What's happening in Life Science?

Trend report

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The Life Science industry continues to undergo significant transformations driven by technological advancements, evolving patient expectations, and the need for sustainable practices.

The use of artificial intelligence (AI), machine learning (ML), and big data analytics is revolutionizing research and development (R&D) processes, enabling faster and more accurate drug discovery and development. Personalized medicine is becoming more prevalent, offering tailored treatments based on individual genetic profiles, improving efficacy, and reducing adverse effects.

IT in Life Science: From cost center to a competitive necessity.

Moreover, the rise of digital health technologies, including telemedicine, wearable devices, and mobile health applications, empowers patients to take control of their health and engage more actively in their care.

For a long time, there was a belief within the life science industry that IT delivered basic capabilities rather than any competitive advantage.

However, today's stance no longer holds as life science witnesses a surge in digital services and accelerates innovation. IT is now embedded across every business function, from R&D to core functions like HR.

For life science companies, IT is the key to unlocking immense value. It allows them to utilize data for better decision-making, meet customer expectations, and modernize internal processes.

IT is more than just computers; it encompasses the information businesses create and use and the technology that processes it. By prioritizing IT, Life Science companies can seize the first-mover advantage in digitizing markets. These technologies also provide healthcare providers with real-time data to make informed decisions and deliver more personalized care.

What does technology mean for Life Science companies today?

The Life Sciences sector is central to advancing health, agriculture, and environmental sustainability and continues to thrive.

With a global valuation exceeding $2 trillion, the industry is expected to experience substantial growth by 2025. This growth is fueled by the increasing healthcare needs of an aging global population and the rapid progress of new technologies and innovation.

These advancements are shaping the industry in multiple significant ways:

Strategic growth through acquisitions and collaborations

The Life Science sector is poised for cautious growth, primarily driven by strategic acquisitions and partnerships. Despite economic challenges, especially in regions like China, mergers and acquisitions (M&A) activities are expected to increase, focusing on high-value assets with significant commercial potential.

Enhanced research and development

AI and ML are accelerating the pace of R&D by enabling predictive modeling, optimizing clinical trials, and identifying potential drug candidates with greater accuracy. These technologies are transforming the discovery process, reducing the time and costs of bringing new therapies to market.

Generative AI Transformations

The rapid evolution of Generative AI (GenAI) is significantly impacting the Life Sciences – from drug discovery to patient care. GenAI automates various tasks, enhances workflows, and optimizes processes, resulting in substantial cost savings and efficiency improvements. The synergy between extensive Life Science datasets and advanced AI capabilities from tech giants drives innovation in drug discovery and healthcare.

Personalized patient interactions

GenAI can deliver personalized patient interactions, such as AI-powered mental health support chatbots and customized treatment plans, enhancing patient care and engagement.

Personalized medicine

Genomic technologies and personalized medicine approaches enable the development of therapies tailored to individual patients. By analyzing genetic information, healthcare providers can predict disease risk, tailor treatments, and monitor response, leading to more effective and personalized care.

Optimized operations and decision-making

Incorporating advanced analytics, automation, and cloud systems allows companies to improve decision-making and streamline internal processes, thereby increasing productivity.

Rising cost and shifting spending patterns

Global pharmaceutical spending is increasing, driven by population growth and a heightened demand for expensive speciality medications. This trend is reshaping spending patterns within the industry.

The global push for affordability through price controls

Governments worldwide are implementing stricter medication pricing controls to address affordability concerns. These measures aim to balance cost management with ensuring access to essential treatments.

Collaboration for innovation

Partnerships and collaborations are becoming increasingly important in the Life Science industry. Cross-industry collaborations, public-private partnerships, and alliances with technology firms are driving innovation and expanding the capabilities of Life Science companies.

Collaborative models

As funding tightens, biotech companies are increasingly turning to partnership models with larger players. These collaborations offer access to essential resources, expertise, and new markets, facilitating continued innovation and market expansion.

Sustainability initiatives

Life Science companies are adopting sustainable practices to reduce their environmental footprint. Innovations in green chemistry, eco-friendly packaging, and energy-efficient facilities are part of the broader commitment to sustainability. These initiatives contribute to environmental conservation and enhance corporate reputation and compliance with regulatory requirements.

Fierce competition for digital and data science talent

The innovation necessary to build products with greater digitization means the demand for digital talent has increased in Life Science. Companies must attract and retain skilled professionals to stay competitive.

