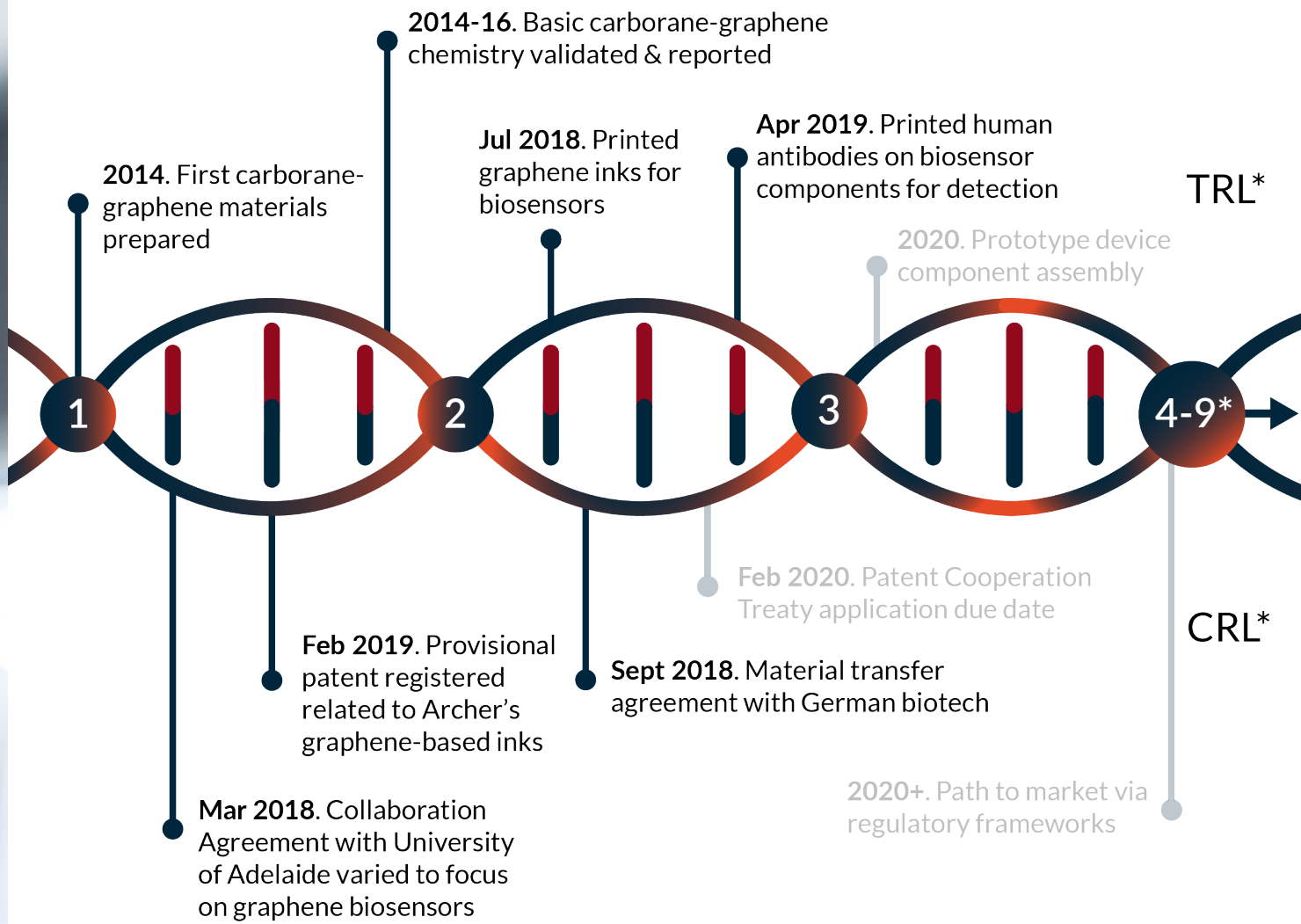
R&D resources advancing Archer's printable biosensor technology are available through collaboration with the ARC Graphene Hub, University of Adelaide.

Archer's graphene-based ink materials.

