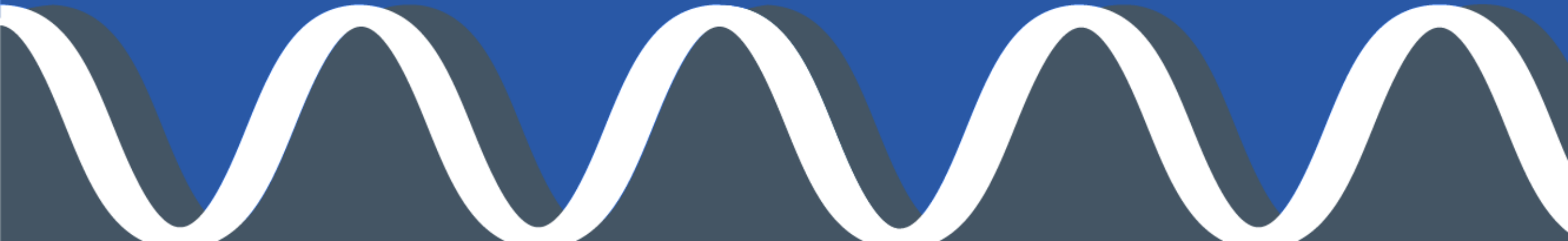


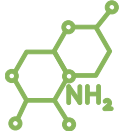


# A Trusted Partner for Pharmaceutical Industry Leaders

**Corporate Presentation**



# An Independent API Company You Can Trust



A world-class developer and manufacturer of differentiated **Active Pharmaceutical Ingredients**



**Global Presence** - More than **280 customers** in over **50 countries**



**Customer oriented** – We are on the **same wavelength**, always in tune with the results required to support your needs



**More than 30 years of exceptional regulatory track record** with leading global regulatory authorities (USFDA, EU-EMA, PMDA, TGA, KFDA, ANVISA and COFEPRIS)



**Scale** – Producing more than **630 metric tons** every year



Strong expertise in **complex chemistry, process optimization and scale up, crystalline forms and particle design**



# An Independent API Company You Can Trust



Leading R&D capabilities and strong regulatory expertise  
**200 DMFs worldwide**



Full range of **API CDMO** services from **pre-clinical grams** to **multi ton commercial scale**



**Back-integration capabilities** - key regulatory starting materials and advanced drug intermediates for complete **supply chain assurance**



**Customized solutions** to meet individual customer requirements



**Creative business models** to get to market, including **co-development partnerships**



**Long heritage of excellence**, and **global leadership** in select molecules



# Over 30 Years of Exceptional Service



1987

Founded in Israel

2005

Perrigo Acquires Agis

2013

Renamed Perrigo API

2017

Acquired by SK Capital Renamed Wavelength Pharmaceuticals

2021

Wavelength Acquires Vanamali Organics

# New Ownership – Renewed Focus



- A New York based transformational private investment firm with a disciplined focus on the pharmaceuticals and specialty chemicals sectors
- The firm's **\$5.5B portfolio** includes **20 companies** generating aggregate annual **revenues of \$11B**, employing **+15,000 people globally**, with **126 plants** operating across **28 countries** and selling to customers in **115 countries**



- Vast industry and operating experience, augmenting leadership teams with strong talent to transform businesses into higher performing **standalone customer-centric organizations**
- Building strong and growing businesses that create substantial **long-term value** with improved strategic positioning as well as lower operating risk

# Leadership Team



**CEO**

Iftach Seri



**VP Sales**

Frédéric Kahn



**Chairman of the Board**

Aaron Davenport



**VP BD  
Marketing & IP**

Ilan Avni



**VP R&D**

Benzion Dolitzky



**Director**

Itzhak Krinsky



**Director**

Barry Penney



**CFO**

Tami Cohen



**VP Quality, RA  
& Compliance**

Sarah Isaacs



**Director**

Meron Mann



**Director**

Stephen d'Incelli



**Head of HR**

Liat Mayan



**Head of  
Operations**

Amit Kalimi



**Director**

Arik Yaari

**Working with Us  
is Always an  
Advantage**

# Committed to Quality

- Strict compliance with the most stringent cGMP standards of all key global regulatory bodies
- Highly experienced team of over 120 quality assurance and quality control personnel
- Consistent supply of high-quality APIs since 1987
- Over 100 successful customer and health authorities audits in the past 5 years
- Israeli MoH audit in February 2019 - mutually recognized by the EU as EU GMP (no observations)
- USFDA audit in July 2018 (no 483s)





# Wavelength Pharmaceuticals - A Partner You Can Trust



NOVARTIS



teva

Perrigo®



medac

B | BRAUN



hameln

hikma.



