
Bluepha

We create life for the future.

About Us

Bluepha Co., Ltd. (Bluepha) is a purpose-driven company dedicated to molecular and material innovation based on synthetic biotechnology. Founded in 2016, we built our own specialized biology automation platforms to engineer microorganisms as a new way to design and manufacture molecules and materials that can provide better solutions to global sustainability and carbon neutrality.

At Bluepha, we are committed to designing, developing, manufacturing, and selling bio-based molecules and materials. This includes marine degradable PHA biopolymers, implantable materials for regenerative medicine, new functional ingredients for cosmetics and probiotics, among others. Our products help our customers differentiate themselves in industries across various fields, such as consumer goods, food, medicine, agriculture, and manufacturing.

Since its establishment, Bluepha has raised approximately US$ 300 million from several well-known domestic investment institutions. Currently, we are collaborating with multiple Fortune 500 companies to help introduce naturally advanced materials into the food and consumer goods industries.

We create life for the future

Company Milestones

2016

October Bluepha was founded at Tsinghua University

2017

February Completed angel round funding led by FreeS Fund

2018

February Recognized as a National High-Tech Enterprise

April Completed Pre-A round funding led by FreeS Fund and Leaguer VC

2019

July Completed Series-A funding with joint investment led by ZGC Group, Shenzhen Qianhai FOF, Green Pine Capital Partners and FreeS Fund

2021

February Completed Series-B1 funding with joint investment led by Hillhouse Capital, Lightspeed China and other shareholders

June Completed Series-B2 funding with joint investment led by Tencent and Country Garden Venture Capital, as well as other shareholders

November Established a strategic partnership with Thai Wah Public Company, Thailand

December Established a Joint R&D Center for Bioactive Substances and Cosmetics with Jiangnan University

2022

January Completed Series-B3 funding with joint investment by Genesis Capital, China State-Owned Enterprise Mixed Ownership Reform Fund and other shareholders

Foundation laying of the Bluepha® biorefinery in Coastal Industrial Park, Binhai, Yancheng, Jiangsu

Established a joint venture with Sihuan Pharmaceutical Group

Established a strategic partnership with Helian Polymers, Netherlands

Figures as of June, 2023

2022

February Bluepha® PHA resin series passed the EU's Food Contact Material tests

April Established the Joint Probiotics Laboratory with Jiangnan University

May Established the Xiaodong Yijian-Bluepha Joint Laboratory with Xiaodong Yijian (Suzhou) Company

2023

January Established a strategic partnership with Shanghai Donggeng (DODGEN)

February Completed Series-B4 funding with joint investment by Zhongping Capital and Jiangsu Huanghai Financial Holding Group Co., Ltd.

March Global product launch event for Bluepha® PHA was held

2022

June Established the Probiotic Resources and Functional Development Joint Laboratory with Lanzhou University

Joined the United Nations Global Compact to protect the earth and promote sustainable social development through practical actions

July Established a strategic partnership with Tecan China

August Established a strategic partnership with Chori Co., Ltd., Japan

September The Bluepha® BP350 obtained the OK biodegradable WATER certification from the TÜV Austria Group

November Jointly released the "PHA Biodegradable Plastic Industry White Paper" with PwC

2023

April Bluepha® PHA BP330 and BP350 grades obtained certificates of OK biodegradable MARINE, OK biodegradable SOIL, OK compost HOME, and OK compost INDUSTRIAL from TÜV Austria Group

May Published our first ESG Report, comprehensively demonstrated the company ESG strategies, practices and achievements in 2022

Established a strategic partnership with TotalEnergies Corbion

Synthetic Biology Operating System (Synbio OS™)

Iteratively upgrade core technologies, and build a full-process research and development barrier

Bluepha established the synthetic biology infrastructure known as Synbio OS™ (Synthetic Biology Operating System) by combining synthetic biology with automation, cloud computing, and other 'Industry 4.0' technologies. This extends the DBTL (Design-Build-Test-Learn) cycle of synthetic biology from the laboratory to industrial scenarios, providing a core guarantee for the implementation of parallel product pipelines. Synbio OS™ includes two main modules: a strain development platform and a process development platform. Through Synbio OS™, the 'flywheel effect' covers the entire product development process, significantly improving the success rate and precision of scale-up production. The research and development cycle, as well as the process development cycle, can finally achieve an order of magnitude reduction.

