

**OLON**  
*All in One*



# P&R Group



**P&R Group**, headquartered in the Milan area, is one of the leading **Italian** groups in the **chemical-pharmaceutical industry**, and has a long tradition of **top-quality products**.

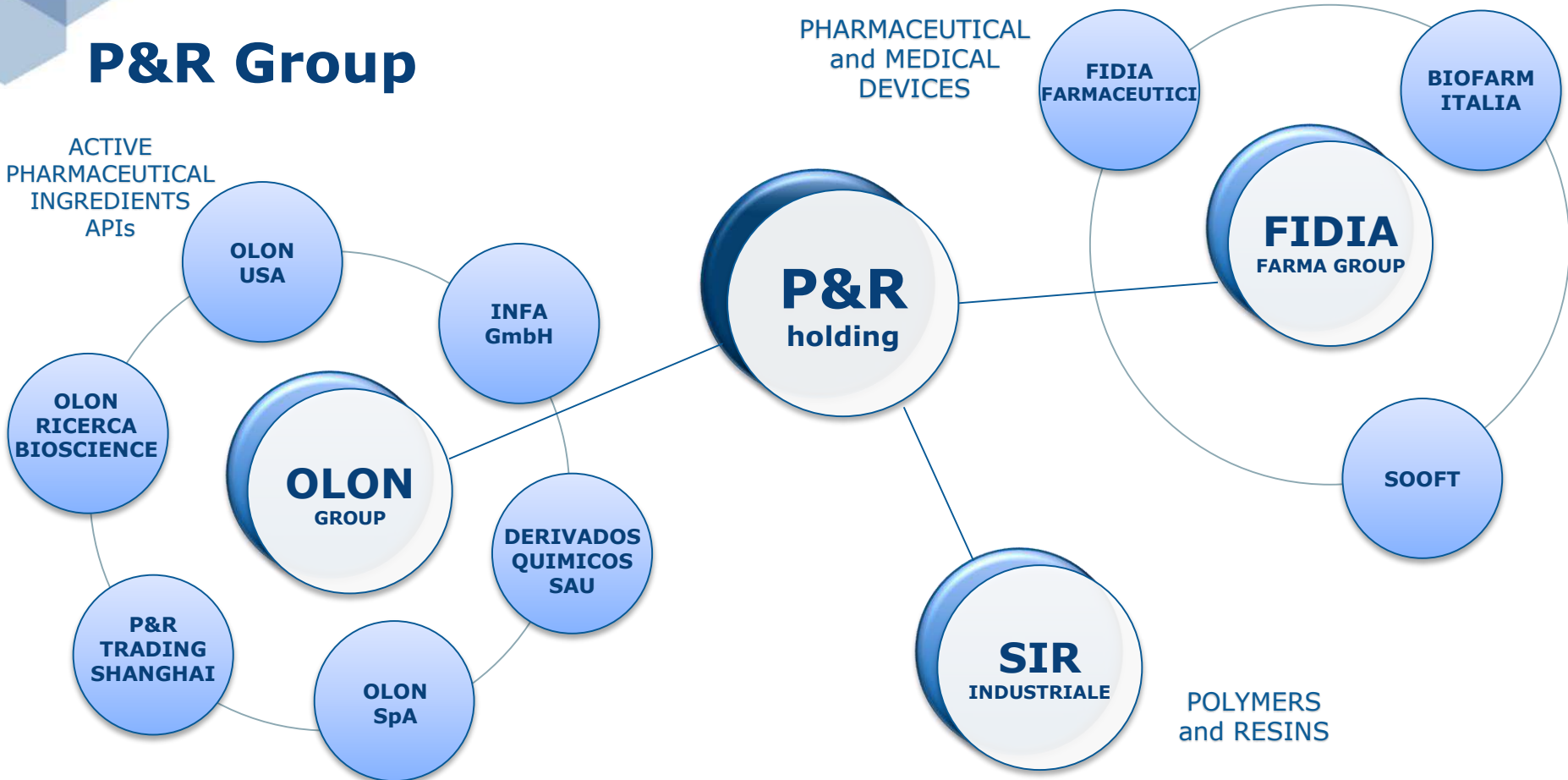
The Group, with its strong presence in foreign markets through companies and subsidiaries, generates yearly revenues **800 million USD (2017)**, **over 80% in foreign markets**.

P&R Group **employs 3,000 people globally**, distributed between the chemical and pharmaceutical market segments.



# P&R Group

ACTIVE  
PHARMACEUTICAL  
INGREDIENTS  
APIs



...focus on...



# History

- **More than 1 century of history**
- **Grown mainly by acquisitions**
- **Owner of 10 plants**
- **Global leader in production and development of API and CDMO field**

**1907**

Establishment of Schiapparelli SPA that became part of Olon SpA in 2003:

- **Schiapparelli S.p.A.**, one of the major companies in the Chemical Pharmaceutical Italian market, located in **Settimo Torinese**, and specialized in fermentation technologies



**2010-2012**

All five API manufacturing sites were incorporated under the name of **OLON S.p.A.**



**2017**

Acquisition of "Chemical Development Division" of **Ricerca Biosciences LLC**, now **Olon Ricerca Bioscience LLC** (Cleveland - US) (ORB)



**1987-2003**

Acquisition of **5 Italian manufacturing sites**:

