

Delaware Corporation founded in March, 2014

R&D in Algal biomass/biofuel & Water management

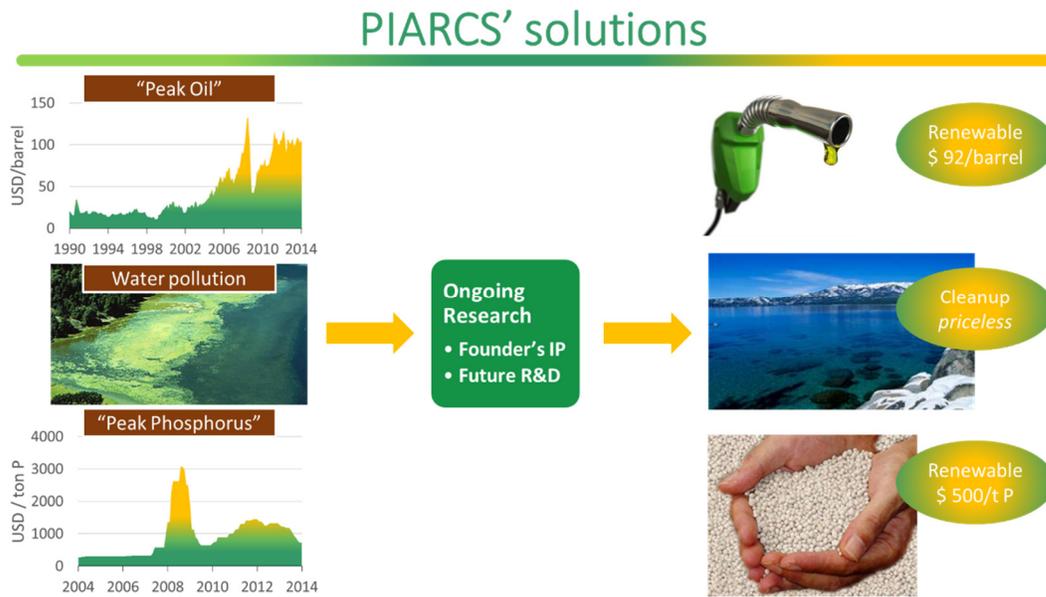
Investment sought: seed funding of \$500,000 for 6-9 months R&D

Year 1 operation: delivery of all critical R&D milestones (Boulder, CO)

Equity funding campaign: <https://www.returnonchange.com/piarcspsc>

Third party due-diligence by: Crowdcheck Reports (thomasofficer@crowdcheck.com)

**PIARCS primarily conducts R&D and generates revenue through broadly licensing its IP.**



Leveraging the founder's proprietary IP, PIARCS' R&D in two unrelated areas aims to achieve the following revolutionary solutions:

- **Novel algal bioreactor designs. Targets algae-based biodiesel production prices under \$92/barrel and an inexpensive biomass feedstock.** PIARCS' Chemical Engineering approach aims to enable high algal efficiency, as opposed to current designs which select for high speed. The resulting biomass production model allows for the continuous production of lipids (biofuel) as well as nutrients-free effluents.
- **Novel bacterial phosphorus sequestration method. Affords complete removal of phosphate from wastewater and a source of renewable phosphorus fertilizer.** The dried biomass phosphorus (P) content (9-17%) compares with the 11-16% found in rock-phosphates, which currently provide a primary yet limited global fertilizer resource. The final dissolved inorganic phosphate levels ( $< 30 \mu\text{g P/L}$ ) meet upcoming EPA standards, which are driving costly upgrades in wastewater treatment plants nationwide.
- **Process integration of these technologies affords wastewater cleanup.**



## Algal biomass/biofuel: PIARCS' edge

- **Limited competition**  
The 2005-2008 Algal Biomass hype has largely failed to deliver scalable solutions to supply transportation fuel.
- **Mature IP**  
**PCT application submitted Oct. 14<sup>th</sup> 2014 (Marsh Fischman Breyfogle LLP)**, based on founder's independent work and three peer-reviewed publications.
- **Unimpeded IP**  
Distinct approaches to algal lipid production and biomass productivity maximization.