- The throughput of strain construction and testing has increased by 30 times.
- An array of bioreactors covering the full scale of process development has been established, and the dimension of monitoring data was increased by an order of magnitude.
- The process data covering all stages of strain development and process development can be fully traced.

Strategic Partnerships using Synbio OS™

Bluepha has entered into a strategic partnership with Tecan China to jointly develop a 'High-Throughput Lifeform Construction Platform for Synthetic Biology'. Both parties will jointly build intelligent software and hardware facilities covering the entire experimental process, based on Bluepha Synbio OS™ and Tecan's automated intelligent hardware. Together, we will jointly develop standardized high-throughput R&D experimental workflows for synthetic biology.

Product Lines

Bluepha

Product Lines

We are creating vibrant, imaginative biotechnology products to satisfy human expectations for future lifestyles, while also meeting sustainable development goals as well.

Core Product:
Marine Degradable PHA Biopolymer

What is Bluepha® PHA ?

Polyhydroxyalkanoate (PHA) is a family of natural polymers produced by microorganisms using renewable biomass, such as starch and plant oils through fermentation. It shows performance comparable to petro-based plastics, while maintaining excellent biodegradability. Its natural ability to degrade in various conditions makes it a sustainable and green solution for addressing global plastic waste pollution and achieving carbon neutrality.

Bluepha® PHA has great strength, heat resistance, and oxygen and vapour barrier properties. It can be widely used in green packaging, cutlery, cosmetics, textile fibers, and other advanced applications. We are committed to improving the formula and fundamental mechanism of Bluepha® PHA, optimized to enhance its comprehensive physical properties, such as processibility, and mechanical properties. Our products can also be customized for various application scenarios and areas to ensure optimal performance.

A phabulous blend with nature

Certifications and Compliance

As Bluepha® PHA is derived from nature, it is capable of returning to nature through spontaneous biodegradation in various natural and artificial environments. This includes industrial compost, home compost, soil, freshwater, and marine environments. Currently, Bluepha is actively proceeding with compliance work on international regulations and standards to ensure responsible material options for different applications, and provide support for expansion into global markets.

Biobased

Completed

OK biobased TÜV AUSTRIA ★★★★ S2427

USDA CERTIFIED BIOBASED PRODUCT PRODUCT 100%

Biodegradability

Completed

WATER OK bio-degradable TÜV AUSTRIA WATER S2427

MARINE OK bio-degradable TÜV AUSTRIA MARINE

HOME OK compost TÜV AUSTRIA HOME

OK compost TÜV AUSTRIA INDUSTRIAL

SOIL OK bio-degradable TÜV AUSTRIA SOIL S2427

BPI COMPOSTABLE COMMERCIALLY COMPOSTABLE ONLY. FACILITIES MAY NOT EXIST IN YOUR AREA. CERT #10529623

生分解性 バイオマスプラ

海洋生分解性 バイオマスプラ

Food Contact

Completed

EU food contact	JP food contact
(EU) No 10/ 2011	(JP) No 233/ 1947

Bluepha® Biorefinery

Our Bluepha® Biorefinery "BioFAB1", with an annual production capacity of 5,000 tonnes, is located in Yancheng, Jiangsu Province. BioFAB1 adopted advanced equipment and technologies at every step of the production line to improve overall operational efficiency. At the same time, the factory's operation conforms to a modern operation management system, which provides precise control over personnel, equipment, raw materials, operating procedures, environmental protection and safety, inspection and testing, and other aspects to ensure stable and reliable products delivery to our customers.

The unique geographical location of Yancheng and the resource advantages of green energy and biomass raw materials will help Bluepha achieve the strategy of "biosynthesis + clean energy", with the aim to demonstrate a "Zero Carbon Industrial Chain" of synthetic biology. Through mass production of Bluepha® PHA, we aim to valorize its commercial value and provide more significant environmental value to society.

