Life Science Ingredients
Jubilant Life Sciences Limited is an integrated global pharmaceutical and life sciences company engaged in Pharmaceuticals, Life Science Ingredients and other businesses including Drug Discovery Solutions and India Branded Pharmaceuticals. Jubilant Life Sciences has a team of around 7600 multi cultural people across the globe and is committed to deliver value to its customers across over 100 countries.

Jubilant Pharma Limited is a global integrated pharmaceutical company offering a wide range of products and services to customers across geographies. We organise our business into two segments, namely, Specialty Pharmaceuticals, comprising Radiopharmaceuticals (including Radiopharmacies), Contract Manufacturing of Sterile Injectables and Non-sterile Products and Allergy Therapy Products, and Generics & APIs, comprising Solid Dosage Formulations and Active Pharmaceutical Ingredients. We supply our products and services to customers in over 85 countries. We have four manufacturing facilities in North America and two in India, coupled with Research and Development centers in North America and India. In addition, we have a distribution network of more than 50 radiopharmacies in the United States.

The Life Science Ingredients business is engaged in Specialty Intermediates, Nutritional Products and Life Science Chemicals through five manufacturing facilities in India. This segment offers a broad portfolio of high quality ingredients that find application in wide range of industries. In this segment, we enjoy a strong position given our strengths in vertical integration, chemistry capabilities, low-cost manufacturing, best-in-class processes, and global leadership in key products.

The Drug Discovery Solutions business provides proprietary in-house innovation for out-licensing purposes and collaborative research and partnership for Drug Discovery through two world-class research centers in India and the US.
BUSINESS SEGMENTS

LIFE SCIENCE INGREDIENTS
- Specialty Intermediates
- Nutritional Products
- Life Science Chemicals

DRUG DISCOVERY SOLUTIONS
- Discovery
- Development
- Commercialization

PHARMACEUTICALS

Specialty Pharmaceuticals
- Radiopharmaceuticals (including radiopharmacies)
- Contract Manufacturing of Sterile Injectables and Non-sterile products (“CMO”)
- Allergy Therapy products

Generics & APIs
- Solid Dosage Formulations
- Active Pharmaceutical Ingredients (“APIs”)
LEADERSHIP POSITIONS

**LIFE SCIENCE INGREDIENTS**

<table>
<thead>
<tr>
<th>Specialty and Fine Ingredients</th>
</tr>
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<tbody>
<tr>
<td>Global Leadership in Pyridine and 11 Pyridine Derivatives</td>
</tr>
<tr>
<td>Nutritional Products</td>
</tr>
<tr>
<td>Globally No. 2 in Niacinamide (Vitamin B3)</td>
</tr>
<tr>
<td>Life Science Chemicals</td>
</tr>
<tr>
<td>Globally No. 7 in Ethyl Acetate and No. 4 in Acetic Anhydride</td>
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</tbody>
</table>

**PHARMACEUTICALS**

<table>
<thead>
<tr>
<th>Radiopharmaceuticals</th>
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<tbody>
<tr>
<td>Third largest radiopharmaceutical manufacturer in the nuclear medicine industry in the United States based on revenue</td>
</tr>
<tr>
<td>Second largest centralized commercial radiopharmacy network in the United States with a national footprint of more than 50 radiopharmacies across 22 states</td>
</tr>
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<thead>
<tr>
<th>Allergy Therapy Products</th>
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<tbody>
<tr>
<td>One of the top three players with a market share of 17.6% in the allergenic extract market in the United States and are currently the sole producer and supplier of venom products for the treatment of allergies in the United States</td>
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</tbody>
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<tr>
<th>Solid Dosage Formulations</th>
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<tr>
<td>One of the market leaders in the United States, based on market share of several key products</td>
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<th>APIs</th>
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<tr>
<td>One of the global suppliers for several key API products based on market share</td>
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</tbody>
</table>

