

**BIOPHARMA  
CAPABILITIES  
OVERVIEW**

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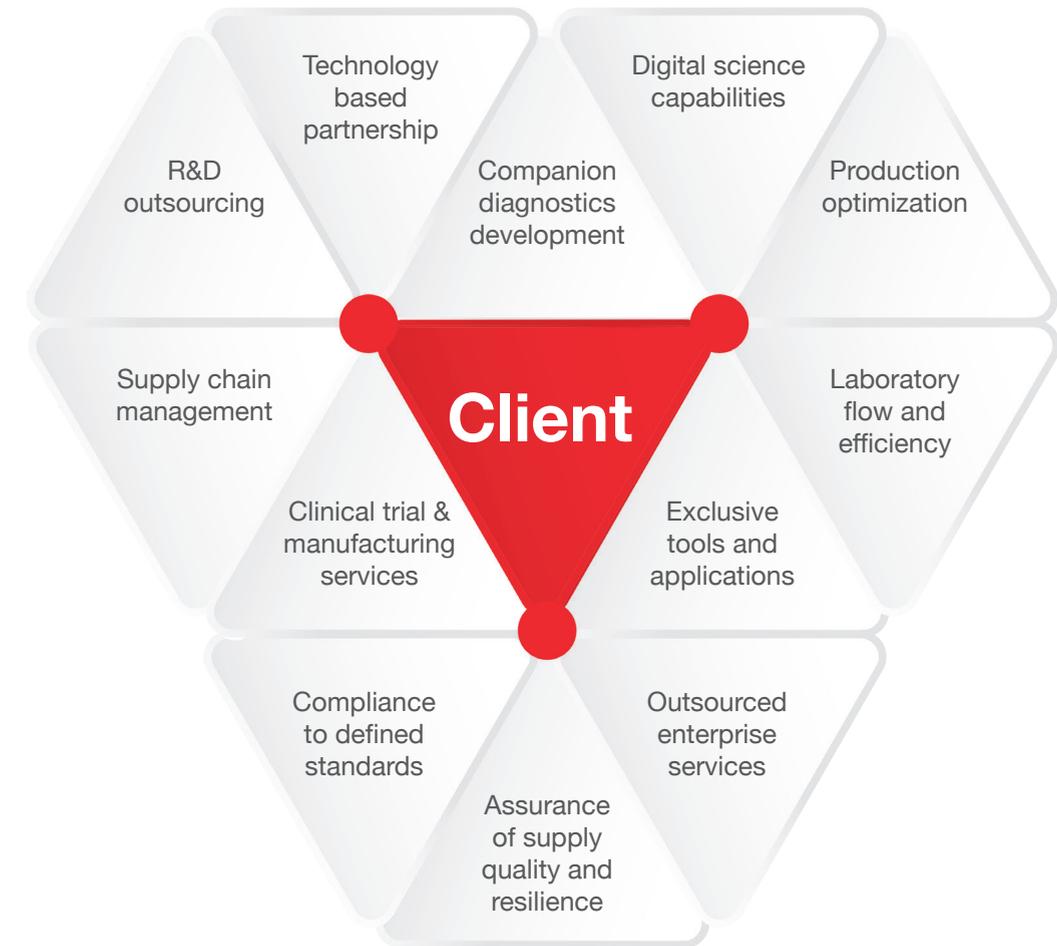


## We take pride in our Mission

We enable our customers to make the world healthier, cleaner and safer

## The value we bring

We help our customers accelerate **innovation** and enhance **productivity**, underpinned by **quality**





## How we deliver

### World-Class Capabilities

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#### Leading product and service

- Best-in-class instruments, consumables and equipment
- Program-based outsourcing services for drug substance and drug product and clinical trials
- Spans the breadth of life sciences

### Workflow Solutions

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#### Integrated technologies that drive better outcomes

- Target identification
- Biomarker-based companion diagnostics
- Precision medicine
- Process analytical technologies

