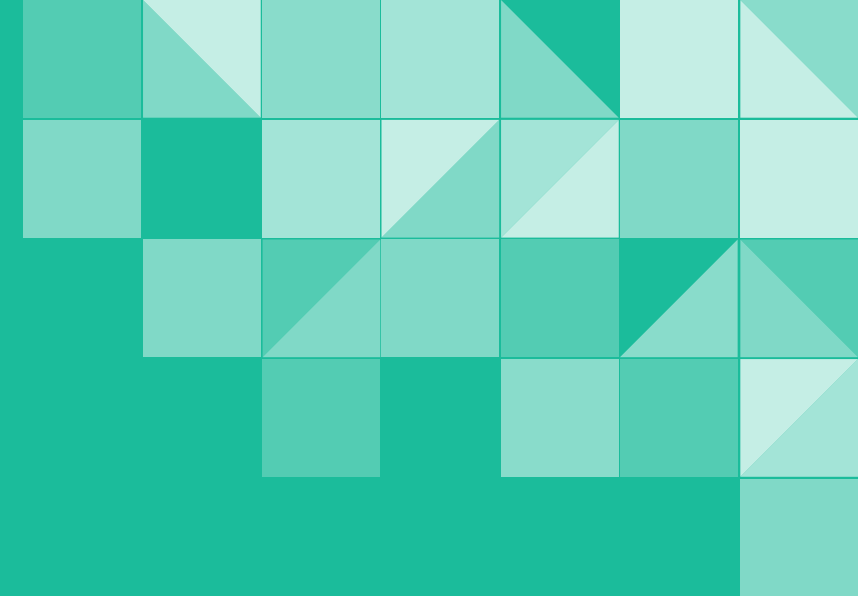




Your Best
START

To a **B**iopharmaceutical
Manuf**A**cturing **C**areer



INTRODUCTION

- A Generous Dose of Passion
- Manufacturing Process and Career Opportunities

A Generous Dose of Passion

The Biopharmaceutical Manufacturing Industry in Singapore would never have come this far without the commitment of those behind the scenes to help people live longer and healthier. Importantly, it is also this “patients first” attitude that has brought inspiration to many, spurring them to join our league.

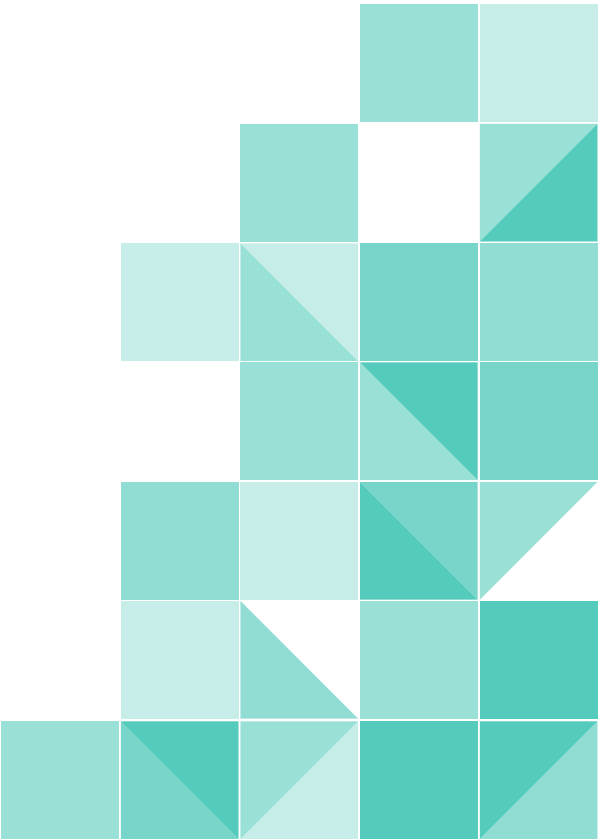
The swift pace of growth of Asia’s Biopharmaceutical Manufacturing Industry in recent years has also been instrumental in the industry’s rapid development in Singapore. To tap into the industry’s massive growth potential, Singapore unveiled its vision to transform itself into a regional biomedical hub through establishing world-class facilities and infrastructure for Research & Development,

product and process development, as well as providing venture capital support and strengthening the industry’s manpower capabilities.

When you join the Biopharmaceutical Manufacturing Industry, you will be part of a specialised workforce that prides itself on the development of a growing suite of innovative healthcare products to meet the evolving needs of patients around the world. You will also collaborate with international teams of colleagues in scientific and support roles, operating across the globe. Above all, you will be offered a wide spectrum of training and working opportunities, locally and overseas, which will bring you closer to achieving your career goals.

The best is yet to be. The Biopharmaceutical Manufacturing Industry in Singapore is set for a phenomenal growth path ahead, making it a key pillar of the economy. To begin, we need you to be the ones with the heart and skills to transform this vision into a reality.

Drive the Biopharmaceutical Manufacturing Industry’s growth with us today!



Industry Sub - Sectors



Pharmaceuticals

Pharmaceuticals are medicinal drugs manufactured to diagnose, prevent and treat diseases or other abnormal health conditions, as well as relieve physical pain and suffering. These drugs are instrumental in prolonging and improving the quality of lives of patients around the world. In general, there are two main stages in pharmaceutical manufacturing: primary and secondary manufacturing. The former involves processing raw materials into active parts of the medicines, while the latter involves mixing these active ingredients with pharmaceutical excipients to form the actual medicines, as well as product packaging.



Biologics

Biologics are a new generation of medicinal products manufactured from biological components, such as proteins, genes and cells. These differ from the conventional chemically synthesised medicines in molecular structures and are expected to be more compatible with the human body, giving rise to fewer side effects. Some of the most important discoveries using this technology were the creation of vaccines, insulin for the treatment of diabetes, as well as biologic anti-cancer drugs. Biologics are expected to become a new engine of growth for the biomedical industry, contributing to a significant part of revenue in the years to come.



Nutritionals

Nutritionals is a segment of the pharmaceutical industry that involves the research, development and manufacturing of nutritional products. These include milk powder for babies (i.e. infant formulas), young children, as well as infant with special nutritional needs. This segment plays an important role in the pharmaceutical industry as it contributes to better quality of life through constant scientific innovation. Nutritional products are produced using the same high-quality manufacturing standards observed throughout the entire pharmaceutical industry.

Pharmaceuticals Manufacturing Process - Overview



Career Opportunities - Overview

SC

SUPPLY CHAIN MANAGEMENT

- Supply Chain Specialist

PP

PROCUREMENT & PLANNING

- Logistics Lead
- Production Planner
- Process Development
- Chemist

MM

MATERIALS MANAGEMENT

- Procurement Manager
- Procurement Executive

PE

PRODUCTION EXECUTION

- Production Chemist
- Production Engineer
- Production Executive

- Production Superintendent
- Production Technician

WM

WAREHOUSE/LOGISTICS MANAGEMENT

- Logistics Supervisor
- Logistics Executive
- Logistics Technician

Support Functions and Shared Services

EM

ENGINEERING & MAINTENANCE

- Engineering/Technician
 - Automation
 - Electrical & Instrumentation
 - Mechanical
 - Project

TD

TECHNICAL DEVELOPMENT

- Chemist
- Engineer
- Laboratory Technician

QM

QUALITY MANAGEMENT

- Chemist
- Laboratory Technician

- GMP Officer
- Compliance/Validation Officer
- Continuous Improvement Project Leader
- Lean Six Sigma Black Belt

Support Functions

QM - Quality Management

- Support production
- Support resources
- Materials tasting
- Continuous improvement
- Finished product testing and release

EM - Engineering Maintenance

- Support production
- Support resources
- Process improvement
- Plant maintenance and reliability

TD - Technical Development

- New Product introduction
- Process development and optimisation
- Technology strategy

Shared Services

EHS - Environmental Health & Safety

- Environmental health and safety of company and staff
- Comply with EHS legal requirements



HR - Human Resources

- Talent management
- Learning and development
- Compensation and benefits
- Business support



IT - Information Technology & Finance

- System support
- Payment and transaction
- Payroll
- Business partnering



EHS

ENVIRONMENTAL HEALTH AND SAFETY

- EHS Engineer/Executive
- EHS Technician

HR

HUMAN RESOURCES

- HR Business Partner
- Learning &

Development Specialist

- HR Executive
- HR Administrator

IT

INFORMATION TECHNOLOGY

- Network Specialist
- Systems Specialist

FI

FINANCE

- Accountant/Accounts Assistant
- Financial Analyst



Nutritional



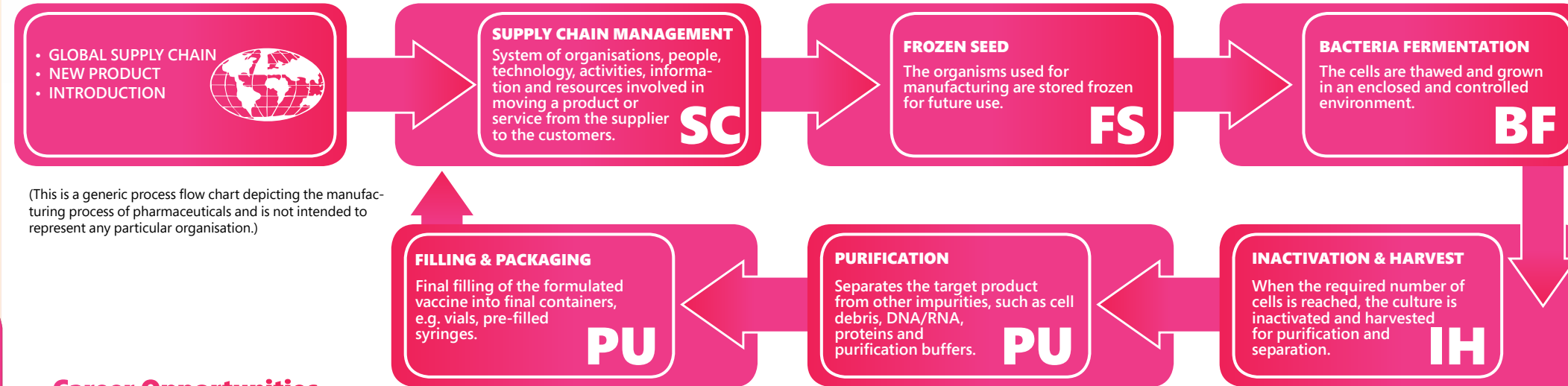
Biologics



Pharmaceuticals



Biologics Manufacturing Process - Overview



Career Opportunities - Overview

PRODUCTION PLANNING & EXECUTION

- Operations Lead
- Operations Supervisor
- Sr. Operations Technician/Associate
- Operations Technician
- Manufacturing Operations Associate

