COMMITTED TO QUALITY

DELIVERING EXCELLENCE

Piramal Pharma Solutions

DISCOVERY SERVICES

SYNTHETIC CHEMISTRY

- Synthesis of discrete compounds, scaffolds, building blocks, focused libraries (20- 100 compounds), reference Standards, Impurities, Stable Metabolites, D2 & C13 Compounds
- Expertise in - Aliphatics, Carbohydrates, Heterocycles, Macrocycles, Small Peptides, Natural Products & its analogs, Nucleosides & Small Molecules
- Asymmetric Synthesis & Chiral Resolution
- Cross-coupling reactions: Sonogashira, Buchwald, Heck, Suzuki, Grubbs RCM, Grignard
- Protective group strategies
- Separations (Chiral prep HPLC mg scale & Chemical Resolution; SFC for g-scale)
- Photo and electrochemical mediated organic transformations.

ANALYTICAL CHEMISTRY

- Two Bruker 400 MHz NMRs (1H, 13C, 19F, 31P, 15N, 2D NMR)
- LC/MS, HPLC, GC
- Analytical Method Development, Isolation & Characterization of unknown impurities
- Purity determination of non-UV Active Compounds by ELSD Detector
- Chiral Purification (mg to g scale)

SYNTHETIC CHEMISTRY OUR APPROACH:

- Design of Synthesis to reduce the number of steps & identify Common Intermediates
- Avoidance of Column Chromatography & Prep Purifications by Crystallization & Trituration Techniques, to save time & cost
- Detailed study of Analytical Data to identify desired product, as well as side products
- 2D NMR experiments to assign the correct structure of Complex Compounds & also distinguish the Isomers

BIOLOGY

ADME

- Physicochemical screening: Aqueous solubility (Thermodynamic and Kinetic method), Log P (Octanol/water), Log D (Octanol/PBS)
- Permeability: PAMPA & CaCo – 2 MDCK (wild type) and MDCKII-MDR01 (Both 24 well and 96 well format), LLC-PK1 (wild type) and LLC-PK1 MDR1 (96 well format)
- Protein Binding: Plasma Protein Binding (Equilibrium Dialysis), Microsomal Binding (Equilibrium Dialysis) & Blood to Plasma Partitioning
- Drug Metabolism: Hepatocyte Stability, S9 Fraction Stability, Microsomal Stability, Plasma Stability, Whole Blood Stability
- Drug-Drug interaction: CYP inhibition assays (Fluorescent), CYP inhibition assays (LCMS/MS based) – Individual and Cocktail Substrates methods, Reaction Phenotyping, CYP Time Dependent Inhibition (IC50 shift) - (All major 5 isoform)
- Others: P-Glycoprotein Substrate, P-Glycoprotein Inhibition, Preliminary BCS Permeability (non-GLP), Metabolite Identification (without structure elucidation)
- Bioanalytical Services for Small Molecules (non-GLP), Method development, Method Validation Bio-sample analysis

Biochemical & Cell-based Assays can be developed based on program requirement.

- Biochemical Assays: Types of Assays are Spectrophotometric & Fluorimetric
- Detection methods: Fluorescence (FRET, TR–FRET) & Absorbance (UV/VIS)
- Assay targets: Kinases & Phosphatases
- Cell-based Assays: Proliferation (Tetrazolium based), Death (Cytotoxicity) - Apoptosis (Caspase 3 & 9) & Necrosis (Calcein AM, Trypan Blue Exclusion, ATP Depletion, LDH Release)
- Signaling & Second Messenger Generation (cAMP/cGMP) Chemokine/Cytokine Release (ELISA); GPCRs (Functional Assays)

ROUTE SCOUTING

- Works on SELECT (Safe; Environmental; Legal; Economic; Control; Throughput) principle
- Rapid access to Unknown Scaffold Structures & initial delivery of Gram Quantities
- Reduced steps & timelines for key Intermediates for immediate Scale-up to ensure enough material is available for completion of Medicinal Chemistry activity
- Decreases the cost of Intermediates during early screening, eliminating Scale-up issues from critical path during SAR studies

SCALE UP

- PDS Ahmedabad has a dedicated Kilo-lab with 200L (one), 100L (one), 50L (one) & 20L (one) Jacketed Cylindrical Glass Reactors with Distillation & Vacuum Tray Dryer to support the non-GMP Synthesis of Compounds in grams to kilograms (5 kg) for Preclinical Toxicology Studies & Route Scouting.