Cipla



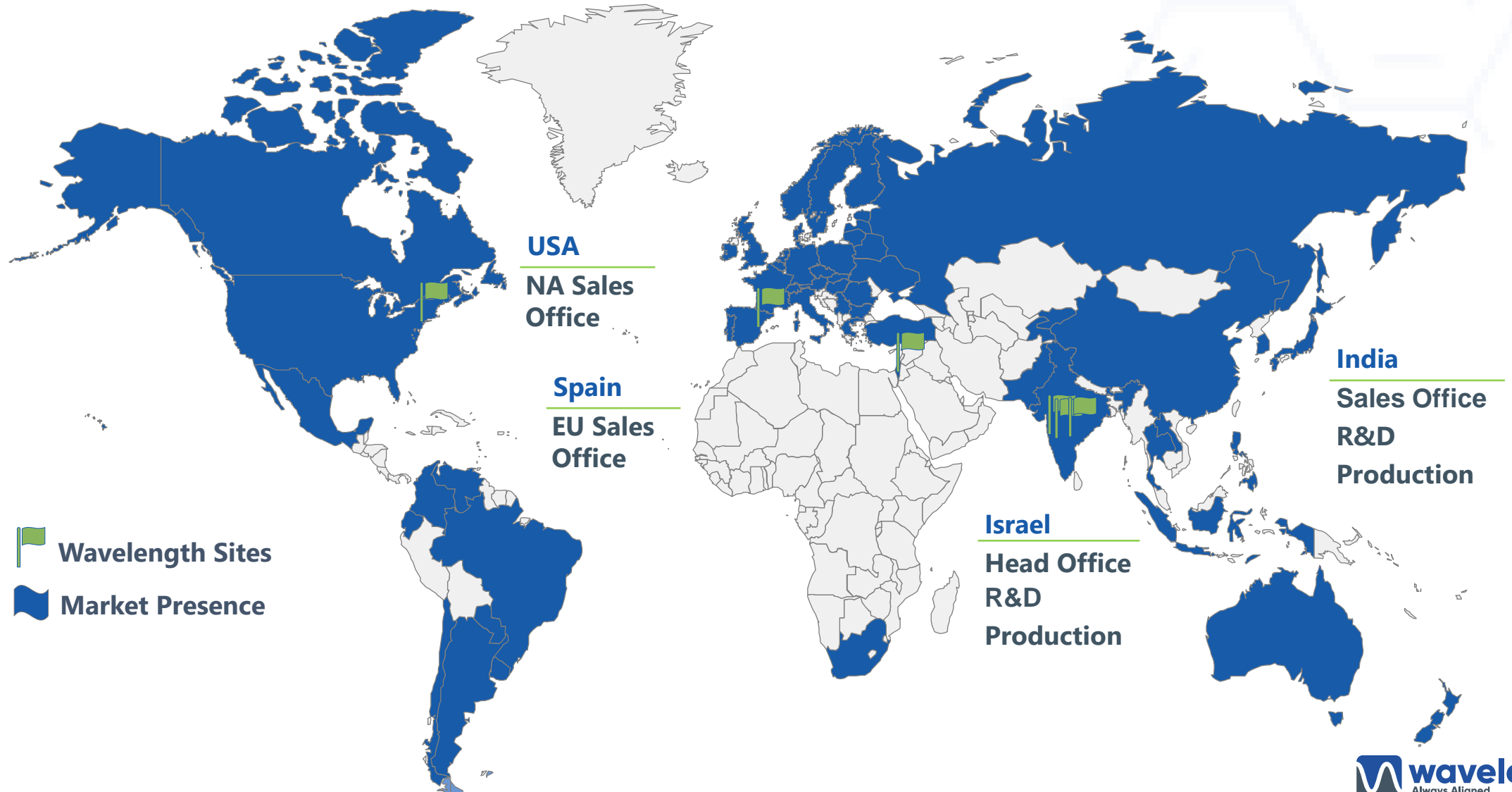
NICHI-IKO

sawai



# Global Presence - 280 customers in 50 countries

>80% of sales in US, EU & Japan



# Reliable Supply of Essential Drugs – COVID19



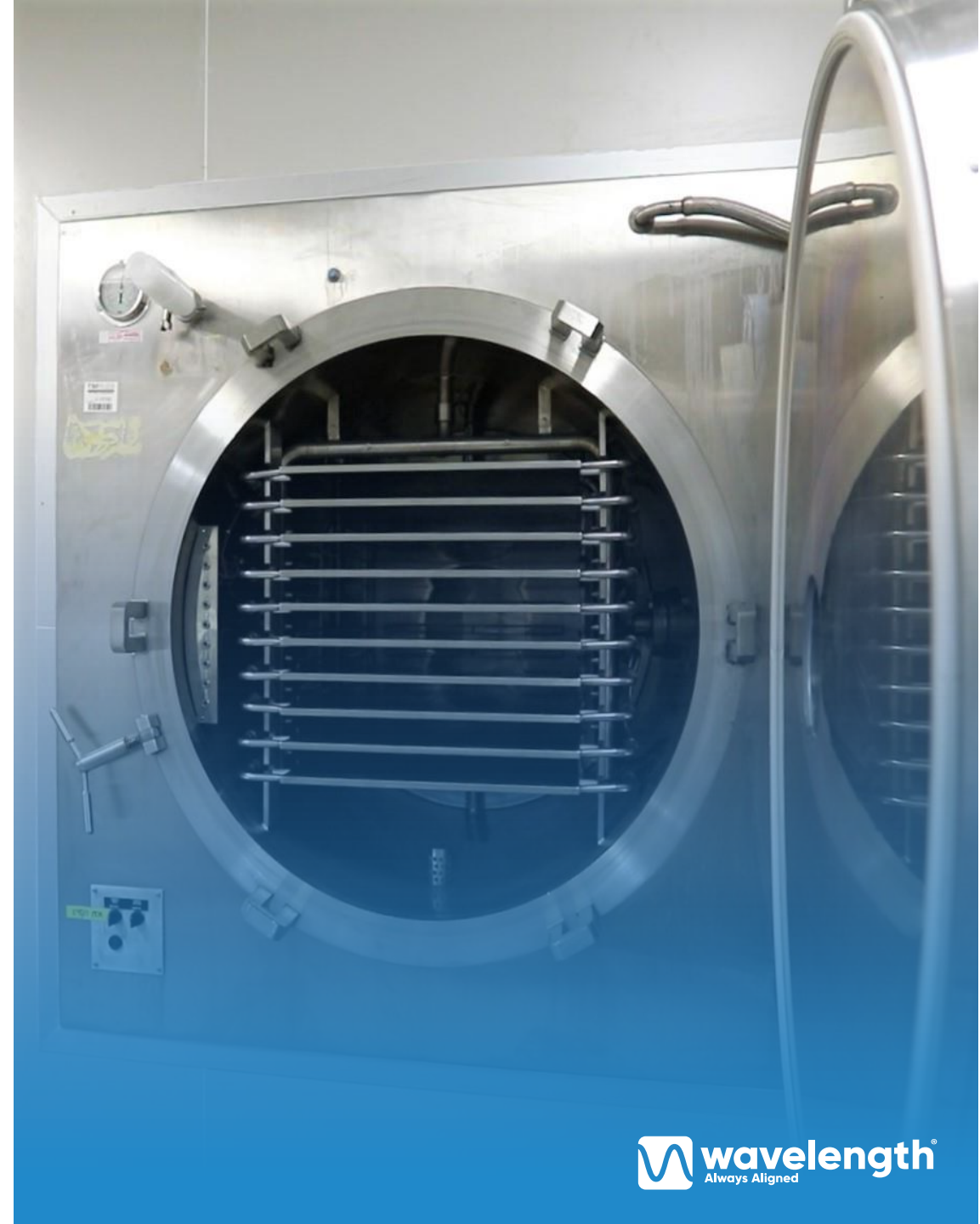
Over 30 years of investment in building a **Robust Supply Chain** and an impeccable **Regulatory Track Record** have enabled us to quickly respond to the urgent need for life-saving care for critically ill COVID-19 patients.



Meticulous **Process Design** has supported rapid and **Right-First-Time** x3-x4 scale up of **Midazolam**, **Cisatracurium Besylate** and **Rocuronium Bromide** production in response to massively increased demand.



Iftach Seri, CEO of Wavelength Pharmaceuticals: "Our commitment to being '**Always Aligned**' with the needs of our customers drove us to invest in the required capabilities and expertise that now allow us to respond so quickly to the urgent global need of respiratory critical care drugs for COVID-19 patients."



# API Custom Development and Manufacturing Services

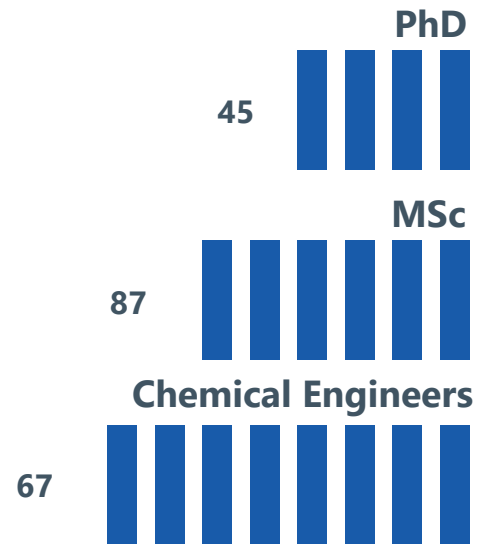
- Technology Transfer
- Process Development and Optimization
- Enzymatic Process Development
- Analytical Methods Development
- Synthesis of Impurities and Standards
- Potential Genotoxic Impurities Evaluation including High Sensitivity Analytical Methods
- Solid State (Polymorphism screening / Salts / Co-Crystals)
- Characterization of Physical Properties
- Particle Design
- Spray Drying & Bioavailability Enhancing