PROCUREMENT & PLANNING

- Logistics Lead
- Production Planner

MATERIALS MANAGEMENT

- Procurement Executive
- Buyer

WAREHOUSE/LOGISTICS MANAGEMENT

- Logistics Executive
- Logistics Supervisor
- Logistics Technician

Support Functions and Shared Services

PM

PLANT MAINTENANCE

- Mechanical Engineer/Technician
- Electrical Engineer/Technician
- Instrument Engineer/Technician
- HVAC Engineer
- Engineering Services Engineer/Technician

QM

QUALITY MANAGEMENT

- Quality Supervisor
- Quality Assurance Specialist
- Quality Control (Biology, Logistics, Chemistry)
- Chemist
- Laboratory Technician
- Validation Specialist
- Virus & Mycoplasma Specialist

MS

MANUFACTURING SUPPORT

- Automation Engineer
- Manufacturing Technician

Shared Services

EHS - Environmental Health & Safety

- Environmental health and safety of company and staff
- Comply with EHS legal requirements



HR - Human Resources

- Talent management
- Learning and development
- Compensation and benefits
- Business support



IT - Information Technology & Finance

- System support
- Payment and transaction
- Payroll
- Business partnering



Support Functions

PM - Plant Maintenance

- Support production
- Support resources

QM - Quality Management

- Support production
- Support resources

MS - Manufacturing Support

- Support production
- Support resources

EHS

ENVIRONMENTAL HEALTH & SAFETY

- Safety & Environment Engineer
- EHS Executive
- EHS Technician

HR

HUMAN RESOURCES

- HR Business Partner
- Learning & Development Specialist
- HR Executive
- HR Administrator

IT

INFORMATION TECHNOLOGY

- Network Specialist
- Systems Specialist

FI

FINANCE

- Accountant/Accounts Assistant
- Financial Analyst

3

Nutritionals



2

Biologics



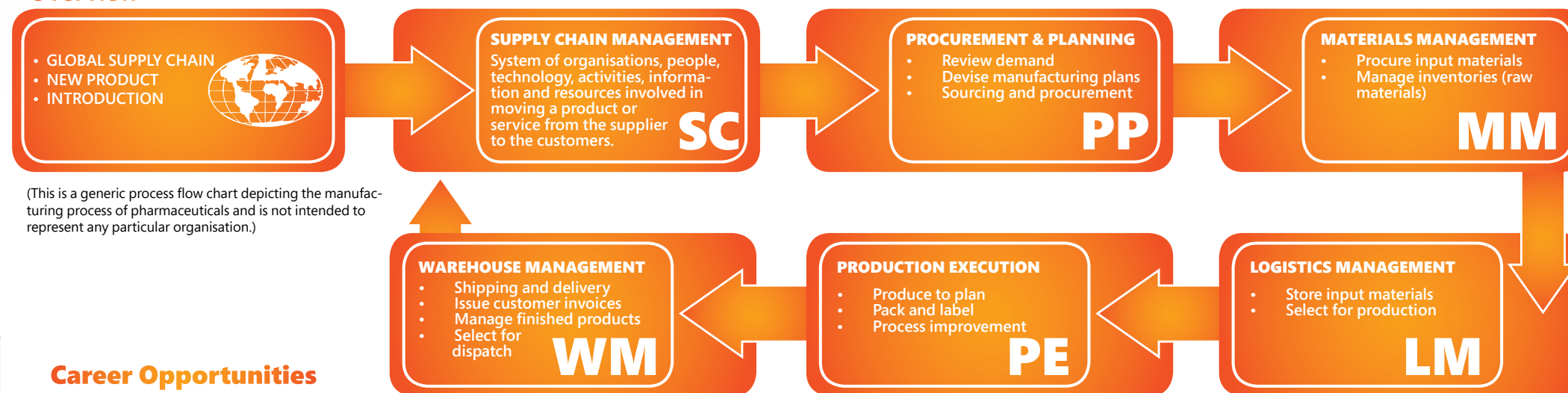
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Pharmaceuticals



Nutritionals Manufacturing Process

- Overview



Career Opportunities

- Overview

SC

SUPPLY CHAIN

- Supply Chain Specialist
- Customer Fulfillment Executive
- Shipping Analyst/Assistant

PP

PRODUCTION & PLANNING

- Logistics Lead
- Production Planner

MM

MATERIALS MANAGEMENT

- Planner/Buyer
- Procurement Executive
- Purchasing Assistant
- Master Scheduler
- Sourcing Specialist
- Storekeeper

LM/WM

LOGISTICS/WAREHOUSE MANAGEMENT

- Logistics Associate
- Logistics Specialist
- Warehouse Supervisor

PE

PRODUCTION EXECUTION

- Production Assistant
- Production Engineer
- Production Scheduler
- Production Supervisor
- Production Technician
- Packaging Supervisor
- Packaging Technician

Support Functions and Shared Services

QO

QUALITY OPERATIONS

- Chemist/Assistant Chemist
- Microbiologist/Assistant Microbiologist
- Analytical Laboratory Analyst
- Batch Record Auditors
- CAPA Executive
- Desktop Publisher

EM

ENGINEERING & MAINTENANCE

- Engineering/Technician
 - Automation
 - Electrical & Instrumentation
 - Engineering Services

Shared Services

EHS - Environmental Health & Safety

- Environmental health and safety of company and staff
- Comply with EHS legal requirements



HR - Human Resources

- Talent management
- Learning and development
- Compensation and benefits
- Business support/excellence



IT - Information Technology & Finance

- System support
- Payment and transaction
- Payroll



- Mechanical
- Maintenance
- Packaging
- Packaging & Dryblending
- Process
- Process & Dryer
- Utilities & Facilities

EHS

ENVIRONMENTAL HEALTH & SAFETY

- EHS Specialist
- Industrial Nurse

HR

HUMAN RESOURCES

- HR Business Support Specialist
- Talent Acquisition

Specialist

- Learning & Development/Training Specialist
- Lean Six Sigma Black Belt

IT

INFORMATION TECHNOLOGY

- Systems Engineer
- Systems Support Analyst

FI

FINANCE

- Accountant/Accounts Assistant
- Accounts Officer

Support Functions

QO - Quality Operations

- Support production
- Support resources
- Materials testing
- Finished product tasting and release

EM - Engineering & Maintenance

- Support production
- Support resources
- Process improvement
- Plant maintenance and reliability



YOU MAKE A DIFFERENCE

■ People At Work

People At Work

Automation Engineer

The Automation Engineer primarily supports manufacturing, utilities and facilities operations, as well as the operation and maintenance of the entire plant's automation and control systems (e.g. PLC, SCADA, PI, BMS, Fire Alarm Systems, Badge Access system, Gas Detection system).

Responsible for the support and execution of automation qualification as well as the resolution of all automation-related issues, the Automation Engineer will also develop Standard Operating Procedures (SOPs) and implement maintenance programmes for the automation and control systems. In addition, managing vendor service contracts as well as preparing the operation and maintenance budget will also come under the purview of this role.

What it takes:

- Bachelor's Degree in Control & Instrumentation/Electrical/ Chemical/IT Engineering, or an equivalent discipline
- Experience in control and instrumentation in the pharmaceutical/food/ petrochemical/chemical plant or the automation industry
- Knowledge of automation and control systems, such as PLC, SCADA, BMS, Siemens S7 Series

- Ability to organise, motivate and develop the potential of team members
- Good planning and supervisory abilities, as well as strong interpersonal, communication and computer skills
- Excellent troubleshooting and problem-solving skills

Also known as:

- Senior Control Engineer
- Manufacturing Engineer
- Automation Specialist
- Operations Engineer

Applicable to:

- Biologics ✓
- Nutritionals ✓
- Pharmaceuticals ✓

Job titles may differ for each company.



Manufacturing Operations Associate

The Manufacturing Operations Associate will oversee the smooth and efficient operation as well as diligent monitoring of the plant's manufacturing activities to ensure that they are compliant with the company's designated policies and procedures (e.g. Safety, cGMP, manufacturing guidelines).

Apart from the preparation of small equipment and solutions, cleaning and sterilisation of equipment, the associate will also conduct troubleshooting on the equipment and manage all process-related issues.

Additionally, managing the process control, performing accurate data entry and documentation in accordance with the approved manufacturing formulae, as well as involving in process improvement initiatives will also come under the purview of this role.

What it takes:

- Degree/Diploma/ITE in Chemistry/Life Sciences/ Engineering or equivalent discipline; candidates with a combination of qualifications and the relevant work experience may be considered
- A self-starter with a strong focus on safety, quality, details and results

- Possess excellent interpersonal and strong problem solving skills
- A team player with good initiative and the ability to work in a multi-task environment

Also known as:

- Process Technician
- Chemical Technician
- Associate Engineers
- Biotechnologist
- Senior Operations Technician
- Pharmaceutical Technician (Biotech)
- Senior Manufacturing Biotechnologist
- Production Technician

Applicable to:

- Biologics ✓
- Nutritionals ✓
- Pharmaceuticals ✓

Job titles may differ for each company.



