

# **ACHARYA GROUP**

## **The Chemistry Specialists**

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## **The Chemistry Specialists**

- **Estd : 1975**
- **Founder : Dr. S. P. Acharya**
- **Today has five manufacturing sites**
- **Employees ~300**
- **Activities :**
  - **Product Manufacturing and Sale**
  - **Contract Research**
  - **Custom Manufacturing**

# ACHARYA GROUP

## The Chemistry Specialists



- **acharya chemicals**

– Ambernath

**1975**

API and Advanced  
Intermediate Site  
(**GMP**)



- **HERBERT BROWN**

*Pharmaceutical & Research Laboratories*

– Dombivli

**1984**

Research &  
Small Volume API  
(**GMP**) and  
Intermediate Site



- **Shirdi Chemicals Pvt. Ltd.**

– Pawane, Navi Mumbai

**2002**

Intermediate &  
Specialty  
Chemicals Sites  
(**ISO9001**)



- **Dr. Acharya Laboratories Pvt. Ltd.**

– Ambernath

**2013**

# Infrastructure

# Manufacturing facilities

**Five independent manufacturing facilities - 150 TPM**

**25 Glass Lined total volume of 100,000 litres**

**30 SS Reactors with total volume of 100,000 litres**

- Glass Lined Reactors from 50 litres to 10000 litres
- SS316 reactors from 100 litres up to 15000 litres
- High Pressure Reactor 45 kg/cm<sup>2</sup>
- Centrifuges
- AGNF (3KL to 12KL) SS, Hastelloy
- Leaf/Membrane/Sparkler Filters
- Pulverisor/Multi Mills/ Microniser
- Blender and sifter
- Driers : RVD, FBD, VTD
- DM Water Plant
- Steam / Thermic Fluid Boiler
- Chilling Plants
- Licensed Underground Solvent Tank Farm
- Power Generators
- MEE/RO for ETP

# Manufacturing facilities

Shirdi Chemicals - ISO 9001:2000 Certified



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# Manufacturing facilities

Acharya Chemicals – WHO-GMP / US-FDA Approved



Intermediate - Reaction Area

# Manufacturing facilities

Acharya Chemicals – WHO-GMP / US-FDA Approved

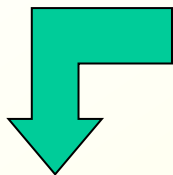


API Crystallisation – Centrifuging Section



# Manufacturing facilities

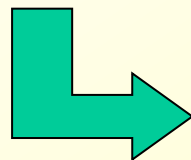
Acharya Chemicals – WHO-GMP / US-FDA Approved



Central Corridor



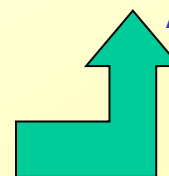
API Drying



API Pulverising



API Blending & Packing



# Manufacturing Facilities Summary

- **Herbert Brown Phar. & Res. Labs.**
  - **Low Volume campaigns**
- **Capacity available at Ambernath**
  - **20 M.T. per month taken on campaign basis**
- **Asvik Pharma, Dombivli**
  - **20 M.T. capacity per month**
- **Shirdi Chemicals, New Mumbai**
  - **50 – 100 MT capacity per month**
- **Dr. Acharya Labs., Ambernath**
  - **High volume manufacturing**

# R&D Facilities



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# R&D facility

- Synthetic lab.
  - Three labs with hoods
  - Medium Pressure Prep. Liquid Chromatography
  - Nano filtration systems for purification
  - High Pressure facility 5L @ 350 bar 250 C
  - Fractional Distillation System under high vacuum
  - Solvent dehydration system
- Strength : 20



Synthesis Lab



Nano filtration System



Prep. HPLC System

# R&D Facilities

- LC-MS Single Quad with Multiple Sources
- Gas Chromatography
- Head Space Sampler for OVI
- HPLCs with UV-Vis and PDA Detector
- UV-VIS Spectrophotometers
- FT-IR with solid sample accessory for polymers
- Coulometer KF with Oven sampler for low moisture determination
- microVISC — Portable Viscometer
- Microscopy Biovis PSA 2000
- Environment Chambers for Stability Studies
- Mettler Balance, Karl Fisher Titration Units etc.