Currently, Bluepha is fully invested in promoting Phase II of the project, which will result in an annual supply of 25,000 tonnes of Bluepha® PHA.

BIOREFINERY


BioFAB1
Yancheng，China

Biohybrid™ Technology

Biohybrid™ is a proprietary technology of Bluepha. It combines the use of CO_2 and plant oil as mixed carbon source to synthesize Bluepha® PHA. Through emulating nature and combining machine learning with metabolic profiling, we discovered that a considerable amount of energy is accumulated intracellularly when microorganisms consume plant oil. This energy is quite similar to that harvested in photosynthesis. It can be used to drive CO_2 fixation effectively, thus directly converting CO_2 into Bluepha® PHA.

According to environmental benefits and technological difficulty, carbon sources that can be used for biomanufacturing are divided into three generations.

Generation I

Traditional biomass, such as starch and plant oil

Generation II

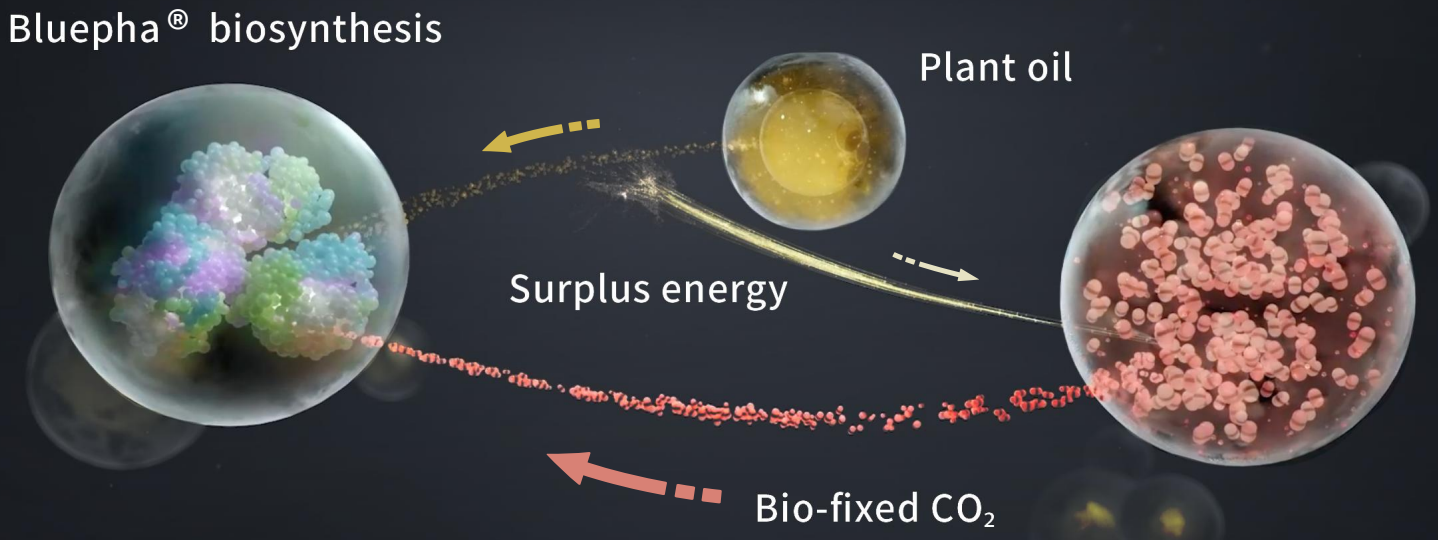
Non-food biomass, such as stalk and used cooking oil, organic sewage, coffee grounds

Generation III

Greenhouse gases, such as methane, CO_2 and industrial waste gases

As a fundamental production technology, Biohybrid™ can be applied to almost any biomanufacturing process, such as the production of various chemicals and materials. Biohybrid™ will revolutionize the production mode of traditional manufacturing industry and help mankind achieve the goal of 'carbon peaking' and 'carbon neutrality', without compromising the needs of our customers.