Quality Control Technician & Microbiologist

The Quality Control (QC) Technician’s primary duty is to ensure that a quality product is produced within a controlled environment. This role is engaged in different testing methodologies, ranging from molecular biology to the latest analytical chemistry techniques.

Annual and quarterly physical inspection and the staging of QC materials and/or production raw materials, as well as environmental and raw material sampling in accordance with cGMP and company procedures will form integral aspects of this position.

The QC Technician will also oversee the necessary documentation, including logbooks, test requests preparation and sample distribution. In addition, the technician will be responsible for managing the inventory levels of the assigned area as well as discarding old samples and hazardous waste from the laboratory and perform housekeeping tasks.

The Microbiologist will be involved in microbiology laboratory activities, including sample collection, microbiological testing, identification of test isolates, pathogenic bacterial screening, media and reagent preparation, as well as systematic documentation and housekeeping in accordance with the Good Laboratory Practice (GLP) and current Good Manufacturing Practice(cGMP). Apart

from conducting microbiological testing on raw materials, finished products and in-process samples, the microbiologist will also perform microbiological assays on products, while preparing media and reagents and carrying out instrument calibration.

Also known as:

- Laboratory Analyst
- Chemical Technician (API)
- Quality Control Analyst
- QC Analyst
- Senior QC Analyst
- QC Bioassay

Applicable to:

- Biologics ✓
- Nutritionals ✓
- Pharmaceuticals ✓

Job titles may differ for each company.



What it takes:

- Diploma, Degree in Chemistry/ Microbiology/Food Science, or an equivalent
- Experience in a testing laboratory environment
- Good knowledge of the plant equipment and environment for optimal equipment performance
- Familiar with cGMP and laboratory
- Meticulous and team-oriented, coupled with good interpersonal and communication skills

Process Engineer

The Process Engineer will lead several process campaigns from the beginning of production, keeping track of their progress as well as safety and quality. Commissioning and setting up new facilities as well as preparing the relevant documentation and process control system recipe will form key aspects of this role.

In addition, the Process Engineer will formulate, implement and monitor technical solutions for all processing issues, while playing a proactive role to ensure that the site safety and quality standards and procedures are duly adhered to.

Apart from identifying, developing and implementing process and equipment improvement initiatives, the Process Engineer will also train and update the process technicians on the existing and new procedures.

What it takes:

- Degree in Science/Engineering/ Chemical Engineering
- Experience in a relevant manufacturing environment

Also known as:

- Chemical Engineer
- Project Engineer
- Manufacturing Engineer
- Senior Control Engineer
- Process Development Engineer
- MS&T Process Expert

Applicable to:

- Biologics ✓
- Nutritionals ✓
- Pharmaceuticals ✓

Job titles may differ for each company.



Electrical & Instrumentation Technician

The Electrical & Instrumentation Technician conducts equipment installation, modifications, repairs, calibration, troubleshooting and preventive maintenance on all pneumatic, electronic, electromechanical and industrial instruments.

The technician will also ensure a safe work environment as well as the efficient utilisation of equipment and instruments in the process areas, utilities, warehouse, laboratories, administration building and the external areas.

The Electrical & Instrumentation Technician will also oversee job requests from the process plants as well as carry out tasks assigned by the Electrical & Instrumentation Engineer relevant to installation, modification, fabrication, control circuit wiring, testing, servicing, calibration, basic troubleshooting and repair of instruments and all electrical equipment, in accordance with the site change control procedures. Additionally, this role will maintain proper documentation for calibration and validation activities for cGMP and FDA inspection.

What it takes:

- NITEC/Diploma in Electrical Engineering, Instrumentation & Control or Mechatronics
- A PUB electrician licence
- Working experience in a similar capacity, preferably within the pharmaceutical industry, coupled with experience in cGMP

Also known as:

- Technical Lead
- Electrical Technician
- Instrument Technician

Applicable to:

- Biologics ✓
- Nutritionals ✓
- Pharmaceuticals ✓

Job titles may differ for each company.



Quality Assurance Specialist

The Quality Assurance Specialist implements and maintains the Quality Management Systems to ensure Good Manufacturing Practice (GMP) compliance according to regulatory and corporate requirement.

Elements of Quality Management Systems include deviation management, change control, document control, release, supplier quality, quality management review, customer complaints, annual product review/product quality review, compliance certification program etc.

In addition to ensuring that manufacturing operations comply with the GMP requirements of the various elements of the Quality Management Systems, he/she develops and writes related procedures and participates in cross-functional investigations and ensures the timely closure of investigation report. The Quality Assurance Specialist also provides support to compliance audits and training activities.

What it takes:

- Bachelor's Degree in pharmaceutical sciences, life sciences, biology, biotechnology chemistry, chemical engineering, or a related discipline
- Experience in pharmaceutical/ biotechnology industry in quality assurance, GMP/GLP compliance, operations or validation
- Able to logically solve problems in order to find timely solutions
- Ability to interact and communicate with cross functional department effectively and efficiently.

Also known as:

- QA Operations
- QA Officer

Applicable to:

- Biologics ✓
- Nutritionals ✓
- Pharmaceuticals ✓

Job titles may differ for each company.



Validation Engineer

The Validation Engineer forms a part of a team that manages and coordinates the site's validation (cleaning, process, equipment, qualification) activities.

He / She is responsible for ensuring that the site is prepared for pre-approval inspections for validation. The scope also includes assisting in managing and coordinating the validation activities for the site, setting clear directions to other groups, organize and follow the plan for all the validation activities on the site between the different groups involved.

A key personnel in validation processes, he/she also writes the validation protocols and reports as well as reviewing and approving validation documents.

The validation engineer is also responsible for assisting in setting and achieving validation yearly objectives and adhering to budgets.

What it takes:

- Bachelor's Degree in Science (Chemistry, Microbiology, Engineering or equivalent)
- Minimum 2 years of experience in a Quality Position / Role
- Able to lead and motivate a team
- Ability to interact and communicate with cross functional department effectively and efficiently.

Also known as:

- Validation Specialist

Applicable to:

Biologics



Nutritionals



Pharmaceuticals



Job titles may differ for each company.





SHINE AS YOU GROW

- Spring to a Great Start!
- Advance Your Career Through Skills Upgrading
 - Development and Apprenticeship (DNA) Programme
 - Biologics Overseas Skills Training (BOOST) Programme
- Career Progression

Spring to a Great Start! Make a Fresh Entry



Relevant Degress/Diplomas/Courses

National University of Singapore

- Applied Chemistry
- Bioengineering
- Biomedical Engineering
- Chemical Engineering
- Chemistry
- Computational Biology
- Electrical Engineering
- Engineering Science
- Food Science & Technology
- Industrial and Systems

- Engineering
- Life Sciences
- Materials Science & Engineering
- Mechanical Engineering
- Pharmacy

Nanyang Technological University

- Accountancy
- Bioengineering
- Biological Sciences
- Biomedical Sciences
- Business

- Chemical & Biomolecular Engineering
- Chemical Biology
- Chemistry & Biological Chemistry
- Civil Engineering
- Computer Engineering
- Computer Science
- Electrical and Electronics Engineering
- Electrical and Electronic Engineering

- Engineering
- Environmental Engineering1
- Materials Engineering1
- Mathematical Sciences
- Mechanical Engineering1
- Medicine
- Renaissance Engineering Programm

Singapore Polytechnic

- Applied Chemistry with Pharmaceuticals
- Applied Chemistry with Materials Science
- Bioelectronics
- Bioengineering
- Biomedical Science
- Biotechnology
- Chemical Engineering
- Chemical Process Technology
- Civil Engineering with Business
- Common Engineering
- Computer Engineering
- Electrical & Electronics Engineering
- Energy Systems & Management
- Engineering with Business
- Food Science & Technology
- Mechanical Engineering
- Nutrition, Health & Wellness

Ngee Ann Polytechnic

- Biomedical Engineering
- Biomedical Science
- Business Process & Quality Engineering
- Chemical & Biomolecular Engineering
- Electrical Engineering
- Electronic & Computer Engineering

- Mechanical Engineering
- Molecular Biotechnology
- Pharmacy Science

Republic Polytechnic

- Diploma Common Engineering
- Diploma Electrical & Electronic Engineering
- Diploma in Biomedical Sciences
- Diploma in Biotechnology
- Diploma in Materials Science
- Diploma in Pharmaceutical Sciences
- Diploma Supply Chain Management

Nanyang Polytechnic

- Diploma in Biologics & Process technology
- Diploma in Biomedical Engineering
- Diploma in Chemical & Green Technology
- Diploma in Chemical & Pharmaceutical Technology
- Diploma in Clinical Diagnostics & Infectious Diseases
- Diploma in Common Engineering
- Diploma in Electronics, Computer & Communications Engineering

- Diploma in Food Science & nutrition
- Diploma in Mechatronics Engineering
- Diploma in Medicinal Chemistry
- Diploma in Molecular Biotechnology
- Diploma in Pharmaceutical Sciences

Temasek Polytechnic

- Diploma in Applied Food Science & Nutrition
- Diploma in Biomedical Engineering
- Diploma in Biomedical Informatics & Engineering
- Diploma in Biomedical Science
- Diploma in Biotechnology
- Diploma in Chemical Engineering
- Diploma in Computer Engineering
- Diploma in Consumer Science & Technology
- Diploma in Electronics
- Diploma in Mechatronics
- Diploma in Pharmaceutical Science
- Diploma in Electrical & Electronic Engineering

Institute of Technical Education

- Chemical Process Technology
- Advanced Manufacturing
- Biotechnology
- Chemical Technology
- Electrical Engineering
- Mechanical Engineering
- Process Plant Design
- Facility Technology
- Medical Manufacturing Technology
- Mechatronics

Advance your career through skills upgrading!