- Dorno (CD Farmasint)
- Mulazzano (Solchem)
- Garbagnate (Laboratori Mag)
- Rodano (Antibioticos)
- Settimo Torinese (Schiapparelli)



**2016**

Acquisition of **Infa Group**:

- Labochim (Segrate)
- Sifavitor (Casaletto Lodigiano)
- Derivados Quimicos (Spain)



**2018 acquisition of Mahad API manufacturing site. The operation is expected to be completed in early 2019.**

# Olon at a Glance



**1,500 people**



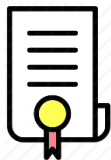
**400 Mio USD (2017)**



**5,340 m<sup>3</sup> reaction capacity**



**250 APIs** (31 under customer's exclusivity)  
**33 Chemical Intermediates** (all under exclusivity)



**cGMP expertise:**  
about **130** active **US DMFs** and **50** granted **CEPs**

# One Olon



**Headquarters:**  
Rodano (Italy)

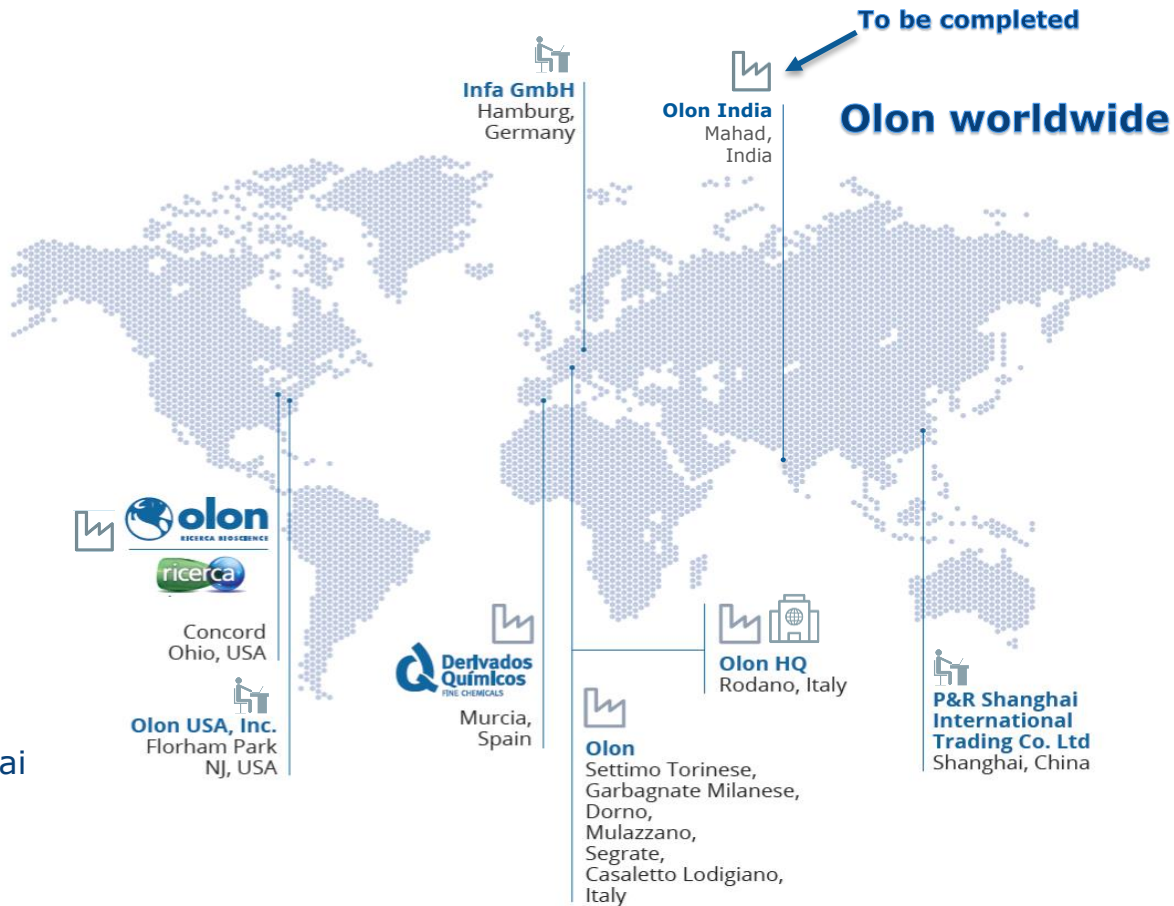


**10 facilities:**  
8 EU + 1 US + 1 IN



**Offices:**

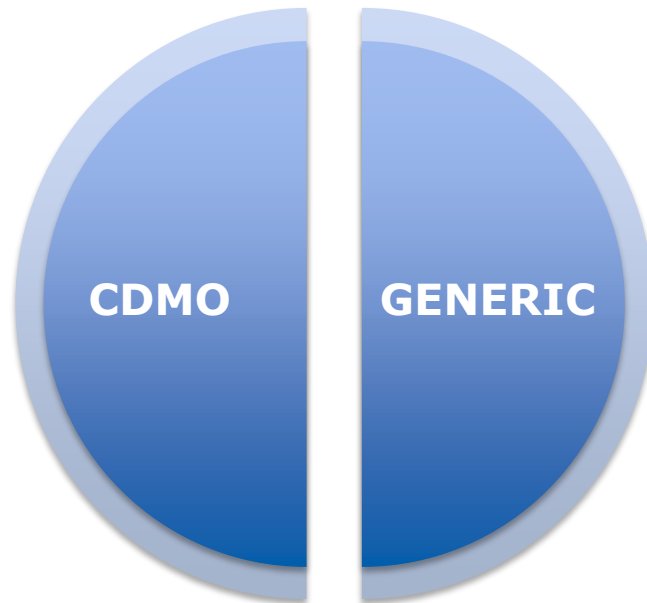
- Olon USA
- Trading: Infa GmbH  
P&R Shanghai