## Phosphorus management: PIARCS' edge

- **Limited competition**  
Current wastewater upgrade plans aim to implement the competing Ostara Pearl (2012) and Siemens Water Tech. CoMag™ (2013) systems to meet upcoming EPA phosphorus standards. In addition to higher performance, PIARCS' technology is on the order of 1/10<sup>th</sup> the cost to implement.
- **Mature IP**  
**Provisional Patent application filed April 7<sup>th</sup> 2014 (Klarquist Sparkman, LLP)**, based on founder's independent and unpublished work.
- **Unimpeded IP**  
Patented biological sequestration methods use unrelated approaches.

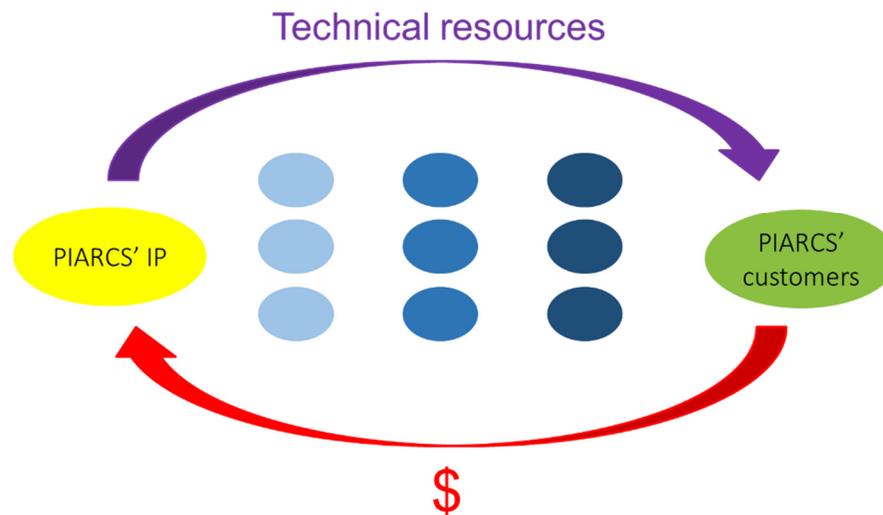
## US/Europe: example markets

	PIARCS License Fee	Market (\$M/y)	Revenue 2024 †
 <b>Biodiesel</b>	\$0.05 / Gallon	US 11,000 Europe 6,100	<b>\$64M (0.4%)</b>
 <b>Wastewater Treatment</b>	\$3 / person / year	US 1,000 Europe 2,400	<b>\$319M (9%)</b>
 <b>P Supply</b>	\$50 / ton P	US 100 Europe 72	<b>\$16M (9%)</b>

† (% market share)



## A scalable expansion strategy



As a Public Benefit Corporation, PIARCS aims to catalyze the advent of a sustainable commodity industry:

- Low-cost licensing to end-users only (algal biomass producers and wastewater treatment plants),
- Continuous development of technical resources for licensees at no additional cost,
- Strategic partnerships with manufacturers and CleanTech companies,
- Sponsoring a wide array of Public Benefit projects (education, energy efficiency, conservation and environmental cleanup).

