YS Biopharma Co., Ltd. – H1 2024 Financial Results Highlight Inventory Management, With Pipeline Advancing

YS Biopharma Co., Ltd. (NASDAQ: YS)

Share Price: $0.49	Valuation: $5.10

Key Statistics

52 Week Range	$0.38 - $12.93
Avg. Volume (3 months)	95.24K
Shares Outstanding	93.06M
Market Capitalization	$45.31M
EV/Revenue	1.10x
Cash Balance*	$36.19M
Analyst Coverage	2

***Cash balance as of September 2023**

Revenue (in RMB millions)

Mar - FY	2023A	2024E	2025E
Q1	NA	176.27	169.82
Q2	NA	96.82	178.32
Q3	NA	143.54	193.80
Q4	NA	157.98	221.77
FY	687.20	574.61	763.71

EPS (in RMB)

Mar - FY	2023A	2024E	2025E
Q1	NA	(0.75)	(0.77)
Q2	NA	(1.13)	(0.72)
Q3	NA	(0.83)	(0.54)
Q4	NA	(0.78)	(0.10)
FY	(1.56)	(3.49)	(2.13)

Stock Price Chart (in $)

Investment Highlights

- **First Half FY 2024 Financial Result Update -** In the first half of the fiscal year 2024, total revenue amounted to RMB 273.1 million compared to RMB 399.5 million in the same period of the previous year, recording a year-over-year decline of 31.6%. This significant reduction in topline is predominantly attributed to the impact of COVID-related disruptions leading to significant supply chain challenges and inventory issues at its YSJA rabies vaccine manufacturing facilities. Despite these challenges, the company maintained a robust gross profit margin profile, with margins expanding to 80.9% compared to 76.5% in the first half of the previous year. The period was also marked by escalated operating expenses, with total operating expenses recording a year-over-year increase of 24.9% to RMB 404.2 million, thus contributing to expansion in net losses. This was driven by increased spending in selling and marketing for YSJA vaccine promotion, higher general and administrative costs due to public listing expenses and salaries, and intensified research and development efforts for its vaccine pipeline. The total operating cash burn for the first half of fiscal year 2024 amounted to RMB 145.83 million, while the end of the period cash reserves were reported at RMB 259.9 million. *Despite these external headwinds, the management outlook for the second half of the year remains optimistic, underpinned by various operational enhancements in production and supply chain processes, particularly for the YSJA rabies vaccine*. The company has effectively overcome the inventory issues caused by earlier COVID-19-related disruptions and has streamlined operations. The operational turnaround is expected to yield a 50% increase in YSJA rabies vaccine revenues in Q3 2024 compared to Q2 2024.

- **PIKA Rabies Vaccine Development Update -** YS Biopharma Co., Ltd has successfully completed the enrollment for its Phase 3 clinical trial (NCT05667974) of the PIKA Rabies Vaccine, marking a significant milestone in the development of this innovative candidate. With 4,500 subjects enrolled across multiple countries, this trial is pivotal in evaluating the vaccine's effectiveness, safety, and consistency. The PIKA Rabies Vaccine, leveraging YS Biopharma's proprietary PIKA adjuvant technology, promises a potentially more rapid and robust immune response compared to traditional vaccines, potentially setting a new standard in rabies prevention. Early phase trials in China and Singapore showed promising results, and this large-scale study aims to validate these findings and demonstrate the vaccine's superiority to existing options. This advancement aligns with the WHO's goal for shorter vaccine regimens and represents a significant stride in YS Biopharma's commitment to addressing global health challenges. The success of this trial could position the company favorably in the market, offering a potentially novel solution in the fight against a fatal disease with a worldwide impact.

- **Valuation -** The reported decrease in revenue, in our view, appears transient and may not be indicative of the company's long-term performance potential. Despite the first-half results mirroring short-lived historical challenges, the company's strategic responses, promising clinical pipeline and a stable financial position provide a solid foundation for its future growth and profitability. We have updated our valuation model, incorporating the latest financial results while re-assessing the comparable company analysis. Rolling over the valuation model, we reiterate our valuation of $5.10 per share, contingent on successful execution by the company.

