

## Disclaimer

## DISCLAIMER

This presentation has been prepared by Recce Pharmaceuticals Ltd (the "Company"). It does not purport to contain all the information that a prospective investor may require in connection with any
 taxation or investment matters.

 estimates, forecasts or projections set out in this presentation.





 available information and should not be used in isolation as a basis to invest in the Company.

## FUTURE MATTERS

This presentation contains reference to certain intentions, expectations, future plans, strategy and prospects of the Company


 be achieved.

 intended.

## US DISCLOSURE




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## About Recce Pharmaceuticals Ltd



Recce Pharmaceuticals (ASX:RCE) is commercialising a New Class of Synthetic Anti-Infectives to address the global health issue of antibiotic resistant superbugs and emerging viral pathogens.


Listed on ASX 2016 (ASX:RCE)


New Class of Synthetic AntiInfectives that kill emerging viral pathogens as well as Gram + and Gram - bacteria, including their superbug forms - even with repeated use!

## Lead indication for

 treatment of sepsis \#1 most expensive

Patented manufacturing, producing to Phase I \& II volumes.

## Recce Pharmaceuticals Ltd - Capital structure

Major shareholders 30 July 2020

1. G. \& O. Melrose* 25.3\%
2. Vesty Superannuation 4.9\%
3. J. Graham** 3.6\%
4. Acuity Capital Investment 3.1\%
5. JP Morgan Nominees 3.0\%
6. M. Dilizia** 2.2\%

RECCE PHARMACEUTICALS LTD
. ASX - D

ASX:RCE 6 months


Snapshot

| ASX code | RCE |
| :---: | :---: |
| Shares on issue <br> 30 July 2020 | 144.17 million |
| Share price <br> 30 July 2020 | AUD \$1.35 |
| Market Cap (approx.) <br> 30 July 2020 | AUD \$194.6 million |
| Cash and deposits <br> 30 July 2020 <br> Ex - Anticipated R\&D Funds | AUD \$2.63 million |
| Trading range 52 week | AUD 0.20c-\$1.52 |
| Average daily volume 3 months | 582.11K |
| Debt | Nil |

## Board and Management Structure

Dr John Prendergast - Non-Executive Chairman
BSc (Hons), MSc (UNSW), PhD (UNSW), CSS (HU)
US based, current Chairman and Co-founder of Palatin Technologies, Inc.
(NYSE: PTN) and Lead Director of Heat Biologics, Inc. (NASDAQ: HTBX) extensive experience in the international commercialisation of pharmaceutical technologies

## Dr Alan Dunton - Non-Executive Director

BSc (BioChem) Hons, M.D. (NYU)
US based, Director of Palatin Technologies. Over three decades of senior pharmaceutical experience incl. President and MD of Janssen Research Foundation (J\&J Research). Dr Dunton has advanced a number of blockbuster antibiotics through regulatory review and commercialization at fortune 500 companies including J\&J and Roche.

## Michele Dilizia - Executive Director

BSc (Med Sci), Grad Dip Bus (Mkting), BA (Journ), GAICD, MASM
Co-inventor and qualified medical scientist; specialisation in medical microbiology and regulatory affairs

## James Graham - Executive Director <br> BCom (Entrepreneurship), GAICD

Extensive experience in marketing, business development and commercialisation of early stage technologies with global potential

Dr Justin Ward - Executive Director \& Principal Quality Chemist BSC (Chem), PhD (Chem), MRACI, CChem
A quality control expert who has worked with leading pharmaceutical companies, he is bringing Recce's research and development, and manufacturing up to US FDA requirements

Alistair McKeough - Company Secretary (Outsourced - Automic Group) Alistair is a qualified lawyer and Principal of Automic Legal Pty Ltd, Alistair has broad experience as a commercial litigator and Company Secretary to ASX Listed companies

Justin Reynolds - CFO (Outsourced - Pitcher Partners Sydney) Justin is a qualified accountant and Partner of Pitcher Partners Sydney, Justin has broad experience covering all areas of accounting, taxation and assurance. Particularly, Justin's areas of expertise are business services and outsourced accounting

Arthur Kollaras - Principal Engineer \& Head of Manufacturing
BSc Beng (Chem), PhilEng (Enviro), MIEAust, MISPE
Highly qualified in chemical engineering and microbiology, has significant experience
taking a new technology concept to pilot plant and full-scale FDA standards and
production internationally
Dr David Bowers - Chair of Clinical Advisory Committee Leading spinal injury physician at Royal North Shore Hospital. Dr Bowers has a specialist interest in the treatment of complex and life-threatening antibiotic resistant infections, particularly among patients with severe spinal cord injuries.

