Aquila bioscience

SCIENCE DONE NATURALLY

The role of the infinitely small in nature is infinitely great

— LOUIS PASTEUR

aquilabioscience.com

/ ANTIMICROBIAL
/ REVOLUTIONARY
/ PLATFORM

Aquila's Pathogen Capture Technology (PCT) is a revolutionary platform, aiming to disrupt the global antimicrobial and disinfectant sectors.

STANDING ON THE SHOULDERS OF GIANTS

In 1928, Alexander Fleming harnessed the power of nature, with one of the most important discoveries in modern medicine: penicillin.

Today, Aquila continues this revolution; using nature to transform the way we capture and remove pathogens, without the use of any harmful chemicals.

The world has enjoyed a century of antibiotic protection but antimicrobial resistance (AMR) is an ongoing problem. The extensive use of chemical agents is acknowledged as a key factor behind the expansion of AMR.

The World Health Organisation considers AMR to be 'one of the top 10 global public health threats facing humanity this century'. The United States Food and Drug Administration (FDA) estimates that deadly, drug resistant, infections could kill up to ten million people a year, by 2050.

/ 2012 / Aquila Bioscience founded by Lokesh Joshi at the University of Galway, Ireland

/ HEALTH
/ NATURE
/ SUSTAINABLE

Aquila's Pathogen Capture Technology uses the power of nature to protect against contamination.

Traditional methods of disinfection are chemical based: toxic, destructive, and harmful. There is a growing need for a safe, environmentally sustainable, alternative.

Aquila technology and products are already making a difference, in healthcare, security, defence, cosmetics, industrial, and diagnostics.

Safety concerns, associated with current decontamination options, have prompted the FDA to declare a number of chemicals 'ineligible to be used without prescription for antibacterial or antiseptic measures'.

There is a major gap in the market for technology that can deliver effective - and environmentally safe - decontamination.

Aquila has produced an unique, nature-based, formulation, to capture germs and decontaminate; safe to use on sensitive areas like skin, nose, and eyes.

Aquila's Pathogen Capture Technology mimics nature, using proteins and carbohydrates to trap germs and viruses. It not only disinfects but protects the environment as well. It is the perfect solution to an urgent problem.

/ 2013 / European Union project on bacterial detection in water

/ BIG
/ LITTLE
/ REVOLUTION

SOME REVOLUTIONS START SMALL...

Glycobiology is the study of the structure, biosynthesis, and biology of glycans: the carbohydrates that coat the outer lining of every living cell. It is the key to **Aquila's** Pathogen Capture Technology.

The scientists at **Aquila** set out to discover how nature disinfects. Every human naturally produces biomolecules that trap and remove pathogens. By using biomimicry, to replicate these useful molecules, **Aquila** has harnessed the power of nature and created something that is effective, extraordinary, and naturally safe.

THE POTENTIAL FOR AQUILA'S PCT PLATFORM IS UNLIMITED

PCT applications include biological cleansers, bio-protection for first responders, pathogen resistant coatings, battlefield disinfection, bio sample collection, pathogen filtration, instrument disinfection, skin care, and more. Anything is possible.

Aquila has developed unique, proprietary, global technology that captures and removes pathogens safely and efficiently, without using harmful chemicals like alcohol, chlorine, and ammonia.

A worldwide patent has been filed and **Aquila's** first product is registered with the US FDA as a Class I Medical Device.

Aquila's PCT platform is a scientific step change; clean, natural, technology with huge potential and zero environmental impact.

/ 2015 / European Defence Agency for decontaminating bacteria and bacterial toxins

/ LOKESH
/ GALWAY
/ INNOVATION

Lokesh Joshi is the Stokes professor of Glycosciences, at the University of Galway, founder of Aquila , and the world's leading authority on glycans and pathogen capture technology. He leads an Aquila team including R&D, Commercial and Business Development staff and is supported by a panel of Advisors from scientific and commercial backgrounds.

The Aquila research and development centre is located at the heart of the University of Galway campus. Since its inception in 2012, the business has secured more than €6m of funding which includes €4m through competitive grants, as well as an international patent (pending) protecting its proprietary pathogen capture technology. It has also launched two unique products utilising Aquila's PCT formulation.

An extraordinary achievement. A centre of scientific innovation in the heart of Ireland.

"Cells communicate but they don't use words. They have a chemical language; a language composed of sugars, known as glycans. By engineering the behaviour of these glycans, we can manipulate how they work. We can make them work for us. We are borrowing nature's tools and using them to our advantage."