Company Description

YS Biopharma Co., Ltd. is a Beijing-based biopharmaceutical company founded in 2002. Specializing in vaccines and therapeutic biologics, it targets diseases such as Rabies, Coronavirus, Hepatitis B, Influenza and Shingles via a proprietary PIKA® immunomodulating technology platform. The firm operates in various regions including China, the U.S., and Southeast Asian Countries.

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Please see last page for important disclosures

- **Other Operational Updates -** YS Biopharma is actively progressing its clinical pipeline, focusing on several other product candidates. Their PIKA recombinant COVID-19 vaccine, currently in the Phase II/III stage, has shown promising safety and immunogenicity results in trials conducted in the Philippines and UAE, with Phase III outcomes expected in first half of 2024. Additionally, the company has made advancements in cancer treatment with PIKA YS-ON-001, completing a Phase I trial in China, and in chronic hepatitis B therapy with PIKA YS-HBV-002, recently patented in the U.S. and set to begin clinical development in 2024.

Company Overview

YS Biopharma, headquartered in the Cayman Islands, is a global biopharmaceutical company at the forefront of discovering, developing, manufacturing, and commercializing vaccines and therapeutic biologics. Primarily aiming to address infectious diseases and cancer, YS Biopharma is committed to tackling multiple global health concerns that still have high unmet medical needs. Central to the company's operations is its proprietary PIKA® immunomodulating technology platform. This platform is based on biologic complexes that engage multiple pathways of immune signaling, specifically TLR3, RIG-I, and MDA5. When integrated with appropriate protein-based molecules, PIKA® technology facilitates the development of a broad spectrum of novel biotherapeutics. These include a new generation of antiviral vaccines, antiviral therapeutics, and anticancer therapeutics. The innovative PIKA® platform, thus, empowers YS Biopharma to create a diverse portfolio of products targeting diseases such as Rabies, Hepatitis B, Shingles, Influenza, and Coronavirus. YS Biopharma has earlier achieved significant strides with the rabies vaccine, the evidence of which is their YSJA™ vaccine. The YSJA™ vaccine, the first aluminum-free lyophilized rabies vaccine launched in China, is a testament to the company's prowess in research and development. The YSJA™ rabies vaccine has proven to be a critical product, with over 22.2 million doses sold to county-level CDCs in China as of June 30, 2023. The company manufactures its vaccines, including the YSJA™ rabies vaccine, in GMP-compliant facilities, indicating its commitment to meeting high regulatory standards.

YS Biopharma specializes in developing vaccines and biologic therapies for infectious diseases and cancer. Using its proprietary PIKA® technology, the firm creates a broad range of novel biotherapeutics by engaging various immune pathways

