Alzheimer’s disease (AD) is the most common cause of dementia among neurodegenerative
diseases in the elderly population. In western countries it is the fourth common cause of death after
heart disease, cancer and stroke. The growing number of elderly and the continuing expansion of
life expectancy, leading to a fast growing number of patients suffering from dementia, have led to
an enormous increase in research focused on the discovery of drugs for of dementia.
Nanotechnology and nanoparticles (NPs) bring promises in research on the AD diagnosis and
therapy, including neuroprotections against oxidative stress and anti-amyloid therapeutics, neuro-
regeneration and drug delivery beyond the blood brain barrier (BBB). Between NPs, liposomes are
most widely used as a drug delivery system. In a project devoted to the generation of nanoparticles
for the diagnosis and therapy of AD, we designed and synthesized monomers for the generation of
functionalized liposome NP. These monomers posses an anchor for the insertion in the NP, a spacer
of polyethyleneglycol (PEG) and alternatively an Abeta ligand or a functional ideal for the
conjugation to other entities: ligands and/or contrast agents and/or carriers able to pass the blood
brain barrier (BBB).

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