

Actinogen Ltd (ASX: ACW)

A Diversified Biotechnology Company



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Capital Structure

Ord Shares on Issue 201.1M

Options (\$0.02 exercise, 50M 30/11/18)

Options (\$0.4 exercise, 9.1M 30/09/15)

Share Price (14/3/14) \$0.03

Market Cap \$6.03M

Cash \$1.353M

Enterprise Value \$4.68M

Top 20 Shareholders 71%







Experienced Management and Board

Dr Brendan de Kauwe, Executive Director

• Dr de Kauwe studied a Bachelor of Science and Bachelor of Dental Surgery at the University of Western Australia, and also holds a Graduate Diploma in Applied Finance (Corporate Finance). Dr de Kauwe's extensive science and biomedical background with more than 10 years experience in the health sector, coupled with his finance backing, gives him an integral understanding in the evaluation of projects over a diverse range of sectors. Dr de Kauwe is currently a Director of ASX listed Virax Holdings Limited (ASX Code "VHL").

Mr Daniel Parasiliti, Non-Executive Director

Mr Parasiliti has many years experience in Injury Management, Industrial Health as a Private Practice and Independent Physiotherapist Practitioner. He has extensive knowledge in Physiotherapy and Allied Health Consultancy, Policy, business and patient management. Daniel is currently completing his Post Graduate Juris Doctorate of Law at Murdoch University, where he has a focus on property, contract, mediation, and corporation law.

Dr Anton Uvarov, Non-Executive Director

• Dr Uvarov has significant experience as an equity analyst in healthcare sector, both domestically and internationally. Prior to moving to Australia he was with Citigroup Global Markets where he spent two years as a member of New York based biotechnology team. Dr Uvarov holds a PhD degree in Biochemistry and Medical Genetics from the University of Manitoba, Canada and an MBA degree from the University of Calgary, Canada. Dr Uvarov is currently a Director of ASX listed Sun Biomedical Limited (ASX Code "SBN").





2013 - 2014 Highlights

1. Actinogen Signed an Agreement with Curtin University to Conduct Further Research in Cancer Stem Cells Project

2. Actinogen Recommenced Trials in Antibiotic Project

3. Laboratory Moved to State Agricultural Biotechnology Centre at Murdoch University 4. Established New Collaboration Agreement with Leaf Energy (ASX: LER) on Bioethanol Project

5. New Management and Board of Directors

6. Completed Consolidation and Capital Raising





Ongoing Partnerships

Pioneering research work to identify new agents targeting Cancer Stem Cells using methods and techniques established at Curtin University laboratories



Ongoing research activities by Actinogen's scientists in the areas of cancer stem cells antibiotics, and bioethanol production at SABC facilities



Actinogen has a collaborative and royalty agreement with ASX listed company Leaf Energy (ASX:LER) to identify strains of actinomycetes capable of producing cellulase(s), an enzymes important in the production of second generation bioethanols







Research Programs





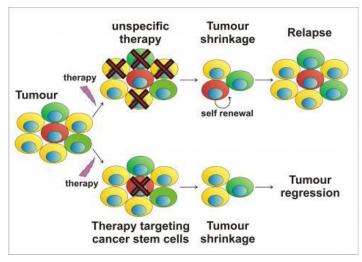


Cancer Stem Cells Program

The program is focused on <u>discovering and</u> <u>developing drugs to treat</u> brain <u>cancer</u> as well as having the potential to address other oncological diseases, <u>through the targeted killing of cancer stem cells</u> (CSCs).

What Are Cancer Stem Cells?

- Cancer stem cells have been reported in many human tumours and are classified as a highly tumorigenic subpopulation that drives tumour formation, proliferation and metastasis. CSCs differ from normal stem cells in their inherent resistance mechanisms against radiation and chemotherapyinduced cancer cell death, enabling them to survive and initiate tumour recurrence.
- If a cancer treatment destroys the bulk of a tumour but leaves behind cancer stem cells, then those cancer stem cells can continue to self-renew allowing the tumour to regrow.
- No drugs specifically targeting CSCs has been developed to date. However, recent research in brain tumours has identified a CD133+ cell population as a cancer stem cell population, giving the way to some targeted therapeutic approaches.



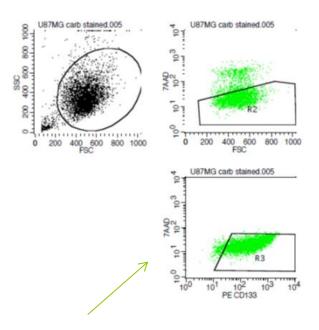
Source: EuroStemCell



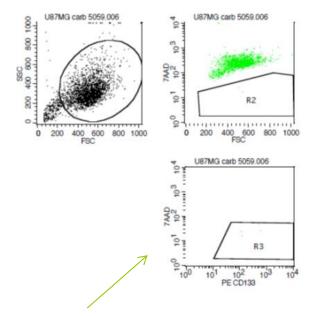


Cancer Stem Cells Program

first results...



 Treatment with carboplatin enriched CD133+ population (bottom plot, green population in R3 area)



- Addition of isolate 5059 to carboplatin kills most of the CD133+ cells (bottom plot, green population in R3 area)
- Next step: Actinogen and Curtin University will examine the effect of actinomycete isolates on cell viability in four different GBM (glioblastoma multiforme, a type of brain tumour) cell lines (U138, U87, A172 and LN18) using additional new techniques and assays.



