



Science explains the world
Science is our world

SCIENCE

of chemistry
of relationships
of inspiration



CSM



Agri



R&D



Pharma

Reimagining a healthier planet!

“Lead with science, technology and human ingenuity to create transformative solutions in life sciences”



Courageous

Think *Bold*, act with *Integrity* and be *Accountable*.



Curious

Question conventional wisdom, be *Open-minded*, *Adaptable* and *Curious*.



Creative

Differentiate, *Collaborate*, *Experiment* and *Execute ideas at speed*.



Caring

Be *Transparent*, build *Trust*, bring the best out of *People* and embrace *Sustainability*.



Partner Centric

First to identify & deliver on latent needs of our customers



Science & Technology Driven

Sustainable solutions by early adoption of cutting-edge science / technology



Digital Edge

Integrated digital solutions to gain competitive advantage



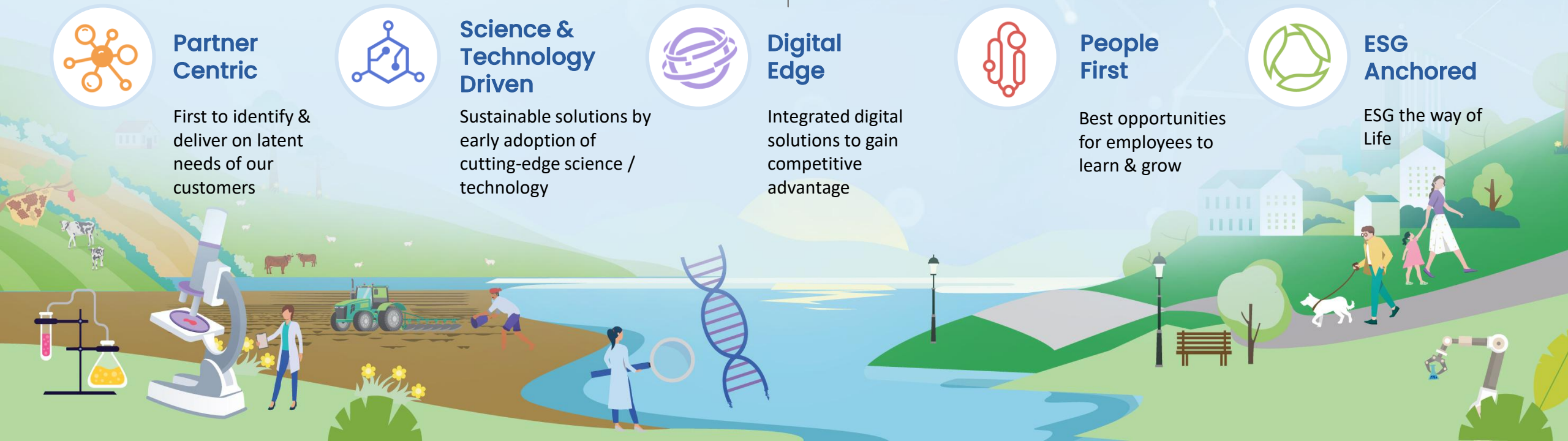
People First

Best opportunities for employees to learn & grow

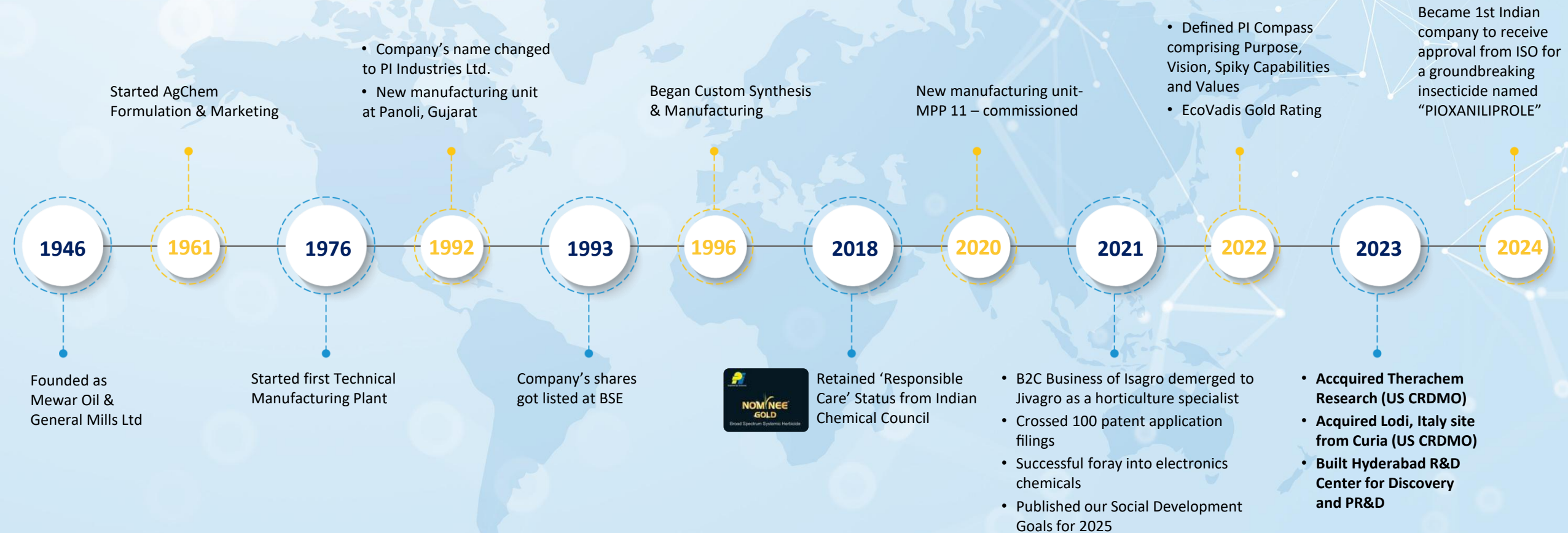


ESG Anchored

ESG the way of Life

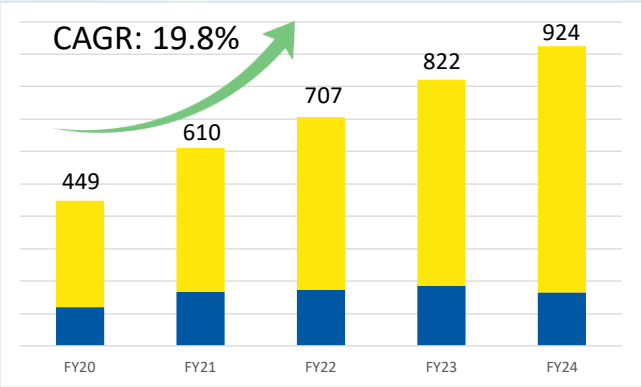


PI has a rich legacy...circa 80 years of delighting customers, and rewarding shareholders