### Productivity Solutions

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#### Optimized operational capabilities

- Transactional excellence
- Lab informatics
- Supply chain optimization
- Process control and monitoring
- Clinical trial supply and management

### Foundation of Quality

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#### Commitment to excellence

- Robust quality systems
- Assurance of supply
- Adapting to a dynamic regulatory landscape
- Strong regulatory track record

Accelerating Innovation

Enhancing Productivity

Uncompromising Quality

World-class capabilities

# Comprehensive in-house or outsourcing solutions from molecule to medicine

Early Discovery and Research	Process Development
<p>Solutions to create or source new therapeutic molecules</p>	<p>Solutions to create or source new therapeutic molecules</p>
<p><b>Discovery research</b></p> <ul style="list-style-type: none"> <li>World-class detection, sample throughput and specificity</li> <li>Consumables, reagents, lab equipment</li> <li>Analytical instrumentation</li> <li>Lab productivity tools</li> <li>Global distribution and supply chain management</li> </ul>	<p><b>Process development and optimization</b></p> <ul style="list-style-type: none"> <li>Target identification</li> <li>Cell culture customization</li> <li>Molecule and application-specific processes</li> <li>Analytical technologies</li> <li>Drug substance and drug product development for small and large molecules</li> <li>Scale-up solutions</li> <li>Technology transfer</li> <li>Process monitoring</li> <li>Materials characterization</li> <li>Drug design, including complex formulation and delivery format</li> <li>Process validation</li> </ul>
<p><b>\$1B</b> R&amp;D Investment</p>	<p><b>&gt;5,000</b> R&amp;D Scientists and Engineers</p>

Clinical Trials		Commercial Production
<p>Support across all phases of clinical development</p>		<p>Production continuity from clinical trials to commercial scale</p>
<p><b>Clinical trials manufacturing</b></p> <ul style="list-style-type: none"> <li>Manufacturing of clinical trial material (biologics and small molecules)</li> <li>Bioprocessing solutions for in-house manufacturing</li> <li>Compliance management</li> </ul>	<p><b>Clinical trial supply and logistics</b></p> <ul style="list-style-type: none"> <li>Clinical supply optimization</li> <li>Technology transfer</li> <li>Primary &amp; secondary packaging</li> <li>Label design, translation &amp; production</li> <li>Storage &amp; distribution</li> <li>Global network</li> <li>Comparator &amp; Ancillary materials sourcing &amp; management</li> </ul>	<p><b>Commercial launch</b></p> <ul style="list-style-type: none"> <li>Biologics and small molecule manufacturing</li> <li>Quality control and assurance equipment</li> <li>Process analytical testing solutions</li> <li>Process monitoring</li> <li>Validation and regulatory support packages</li> </ul>
<p>Supported the development of <b>250</b> small &amp; large molecules in last 3 years</p>		<p>More than <b>1,000</b> molecules developed 40+ dosage forms</p>

## Integrated workflows

# Innovation investments put us at the forefront of scientific advances

### Precision Medicine

Broadest combination of capabilities across the precision medicine workflow: Genetic and protein analysis, biobanking, informatics and diagnostics

### Structural Biology /Protein Analysis

Leading cryo-electron microscopy and high-resolution mass spectrometry workflow solutions

### Biopharma QA/QC

Omics-based analytical technologies for quality testing and release

# Productivity solutions to meet your unique needs

### Enhanced Procurement Processes

- Simplified access to a broad portfolio of leading brands
- Leading eBusiness platform and electronic transaction options
- Supplier aggregation and tail spend management
- Customer and technical support

### Supply Chain Simplification

- Purpose-built and integrated supply chain
  - cGMP supply chain distribution centers
  - Specialized supply management (e.g. biorepository and cold chain storage)
- Assurance of supply
  - Safety stock programs
  - Secondary sourcing
- Supply and order management services
- Material handling and logistics
- Lab supplies inventory management

