

AGM Presentation
November, 2017

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Forward Looking Statements

This presentation contains forward-looking statements regarding the Company's business and the therapeutic and commercial potential of its technologies and products in development. Any statement describing the Company's goals, expectations, intentions or beliefs is a forward-looking statement and should be considered an at-risk statement. Such statements are subject to certain risks and uncertainties, particularly those risks or uncertainties inherent in the process of developing technology and in the process of discovering, developing and commercializing drugs that can be proven to be safe and effective for use as human therapeutics, and in the endeavor of building a business around such products and services. Actual results could differ materially from those discussed in this presentation. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the Antisense Therapeutics Limited Annual Report for the year ended 30 June 2017, copies of which are available from the Company or at www.antisense.com.au.

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Corporate Snapshot

- ✓ Developing a portfolio of RNA-targeted therapeutics from technology partner Ionis Pharmaceuticals with world-wide exclusive license for all disease applications of licensed compounds
- ✓ Advanced stage pipeline with two compounds that have delivered positive Phase 2 clinical results
- ✓ Acromegaly Program (ATL1103 targeting GHr for endocrine diseases)
  - *Phase 2 trial in Acromegaly patients - primary efficacy endpoint met with significant (p<0.0001) reduction in sIGF-I*
  - *Conducted a successful higher dose study in acromegaly patients to support potential future Phase 3 trials*
  - *Orphan Drug Designation (ODD) obtained in the USA and Europe*
- ✓ Multiple Sclerosis Program (ATL1102 targeting VLA-4 for autoimmune / inflammatory diseases)
  - *Phase 2 trial in patients with Relapsing Remitting-Multiple Sclerosis: primary efficacy end point met with reduction in the cumulative number of new active brain lesions by 54.4% (p=0.01) compared to placebo*
  - *US IND for Phase 2b MS trial of ATL1102*
- ✓ **Duchenne Muscular Dystrophy (DMD) Program - application submitted for Phase II clinical trial of ATL1102 in DMD**
- ✓ Looking to expand product pipeline with addition of complimentary new products

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Acromegaly Program

Acromegaly

- Abnormal enlargement of organs and bones of the face, feet and hands
- Due to a benign tumor of the pituitary gland causing excess Growth Hormone and Insulin-like Growth Factor 1 (sIGF-I) leading to diabetes, hypertension, and cancer (increased mortality rate up to 2.7x normal)
- Affects ~85 per million in the US and Europe (~85,000 adults): Orphan disease = incentives to develop
- Global sales for acromegaly drug treatment ~ $1B/annum

ATL1103

- ATL1103 reduces expression of GHr in the liver & blocks GH action on the liver, which reduces sIGF-I
- Normalising sIGF-I is the treatment goal in acromegaly
- ATL1103 has suppressed sIGF-I in all animal and human studies undertaken to date
- **ATL1103 for first line therapy failures -** potential advantages include lower cost of therapy, improved safety profile, and more convenient dosing and administration

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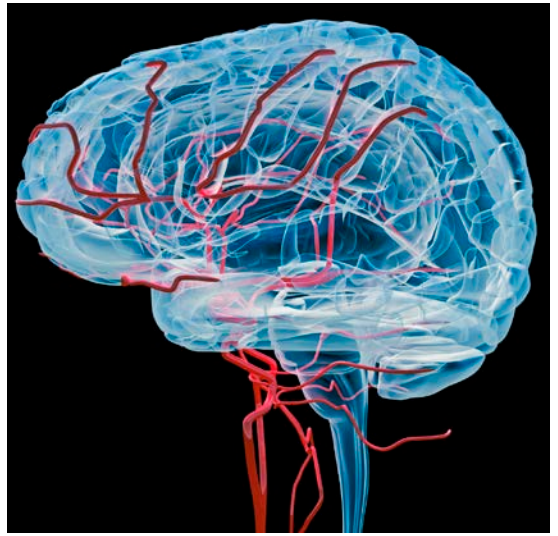
Acromegaly Program Status