- Scale Up, Process & Analytical Methods Validation
- cGMP Manufacturing - Grams to Multi Ton Scale
- APIs, Advanced Drug Intermediates and Key Starting Materials



# People Are Key To Our Success



Education



G&A



12

Sales and Marketing



16

R&D



110

Quality



120

Operation



220



478

# Leading R&D Capabilities and Strong Regulatory Expertise



110 R&D scientists and 10 regulatory experts,  
4 R&D sites in Israel and India



**Quality by Design** and complete regulatory support  
throughout the product lifecycle



Extensive knowhow and experience in filing Drug Master Files  
with many different agencies, enables us to provide  
**Best-in-Class Global Regulatory Support**



United States	34	USD MF	
Europe	30	ED MF	15 CEP
Japan	11	JDMF	
Korea	7	KDMF	
Rest of World	103		

**Total 200 DMFs**



# World-Class Manufacturing Facilities



Wide range of multi-purpose production capabilities from **pre-clinical grams to multi-ton commercial scale**



**Total reaction volume of 155m<sup>3</sup>**

84 reactors ranging 10L-12,000L including Stainless Steel, Glass-Lined, Hastelloy and **High Pressure Hydrogenators** up to 50bar



**Complex chemical reactions** including **Enzymatic** reactions, **Heterocyclic** synthesis, **Brominations**, **Nitrations** and **Sulphonations**, **Cryogenic** reactions (-70°C to -85°C), advanced pharmaceutical technologies including, **Lyophilization**, **Micronization**, **Particle Design** and other **Bioavailability Enhancing** technologies.