[10]https://pubs.rsc.org/en/content/articlelanding/2014/cc/c4cc04521a#!divAbstract
[11]https://pubs.rsc.org/en/content/articlelanding/2016/CC/c5cc07611k#!divAbstract

Archer affiliates preparing chemical adducts & precursors to materials' syntheses at UNSW.

/ Commercial Pathway



The commercialisation pathway involves applying the triple-helix business model[+] for biotechnology innovation

Our strategy is to develop printable graphene-based biosensor componentry and sublicense the associated intellectual property rights by:

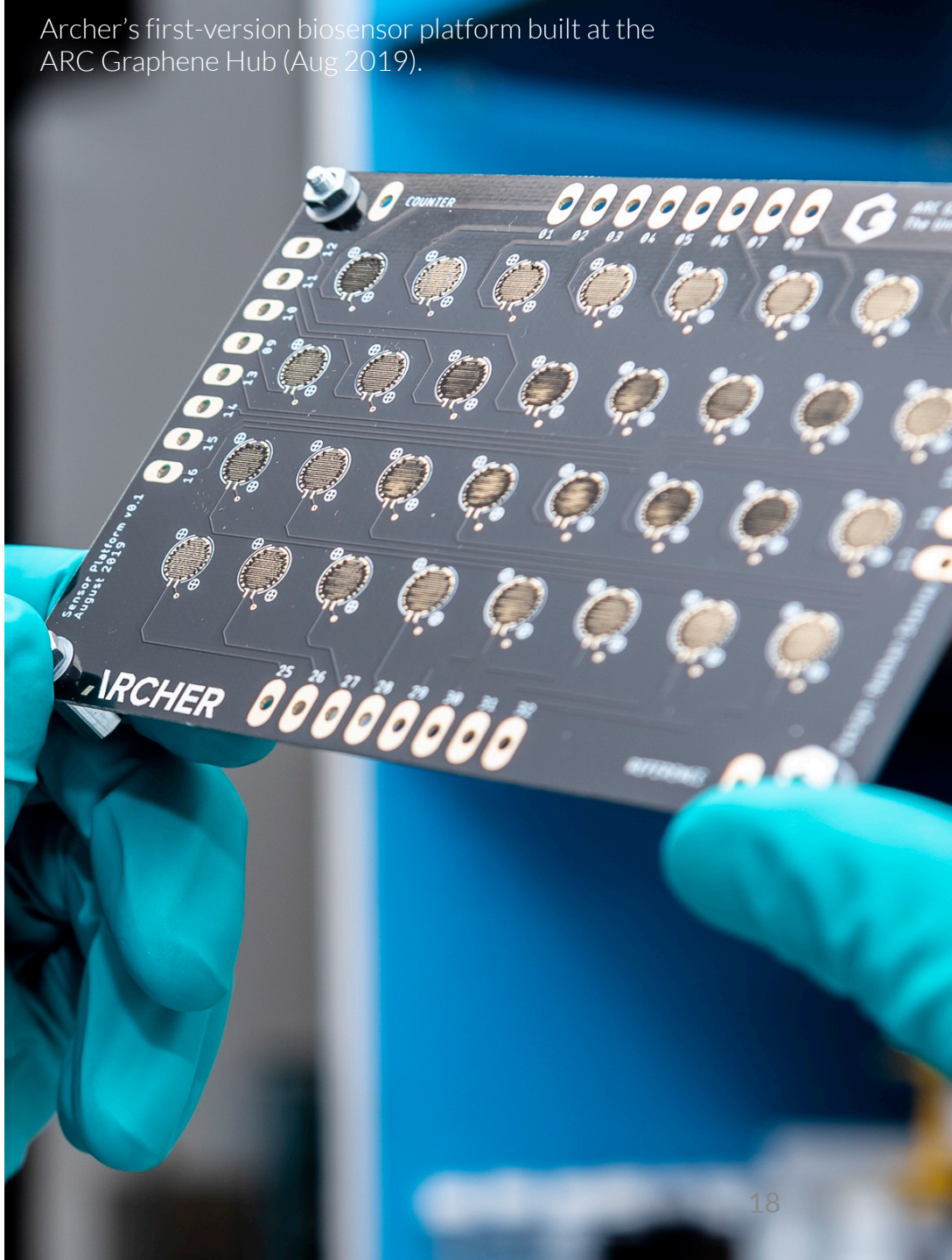
1 Proof-of-concept Validation

Developing commercial prototype *in-vitro* diagnostic biosensing devices by assembling and testing proprietary graphene-based componentry capable of enabling rapid multi-disease detection and device integration.