In collaboration with relevant industry players, regulatory bodies, economics agencies, training institutions, industry associations and unions in the Process Manpower Skills and Training Council (MSTC), the Singapore Workforce Development Agency (WDA) has identified the skills required in the industry and developed specific Singapore Workforce Skills Qualifications (WSQ) programmes under the Process WSQ framework.

The Process WSQ framework comprises of key competencies for the different specialization with career progression pathway, covering various sectors including the pharmaceuticals and biologics manufacturing industry.

WSQ is a national credentialing system that trains, develops, assesses and recognises adult workers for competencies they need to stay employable. Based on standards developed by WDA and various industries, WSQ ensures workers acquire skills needed by employers at the workplace. With clear progression pathways, workers can also use WSQ to upgrade their skills and plan their careers.

As training and assessment are competency-based, not academic-based, workers have to demonstrate the right competencies before they are certified. WSQ is accessible to all workers, as its entry criteria are skills and knowledge, not formal qualifications. The quality of WSQ is assured by WDA, from

the development of competency standards, accreditation of training providers to the award of its qualifications.

WSQ allows you to take charge of your own career advancement and can help you in the following ways:

- Plan your career path and help you enter a new industry
- Upgrade skills and advance your career through a systematic training pathway
- Achieve qualifications and certifications that demonstrate your skills sets to employers in tangible terms
- Obtain portable credentials for existing skills to improve your employability
- Assess and benchmark your capabilities against industry-established work standards
- Support and promote the best practices at your workplace
- Meet regulatory requirements

To find out more about the Process WSQ framework, please visit

<http://www.wda.gov.sg/content/wdaweb/L207-AboutWSQ/L301-WSQIndustryFramework-ProcessIndustry.html>

For a listing of WSQ programmes for the pharmaceuticals and biologics manufacturing industry please visit WDA's course directory at

<http://www.wda.gov.sg/content/wdaweb/L204-CourseDirectory.html>



Development and Apprenticeship (DNA) Programme

To meet the increasing demand for workers in the Process and Biomedical Sciences industry, the Development and Apprenticeship (DNA) programme is designed to support the industry's growth by providing an opportunity for new entrants to gain entry into the industry through a structured training and development programme.

If you are fresh from school or looking to switch careers, this would be an excellent opportunity to begin your career in the Pharmaceuticals and Biologics manufacturing industry with a position at the leading edge companies.

During your tenure at the company, you will undergo a series of training and guided practicum. Key elements of this programme include the adoption of productivity-related, leadership and sector-specific training, which will provide apprentices with general and sector-specific manufacturing skills sets; while learning on-the-job

provides apprentices with the job-role specific processes, tools and equipment.

Singaporeans and Singapore Permanent Residents, who are keen to embark on the DNA programme, can apply to the participating companies directly. You may wish to make a note in your job application that you would like to embark on the DNA programme with the company.

To embark on this programme, you have to be hired by the participating companies. Upon acceptance into the company, you will be put through a series of training which will comprise of Singapore Workforce Skills Qualifications (WSQ) training, industry-specific or in-house courses and an apprenticeship. Information of participating companies and job vacancies can be found at

http://www.wda.gov.sg/content/wdaweb/programmes_and_initiatives/DNA_Programme.html





Biologics Overseas Skills Training (BOOST) Programme

The Biologics Overseas Skills Training Programme (BOOST) is a manpower talent development programme which aims to build a pipeline of specialists for Singapore's biologics manufacturing sector. The BOOST programme is an initiative jointly supported by the Singapore Economic Development Board (EDB), Singapore Workforce Development Agency (WDA) and Temasek Polytechnic (TP).

BOOST encompasses first-of-its-kind training model combining both Process Singapore Workforce Skills Qualifications (Process WSQ), conducted at TP, and overseas structured in-house training with top biologics companies in locations like the United States of America (USA) and Europe. Candidates will complete a 3-month full time training in TP before embarking on 12 to 18 months of overseas training.

The training duration will take up to 21 months and competent candidates will receive a

WSQ Higher Certificate in Process Technology (Biologics Manufacturing) awarded by WDA.

Upon completion of training, successfully candidates are required to serve a Minimum Service Period of 24 months in Singapore-based biologics manufacturing companies.

Singaporeans and Permanent Residents of Singapore who are keen to embark on this programme can visit

www.tp.edu.sg/boost





University Graduates

Career Progression

Engineering Director	Production Director	Production Director	Logistics Director	Procurement Director	Finance Director	HR Director	EHS Director	IT Director	Production Director
▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
Engineering Lead/Manager	Manufacturing Lead	Manufacturing Lead	Logistics Lead/Manager	Procurement Lead/Manager	Finance Manager	HR Manager	EHS Lead/Manager	IT Manager	Manufacturing Lead
▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
Sr. Engineer	Sr. Engineer	Sr. Chemist	Sr. Logistics Executive	Sr. Procurement Executive	Sr. Accountant	Sr. Human Resource Executive	Sr. EHS Executive	Sr. Systems Engineer	Sr. Production Engineer
▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
Engineering (Engineering/Automation/Projects)	Engineer (Production/Chemical)	Chemist	Logistics Executive	Procurement Executive	Accountant	Human Resources Officer	EHS Officer	Systems Engineers	Production Executive

Starting Off



ITE Graduates

Senior Technician 2	Senior Technician	Senior Administrator
▲▲	▲▲	▲▲
Senior Technician 1	Laboratory Technician 2	Administrator 2
▲▲	▲▲	▲▲
Technician 2	Laboratory Technician 1	Administrator 1
▲▲	▲▲	▲▲
Technician 1	Laboratory Assistant 2	Administrative Assistant 2
▲▲	▲▲	▲▲
Assistant Technician (Production/Engineering/Logistics)	Laboratory Assistant 1	Administrative Assistant 1
▲▲	▲▲	▲▲

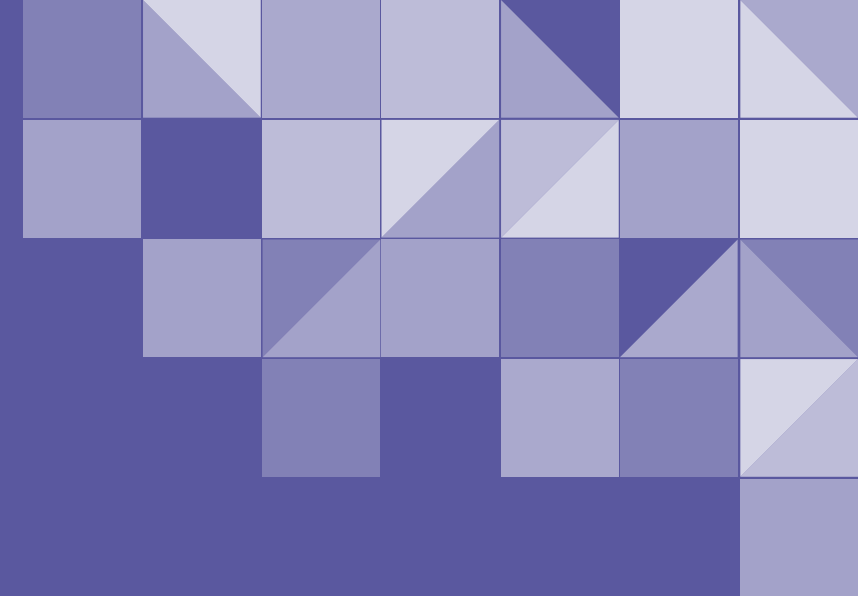
Starting Off



Polytechnic Graduates

Supervisor/Superintendent	Supervisor/Superintendent	Administrative Executive	Accounts Executive
▲▲	▲▲	▲▲	▲▲
Production/Engineering/Logistics Leader	Analytical Leader	Administrative Officer	Accounts Officer
▲▲	▲▲	▲▲	▲▲
Sr. Technician 1/2	Sr. Laboratory Analyst 1/2	Sr. Administrator 1/2	Sr. Accounts Assistant 1/2
▲▲	▲▲	▲▲	▲▲
Technician 1/2 (Production/Engineering/Logistics)	Laboratory Analyst 1/2	Administrator 1/2	Accounts Assistant 1/2
▲▲	▲▲	▲▲	▲▲

Starting Off



REAP THE REWARDS

- Learning & Career Development
- Great Place To Work



Learning & Career Development

A host of learning and career development opportunities await when you join the biomedical industry.

These include:

- Career opportunities in cross-functional projects and role rotations
- Lateral and vertical career opportunities, including internal cross-functional deployment
- Educational assistance Programmes (local academic and skills upgrading and development)
- Management and leadership development
- Professional and technical development
- Overseas training and attachment

Great Place to Work

- A work environment that values work-life balance
- Free access to gymnasiums and fitness clubs
- Fun and enriching activities to foster team bonding and camaraderie
- Flexible work arrangements
- Fair employment practices
- Continuous improvement culture
- Diversity and inclusion initiatives



BIOPHARMACEUTICAL MANUFACTURING LEADERS

- Abbott
- AbbVie
- Alcon
- Amgen
- GlaxoSmithKline
- Kaneka
- Lonza
- Mead Johnson
- MSD
- Novartis
- Pfizer
- Roche
- Sanofi-Aventis
- Shire
- Wyeth Nutrition



Abbott is a global healthcare company devoted to improving life through the development of products and technologies that span the breadth of healthcare. Our mission for health goes beyond developing great products people can trust. It's about helping people get and stay healthy throughout their life's journey—so they can achieve their fullest potential.

With a portfolio of leading, science-based offerings in diagnostics, medical devices, nutritionals and branded generic pharmaceuticals, we are committed to and invested in bringing forth innovative solutions that address critical health needs of people in every corner of the world.

Testament to our global reach, Abbott has sales, manufacturing, research and development and distribution facilities worldwide. We serve people in more than 150 countries and employ approximately 69,000 people.

