Dr. John William (Bill) Costerton peacefully passed away early this summer on 12 May 2012, surrounded by his adoring family in his home in Kamloops, British Columbia, Canada, following a valiant fight against pancreatic cancer.

Bill has been given the loving monikers, 'Father of Biofilms' and 'The King of Slime'. While the vast majority of scientists could only see cultures in either Petri dishes or test tubes as the valid growth mode for microorganisms, Bill saw something else. He saw microbial life as a community of microorganisms attached to hydrated surfaces, whether they were on the rocks of a mountain stream, visualized in his youth as a shepherd, or on a pacemaker lead isolated from an infected patient. The 'Eureka' moment came to him during a stay in the NH Grand Krasnapolsky Hotel in the historic district of Amsterdam, where he realized not only the importance of biofilms, but also the uniqueness of the phenotypic difference displayed by microorganisms within biofilms, like antibiotic tolerance or slow growth rate. He soon published his benchmark paper 'How Bacteria Stick.' [Costerton JW, Geesey GG, Cheng KJ. (1978) Scientific American 238: 86–95] and his journey continued for another three and a half decades, as the chief proponent of a biofilm centric view of the microbial world. As with all paradigmatic shifts, he faced doubts, obstacles, and resistance from the scientific community, who had depended upon Petri dishes and shaken cultures for so many decades. However, in the end, the special properties of Bill’s biofilms were grudgingly accepted as a scientific truth.

Bill described his approach to discovering new avenues and fields of research as akin to the runners on strawberry plants. These specialized types of horizontal above-ground shoots, also known as stolons, form adventitious

Fig. 1. Images of Bill Costerton in the office (centre, © MSU News Services) or exploring the wilderness (from bottom left clockwise) at high altitude fishing hole, exploring the Canadian Rockies by canoe, hiking with his wife Vivian, or looking for biofilms on the Athabasca River.
roots at the tips to develop a new parental plant. While other plants methodically grow and spread from a central plant in incremental steps, the strawberry plant sends out these runners several feet away to discover fertile lands and allow for a rapid spread, leap-frogging over competing plants. Much like in scientific disciplines, by sending out runners and thinking beyond an incremental approach to science, one may find fertile ground for research and shifts in the present zeitgeist of the field.

Looking at the subjects of his > 700 article publication lists, whether first, last, or middle author, his leadership and foresight are seen in an exhaustive list of biofilm-associated disciplines:


One may think that a person leading the charge on changing dogma could do so like a juggernaut, rolling over those in his way, using whatever advantage to forward his goals, or taking the less gentlemanly course. Bill would have none of this. He was a leader in the field but approached his role, not only as a leader, but as a servant-leader in the truest sense, as described by Robert K. Greenleaf in his treatise ‘The Servant as Leader’. The servant-leader is servant-first, with the feeling that one wants to serve, to serve first. Then, conscious choice brings one to aspire to lead. That person is sharply different from one who is leader first, perhaps because these types of leaders need to gain power or acquire material possessions. The difference manifests itself in the care taken by the servant-first to make sure that the mission and other people’s highest priority needs are being served. The best test is: Do those served grow as persons? Do they, while being served, become healthier, wiser, freer, more autonomous, more likely themselves to become servant leaders? To those of his trainees, collaborators, and competitors alike, Bill represented the best of these qualities. He built a community of biofilm researchers who choose to serve and collaborate in a happy, friendly, and cooperative way to advance the field he pioneered.

Besides Bill’s incredible insight to see what was seen but not recognized before and doing it in a collaborative and friendly way, if you ever have the feeling that you haven’t crammed enough in, here’s confirmation.

Bill was born on 21 July, 1934, and grew up in Vernon, BC, Canada, and learned the lessons of hardship early when he lost his father at a young age. He overcame this and other struggles to graduate from Vernon High School and went on to receive degrees from the University of British Columbia (BA and MA in Bacteriology) and the University of Western Ontario (PhD, under the mentorship of Professor R.G.E. (Bob) Murray). He also found time to find and wed the love of his life, Vivian, to whom he evermore referred as his bride. Bill felt the calling of service, and he and Vivian moved to India where they established a premedical school under the missionary society of the Anglican Church. During this time, he taught and became Dean of Baring Union College in the Punjab region, becoming fluent in Hindustani. He then received the Nuffield Scholarship at the University of Cambridge in the United Kingdom where he studied under Enid Macrobbe, whose specialty was in ion fluxes.
and stomata in the field of Botany. Upon their return to Canada in 1966, the Costertons lived in Montreal, Quebec, and Bill performed research in the laboratory of Robert (Bob) MacLeod in the MacDonald College of McGill University, being promoted to Assistant Professor in 1968. Eventually, Bill and Vivian set their sights West where Bill obtained an Associate Professorship at the University of Calgary, Department of Biology in Calgary, Alberta, Canada, in 1970 and was promoted to full Professor in 1975. After a quarter century at the University of Calgary, where he received numerous teaching awards, Bill moved to the Center for Biofilm Engineering (CBE) at Montana State University in Bozeman, MT, USA, to succeed the ailing Bill Characklis as Director. The CBE was already an internationally recognized research and training center for biofilms, but it only grew stronger with Costerton’s leadership. Upon Bill Costerton’s retirement from the CBE, he reevaluated and felt the tug of his ever-present love of the work and an unbridled energy to establish the Center for Biofilms in the University of Southern California in the Faculty of Dentistry where he was Director. Four short years later, Bill then continued on his quest to spread the word of Biofilms to the far reaches of North America and moved to Pittsburgh, PA, USA, to become the Director of Biofilm Research in the Center for Genomic Sciences at the Allegheny-Singer Research Institute. This would be his final academic and research position until his passing.

