Meeting report and abstracts of the 2005 UC Davis Transgenic Animal Research Conference V

Speaker Abstracts
Excess phosphorus (P) in manure is a major environmental pollutant associated with poultry and swine production and is directly related to eutrophication, which results in the death of aquatic organisms and loss of biodiversity. Phytate accounts for 50–80% of plant phosphorus and this phytate-bound P is unavailable to simple-stomached animals. As a result, this P is not utilized by the animal and is therefore excreted. Phytases are enzymes that cleave inorganic phosphate from phytic acid, thereby improving its bioavailability to simple-stomached animals. Strategies intended to limit levels of P excretion in production animals have included dietary supplementation of phytase, as well as the use of transgenic crops with reduced phytate levels. Additionally, the recent production of transgenic pigs that express recombinant phytase in the digestive tract has been shown to increase phytate-P availability and therefore reduce P excretion. We have developed a phytase transgene construct for production of transgenic quail as a model system for application to commercial poultry. We have isolated and cloned the chicken preprogastrin promoter (PPGP), which is designed to limit the expression of a recombinant phytase to the proventriculus where it will be secreted into the upper GI tract.