In Singapore, Abbott's manufacturing plant in the Tuas Biomedical Park was the company's first major capital investment in Asia as well as its largest nutritional investment in the region. The plant which has been fully operational since January 2009, manufactures a wide range of infant and adult nutritional products, such as Similac Advance, Pediasure, Gain, Grow, Ensure and Calcisure for Abbott's fast-growing markets in Asia. There are more than 300 employees working in various roles.

As an award-winning employer, our commitment to workplace excellence and efforts to provide our people with an environment that helps them succeed has won us various distinctions, locally and internationally. Our range of employee programs includes healthcare benefits, a variety of convenience and wellness services as well as long-term retirement benefits.

At Abbott, we believe that innovative, responsible and sustainable business plays an important role in building a healthy, thriving society. This idea is the cornerstone of our global citizenship strategy. We focus on advancing economic, environmental and social well-being as we pursue the work of discovering, developing, manufacturing and distributing products that enhance people's health. We continually work to build sustainable solutions to the world's most pressing healthcare challenges, while reducing our impact on the environment and creating lasting value for both our stakeholders and our business.

For more information, visit
www.abbott.com.sg

Abbott Manufacturing Singapore
26 Tuas South Avenue 10
Singapore 637437
Phone : +65 6500 8500





AbbVie **Working for a healthier world**

AbbVie is a global, research-based biopharmaceutical company committed to delivering a consistent stream of innovative medicines that solve serious health issues and have a remarkable impact on people's lives.

AbbVie was formed in 2013 following separation from Abbott Laboratories. We focus on advanced therapeutic innovation where needs are great, including immunology, liver disease, oncology and neurosciences. We are investigating both small and large molecule approaches, and our internal research efforts are balanced with external collaborations across industry, academia and healthcare authorities.

Aspiring to impact patient care
When it comes to innovating, AbbVie starts with holistically understanding the patients' journey and needs. Our commitment to patients and our values drives our business and strategic imperatives, shapes the way we work, and the way we view and reward performance.

A place for people with passion to transform lives
AbbVie employs approximately 25,000 people worldwide and markets medicines in more than 170 countries.

Singapore serves as a key location for AbbVie and this region, namely Japan, Asia and the Pacific. The Singapore location is host to regional and corporate services, global research and development as well as AbbVie Biologics Singapore, an operations technical center. In early 2014, AbbVie announced plans to establish the company's first manufacturing site in Asia in Singapore. This site will join our network of 15 primary research and manufacturing facilities located across the United States, Europe and Puerto Rico. The investment will establish two facilities on a single campus to support small molecule and biologic active drug substance manufacturing to serve patients around the world.

For further information on the company and its people, portfolio and commitments, please visit www.abbvie.com. Follow @abbvie on Twitter or view careers on our Facebook or LinkedIn page.

AbbVie Operations Singapore Pte. Ltd
23 Tuas South Avenue 6
Singapore 637022

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Alcon[®]

a Novartis company

Novartis provides innovative healthcare solutions that address the evolving needs of patients and societies. Headquartered in Basel, Switzerland, Novartis offers a diversified portfolio to best meet these needs: innovative medicines, eye care, cost-saving generic pharmaceuticals, preventive vaccines and diagnostic tools, over-the-counter and animal health products. Novartis is the only global company with leading positions in these areas. In 2013, the Group achieved net sales of USD 57.9 billion, while R&D throughout the Group amounted to approximately USD 9.9 billion (USD 9.6 billion excluding impairment and amortization charges). Novartis Group companies employ approximately 136,000 full-time-equivalent associates and operate in more than 140 countries around the world.

Alcon Manufacturing and Logistics facility (AML) opened in 2005 in response to the growing global demand for contact lenses. AML uses fully automated and industry-leading Lightstream[®] Lens Technology for making DAILIES[®] disposable contact lenses. The plant also employs an advanced on-line lens quality inspection system, high-precision mold tools set-up, optical tools repair operations, and an in-house steam autoclave for sterilization.

In 2013 and 2014, AML increased its production capacity by 30 percent with the addition of three Lightstream[®] Lens Technology production lines. In April 2013, the plant began making DAILIES[®] Illuminate, lenses featuring a unique starburst pattern that provides greater depth and cosmetic definition of the eyes. Manufacturing these color lenses requires state-of-the-art color lens printing processes.

Alcon Singapore Manufacturing Pte Ltd (ASM) started commercial production in July 2013. This impressive USD160 million facility produces

five leading ophthalmic pharmaceutical products that are distributed throughout Japan, Asia Pacific and Europe. ASM has a manufacturing and environmental supervisory control system with real-time data historian. The packaging process also features precise data matrix UV printing and an advanced optical character recognition system.

The Novartis TechOps Academy Singapore, which was launched in November 2013, will offer talented associates a chance to gain hands-on experience in the global technical operations network. Over four years, participants will rotate among the Singapore sites in four different manufacturing environments, from production of pharmaceuticals and contact lenses to the new biologics facility.

Novartis also offers a wide range of opportunities for career advancement, including promotional and lateral progression. This ensures that our employees enjoy an enriching and well-rounded career experience as a member of our team.

Novartis in Singapore with more than 1,400 associates working across the city-state has been playing a key role since 1996 with the merger of Ciba-Geigy and Sandoz. Novartis remains committed to further strengthen its footprint in the healthcare industry in the Asia-Pacific region, especially in Singapore.

Alcon Singapore Manufacturing
19 Tuas South Avenue 14
Singapore 657313

CIBA Vision Asian Manufacturing
and Logistics Pte Ltd
133 Tuas South Avenue 3
Singapore 637550



The story of Amgen began more than three decades ago with a simple idea—that emerging research in genetics could lead to very exciting opportunities if the right scientists could be assembled and given the appropriate resources. Amgen has since grown to be the world's largest independent biotechnology company, launching the biotechnology industry's first blockbuster therapies, and subsequently changing the course of medicine. As a company, we could not have accomplished what we did were it not for our commitment to building a culture that embraces science and innovation—a culture that continues to shape who we are today.

Delivering for Patients

Amgen is counted among the early pioneers of biologic medicines. Our therapies have since reached millions of patients worldwide. Our scientists have characterized key biologic processes that have led to the development of innovative, first-in-class therapies. We have shaped the scientific world's understanding of certain disease processes. We have also engineered new types of therapeutic platforms.

Amgen Singapore - Manufacturing of The Future

In 2013, Amgen announced a planned addition to our network – an innovative facility located in Singapore. The facility will initially focus on expanding Amgen's capability to manufacture monoclonal antibodies while bringing new technology and innovation to the heart of our manufacturing enterprise. Once completed, the facility will be fully reconfigurable, providing efficient manufacturing capabilities that will help ensure a reliable supply of our vital medicines to patients worldwide.

For more information

Amgen Singapore Manufacturing Pte Ltd
1, Tuas View Drive
Singapore 637026

www.amgen.com



GlaxoSmithKline (GSK)

Headquartered in the UK and listed on New York Stock Exchange and London Stock Exchange, GlaxoSmithKline (GSK) is one of the world's leading research-based pharmaceutical and healthcare companies dedicated to improving the quality of human life by enabling people to do more, feel better and live longer.

Singapore is home to GSK's Regional Headquarters (Emerging Markets & Asia Pacific), an R&D facility (Biopolis), two global Active Pharmaceutical Ingredients (API) manufacturing and supply sites (Jurong & Quality Road) and a state-of-the-art vaccines plant (Tuas). To date, GSK's total investment in Singapore is exceeding S\$1 billion with several significant groundbreaking future investment planned.

Global Manufacturing and Supply (GMS)

GSK has 86 sites in 36 countries manufacturing pharmaceuticals, consumer healthcare products and vaccines. Global Manufacturing and Supply (GMS) is responsible for 72 of these sites employing more than 27,000 people who make pharmaceutical and healthcare products. The remaining 14 sites employing 7,500 staff are run by Vaccines business.

GSK was the first pharmaceutical company to set up its manufacturing operations in Singapore in 1972. GMS operates two strategic primary pharmaceutical manufacturing sites at Jurong and Quality Road, employing about 650 personnel. Together both sites are making 17 APIs for a range of medicines for the treatment of respiratory, oncology, gastro-intestinal, allergy, anti-viral, HIV and neurological conditions.

Jurong is a lead New Product Introduction (NPI) site supported by a 2-stream R&D Pilot Plant focused on the development of late phase New Chemical Entities (NCEs) and delivering higher value products such as very active compounds in small batch sizes. The 9-hectare Jurong site

has three multi-purpose production buildings with a new kilo scale facility to make breakthrough medicines. Over at Quality Road, the 5-hectare site is one of the world's largest Amoxicillin facilities and is the primary source of Amoxicillin and Monosodium Ticarcillin within GSK.

Biologicals (Vaccines)

GSK Vaccines, the vaccine division of GSK, is one of the world's leading vaccine manufacturers, supplying around 23.9% of the world's vaccines. Headquartered in Belgium, the division employs 12,000 employees worldwide and manufactures more than 30 marketed vaccines.

GSK has investments in vaccine manufacturing plants in France, Hungary, North America, and now, Asia. Singapore is the site for its first primary vaccine plant in Asia. Employing state-of-the-art biotechnology and equipment, the vaccine plant in Singapore commenced operations in 2011, focusing on innovative vaccines to prevent disease caused by *Streptococcus pneumoniae* and non-typeable *Haemophilus influenzae* (NTHi).

During 2013, GSK received approvals for six major new products and several new indications for existing medicines and vaccines. Come join us as we work towards delivering the rich pipeline of GSK to benefit the patients at the end of the supply chain.

For more information, visit www.gsk.com

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1 Pioneer Sector 1 Singapore 628413
Phone : +65 6861 2111

Beecham Pharmaceuticals (Pte) Ltd
38 Quality Road
Singapore 618809
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GlaxoSmithKline Biologicals
10 Tuas South Ave 8 Singapore 637421
Phone : +65 6496 3000





Kaneka

The Dreamology Company
— Make your dreams happen —

Kaneka Singapore Corporation

Kaneka Corporation is a leading technology-driven chemical manufacturer with a multi-billion U.S. dollar turn over. Kaneka Corporation, headquartered in Japan, provides diversified products globally supported by a worldwide manufacturing and marketing organization.