Digital ecosystems

The importance of digital ecosystems is more pronounced as companies look to improve customer engagement, quality of care, and experience.

Improving patient engagement and transparency

Patients today are more engaged with their care and expect healthcare services to deliver convenient and transparent care. There is a growing desire to access and utilize existing data to provide transparency into product performance.

Tech-first competitors arising

As the Life Science and technology spheres become more intertwined, new, nontraditional technology actors are rising within the market.

Technology is continuously reshaping how we live, work, and interact. It is also at the heart of the Life Science industry, driving innovation and providing a competitive edge.

Technology provides the key to unlocking bold digital aspirations for businesses to drive potentially life-changing R&D, lead the transition to a more unified ecosystem, and reach revenue objectives. Integrating advanced technologies enables Life Science companies to overcome traditional challenges and unlock new opportunities.

Trends that will shape the Life Science industry

The Life Science industry is evolving rapidly, driven by new trends reshaping healthcare and biomedicine. From AI-powered data analysis to personalized medicine and gene therapies, these advancements are transforming research, treatment, and sustainability practices.

This section explores these six key trends and their significant impact on global health and scientific progress.

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AI-powered data analysis

One of the leading trends in the Life Science industry is the integration of AI-powered data analysis. Much like in other sectors, the AI revolution is dramatically reshaping the Life Science industry – particularly in biomedicine and healthcare.

In 2022, the market for AI in Life Science analytics was valued at $1.5 billion and is projected to reach $3.6 billion by 2030.

AI-powered data analysis enables scientists and clinicians to quickly and accurately process vast and complex data sets, driving significant advancements in drug development, manufacturing, basic research, and clinical trials.

AI-powered drug discovery is on the rise, offering the potential to reduce costs and save time. Many pharmaceutical companies are expanding their AI and data science departments to leverage AI for designing molecules, experiments, and clinical trials.

Adoption of intelligent technologies

The Life Sciences industry is embracing intelligent technologies transforming operations and enhancing compliance with quality standards. Digital tools such as AI, automation, and the Internet of Things (IoT) boost productivity and accuracy across various tasks.

These technologies enhance connectivity, providing deeper insights into performance metrics like supply chain efficiency. Moreover, the influx of digital data enables companies to gather, analyze, and leverage valuable information, thereby improving decision-making and supporting the development of innovative treatments and services.

Personalized medicine and cell therapies

Another significant trend in the industry is the rise of personalized medicine and cell therapies. Personalized medicine represents a modern approach aimed at developing diagnostic, predictive, preventive, and therapeutic solutions tailored to an individual's physiological, environmental, and behavioral characteristics.

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This field has expanded rapidly with the advent of cutting-edge technologies such as DNA sequencing, 3D tumoroid culture systems, wireless health monitoring, and multi-omics. These innovations enable researchers to uncover the intricate differences in disease processes among individuals.

A notable example of personalized medicine's success is autologous cell

therapy, which uses a patient's engineered cells as treatment. This approach has shown significant efficacy in treating various intractable cancers, including multiple myeloma.

In the past decade, cell therapy has experienced rapid growth within the pharmaceutical market and regulatory landscape. Since the first CAR-T cell therapy approval in 2017, five such therapies have received FDA approval. Researchers are exploring emerging methods like NK cell and allogeneic therapies and developing modular manufacturing systems for scaling up existing therapies.

The global cell therapy market, valued at $4.74 billion in 2023, is projected to reach $5.89 billion in 2024.

Advanced cancer research models with tumoroid culture

A third trend is the use of advanced cancer research models with tumoroid culture. Over 90% of potential anti-cancer drugs fail during clinical trials, primarily because traditional 2D pre-clinical models – which use immortal tumor lines – cannot accurately mimic the complex environment and biological processes of real patient tumors. This gap makes it difficult to translate lab findings into successful clinical outcomes.

In contrast, 3D culture tumoroid models, also known as tumor organoids, are proving to be a significant advancement. These models, derived from patients' primary tumors, better replicate the actual physiological behavior of cancer cells.

