



Megazyme International Ireland

Megazyme International Ireland develops test kits and reagents for quality control in the food, feed, fermentation, biofuels, wine and dairy industries. The company was founded by Dr. Barry McCleary and Ms. Angela Kennedy in Sydney, Australia in 1988 and relocated to Bray in 1996. It has 32 employees, 16 of whom were employed over the past 5 years. Heavy investment in research and development in the "good years" has positioned the company for rapid growth, even in these challenging times.

Many of the methods developed by Megazyme are world standards. Such methods include those for dietary fibre, starch, beta-glucan (the soluble fibre in oats that confers health benefits) and many enzymes that affect the use of grain and fruit products. Recently, a new Integrated Total Dietary Fibre method developed by Megazyme has gained international acceptance. McCleary coordinated the interlaboratory evaluation of this method through AOAC International in 2008-2009. The study was named "Collaborative Study of the Year" for 2010, and McCleary was awarded "Study Director of the Year". This method has recently been adopted by CODEX Alimentarius (a body established by FAO and WHO whose main aims are to protect the health of consumers and ensure fair practices in the international food trade), positioning it to become the international standard method for dietary fibre.

Megazyme also develops reagents and test technology for measurement of enzyme activities. Enzymes are biological catalysts; in our body they digest our food

and they are widely used in food processing. Enzymes are produced industrially by major corporations in Europe, USA and Asia. These companies turn to Megazyme for their analytical requirements. Megazyme products are used to measure the amylase and protease enzymes in biological washing powders, the cellulase enzymes used to make "stone washed" jeans, and enzymes that are used to increase the digestibility of poultry and pig feeds. The quality of brewers malt is dictated by the levels of the enzymes α-amylase, β-amylase and limit-dextrinase. Megazyme is the sole supplier of specific reagents to measure each of these enzymes, and these reagents are used in industry and research laboratories worldwide.

In 2003, Megazyme extended its research facility to house a molecular biology division, aimed at developing capabilities to clone genes to produce enzymes allowing the development of test kits for the wine and food industries. This venture has been very successful, allowing Megazyme to compete with multinational companies involved in this field. There are over 20 different biochemically measurable components in wine that affect quality and Megazyme has developed test kits for each; these components include organic acids, sugars and a number of nitrogen compounds and sulphite. Within five years, Megazyme became the market leader in supply of test kits in Australia, New Zealand and Chile. Much of the wine you drink was analysed and standardised with a test kit developed and supplied from Bray, Ireland. Penetration of markets in USA, France, Spain, Italy and South Africa is proceeding rapidly.

Megazyme is now heavily involved in fungal genomics research, with the aim of producing enzymes that will contribute to developments in biofuels and glycoprotein research. The challenges and opportunities are limitless. Already, several valuable enzymes have been produced through an eukaryotic expression system, and some of these are now offered for sale. Megazyme is also developing an organic chemistry capability to allow the expansion of our range of novel substrates for rapid analysis of enzyme activity.

The commitment of Megazyme to "Setting New Standards in Test Technology" has been continually recognised over the years, with Megazyme and founder, Dr McCleary receiving a number of business and scientific awards. Megazyme was named the SFA Small Business Innovator of the Year in Ireland in 2007 and 2009 and McCleary was a finalist in the Ernst & Young Entrepreneur of the Year Awards in 2009. For his contributions to analytical chemistry, in 2002, McCleary was awarded the Harvey W. Wiley Medal by the Association of Official Analytical Chemists, USA — this is the most prestigious award given by this Association. He was awarded the Clyde H. Bailey Medal in 2008 by the International Association for Cereal Science and Technology (Europe), the Edith Christensen Award in 2008 and the Applied Research Award in 2009 by the American Association of Cereal Chemists. McCleary is an ISI highly cited author. Currently he is Chair of the Board of the American Association of Cereal Chemists International.