# One Olon



**CDMO** in cGMP  
**Advanced Intermediates**  
+  
**Active ingredients** for the  
Life Science Industry



**More than 100 years of  
experience of Generic API  
production**



# Products: APIs – Main Therapeutic Classes



## **CNS (Central Nervous System)**

ASENAPINE maleate, BENPERIDOL, BENZPHETAMINE, BUPROPION, DOXEPIN HCl, FLUOXETINE, FLUVOXAMINE maleate, HALOPERIDOL, LURASIDONE HCl, MEMANTINE, PERGOLIDE mesylate, PHENDIMETRAZINE tartrate, PHENTERMINE HCl, PREGABALIN, ROTIGOTINE, SELEGILINE



## **Man & Woman's Health**

CLODRONIC ACID sodium salt, DIENOGEST, FLUTAMIDE, MINOXIDIL, OSPEMIFENE, RALOXIFENE HCl, THIOCTIC ACID



## **Antivirals**

ABACAVIR sulfate (HIV), ACYCLOVIR, ATAZANAVIR sulfate (HIV), FAMCICLOVIR, RITONAVIR (HIV), VALACYCLOVIR HCl, VALGANCICLOVIR HCl



## **Antibiotics**

CEFAZOLIN, DAPTOMYCIN (standard and sterile), FIDAXOMICIN, PAROMOMYCIN sulfate, RIFABUTIN, RIFAMPYCIN, RIFAMYCIN, TEICOPLANIN.



## **Antineoplastics**

ABIRATERONE acetate, AZACITIDINE, BENDAMUSTINE, BICALUTAMIDE, CLOFARABINE, ENZALUTAMIDE, IRINOTECAN, MELPHALAN, NINTEDANIB esylate, OLAPARIB, POMALIDOMIDE, TAMOXIFEN citrate, TOREMIFENE citrate

# Products: APIs – Main Therapeutic Classes



## **Cardiovascular** (Antihypertensives, Diuretics, Anticoagulants, Lipid regulators)

AMIODARONE HCl, BEZAFIBRATE, BOSENTAN MONOHYDRATE, BUMETANIDE, CIPROFIBRATE, FENOFIBRATE, FUROSEMIDE, INDOBUFEN, LABETALOL HCl, PIRETANIDE, PITAVASTATIN calcium



## **Dermatologics**

ACITRETIN, ADAPALENE, ALITRETINOIN, ETRETINATE, ISOTRETINOIN, TAZAROTENE, TRETINOIN

## **Antimicrobics**

AMOROLFINE, BUTOCONAZOLE nitrate



## **Antidiabetics**

GLICLAZIDE, GLIPIZIDE, VILDAGLIPTIN



## **Pain** (Analgesics, Anti-inflammatories, Antimigraine)

BUFEXAMAC, DICLOFENAC, DIHYDROERGOTAMINE mesylate, FLUNARIZINE 2HCl, , IBUPROFEN lysine, METERGOLINE, OXAPROZIN, PIROXICAM, TENOXICAM



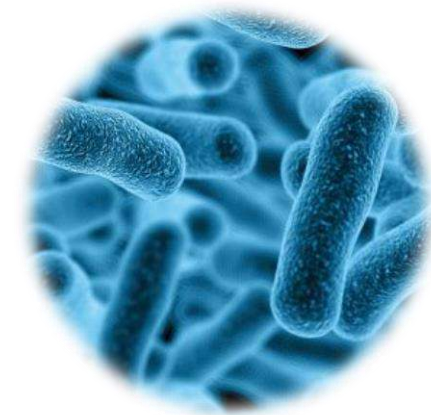
## **Respiratory** (Bronchodilators, Mucolytics, Antitussive, Antiasthmatics)

AMBROXOL, BUTAMIRATE citrate, INDACATEROL maleate, IPRATROPIUM bromide, LEVALBUTEROL HCl, SOBREROL, TIOTROPIUM bromide, UMECLIDINIUM bromide, VILANTEROL trifenate

# Olon CDMO's Offer

Through **chemical synthesis** or **fermentation technology** or **semi-synthesis** approach, Olon offers, **under GMP**, dedicated solutions for development and manufacturing of:

- NCEs
- Advanced Intermediates
- Building Blocks
- Enzymes & Proteins



**Supporting** customer from **early phase to commercialization.**

# Pharmaceutical Industries Principles for Responsible Business

Olon applies Pharmaceutical Supply Chain Initiative (**PSCI**) which addresses **five areas of responsible business practice**:

- Ethics
- Labor
- Health and Safety
- Environment
- Management systems



**Olon** is committed to implement these Principles as its **own Conduct Principles**

# Wide and Global Regulatory Coverage

- More than **250 APIs**
- **Main submission areas:** USA, Canada, Mexico, Brazil, India, China, Russia, Japan, Europe, Far East
  - More than **50 granted** Certificates of Suitability (**CEP**)
    - More than **150 US-DMFs**