Revenue FY 2018

**USD 1165 million**

(INR 7518 crores)

International Revenues contribute 72%

11 Manufacturing Facilities

(7 in India, 2 in Canada and 2 in USA)

Serving customers across 100 countries
GLOBAL FOOTPRINT

MANUFACTURING FACILITIES

LIFE SCIENCE INGREDIENTS

Gajraula, Uttar Pradesh, India
Integrated Pyridine & its derivatives, Fine & Crop Science Ingredients and Life Science Chemicals

Bharuch, Gujarat, India
Vitamin B3, Fine & Crop Science Ingredients and Life Science Chemicals facility located in the Special Economic Zone (SEZ)

Nira, Maharashtra, India
Life Science Chemicals

Samlaya, Gujarat, India
Animal Nutrition Products

Ambernath, Maharashtra, India
Fine and Crop Science Ingredients

PHARMACEUTICALS

Kirkland, Montreal, Canada
Health Canada and the US FDA approved facility for Radiopharmaceuticals

Kirkland, Montreal, Canada
US FDA, Health Canada approved facility for Sterile Injectables and Non-sterile products

Spokane, Washington, USA
US FDA, MHRA, Health Canada, PMDA Japan approved facility for Sterile Injectables

Salisbury, Maryland, USA
Health Canada, US FDA and DEA approved facility for Solid Dosage Formulations

Nanjangud, Karnataka, India
US FDA, PMDA Japan, KFDA Korean and COFEPRIS Mexico approved facility for Active Pharmaceutical Ingredients

Roorkee, Uttarakhand, India
US FDA, UKMHRA, PMDA Japan, ANVISA Brazil and MCC South Africa approved facility for Solid Dosage Formulations

7,600 multicultural people
(2200 in North America & 1100 in R&D)

Listed on Indian Stock Exchanges at NSE & BSE

World-class research centres in India and USA and state-of-the-art Discovery Centre in Bengaluru, India
The Life Science Ingredients business is engaged in Specialty Intermediates, Nutritional Products and Life Science Chemicals through five manufacturing facilities in India. This segment offers a broad portfolio of high quality ingredients that find application in wide range of industries. In this segment, we enjoy a strong position given our strengths in vertical integration, chemistry capabilities, low-cost manufacturing, best-in-class processes, and global leadership in key products.
We have leveraged on backward integrated feedstock of Acetaldehyde produced from Ethanol, coupled with global expertise in Pyridine Chemistry to achieve global leadership position in Pyridine business. We have forward integrated this Pyridine and Picolines platform to develop 60 commercial products in Fine Ingredients and Crop Science Ingredients business. We have built global capacities in most of these products with global leadership position in 10 value added products.

The Specialty Intermediates products of Jubilant are used in Pharmaceutical, Agrochemicals, Food, Personal Care, Healthcare and Nutrition products and various other life science industries.

For the last four decades, Jubilant has mastered the art of making these products and continually work on multiple chemistry platforms to ensure that our global customers’ requirements are met.
Advance Intermediates

The Advance Intermediates business of Jubilant Life Sciences manufactures Pyridine, Picolines, Cyanopyridines and Piperidine. These are used as Advance Intermediates/building blocks for the production of a range of agrochemicals, pharmaceuticals, dyes, solvents, metal finishes, fine chemicals etc.

Jubilant manufactures products via Biomass route, using agricultural feedstock, which gives it a benefit of lesser carbon footprint as compared to the conventional petroleum route. The products are trusted by more than 275 global pharmaceutical, agrochemical and other industrial customers who rely on Jubilant’s consistent quality and service.

Antimicrobials (antimicrobial for industrial and personal)

Jubilant has a range of safe and highly efficacious anti-microbial solutions for applications in Paints, Coatings, Industrial, Cosmetic and Personal Care industries. Range of Products includes Jubithione® (ZPTO, ZPT-40, ZPT Powder, CuPT, NaPT) Class of Pyrithiones, Cetyl Pyridinium Chloride, Per-Acetic Acid 15% & 35% solution.

