

**PP-125 Multibiometric Based Personal Verification Using the Fusion of
Hand and Finger Stripe Geometry**

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This project presents a new Multibiometric based Personal Verification system using the Fusion of Hand and Finger Stripe Geometry which is efficient, simple, fast, easy to handle and cost effective compared to other verification techniques. This Hand Geometry based verification comprises of two main attributes, (1) feature extraction by image processing and (2) feature learning by Artificial Neural Network (ANN). For feature learning, Back Propagation algorithm has been applied. This prototype has been trained with 50 samples.

**PP-134 Improvement Process of Halal Gelatin Coated Polystyrene
Microcarrier**

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Polystyrene (PS) are widely used polymer as a core substrate because of its favorable properties such as low specific weight, high chemical resistance and mechanical flexibility and biocompatible. PS as biomaterials has been studied and manufactured for cell attachment however, the adhesion of gelatin on unmodified PS surfaces is generally poor. UV-ozone has been shown to be a highly successful method for the controlled modification of polymers for applications ranging from adhesion and wetting improvement to the production of surfaces for enhanced cell attachment. This research, the surfaces of microsize polystyrene beads (150 Åµm) was modified by UV/ozone treatment system at different treatment time, ozone flow-rate and UV. The maximum amount of gelatin obtained was 63.75 Åµg/ml while the lowest amount obtained for untreated PS (9.947 Åµg/ml). The result found that time is the most significant factor to prepare sample for gelatin immobilization at reduced flow rate and increased ultraviolet (UV) intensity in the range under study. The introduction of carbonyl, hydroxyl and amide group on the polystyrene beads surface was confirmed by ATR-FTIR analysis and it was found that the condition of 45 min, 1 l/min, and 18W immobilized highest amount of gelatin. The best condition for UV/ozone surface modified PS bead as well as gelatin coated PS modified beads was undergoing biological testing and it was compared with commercial polystyrene microcarrier (Plastic Plus). It was found that our developed polystyrene microcarrier; UV/ozone modified polystyrene generated 2.9 x 10⁵ cell/ml and gelatin coated polystyrene generated 3.55 x 10⁵ cell/ml to promote DF-1 cell attachment and better proliferation compared to the commercial polystyrene microcarrier that only generated 1.8 x 10⁵ cell/ml. In addition, this developed microcarrier has advantages of easy sampling and easy cell recovery.

**PP-135 Spirulina - A Potential Feed Additive for the Development of
Proteolytic Enzymes And Growth of the Tropical Sport Fish
Malaysian Mahseer (KELAH, *Tor tambroides*) FRY**

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Tor tambroides fry with a mean of 8.0 mm standard length (SL) and weighing (W) 0.06 g werer stocked at the rate of fifty (50) individuals in each of the fifteen 150 l rectangular fibre glass tanks for a period of 5 weeks. The development of proteolytic enzymes (Trypsin and Chymotrypsin) and growth were studied during these feeding treatments. 45% protein diet without additives was treated as control diet. The gut of the fish fry fed on control diet incorporated with 0.10% Spirulina, 0.10% enzyme, and