Although setting up tumoroid systems has historically been challenging due to issues in consistency and reproducibility, newer tools are simplifying the process and ensuring standardization across different research groups. These advanced models promise to speed up cancer drug development and enhance personalized medicine approaches.
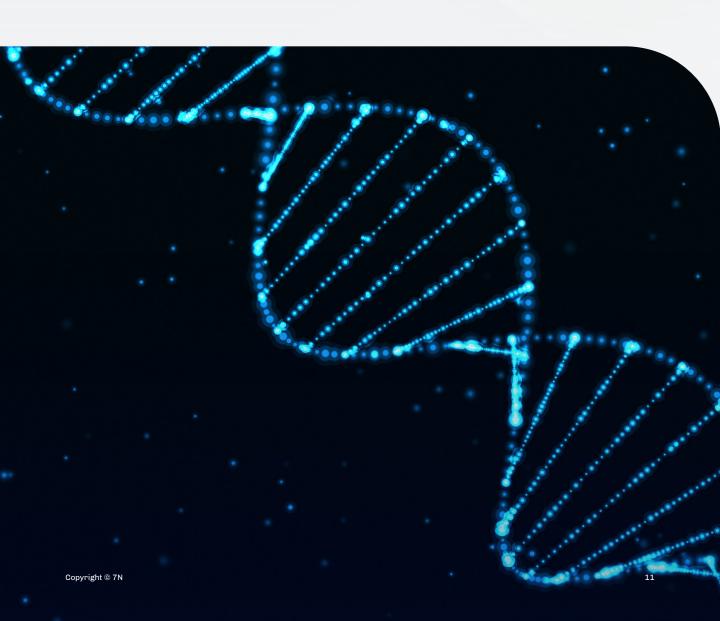
Gene therapies

Gene therapy is a transformative trend within molecular medicine, anticipated to have a profound impact on healthcare. After facing initial challenges two decades ago, recent advancements in genetics and bioengineering have revitalized this field. Technologies such as CRISPR-Cas9 editing, nanoparticle biological delivery systems, and efficient adeno-associated virus (AAV) vectors drive this resurgence.

While current applications of gene therapies are mostly in research, they hold great potential for treating various genetic disorders – including autosomal recessive diseases like sickle cell anemia, acquired genetic conditions such as cancer and cardiovascular diseases, and viral infections like AIDS.

Recent breakthroughs include the use of AAV1-hOTOF gene therapy to treat children with deafness caused by a mutated otoferlin gene. Notably, in 2023, the FDA approved the first cell-based gene therapies for treating sickle cell disease and severe hemophilia A.

Sustainability in Life Science

Lab sustainability

Another crucial trend is lab sustainability. The Life Sciences industry has a significant environmental impact due to its intensive use of energy and resources – the pharmaceutical sector produces a large proportion of health system greenhouse gas, contributing to climate change. More precisely, it's responsible for 4.4% of global emissions, with its carbon footprint potentially tripling by 2050 if unaddressed.

Researchers and industry leaders, driven by a commitment to mitigate climate change, actively seek ways to reduce hazardous, consumable, and packaging waste. They also look for ways to extend the life-cycle of laboratory tools before disposal or recycling and improve energy efficiency.

Lab automation

Lab automation is a trend that is transforming the Life Sciences industry as well. It enhances the quality and reproducibility of results, supports clinical translation in closed-system environments, and boosts researcher efficiency, speed, and productivity.

Rapid advancements are delivering exciting new options – ranging from GMP compliance to AI-powered analysis and complete hands-off workflows. As materials and engineering technologies progress, the footprint of advanced instruments continues to shrink.

These automated tools and systems are crucial for the future of clinical manufacturing, enabling faster failure and quicker scaling of successful processes. This capability is essential for rapidly developing and producing lifesaving therapies – such as mRNA vaccines and cell therapies.

Advances in sustainability reporting

Life Sciences companies are increasingly preparing to meet comprehensive state, federal, and international climate risk and emissions disclosure regulations.

As environmental, social, and governance (ESG) factors become essential to business resilience, consumers, shareholders, regulators, and other stakeholders are demanding greater transparency.

Compliance and reporting requirements

Organizations must meticulously collect, organize, govern, attest, and disclose data to comply with new regulations. This often requires changes to current practices for reporting climate risks and greenhouse gas (GHG) emissions.

For example, the SEC has proposed a new rule requiring public companies to disclose their GHG emissions reduction targets and climate-related business risks. Consequently, organizations need to proactively set goals, gather relevant data, and measure their progress.

Investment in talent and technology

In response to these sustainability regulations, Life Science companies are expected to invest in both talent and technology to remain compliant and competitive. This includes hiring leaders proficient in ESG reporting frameworks and standards, who can navigate the complexities of robust data disclosure.