In addition the Company has developed New Synergistic & Innovative Antidandruff Products like Jubithione® ZPC, Jubiquat™ CLC, Low Cost In Can & Dry film Preservation Solutions like Jubithione® ZBT, Jubithione® NBT, Boosted Preservation Solutions Jubigaurd® PHG and PCG, & Complete Oral Care solutions Jubiquat® CPL

Crop Science Ingredients

With its value added intermediates & Actives specially developed for the Agro Chemical Industry, the business is a preferred supplier to all global agrochemical customers. Jubilant’s product range includes Halogenated and Fluorinated intermediates and actives with wide application in the agrochemical industry.

In addition, the Company is also developing chosen Agro-Actives towards forward integration plan and will offer the same to its existing and new customers in future. All necessary regulatory work is underway, in India, to ensure quick availability and delivery of these actives, for our customers.

Fine Ingredients (Pharma & Others)

Jubilant offer over 50 commercial Pyridines, Picolines, Piperidine based intermediates which are used globally by Pharmaceutical, Healthcare, Electronics and other industries. The Company is a global leader in 11 pyridine based intermediates.

CDMO (Contract Development & Manufacturing Organisation-for Pharma & Agrochemical)

The business provides Contract Development and Manufacturing services for

- Key Starting Materials and Regulatory Starting Materials
- Advanced Intermediates with final step in WHO and Third Party certified GMP Plant,
- Patented or Generic APIs under cGMP Guidelines.
- Large Volume Intermediates and Actives for Agrochemical companies

Global leadership position in Pyridines & derivatives

Around 40 years of experience in Pyridine chemistry
Vitamin B3 (Niacinamide and Niacin)
We have recently received World Health Organisation’s (WHO) Good Manufacturing Practice (GMP) certification for our Vitamins facility which will help us increase our footprint in the premium food, personal care and other value added applications.

Our product quality and consistency have ensured a growing and dedicated customer base for us. We have competitive edge in the market from being able to control our own supply of major raw material **Beta Picoline** which is a precursor to **Vitamin B3** and is manufactured by our Specialty Intermediates business.

Currently, our Niacinamide is being sold in more than **80 countries** and we are confident of growing our business in the coming year. The Molasses obtained from sugarcane enables Jubilant to use bio-ethanol as the primary feedstock for the manufacture of Niacinamide and Niacin. Another key product in this segment is **Vitamin B4 (Choline Chloride)** for which we have the largest market share in India, catering to different applications like feed, food, pharmaceuticals, dye manufacturing and shale stabilisation.

Animal Nutrition
Through our Animal Nutrition business we offer high quality Specialty Feed Supplements and Additives and Premixes in the category of Vitamin and Mineral Premixes, Betaine, Acidifier, Toxin Binders, Encapsulated products, Growth Promoters, Liver Nourishment Products and Emulsifiers to integrators, feed millers and commercial farmers across the globe. We cater to various segments of industry like **poultry, dairy, aqua and pet food**.

Human Nutrition
We have recently entered into Human Nutrition offering nutritional and functional ingredient solutions, and tailored premixes for use in food, nutrition and fortification markets. We are the right partner of choice for developing client’s business in today’s ever-conscious clean label market by providing natural, minimally processed and familiar ingredients.

**NUTRITIONAL PRODUCTS**
This business cater to Human Nutrition, Animal Nutrition, Pharmaceuticals and Personal Care segments. One of our key products in this segments is Vitamin B3 (Niacinamide and Niacin) for which we are number two globally. The product is typically used in the food, animal feed, pharmaceuticals and personal care industries. Our Vitamin B3 business is fully backward integrated with feedstock raw material (i.e. Beta Picoline and 3-Cyanopyridine) which is produced by our Specialty Intermediates business captively.