Applications supported in US and EU (years 2016-2017)	
ANDA	15
NDA	5
DCP	7
CP (EMA)	152

- **Total DMFs** manage worldwide around **350**

# Extensive Experience in RA – QA – QC

Skilled teams with experience and practice in **Regulatory and Quality procedures**

— | **RA** → 20 people  
**QA** → 50 people  
**QC** → 142 people



~ **15% of Olon**



**All Olon's facilities**

- Are **in compliance** with the strictest international requirements
- Are **inspected** by the most important **national** and **international Medicine Agencies**
- Self-identified under **GDUFA**



# Extensive Experience in RA – QA – QC

## Recent Inspections

Olon's facilities are regularly **inspected** by the most important **national** and **foreign Medicine Agencies**:

	Rodano	Settimo	Garbagnate	Mulazzano	Dorno	Segrate	Casaleto	Derivados Quimicos	Olon Ricerca Bioscience
		<b>Sep 2018</b> Feb 2016 Jun 2013	Mar 2014 Mar 2010 Feb 2005	<b>May 2018</b> Feb 2016 Sep 2013	<b>May 2018</b> Feb 2016 Sep 2013	May 2015 Mar 2012 May 2009	Apr 2015 Apr 2012 Mar 2009	<b>Jun 2018</b> Oct 2015 Nov 2012	May 2015 Feb 2012 Jun 2010
		<b>Sep 2018</b> Feb 2016 Jan 2014	Jun 2017 Mar 2015 Jan 2012	<b>Mar 2018</b> Nov 2015 Nov 2012	Dec 2016 Feb 2014 Jan 2011	<b>Mar 2018</b> May 2015 Nov 2013	<b>Jun 2018</b> Mar 2016 Mar 2013	-	-
		-	-	-	-	-	-	<b>Jun 2018</b> May 2016 May 2012	-

- Italian Veterinary Agency (IT)
- COFEPRIS (MX)
- KFDA (KR)
- Russian Health Authority (RU)
- ANVISA (BR)
- PDMA (JP)

# R&D Expertise

- 210 **highly experienced and qualified** people in R&D team
- Prompt response thanks to **project dedicated teams**. (Weekly TCs, high degree of flexibility)
- Fast and detailed offer submissions (**FTE model** and transparent raw material cost)
- **Design of Experiment (DoE)** approach, when required, taking advantage of **Parallel Synthesis Equipment**



# R&D Expertise

- Fully **equipped** and **dedicated** analytical R&D laboratory
- Full **support** throughout **all clinical phases**
- Process optimization through **3 kilo Labs, 1 macro-Lab, 4 pilot plants**
- Successful scale-up multi step synthesis (**even > 10 steps**)
- **Cooperation with 4 Universities:** University of Milan (Italy), Milan Politecnico (Italy), University of Pavia (Italy), University of Murcia, and PROMIDIS (Milan University spin-off)

# Patents

Family	Granted Patent	Patent Application
57	306	147

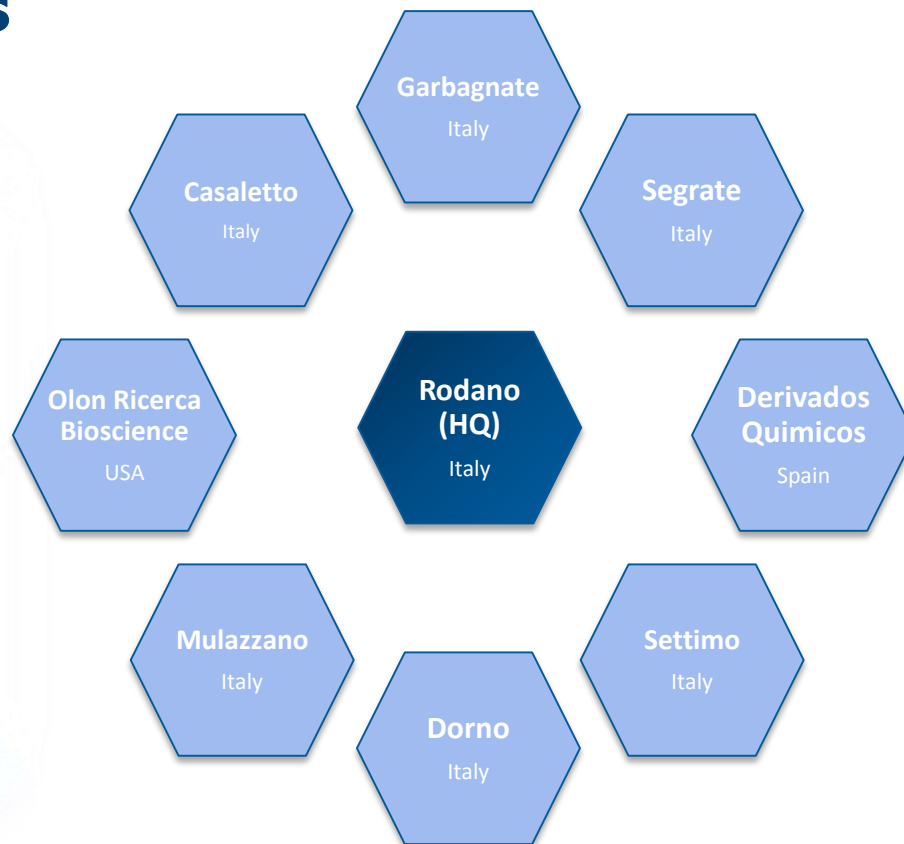
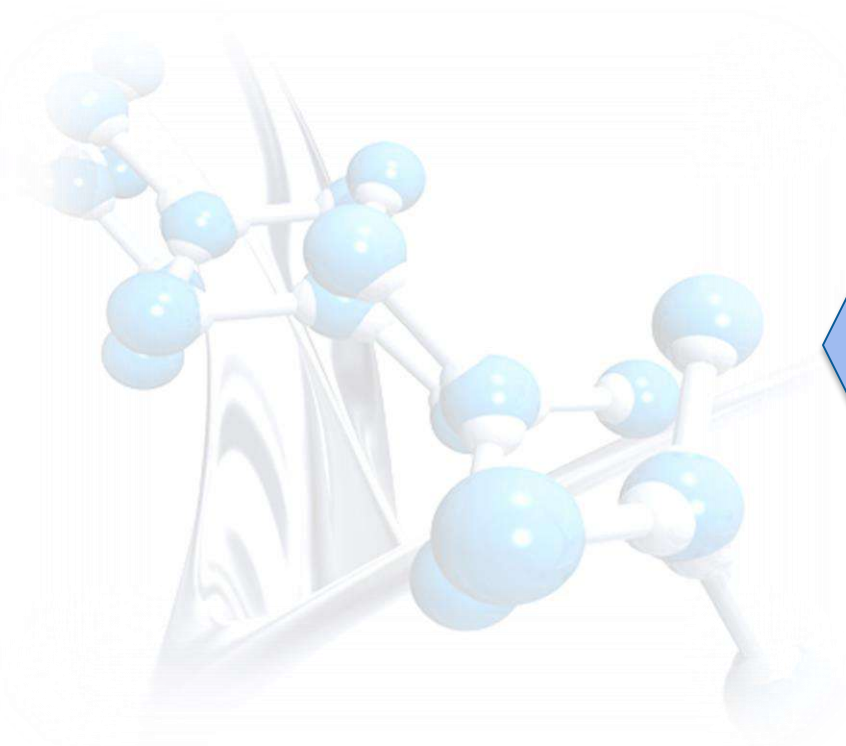
Olon portfolio consists of **57 patent families** comprising 453 patent documents: 306 granted patents and 147 patent applications.