**Highly potent** compounds, **Steroids** and **Cytotoxics** manufacturing capabilities complying with the strictest containment requirements (OEL < 1µg/m<sup>3</sup>)



Licensed to handle **Highly Controlled Substances**



Ability to **quickly and efficiently Accommodate Customers Growth** translates into lower risk and faster turnaround, all with unparalleled quality, regulatory compliance and exceptional customer service



# Environmental and Social Responsibility

- Committed to the highest **Environment Protection, Health** and **Safety** standards
- Implementing **Best Available EHS Technologies** across all fields of operation



**Waste  
Treatment**



**Air Emission  
Reduction**



**Energy  
Efficiency**

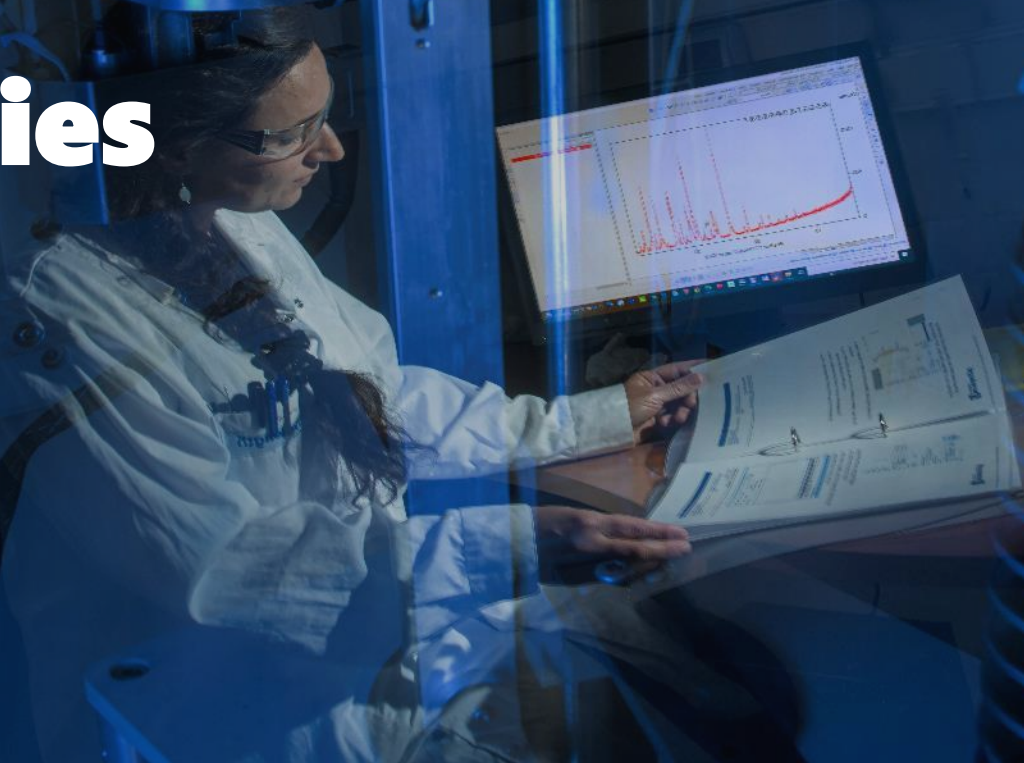
- Participating in multiple voluntary community programs with focus on education and health



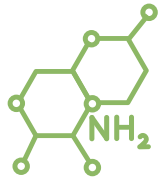


X'Pert

# Advanced Technologies

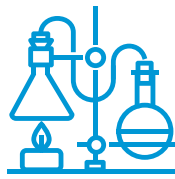


# End to End Drug Substance Solutions



## Process Development and Optimization

From **Pre-clinical Grams**  
To **Multi-ton Commercial Scale**  
Production



## Experts in Complex Scale-Ups

**Quality By Design**  
Extensive Knowhow And  
Experience - **Right First-Time**  
Approach



## Innovation

**Enzymatic** Processes,  
**Continuous Flow**  
Chemistry,  
**Oligonucleotides**, ...



## Advanced Technologies

**Particle Design**,  
Micronization,  
**Polymorphs**, **Co-Crystals**,  
Alt Salts, **Spray Drying**,  
**Bioavailability Enhancing**,  
**Lyophilization**, ...



## Wide Range of Capabilities

**Inhalables**, **Injectables**,  
**High Potency**, **Steroids**,  
**Cytotoxics**, **Controlled**  
Substances, ...

# Bioavailability & Solubility Enhancement - Spray Drying

- Development and scale up of unique **Spray Drying** solutions
- Enhanced material **Solubility** and **Bioavailability**
- Option to add excipients
- Improved chemical and physical stability properties

## Scale up capabilities - Pre-Clinical Grams to Commercial Scale

- 2 Lab Spray Dryers - BUCHI- B-290
- Small scale Spray Dryer – GEA Niro 2kg/h
- Small scale Spray Dryer – CPS 6kg/h
- Mid scale Spray Dryer - GEA Niro 15kg/h

## Experience

- Rocuronium Bromide Amorphous
- Ibrutinib Amorphous
- Imatinib Amorphous
- Donepezil Hydrochloride Amorphous in Lactose
- Montelukast Amorphous