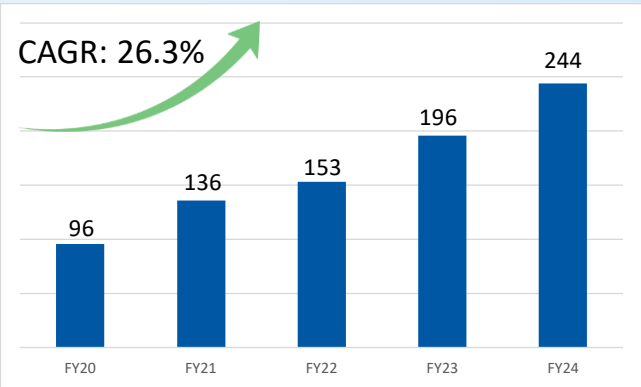


Continued trend of stellar financial performance with a focus on enhancing shareholder value

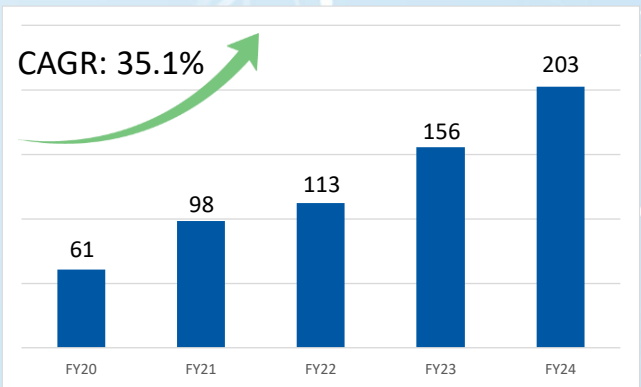
Revenue, \$M



EBITDA, \$M



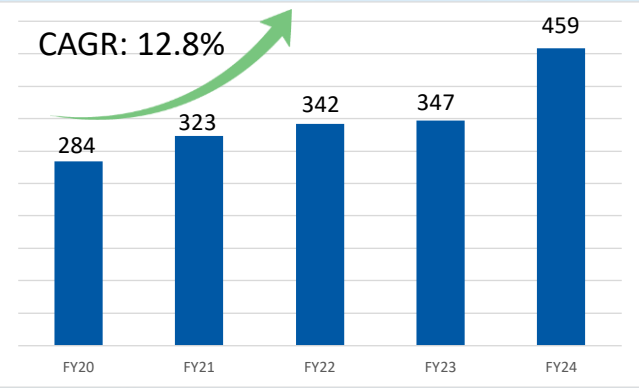
PAT, \$M



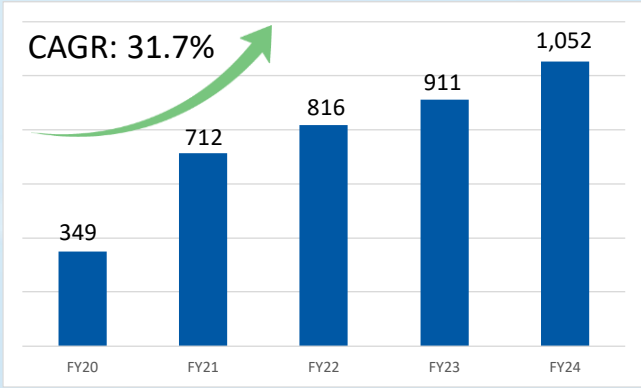
 **Debt Free**

 **Market Cap
US\$ 8~ Bn**

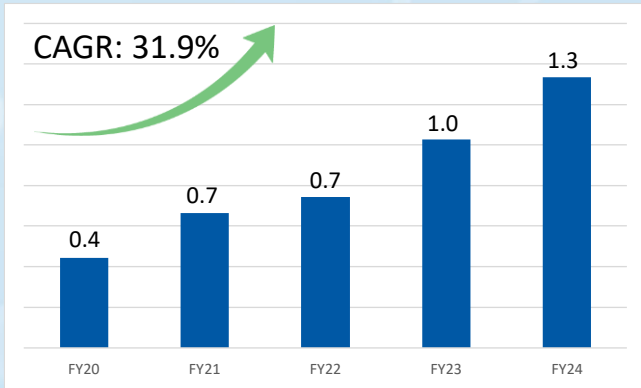
Fixed Assets, \$M



Net Worth, \$M



EPS, \$



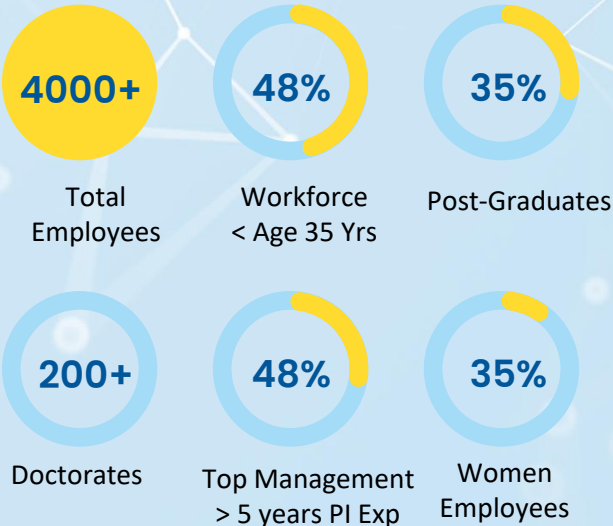
Our People, Our Strength



Building a Committed & Empowered Workforce

Employees have access to more than 20,000 online courses from libraries of Percipio LxP and LinkedIn Learning

Enhanced focus on 'Digital' with an aim to enhance Employee Experience



Board of Directors

Diverse Board with deep financial, technical & scientific acumen guiding next round of growth



Mr. Narayan K. Seshadri
Non-Independent Non-Executive
Chairperson



Mr. Mayank Singhal
Vice Chairperson & Managing
Director



Mr. Rajnish Sarna
Joint. Managing Director



Mr. T.S. Balganesh
Independent Director



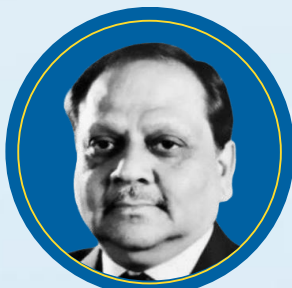
Mr. Shobhinder Duggal
Independent Director



Ms. Lisa J Brown
Independent Director



Ms. Pia Singh
Independent Director



Mr. Arvind Singhal
Non-Independent Director



Mr. Rafael Del Rio
Non-Executive Director

PI SCORES HIGH ON GOVERNANCE

44% of Board Members- Independent Directors

Two Women Directors

Separation of role for MD and Chairperson

Audit, NRC, CSR, Stakeholder Relationship Committees
Chaired by Independent Directors

No Executive Director in the NRC and Audit Committee

Non-Executive Chairperson

Business CEOs not members of the Board

External evaluation of Board performance





PI Health Sciences (PIHS)

A global CDMO established via integrating,

- **Acquisition of Therachem®:**
 - Alabama (US),
 - Jaipur (India)
 - Ankleshwar (India)
- **Acquisition of Curia® site**
 - Lodi (Milan), Italy
- **Organic Build of R&D facility**
 - Hyderabad (India)

