

Shining a light on tomorrow: #21toWatch 2024 innovation awards have been unveiled

The 6th annual #21toWatch innovation awards have been unveiled at an awards ceremony at The Bradfield Centre in Cambridge, the UK Centre for Science, Technology and Innovation.

21st of June, 21st of December. These days might sound familiar to many of you, as they represent the two solstices. They announce the return of the sun, or its gradual withdrawal for months to come.

This perpetual dance, this galactic ball or two celestial bodies waltzing into eternity, assures our blue planet its diverse seasons. These seasons each bring their own qualities for us and Earth, assuring our prosperity.

For the 6th consecutive year, #21toWatch acts as the solstice of the innovation world. But this time, the world is not just enlightened by a star from space, but by the brilliant mind from Cambridge and the East of England.

Invaluable Innovation

The 6th annual #21toWatch innovation awards have been unveiled at an awards ceremony at The Bradfield Centre in Cambridge, the UK Centre for Science, Technology and Innovation.

The annual Awards – which highlight the Top21 standout individuals, game-changing companies, and world-leading innovations from across Cambridge and the East of England – are widely relied upon to be an early indication of the NextGen innovators set to make a considerable contribution to a better world and future.

Since its beginnings in 2018, #21toWatch alumni have included startups which have grown into world leading companies such as:

CMR Surgical, Riverlane, Paragraf, Flusso, Colorifix, Unitary, VividQ, Broken String Biosciences, Xampla, Sano Genetics, SATAVIA, Porotech and Cambridge Gan Devices.

The total amount of investment in #21toWatch alumni and British entrepreneurship now tops £1.036B (£1,036,508,387) to date. (This figure excludes undisclosed sums and private equity but does include the £621,383,288 investment in 2019 winner, behemoth CMR Surgical.)

Medical Masters

This year, there has been a sharp focus on medical innovation with early disease detection and surgical advancements high on the agenda. Ground-breaking innovations from across Cleantech/Sustainability are also included with some exciting battery developments – and the Agritech and AI sectors have also featured heavily.

Some of the breakthrough medical innovators honoured this year include:

Cambridge Vision Technology, a company focused on the notoriously difficult work of detecting early-stage Alzheimer's Disease – so essential if the emerging treatment drugs (which need to be administered early at mild cognitive impairment stage) are to be effective in slowing the devastating progression of the disease. Cambridge Vision Technology's solution is a game-changing hardware device and integrated software platform which paves the way for cost-effective non-invasive mass screenings of the condition, making early detection available to all.

Bakul Gupta, co-founder and CEO of Deliver Biosciences, whose work on 're-programming' cells in vivo is enabling fatal diseases to be cured at a fraction of the time *and* cost of existing curative therapies. Bakul's work involves developing nanoparticle delivery vectors for targeted and specific delivery of payloads.

William Oak Diagnostics, with an innovative point-of-care test able to identify numerous micronutrient deficiencies at the push of a button – which

is transforming maternal, child and infant health testing.

Heartfelt Technologies, with an automatic, AI-supported, non-contact telemonitoring solution for heart failure patients, which is set to revolutionise heart failure telemonitoring.

Sustainability Superstars

Many of the ground-breaking innovators/ innovations came from the cleantech/sustainability sector, and included:

Paolo Bombelli and team, who are pioneering the development of a technology capable of generating electricity from microbial photosynthesis. The novel technology can substitute portable batteries for powering billions of small electronic devices.

Remedium Energy, with its revolutionary carbon capture technology – the first of its kind to make the process of capturing carbon dioxide. The novel battery operates by capturing carbon dioxide from the air or from high emitting cement/steel plants to store as electricity. As well as minimising carbon emissions, the technology provides up to \$50 per tonne of carbon dioxide captures and provides a solution for renewable energy storage problem.

Jack Chengzhi Guo, cofounder of Protonera, which is developing a new way to treat waste plastics. Based on interdisciplinary research at the University of Cambridge, Protonera's novel technology turns waste plastics into green hydrogen and valuable organics.

Molyon, which has developed a new cathode material to enable high energy-density and long-life lithium-sulfur batteries – and which fundamentally opens up new modes of transport and facilitates the NetZero transition.

Cellexcel, which has created a novel process to manufacture water-resistant bio-composite materials to replace conventional composites such as fiberglass, carbon fibre, plastics and metal.

Agritech Aces

Agritech was also strongly represented in this year's Top21, which included:

Autopickr's fully automated asparagus harvester, 'Gus', which combines

cutting-edge AI, novel navigation technologies, robust robotics, and the latest cutting technology to optimise the harvesting process.

Antler Bio's livestock platform, EPIHERD which harnesses gene expression data and AI to evaluate the status of livestock in order to best prescribe targeted husbandry interventions to increase performance, efficiency, welfare and sustainability.

Nadia Radzman, a plant biologist who is working on rehabilitating forgotten legumes such as the African yam bean back into the food system, having discovered that they can greatly reduce our nitrogen use and increase sustainable food sources. While current food production uses huge amounts of nitrogen fertilisers (poisoning land, water and air), legumes work with microbes in the soil to take nitrogen from the air and create their own fertiliser.

