

[Access through your institution](#)[Get Access](#)

Advanced Drug Delivery Reviews  
Volume 61, Issue 2, 27 February 2009, Pages 140-157

## Nanoparticles for nasal vaccination ☆

Noemi Csaba <sup>a, b, 1</sup>, Marcos Garcia-Fuentes <sup>a, b, 1</sup>, Maria Jose Alonso <sup>b</sup>  

[Show more](#) ▾

 [Outline](#) |  [Share](#)  [Cite](#)

<https://doi.org/10.1016/j.addr.2008.09.005>

[Get rights and content](#)

### Abstract

The great interest in mucosal vaccine delivery arises from the fact that mucosal surfaces represent the major site of entry for many pathogens. Among other mucosal sites, nasal delivery is especially attractive for immunization, as the nasal epithelium is characterized by relatively high permeability, low enzymatic activity and by the presence of an important number of immunocompetent cells. In addition to these advantageous characteristics, the nasal route could offer simplified and more cost-effective protocols for vaccination with improved patient compliance.

The use of nanocarriers provides a suitable way for the nasal delivery of antigenic molecules. Besides improved protection and facilitated transport of the antigen, nanoparticulate delivery systems could also provide more effective antigen recognition by immune cells. These represent key factors in the optimal processing and presentation of the antigen, and therefore in the subsequent development of a suitable immune response. In this sense, the design of optimized vaccine nanocarriers offers a promising way for nasal mucosal vaccination.

 [Previous](#)

[Next](#) 

## Keywords

Mucosal immunity; Nasal administration; Antigen delivery; Transmucosal transport; Bioadhesion; Nanoparticles

---

[Recommended articles](#)

[Citing articles \(196\)](#)

★ This review is part of the *Advanced Drug Delivery Reviews* theme issue on “Drug and Gene Delivery to Mucosal Tissues: The Mucus Barrier”.

<sup>1</sup> These authors contributed equally to this manuscript.

[View full text](#)

Copyright © 2008 Elsevier B.V. All rights reserved.



[About ScienceDirect](#)

[Remote access](#)

[Shopping cart](#)

[Advertise](#)

[Contact and support](#)

[Terms and conditions](#)

[Privacy policy](#)

 RELX™

We use cookies to help provide and enhance our service and tailor content and ads. By continuing you agree to the [use of cookies](#).

Copyright © 2021 Elsevier B.V. or its licensors or contributors. ScienceDirect® is a registered trademark of Elsevier B.V.

ScienceDirect® is a registered trademark of Elsevier B.V.