# Biocatalytic Process Development



## Development and scale up of Enzymatic / Biocatalytic Processes



### Advantages

- Greater Enantio / Regio / Stereo Selectivity
- Higher Atom Utilization / Yield
- Overcomes Hazardous Chemical Reactions
- Improved Eco Efficiency
- Fewer Synthetic Steps
- Green Chemistry
- Reduced Waste / Consumption Of Organic Solvents



### Experience

- Sitagliptin HCl
- Sitagliptin Phosphate
- Remimazolam Besylate
- Clascoterone
- Cannabidiol



# Solid State & Particle Design



## Polymorph Screening / Development

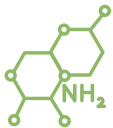
Alternate Salts

Co-Crystals



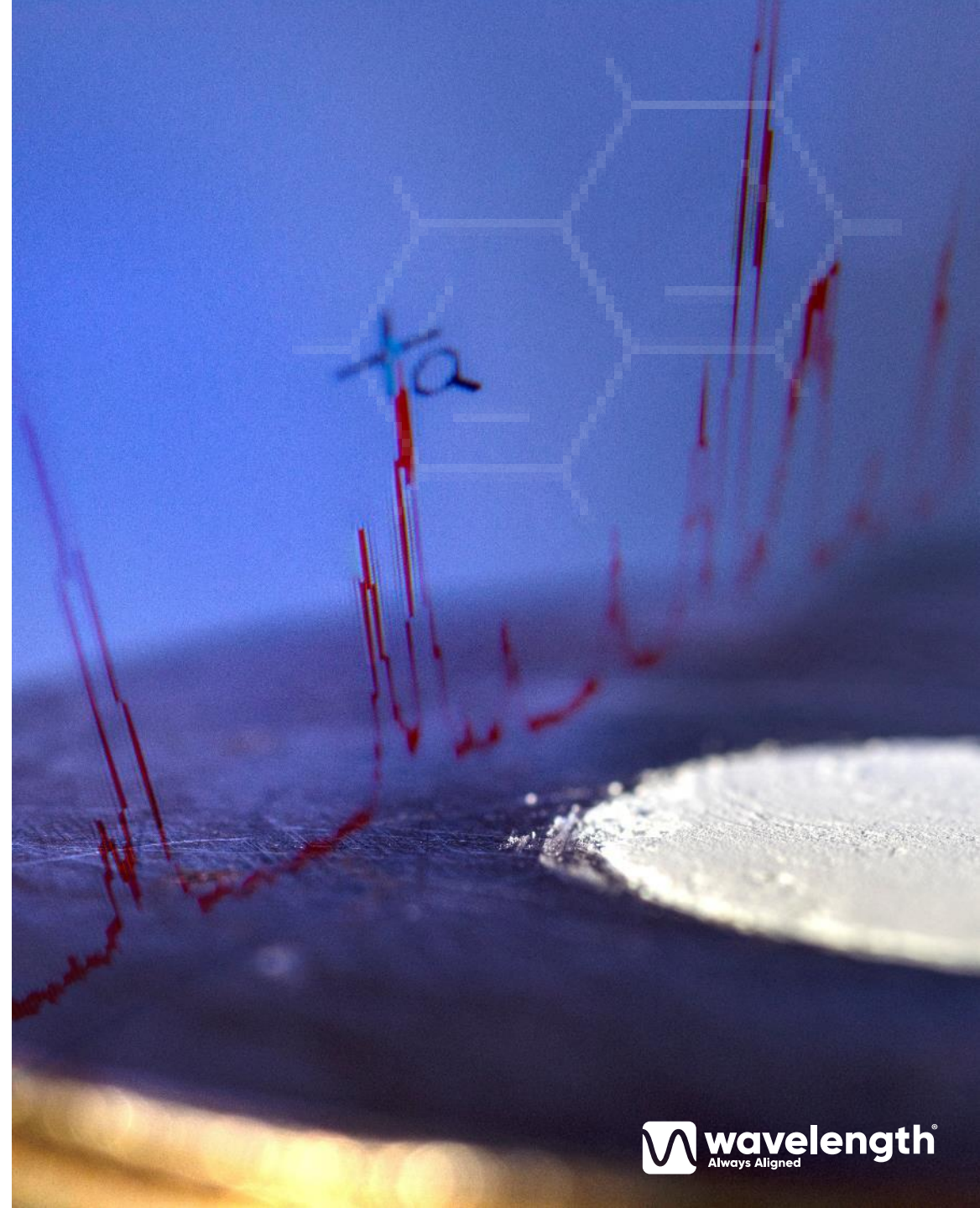
## Particle Design

- Morphology
- Particle Size Distribution
- Improved Physico-chemical performance
- Powder flowability



## Experience

- Fluticasone Propionate
- Fluticasone Furoate
- Tiotropium Bromide Monohydrate
- Mometasone Furoate
- Halobetasol Propionate
- Cetirizine Hydrochloride Micronized
- Fenofibrate
- Glycopyrronium Bromide
- Umeclidinium Bromide



# Solid State & Particle Design



## Crystallization Process Design



## Wide Range Of Milling And Micronization Equipment

From 5mm To  $<5\mu\text{m}$  in a single pass

**Ultra Low Energy Technology** - Minimum Mechanical / Heat Impact

No Impact on Crystalline Properties / No Increase In Amorphous Content



## Wide Range of Advanced Analytical Instruments

Thermogravimetric Analysis (TGA)