AI Artists

And, with significant developments within the AI sector, our Top21 winners included:

BeyondMath, a NextGen deeptech company revolutionising traditional engineering design practices with the latest AI developments, resulting in reduced time, cost and environmental impact during production. BeyondMath's founders were part of the team at Evi Technologies that built the AI that was acquired by Amazon and turned into Alexa.

Tenyks, a University of Cambridge spinout that is inventing and building the technology to drive the AI revolution. Tenyks is developing the most advanced MLOps monitoring and validation platform to empower computer vision engineers to build more reliable models faster. They are focused on the way humanity interacts with AI – with a mission to protect the world from the misuse of AI and to ensure that AI is developed with passion, excitement, and joy.

Celebrating and Promoting Innovation

The final Top21 were selected from a shortlist of 40 out of 301 applications – and across a range of sub-sectors spanning aerospace, insurtech, augmented reality (AR), AI, and biotechnology – by an independent judging panel:

Jon Bradford, Partner at Dynamo Ventures

Serial Entrepreneur Fiona Nielsen, CEO at Neurolentech GmbH

Nitin Patel, founder of Impact Management Consulting Ltd.

“The #21toWatch alumni list reads like the Who’s Who of successful British entrepreneurship with previous winners already huge contributors to a better future.” says entrepreneur Faye Holland, who created #21toWatch

“With every new Awards, I think it’s going to be impossible to trump the previous year – but it always happens as the level of ingenuity never decreases. And with the work of our partners and judges we are consistently picking the right businesses to watch – in last year alone, which was a particularly difficult year for investment, our alumni raised over £110M in investments and funding which is simply incredible.

And the winners are

The #21toWatch Top21.2024 People:

Ahmed Waraky, a Postdoctoral Research Fellow at the Cambridge Stem Cell Institute and co-founder of K-Stem, is directing research that focuses on machine learning and single-cell omics to advance stem cell transplantation and personalised medicine.

Alicia Showering, CEO of BugBiome, is dedicated to developing natural and durable microbiome-based insect repellents.

Mark Golab, co-founder of Cambridge Surgical Models (CSM), a startup focusing on manufacturing a new generation of artificial anatomical models for surgical training.

Bakul Gupta, co-founder and CEO of Deliver Biosciences, developing

nanoparticle delivery vectors for targeted and specific delivery of payloads to re-programme cells in vivo, curing fatal diseases in a fraction of the time and cost compared to existing curative therapies.

Jack Chengzhi Guo's venture with Professor Erwin Reisner promises a new way to treat waste plastics. Based on interdisciplinary research at the University of Cambridge, their technology turns waste plastics into green hydrogen and valuable organics

Nadia Radzman is a plant biologist working on rehabilitating forgotten legumes back into the food system and is a co-founder of a startup that accelerates genetic improvements in challenging legume crops.

Paolo Bombelli and colleagues pioneered the development of a novel technology capable to generate electricity from the photosynthesis of algae. This novel technology can substitute portable batteries for powering billions of small electronic devices.

The #21toWatch Top21.2024 Companies:

BeyondMath is using AI to solve the complex simulation of physics in engineering design orders of magnitude faster, providing reductions in time, cost and environmental impact when taking designs to production.

Cambridge Vision Technology is a startup whose technology enables early detection of Alzheimer's Disease using retinal scanning

Cellexcel has created a novel process to manufacture water-resistant bio-composite materials. These will replace conventional composites such as fiberglass & carbon fibre, as well as plastics and possibly metal.

ExpressionEdits' proprietary intronisation platform recodes transgenes to better resemble natural genes, leading to significant improvement in protein production – a key challenge for recombinant proteins and DNA medicines

Kuano combines state-of-the-art simulation and AI to add quantum detail to structure-based drug discovery, helping to enable the design of next generation medicines.

Remedium Energy developing a new carbon capture technology, carbon capture battery, that captures CO₂ from cement/steel plants and monetises the variation in electricity price to make carbon capture profitable.

Vector Bioscience's platform technology tailors nanomaterials for drug delivery applications. These nanomaterials are MOFs (Metal Organic Frameworks) can store 10x more molecules than other encapsulation methods and are designed

and tailored for effective and targeted delivery.

The #21toWatch Top21.2024 Innovations

EPIHERD (Antler Bio) – harnessing gene expression data and AI to evaluate the status of livestock and prescribe targeted husbandry interventions to increase performance, efficiency, welfare and sustainability.

Gus, the automated asparagus picker (Autopickr) – incorporates cutting-edge AI and navigation technologies, robust robotics, and new cutting technology to optimise the harvesting process.

Heartfelt Technologies – an automatic, AI supported, non-contact telemonitoring solution for heart failure patients.

Molyon has developed a new cathode material to enable high energy-density and long-life lithium-sulfur batteries. This opens up fundamentally new modes of transport and facilitates the net-zero transition.

Tenyks – ‘AI doctor’ resolving issues for machine learning engineers working with computer vision data.

Verinnogen – building hand-held, innovative tools to directly profile physical properties of 3D surfaces with direct applications in pre-clinical oncology research.

William Oak Diagnostics – an innovative point-of-care test which simplifies the identification of various micronutrient deficiencies making maternal, child, and infant testing more accessible.