- Drug compound manufactured for continued clinical development (or Early Access Program – see below)
- Orphan Drug Designation approvals in the US and Europe
- Generic name approved - **atesidorsen**
- Chronic animal safety study in one species (mouse) completed to support long term clinical development of ATL1103
- Manuscript entitled ‘A parallel group Phase II study of antisense oligonucleotide therapy in acromegaly’ has been submitted for publication in a high-quality peer reviewed scientific journal. Lead author is Dr Peter Trainer, Professor of Endocrinology, The Christie NHS Foundation Trust, Manchester, UK, the Principal Investigator of the Phase II clinical trial of ATL1103 in Acromegaly
- Interactions held with potential development & commercialisation partners - no deal anticipated in near term - Publication of Phase II data may positively impact partnering interest
- Working with myTomorrows https://mytomorrows.com/en/ on the opportunity to provide ATL1103 under an Early Access Program (EAP) in Europe in those countries where ANP can charge for drug (EAPs offer patients access to new non-registered pharmaceuticals where companies can charge for drug supply in certain markets)
- Positioned to move rapidly on in-house IP concepts to enhance the tissue uptake and efficacy of ATL1103 that would allow relatively quick progression to the clinic (i.e. bridging toxicology studies only)

Multiple Sclerosis Program

Multiple Sclerosis (MS)

- MS is a chronic, progressive, and debilitating autoimmune disease that affects central nervous system, brain and spinal cord
- Affects approx 400,000 people in North America and more than 2.5 million worldwide. Global sales for MS drugs in 2016 were over US$20 Billion



ATL1102

- ATL1102 is an antisense inhibitor of VLA-4 protein, a clinically validated target in MS
- Successful Phase II trial completed in patients with Relapsing Remitting-MS
- Trial results published in Journal of Neurology
- US and EU patent registrations extending patent protection to 2029 in RR-MS and progressive forms of MS (extendible up a further 5 years)

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MS Program Status

- Based on a positive response from FDA on a Pre-IND assessment for a Phase 2b trial at a dose of 100mg and 200mg per week in both RR-MS and SP-MS, ANP submitted a US IND application for a 6 month, 195 patient Phase 2b human trial in relapsing MS (relapsing remitting and relapsing secondary progressive MS). FDA approved the study to move forward at a dose of 25mg/week for 6 months (partial-hold)
- Restriction on higher doses relates to histological (vascular) findings in the 6 month monkey toxicology studies which ANP presented (both in the Pre-IND and IND applications) as a monkey specific adverse event based on our data (including Phase IIa clinical data) and supportive scientific literature, however FDA is now requiring further assurance that patients won't be at undue risk. ANP have requested a meeting to clarify the conditions that would allow patients to receive higher doses
- ANP have been investigating non-dilutive funding via an NIH grant to undertake the Phase 2b trial - grant application submission is pending outcome of FDA deliberations on higher dosing plans
- Application submitted to US MS Society for grant funding for a 16 patient study in R-MS looking at ATL1102's effects on MS lesions and 'Blackhole" formation as presented at ECTRIM 2017 conference - news on the grant expected early 2018
- ANP in discussions with MS experts on the opportunity of using ATL1102 in a new application in MS as a short term (1 month) dosing regimen, that would circumvent any dosing restriction for longer term studies. Next step would be a PoC study in MS patients



Duchenne Muscular Dystrophy Program

William (Bill) Goolsbee

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Duchenne Muscular Dystrophy Program

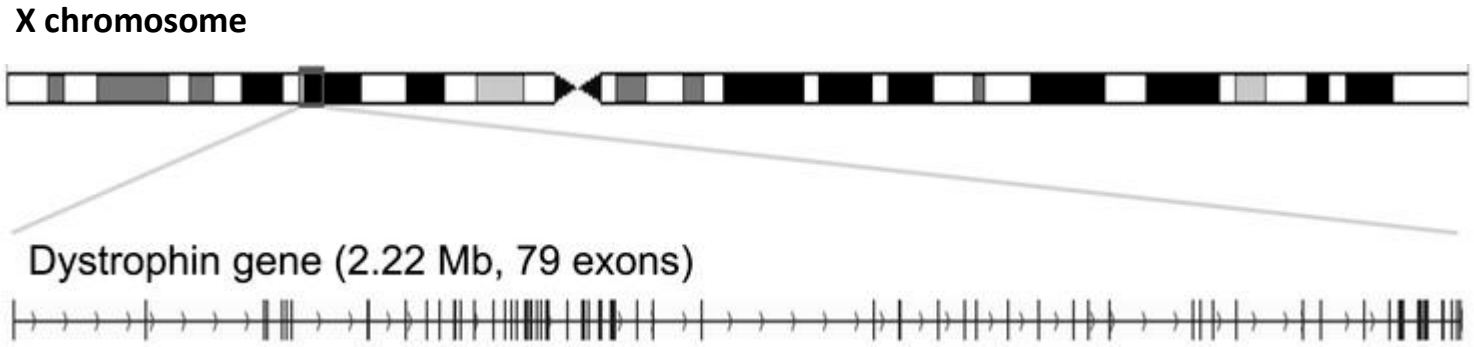
Video - Living with Muscular Dystrophy

http://www.theage.com.au/video/video-news/video-national-news/living-with-muscular-dystrophy-20171017-4m6hl.html