Analytical Development Lab.  
with HPLC-PDAs



# Business Model

- Product Development and Sale
- Contracts – Exclusive Supply

# Product Development and Sale

# Products

## APIs

- Benzyl Nicotinate #
- Methyl Nicotinate #
- Metronidazole Benzoate #
- Valbenazine Tosylate

\* under development

# DMF available



# Products

## Intermediates & other building blocks

- Caronic Anhydride
- Myosmine
- 1,2,5-Trimethylpiperidine-4-One
- 2-Aminobenzonitrile
- 2-Amino-5-chlorobenzophenone

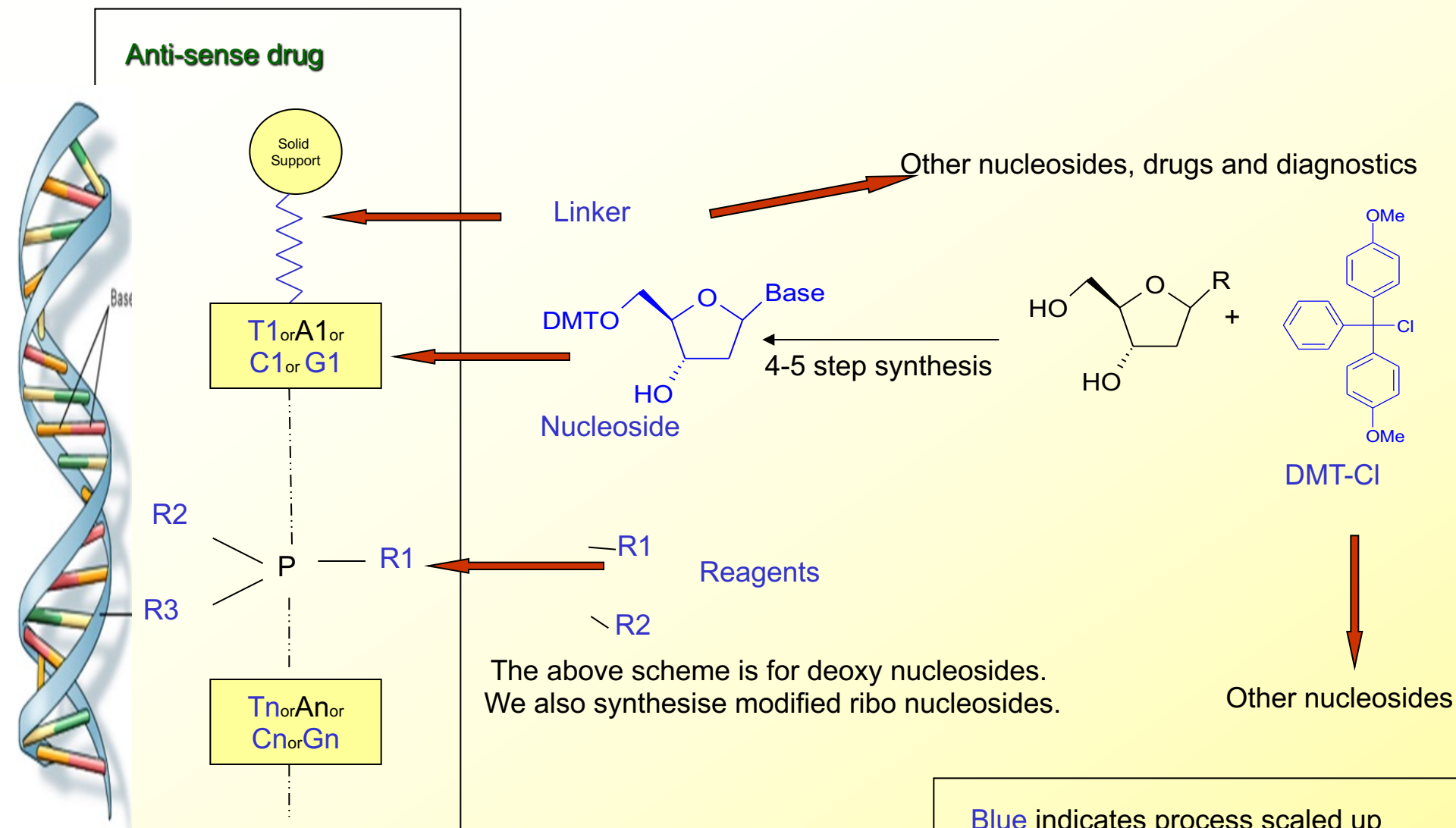
# Products

## Nucleoside Related

- Bis(phenylacetyl) disulfide [PADS]
- Protected Nucleosides
- Linkers with Solid Support
- Amidites

The above products will be offered subject to permission from patent holder and access rights for the respective technologies to the buyer.

# Materials for Oligonucleotides



Blue indicates process scaled up and supplied by