/ May 2019 / Device and methods for decontamination/disinfection patent filed

/ SUSTAINABLE
/ SCIENCE
/ SOLUTION

Aquila's Pathogen Capture Technology is the key ingredient. It creates a new biotechnology platform, enabling the development of multiple safe and non-toxic applications in the fields of decontamination and disinfection.

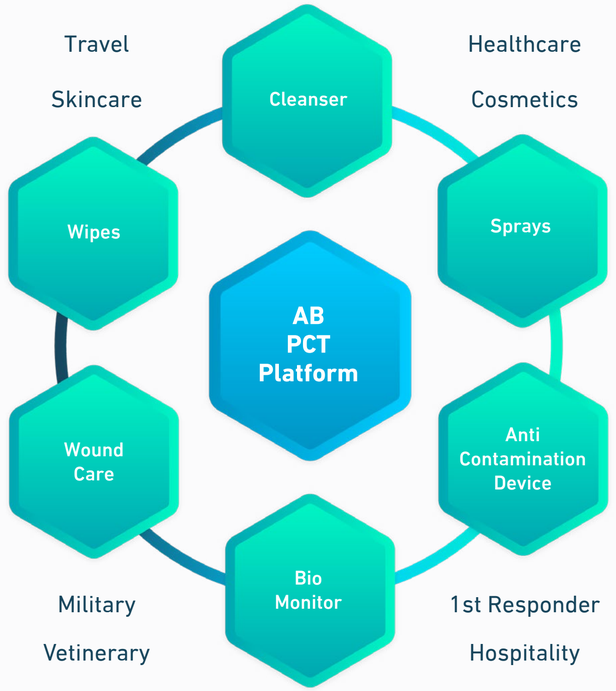
The true power of Aquila's platform is the combination of being safe, environmentally sustainable and scalable, with proven efficacy, delivering pilot product sales of over €250k during the Covid 19 pandemic. It can now be rapidly expanded in many other uses.

The beginning of this decade is defined by the COVID-19 outbreak. The disease devasted economies and distorted society, causing an estimated 6.5 million deaths in two years. The financial and emotional cost of COVID-19 is impossible to calculate.

The pandemic was a devastating wake up call. One of the few positives: the ability of science to rise to the challenge.

THE POTENTIAL:

- Medical - hospitals, first aid, surgery
- First Response – medics, doctors, A&E, sanitisation, police, hazardous situations
- Wound Care
- Filtration
- Veterinary - disinfection, bites, surgery
- Military – battlefield injuries, infection, bio threat, bio detection, bioanalysis, bio protection
- Cosmetic – skin cleansers, skin treatment, cosmetics, skin-safe disinfection
- Dermatology
- Food and Drink – hygienic cleaning, safe near food, surface wipes, food preparation areas
- What's next?



Illness / Condition	Infectious Agent / Toxin	PCT
COVID	SARS /CoV-2 virus	✓
Flu pandemic	Influenza virus	✓
Anthrax	Bacillus anthracis (vegetative and spore state)	✓
Botulisum	Clostridium botulinum	✓
Tularemia, a lethal form of pneumonia	Francisella tularensis	✓
Pneumonia - Ventilator associated	Pseudomonas aeruginosa	✓
Wound Infections / MRSA	Staphylococcus aureus	✓
Sepsis	Enterococcus hirae	✓
Acne	Propionibacterium acnes	✓
Dandruff	Malassezia furfur	✓
Thrush	Candida albicans	✓
Lung infections	Aspergillus fumigatus	✓
Ricin toxin	Lethal biotoxin	✓

/ CONFLICT
/ THREAT
/ DETECT

*One of the most urgent applications for **Aquila's** PCT is the first responder, civil and military, community.*

Chemical and biological attacks are a reality. The World Health Organisation acknowledges the risk of biological agents, highlighting the threat of secondary transmission and attacks that mimic natural events.

The Pathogen Capture Technology platform was developed by **Aquila**, in collaboration with the Defence Forces of Ireland and the European Defence Agency, to protect frontline personnel against biological threat agents. The technology has been independently tested and validated to remove 99.90 - 99.99% of viruses, bacteria, and fungi, by international independent laboratories in the Czech Republic, UK, and France.

Aquila is developing a range of products to help tackle this situation.

To date, bio-monitoring lacks accurate sampling systems. Using specific glycomolecules, **Aquila** has developed a bio-enhanced membrane to capture specific pathogens; enabling accurate and timely response.