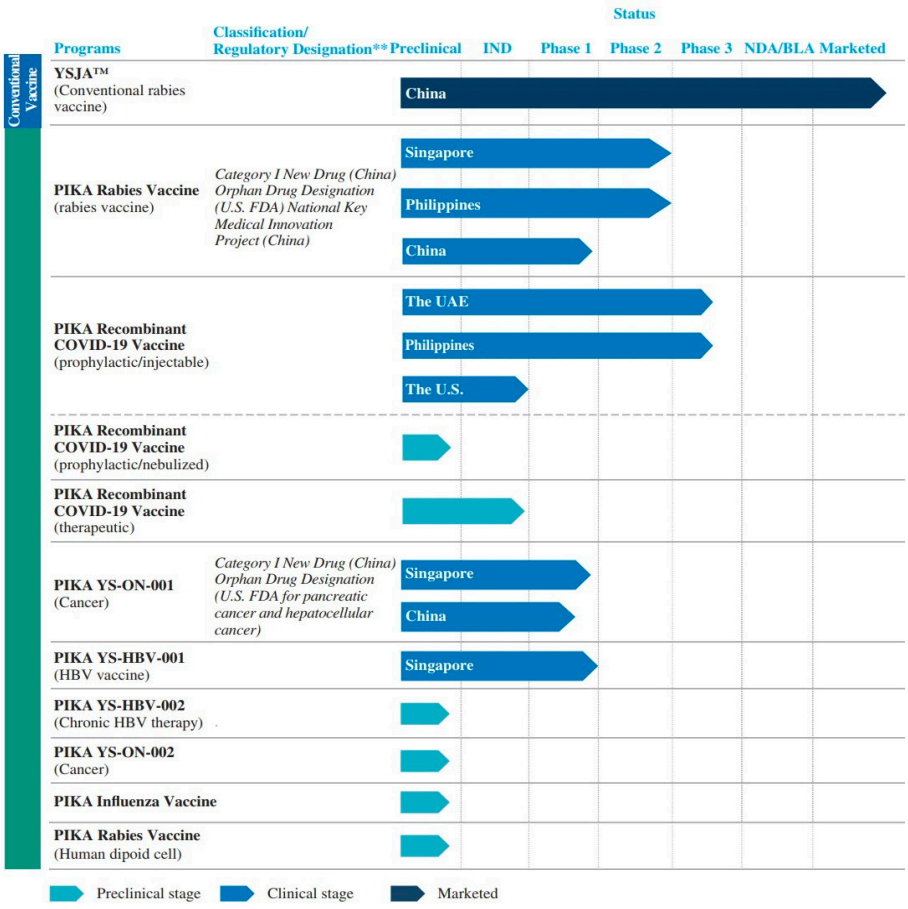

Exhibit 1: YS Biopharma Product Pipeline. Source: YS Biopharma Filings

A glance at YS Biopharma's R&D pipeline reveals a promising landscape. Currently, there are four clinical-stage product candidates—PIKA® rabies vaccine, PIKA® recombinant COVID-19 vaccine, PIKA® YS-ON-001, and PIKA® YS-HBV-001 vaccine. Additionally, four more preclinical-stage product candidates are in the pipeline, aiming to prevent diseases like Hepatitis B and cancer potentially. These pipeline products aim to meet unmet medical needs in areas such as HBV, influenza, rabies, and cancer, indicating high potential future growth.

YS Biopharma has extended its global footprint to key markets such as China, Singapore, the United States, the UAE, and the Philippines. Despite its recent incorporation into the Cayman Islands in 2020, the company's long-standing history and strong market presence point to stability and future global expansion potential. With a sizeable workforce of over 770 employees, YS Biopharma amalgamates local expertise with a global vision. This strategic blend positions the company to deftly navigate the challenges and seize the biopharmaceutical industry's opportunities.

YS Biopharma has a multi-faceted corporate structure with a mix of domestic and international operations. The equity ownership of the company is distributed among several major shareholders, which contributes to a broad-based governance structure. The major equity stakeholders include Yi Zhang and All Brilliance Investments. The rest of the equity ownership is spread among Hopeful World Company, Apex Pride Global, Action Town International, and other ordinary shareholders. On the operational front, YS Biopharma has established a strong global presence through its offshore entities. YS Biopharma US, Yisheng Singapore, and Yisheng HK are the primary offshore operational branches, each strategically located in key global markets. This geographical diversification supports the company's global market access and potentially mitigates the risk of operational disruption in any single market.

Domestically, YS Biopharma operates through two main entities: Liaoning Yisheng and Beijing Yisheng. These onshore operations signify the company's robust presence in China's domestic market.

