Supporting Information

Method of Preparation of Solid Supported Defined-Length Oligoleucine

Defined length oligoleucines were made on an automated peptide synthesiser (9050, PerSeptive Biosystems, Hertford, UK) using Fmoc chemistry and a PEG-polystyrene support. Briefly, the support (supplied by PerSeptive Biosystems) comprised polystyrene beads with a derivatised polyethylene glycol (PEG) spacer to which the Fmoc amino acid was attached by a hydroxymethylphenoxyacetic acid linker.

Further amino acids were attached singly as Fmoc amino acid pentafluorophenyl esters using a standard protocol. Firstly, the Fmoc group was removed from the attached amino acid using 20% (*v/v*) piperidine in DMF for 7 min. Then the support was washed with DMF and recycled with a four-fold excess of Fmoc-L-Leu-OPfp and 1-hydroxybenzotriazole (PerSeptive Biosystems, Hertford, UK) in DMF for 1 hour.

After the final cycle, the amino terminal Fmoc group was removed using 20% piperidine in DMF for 7 min and the support with the oligoleucine was washed with DMF then with DCM.

The oligo-peptides were used still attached to their supports; the supports were derivatised at 0.18 mmol per gram; the efficiency of successive additions of amino acid was monitored by the absorbance at 365 nm of the Fmoc group on deprotection.

General Experimental

All defined length oligoleucines were washed once after preparation with DCM and dried overnight using a vacuum pump (approx. 10 bar). THF was distilled, under nitrogen, from a solution dried in the presence of sodium and benzophenone. HPLC grade hexane was purchased from BDH, ethanol for HPLC was distilled with no drying agent so contained approximately 0.7% water. Epoxidations were carried out away from direct sunlight in small glass cylindrical vials (height 50 mm, diameter 15 mm) with screw caps. Enantiomeric excesses were determined by extracting small samples from the reaction, filtering through a short silica plug, concentrating and dissolving in ethanol : hexane (1:9). Chiral HPLC was then performed using a Chiralpak AD column (Daicel Chemical Industries), 0.46 × 25 cm with the eluent ethanol : hexane (1:9), with the flow rate at 1 ml/min and the UV detector set to 254 nm. Retention times: Chalcone (**5**) = 12 min, epoxide **6** = 14 min, epoxide (enantiomer of **6**) = 21 min. The different UV extinction coefficients at 254 nm of starting material and product were accounted for by running known solutions for calibration.

Preparation of H(L-Leu)$NHCH_2CH_2(OCH_2CH_2)_{71}NH$(L-Leu)H (8)

Coupling Step: FmocLeuOH (2.884 g, 2.00 eq) was dissolved in anhydrous DMF (70 ml) and stirred under N_2 at room temperature. HBTU (3.095 g, 2.00 eq) and *N,N'*-diisopropylcarbodiimide (DIC, 1.278 ml, 2.00 eq) were added, followed by diaminoPEG (4.500 g, 1.00 eq). After 6 days the solvents were removed *in vacuo* and the solid product washed in a Soxhlet extractor (for 3 h at ca. 10 min/cycle) with diethyl ether. ^{1}H NMR spectrum of the ether soluble material showed no PEG to be present. The product (Fmoc(L-Leu)$NHCH_2CH_2(OCH_2CH_2)_{71}NH$(L-Leu)Fmoc) was then extracted with THF by using a Soxhlet extractor (for 16 h at ca. 30 min/cycle).

Deprotection Step: The Fmoc(L-Leu)$NHCH_2CH_2(OCH_2CH_2)_{71}NH$(L-Leu)Fmoc was dissolved in a mixture of anhydrous DMF (80 ml) and piperidine (20 ml) and stirred under N_2 at room temperature for 20 h. The solvents were removed *in vacuo* and the solid product washed several times in a sinter funnel with diethyl ether, and the product H(L-Leu)$NHCH_2CH_2(OCH_2CH_2)_{71}NH$(L-Leu)H (**8**) (5.09 g) collected with THF which was then removed *in vacuo*.

Preparation of H(L-Leu)$_2NHCH_2CH_2(OCH_2CH_2)_{71}NH$(L-Leu)$_2$H (9)

Coupling Step: H(L-Leu)$NHCH_2CH_2(OCH_2CH_2)_xNH$(L-Leu)H (**8**), 4.54 g, 1.00 eq) was dissolved in anhydrous DMF (60ml) and stirred under N_2 at room temperature. FmocLeuOH (2.572 g, 2.00 eq), HBTU (2.760 g, 2.00 eq) and *N,N'*-diisopropylcarbodiimide (DIC, 1.140 ml, 2.00 eq) were added. After 44 h the solvents were removed *in vacuo* and the solid product washed several times in a sinter funnel with diethyl ether. The THF-soluble product (Fmoc(L-Leu)$_2NHCH_2CH_2(OCH_2CH_2)_xNH$(L-Leu)$_2$Fmoc) was then extracted with THF.

Deprotection Step: The Fmoc(L-Leu)$_2NHCH_2CH_2(OCH_2CH_2)_{71}NH$(L-Leu)$_2$Fmoc was dissolved in a mixture of anhydrous DMF (80 ml) and piperidine (20 ml) and stirred under N_2 at room temperature for 20 h. The solvents were removed *in vacuo* and the solid product washed several times in a sinter funnel with diethyl ether, and the product H(L-Leu)$_2NHCH_2CH_2(OCH_2CH_2)_{71}NH$(L-Leu)$_2$H (**9**) (4.11 g) was collected with THF which was then removed *in vacuo*.