- Duchenne Muscular Dystrophy (DMD) is a genetic muscular disease caused by loss of dystrophin, with progressive muscle wasting and associated muscle injury leading to inflammation and fibrosis
- DMD is X-linked and affects boys with an incidence of ~1 in 3,500 and prevalence of ~44,000 in US & EU
- Corticosteroids are used to treat the muscle inflammation in DMD but have insufficient efficacy and significant side effects
- Dystrophin restoration treatments have recently been approved
  - *Eteplirsen (Sarepta Therapeutics) for the 13% of DMD children amenable to Exon 51 skipping*
  - *Ataluren to read through stop codon mutations in the dystrophin gene*
- Improved anti-inflammatory therapies with dystrophin restoration treatment strategies are needed to reduce immune-mediated pathology so as to ameliorate DMD severity and delay disease progression
- DMD patients with higher levels of CD49d (α chain of VLA-4) expression on circulating T cells have both more severe and rapid progression of disease
  - *VLA-4 role in immune cell transmigration, maturation, survival, activation & extracellular matrix adhesion*
- ATL1102 is a highly active immunomodulatory antisense drug to human CD49d RNA which has completed a successful Phase IIa trial in Multiple Sclerosis (MS) patients
  - *90% reduction in MS brain lesions vs placebo after only 8 weeks of dosing: generally well tolerated*
  - *Reduced CD49d on T and B cells, and reduced T and B cell numbers by ~25 and 50% respectively in blood of MS patients*

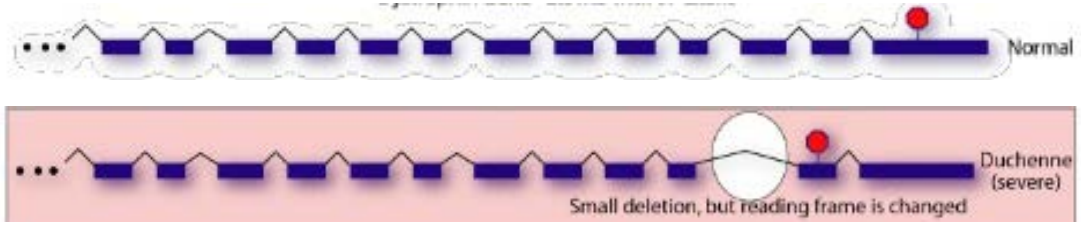
DMD – dystrophin gene

- DMD is a genetic muscular disease caused by the loss of muscle dystrophin, with progressive muscle wasting and associated inflammatory immune mediated damage to the muscles
- The dystrophin gene (NCBI ID:1756) is the largest of the ~20,000 genes that encode proteins in the human genome
- The dystrophin gene sits on the X chromosome, comprising 1.5% of the X chromosome and provides instructions for making the dystrophin protein within muscle cells
- The human dystrophin gene has 79 exons (coding regions) and introns (non coding regions) of variable sizes and is over 2 million base (Mb) pairs long.
- The normal dystrophin gene is copied to RNA, the introns are spliced out, the exon coding regions joined together, so that the exons can be read to make normal dystrophin protein
- Dystrophin has various functions such as to anchor cell components resulting in normal muscle fibres