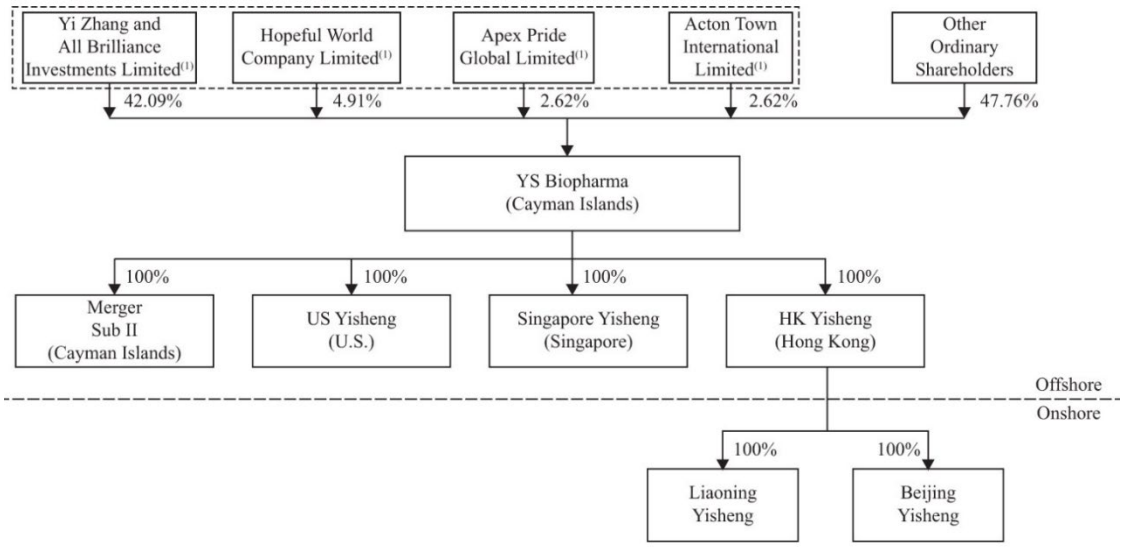

Exhibit 2: YS Biopharma Corporate Structure. Source: YS Biopharma Registration Filing

Innovative PIKA® Immunomodulating Technology Platform

YS Biopharma's core platform is the PIKA® technology, a synthetic biologic complex synthesized based on their proprietary GMP manufacturing technology. This technology triggers a multi-pronged approach of immunomodulation through TLR3, RIG-I, and MDA-5 signalling pathways, thereby inducing a prompt production of interferon, cytokines, chemokines, and co-stimulatory factors.

YS Biopharma's PIKA technology is a synthetic biologic complex inducing various immune responses. Used with suitable antigens, it enables development of new antiviral and anticancer treatments

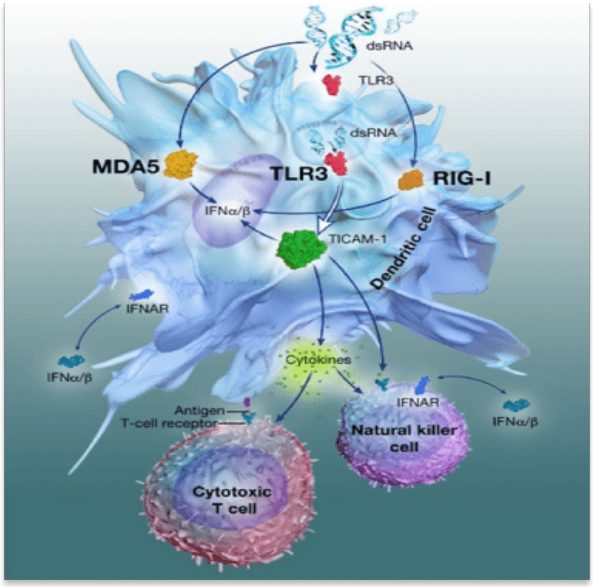

Exhibit 3: PIKA® Technology Overview. Source: YS Biopharma Filings

The PIKA® technology is derived from YS Biopharma's research in a class of well-defined dsRNA molecules synthesized using their proprietary technology. The endosomal dsRNA can be recognized by TLR3, while cytosolic dsRNA can be sensed by the RIG-I-like receptor family, which includes RIG-I and MDA-5. The antiviral and antitumor effects of interferon have been well established. The production of type I interferon upon PIKA® administration facilitates antigen cross-presentation by dendritic cells and augments CD4+ T-cell, CD8+ T-cell, and natural killer-cell responses, which makes PIKA®-based therapeutics suitable for both antiviral and antitumor applications.