## RECCE ${ }^{\circledR}$ - Multiple Anti-Infective Applications

Recce's technology enjoys the added opportunity of multiple markets and product categories.


## RECCE ${ }^{\circledR} 529$ - New Antiviral Compound

- RECCE ${ }^{\circledR} 529$ is a new synthetic polymer formulation with indication against viruses
- Compound built on Recce's anti-infective expertise
- RECCE $^{\circledR} 529$ 100\% water soluble at all pH levels in its liquid form
- RECCE ${ }^{\circledR} 529$ to be tested in SARS-CoV-2 study in an ex-vivo respiratory organoid model system
- No proven vaccine or therapeutics currently available for COVID-19
- Recce will continue to expand upon this promising indication in due course
- Product pipeline continues to strengthen and expand in order to find a treatment for 'difficult to treat' viral infections

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## Natural Antibiotics vs Synthetic Antibiotics



Natural Antibiotics


Synthetic Antibiotics
recce.com.au

- Pre-formed natural superbugs
- All Fungi or Bacteria based
- "Penicillin allergy is the most common drug allergy and is reported in up to 15 percent of hospitalized patients" ${ }^{1}$
- Only as good as what's found in nature
- Has always had naturally occurring superbugs, now multiplying out of control!
- NO pre-formed natural superbugs
- Entirely man-made and designed with purpose
- Universal Mechanism of Action - detailed experimentation demonstrates it does not succumb to superbugs.
- Contains only what we want - not reliant on what's found in nature
- Broad Spectrum capability and maintains its activity even with repeated use!


## Sepsis - it's a big problem!

## 48.9 million incident

## cases of sepsis

 recorded worldwide11 million sepsis related deaths recorded ${ }^{2}$

## One in three patients

 who die in hospital have sepsis ${ }^{3}$

- Sepsis is a life-threatening inflammatory response to infection that has spread in the body.
- Kills more people in the US than prostate, breast and HIVIAIDS combined. ${ }^{4}$
- Has been the most expensive condition to treat in the last 8 years - double the average cost per stay across all other conditions. ${ }^{5}$
- Currently no drug therapies specifically for the treatment of sepsis. ${ }^{6}$

4 - BioMed Central
5 - University of Texa
6 - International Medicine Journal RACP
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## RECCE ${ }^{\circledR} 327$ Phase I Human Clinical Trial

Pharmaceuticals

- Human safety and tolerability study to assess I.V infusion of RECCE ${ }^{\circledR} 327$ in 40 healthy subjects as a single ascending dose
- Phase I trial agreement with leading clinical research organization PAREXEL
- First patients expected to be dosed in second half of 2020
- Estimated clinical start-to-completion with data read-outs less than 12 months from

0 ค) now

- First-in-human self-dosing by a respected NSW physician
- Self-dosing treatment showed No Observed Adverse Effect Levels
- Escalation of 1 ml undiluted (neat) RECCE $^{\circledR} 327$ via buccal administration.
- Blood samples taken \& analysed for haematology and clinical biochemistry parameters
$\downarrow$ Results found to be normal
- Further analysis expected to be taken on samples to determine concentration levels of RECCE ${ }^{\circledR} 327$ in the blood


## RECCE ${ }^{\circledR}$ Antibiotics - Curative \& Preventative IV Studies*

Number of mice that survived Sepsis from S. aureus (superbug)


- All ten mice treated with RECCE ${ }^{\circledR}$ antibiotic survived
- Nine mice treated with efficacious dose of Oxacillin (500 $\mathrm{mg} / \mathrm{kg}$ ) survived
- Four mice that had no treatment at all, survived
* Results from an independent laboratory in USA
recce.com.au

Infection in mice from
S. pyogenes


- One group of ten mice were administered a $167 \mathrm{mg} / \mathrm{kg}$ dose of RECCE ${ }^{\circledR} 327$ at 0 hours. Second group received no antibiotic.
- Both groups inoculated with the S. pyogenes burden into the bloodstream.
- Mice results first monitored after 12 hours allowing bacteria to develop and establish an infection.
- Bacteria in the blood were rapidly killed and unable to establish an infection in the kidneys of mice who received RECCE ${ }^{\circledR} 327$.


