

Australia supports Aptar Pharma and Macquarie University collaboration to advance inhaled biologics

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Three-year initiative aims to address critical formulation and delivery challenges associated with high-dose dry powder biologic therapies



Aptar Pharma, a global leader in drug delivery, dosing and protection technologies and services, has announced a new research collaboration with Macquarie University under an Australian Research Council (ARC) Linkage Project.

The three-year programme, *“Unlocking the Potential of Dry Powder Carriers for Biologic Applications”* (ARC LP250100089), will investigate formulation approaches designed to support the pulmonary delivery of biologic medicines.

Central to the collaboration is Aptar Pharma's Orbital™ dry powder inhaler platform, an innovative technology designed to enable the delivery of high-payload dry powder formulations. Researchers will evaluate how formulation variables influence aerosol performance when delivered using the Orbital™ platform, generating new insights into the interplay between formulation design and device performance.

As interest in inhaled biologic therapies grows, developers continue to face challenges in delivering large doses of complex molecules while maintaining formulation integrity, aerosol performance and therapeutic effectiveness. Many biologics may also require novel excipient systems to achieve adequate stability and aerosolization. Supported by ARC and industry funding, the project combines Macquarie University academic research with Aptar Pharma's expertise in inhalation science, pharmaceutical development and drug delivery technology.

The project will assess engineered, blended and combined dry powder formulations to understand how formulation characteristics influence aerosol behavior and device performance. The resulting data will also support the development of computational fluid dynamics (CFD) models to provide further insight into aerosol behavior and particle transport. These models are expected to support future advances in dry powder formulation design and inhalation system performance.