PIHS – An integrated platform from Concept to Commercial



Solution Offering

- Target selection & characterization
- Disease associations & mechanisms
- Model selection
- Assay planning
- Research plan to generate Hit
- Generate Lead matter

- Optimize Lead
- Demonstrate efficacy
- Generate Pre-Clinical Candidate
- Route Scouting & Optimization
- Salt & Polymorph selection
- GLP Tox API supply
- IND filing support

- API supply for Phase 1
- Process Development for Phase II supply
- Phase II supply route lock
- Generate Pre-Clinical Candidate
- Begin Process Development
- API route lock
- API supply for Phase II and Phase III
- Validation and Engineering batches to support NDA filing
- Analytical method validation

- Commercial Supply
- Route Development for Life Cycle Management (LCM)
- LCM Supply

Capability

- Structural Biology
- In vitro Biology
- In Silico Modeling
- Synthetic Chemistry
- Medicinal Chemistry

- In vitro Biology
- Animal Pharmacology
- Medicinal/Synthetic/Process Chemistry
- Analytical Sciences
- Particle Science & Engineering

- Route Development
- Process Safety
- World Class Supply Chain
- State of the Art API Manufacturing
- Flow Chemistry, Enzymatic transformation tech

- Commercial API Manufacturing
- LCM route development
- CIP, LCM supply

PIHS Benefit

- Begin relationship at company formation
- C-level familiarity build

- Molecule familiarity in med chem to process
- Allows for speed- key for early development

- Molecule familiarity allows for CMC sell
- Intermediate out of India, API out of west- attractive cost & western supply as a selling point

- Clinical supply to comm. contract
- LCM potential with India access

- Operating partner presence
- Comprehensive platform
- Team of experienced drug hunters
- Disease area (pre) clinical expertise

- World class manufacturing infrastructure
- Stand out Process Development Team
- Asian & Western sites - cost effective local API supply
- Flow Chemistry at scale, Enzymatic transformation

PIHS – An overview of development & manufacturing

-  Team of **600+**
-  Key approvals



-  Life Sciences focused NCE manufacturing is our DNA
 - Over 3 decades in Process R&D and manufacturing of NCEs
 - OEB4 manufacturing (1 ug/m3)
 - Azide, High Energy Chemistry, Phosphogenation, Flourination, Complex Chemistries
 - A global leader in continuous flow (15 tons/day NCE)
 - Center of Excellence, Enzymatic transformation (engineer own strains)
 - ISO 9001:2015 Certified

-  60+ customers, **4** commercial NCEs launched

-  **\$600M** earmarked for future investment

PI Health Sciences: Global sites



A global footprint that serves customers locally

PIHS sites– Early Development to Commercialization solutions

Process R&D

R&D, Enabling Technologies

R&D, Manufacturing

R&D, Manufacturing

Facility	Hyderabad & Alabama	Udaipur	Jaipur & Ankleshwar	Lodi
Temperature Range	Various	Various	-50/200°C	-20/160°C
Reactor Sizes	R&D unit	R&D Center of Excellence Enabling Technologies	0.05-5 m ³	0.05-10 m ³
Equipment	Parallel Reactors Potent Labs Scale up Simulators World class analytical State of the art Process Safety Labs	Cont. Flow Lab reactors Cont. Flow Pilot facility Enzyme characterization Assay development Whole cell biocatalysis Cell-free biocatalysis	Reactors Distillation Nutsche Filters Centrifuge, Tray Dryer	Reactors Distillation Columns Centrifuges, Filters, Ancillary Equipment, Fluid Bed, Double Cone
Construction Materials			Stainless Steel Glass Lined Halar coating	Stainless Steel Hastelloy Monel Glass lined

- Strong PRnD team
- Centralized Knowledge Center

- 33 strong Flow Team, ~10 years, Pilot Flow Reactor system: 1 ton/day
- 23 strong Enzyme team; State of the art infrastructure

- Potent manufacturing
- State of the art, DCS controlled, new kilo lab

State of the art Kilo Lab – GMP facility ISO 8 environment: Lodi

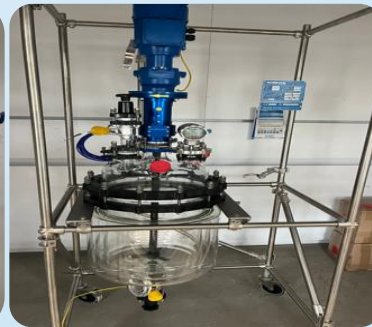
Built up area	Materials of Construction	Equipment Capabilities	HVAC	Automation	Features	Safety	Utilities
36 x 7.2 m 252 Sq mt	- SS 316 - All Glass Reactors - Hast Alloy. C	- Reactor - 5 L to 100 L (7 no) - Filtration – CF – 14" ANFD/PNF – 20 L - Drying – Rotavapor – 20 L /VTD 4 trays - Micronizer – 10kg/hr.	- ISO -8 - Once through	- DCS - MES	- Combination of Mixing - Scale up studies - Multiproduct operation. - Batch size : 5kg API	- Equipment's installed in Fume Hoods - Antistatic Epoxy flooring - Closed Material Handling - Vents through wet scrubber	- Single Fluid system - Temp : (-)20 to (+) 150 Deg.c - Purified water with EDI



SS Reactor



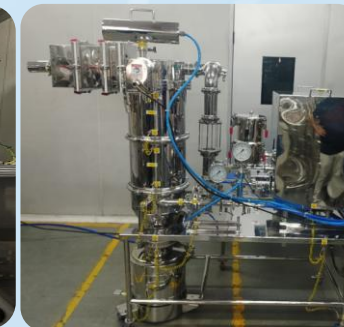
Glass 10 L Reactor



Glass 20 L Reactor



Hast.c ANFD

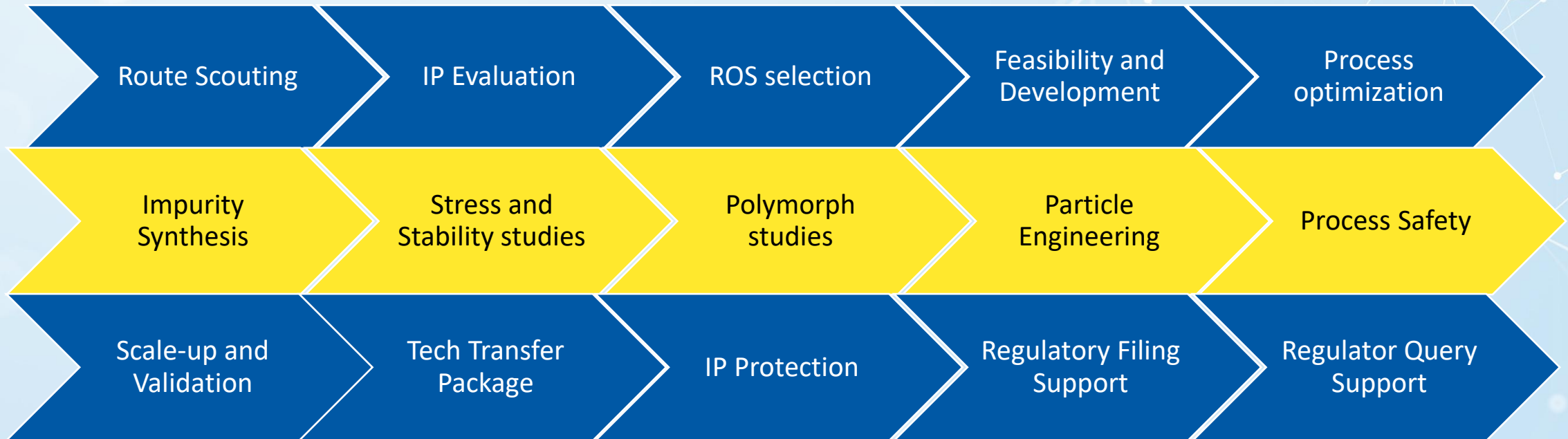


SS Micronizer



Heating/Cooling system

R&D as a solution engine...