Differential Scanning Calorimetry (DSC)

Raman spectroscopy

Hot stage microscopy

Scanning Electronic Microscope

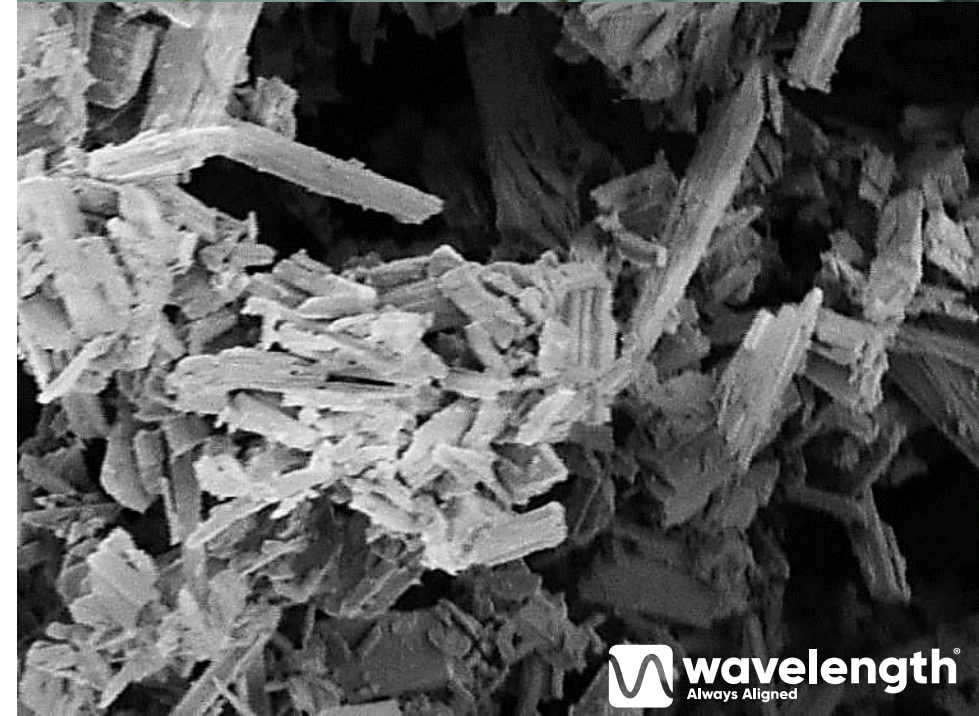
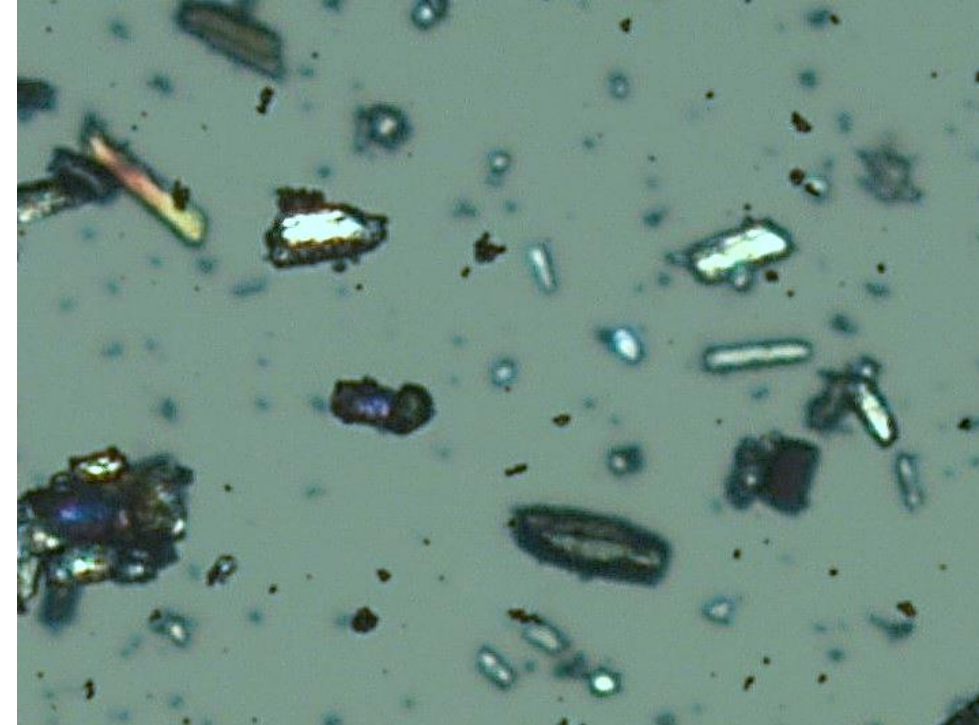
Malvern Particle Size Analysis

Sympatec Particle Size Analysis

X Ray Powder Diffraction (XRPD)

Surface Area

Amorphous Content



# Highly Sensitive Analytical Method Development



Quantification of **Nitrosamine** and other **Potential Genotoxic Impurities**

Highly Sensitive Methods Developed - **Detection Limit 0.03ppm**



Wide Range of **Advance Analytical Instruments**

UHPLC, GC MS, LC MS, FT IR, UV Spectrophotometers, Titrators ...