Today's battlefield has moved to homes and cities, making new medical countermeasures essential. **Aquila** is working with civil and military communities to develop applications for its Pathogen Capture Technology. It enables combatants to quickly determine what pathogens are in use and mitigate appropriately. A first responder exposed to a biological weapon can be quickly disinfected, using an Anti-Bioagent Decontamination Device. ProShield Mask Spray offers instant protection from biological materials in the heat of battle. Skin creams can be developed for both protection and bacteria removal. Safe to use, every day, both on and off duty.

/ March 2020 / First ABD produced by Aquila Bioscience

/ SKIN
/ BEAUTY
/ NATURE

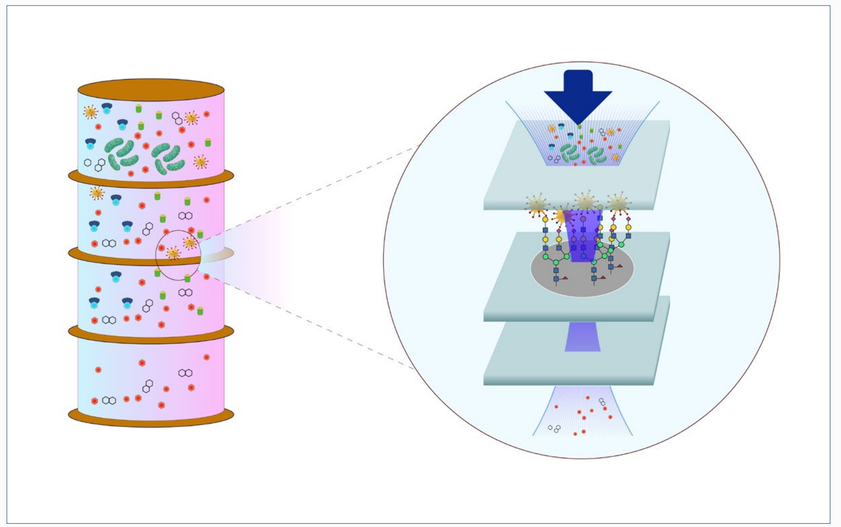
It's easy to forget, with the talk of pandemics and biological warfare, that the pathogen capture technology developed by **Aquila** Science is 100% natural; harnessing the power of nature, creating a sticky, nano-glue, micro-miracle that's so safe - you can use it on your skin.

The beauty & dermatological market is an ever-evolving business, always looking for the next perfect solution; organic and eco-friendly.

The technology developed by **Aquila** can immediately remove skin-based pathogens that cause acne, thrush, and dandruff, with a simple cleansing wipe, gel, or solution.

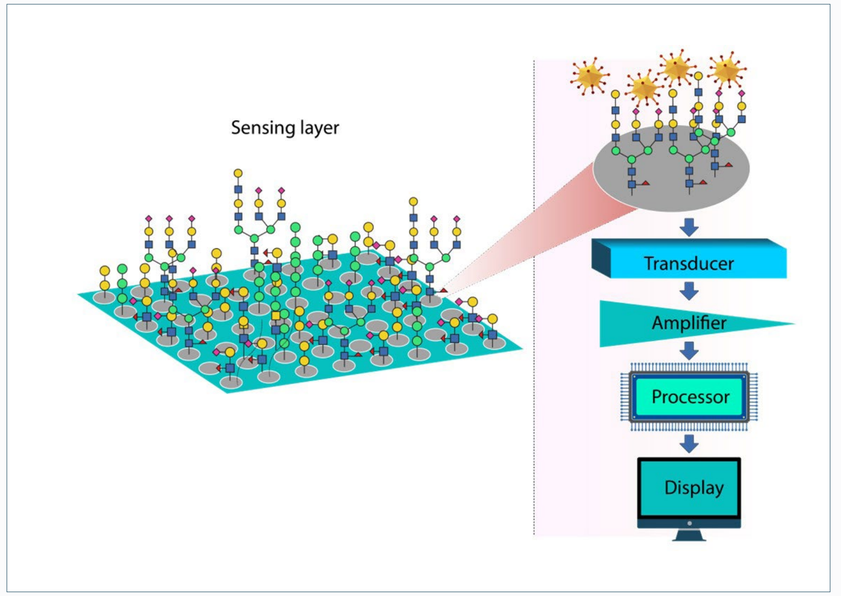
PCT can be the ultimate biological cleanser, waiting to disrupt the beauty market. For most people, acne is a bigger threat than Anthrax. Here's the solution: simple, environmentally sound, and ready to strut the catwalk.

/ April 2020 / first ABD delivered to customer



NEXT-GEN PRODUCTS:

Diagnostic Biosensors & Forensics
Carbohydrate-Protein interactions are the most universal molecular binding events among biological systems. The use of carbohydrate-based sensors allows detection of pathogens in complex mixtures of cells, IDEAL for BIOSENSORS.



