

P030 Bio-production of self-assembling peptides
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The wide range of emerging applications for self-assembling peptides will require the production of large quantities of peptidic material. Current chemical synthesis of peptides is limited by cost and short sequence length. We are currently exploring the bio-production of self-assembling peptides in a range of hosts. A bacterial (*E. coli*) system has been used for high level expression of the self-assembling peptide P₁₁₋₄ (n-QQRFWEFEQQ-c), providing 0.6 g peptide/L. This recombinant peptide displays similar pH responsive behaviour to that described for the chemically synthesised peptide. P₁₁₋₄ has the potential to act as a scaffold for tissue engineering applications by allowing tissue conduction and cell attachment, ultimately providing a framework for regenerating tissue. This provides promise for the provision of adaptable, flexible, and biodegradable 3D hydrogel scaffolds which can be produced in large amounts in a sustainable, biotechnological manner to improve tissue regeneration processes. The cellular compatibility of recombinant P₁₁₋₄ will be determined as will its ability to support the three-dimensional proliferation of L929 cells and primary human dermal fibroblasts. We are also testing other hosts including yeast, fungi and non-food plants with a range of self-assembling peptides. For example, we have recently demonstrated expression of two peptides in the plant *A. thaliana*.