## Meeting your investment criteria

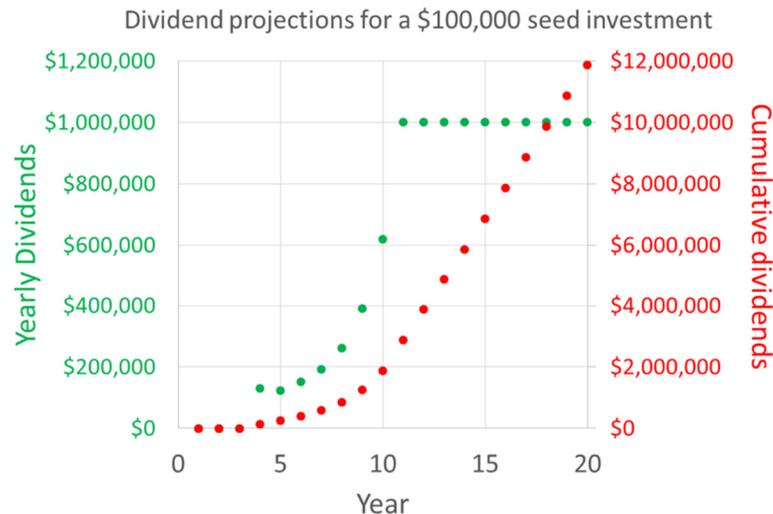
- **Capital efficiency:** the proposed lab structure to validate the far-reaching implications of PIARCS' IP is inherently efficient, since it only requires a small well-led R&D team and minimal funding: \$0.2M lab setup cost, \$0.3M operating cost for Year 1, and a \$2M operating cost for Year 2-3 (pilot scale validations), after which point PIARCS should ensure sustained revenues from licensing and partnerships.
- **Risk mitigation:** the dual R&D focus provides risk mitigation for the investors, as well as a dual revenue stream from a fixed setup cost.
- **Key risks are taken early:** The main IP milestones are to be reached within the first 6-9 months of Year 1 R&D, with key patents submitted and validated.
- **Near-term markets:** the highly mature phosphorous IP alone provides a robust near-term revenue stream.



## Proposed accruable cash dividend structure

The contractual dividend structure, provided as an amendment to PIARCS' Certificate of Incorporation, was designed to conciliate:

- PIARCS' priority to achieve rapid Return on Investment for seed investors
- As well as a lightening of the dividend financial burden as the company expands (from 25% of the annual net income Year 4 to below 5% from Year 7 on).



## Seed team

Alexandra Holland, PhD, Founder and CEO

- Interdisciplinary training (Chemical Engineering and Microbiology)
- Pedagogical experience
- International and multi-disciplinary scientific ties

X, PhD (currently employed elsewhere)

- Algal culture optimization
- Bacterial production processes (team leader)



Joe Dragavon, PhD

- Analytical Chemistry
- Co-author on two publications

I look forward to discussing this initiative further with you. Please contact me at:

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## Risk Factors; Disclaimer

**Not an Offer.** This Executive Summary is not an offer to sell or a solicitation of an offer to buy any security and may not be relied upon in connection with the purchase or sale of any security.

**Risk Factors; Disclaimer on Forward Looking Statements.** There are risks and uncertainties inherent in PIARCS' business plan, including the following:

- We require additional equity or debt financing to fund our business, including to fund general working capital and research and development activities.
- Efforts to protect our IP rights and to defend claims against us can increase our costs and will not always succeed; any failures could adversely affect profitability or restrict our ability to do business or to achieve projected licensing revenues.
- Others.....

The risks described above are not the only ones we face. Additional risks not identified here or that we currently do not know about may also impair our business, financial condition or results of operations. If we cannot address any of these risks and uncertainties effectively, or any other risks and difficulties that may arise in the future, our business, financial condition or results of operations could be materially and adversely affected.

This Executive Summary includes forward-looking statements that involve risks and uncertainties, including, among others, estimates and assumptions relating to market size, penetration rates, and IP licensing royalty rates. Such forward-looking statements are based on certain assumptions and expectations about strategies, objectives, goals, expectations, results, plans and projections of PIARCS, and the inclusion of projections should not be relied upon as a prediction of future events. These forward-looking statements are subject to risks and uncertainties, including those identified above, that could cause actual results, events, performance or financial conditions to differ materially from current expectations, projections and estimates.

**No Representation.** The date of this Executive Summary is November 10<sup>th</sup>, 2014. Neither PIARCS PBC nor any of its directors, officers, employees, representatives, has made or makes any representation or warranty, express or implied, to any person regarding the forward-looking statements and projections contained in this Executive Summary and none of them has nor assumes any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. For the sake of clarity, only those limited representations and warranties that are made in final definitive written agreements regarding any transaction, when, as and if executed, and subject to the limitations, restrictions and disclosures as may be specified therein, will have any legal effect, and any term sheet, letter of intent or other form of preliminary agreement is not a definitive agreement.