With people and technology growing together into creative fusion, Kaneka will break fresh ground for the future and tie in to explore New Values. Kaneka is also committed to challenge the environmental issues of our planet and contribute to upgrade the quality of life. Kaneka is dedicated to the development of world-class technology in the field of chirality and continuously strives to maintain our leading position through research, development, manufacturing and marketing of innovative products.

Based on our customers' needs and requirements, Kaneka offers new technology development programs that are an effective application of our advanced biotechnology and synthetic technology. Once Kaneka is successful in constructing competitive manufacturing technology,

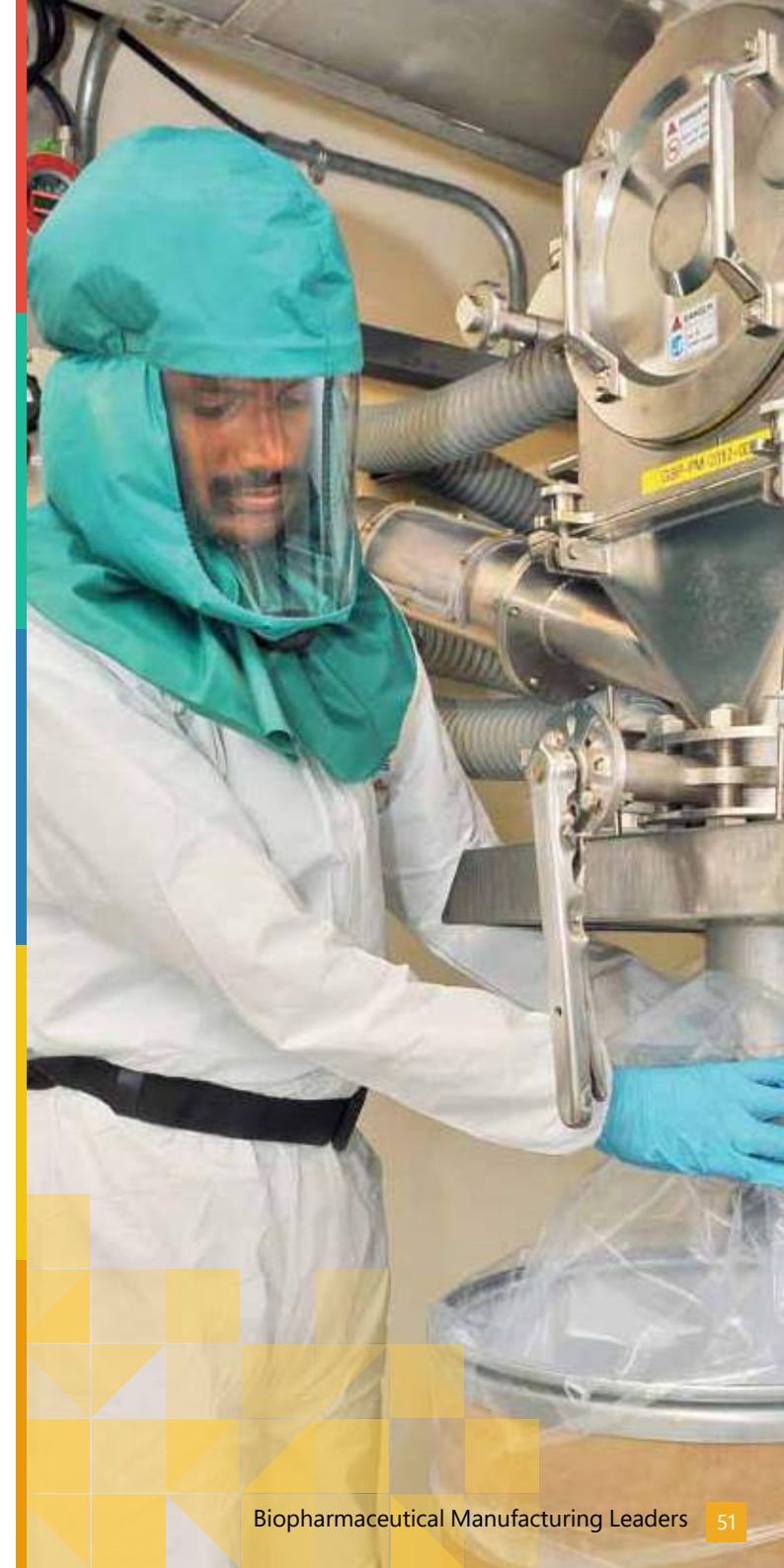
Kaneka initiates supply of products and effectively supports customers' new drug development from early development needs through to full commercial pharmaceutical production.

Kaneka Singapore that is a key overseas production site of Kaneka has been manufacturing various pharmaceutical intermediates here in Singapore since 1979. The key technologies are combination technologies with fermentation, enzymatic reactions and organic synthesis.

Process innovation and flexible manufacturing along with compliance to the highest standards of Quality Assurance & Quality Control enable Kaneka to meet many customers' inquiries with professional solutions. Kaneka strives to be a "Producer of Reliability."

For more information,
visit www.kaneka.co.jp/kaneka-e/

Kaneka Singapore Co.(PTE)LTD.
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Lonza

Lonza

Lonza is one of the world's leading and most-trusted suppliers to the pharmaceutical, biotech and specialty ingredients markets. We harness science and technology to create products that support safer and healthier living and that enhance the overall quality of life.

Not only are we a custom manufacturer and developer, our diverse offerings range from active pharmaceutical ingredients and stem-cell therapies to drinking water sanitizers, from the vitamin B compounds and organic personal care ingredients to agricultural products, and from industrial preservatives to microbial control solutions that combat dangerous viruses, bacteria and other pathogens.

Founded in 1897 in the Swiss Alps, Lonza is today a global leader with more than 40 major manufacturing and R&D facilities and approximately 10,000 employees worldwide. Lonza's share registers are listed on the SIX Swiss Exchange, with secondary listing on the Singapore Exchange Securities Limited.

Singapore is a strategic and important part of Lonza's global network. Our Pharma and Biotech operations at Tuas have been steadily expanding. Today, the site hosts a large-scale Mammalian manufacturing facility, Cell Therapy manufacturing facility and Development Services. Lonza Singapore also supports sales offices for Lonza Life Science Ingredients – Nutrition and Microbial Control, plus Lonza Bioscience Cell Biology and Rapid Testing groups.

Lonza Biologics Tuas Pte Ltd

Lonza's Mammalian cell culture manufacturing facility in Tuas commenced cGMP production in 2011 with a complete range of mammalian bioreactor production systems for both clinical and commercial operation. Process development services were also launched in 2011. This facility provides contract development and production of biopharmaceutical products, including monoclonal

antibodies, cellular therapeutics and other recommended proteins. The Singapore facility extends Lonza's worldwide custom manufacturing capacity to provide customers in the biopharmaceutical industry with further capacity to successfully develop and commercialize their important products in the global market.

Lonza Bioscience Singapore Pte Ltd

Lonza has continued its commitment to emerging markets by expanding its global footprint for Cell Therapy production. The Singapore Cell Therapy facility was completed in 2012 and introduced purpose-built laboratories for a full range of process development and analytical services to expand our process development services capabilities, plus cGMP manufacturing suites for cell-based therapeutic products.

At Lonza we work with passion, using advanced technologies to transform life science into new possibilities for our customers. Working at Lonza means interacting with intelligent and empowered people who focus on emerging technologies that are groundbreaking and exciting and have a positive impact on humankind. People are the cornerstone of our success. Our employees are valued and respected and have the opportunities to develop their knowledge and skills and grow professionally. If you like a fast-paced environment, opportunities to improve the quality of life in people and interact with employees from diverse countries, backgrounds and cultures, we think you will like working at Lonza. An attractive remuneration package commensurate with qualifications and experience will be offered to the successful candidates.

We invite you to send details of your employment history and contact details to our Human Resources Department at:

Lonza Biologics Tuas Pte Ltd/
Lonza Bioscience Singapore Pte Ltd
35 Tuas South Avenue 6
Singapore 637377

Email: careers.singapore@lonza.com
Website: <http://www.lonza.com>





Mead Johnson Nutrition

Mead Johnson Nutrition is a global leader in pediatric nutrition. Our Enfa family of brands, including Enfamil infant formula, is the world's leading brand franchise in pediatric nutrition, based on retail sales. Our comprehensive product portfolio addresses a broad range of nutritional needs for infants, children and expectant and nursing mothers.

Founded in 1905 in the U.S., we have a well-established history of innovation, during which we have developed or improved many breakthrough or industry-defining products across each of our product categories. Our singular focus on pediatric nutrition and our implementation of a business model that integrates nutritional science with health care and consumer marketing expertise differentiate us from many of our competitors. Today, we market our portfolio of more than 70 products to mothers, health care professionals and retailers in over 50 countries in North America, Europe, Asia and Latin America.

Our investment in Singapore represents the largest single capital investment in our company's history and features a state-of-the-art manufacturing plant, a new Asia regional office, as well as our newest Mead Johnson Pediatric Nutrition Institute (MJPNI) Technology Center, which connects advanced scientific technology and research with modern manufacturing and quality processes. We have three other MJPNI Technology Centers located in China, Mexico and the United States. Having a presence across geographies allows us to better understand and meet the

needs of the local environments in which we operate.

Scheduled to open in September 2014, our cutting edge production facility in Singapore will bring our scientific research to market in our innovative products. This facility is an acknowledgement of not only the double-digit annual growth in demand for our products in Asia over the past decade, but also the strong prospects for future growth and expansion in the region. Establishing additional capacity and important technologies and capabilities here will help maintain our competitive advantage in the marketplace.