Piramal
Pharma Solutions

OUR GLOBAL PRESENCE

1 LEXINGTON, USA
Sterile Development & Manufacturing
USFDA, PMDA

2 RIVERVIEW, USA
HPAPI Development & Manufacturing
USFDA, PMDA

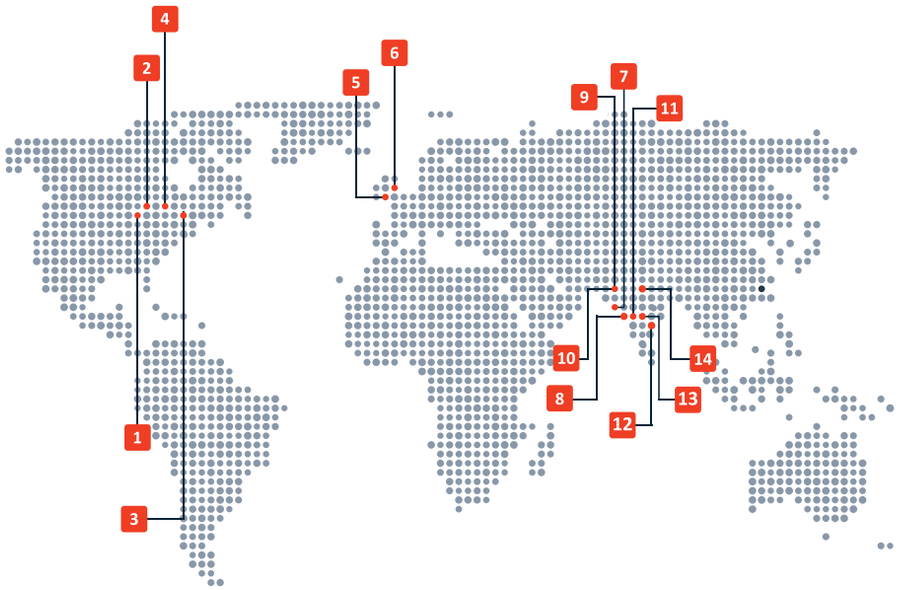
3 SELLERSVILLE, USA
Formulation Development & Manufacturing
USFDA, EMA

4 AURORA, CANADA
API Development & Manufacturing
USFDA, PMDA

5 MORPETH, UK
API & Formulation Development & Manufacturing
USFDA, MHRA

6 GRANGEMOUTH, UK
ADC Development & Manufacturing
USFDA, MHRA

7 RABALE, INDIA
API Development



8 TURBHE, INDIA
Peptide API Development & Manufacturing
USFDA

9 AHMEDABAD - PDS, INDIA
Drug Discovery

10 AHMEDABAD - PPDS, INDIA
Formulation Development
EU Finland

11 MAHAD*, INDIA
Vitamins & Minerals Premixes
USFDA, WHO-GMP

12 ENNORE, INDIA
API Development & Manufacturing
WHO-GMP

13 DIGWAL, INDIA
API Development & Manufacturing
USFDA, MHRA

14 PITHAMPUR, INDIA
Formulation Manufacturing
USFDA, EU Finland

SHANGHAI, CHINA
• Sourcing Office

Note: *Dietary Ingredient

Piramal
Pharma Solutions

Piramal Pharma Solutions
1500, Bull Lea Road, Suite 250,
Lexington, KY 40511.
contactus@piramal.com

Just scan the QR Code
& get an access to
piramalpharmasolutions.com