2 Securing Intellectual Property Requirements

Filing a strong Patent Cooperation Treaty application for prosecution in jurisdictions including Australia, the US and EU while establishing partnerships with highly resourced organisations in the biotechnology industry.

[+]https://triplehelix.stanford.edu/3helix_concept



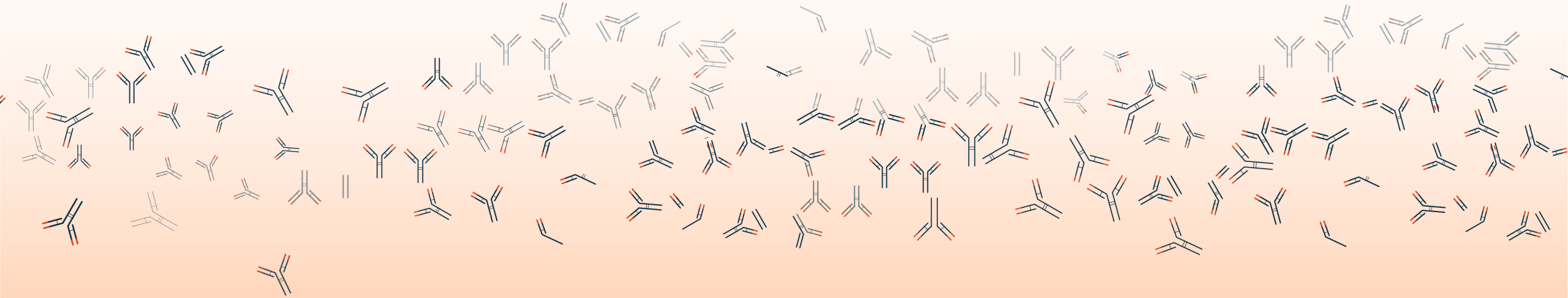
Archer's first-version biosensor platform built at the ARC Graphene Hub (Aug 2019).

/ Graphene Impact on Biotechnology

Materials Biocompatibility
Recognition motifs on graphene in biological media are possible without comprimising function^

Biology Searching Engine
Graphene can simplify the process of targeted DNA & gene detection that currently require DNA amplification*

Desalination Membranes
Molecular-level design approaches to highly-selective and permeable graphene membranes#



Devices for DNA Sequencing
Graphene sequencers have begun to appear which involve DNA passing through nanopores & physisorption**

Tissue Engineering
Graphene has been successfully used to create scaffolds for a range of organs while mimicking in-vivo environments***

Antibodies & Aptamers
Graphene-based biosensors can detect a wide range of targets, including cancer molecules^^

^*Nature Commun.*, 9, 1577 (2018)
**Nature Nanotech.*, 11, 127–136 (2016)
**Nature Biomed. Eng.*, 3, 427–437 (2019) #*npj Clean Water*, 1, 5 (2018)
***Int. J. Nanomedicine*, 14, 5753–5783 (2019)
^^*Sci. Rep.*, 9, 19311 (2019)

/ Strategic Direction

The Path Forward

/ Company News Flow

Over the next 12 months key aspects of our strategy to provide shareholder returns include:

+ **Patenting & developing graphene biosensors**
  Patent Cooperation Treaty application decision point, and development milestones in building proof-of-concept devices.

+ **Accelerating ^{12}CQ toward commercialisation**
  World-first componentry assembly and device testing, and engagement with quantum computing industry partners.

+ **Integrating & advancing the Campoona graphite project**
  Producing high-value downstream graphite materials and identification of project co-development partners.

