

driving respiratory drug delivery forward

Building on particle engineering expertise to optimize respiratory drug delivery and bring advanced therapeutics to market

The respiratory system provides an attractive drug absorption target for both local and systemic disease states and is increasingly utilized for the delivery of both small molecules and biotherapeutics.

Our core particle engineering expertise through milling and/or spray drying is complemented with extensive formulation and process development, specialized clinically relevant characterization and mechanistic understanding, and encapsulation capabilities to provide integrated respiratory product development from concept through the clinic and commercialization.

We provide unparalleled expertise in spray dry processing and jet milling for optimized particle engineering

Particle engineering is crucial to successful respiratory product design. At Lonza, we have more than 20 years' experience in advanced top-down and bottom-up particle engineering techniques specific to inhalation applications, with specialized, proprietary equipment in place for all stages of product development.

The milling approach may be suitable for a quick proof-of-concept/ first-in-human studies. Depending on the API, it may also be possible

to commercialize via this route. Alternatively, spray drying may be required to enhance product performance such as shelf life and delivery efficiency. Lonza has unique capabilities in milling and spray drying to ensure the appropriate technology is applied to fit specific compound properties and target product profiles.

We provide extensive formulation and process development based on a rich legacy

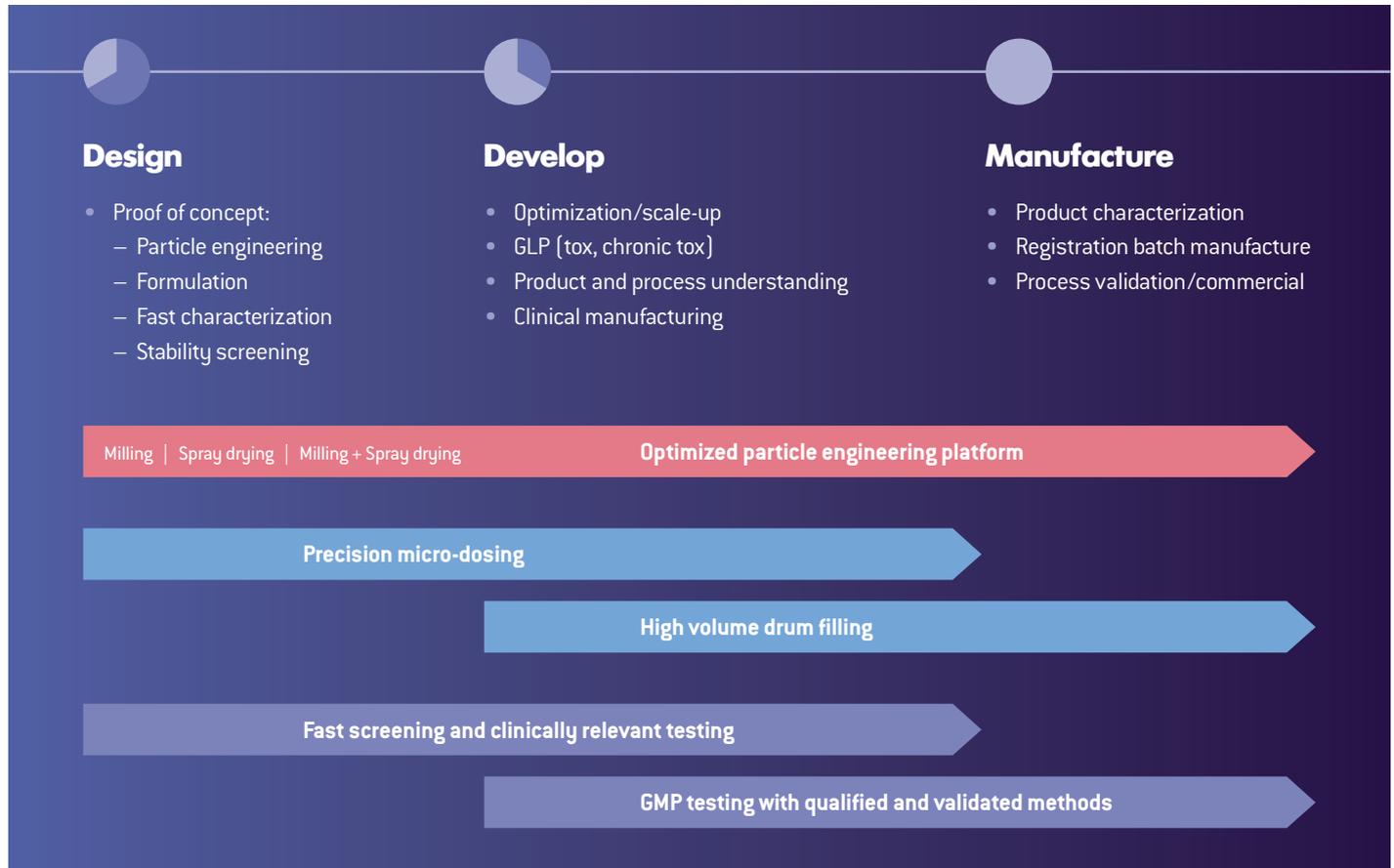
Our scientists have encountered a myriad of API characteristics and delivery challenges for respiratory delivery, enabling Lonza to optimize its technology and formulation selection methodologies, process development, and scale-up approaches. A comprehensive clinically relevant analytical platform is coupled with regulatory relevant analytical support is in place to support all stages of respirable product development.

Our full-service offering includes API manufacture and state-of-the-art encapsulation for capsule-based DPI systems

Lonza's end-to-end offering starts from the manufacture of API, through encapsulated drug product, and is complemented with customized capsules. Efficient phase-appropriate capsule filling supports the development process.

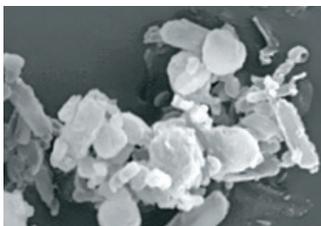
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Respiratory product development tailored for your molecule



Complete respiratory product development platform

Lonza offers a full range of services, from POC and formulation identification to powder manufacture for clinical studies, cGMP manufacturing and capsule filling optimized for respiratory drug development.



Crystalline api in a morphous matrix



Xcelodose® 600S for clinical phase encapsulation



Particle engineering expertise

Learn how Lonza's integrated inhalation product development and manufacturing can be tailored to meet your exact needs

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