### Digitally Enabled

- Cloud-connected instruments
- Remote monitoring and diagnostics for instruments and equipment
- Algorithm-based predictive instrument maintenance
- Manufacturing execution system (MES) to integrate unit operations on one network
- Scientific apps
- Data and information management

**2.5M**  
products from  
9,000 suppliers

**>70%**  
eCommerce transactions

**>1,000**  
on-site resources

**>4,500**  
instrument  
servicing FTEs



## Foundation of quality

### Our process

- Rigorous quality management system (QMS) that meets the demands placed on our customers
- Practical Process Improvement (PPI) business system and lean practices
- Manufacturing redundancy and business continuity strategies to assure supply



**>20**

Approvals from regulatory authorities for Pharma Services sites globally



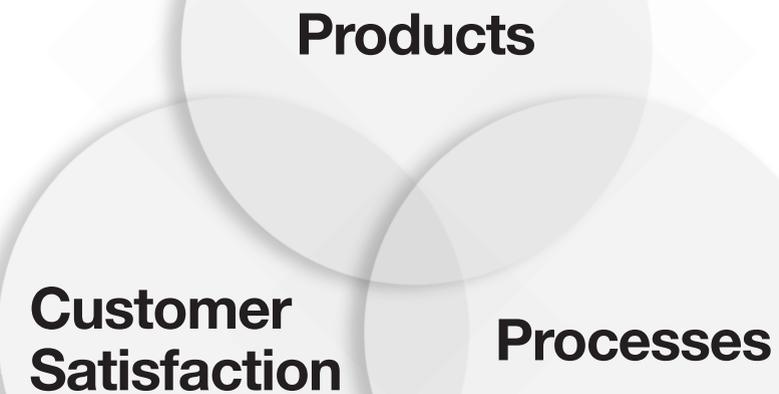
**>1,000**

Molecules developed in the last decade



**107**

New drug applications in the last decade (2X the nearest competitor)



Example: Pharma Services (CDMO) business

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## Expanding our end-to-end pharmaceutical services offering

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**Built on a foundation of quality systems and commitment to continuous improvement, we help you achieve success at every milestone**

### Create or source your ingredient

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- Large and Small Molecule API Development
- Route Scouting
- Cell Line Development
- Analytical Methods
- Process Development
- Commercial Manufacturing
- Viral Vector Development and Manufacturing

### Design the ideal formulation

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- Quick to Clinic®
- Complex Formulations
- Solubility Enhancement
- Analytical Methods
- Process Development
- Oral Solid and Sterile Development

### Scale to your next milestone

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- Pre-clinical
- Early Phase Development
- Clinical Trial Material Manufacture
- Late Phase Trials
- Commercialization

### Develop clinical supply chain strategy

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- Clinical Supply Optimization
- Compliance Management and Risk Mitigation
- Comparator Sourcing
- Label Translation and Planning
- Ancillary Materials Sourcing

### Accelerate clinical research

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- Primary and Secondary Packaging
- Labeling Design & Production
- Storage and Distribution
- Global Network
- Cold Chain Material Management
- Logistics and Transportation
- cGMP Biologics Storage / Biorepository
- Pharmacy Services

### Deliver a successful commercial launch

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- +95% Right First Time delivery
- 75% of all dosage forms
- Oral Solid Dose
- Sterile Injectable
- Softgels
- Flexible Business Models

**185 technology transfers in 2017:**

44 Drug substance, 3 Development, 138 Commercial

**11,000+**

unique clinical packaging lots in 2017

**More than 500,000**

clinical shipments completed in 2018

**107**

NDA's 2009 - 2018



**70,000**  
employees



**5,000**  
R&D  
scientists/  
engineers

**ThermoFisher**  
SCIENTIFIC

thermo  
scientific

applied  
biosystems

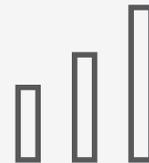
invitrogen

 fisher  
scientific

unity  
lab services



**\$1B**  
invested in R&D



**\$24B**  
in revenues