Bioparticle Filtration
PCT is ideal for sample collection, entrapment and filtration of biotoxins, viruses, bacteria and fungal particles as well as allergens such as pollen and allergenic proteins.

/ SKIN IN THE GAME

Platform technologies and solutions have recently drawn significant attention in Kendall Square and Wall Street. Prime examples are Moderna and BioNTech; both demonstrate the efficiency and adaptability of the platform approach to biotech development.

*The **Aquila** PCT platform comes with a track record of competitive, grant-funded, success*, a history of innovation, and two ground-breaking applications under its belt.*

**All grants are extramural where only 5-10% of grant applications successfully met the criteria of the awards.*

PCT IS:

/ Tried and tested
/ Peer reviewed science
/ Grant funded
/ FDA registered
/ Proprietary technology
/ International patent pending
/ Environmentally safe
/ Ground breaking
/ Disruptive
/ Life saving

Aquila is working to continuously broaden their IP portfolio through internal R&D and collaboration. Converting collaborative relationships, established during the pandemic, into strategic partnerships is underway, with formal announcements expected soon.

Ollscoil na Gaillimhe University of Galway · Óglaigh na hÉireann Irish Defence Forces · Enterprise Ireland where innovation means business · European Innovation Council

/ June 2020 / Aquila Bioscience is selected for EIC Accelerator Funding

/ GET INVOLVED

Since 2012, more than €6 million has been raised, with a focus on research, application development, and manufacturing proof of concept.

The plan from 2023 is to transition to a commercially viable business, with managerial capability, as well as an extended research and development team.

Aquila is at the start of an extraordinary journey. Are you ready to get on board?

COMMERCIALISATION:

2012 to 2018
€2m raised to support PCT research

2018 to 2022
€4m raised for application development, pilot manufacturing, and sales

2022 to 2024
Deliver key steps to scale commercialisation

2025 onwards
Expand application portfolio, focusing on wound care, cosmetics, and the veterinary sector

/ June 2020 / Aquila Bioscience is selected for EIC Accelerator Funding

KEY COMMERCIAL ASSUMPTIONS, 2023 ONWARDS

2023
/ Deliver Europe CE approval
/ Establish contract manufacturing
/ Sales & distribution for Military & First Responder sectors
/ Strengthen Management, Board, R&D & Commercial teams
/ Expand R&D capabilities
/ Establish partnership for commercialisation

2024
/ International Patent Protection
/ Extend international regulatory approvals
/ Extend Military/First Responder market to Europe & APAC
/ Establish Licenses and Partnerships
/ Expand PCT application to other market

2025
/ Focus R&D and partnerships on new applications
/ Scale production capabilities
/ Expand wound care and dermatology applications

/ INVITATION TO PARTICIPATE

Aquila is opening this restricted offering to individuals and organisations that bring more than capital. Specifically, Aquila is only open to those investors with a track record of adding more to the value equation.

Based on 2022 valuation of **€10.55m**, Aquila will issue circa 200,000 new shares at a value of **€9.64** in an order to raise **€1m**. Aquila will engage with State Agency to raise matching funds of up to **€1m**.

Following successful execution of the 2023-25 business plan we expect a return on investment of between **5x and 6x** on this investment round.

/ December 2021 / Patent Nationalisation

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/ **GAME CHANGER** / DISRUPTION / **INNOVATION** / REVOLUTION / AHEAD OF THE CURVE / **PROTECTION** / SAFE / EFFECTIVE / BIOTECHNOLOGY / VERIFIED / CUTTING EDGE / MEDTECH / PEOPLE FIRST / **BIODEGRADABLE** / ALCOHOL AND CHLORINE FREE / SKIN SAFE / FDA REGISTERED / SUSTAINABLE / COMMERCIAL / LOW COST / ENVIRONMENTALLY FRIENDLY / BASED IN NATURE / TESTED / HARNESSING NATURAL IMMUNITY / **PREVENTS TRANSMISSION** / SAMPLE COLLECTION / PATHOGEN CAPTURE / SAMPLE STORAGE / SCALABLE / **NO HARMFUL INGREDIENTS** / PREVENTS ANTI MICROBIAL **RESISTANCE** / DERMATOLOGICALLY TESTED

ADDRESS
Unit 5, Business Innovation Centre
National University of Ireland Galway
Republic of Ireland
H91 W60E

TELEPHONE
+353 (0) 91 734 007

EMAIL
info@aquilabioscience.com

aquilabioscience.com