Additionally, the industry is likely to invest more in carbon footprint software to accurately measure and monitor individual carbon profiles.

Advanced carbon footprint calculators, which can integrate with ERP systems, will streamline the calculation of supply chain emissions, especially when suppliers also use the same ERP system.

Emerging therapies and research

mRNA-based therapeutics

A notable trend in Life Science is the development of mRNA-based therapeutics. After decades of research, mRNA-based therapies gained widespread attention with the development of SARS-CoV-2 vaccines, which demonstrated the potential of mRNA technology to be safe, easy to produce, targeted, versatile, and highly effective.

Beyond vaccines, mRNA therapies hold promise for treating various challenging diseases, including metabolic genetic disorders, infectious diseases, cancer, cardiovascular conditions, and cerebrovascular issues.

The success of these mRNA-based therapies is paving the way for a new era of nucleic acid medicines, revolutionizing how we approach treatment for numerous medical conditions.

Rising interest in metabolic diseases

Interest in metabolic diseases is skyrocketing due to their significant health challenges. According to research, roughly two out of three (69%) American adults are overweight or obese. Moreover, one out of three (36%) American adults are obese, leading to serious health issues such as heart attacks and strokes.

Additionally, non-alcoholic fatty liver disease (NAFLD) affects around 25% of the global population, causing severe liver damage.

Despite their substantial impact, these diseases have historically been difficult to address with pharmaceuticals, resulting in less focus from big pharma and investors. However, new research and potential treatment strategies are emerging, renewing interest in tackling these pervasive health problems.

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The flexible IT consultancy

A global network of extraordinary IT people
– delivering on clients' objectives and beyond

Sector expertise drives the digital transformation

In recent years, macro events have increased the pace of innovation, development cycles, and competition, while creating an ever-changing risk landscape. Armed with knowledge of these trends and their implications on the business, our agents and consultants can help mitigate risk and identify opportunities in our clients' business cycle.

Over decades, 7N has been part of several waves of digitalization. Today, our consultants work across industries and geographical borders to deliver the projects that define the new digital realities.

We offer clients a highly specialized portfolio of IT services and solutions delivered by the top 3% of IT professionals. Our expertise spans across many industries providing digital transformation across all phases of the IT project life cycle.
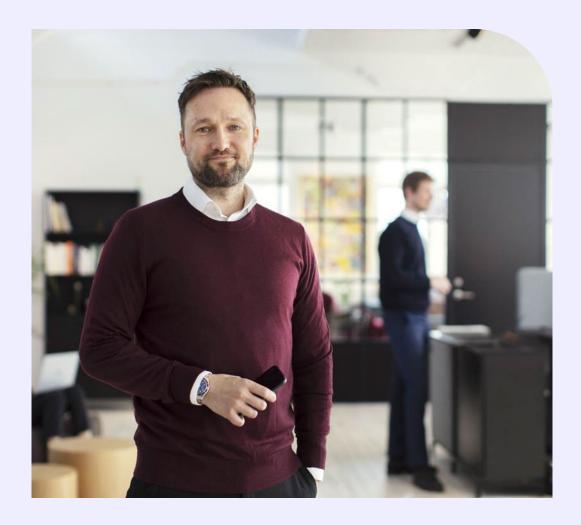
By engaging early with 7N, our clients already benefit from our expertise when defining project scope and strategic needs, and they always gain flexibility to adapt and accommodate changing demands while retaining control and maintaining ownership of IT development in-house.

How we deliver high-performance IT

Delivering with high efficiency shouldn't lead to higher workload. We build efficient teams, where expertise and experience accelerate more than headcount and capacity. In doing so, we helm form small, highly efficient teams, staffed to maximize client impact.

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We have a sophisticated our best-of-breed approach to identifying and quality-assuring top 3% IT professionals. Our model is designed to identify personal capacities, professional skills, and drive to deliver to our clients. For all clients, we have dedicated recruitment teams with extensive local knowledge and global reach for candidate sourcing. We tailor our recruitment process to each client's technical and cultural needs.

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Schedule a meeting and hear more about how we can help you assess your possibilities and overcome your challenges.

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7N Group is an elite IT consultancy agency with more than 20 years of market experience in serving all aspects of critical IT projects both within the public and private sector.

We have dedicated ourselves to finding the right match between our consultants and the companies we serve – we believe that is how the best results are created. At 7N, we have built a professional community of extraordinary people. A community dedicated to achieving professional and personal development. A place where the best gets to play with the best.

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