At Mead Johnson we make a difference in the lives of millions of babies and children worldwide every day. Together, we take great pride in our mission to nourish the world's children for the best start in life. This commitment shows in our culture of teamwork, integrity, innovation, accountability and success. Ours is a business driven by purpose – where committed people are challenged to make a difference for our customers, our co-workers and our company. We pride ourselves on offering opportunities for growth to each person who works here.

Over one hundred years since its foundation, Mead Johnson's mission to give infants and children the best start in life is being carried forward with renewed vigor and we look forward to continuing to nourish generations to come.

For more information, visit
www.meadjohnson.com

Mead Johnson Nutrition
20 Tuas South Avenue 6
Singapore 637379





Today's MSD (known as Merck in the United States and Canada) is a global healthcare leader working to help the world be well. Through our prescription medicines, vaccines, biologic therapies, and consumer care and animal health products, we work with customers and operate in more than 140 countries to deliver innovative health solutions.

We also devote extensive time and energy to increasing access to medicines and vaccines through far-reaching programs that donate and deliver our products to the people who need them. At MSD, we're applying our global reach, financial strength and scientific excellence to do more of what we're passionate about: improving health and improving lives.

MSD established its first manufacturing operations here in 1994 and over the subsequent years it has developed into one of the Company's most critical manufacturing sites. We have 2 manufacturing campuses in Tuas that cover all aspects of pharmaceutical manufacturing including Active Pharmaceutical Ingredients, Oral Solid Dosage, Sterile Formulation and Filling, Dry Powder Inhaler and Intranasal Spray. We produce a significant number of the Company's largest selling products and are a significant contributor to

the Company's overall performance.

Singapore is also MSD's regional headquarter for the Asia Pacific region, a converging point for manufacturing, research as well as a hub for regional sales and marketing activities.

Key to accomplishing our mission is having a team of dedicated and highly trained colleagues as well as an inclusive environment to enable them achieve their potential. Therefore we take pride in developing an array of learning programs and resources to help our colleagues attain professional growth and career development. We believe in respecting individuals and their differences as well as fostering teamwork, promoting flexibility and agility and supporting work-life balance.

For more information, visit www.msd-singapore.com or www.merck.com

MSD International GmbH (Singapore Branch)
50 Tuas West Drive
Singapore 638408

Merck Sharp & Dohme Singapore
21 Tuas South Avenue 6
Singapore 637766

Phone: +65 6697 2888
Email: msd_singapore_recruitment@merck.com





Novartis

Novartis provides innovative healthcare solutions that address the evolving needs of patients and societies. Headquartered in Basel, Switzerland, Novartis offers a diversified portfolio to best meet these needs: innovative medicines, eye care, cost-saving generic pharmaceuticals, preventive vaccines and diagnostic tools, over-the-counter and animal health products.

Novartis is the only global company with leading positions in these areas. In 2013, the Group achieved net sales of USD 57.9 billion, while R&D throughout the Group amounted to approximately USD 9.9 billion (USD 9.6 billion excluding impairment and amortization charges). Novartis Group companies employ approximately 136,000 full-time-equivalent associates and operate in more than 140 countries around the world.

Novartis Singapore Pharmaceutical Manufacturing Pte Ltd consists of a solid dosage pharmaceutical manufacturing facility in Singapore in the Tuas Biomedical Park. Novartis also announced plans in 2012 to construct a state-of-the-art biotechnology production site which is currently under construction and is one of Novartis' largest investments to date. The new facility will focus on manufacturing based on cell-culture technology.

The solid dosage facility manufactures drug products for two of the largest markets (Japan, Europe and USA). At the facility, the entire process from the receiving of raw materials into the plant to the shipment of finished drug products to the receiving countries for packaging takes place. The plant enhances and complements our existing network of pharmaceutical production plants located around the globe.

The new biologics site will produce biopharmaceutical substances to be used in the production of lyophilized or liquid sterile dosage forms. The new products are expected to help patients with autoimmune diseases, respiratory disorders and cancer.

The Novartis TechOps Academy Singapore, which was launched in November 2013, will offer talented associates a chance to gain hands-on experience in the global technical operations network. Over four years, participants will rotate among the Singapore sites in four different manufacturing environments, from production of pharmaceuticals and contact lenses to the new biologics facility.

Novartis also offers a wide range of opportunities for career advancement, including promotional and lateral progression. This ensures that our employees enjoy an enriching and well-rounded career experience as a member of our team.

Novartis in Singapore with more than 1,400 associates working across the city-state has been playing a key role since 1996 with the merger of Ciba-Geigy and Sandoz. Novartis remains committed to further strengthen its footprint in the healthcare industry in the Asia-Pacific region, especially in Singapore.

For more information about Novartis and her Group of Companies, visit us at www.novartis.com

Novartis Singapore Pharmaceutical Manufacturing Pte Ltd, 10 Tuas Bay Lane, Singapore 637461



Pfizer

Pfizer, we apply science and our global resources to bring therapies to people that extend and significantly improve their lives. We strive to set the standard for quality, safety and value in the discovery, development and manufacture of health care products. Our global portfolio includes medicines and vaccines as well as many of the world's best-known consumer health care products.

Every day, Pfizer colleagues work across developed and emerging markets to advance wellness, prevention, treatments and cures that challenge the most feared diseases of our time.

Consistent with our responsibility as one of the world's premier innovative biopharmaceutical companies, we collaborate with health care providers, governments and local communities to support and expand access to reliable, affordable health care around the world.

In Singapore, Pfizer Asia Pacific Pte Ltd (PAPPL) produces Active Pharmaceutical Ingredients (API) for many of Pfizer's products globally. PAPPL, located at the Tuas Biomedical Park, is a multipurpose, fully automated facility with an excellent reputation in Safety, Quality, Supply Assurance, and Energy Management.

Since its establishment in 2003, PAPPL colleagues have created a successful and dynamic operating environment by incorporating the latest technologies into every aspect of the facility. Some examples include continuous processing, leveraging chemical advances to change our synthetic routes, on-line analytical analysis, utilization of advanced membrane technologies, and using solar energy to chill water technologies, to name a few. PAPPL colleagues are the foundation of the success of PAPPL.

We are fully committed to colleague development and seek individuals who are enthusiastic about manufacturing highly complex medicines and have a passion for continuously improving themselves and our operations.

At Pfizer, we know we can make a difference in the quality of life for millions of individuals worldwide. We also understand that your talent is the key to attaining this goal. Thus, we are committed to sustaining and expanding a culture of Diversity and Inclusion in the workplace.

We embrace an environment that is open, diverse, supports a balance of professional and personal needs, and fosters the growth and development of individuals.

When you begin a career at Pfizer, you join a team of dedicated colleagues working around the world to deliver the value that our patients and customers deserve and the promise of a healthier world.

For more than 150 years, Pfizer has worked to make a difference for all who rely on us.

For more information, visit
www.pfizer.com.sg or www.pfizer.com

Pfizer Asia Pacific Pte Ltd
31 Tuas South Avenue 6
Singapore 637578





ROCHE

Be part of a business where human lives are the true beneficiaries.

Roche is a world leader in research-focused healthcare with dual pillars of strength in pharmaceuticals and diagnostics. As frontrunners in biologics manufacturing, we are firmly grounded through our longstanding expertise in biopharmaceutical manufacturing and our production capacity. At Roche, our focus is on the development of medicines and diagnostics that will extend and improve the lives of patients. Roche strives to discover, develop and provide innovative diagnostic and therapeutic products and services that deliver significant benefits to patients and healthcare professionals that will improve the lives of patients everywhere. At Roche, we do this in a responsible and ethical manner through our commitment to sustainable development while respecting the needs of people, society and the environment.

Roche employees cite the chance to make a difference in the lives of patients as the number one reason they enjoy working at the company. In hiring new employees, Roche looks for people who are inspired by this mission and who would fit in well with the collaborative, rigorous and entrepreneurial spirit of the company culture. Because Roche knows that employees are critical to its success in bringing novel medicines to patients, the company is dedicated to remaining a great place to work and to providing employees with programmes, services and benefits that allow them to bring the best to the business and their personal lives.

ROCHE SINGAPORE TECHNICAL OPERATIONS

Roche Singapore Technical Operations is Roche's first biologics manufacturing site within Asia, and the first

company in Singapore to produce US FDA licensed bio-therapeutics using recombinant DNA technologies. With over 500 employees, two state-of-the-art facilities, using two different production technology platforms to manufacture bacterial and mammalian cell-based products – all within a 12.6 hectare biomedical space. Here is where we produce the biologic medicines that target a wide spectrum of patients and conditions. Our facilities are designed for multi-product drug substance manufacturing based on CHO and E.Coli platforms. The 26,000 m² CHO facility manufactures Avastin, an anti-angiogenesis therapy for colorectal, lung, kidney, breast and brain cancer patients; and Herceptin, a therapeutic antibody for metastatic breast cancer. The 3,084 m² E.Coli facility, on the other hand, yields Lucentis, a treatment for patients with wet age-related macular degeneration, a leading cause of blindness in people over 55. The entire operation is supported by external infrastructure which includes a power substation, waste neutralization, industrial gases and water storage.

Roche Purpose Statement

We believe it's urgent to deliver medical solutions right now - even as we develop innovations for the future. We are passionate about transforming patients' lives. We are courageous in both decision and action. And we believe that good business means a better world. That is why we come to work each day. We commit ourselves to scientific rigour, unassailable ethics, and access to medical innovations for all. We do this today to build a better tomorrow. We are proud of who we are, what we do, and how we do it. We are many, working as one across functions, across companies, and across the world.