## Intellectual Property (IP) Unit Skills:

- **Identifying patentable subject matter**, drafting, filing and prosecuting patent applications
- Developing and implementing **IP strategies**, analyzing patents (prior art search) and preparing freedom-to-operate opinions
- **Assisting** with litigation-related matters and challenging/defending patents



# Manufacturing Sites



# Rodano (Italy), Plant and Headquarters



## RODANO - HEADQUARTERS

### Synthesis, Custom Synthesis & CMO

Reaction Capacity: 950 m<sup>3</sup>

Surface: 374,000 m<sup>2</sup>

Covered Area: 90,000 m<sup>2</sup>

Employees: 341 (plant) + 143 (HQ) ➔ **About 500**

Pilot plant available

- High Potency Drugs
- Cefalosporanic antibiotics
- Camptothecins and Anthracyclines
- Lipoic Acids

# Manufacturing Sites



## SETTIMO

### Fermentation, Recovery and Semi-Synthesis, CMO

Fermentation Capacity: 3,100 m<sup>3</sup>

Surface: 160,000 m<sup>2</sup>

Covered Area: 55,000 m<sup>2</sup>

Employees: 302

Pilot plant

- Lipopeptide Antibiotics
- Aminoglycosidic Substances
- High potency drugs
- Fermentation, Recovery, Semisynthesis
- PEPTIDES of rDNA origin

# Manufacturing Sites



## **MULAZZANO**

### **Synthesis**

Reaction Capacity: 350 m<sup>3</sup>

Surface: 65,000 m<sup>2</sup>

Covered Area: 10,000 m<sup>2</sup>

Employees: 119

4 multi-purpose units

Pilot plant

- Antivirals
- Non beta-lactam antibiotics
- Antineoplastics (non cytotoxic)
- Antidiabetics