Areas of expertise and experience...

Reaction	Lab scale	Pilot scale	Commercial
Asymmetric Synthesis	●	●	●
Chiral Resolution	●	●	●
Auxiliary assisted Chiral synthesis	●	●	●
Homo- & Hetero- Atomic Coupling	●	●	●
Metal Catalyzed Reduction	●	●	●
Modified sugars deoxy, fluoro, aza-sugars, thio-sugars	●	●	●
Lactones	●	●	●
N-Heterocycles	●	●	●
O-Heterocycles	●	●	●
S-Heterocycles	●	●	●
N-, O-, S- Benzocycles	●	●	●
Linear Peptides	●	●	
Peptide Building Blocks	●	●	●
Polymorphism	●	●	●
Flow Chemistry	●	●	●
Bio-Catalysis	●	●	●

Project Management: Core Competency at PIHS

Strong team of experienced Project managers with PMP/Agile certifications

RM Procurement

- 2-3 days from PR
- Locally available- next day



Raw Materials



Timelines

Project Timelines

- Estimated timelines proposed project start
- Gantt tracked by weekly report

Data Exchange

- Secured Share point
- Experiments recorded on ELN (eNB: Perkin Elmer)



Data Sharing



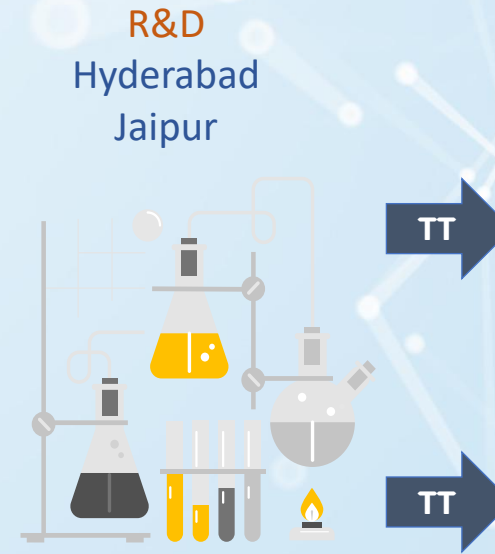
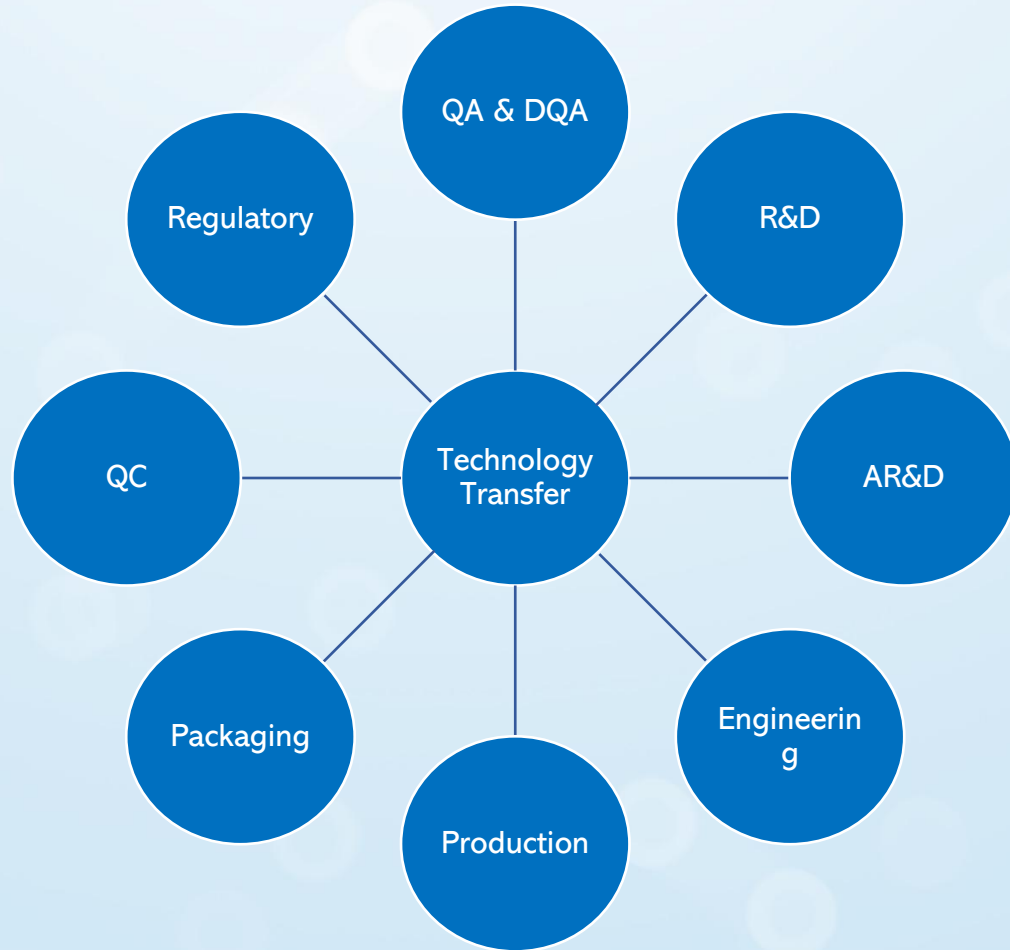
Communication

Project Communication

- Weekly/ Fortnightly report in power point
- TCs on a mutually agreed day and time
- Transparent and quick communication

- Quick/clear communication through TCs, Emails, Calls.
- Standard packaging and shipment through ambient temperature or cold temperature through DHL/world courier partners
- Handles and shares MoMs, invoices, shipments, internal escalations and collects customer feedback

