

“Thinking time is a rare thing and my three years as a Newman Fellow was really such a luxury. I had no obligations other than finding answers to research problems.”

Dr Joseph Jacobs, founder of Jacobs International believed wholeheartedly that the fruits of his entrepreneurship should be used to advance knowledge for human good. As one of the inaugural donors to the Newman Fellowship Programme he understood the importance of supporting fundamental research. Associate Professor Greg Foley was the beneficiary of his altruism, being able to spend three years conducting an experimental and theoretical study of a novel membrane separation technique called crossflow microfiltration. This is a technique that is now used routinely in wastewater treatment, food processing and in the production of pharmaceuticals but was little understood at the time. As a result of hours spent working in a windowless lab in the basement of the engineering building analysing yeast cells using what was then a breakthrough technology, computer-aided image analysis, Associate Professor Foley furthered our understanding of what happens when a suspension of microbial cells flows over a porous surface.

Further research in the 1990s demonstrated that the behaviour of crossflow microfiltration systems would always require experimentation. So he expanded his research into the fields of ultrafiltration and diafiltration and more recently, pervaporation. These are molecular filtration processes and systems involving molecules which are easier to analyse mathematically than systems involving particles. In spite of countless hours spent manoeuvring mathematical symbols around A4 pages during his Fellowship, mathematical modelling is still his true love.

Associate Professor Foley published four papers during his time in UCD with one of his ideas proving to be one of the most influential ideas in the whole field. Unfortunately, that particular idea (known as the critical flux) appeared as a curiosity in his thesis and he didn't name it. Others did a little later. That proved to him two things: first, he was capable of coming up with good ideas and second, he needed to be bolder in his thinking. A valuable lesson for all current Newman Fellows.

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