Biohybrid™


Bluepha® biosynthesis
Plant oil
Surplus energy
Bio-fixed CO_2

BLUEPHA PHA

Policy Support & Synergistic Development

Policy support ushers in development opportunities for biomanufacturing

- Listed by the National Development and Reform Commission of China in the "Guiding Catalogue of Key Products and Services for the Strategic Emerging Industries" (2013)
- PHA manufacturing technology has been listed in the National Development and Reform Commission's "Catalogue of Key Low Carbon Technologies to be Promoted" (2015) as a key carbon reduction technology to be promoted in China.
- The "Notice on Issuing the Action Plan for Plastic Pollution Control during the 14th Five Year Plan" by the National Development and Reform Commission and the Ministry of Ecology and Environment focuses on "increasing the research and transformation of key core technologies and achievements in degradable plastics" (2021)

Deep integration of innovation into industrial chains to increase international influence

- Bluepha has rich technical resources and intellectual property at each stage of the technology chains, including spanning strain development, biotransformation, separation and purification, and material modification.
- The industrial production technology developed by Bluepha has solved numerous longstanding problems of PHA manufacturing, including high production cost, low yield, and unreliable product performance. We achieved this by systematically reducing the production cost of Bluepha® PHA. We will continue to work together with upstream and downstream partners from major countries and regions to further expand the global market for Bluepha® PHA materials applications.

THAI WAH PUBLIC COMPANY LIMITED　helianPolymers　CHORI　东庚 DODGEN

Other Product Lines

Aesthetic Medicine & Cosmetics

The rise of the "Beauty Economy" has created great demand in the beauty industry. Along with advances in medical aesthetic technology introducing a large number of new products to the market, there is also rapid development in both market demand and supply. Concurrently, the concept of "Clean Beauty" has become increasingly popular, and many consumers no longer use skincare products containing harmful synthetic chemicals. Instead, they now prefer healthier and more environmentally friendly skincare products.

In addition to functional skincare products, Bluepha focuses on implantable biomaterials for regenerative medicine. By fusing on the dimensions of human health, environmental protection and industrialization, synthetic biology will help the rapid development of the increasingly popular aesthetic medicine and functional cosmetic fields.

At present, synthetic biotechnology produced PHA materials have been approved by the US FDA for use in medical devices such as surgical sutures. In the future, synthetic biotechnology will provide more innovative and sustainable solutions for the medical beauty industry, which can bring safe, effective, and carefree new products to beauty seeking consumers.

December 2021

Bluepha and Jiangnan University jointly established the Joint Research and Development Center for Bioactive Substances and Cosmetics, where both parties will collaborate to discover and produce functional raw cosmetic materials using synthetic biotechnology, co-create products and verify the efficacy of related fields.

January 2022

Bluepha established a joint venture with Meiyoung Biomedical Co., Ltd. (subsidiary corporation of Sihuan Pharmaceutical Holdings Group Ltd.) to develop regenerative medical materials, more specifically, PHA medical aesthetics injection microspheres.

Health & Wellness

With the emerging issues of suboptimal health, the population of chronic patients are rising in recent years. As a consequence, 'Healthy China' has become a national strategy, and people's awareness of health has steadily improved, leading to a health industry boom. Meanwhile, many nutrition and health brands have increased their presence in the market.

Biomanufacturing creates new possibilities for building cell factories of nutrition and health, since converting renewable raw materials into specific nutritional components and new functional materials can bring new economic benefits for the health industry. In addition, differentiated solutions can be provided for upstream and downstream enterprises by targeted transformation of microorganisms to cultivate functional engineered bacteria, or more rational domestication of microorganisms to obtain stronger natural probiotics, promoting the development of the health industry.

April 2022

Bluepha partnered with Jiangnan University to establish the Joint Probiotics Laboratory, where both parties will collaborate on strategic projects related to probiotic strain resources, process development, and efficacy evaluation.