# High Potency APIs

More Than 20 Years of Extensive Experience In Highly Potent APIs

- Development
- Scale-up
- Commercial Production

	OEB4 1 < OEL < 10 mcg/m <sup>3</sup>	OEB5 OEL < 1 mcg/m <sup>3</sup>
Cantharidin		✓
Fluticasone Furoate	✓	
Fluticasone Propionate	✓	
Fulvestrant		✓
Halobetasol Propionate	✓	
Moxonidine	✓	
Rocuronium Bromide	✓	
Temozolomide		✓
Tiotropium Bromide	✓	
Umeclidinium Bromide		✓





# Wavelength Key Sites

# Wavelength Pharmaceuticals Neot Hovav API Site



1. Main Entrance Gate
2. Large Scale Plant 31
3. Large Scale Plant 37
4. Mid Scale Plant 720
5. HPAPI Plants 41, 45
6. Pilot Plant 75
7. Pilot Plant 76, 78+R&D Labs
8. Utilities Plant
9. Effluent Bio Treatment Plant
10. Thermal Oxidizer
11. Raw Materials Warehouse
12. Final Product Warehouse
13. QC labs & Admin Offices
14. R&D Labs
15. Available for Expansion
16. Scrap Yard / Available for Expansion



12km from Be'er Sheva  
1.5hr Drive from Tel Aviv



IL ASH Sea Port 100km  
TLV Int'l Airport 115km



Total Area 40,700m<sup>2</sup>  
Built 14,000m<sup>2</sup>

# Vanamali Organics Hyderabad DI & KSM Sites



## Vanamali Organics Pvt. Ltd.

**Unit-I** Plots No. 24A & 24B

**Unit-II** Plot No. 32

IDA Mankhal, Maheswaram (M),  
Ranga Reddy District, Telangana, India



3.75km from Hyderabad



Hyderabad Airport 6.2km  
Railway Station 20km



Total Area 9,790m<sup>2</sup>  
Built 3,360m<sup>2</sup>



## Vanamali Organics Pvt. Ltd.

Plots No. 117 & 126, IDA Phase-II,  
Pashamailaram, Patancheru (M),  
Sangareddy District, Telangana, India



1hr Drive from Hyderabad



Shamshabad Airport 40km  
Railway Station 15km



Total Area 2,264m<sup>2</sup>  
Built 860m<sup>2</sup>

# Products Portfolio

# A Wide Range of APIs



**Injectables**



**Inhalables**



**Controlled  
Substances**



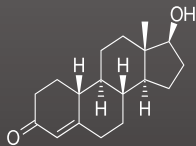
**Highly Potent**



**Cytotoxics**



**Cannabinoids**



**Corticosteroids**



**Topicals**

# A Wide Range of APIs

## Under Development

API	Therapeutic Use
Cannabidiol	Seizures
Cantharidin	Molluscum Contagiosum
Clascoterone	Acne, Alopecia
Remimazolam	Sedation, Amnesia, Anesthesia
Sitagliptin HCl / Phosphate	Type II Diabetes
Umeclidinium Bromide	Chronic obstructive pulmonary disease (COPD)

## Under Evaluation

API	Therapeutic Use
Glycopyrronium Bromide	Chronic obstructive pulmonary disease (COPD)
Melphalan Flufenamide	Multiple Myeloma
Plinabulin	Chemotherapy Induced Neutropenia
Relugolix	Uterine Fibroids, Prostate Cancer
Ruxolitinib Phosphate	Myelofibrosis, Polycythaemia vera, Graft-versus-host disease
Tirbanibulin	Actinic keratosis
Vilanterol Trifenatate	Chronic obstructive pulmonary disease (COPD)



# A Wide Range of APIs

## New Products

API	Therapeutic Use	Available DMFs
Efinaconazole	Onychomycosis of the toenail or fingernail	USD MF
Fluticasone Furoate	Seasonal and perennial allergic rhinitis , COPD	USD MF
Ibrutinib	Mantle cell lymphoma, Chronic lymphocytic leukemia	USD MF
Pralidoxime Chloride	Treatment of Organophosphates Poisoning	USD MF
Rotigotine	Parkinson's disease	USD MF
Sugammadex	Antidote for Vecuronium and Rocuronium	USD MF
Tavaborole	Onychomycosis of the toenail or fingernail	USD MF
Tiotropium Br Monohydrate	COPD	USD MF, CEP, CDMF

## Commercial Products

API	Therapeutic Use	Available DMFs
Ammonium Lactate	Ichthyosis and Xerosis	USD MF
Anastrozole	Breast cancer	CEP, KDMF
Cetirizine Dihydrochloride	Seasonal and perennial allergic rhinitis	USD MF, CEP, JDMF, CADMF
Cilostazol	Intermittent claudication	USD MF, JDMF, KDMF, BRDMF
Cisatracurium Besylate	Neuromuscular blocking agent	USD MF, CEP, CADMF, BRDMF, AUDMF
Donepezil Base	Alzheimer's-type dementia	USD MF, CEP, KDMF
Donepezil Hydrochloride	Alzheimer's-type dementia	USD MF, CEP, JDMF