## Single Dose and Range-Finding Repeat Dosing - Rats




- No Observed Adverse Effect Level (NOAEL) of 24-hour 500mg/kg (10x indicated efficacious dose)
- Phase la (24-hour), Phase lb (24-hour over 7 days)
- A separate single 24-hour intravenous infusion administration of RECCE ${ }^{\circledR} 327$ up to $12,000 \mathrm{mg} / \mathrm{kg}$ over the course of 7 -days was carried out.
- Results of up $12,000 \mathrm{mg} / \mathrm{kg} /$ day was well tolerated from Days 1 to 4 (inclusive); with no mortalities or clinical signs.
- 24-hour dosing up to $4,000 \mathrm{mg} / \mathrm{kg}$ ( 80 x indicated efficacious dose) in Dogs well tolerated.
- RECCE ${ }^{\circledR} 327$ is indicated to be efficacious from as little as $50 \mathrm{mg} / \mathrm{kg}$ and here shows tolerability can be sustained over at least 7 days of continuous daily exposure at doses up to and including $500 \mathrm{mg} / \mathrm{kg}$.



## Single Dose and Range-Finding Repeat Dosing - Dogs

- No Observed Adverse Effect Level (NOAEL) of 24-hour 500mg/kg (10x indicated efficacious dose)
- Phase la (24-hour), Phase lb (24-hour over 7 days)
- A single 24-hour intravenous infusion administration of RECCE ${ }^{\circledR} 327$ up to $4000 \mathrm{mg} / \mathrm{kg}$ and 7 -day continuous intravenous infusion administration of RECCE ${ }^{\circledR} 327$ up to $500 \mathrm{mg} / \mathrm{kg} /$ day were well tolerated; with no mortalities, clinical signs, changes in body weight, coagulation, clinical chemistry or salient macroscopic abnormalities.
- RECCE ${ }^{\circledR} 327$ is indicated to be efficacious from as little as $50 \mathrm{mg} / \mathrm{kg}$
- Therapeutic dose window appears considerably wider than Vancomycin and other antibiotics.



Group 1 - Bladder E. Coli infection + vehicle control
Group 2 - Bladder E. Coli infection + RECCE ${ }^{\circledR} 327$ 50mg/kg
Group 3 - Bladder E. Coli infection + RECCE ${ }^{\circledR} 327500 \mathrm{mg} / \mathrm{kg}$


Group 1 - Kidney E. Coli infection + vehicle control
Group 2 - Kidney E. Coli infection + RECCE ${ }^{\circledR} 327$ 50mg/kg
Group 3 - Kidney E. Coli infection + RECCE ${ }^{\circledR} 327500 \mathrm{mg} / \mathrm{kg}$

- Single 24-hour intravenous infusion
- RECCE ${ }^{\circledR} 327$ showed dose dependent antibacterial effect in the kidney and bladder at $50 \mathrm{mg} / \mathrm{kg}$ and $500 \mathrm{mg} / \mathrm{kg}$ when compared to vehicle control ( $\mathrm{p}<0.050$ )
- Rats treated with RECCE ${ }^{\circledR} 327$ were observed for any adverse clinical signs remained apparently normal throughout the study


## Topical Efficacy - Wound Infection \& Contraction

Superbug Methicillin-Resistant S. aureus (MRSA)


## RECCE ${ }^{\circledR} 435$ Efficacy Against H. pylori

RECCE 435 Oral Rat Study
New RECCE ${ }^{\circledR} 435$ oral showed dose-dependent and significant efficacy against Helicobacter pylori (H. pylori) bacteria

- Bacteria isolated from a patient with a duodenal ulcer compared to control vehicle in independent study model in rats
- Five groups of 10 rats each were observed. Three groups were treated with varying doses of RECCE ${ }^{\circledR} 435$ (250, 500, 1,000 mg/kg)
- Dose-dependent efficacy was seen at all doses with significant reduction in bacterial load.
- High solubility and antibacterial effect supportive of a 'targeted' oral therapy for stomach infection
- Study assessed a combination of two broad spectrum antibiotics being used - Amoxicillin and Clarithromycin.

| Group | Group ID | Rats | Urease test |  | \% Positive for H. pylori [Urease Test] |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Positive | Negative |  |
| 1 | Uninfected control | 10 | 0 | 10 | 0 |
| 2 | Infected control | 10 | 9 | 1 | 90 |
| 3 | AB Combo $135 \mathrm{mg} / \mathrm{kg}$ (Amoxicillin $90 \mathrm{mg} / \mathrm{kg}$ <br> + Clarithromycin $45 \mathrm{mg} / \mathrm{kg}$ ) | 10 | 5 | 5 | 50 |
| 4 | Infected + RECCE ${ }^{\text {e }} 435-250 \mathrm{mg} / \mathrm{kg}$ | 10 | 6 | 4 | 60 |
| 5 | Infected + RECCE ${ }^{\text {® }} 435-500 \mathrm{mg} / \mathrm{kg}$ | 10 | 4 | 6 | 40 |
| 6 | Infected + RECCE ${ }^{\text {e }}$ 435-1000 mg/kg | 10 | 2 | 8 | 20 |