Roche Singapore Technical Operations Pte Ltd
10 Tuas Bay Link
Singapore 637394
Phone : +65 6491 4000
Website: www.roche.com





Sanofi

Sanofi is a global healthcare leader focused on patient's needs engaged in the research, development, manufacturing and marketing of innovative therapeutic solutions. Sanofi has core strengths in healthcare, with 7 growth platforms: diabetes solutions, human vaccines, innovative drugs, consumer healthcare, emerging markets, animal health and the new Genzyme.

The sanofi-aventis manufacturing facility in Singapore, Aventis Pharma Manufacturing Pte Ltd, is one of the company's primary manufacturing sites under the Group. It is responsible for the global supply of the pharmaceutical active ingredients used in key products of sanofi-aventis.

The Jurong site is located in Singapore about 15 km west of the city center, close to the Tuas Biomedical Park. This area is home to many pharmaceutical companies that have set up production and formulation operations in Singapore. The Sanofi site is dedicated to the production of active ingredients and includes two chemical plants. Technologies at the site include standard and complex chemistry and finishing operations. The site operates a liquid waste treatment plant and two solvent recovery units. Jurong is part of the Chemistry & Biochemistry operational unit.

Over the years, the plant has been successfully inspected by US FDA, Singapore HSA and France AFSSAPS, and its products are exported to manufacturing sites located in Continental Europe, UK, USA and Japan.

At sanofi-aventis Singapore, we strive to improve health of patients and residents in Singapore through the providence of quality medicine. We are a performance-driven and dedicated team with a vision to improve the professionalism of employees through skills/knowledge training & development.

Aventis Pharma Manufacturing Pte Ltd
(A Sanofi Group Company)
61 Gul Circle Singapore 629585





Who We Are

Shire is the leading global biotechnology company focused on serving people with rare diseases and other highly specialized conditions.

We strive to develop best-in-class products, many of which are available in more than 100 countries, across core therapeutic areas including :

Hematology, Immunology, Neuroscience, Ophthalmics, Lysosomal Storage Disorders, Gastrointestinal / Internal Medicine / Endocrine and Hereditary Angioedema; and a growing franchise in Oncology.

Our employees come to work every day with a shared mission:

To develop and deliver breakthrough therapies for the hundreds of millions of people in the world affected by rare diseases and other high-need conditions, and who lack effective therapies to live their lives to the fullest.

Singapore Plant

Shire's Singapore recombinant manufacturing plant currently manufactures lifesaving therapy for patients with hemophilia A and B.

Antihemophilic Factor VIII and Coagulant Factor IX bulk drug substance are manufactured in the Singapore plant and were first approved in 2013 and 2016 respectively.

The plant received US FDA and EMA approvals for the production of both products.

Officially opened on 7 August 2014, Shire's manufacturing facility in Singapore is located in Woodlands, next to Kranji MRT station and currently employs over 400 highly qualified employees.

It is part of Shire's four world-class global network sites that produce Antihemophilic Factor VIII and Coagulant Factor IX bulk drug substance.



For more information, visit shire.com
2A, Woodlands Industrial Park D
Street 2
Singapore 737779

Wyeth® Nutrition

Wyeth Nutrition - nurturing a healthier generation with parents and healthcare professionals

Wyeth Nutrition is part of Nestle S.A. the world's leading Nutrition, Health and Wellness Company. Wyeth Nutrition develops premium-quality nutritional products scientifically-designed to meet the needs of infants and young children, as well as pregnant and lactating mothers.

As pioneers in infant nutritional science, our mission is to provide the best nutritional support for future healthy outcomes. For nearly a century, Wyeth Nutrition has leveraged clinical rigor, scientific research, world class manufacturing and product safety standards to drive scientifically-sound solutions that offer parents confidence, help nourish children and support their healthy futures.

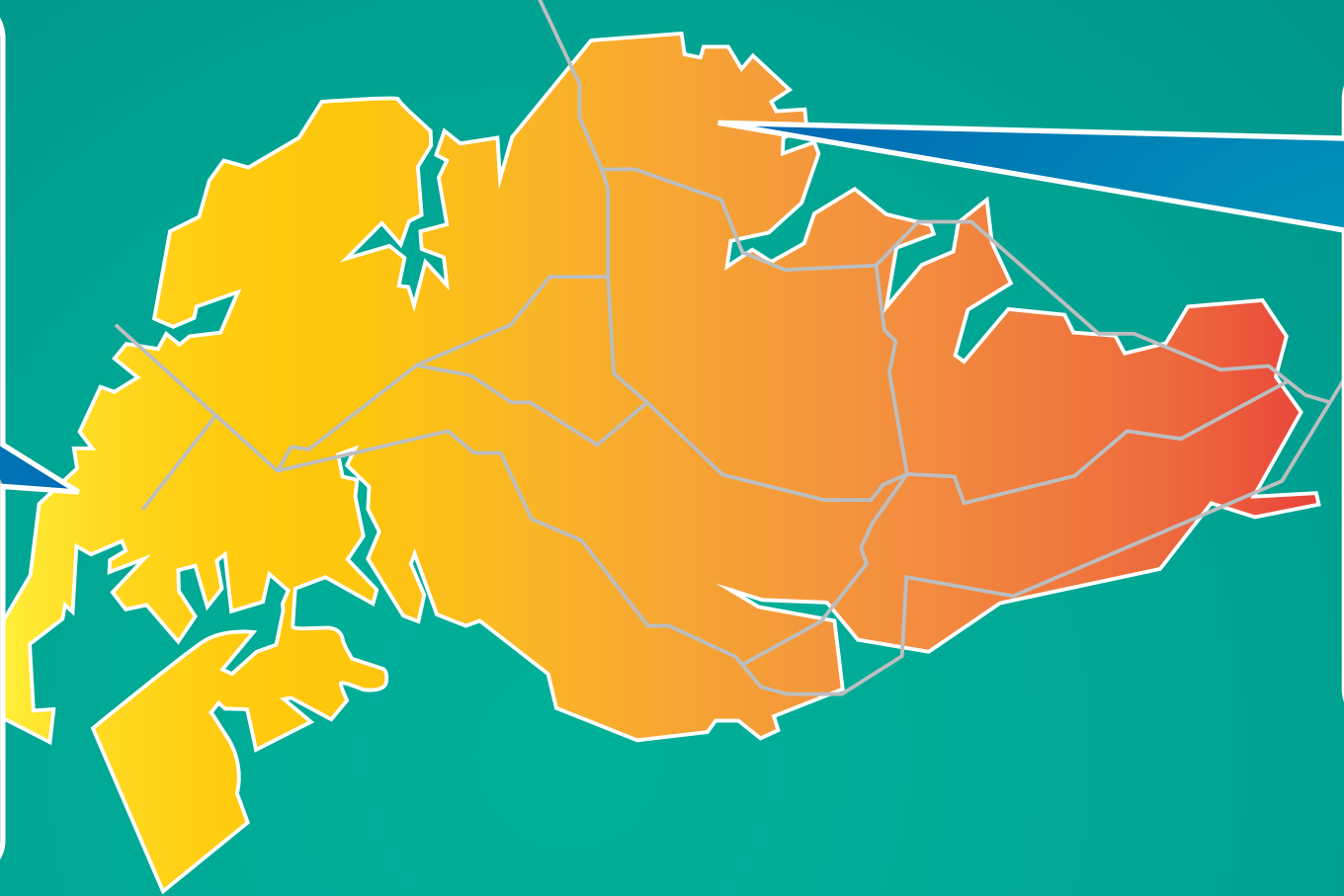
In Singapore, the plant in Tuas manufactures a wide range of milk powder formulas that caters to the differing nutrition needs of consumers in varying life stages. These include S26, Promil, Progress and Promise for babies and children, and Enercal and Pro Mama for adults to support the markets in Asia and Middle East.

Utilizing world-class cutting edge technology and processes, Wyeth Nutritionals Singapore Pte Ltd has also won many accolades such as Workplace Safety and Health (WSH) Award by Ministry of Manpower (MOM), Food Safety Partner Award by Agri-Food and Veterinary Authority (AVA), 3R Packaging Award by Singapore Packaging Agreement (SPA) – sponsored by National Environment Agency (NEA) and Excellence in Energy Management by Energy Efficiency National Partnership (sponsored by NEA).

Wyeth Nutritionals (Singapore) Pte. Ltd.
No 1 Tuas South Avenue 4
Singapore 637609
Phone : +65 6415 2000

How to Get There

- ① Abbott
- ② AbbVie
- ③ Alcon
- ④ Amgen
- ⑤ GlaxoSmithKline
- ⑥ Kaneka
- ⑦ Lonza
- ⑧ Mead Johnson
- ⑨ MSD
- ⑩ Novartis
- ⑪ Pfizer
- ⑫ Roche
- ⑬ Sanofi-Aventis
- ⑭ Shire
- ⑮ Wyeth Nutrition



Public Transport (All companies except Shire)

Nearest MRT Station: Joo Koon Mrt
Buses that goes to Tuas Biomedical Park (walking times from bus stop to companies will range from 5 mins to 25 mins dependant on proximity from bus stop):

182, 182M (From Boon Lay Interchange)

Company Chartered Shuttle Bus Service

On top of public transport, companies located at Tuas Biomedical Park and Woodlands also provides free shuttle bus pick-up services from MRT stations at specific times. Pick-up locations of the free shuttle bus service will vary from company to company. Hence, it would be advisable

to check in with the company to determine the pick-up locations.

- ⑤ GlaxoSmithKline is also located at Pioneer Sector and Quality Road (not in map)
- ⑥ Kaneka is located at Gul Crescent (not in map)
- ⑨ MSD is also located at Tuas West Drive (not in map)
- ⑬ Sanofi-Aventis is located at Gul Circle (not in map)

Public Transport (Shire)

Nearest MRT Station: Kranji (About 15 mins walk)

Buses around Shire:

Bus Stop No: 46021 / 46029 (About 10 mins walk)
160,170,170x,178

Bus Stop No: 46389 / 46381 (About 20 mins walk)
925,925C,960,961,961C

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