**Highly-Functional Poly(amino acids) for Controlled Therapeutic Delivery**

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Drug delivery vehicles are medicinally imperative materials for the targeted delivery of poorly soluble drug molecules to a specific site in the body. This enhances the efficacy of drug molecules and enables a reduction of the abysmal side-effects that are associated with many diseases. In addition, previously discarded drug molecules may be reassessed if used in conjunction with an appropriate drug delivery vehicle.

Polymeric nanoparticles that, crucially, are biodegradable and present cell-binding peripheries are ideal carriers for the targeted delivery of therapeutic compounds. In particular, poly(amino acids) are extremely well-suited for deployment as drug delivery vehicles due to their inherent biodegradability, non-cytotoxicity and capability to present secondary structures upon self-assembly in aqueous solution. This project will involve the production of unique polymers from amino acid monomers to create innovative drug delivery vehicles. A range of polymer architectures will be created in a project that has strong academic and industrial merit. Successful drug delivery vehicle candidates will be loaded with therapeutic compounds, and their *in vitro* performance assessed.

The project will provide experience of the synthesis and analysis of biodegradable polymers that have application within a biomedical context, and far beyond. In addition, monomer synthesis and polymer functionalisation will offer excellent training in organic chemistry methods. At AstraZeneca, you will learn about the drug discovery process where drug molecule development occurs. Full access to state-of-the-art analytical equipment (NMR, GPC, HPLC, SFC and MALDI-TOF-MS) will be presented as part of a truly multidisciplinary project