May 2022

Bluepha established the Xiaodong Yijian-Bluepha Laboratory with Xiaodong Yijian (Suzhou) Instrument Equipment Co., Ltd. Both sides will engage in strategic cooperation in the fields of probiotic preparation technology, biomimetic digestion, and targeted controlled release.

June 2022

Bluepha established the Joint Laboratory for Probiotic Resources and Functional Development with Lanzhou University, to engage in strategic cooperation in areas such as microbial resource exploration, automated screening technology, and functional research in the Qinghai Tibet Plateau region.

Honors & Awards

- National Finals of the Startup World Cup (2016): Top 10
- Future Planet Award (2017): Sustainable Development Category
- Fast Company Magazine (2018 & 2019): 50 Best Innovative Companies in China
- Green Chemistry and Chemical Engineering Innovation and Entrepreneurship Contest (2020), SCIP+ Entrepreneurial practice group: 1st prize
- CB Insights (2020): The world's 50 most noteworthy synthetic biology enterprises
- HICOOL Global Entrepreneurship Competition (2021): 1st prize
- Venture 50 and Investment Ventures in Hard Technology 50 (2021)
- MIT Review (2021): 50 Smart Companies
- Cleantech (2022): Global Top 100 Clean Technology Enterprises
- Fortune (2022): China's Most Influential Social Entrepreneurship Company
- BEYOND Awards (2022): Impact Award, Sustainable Innovation Award
- Xiangguang Award (2022): Top 10 Social Enterprises of the Year

Culture

Mission

Eliminate humankind's dependence on petrochemicals

Values

Always Day 1

Pursue Truth and Dare to Win

Getting Things Done First

Uphold Integrity and Transparency

Exemplify Professional Excellence

Free Spirit and Accountability

Vision

One industry

One hundred products

for Five billion people

Founders

Dr. Haoqian ZHANG | Co-founder & CEO, Bluepha

- Graduated from Peking University with a bachelor's degree in Biology and PhD in Integrated Life Sciences (Physics)
- Member of the Synthetic Biology Committee of Chinese Society of Biotechnology
- Editorial board member of Synthetic Biology
- Listed on Fortune China's "40 Under 40", 2022
- Selected as one of 36Kr's "X·36 Under 36" S-Class Young Entrepreneurs", 2022

Dr. Teng LI | Co-Founder & President, Bluepha

- Graduated from Tsinghua University with a bachelor's degree in Life Science and PhD in Biomaterials and Synthetic Biology
- Beijing Science and Technology New Star, 2019
- Zhongguancun High-end Leading Talent, 2020
- Selected as one of MIT Technology Review's "Innovators Under 35 (TR35) China", 2018
- Listed on Fortune China's "40 Under 40", 2019
- MIT Technology Review's "Youth Innovation Award", 2020
- Selected as leading talent of "Huanghai Pearl Talent Plan", 2021
- Selected as one of 36Kr "X·36 Under 36" S-Class Young Entrepreneurs, 2022

Locations

Beijing

ZGC Life Science Park, Changping District, Beijing

Shenzhen

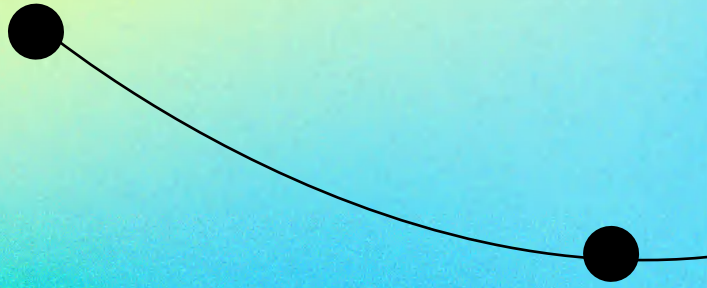
Daoxing GL INNOV CTR, Liuxian 1st Rd, Baoan District, Shenzhen

Shanghai

430 Linqing Rd, Yangpu District, Shanghai

Yancheng

Zhongshan 6th Rd, Binhai Coastal Industrial Park, Yancheng, Jiangsu



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