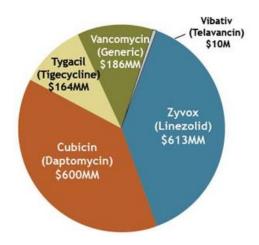


Antibiotics Program

Currently Three Areas of Interest

- A: MRSA: antibiotic resistant golden Staphylococci
- B: Anti Clostridium difficile
- C: Anti Candida agents

Large market opportunity in treating bacterial infections resistant to common antibiotics (see diagram)



Source: Trius Therapeutics

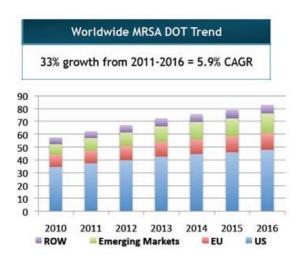




Antibiotics Program

(A) methicillin-resistant Staphylococcus aureus (MRSA)

• Actinogen currently has 19 actinomycetes that are producing antibiotic molecules that are different from all antibiotics screened for via Actinogen's internal de-replication libraries. These active molecules are then isolated and prepared for testing against larger libraries. Molecules that are not excluded will go for structural analysis. Any new agents that are identified will then be analysed for potential commercialisation.



Source: Trius Therapeutics

The treatment of MRSA is rapidly growing market. Despite the presence of generic vancomycin, branded sales of Zyvox, Cubicin, and Tygacil grew by 20% CAGR. The market is shifting towards more effective drugs, with price becoming less of a determining factor (see diagram).





Antibiotics Program

(B) Clostridium Difficile

- This is an anaerobic bacterium that is relatively new in the collective known as "emerging" pathogens. This bacteria lives in the gastrointestinal tract. Current antibiotics used in its treatment also kill normal gut flora leading to gastrointestinal and immunological problems New antibiotics and targeted treatment modalities are needed.
- Actinogen, via bench trials, has identified an actinomycete which kills the Clostridium whilst showing no effect on the normal gut flora. These results are being confirmed and the active molecule(s) will be isolated for structural analysis.

(C) Anti Candida antibiotic

- Candida infections are commonly seen in immune depressed individuals, and whom can also be infected by multiple species. Susceptible individuals include those following organ transplants, AIDS, immunosuppression and the elderly. The candida infection known as 'Thrush' is a condition of the oral and genital mucosa and is relatively common in the general population affecting both adults and children.
- Açtinogen has identified an actinomycete capable of producing an anti-Candida 'antibiotic'. Current testing suggests that the molecule identified is 'new' and future steps will involve purification for the determination of its structure.



Bioethanol Program

Project Overview

- ACW signed a coloration agreement with Leaf Energy Ltd on 23 December 2013 to fully fund further trials in ACW's bioethanol project
- ACW has identified Actinomycetes strains that produce Cellulases and Lignases as a byproduct. These Enzymes are an essential component to the Bioethanol production process
- The traditional method of producing cellulases is very costly and requires significant capital for infrastructure, requiring an anaerobic and high temperature and pressure environment
- ACW's can produce cellulases in an aerobic environment at low temperature and pressure and at significantly lower costs
- ACWs enzyme production method is complimentary to LER's Glycerol Pretreatment Process which uses cheap, recyclable glycerol at low temperature and pressure, in a simple and highly effective process

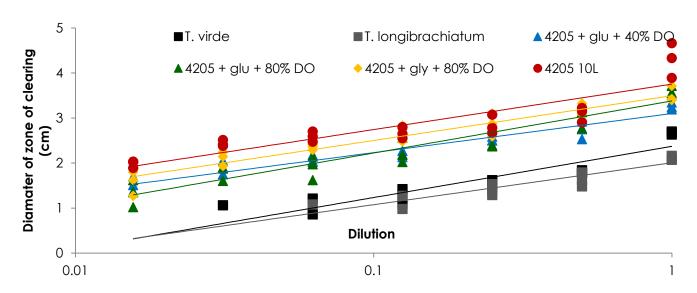




Bioethanol Program

Initial Results are Very Positive

- Commercial cellulases were titrated against an actinomyceteACN4205; 4205 showed better activity
- Actinogen's results were confirmed and cultural conditions optimised using larger fermentation vessels up to 10 litres in research partnership with CSIRO.



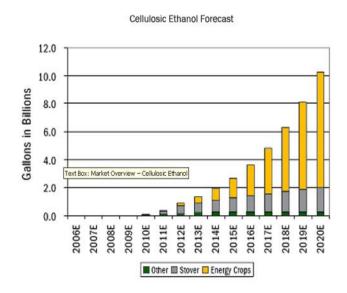




Bioethanol Program

Large Market Opportunity

- LER plans to licence the discovered IP from ACW for the exclusive use in its innovative and patent protected Glycerol Pretreatment Process for the production of biofuels
- ACW will receive a royalty payment on net profits from LER on the exploitation of its technology and biofuel production processes and valuable by-products
- LER Glycerol Pretreatment process requires a fracture of the costs and infrastructure to current worldwide methods and processing facilities
- Highly scalable business model using licensing into multiple territories and markets
- Excellent environmental credentials with large carbon savings



Source: Citigroup





Other Program

Actinogen is Looking for Partnership Opportunities

- Shikimic Acid Project
- Salt Tolerance Project
- Plant Growth Hormone Project
- Biofumigation Project





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