

**Information sheet**

# Inhaled Product Development

**With more than 30 years' experience, Quotient is a leader in the development, manufacture and assessment of inhalation products, helping clients to accelerate molecules from first-in-human through to proof-of-concept. Our integrated capabilities and vast knowledge encompasses pre-formulation sciences, formulation development, device evaluation, clinical trial manufacturing and the clinical assessment of a variety of inhaled formats for nasal and pulmonary delivery.**

## **Candidate Selection / Pre-formulation**

- > Development of Target Product Profile
- > Salt/crystalline form discovery support
- > Physical properties testing of drug substance
- > Selection of the physical/salt form
- > Inhalation particle design and engineering technologies
- > Climate control chamber

## **Formulation and Product Development**

- > Particle engineering (e.g. micronization or spray drying)
- > Development of Dry Powder Inhalers (DPIs)
- > Analytical characterization of aerosol formulations
- > ICH stability testing of drug products

## **Clinical Trial Manufacture**

- > Phase I and Phase II clinical trial manufacturing
- > Analytical/QA/QP release of GMP clinical products
- > Real-time adaptive GMP manufacturing
- > Supply and global distribution for patient trials

## **Clinical Pharmacology Assessment**

- > First-in-human studies
- > Formulation/system optimization
- > Device bridging
- > Scintigraphic deposition studies
- > Pilot and pivotal bioequivalence studies
- > Biomarker and pharmacodynamic assessments

## Inhaled Product Development – Equipment

### Spray Drying for Inhalation

- > ProCepT spray dryer
- > GEA Niro Mobile Minor spray dryer
- > SPX Anhydro MicroSpray MS-35 dryer
- > Aqueous and solvent

### Processing Equipment

- > Low and high shear blending
  - > Turbula, Bin and V-Blenders
  - > TRV and PMA mixing systems
- > Particle size reduction
  - > MC-ONE micronizer
  - > MC-TWO micronizer
  - > Sturtevant 2” micronizer

### Encapsulation of Inhaled Products

- > Xcelodose 600
- > Quantos
- > Harro Hofliger Modu-C LS Drum filler
- > Small volume blister packaging

### Aerosol Characterization Equipment

- > Anderson Cascade Impactor (ACI)
- > Next Generation Impactor (NGI)
- > Dose Uniformity Sampling Apparatus (DUSA)



## Who is Quotient Sciences?

Quotient Sciences is a drug development and manufacturing accelerator providing integrated programs and tailored services across the entire development pathway. Cutting through silos across a range of drug development capabilities, we save precious time and money in getting drugs to patients. Everything we do for our customers is driven by an unswerving belief that ideas need to become solutions, molecules need to become cures, fast. Because humanity needs solutions, fast.

[Alnwick](#) > [Edinburgh](#) > [Miami](#) > [Nottingham](#) > [Philadelphia](#) > [Reading](#)

**UK** +44 (0)115 974 9000 **USA** +1-800-769-3518  
Email [info@quotientsciences.com](mailto:info@quotientsciences.com) Visit [www.quotientsciences.com](http://www.quotientsciences.com)



Molecule  
to cure.  
Fast.™