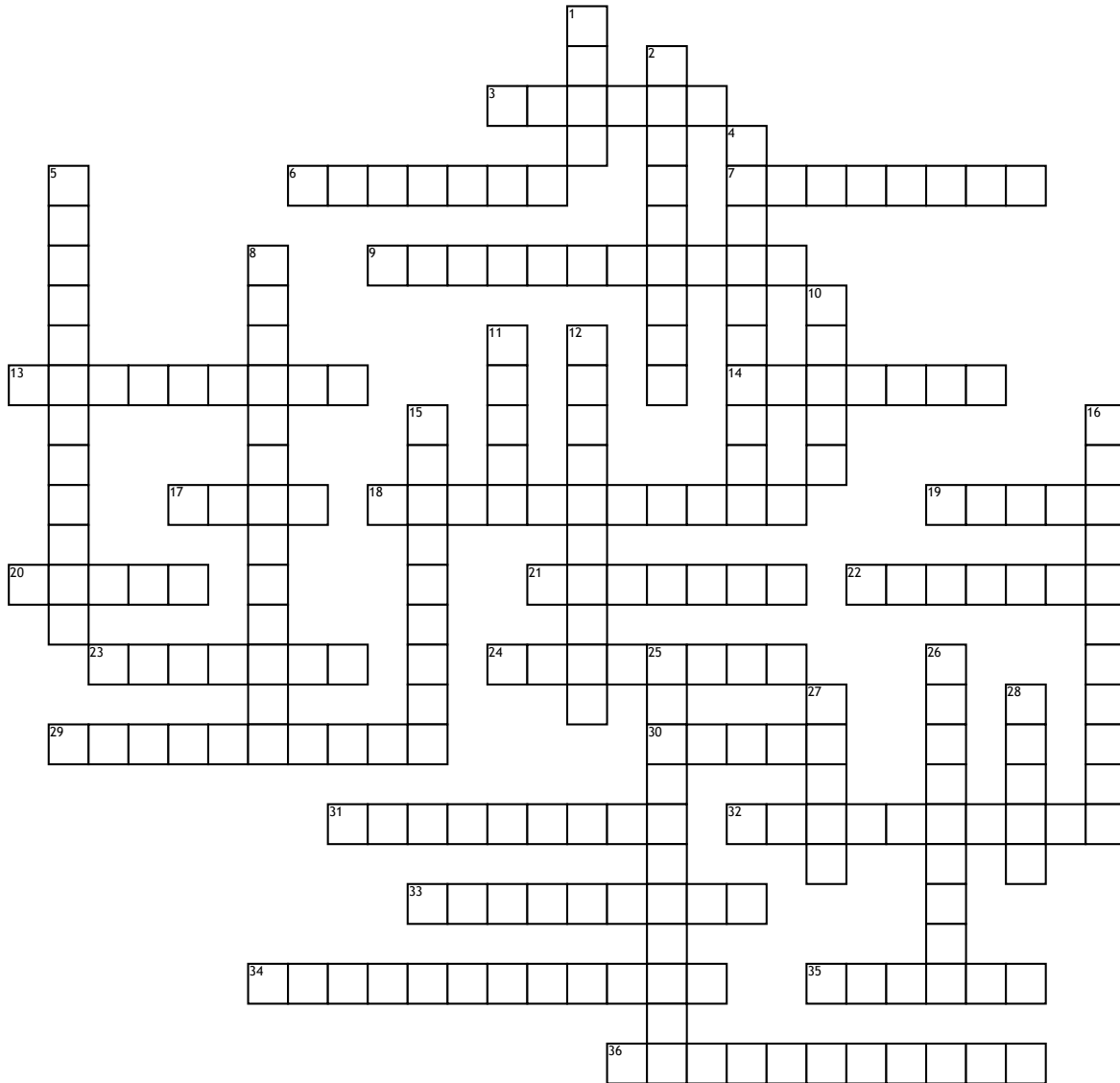


# Respiratory drug delivery



## Across

3. Is used to eliminate the need to coordinate breathing and actuation when inhaling through a pMDI.  
 6. Was marketed by Pfizer as an insulin inhaler before being discontinued.  
 7. The \_\_\_\_\_ is responsible for gas exchange.  
 9. \_\_\_\_\_ clearance limits drug retention in the respiratory system.  
 13. \_\_\_\_\_ is the main mechanism of particle deposition in small airways and lung periphery.  
 14. Breath \_\_\_\_\_ for a few seconds allows particles to settle in the airways under gravity.  
 17. Pulmonary drug delivery targets the \_\_\_\_\_  
 18. pMDIs contain a \_\_\_\_\_ liquid inside a canister.  
 19. An advantage of pulmonary drug delivery is the ability to achieve a rapid \_\_\_\_\_ of action.  
 20. An aerosol is a two-phase system defined as a dispersion or suspension of \_\_\_\_\_ particles or liquid droplets in a gaseous medium.  
 21. An excipient commonly used in DPI formulations.  
 22. Is about 15-22 mm in diameter.

23. Sedimentation is a particle deposition mechanism that occurs because of the effect of \_\_\_\_\_  
 24. Ultrafine particles settle under \_\_\_\_\_ motion  
 29. The nasal cavity is composed of inferior, middle and posterior \_\_\_\_\_  
 30. Administering drugs to the nose is referred to as \_\_\_\_\_ drug delivery.  
 31. Large particles are deposited in the respiratory tract by inertial \_\_\_\_\_  
 32. Present in a pMDI formulation is the largest quantity.  
 33. \_\_\_\_\_ drug delivery uses the inhaled route of drug delivery.  
 34. Alveolar macrophages are involved in the \_\_\_\_\_ of foreign particles.  
 35. DPI stands for: dry \_\_\_\_\_ inhaler.  
 36. Both pulmonary and nasal drug delivery routes belong to the \_\_\_\_\_ drug delivery route.

## Down

1. The diameter of a sphere of unit density that has the same settling velocity in air as the aerosol particle in question.

2. A type of inhaler device.  
 4. Inhaled particles may be cleared by an alveolar \_\_\_\_\_  
 5. The biggest challenge when using pMDIs is the ability to achieve \_\_\_\_\_  
 8. Particles are deposited by \_\_\_\_\_ in the airways when air velocity is relatively low  
 10. The \_\_\_\_\_ beat 10 times each second.  
 11. Can lead to narrowing of airways.  
 12. A drug used to relieve an asthma attack.  
 15. Inhaled particles avoid \_\_\_\_\_ metabolism.  
 16. Salbutamol is an example of a \_\_\_\_\_ drug.  
 25. An advantage of the respiratory route of drug delivery is that it is \_\_\_\_\_  
 26. Side effects from inhaled therapy could arise when particles are \_\_\_\_\_  
 27. An advantage of nasal drug delivery is the presence of a rich \_\_\_\_\_ supply in the nose.  
 28. \_\_\_\_\_ volume is the amount of air which enters the lungs during normal inhalation at rest.