# Manufacturing Sites



## **SEGRATE**

### **Synthesis, Custom Synthesis, CMO**

Reaction Capacity: 170 m<sup>3</sup>

Surface : 11,400 m<sup>2</sup>

Covered Area: 5,240 m<sup>2</sup>

Employees: 114

HP-API handling Kilo-lab

- Antidiabetics
- Antilipemics
- Anti-inflammatory substances
- CNS

# Manufacturing Sites



## **GARBAGNATE**

### **Synthesis**

Reaction Capacity: 50 m<sup>3</sup>

Surface: 16,000 m<sup>2</sup>

Covered Area: 5,000 m<sup>2</sup>

Employees: 88

3 multi-purpose units

- Retinoids (dedicated production line)
- CNS compounds
- Controlled Substances



# Manufacturing Sites



## CASALETTO

### Synthesis

Reaction Capacity: 100 m<sup>3</sup>

Surface: 17,200 m<sup>2</sup>

Covered Area: 2,250 m<sup>2</sup>

Employees: 91

- Antimicrobics
- CNS
- Anti-inflammatory substances
- Bronchodilators

# Manufacturing Sites



## **DORNO**

### **Synthesis**

Reaction Capacity: 210 m<sup>3</sup>

Surface: 33,000 m<sup>2</sup>

Covered Area: 8,500 m<sup>2</sup>

Dedicated production lines

Employees: 55

Pilot plant

- Antilipemics
- Anti-inflammatory substances
- Antivirals

# Manufacturing Sites



## **DERIVADOS QUIMICOS**

### **Synthesis, Custom Synthesis, CMO**

Reaction Capacity: 409 m<sup>3</sup>

Surface: 78,000 m<sup>2</sup>

Covered Area: 25,395 m<sup>2</sup>

Employees: 134

- Antimicrobics
- CNS
- Antiepileptics
- Hazardous chemistry

# Olon Ricerca Bioscience (ORB)



Founded in 1986, single integrated 25 acre site near Cleveland, Ohio



## **OLON RICERCA BIOSCIENCE** **CRO, Lab scale**

Reaction Capacity: 17 m<sup>3</sup>

Surface: 100,000 m<sup>2</sup>

Covered Area: 15,000 m<sup>2</sup>

Employees: 100

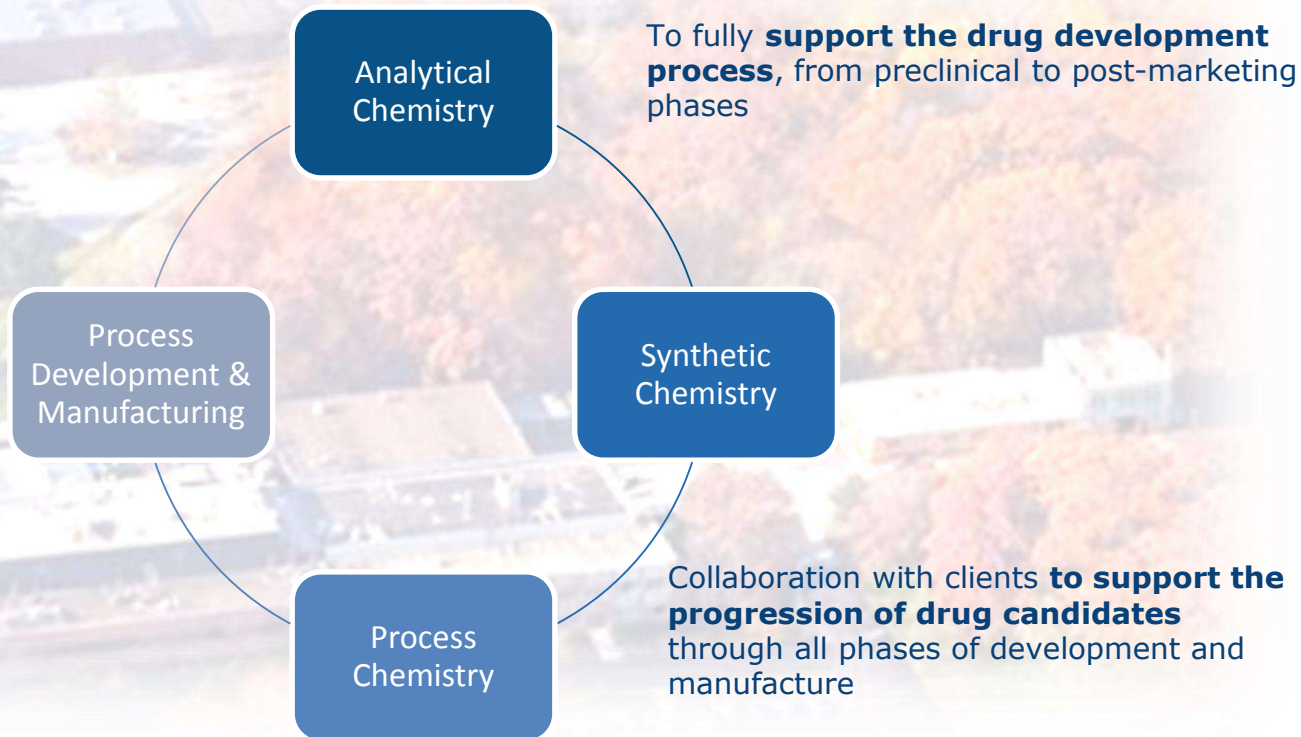
- World-Class **Contract Research and Manufacturing** Services
- Broad array of capabilities, **integrated approach** to chemical development
- Rigorous **quality management process** embedded throughout the entire organization
- **Strategic partnership** broadens contract research and manufacturing services for a global customer base

June 2017  Olon **acquired**  
Ricerca Bioscience

# ORB - Overview

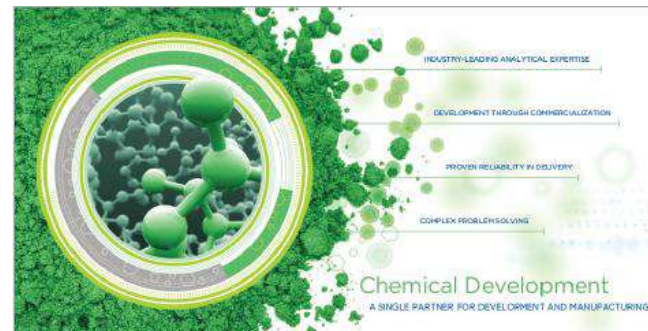
**Flexible access** to a broad spectrum of:

- **manufacturing process development**
- **pharmaceutical process development**
- **manufacturing expertise**



