

# Preparation, photophysical properties and cell image of Naphthalimide-based fluorescent nanostructures for biomedical applications: BAPAD dendrimeric antigens and silica nanoparticles.

**Ezequiel Perez-Inestrosa,<sup>a,b</sup> Pablo Mesa,<sup>a,b</sup> Daniel Collado,<sup>a,b</sup> Yolanda Vida,<sup>a,b</sup> Francisco Najera,<sup>a,b</sup>**

*a Department of Organic Chemistry, Faculty of Science, Institute of Biomedical Research of Malaga (IBIMA), Universidad de Malaga; b Andalusian Centre for Nanomedicine and Biotechnology (BIONAND), Malaga.*

*e-mail: inestrosa@uma.es*

We present here the synthesis and characterization of BAPAD [1] fluorescent Dendrimeric-Antigens (DeAn), to be applied in basophil activation as a test to detect drug allergy reactions.

A second generation BAPAD dendrimer using cystamine as core that can be reduced to obtain two dendrons with a thiol group in the focal point, useful to attach a fluorescent probe, have been synthesized. The free amine groups on the surface of the dendrimer were functionalized with an amoxiciloyl group (AXO), the allergenic determinant to the beta-lactam antibiotic amoxicillin. The fluorescent DeAn (F-DeAn) has been fully characterized by NMR and MS techniques, and their fluorescent properties well established in aqueous biological media. F-DeAn without the haptenic moieties at the periphery has been also obtained and fully characterized as a control assay. Both molecules have been also characterized using molecular dynamics simulation calculations. We show here how these dendrimeric structures interact with dendritic cells and are internalized by them.

In a second approximation, Naphthalimide-fluorescent silica nanoparticles have been prepared and characterized, to be used also in basophil activation test.

## References

[1] PCT/ES2012/000136, 2012, Perez-Inestrosa, E.; Ruiz, A. J.; Najera, F.; Vida, Y.; Collado, M.; Mesa, P.