**2nd largest manufacturer of vitamin B3 (niacinamide and niacin) worldwide**

**Largest manufacturer of choline chloride (vitamin B4) in India**
LIFE SCIENCE CHEMICALS

Jubilant Life Sciences manufactures a range of Life Science Chemicals which includes Acetyl products, Ethanol & Specialty Gases and holds leadership positions in most of them.

BUSINESS EDGE

- The key product portfolio comprises of Ethyl Acetate, Acetic Anhydride, Acetic Acid, MCAA (Monochloroacetic Acid), SMCA (Sodium Monochloro Acetate) and Acetaldehyde.
- We have global scale capacity to produce Acetyls from agro-based feedstock including molasses and alcohol.
- Established sales and distribution network to cater the requirement across the globe.
- Ethanol produced is supplied to oil marketing companies for Ethanol Blending Programme (EBP) in India.

Acetyls

The business is globally No. 4 in merchant market sales of Acetic Anhydride and No. & in Ethyl Acetate. Acetyls find applications in diverse industries such as Pharmaceuticals, Crop Protection, Food & Beverages, Textiles, Packaging, Adhesives, Aromatics, etc.

Ethanol & Specialty Gases

Ethanol and Specialty Gases business manufactures Anhydrous Alcohol, CO2 and ETO mixtures. Ethanol is well synergized in the value chain and serves as a critical feedstock for the company to make value added end products and is produced by the biomass route of processing sugarcane molasses. The company has two state of the art production unit for ethanol manufacturing in Gajraula (Uttar Pradesh) and Nira (Maharashtra). Ethanol produced is supplied to oil marketing companies for Ethanol Blending Programme (EBP) in India making us the 4th largest supplier on Pan India basis.
The Life Science Ingredients (LSI) business of Jubilant is supported by five state-of-the-art manufacturing facilities in India. We practice world class manufacturing concepts in our day to day operations assuring our customers with unmatched quality and timely delivery of products.

The facilities adhere to stringent safety and quality standards while following environmental friendly sustainable practices. Strategy of ‘Driving sustainable manufacturing in the dynamic business environment’ and ‘Zero tolerance to any non-compliance’ has been the core focus of Jubilant.

Following the approach of triple bottom line (Environment, Economic and Social) and adopting the same as a part of the overall Company strategy, Jubilant has marched ahead towards sustainability and has received approval for the coveted Responsible Care Logo usage approval for Corporate Office at Noida, Uttar Pradesh, India and plant at Gajraula, Uttar Pradesh, India under the American Chemical Council’s (ACC) Responsible Care® program. Dedicated EHS teams at the Corporate Office and manufacturing facilities effectively manage health, safety and the environmental aspects of the organisation. We maintain high and uniform quality standards across our facilities.

INDIA

LIFE SCIENCE INGREDIENTS

Gajraula, Uttar Pradesh, India
Integrated Pyridine & its derivatives, Fine & Crop Science Ingredients and Life Science Chemicals

Bharuch, Gujarat, India
Vitamin B3, Fine & Crop Science Ingredients and Life Science Chemicals facilities located in the Special Economic Zone (SEZ)

Nira, Maharashtra, India
Life Science Chemicals

Samlaya, Gujarat, India
Animal Nutrition Products

Ambernath, Maharashtra, India
Fine and Crop Science Ingredients
Our continuous emphasis on compliance to regulations, GMP (Good Manufacturing Practices) and continuous improvement are key drivers for ensuring consistent quality of products. Jubilant ensures compliance by continuous assessment and review of quality systems, and compliance with industry guidelines and regulatory standards.