DMD - dystrophin gene mutations

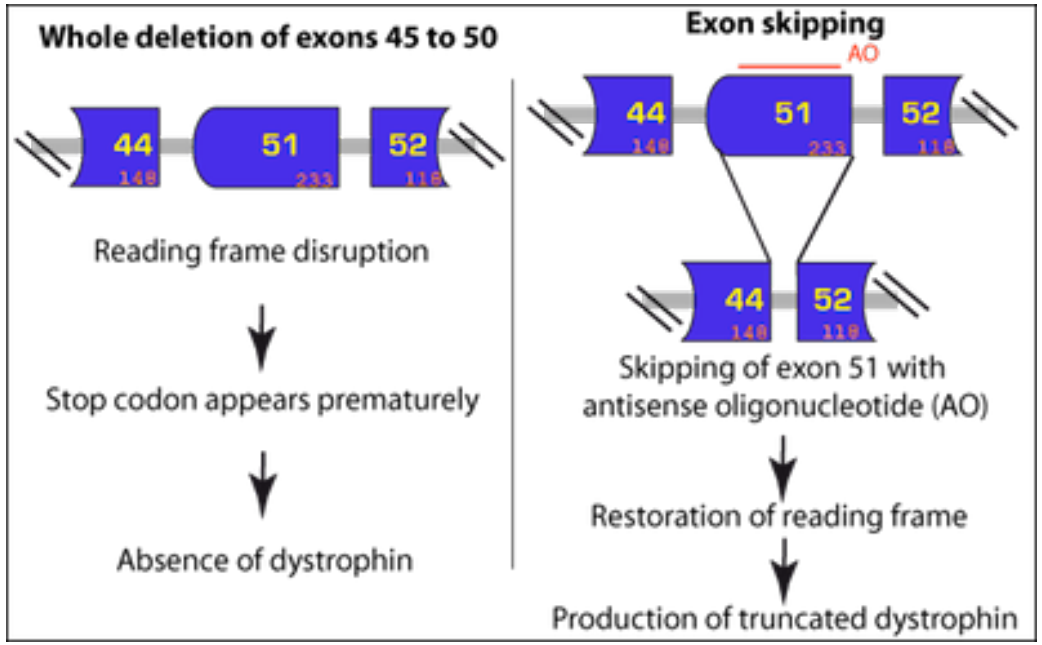
- As the dystrophin gene is the largest gene it is at more risk of mutations
- In DMD the dystrophin gene has mutations in one or more exons or introns so that the exons are not joined correctly and unable to be read, or an exon has a point mutation and is unable to be read, such that dystrophin protein is not produced at all or only abnormal forms are made
- Dystrophin gene mutations are 60% large insertions or deletions and 40% small duplications or rearrangements and point mutations
- Dystrophin gene mutations often occur in exons 40-54 with instructions lost for making dystrophin



- In DMD patients, the most common gene mutation, occurring in 13% of DMD patients, is to Exon 51, where there is a stop codon, in an area that can no longer be read, interfering with instructions to make dystrophin protein

DMD - dystrophin restoration

- Dystrophin restoration treatments have recently been approved in the US and Europe
- Eteplirsen is an antisense oligonucleotide that allows the skipping of reading of the Exon 51 mutations, allowing dystrophin production in the 13% of DMD children with this mutation
- Ataluren is used to read through stop codon mutations in the dystrophin gene



Value Creation Potential

- DMD market is growing at over 160% per annum - one of the fastest pharmaceutical category growth rates globally
- Market for therapeutic treatments for DMD is forecast to be US$1Billion by 2019 driven by the FDA regulatory approval in September 2016 of Exondys 51 (eteplirsen) an **oliogonucleotide drug** for DMD by Sarepta Therapeutics Inc.
  - *Prior to the approval of Exondys 51, Sarepta had a market capitalisation of ~USD$60m (July 2012)*
  - *Following FDA approval of Exondys 51 in September 2016 (based on data from a trial in 12 DMD patients), Sarepta's market capitalisation peaked at US$3.3Billion, representing a 55x increase in value in just over 4 years (current m/c US$3.6Billion)*
  - *Mr William Goolsbee, ex Chairman of Sarepta, is a non-executive director of ANP*
  - *Exondys 51 inventor, Professor Steve Wilton (Murdoch University, Perth) is a member of the ANP scientific advisory board*
- Exondys 51 is the first FDA approved treatment for DMD however is useful in only 13% of boys with exon 51 mutation
- Cost per patient of Exondys 51 is US$300,000/year
- Sarepta – 2017 annual revenue guidance for Exondys 51 is US$150 million

All DMD patients experience inflammation and so present as a potential market for ATL1102 treatment

DMD Program Status

- ATL1102's extensive pre-clinical and clinical experience to support clinical development in DMD patients
- GMP manufacturing of ATL1102 drug substance (DS) is complete and DS has been formulated into drug product for use in clinical trials
- An international group of experts in myology, paediatric immunology and DMD treatment have been assembled to support clinical development efforts
- Company plans to conduct a Phase II trial in DMD patients at the Royal Childrens Hospital, Melbourne
- Trial application submitted for a study in wheel chair bound boys with DMD to assess the drugs effects on the inflammation associated with DMD
- Trial costs eligible for R&D tax incentive refund

Corporate

- Introduced a new clinical stage DMD program into the development pipeline
- Successfully completed sale of less than marketable parcels reducing associated administration costs
- 30 September’17 Appendix 4C - $1.12M cash
- R&D Tax incentive received November’17 - $400K
- ANP looking to raise capital for conduct of DMD Phase II clinical trial
- Capital raising to be initiated upon RCH Ethics Committee approval of the DMD trial
- Actively seeking new development project(s) that would fit with our expertise in autoimmune/inflammatory disease

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