When delivered with relevant antigen-based molecules, PIKA® technology can be applied to the development of a new generation of antiviral vaccines, antiviral therapeutics, and anticancer therapeutics. This offers a promising platform for the development of a wide variety of novel biologics to improve treatments that are currently available and address unmet medical needs. The robust response stimulated by PIKA® technology can offer significant improvements over traditional antiviral and anticancer therapies. Conventional treatments often focus on attacking the disease directly and may not fully leverage the body's own immune response. PIKA® technology, in contrast, harnesses and enhances the body's natural defences, providing a more holistic approach to treatment.

Moreover, PIKA® technology's ability to be coupled with antigen-based molecules offers another level of versatility. By delivering the PIKA® molecule alongside relevant antigens, YS Biopharma can develop targeted vaccines and therapeutics for various diseases. This ability to customize the immune response to specific diseases could allow for more effective and personalized treatments. YS Biopharma has been granted about 70 patents across more than 30 countries and regions relating to its PIKA® immunomodulating technology and prophylactic and therapeutic product innovations.

The potential applications of PIKA® technology are vast. From creating powerful new vaccines for infectious diseases to developing novel anticancer therapeutics, this platform could revolutionize many areas of medicine. Furthermore, by improving upon currently available treatments and addressing unmet medical needs, YS Biopharma is positioning itself as a leader in the field of immunotherapy. The future of PIKA® technology is promising—as our understanding of the immune system continues to grow, the potential for innovative platforms like PIKA® will only continue to expand. The versatile and powerful approach of PIKA® technology makes it a key player in the next generation of immunomodulating therapeutics.

YS Biopharma's PIKA technology is a synthetic biologic complex inducing various immune responses. Used with suitable antigens, it enables development of new antiviral and anticancer treatments

YS Biopharma's First Marketed Product: YSJA™ Vaccine for Rabies Prevention

YSJA™ Rabies Vaccine, the company's first marketed product, is also a first-of-its-kind inactivated vero cell-based rabies vaccine in China that does not contain aluminum, providing post-exposure protection against rabies. Additionally, it uses a fixed CTN-1 strain grown in Vero cells, which shares a higher similarity with most wild rabies strains in China, making it particularly effective. Since its introduction in 2003, approximately 98 million doses have been administered to patients. The vaccine stands out because of its improved suitability for rabies prevalent in China, its better tolerability, causing less pain, injection site discomfort, and a lower rate of fever compared to other locally available rabies vaccines. YS Biopharma's manufacturing facilities in Shenyang, China, which are compliant with Good Manufacturing Practices (GMP), have been producing the vaccine since February 2020. As of June 30, 2023, the company had produced more than 26.5 million doses, of which about 22.2 million have been sold to approximately 1,725 county-level CDCs in China, covering over 60% of all county-level CDCs in the country. The company is actively seeking partnerships and licensing agreements with prominent pharmaceutical companies to bring the YSJA™ rabies vaccine to the primary markets of Southeast Asia. Additionally, the company plans to extend its reach into Europe, Africa, and South America, aiming to boost the commercial success and visibility of its products across these diverse regions.