**Certifications:**

- Responsible Care® 14001:2013 (RC 14001:2013) certified*
- Certified by Kosher (STAR-K KOSHER CERTIFICATION)
- ISO 22000:2005 (Food Safety System) certified
- ISO 9001:2015, ISO 14001:2015 (Quality & Environment System) certified
- ISO 50001:2011 certified
- BS OHSAS 18001:2007 (Occupational health Safety System) certified
- FAMI-QS Code Version 5.1 in Feed Safety Management System
- Halal-India, Halal-Malaysia, Halal Indonesia,
- Food Safety System Certification (FSSC) 22000 (Global Food Safety) Compliance
- Food Safety and Standards Authority of India (FSSAI)
- TS22002-01:2009 (Food Safety System Certification)
RESEARCH & DEVELOPMENT AND INTELLECTUAL PROPERTY

In Jubilant, a team of well qualified and experienced professionals in R&D centres spread across multiple locations are specialised across the value chain of chemical research, chemistry/ process development of advance intermediates, fine ingredients and contract research.

Our R&D centres conform to international standards and are well equipped with world-class infrastructure managed by best-in-class manpower. Each R&D centre has dedicated unit integrated with relevant business.

Our R&D performance hinges on the coherence and cohesiveness among our R&D centres where rapid exchange of knowledge takes place to keep pace with competition and to develop disruptive technologies for future. The R&D team focuses on process intensification, absorption of technologies and establishing technologies at commercial scale.

A dedicated team of scientists focuses on product/ process development in the area of pyridine and its derivatives and related heterocyclic chemistry, development of advance heterogeneous catalysts, extension of chemistry skills to non-heterocyclic compounds, value creation in existing key products through process improvements / process intensification, chiral compounds, technology development of vitamins & especially B-3 and development of animal health care products. We have both developed intellectual property internally and acquired intellectual property through acquisitions. New products continue to get developed by experienced and talented R&D teams which work to deliver in line with the marketing strategy by developing new cost effective processes/products.

Team of over 100 Scientists

Knowledge driven operations; Providing innovative products and economically efficient solutions

Proven expertise in complex chemical/ engineering technologies viz. heterogenous technologies, chiral chemistry, vapour phase technologies and polystate science

Advanced in-house capabilities in modern analytical instruments leads to expedited customer support

Continued efforts to minimise time to commercialisation of newer technologies/ products

R&D locations
Gajraula, Uttar Pradesh, India
Noida, Uttar Pradesh, India
The continual efforts of Business Excellence function is to understand processes and systems, model them by transfer functions, and define crucial measurements which result in a superior co-ordination and integration of processes, learning and reconfiguration and transfiguration which become sources of competitive advantage and can be effectively used to leverage Company’s competitive strategy.

**Highlights:**

- Initiatives cover all facets of the business including Manufacturing, Sales and Marketing, New Product Introduction (R&D), Supply Chain, Corporate HR, Projects and other support functions which help in creating a more efficient value chain through Six Sigma, Lean, Design for Six Sigma, World Class Manufacturing (WCM), Total Productivity Management (TPM), Supply Chain Re-engineering (SCOR), Project Management (EPM), Operation Research and Business Intelligence (BI).
- Dynamic and Steady State Process Simulation Modeling for enhancing efficiencies of chemical processes using tools like ASPEN, DYNOCHEM and other 3D printing technologies, leading to cost savings.
- Capacity debottlenecking and OPE Improvement across all sites for all major products through application of Lean Six Sigma tools thereby improving the ROCE.
- Energy savings and conservation initiatives across all sites and focussing on increasing renewable energy usage and reduction of carbon footprints.
- EBIDTA improvement initiatives across all businesses by following best in class Lean manufacturing, Lean business and Lean Supply Chain practices.
- Manpower productivity enhancement through Mechanisation and Automation and other Process Intensification initiatives.
- Digitalisation initiatives for improved visualisation, analytics and effective decision making.
- Competence development across organisation by certification of Black belts, Green Belts and Yellow belts for effective Lean six sigma deployment.
- Culture building for continual deployment of Pokayoke systems and processes, TPM philosophies and 5-S and moving towards a Visual factory.
Jubilant strives to play an integral role in all geographies where we operate. The guiding principles for our supply chain have been set under our Green Supply Chain Policy. To fulfil our Green Supply Chain commitments, the evaluation criteria cover clauses on compliance to EHS, human rights and social requirements relevant laws of the land.