Bill was prolific with the pen, a testament to the early career decision he had to make as to whether to go into science or journalism. He published over 700 manuscripts in his academic career in Science, Lancet, Scientific American, Journal of Clinical Investigation, and Journal of the American Medical Association, just to name a few. He also loved to teach and mentor the next generation of biofilm researchers. He taught at all levels from the general public, to the university and scientific communities, and government institutions. His academic lectures attracted hundreds of undergraduates to his classes, and his scientific lectures attracted thousands of colleagues. He also traveled far and wide, delivering over 1500 invited talks, describing difficult concepts easily with style and panache that only he was able to pull off, bringing biofilms to the scientific forefront and describing the various nuances of the latest research in the field. He also personally trained over 50 graduate students and postdoctoral fellows. He encouraged students and postdocs to work independently, to think of the big picture and to try to see what no-one else sees, and most importantly, to enjoy the scientific journey. Well known to the international scientific community, he tirelessly promoted good ideas and encouraged young investigators. His loyalty did not end once his mentees and colleagues left to broaden their experience in other institutions, and neither did their loyalty waiver to him.

His awards and honors are too numerous to list but a few highlights were Doctorate (Honoris causa), University of Gent, Belgium (2009); Sarton Medallion by the Belgian Society for Microbiology (2007); Doctorate (Honoris causa), University of Guelph, Ontario, Canada (2006); Elected to the Royal Society of Canada (2005); Honorary Professor, The University of Queensland, Australia (2003); added to the Highly Cited List by the Institute for Scientific Information (2001); Isaak Walton Killam Memorial Prize for Scientific Achievement (1990); Sir Frederick Haultain Prize for Outstanding Achievement in the Physical Sciences (1985); University of Calgary Master Teacher Award (1981); the Canadian Society of Microbiology Prize (1980); and a litany of lecturer prizes and keynote lectures averaging over 30 per year for over 20 years in every continent on the planet except Antarctica.

In order to give honor and respect to Bill and his infinite contributions to the field of his creation, 150 present and former colleagues, students, and others gathered in Pittsburgh prior to his passing for a Festschrift (an academic celebration of his work and influence on others), where he was honored with a black tie affair as well as scholarly sessions of how his work impacted the field and work of others. Attendees came from as far as China, Europe, Australia, and Singapore. The normally modest Bill was able to enjoy the tribute, although he was typically the instigator of such gatherings and collaborations, rather than the focus of recognition.

These many academic pursuits might be the success of a man who tirelessly worked. However, as hard as he worked, he played just as hard. He was a world traveler in the truest sense of the word, often clocking more miles in the air in a single year than it would take to fly to the moon. He loved the mountains and spent a lifetime climbing, hiking, and fishing in the Canadian Rockies of his youth but also the Alps, Himalayas, and Grand Tetons. He was an avid skier, not only on groomed runs but in the isolated locales provided by heli-skiing. He loved a good racquetball game and more than usually beat the young postdocs and faculty, who were over 30 years his junior. He was also a great fan of rugby, having played and coached varsity rugby as a faculty member; as with all of these passions, he imparted his love and excitement of this gentleman’s game to all those he could get to watch with him, as well as to the teams he coached.

And in light of all of these academic accomplishments and outdoor pursuits, he still had time for a loving family that were dear to his heart and the most cherished part of his life. His love of each of them was obvious and well
told to all colleagues when he could tug an ear. He leaves to mourn, Vivian his beautiful bride of 56 years, and three daughters, Diane Costerton and Nancy Wagner, both of Kamloops, and Sheila Norton of Victoria, British Columbia, and one son, Robert, of Kamloops. He had nine grandchildren: Byron (Jelena), Allyssa, Laura, Leighton, Meghan, David, Scott, Liam, and Nicola. He also had the joy of seeing the next generation of Costertons come into the world with the arrival of his one great-grandchild, Adrijana. He was predeceased by his son, Johny.

Alas, how can we ever really say good-bye to someone who gave us the gift of a new view of our world and shifted a major scientific paradigm, while simultaneously touching millions of lives through his ideas and research? Truth be told, we don’t have to. This is not the end – by the power of his thought and his personality, he has become one of the immortals and takes his place in the Pantheon of Science. Therefore, this is not even the beginning of the end. It is, instead, the end of the beginning. His influence will be forever felt throughout our burgeoning field and the torch he lit is being carried forward by thousands of biofilm researchers. We hope to continue our travels in Bill’s style, through collaborations with a smile, a handshake, loyalty, laughter, and a great bottle of wine. Although sadness weighs on the hearts of the many lives he has directly affected and those of an entire scientific discipline, we hope that we can soon smile that our journey with him happened.

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