# A Wide Range of APIs

## Commercial Products (continued)

API	Therapeutic Use	Available DMFs
Fenofibrate	Hyperlipidemia; Hypertriglyceridemia	USD MF, CEP, CAD MF
Fexofenadine Hydrochloride	Allergy symptoms	USD MF
Flumazenil	Reversal of sedative effects of benzodiazepines	USD MF, CEP, JD MF, KD MF, CAD MF, BRD MF, AUD MF
Fluticasone Propionate	Asthma, COPD	USD MF, CEP, JD MF, KD MF, CAD MF, BRD MF
Fulvestrant	Breast Cancer	USD MF, CEP
Granisetron Base	Chemotherapy-induced nausea and vomiting	USD MF
Granisetron Hydrochloride	Chemotherapy-induced nausea and vomiting	USD MF, CEP, JD MF, KD MF, CAD MF
Halobetasol Propionate	Topical anti-inflammatory and antipruritic conditions	USD MF
Imiquimod	Actinic keratoses (AK); Superficial basal cell carcinoma; Genital and perianal warts/condyloma	USD MF
Midazolam	Sedation; Amnesia; Anesthesia	USD MF, CEP, JD MF, KD MF, CAD MF, BRD MF, AUD MF
Modafinil	Narcolepsy, obstructive sleep apnea, and shift work disorder	USD MF, CEP, BRD MF, AUD MF
Mometasone Fur. Anhydrous	Asthma	USD MF



# A Wide Range of APIs

## Commercial Products (continued)

API	Therapeutic Use	Available DMFs
Mometasone Furoate Monohydrate	Allergic Rhinitis	USD MF, ED MF, CAD MF, BRD MF, CD MF
Moxonidine	Hypertension	CEP
Omeprazole Magnesium	Duodenal and gastric ulcer; Gastroesophageal reflux disease	USD MF
Palonosetron Hydrochloride	Chemotherapy-induced nausea and vomiting; Post-operative nausea and vomiting	USD MF, ED MF, JD MF
Permethrin	Treatment for scabies	USD MF, CEP
Pramipexole Dihydrochloride	Parkinson's disease	USD MF, BRD MF
Rocuronium Bromide	Adjunct to general anesthesia	USD MF, KDMF, CAD MF
Temozolomide	Glioblastoma multiforme (GBM)	USD MF, ED MF, CAD MF, BRD MF
Terbinafine Hydrochloride	Onychomycosis of the toenail or fingernail	JD MF, BRD MF
Tramadol Hydrochloride	Management of moderate to moderately severe pain	USD MF, CEP, JD MF, KDMF, CAD MF, BRD MF, AUD MF

# Vanamali Products

# Select Advanced Drug Intermediates

API	Intermediate	CAS
Acotiamide	Ethyl-2-amino-1,3-thiazole-4 carboxylate	5398-36-7
	N,N-Diisopropylethylenediamine	121-05-1
	2,4,5-trimethoxybenzoic acid	490-64-2
Bortezomib	(aR,3aS,4S,6S,7aR)-Hexahydro-3a,8,8-trimethyl-alpha-(2-methylpropyl)-4,6-methano-1,3,2-benzodioxaborole-2-methanamine 2,2,2-trifluoroacetate	179324-87-9
Clofazimine	N-(4-Chlorophenyl)-1,2-benzenediamine	68817-71-0
Clozapine	8-Chloro-11Oxo-10,11-Dihydro-5 H-Dibenzo-1,4-Diazepine	50892-62-1
Donepezil	5,6-Dimethoxy-2-(4-piperidinylmethyl)-1-indanone hydrochloride	120013-39-0
Fosaprepitant	Tetrabenzyl diphosphate	990-91-0
Gadobutrol	1,2,4-butanetriol-3-(1,4,7,10-tetraazacyclododec-1-yl)4hydrochloride	156077-56-4
	4,4-dimethyl-3,5,8-trioxabicyclo[5.1.0]octane	57280-22-5
Micafungin	4-{5-[4-(Pentyloxy)phenyl]-1,2-oxazol-3-yl}benzoic acid	179162-55-1
Posaconazole	1-(4-Aminophenyl)-4-(4-hydroxyphenyl)piperazine	74853-08-0
Pazopanib	2,3-Dimethyl-6-nitro-2H-indazole	444731-73-1
	2,3-Dimethyl-2H-indazol-6-amine hydrochloride	635702-60-2
	5-Amino-2-methylbenzenesulfonamide	6973-09-7
Permethrin	2,4-Dichloropyrimidine	3934-20-1
	3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarbonyl chloride	52314-67-7
Ractopamine	2-(4-(4-hydroxyphenyl)butan-2-ylamino)-1-(4-hydroxyphenyl)ethanone hydrochloride	52446-58-9
Varenicline	2,3,4,5-Tetrahydro-7,8-dinitro-3-(trifluoroacetyl)-1,5-methano-1H-3-benzazepine	230615-59-5



# **Wavelength's Always Aligned Approach**



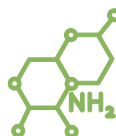
An Independent API Company



Worldwide Regulatory Expertise  
with Unparalleled Quality & Compliance Track-Record



Leading R&D Capabilities and Advanced Technologies



Full Range of Back Integrated Manufacturing Capabilities  
API, KSM, DI from Pre-Clinical Grams to Multi-Ton  
Commercial Scale



Highly Experienced and Accessible Management Team  
that Puts customers First



Strategic Account Management with Exceptional  
Customer Care



Supply Assurance – On Time and In Full



A Partner You Can Trust





# Looking Forward To Working With You

[www.wavelengthpharma.com](http://www.wavelengthpharma.com)