**Highlights:**

- **Jubilant emphasises and invests in Life Cycle Management (LCM) of all its products consistently to be a reliable and a sustainable supplier meeting global quality standards**
- **We used modern negotiation tools like reverse auction and project management tools to ensure timely and cost efficient execution of capacity expansion projects.**
- **Many green supply chain initiatives are taken like disposing of solid waste and spent solvents to cement industry thereby reducing burden on land filling. Usage of Bio-Diesel as a boiler fuel. Power trading through Indian Energy Exchange (IEX) to be efficient.**
- **Regular supplier meets to collectively innovate & optimize a sustainable value chain**
- **Paperless Sourcing: Jubilant uses eJ-Buy an e-procurement tool that enables paperless buying. It ensures greater efficiency and transparency in procurement process and information flow.**
- **Supplier Audits are conducted annually to cover critical vendors at least once in three years. It include performance assessment against parameters such as environment, labour practice, human rights and social impact.**
- **Local Sourcing: Jubilant sources its material, machinery, spares stores etc. from across the globe without compromising on quality and value. Preference is given to local suppliers if they satisfy the requisite specifications.**
- **Training Programs: Road safety during transportation of its products and raw materials is of prime concern to us. In order to improve transporter safety, ‘Behavioural Safety Training with focus on defensive driving’ is imparted to transport service providers.**
The Company uses renewable energy sources like solar, biogas, bio-mass etc. in its energy mix to reduce company’s carbon footprint.

The Company conducted life cycle based Carbon footprint studies of key products twice in the past.

### Environment, Health and Safety (EHS)
- The Company’s approach towards best-in-class EHS standards is articulated in the EHS Policy.
- Dedicated EHS teams at manufacturing facilities & corporate office effectively manage the EHS performance of the Company.
- Safety culture in terms of safe behavior is being aggressively promoted and propagated at workplace.
- All manufacturing facilities are ISO 14001 and OHSAS 18001 certified. The Company is signatory to Responsible Care and our largest plant in Gajraula & the corporate office are RC 14001 certified. All LSI plants in India has received Responsible Care logo from Indian Chemical Council (ICC).

### Customer Health and Safety
- Strong team involving R&D, QA, QC, sales and marketing to take care of product safety
- Compliance to national and international product safety related guidelines and standards like REACH, GHS, FAMI-QS, FSSC 22000:2012. Relevant facilities have also taken FSSAI (Food Safety and Standards Authority of India) license from respective authorities.
- To bring in customers confidence on Jubilant’s EHS & Sustainability performance, the Company allows EcoVadis, a third party deputed by global Chemical business conglomerates, to assess Jubilant’s sustainability performance every year. During FY 2018, the Company was assessed under Gold category and rated under top 5% company’s assessed by EcoVadis globally.

### Corporate Social Responsibility (CSR)
- Jubilant’s CSR initiatives thrust on creating value in the lives of the communities around the area of operations of the Company
- Jubilant CSR initiatives are focused in the realm of Education, Health, Livelihood and Social Entrepreneurship
- Key CSR activities includes skill development programs, computer literacy projects via mobile bus, enhancing quality of education, mobile based biometric system for health monitoring of select children, women empowerment, partnership with development organizations etc.
- Jubilant is aligning its sustainability efforts along with UN SDGs (Sustainable Development Goals) and refer these SDGs while planning/ adopting any new / existing community development projects.
The Life Science Ingredients segment of Jubilant Life Sciences is engaged in Specialty Intermediates, Nutritional Products and Life Science Chemicals through five manufacturing facilities in India.

Serving customers in over 80 countries the segment offers a broad portfolio of high quality ingredients that find application in wide range of industries.