## RECCE ${ }^{\circledR} 435$ Efficacy Against H. pylori

Mean body weights of rats following oral


RECCE $\mathbf{4 3 5} \mathbf{- 5 0 0} \mathbf{~ m g} / \mathrm{kg}$ dosed twice daily (each 12 h ) over 7 days
Vehicle Water - dosed twice daily (each 12 h ) over 7 days

| Mean body weights of rats following oral administration with vehicle and RECCE $^{\ominus} 435$ group |  |  |  | Body weight (g) (Mean $\pm$ SD) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Days | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
| Vehicle Water dosed twice daily (each 12h) over 7 days | $213 \pm 8.09$ | $224.4 \pm 6.73$ | $236.2 \pm 4.82$ | $246 \pm 5.15$ | $253.2 \pm 4.15$ | $262.6 \pm 3.65$ | $268.2 \pm 5.81$ |
| RECCE $^{\oplus} 435$ $500 \mathrm{mg} / \mathrm{kg}$ dosed twice daily (each 12h) over 7 days | $213.4 \pm 4.56$ | $223.4 \pm 9.32$ | $231.6 \pm 7.7$ | $240 \pm 4.74$ | $246.8 \pm 5.89$ | $255.2 \pm 9.65$ | $269.4 \pm 5.77$ |

## SARS-CoV-2 Antiviral Program

- RECCE® 327 compound selected as Priority 1 candidate group for testing in SARS-CoV-2 Antiviral Program.
- The program is run by CSIRO and The Peter Doherty Institute for Infection and Immunology.
- Compounds were chosen by a Science Selection Panel including field experts in the areas of: Virology, Antivirals, Medicinal Chemistry \& Clinical Trials of Antiviral drugs.
- Therapeutic anti-viral treatment focus with added potential benefit against secondary bacterial infections.

Doherty
Institute

## SARS-CoV-2 International Study

- RECCE ${ }^{\circledR} 327$ and RECCE ${ }^{\circledR} 529$ to be tested against SARS-CoV-2 in international study
- Study led by Path BioAnalytics and conducted in a laboratory at a leading academic institution in the U.S.
- Purpose of study:
- Evaluate RECCE ${ }^{®} 327$ and RECCE ${ }^{®} 529$ for prevention and/or mitigation of SARS-CoV-2 infections
- Study will be conducted as an ex-vivo respiratory organoid model system.
- Path BioAnalytics is a precision medicine company dedicated to the advancement of next generation treatments for diseases with high unmet need.
- All intellectual properties are retained by the Company


## Path BioAnalytics



## RECCE ${ }^{\circledR} 327$ Efficacy Against Influenza A

- Study conducted to assess dose-dependent efficacy of RECCE ${ }^{\circledR} 327$ and in vivo anti-viral activity against Influenza A
- Four groups of 12 mice infected with Influenza A
- Dramatic reduction in viral growth rate and load in the lungs of mice treated with RECCE $^{\circledR} 327$ compared to approved antiviral drug treated and vehicle control untreated groups
- As dosage increased the viral count fell below limit of quantitation (BLOQ) on Days 4 and 6 post infection
- Genome of Influenza A virus similar to that of Coronaviruses - both genomes being single-stranded ribonucleic acid molecules
- Company is moving quickly to assess RECCE $^{\circledR} 327$ in
 other major viral infections


## RECCE ${ }^{\circledR} 327$ kills at practical speeds

Rates of kill of standard bacteria

| S. aureus |  | E. coli |  | P. aeruginosa | O-O | S. pyogenes |  | C. difficile |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $20-60$ <br> minutes | O-O | 20-60 <br> minutes | O-O | $3-24$ <br> hours |  | 20-60 <br> minutes | $\mathrm{O}-\mathrm{O}$ | $20-60$ <br> minutes |

Rates of kill of Superbugs
\(\left.$$
\begin{array}{|c|}\hline \text { S. aureus } \\
20-60 \\
\text { minutes }\end{array}
$$\right] \bigcirc\left[\begin{array}{c}E. coli <br>
20-60 <br>

minutes\end{array}\right] \bigcirc-\)| The aeruginosa same kill-rates for <br> $3-24$ <br> hours |
| :---: | :---: |
| The <br> standard bacteria and <br> their superbugs |