+ **Monetising our mineral exploration project pipeline**
  The effective, timely, and strategic exploration, sale, and acquisition of value-added mineral exploration tenements.

Instrumentation used by Archer and its Affiliates at the ARC Graphene Hub, University of Adelaide.

The Board of Archer authorised this announcement to be given to ASX.

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LinkedIn: https://au.linkedin.com/company/archerexplorationltd
YouTube: https://bit.ly/2UKBBmG

Sign up to our Newsletter: http://eepurl.com/dKosXI

Appendices

Board and Executive Management (Slide 4)

Greg English *LLB, BE (Mining)*
Executive Chairman

Greg English is the co-founder Archer. He has been Chairman of the board since 2008 and has overseen Archer's transition from a South Australian focussed minerals exploration company to a diverse materials technology company. He has more than 25 years of engineering and legal experience and has held senior roles for Australian and multinational companies. Greg has received recognition for his work as a lawyer in The Best Lawyers® in Australia, 2020 Edition in the area of Commercial Law.

Alice McCleary *DUniv, BEc FCA FTIA FACID*
Non-executive Director

Alice McCleary is a Chartered Accountant. She is Deputy Chair of the Uniting Church of South Australia's Resources Board. She is a former Chairman of ASX Listed Company Twenty Seven Co. Limited (ASX:TSC) and former Director of Adelaide Community Healthcare Alliance Inc. (ACHA), Benefund Ltd and Forestry Corporation of South Australia. Previous leadership roles include Vice-President of the South Australian Chamber of Mines and Energy (SACOME), Deputy Chancellor of the University of South Australia and National President of the Taxation Institute of Australia. Alice's professional interests include financial management and corporate governance.

Paul Rix *B.Com, FACID*
Non-executive Director

Paul Rix was appointed as a Director of the Company on 8 February 2016. Paul Rix is an experienced mining professional with more than 30 years' experience in the marketing of industrial minerals and products. From 2003 – 2013, Paul worked for Queensland Magnesia Pty Ltd (QMAG) as General Manager Marketing where he was responsible for the development and implementation of QMAG's long term marketing strategy, focusing on diversification of magnesia products and markets whilst maintaining high plant utilisation. His magnesia marketing responsibilities stretched across six continents and more than 30 countries.

Appendices

Board and Executive Management (Slide 4)

Mohammad Choucair *PhD, FRACI FRSN GAICD*
Chief Executive Officer

Dr Mohammad Choucair was appointed Chief Executive Officer on 1st December 2017. Dr Choucair has a strong technical background in nanotechnology, and has spent the last decade implementing governance, control and key compliance requirements for the creation and commercial development of innovative technologies with global impact. Dr Choucair served a 2-year mandate on the World Economic Forum Global Council for Advanced Materials and is a Fellow of both The Royal Society of New South Wales and The Royal Australian Chemical Institute. He has a strong record of delivering innovation and has been recognised internationally as a forward thinker.

Damien Connor *CA GAICD AGIA B.Com*
Chief Financial Officer & Company Secretary

Damien Connor was appointed Company Secretary on 1 August 2014. Damien performs the financial/accounting role in the Company as well as the secretarial duties. Damien has been a member of the Institute of Chartered Accountants since 2002 and is a Graduate of the Australian Institute of Company Directors and a Member of the Governance Institute of Australia. Damien has been employed in the resources sector since 2005. He also provides Company Secretary and Chief Financial Officer services to other ASX-listed and unlisted entities.

Appendices

Reference to Technology Readiness Level (“TRL”) and Commercial Readiness Level (“CRL”) on Slide 17.

Commercial Readiness Level		Technology Readiness Level	
1	IP requirements identified	1	Scientific research begins
2	Secured entry to sub-sectors of market	2	Basic principles observed & reported
3	Minimum viable product solution	3	Proof-of-concept validation
4	Customer problems validated	4	Basic technology elements integrated
5	Customer relationships established	5	Validation in relevant environment
6	Revenue model verified	6	Prototype demonstration (controlled)
7	Prototype solution validation	7	System prototype demonstration (operational)
8	Growth model realisation	8	Systems integration at scale
9	Customers acquired	9	System validation