# Contract – Exclusive Supply

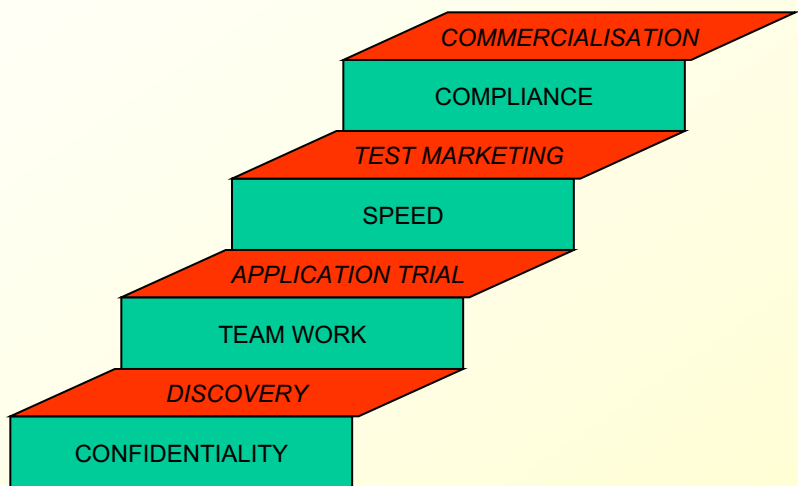
# Business Model

## Contracts – Exclusive Supply

- Sector
  - Pharma
  - Specialty Chemicals
  - Agro Intermediates
- Type
  - Contract Research
  - Custom Synthesis
  - Contract Manufacturing

# Contract Research & Custom Synthesis

- Team of Specialists
- High End Instrumentation from world reputed brands like Agilent, Shimadzu etc
- Pilot Plant
  - 50 L to 1000 L Scale SS and Glass Reactors
  - Centrifuges
  - FBD and Vacuum Tray Drying
  - Liquid N2 Handling capability
  - Column Chromatography system
  - Lyophilizer



# Project Management

- Project Infrastructure Speed
  - e.g. Agro Intermediate – technology development to project implementation in 4 months
- In-licensed API project with Polymorph and filed US DMF
- Aided in Life Cycle Assessment of Projects