Seamless Technology Transfer



non-GMP Manufacturing
Ankleshwar Jaipur



GMP Manufacturing
Lodi



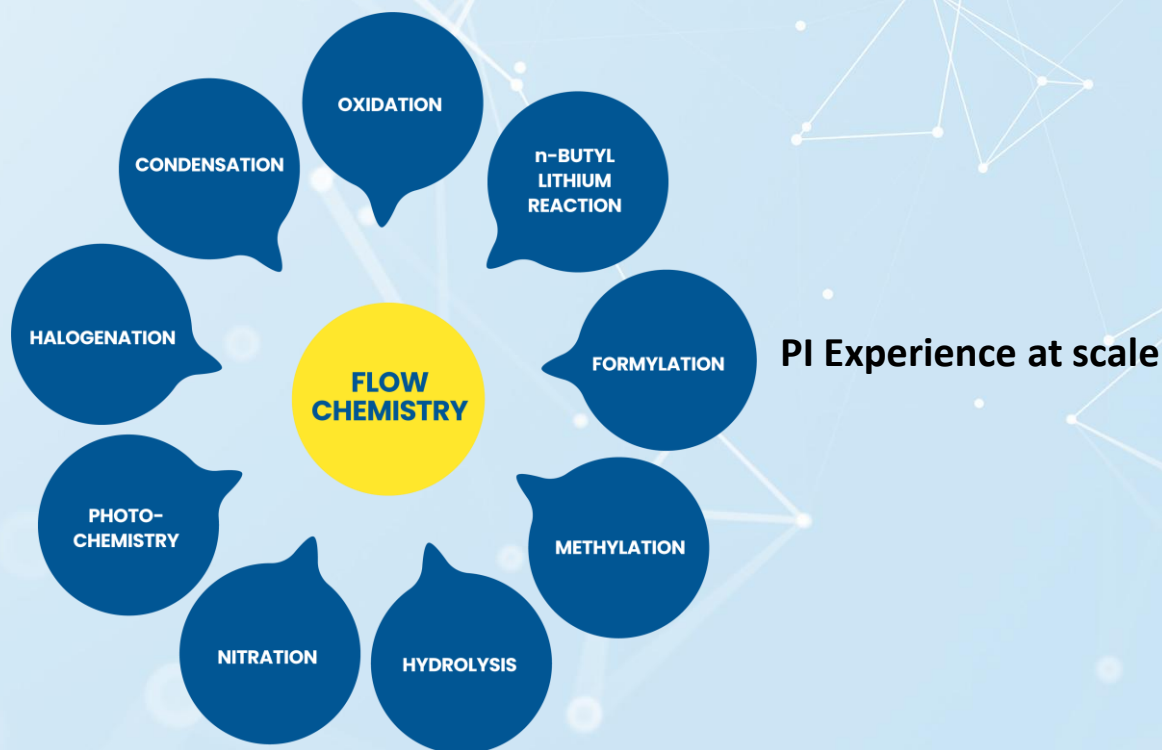
- QBD and DoE approach
- Defining CQAs, CMAs, and CPPs
- Determining In Process Controls
- Demonstration batches
- Kilo/ Pilot batches
- R&D support during validation
- Consistency, Quality, Reproducibility

A global leader in Flow chemistry...

One of the world's largest, life science, commercial flow chemistry plant coming online this quarter
NCE, 15 tons/day, 8 step process, Gujarat, India



- 1 MT/day capacity Flow Pilot plant (Udaipur R&D center)
- Completely Automated with PLC controller
- Heterogeneous/Homogeneous reactions, High pressure/temperature, Hazardous chemistries
- Centralized LIMS system



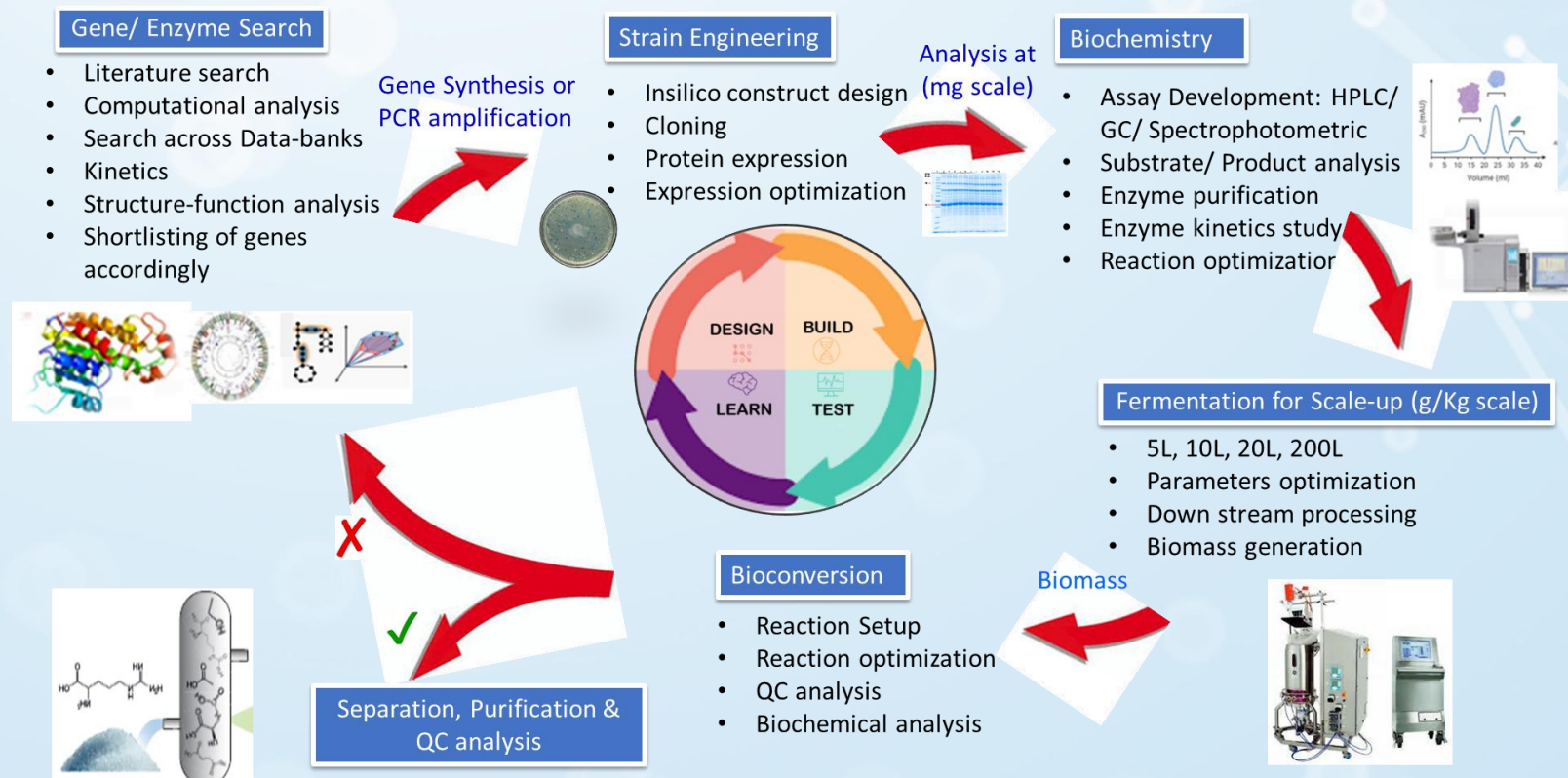
Flow R&D began, 2018
33 scientists & Engineers
Lab units (multiple)
Pilot plant (1 ton/day)

Team Structure

Vaportec, ACR, ATR
PFR, Photo-flow
Spin-Pro, Liq-Liq
Liq-Solid, Liq-Gas

Expertise Systems & Processes

Emphasis on Green chemistry with in-house biocatalyst engineering unit...



