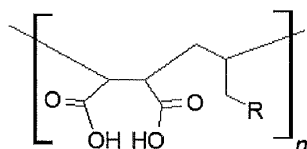


Claims

1. A nanoparticle comprising
 - a) a micelle comprising an amphiphilic polymer with a number average molecular weight (M_n) of 20,000 g/mol or less, and
 - b) at least one peptide comprising at least one T cell epitope.
2. The nanoparticle of claim 1, wherein the nanoparticle further comprises a solid hydrophobic core which is at least partially coated by the micelle, wherein the core comprises a traceable inorganic material selected from the group comprising iron oxide, CdSe/CdS/ZnS, silver and gold.
3. The nanoparticle of claims 1 or 2, wherein the peptide is associated with the outside of the micelle.
4. The nanoparticle of the preceding claims, wherein the amphiphilic polymer has a number average molecular weight (M_n) of 10,000 g/mol or less, preferably 6,000 g/mol or less, most preferably 6,000 to 1,000 g/mol.
5. The nanoparticle of the preceding claims, wherein the amphiphilic polymer comprises the following building block



wherein R is a hydrocarbyl group or a substituted hydrocarbyl group, preferably R is a C₄ to C₂₂ alkyl group, preferably C₈ to C₂₀ alkyl group.

6. The nanoparticle of claim 5, wherein R is a linear alkyl group, preferably a linear C₁₁ to C₁₇ alkyl group, most preferably R is a linear pentadecyl group.
7. The nanoparticle of any of the preceding claims, wherein the amphiphilic polymer is selected from the group

comprising poly(maleic acid-alt-1-octadecene), poly(maleic acid-alt-1-dodecene) and poly(maleic acid-alt-1-tetradecene), preferably the polymer is poly(maleic acid-alt-1-octadecene), and

the number average molecular weight of the polymer is from 6,000 to 1,000 g/mol.

8. The nanoparticle of any of the preceding claims, wherein the peptide is covalently linked to the micelle or non-covalently associated.
9. The nanoparticle of any of the preceding claims, wherein the nanoparticle is negatively charged at a pH of 6 to 7.
10. The nanoparticle of any of the preceding claims, wherein the nanoparticle has a hydrodynamic diameter between 100 and 10 nm, preferably between 50 and 10 nm, more preferably between 20 and 40 nm as measured by dynamic light scattering.
11. A pharmaceutical composition comprising the nanoparticle of claims 1 to 10.
12. A pharmaceutical composition for use in suppressing a specific immune response comprising the nanoparticle of claims 1 to 10.
13. The pharmaceutical composition for use in suppressing a specific immune response of claim 12, wherein said response is associated with an autoimmune disease, preferably with an autoimmune disease selected from the group comprising Pemphigus vulgaris, Pemphigus foliaceus, Epidermolysis bullosa Acquisita, Bullous pemphigoid, Cicatricial pemphigoid, Goodpasture syndrome, Microscopic polyangiitis, Granulomatosis with polyangiitis (Granulom. Wegener), Thrombotic thrombocytopenic purpura, Immune thrombocytopenic purpura, Uveitis, HLA-B27-associated acute anterior uveitis, Multiple sclerosis, Neuromyelitis optica, Type I diabetes, Narcolepsy with or without cataplexy, Celiac disease, Dermatitis herpetiformis, Allergic airways disease/Asthma, Myasthenia gravis,

Hashimoto thyroiditis, Autoimmune thyroid disease, Graves disease, Autoimmune thyroid disease, Autoimmune Hypoparathyroidism, Autoimmune thyroid disease, Antiphospholipid syndrome, Autoimmune Addison's Disease, Autoimmune haemolytic anaemia, Chronic inflammatory demyelinating, Polyneuropathy, Guillain-Barré syndrome, Autoimmune neutropenia, Linear morphea, Batten disease, Acquired hemophilia A, Relapsing polychondritis, Isaac's syndrome (acquired neuro-myotonia), Rasmussen encephalitis, Morvan syndrome, Stiff-person syndrome, Pernicious anaemia, Vogt-Koyanagi-Harada syndrome, Primary biliary cirrhosis, Autoimmune hepatitis type I, Autoimmune hepatitis type II, Systemic lupus erythematosus, Rheumatoid arthritis, Polymyositis/ Dermatomyositis, Sjögren syndrome, Scleroderma, Vitiligo and Alopecia areata.

14. A method of producing a nanoparticle comprising:
 - i) obtaining an amphiphilic polymer with a number average molecular weight (Mn) of 20,000 g/mol or less,
 - ii) optionally purifying the amphiphilic polymer,
 - iii) forming micelles of the amphiphilic polymer, and
 - iv) adding at least one peptide to form the nanoparticles.
15. The method of claim 14, wherein step i) is a radical copolymerization synthesis step, preferably using 2,2'-Azobis(2-methylpropionitrile) as a radical initiator.