Appendix

Income Statement	FY2022 A	FY2023 E	FY2024 E	FY2025 E	FY2026 E
Net sales	502,949,894.0	687,201,070.0	574,609,152.0	763,714,440.9	1,419,131,290.1
Cost of sales	(117,066,090.0)	(153,360,262.0)	(114,921,830.4)	(152,742,888.2)	(283,826,258.0)
Gross profit	**385,883,804.0**	**533,840,808.0**	**459,687,321.6**	**610,971,552.7**	**1,135,305,032.1**
Operating expenses					
Selling	(185,999,704.0)	(272,927,356.0)	(298,796,759.0)	(290,211,487.5)	(496,695,951.5)
General and administrative	(107,620,500.0)	(81,595,277.0)	(143,652,288.0)	(152,742,888.2)	(255,443,632.2)
Research & development expense	(211,222,263.0)	(318,700,326.0)	(339,019,399.7)	(343,671,498.4)	(354,782,822.5)
Income from Operations	**(118,958,663.0)**	**(139,382,151.0)**	**(321,781,125.1)**	**(175,654,321.4)**	**28,382,625.8**
Late fees related to income tax	-	-	-	-	-
Late fees related to taxes other than income tax	(231,231.0)	(3,603.0)	-	-	-
Late fees related to social security insurance	(1,852,378.0)	(747,609.0)	(446,176.0)	-	-
Government grants	23,020,413.0	26,072,517.0	14,627,559.0	-	-
Fair value of changes of warrant liability	-	21,358.0	6,851,308.0		
Financial expenses, net	(2,717,433.0)	(30,857,673.0)	(26,813,993.7)	(26,813,993.7)	(26,813,993.7)
Other income (expenses), net	(327,987.0)	551,760.0	(148,749.0)	-	-
Profit before exceptional items, extraordinary items and tax	**(101,067,279.0)**	**(144,345,401.0)**	**(327,711,176.9)**	**(202,468,315.1)**	**1,568,632.1**
Exchange loss (net)	-	-	-	-	-
Employee seperation cost	-	-	-	-	-
Profit before tax from continuing operations	**(101,067,279.0)**	**(144,345,401.0)**	**(327,711,176.9)**	**(202,468,315.1)**	**1,568,632.1**
Income tax (expense) benefit	(4,937,122.0)	(1,133,504.0)	-	-	(392,158.0)
Net earnings	**(106,004,401.0)**	**(145,478,905.0)**	**(327,711,176.9)**	**(202,468,315.1)**	**1,176,474.0**
Accretion to redemption value of convertible redeemable preferred shares	(130,662,326.0)	(137,991,697.0)	-	-	-
Net loss attributable to YS Biopharma Co. Ltd	**(236,666,727.0)**	**(283,470,602.0)**	**(327,711,176.9)**	**(202,468,315.1)**	**1,176,474.0**

Exhibit 4: Income Statement Snapshot (values in RMB). Source: Diamond Equity Research

Risks Profile

- **Regulatory Risks and Governmental Influence in China's Market:** YS Biopharma's considerable presence in China subjects it to certain legal and operational risks. The Chinese government's ability to significantly influence businesses, coupled with potential changes in the country's economic, political, or social conditions, could adversely affect the company's performance. Further, the company is domiciled in Cayman Islands; the perception of the Cayman Islands as a tax haven may lead to reputational risk, scrutiny from international regulators, and potential changes in tax treatment.

- **Dependence on a Single Product for Revenue:** YS Biopharma relies heavily on its rabies vaccine, YSJA™, which constituted nearly all of its total revenue in recent fiscal periods. The sustained success and sales expansion of YSJA™ hinge on factors like manufacturing standards, marketing effectiveness, and regulatory compliance. A failure to expand YSJA™'s sales could critically impact YS Biopharma's operations.

- **Significant Market Competition:** YS Biopharma operates within a highly competitive landscape, which could hinder its ability to market or commercialize its products effectively. The competition spans from global pharmaceutical giants to specialty biotechnology firms, along with academic institutions. If YS Biopharma cannot sustain its competitive standing, it may experience a reduction in market share, diminished pricing power, and a subsequent downturn in financial performance.

- **Market Acceptance Risk:** The commercial success of YS Biopharma's products is contingent upon market acceptance by end-users, CDCs, Key Opinion Leaders (KOLs), and others in the vaccine or disease prevention industry. Failure to secure and sustain such acceptance could have a materially adverse effect on YS Biopharma's business, financial condition, and operational results.

- **Adverse Event Risk:** The success of YS Biopharma's marketed product and product candidates could be hindered by undesirable adverse events or other properties that could delay or prevent their regulatory approval, limit the approved label's commercial profile, or result in significant negative consequences post-approval. These adverse events could cause interruptions, delays, or halts in clinical trials and could lead to more restrictive labels or denial of regulatory approval.

- **Success of Product Candidates Hinges on Preclinical and Clinical Trial Outcomes:** The success of YS Biopharma is highly contingent on the successful completion of preclinical and clinical trials for its product candidates, which involve complex, time-consuming, and expensive processes with uncertain results.

This list of risk factors is not comprehensive. For a full list, please refer to YS Biopharma's latest prospectus and/or annual filings.

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