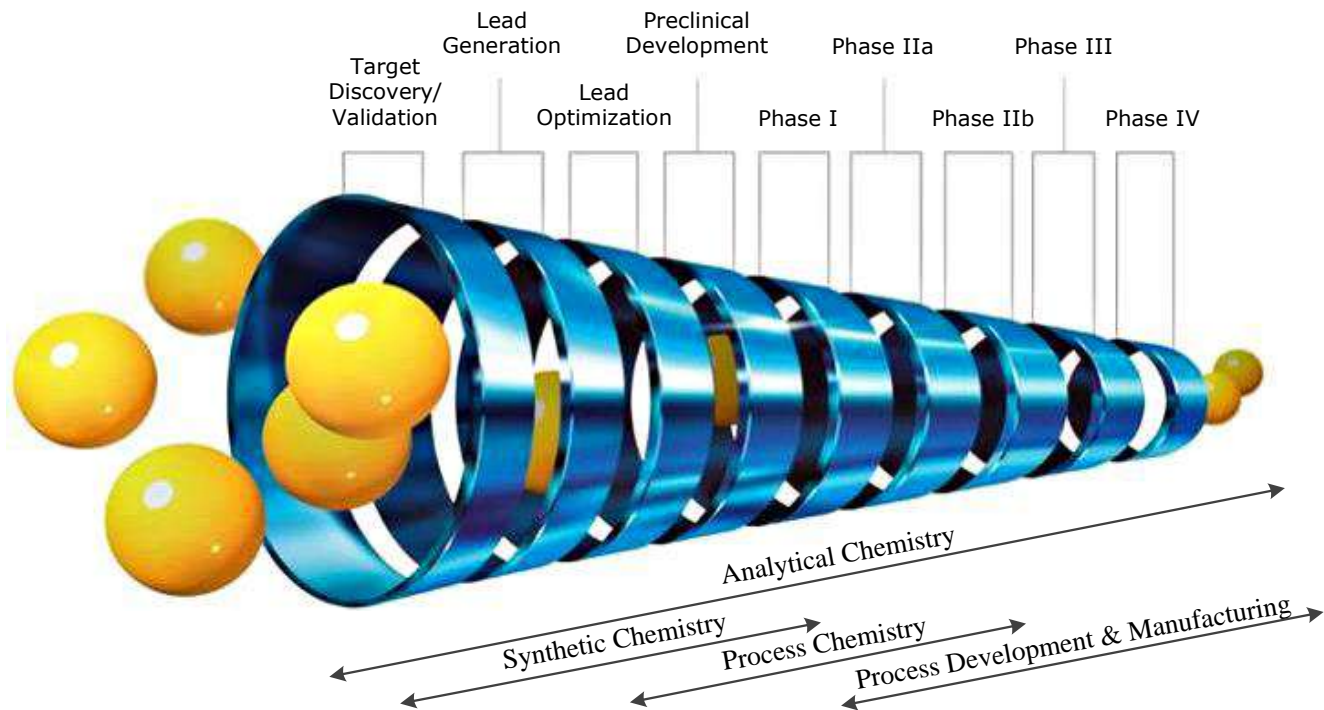
# ORB - Overview

- First-class analytical chemistry, synthetic chemistry, engineering, and API manufacturing services **designed to meet Customer needs throughout all phases of drug and chemical development**
- Providing complete **solutions** for Customer's small molecule chemical development needs
- Ability to **solve** complex **chemical problems**
- 18 technology transfers to commercial manufacturing



ORB - QC lab

# Aligned with Drug Development



# Trading

Olon's Trading Unit can be the right **Partner** to

➔ **Find new products** (APIs and intermediates)

➔ Provide **GMP auditing services** in China and India



**Infa GmbH**

- **Sells APIs** (not manufactured by Olon)
- **Supplies products** from EU, India and China
- **Major markets:** Vietnam, Turkey, Russia