Biocatalysis Workflow at PI

Team of 23 scientists
Metabolic Engineering
DNA transformation
Whole Cell Biocatalysis
Cell Free Biocatalysis

Enzymatic transformation & biotechnology lab

PMI
Atom Efficiency
Catalysis
Green Chemistry award

Green Chemistry Emphasis



26

A philosophy that emphasizes Process Safety as a culture

Comprehensive Process Safety Integration

Process safety evaluation at all stages of product life cycle, from discovery to commercialization

Continuous Improvement

Every process change is evaluated with respect to process safety before taking to scale-up



Advanced Safety Lab

Specialized in both reactive hazard and powder safety assessment ensuring complete safety evaluation from Manufacturing to Packing

Tailored Client Solutions

Customized process safety evaluations cater to specific client needs and regulatory frameworks

Supply Chain: an agile team that capitalizes/builds on the buying power of PI family of companies



Vendor
On-boarding



Supplier
Monitoring



Continuous
Improvement



Digital ecosystem

4500+
SKU

Chemical
Procurement

2000+ Internal
database of
verified Global
suppliers

- 3rd party evaluation (D&B, ARIBA, Rubix)
- VRF (Vendor registration form)
- Compliance evaluation (onsite/desktop)
- COA, Sample testing, Pilot batch

- 3 x 3 Supplier assessment framework in place
- Supplier categorization basis yearly performance
- Source de-risking | Import vs Domestic

- KPIs tracked periodically
 - On-time rate
 - Quality acceptance rate
- Develop capabilities with suppliers to optimize cost
 - Response rate
 - Price variance

- SAP
- ARIBA
- Power BI
- QlikSense

60% Class A Vendors

75% Domestic procurement

3-5% CIP Optimising RM Cost

90% RM procured in 3 weeks

ESG: We are proud to state that PI Ranks in the TOP Decile

The Sustainability Yearbook
Member 2024
S&P Global



“ Belief in sustainability is a culture rather an obligation”

PI Health Sciences Leadership: Experience, Expertise, Execution



Ramesh Subramanian, Ph.D.

Global CEO

Key Prior: CCO, Aragen
25+ years experience



Franco Moro

Chief Operating Officer

Key Prior: CEO, FIS
35+ years experience



Mahavir Prashad, Ph.D.

Chief Development Officer

Key Prior: Head, Chemical Dev, Novartis
35+ years experience



Simon Haydar, Ph.D.

Chief Scientific Officer

Key Prior: Chief Scientist, GSK
25+ years experience



Alessio Piccoli

Chief Commercial Officer

Key Prior: VP - BD, Suven
24+ years experience



PI Health Sciences Management



Site Lead, Italy

Andrea Fabrizio Bassani
Key Prior: Curia
13+ years experience



Head Process R&D,
PI Flow Chemistry
Center of Excellence

Dr. Rama Mohan Hindupur
Key Prior: CSO- APSL-DRL
22+ years experience



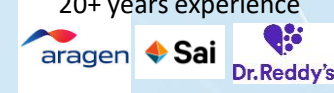
Director -
Biotechnology R&D
PI Bio-Catalysis
Center of Excellence

Sudip K Samanta, Ph.D.
Key Prior: Sr. Gen. Manager, RIL
16+ years experience



Head – Program
Management

Nageshwar Rao K V
Key Prior: Aragen Life Science
20+ years experience



Head – Supply Chain

Syed Zaidie
Key Prior: Dr Reddy's Lab
11+ years experience



Chief Financial
Officer

Ankit Nayyar
Key Prior: Head of Finance, Bayer
18+ years experience



Head – Digital &
Process Excellence

Himanshu Gaur
Key Prior: Dr Reddy's Lab
24+ years experience



Head - Projects

Rutvij S Panchal
Key Prior: BioCon
25+ years experience



Head - Safety

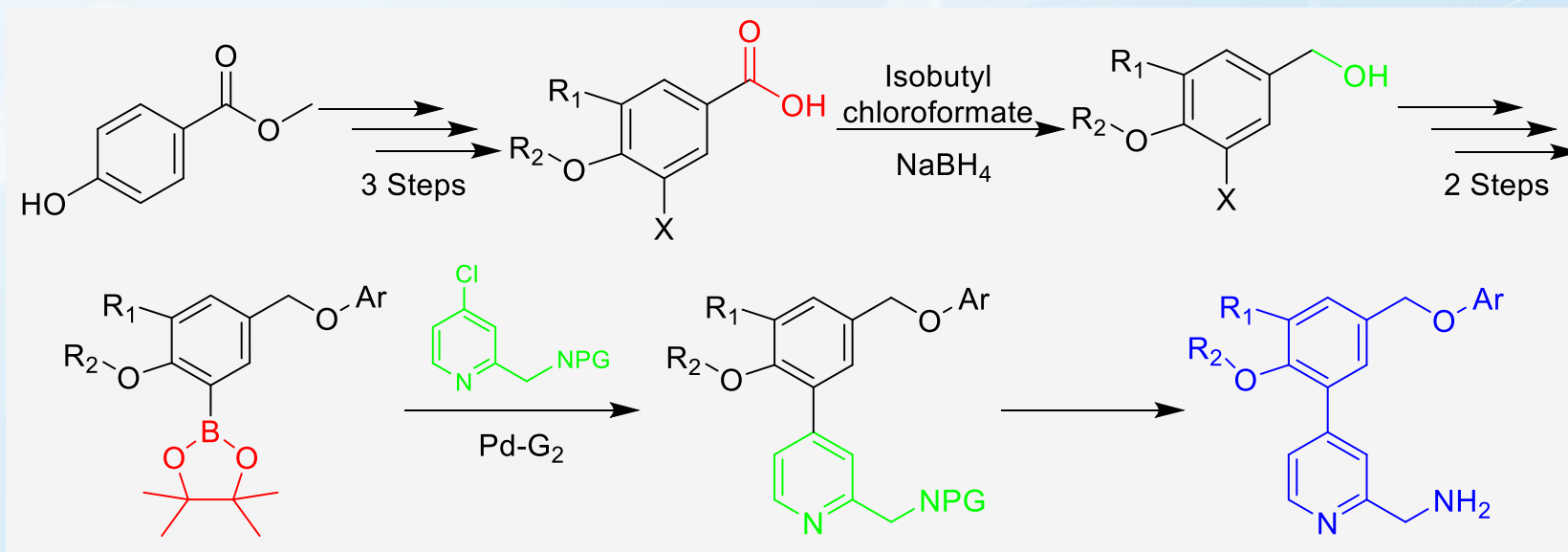
S Subramoni
Key Prior: Piramal
20+ years experience