# Project Management High Pressure Reactor Project



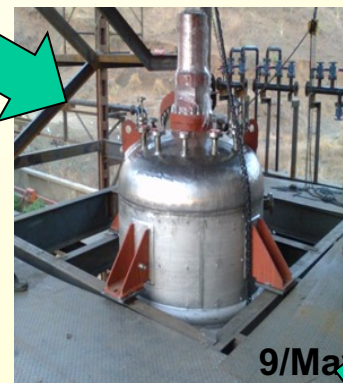
6/Apr



15/Apr



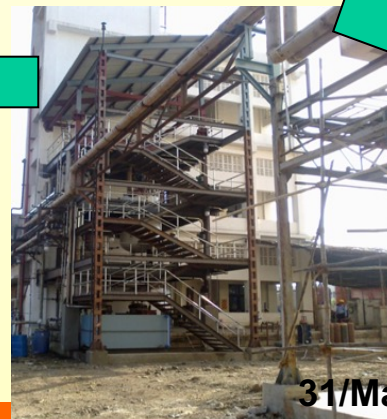
30/Apr



9/May



21/May



31/May



2/June

Plant batch starts on 2<sup>nd</sup> June

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# CMC Partner

## Project Phase

- Discovery – Preclinical P1/2/3
- Launch
- Commercial Production

## Key Services

- Technology In-transfer
- Process Development
  - Feasibility
  - Viability
  - Scalability
- Supply Chain
- Stability
- Regulatory

# Reaction Capabilities

Reaction	Lab.Scale	Pilot Scale	Plant Scale	Reaction	Lab.Scale	Pilot Scale	Plant Scale
Acetal Formation			X	Epoxidation	X		
Acid Chloride Formation			X	Esterification		X	X
Acylation		X	X	Friedel-Crafts Reaction	X	X	X
Alkylation of Phenols			X	Grignard Reaction	X	X	X
Amidation			X	High Pressure Reaction	X	X	X
Amination		X	X	Hydrogenation	X	X	
Arbusov	X	X	X	Hydrolysis	X	X	X
Beckmann Rearrangement	X	X		Michael Addition		X	
Bromination			X	n-ButylLithium Reactions		X	X
Catalytic Reduction using LiAlH <sub>4</sub> and NaBH <sub>4</sub>	X	X	X	Nitration			X
Chiral Reactions	X	X		O-Glycosidation	X		
Chiral Chemistry (Induced resolution)	X	X		Oxidation Reaction		X	X
Chlorination of Phenols & Aromatic Acid Anhydrides			X	Oximation	X	X	X
Chlorosulfonation	X	X		Protection and Deprotection of Carbohydrates	X	X	X
Condensation			X	Reduction			X
Cryo Reactions	X	X		Sandmeyer Reaction			X
Decarboxylation	X	X		Silylation	X	X	
Dehydration of Amides to Nitriles	X	X	X	Substituted Piperidones	X	X	X
Diazocoupling ( ring cyclisation )	X	X	X	Transesterification			X
Diazotisation	X	X	X	Vilsmeier Haack Reaction	X	X	X
Dieckmann Reaction	X	X		Wolff Kishner Reduction	X		