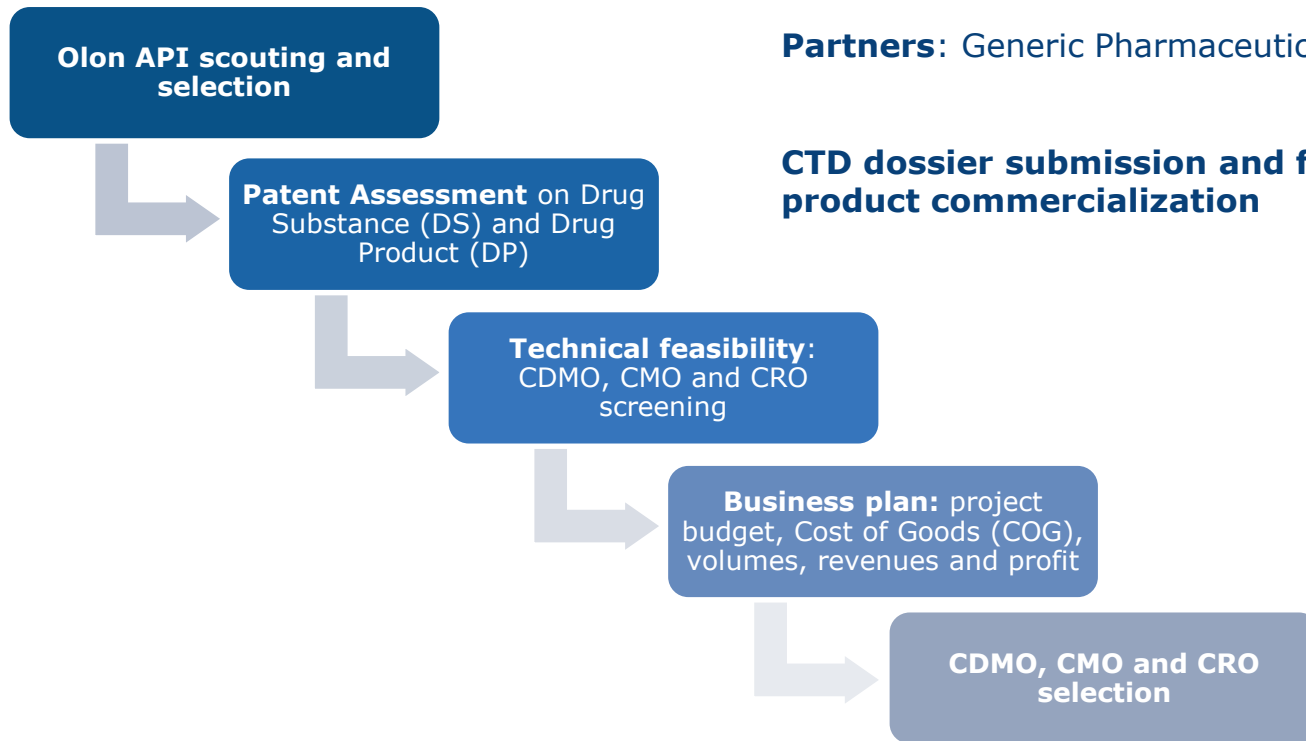


**P&R Trading Shanghai**

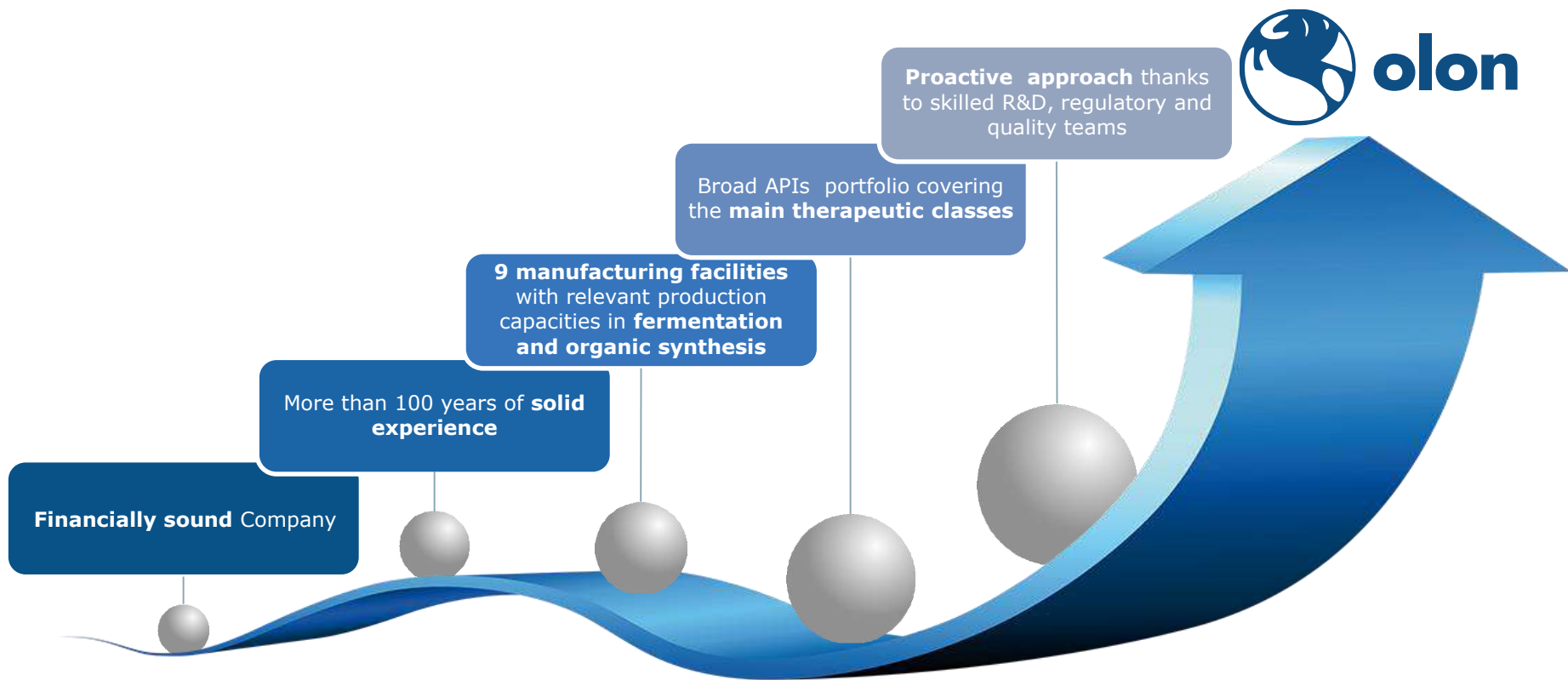
- Supports Olon in **intermediates supply**
- **Sells intermediates** to third parties
- Ensures **auditing services** to Olon and third parties



# Dossiers Unit



# One Olon... All in One



**Thank you**



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