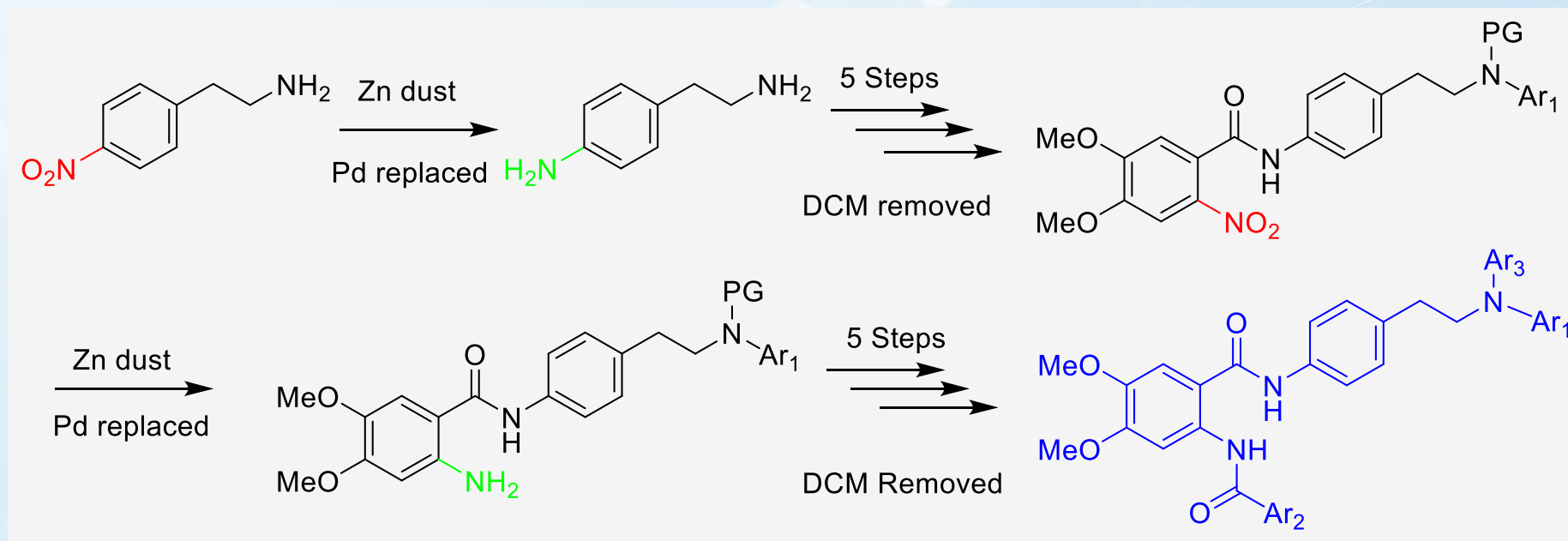
Case studies

Case Studies: Oral Factor D inhibitor



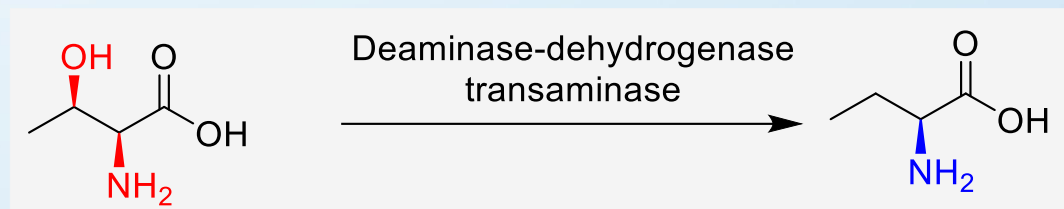
- Project developed from discovery stage to Manufacturing
- Yield improvement from 3% to 16% during scale up to 90 Kg API for tox to Phase II studies
- Crystallizations developed at different stages to remove 6 column purifications in the original process
- Metal based reducing agents replaced by mixed anhydride reduction to get alcohol from Acid
- Introduced new catalyst Pd-G2 to improve the yield of Suzuki reaction from 52% to 76%
- Final purification process developed to get consistent desired polymorph

Case Studies: KX2



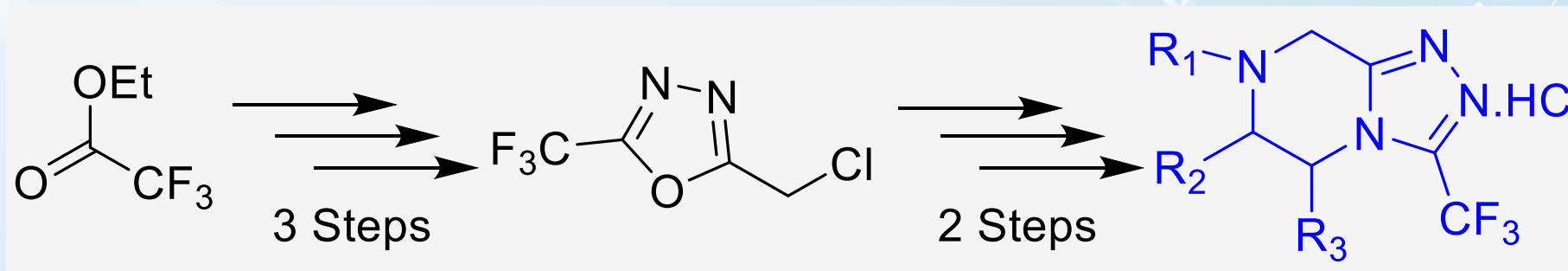
- Overall yield improved from 12 % to 27%
- 0.5 Kg synthesized and delivered from the lab for Pre-Clinical studies
- Column chromatography removed from process in total 6 stages
- Chlorinated solvent removed from process
- Use of Palladium (2 stages) removed from the process
- Backward integration carried out to synthesize SMs to achieve cost advantage

Case Studies: Biocatalytic Reaction



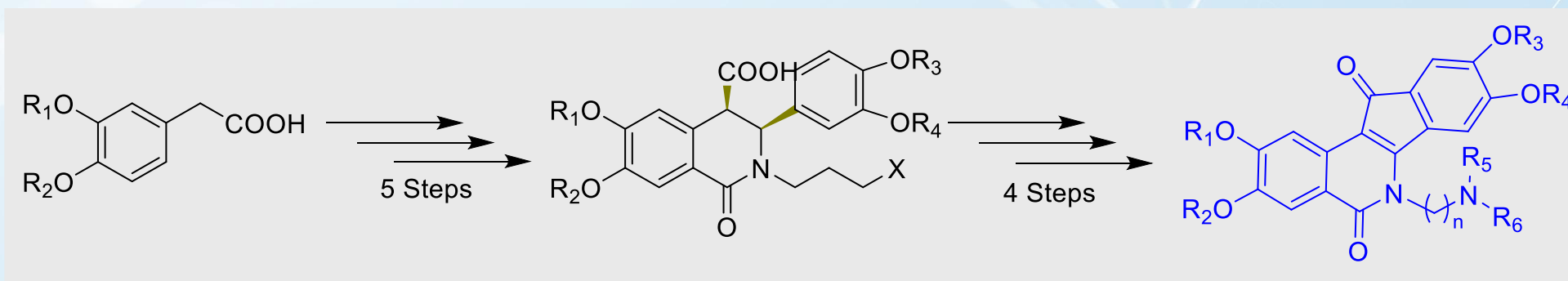
Enzyme	JT-SA: 1.5%, AT-SA: 1.5%, TH-SA: 0.8%, FM-SA: 0.4%
Reaction Condition	Water (4V), formic acid (5.5V), pH 7.5 with aqueous Ammonia (~10V), L-Threonine, 30°C
Yield	90%
Purity	>98%