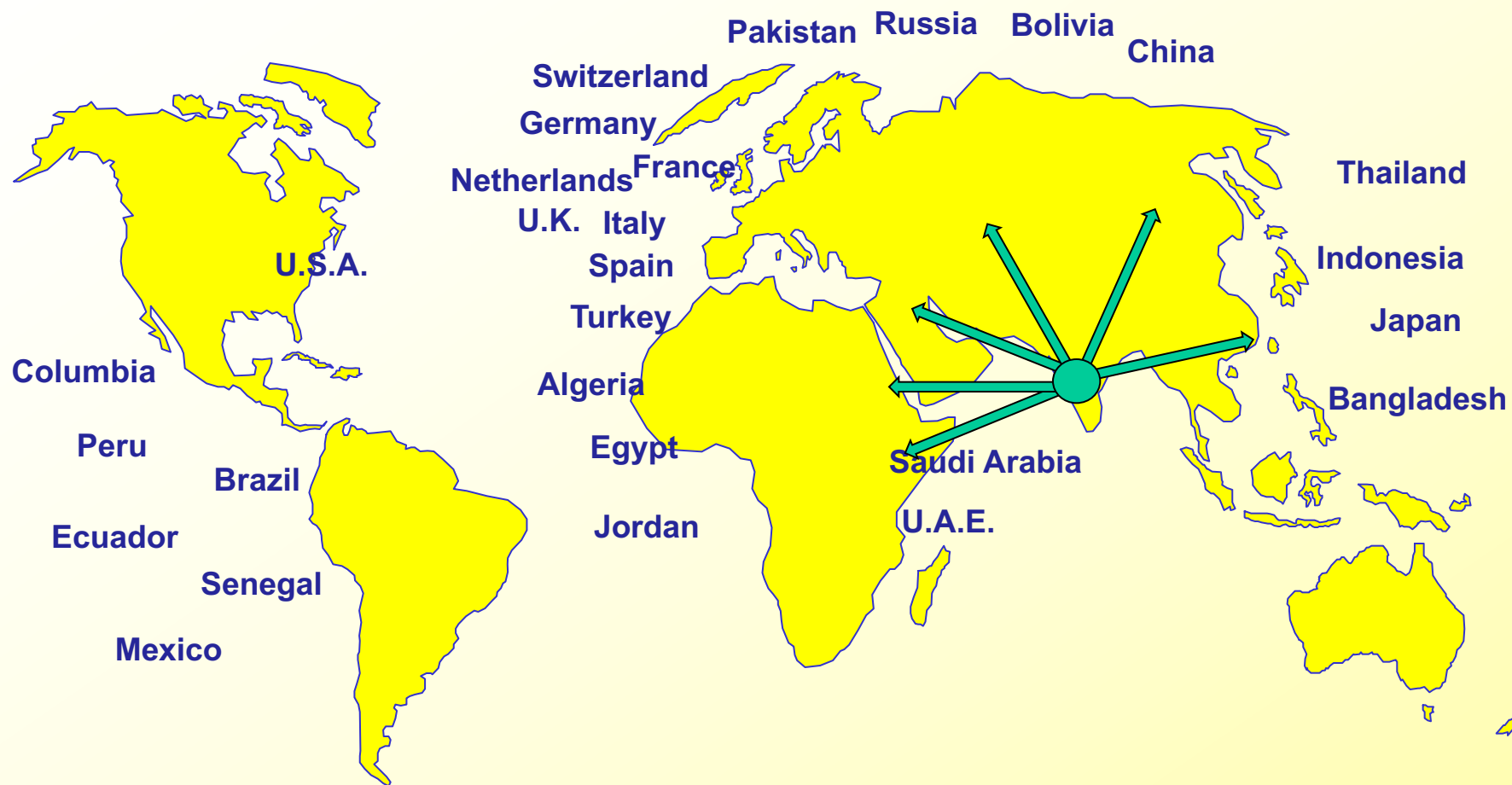
# Unique Production Scale Technical Capabilities

- High Pressure Reactor @45 kg/cm<sup>2</sup> in 3500 Litres volume
- Preparative HPLC Flow rate @ 4 litres/min
- Nano-filtration system for product purification based on molecular weight
- Class 100,000 powder processing area in API plant
- Carbohydrate Chemistry : Nucleic Acid Chemistry and its related agents
- Capabilities of handling pyrophoric reagents on plant scale e.g. n-Butyllithium, Diethylzinc, Triethylaluminium(TEAL), LAH etc

# Core High Volume Capabilities (Multi 100 T Capabilities)

- High Pressure Reaction upto 640 psi
  - Ammonolysis (using Ammonia gas tonners)
  - Hydrogenation
- Low melting solids handling capability
  - Phenol/Cresol/Xylenol based reactions with bulk storage and handling of materials
- Fractional Distillation under vacuum
- Grignard Reaction
- Diazotisation and other functional groups introduction
- Dehydration of amides to form nitriles
- Acid Chloride formation using  $\text{SOCl}_2$  /  $\text{POCl}_3$

# Exports (90% of Total Sales)



# Key Drivers for Partnership

- Partner - Compatibility
- Adaptability
- Right sized
  - Advantages of Instrumentation, Systems and Thought Process of Large Companies
  - Flexibility, Quick Implementation, Decision Making, Confidentiality, Loyalty
- Business Model – Exclusive Supply