## RECCE ${ }^{\circledR} 327$ Does Not Lose Activity!

Number of repetitive uses before displaying loss of antibiotic activity

| Bacteria | Commercial <br> Antibiotic | RECCE $^{\circ}$ <br> Antibiotic |
| :--- | :--- | :--- |
| 80 S. aureus | 8 Repeats |  |
| (a) E. coli | $\mathbf{2}$ Repeats |  |
| Repeats |  |  |
| P. aeruginosa | 6 Repeats |  |

[^0]
## RECCE ${ }^{\circledR} 327$ Mechanism of Action in practice



> Before application of RECCE ${ }^{\circledR} 327$, the E.coli bacteria cells are healthy, smooth and intact

## E.coli Facts ${ }^{1}$

- Part of the Enterobacteriaceae family
- \$1.2bn USD estimated attributable healthcare costs in 2017
- CDC labels this bacteria as a Serious Threat
- $50 \%$ increase in cases since 2012


## RECCE ${ }^{\circledR} 327$ Mechanism of Action in practice



## RECCE ${ }^{\circledR} 327$ Mechanism of Action in practice


E. coli bacteria cells ( $10 \mathrm{e} 6 \mathrm{cfu} / \mathrm{ml}$ ) having their outer membrane weakened - and bursting from treatment with RECCE ${ }^{\circledR} 327$ (1000 ppm)

## Patents and trademarks

Pharmaceuticals

## Recce's patent portfolio includes more than 15 issued patents and patent applications in the world's major markets, including the United States, Europe, Japan, China and Australia.

Patent Family 1 - Antimicrobial
Polymers and Their Compositions

- Family 1 group relates to the Company's unique and highly economical manufacturing process and use of the polymer in treatment of diseases

Patent Family 2 - Copolymer for use in Method of Treatment of a
Parenteral Infection

- Family 2 relates to the method of manufacture, administration and application to treat a broad range of common human infections.

Patent Family 3 - Anti-Virus Agent and Method for Treatment of Viral Infection

- Family 3 relates to a method of treatment of a broad range of viral infections, particularly parenteral viral infection

| Filed | Patent <br> Family 1 <br> Granted | Expiry | Patent <br> Family 2 | Expiry | Patent <br> Family 3 | Expiry | Patent <br> Family 4 | Trademarks <br> registered |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Australia | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | $\checkmark$ |
| USA | $\checkmark$ | 2029 | $\checkmark$ | 2035 | Pending | 2035 | Pending | $\checkmark$ |
| Europe | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | $\checkmark$ |
| Germany | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | - |
| Spain | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | - |
| France | $\checkmark$ | 2029 | $\checkmark$ | 2035 | Pending | 2035 | Pending | - |
| United <br> Kingdom | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | - |
| Italy | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | - |
| Sweden | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | - |
| Japan | $\checkmark$ | 2028 | $\checkmark$ | 2035 | Pending | 2035 | Pending | $\checkmark$ |
| China | $\checkmark$ | 2028 | Pending | 2035 | Pending | 2035 | Pending | $\checkmark$ |

## Manufacturing and Production



Wholly owned, automated manufacturing facility in Sydney's Macquarie Park
( Raw materials plentiful and CHEAP - few \$/KG

- No expensive waste - 99.9\% product yield.
- Automated manufacture process taking approximately $1 \frac{1}{4}$ hours.
- 500 doses per automated manufacture output in less than 1 hour/run
- Currently producing in volumes to support planned Phase I \& II clinical trials.
- Facility built to pharmaceutical specification.
- Packaging and labelling to international 'tamper-proof'


## Investment summary



R327 Qualified Infectious Disease Product (QIDP)

Designation


R327 initial focus on sepsispotentially the first treatment for sepsis


R327 Generating Antibiotics Incentive Now (GAIN) Act approved


Favourable legislative and financial landscape


Proprietary technology as a new class of synthetic anti-infectives


Experienced commercial management and board


R327 addressing the most expensive condition faced by hospitals worldwide


Creating value by meeting key milestones


Early commercialisation potential


Established manufacturing (volumes suitable for Ph I/II)

## Thank you

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[^0]:    ${ }^{1}$ After repetitive use, the commercial antibiotic loses activity; >25 repeats RECCE ${ }^{\circledR} 327$ DOES NOT