Case Studies: Green Chemistry



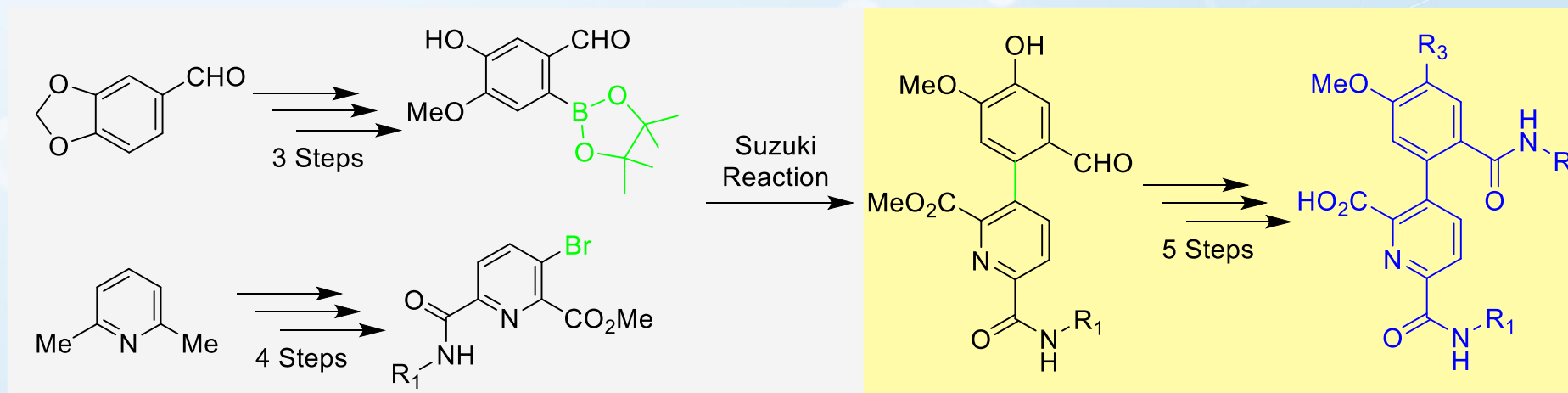
- Extensive process optimization to increase the yield from ~25% to 44% over 5 stages
- Telescoping of the process to have 2 isolated stages
- Neat reactions or reactions with less than 2 Volume of solvent in 4 stages
- E-factor improved from 32 to 19 during optimization

Case Studies: Anti-Tumour API



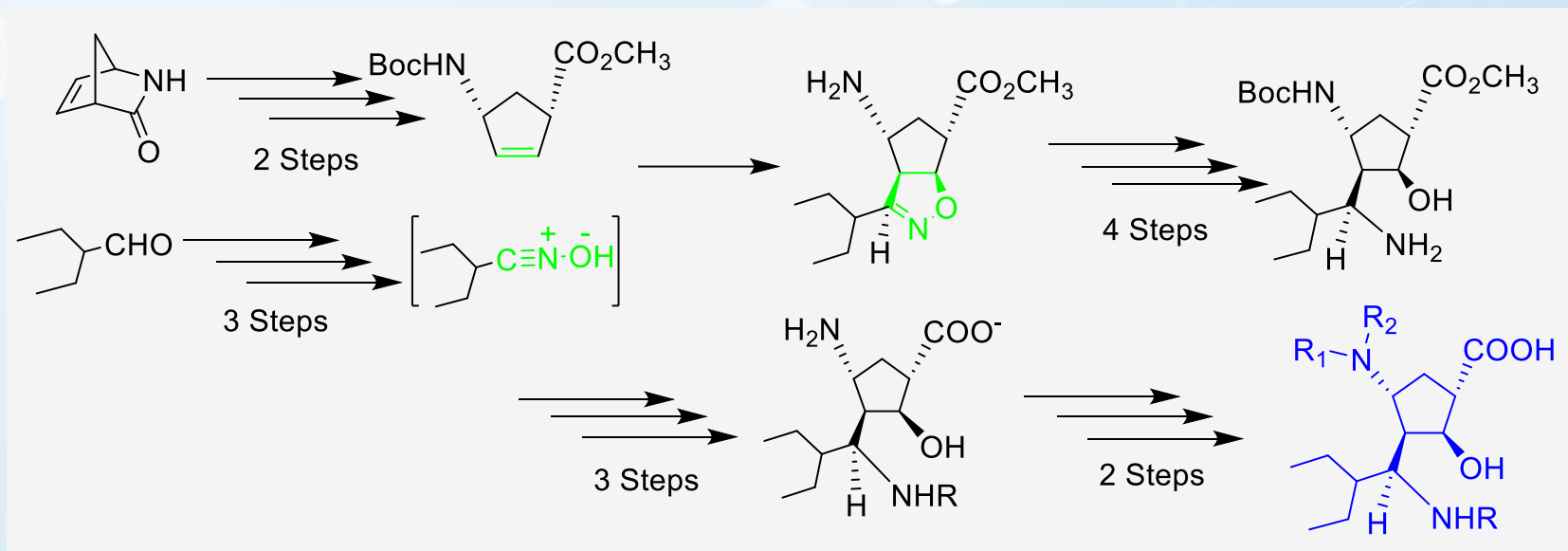
- Column purification was removed from process in 3 stages
- Manufactured ~ 100 Kg of N-3 and delivered for GMP synthesis for Phase I studies
- Separation of Cis and Trans isomers of the intermediate was achieved by extensive optimization
- Tech transfer done for synthesis of API in GMP facility

Case Studies: Plasma Kallikrein Inhibitor



- Developed from discovery to manufacturing
- 150 Kg of non-GMP product synthesized for Phase II studies
- 21 step linear synthesis was optimized and reduced to 13 steps convergent synthesis with significant cost and safety benefits
- Synthesis started from commercially available SMs to reduce dependency on single vendor
- KSM supply and Tech transfer to GMP facility and successful completion of GMP batches
- Successful collaboration between India and Italy facilities to deliver the product

Case Studies: Peramivir (Anti-viral drug)



- Unique Structure: Highly substituted Cyclopentane ring
- Elimination of all chromatographic separations and hazardous solvents
- Overall yield improved from 12% (10 kg produced) to 24% (600 kg produced)
- Preferred crystalline form (a trihydrate) was identified
- Improved recrystallization procedure
- Lower cost of production



THANK YOU!

PI Health Sciences Ltd.

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