The house that Professor Edwards built

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For most of us working in the area of reproductive medicine, the morning of October 4, 2010 will long be remembered with nearly as much exhilaration as that of July 25, 1978. On the former date, Professor Robert G. Edwards received word, and soon thereafter the rest of the world learned, that he had been awarded the 2010 Nobel Prize in Physiology or Medicine. Long (and unfortunately) overdue, this fitting finale of accolades accorded Professor Edwards reflects the profound impact he has had on human reproductive health, especially for those whose lives would have lacked the opportunities offered by parenting. One could argue that this announcement does much more than recognize a single individual for opening avenues in understanding infertility and bringing to bear treatment strategies that have been adopted around the world. Does it signal a change in the public understanding of science and its role in serving society? I would like to suggest that examining the work ethic and accomplishments of Professor Edwards that led to his Nobel Prize will offer insight into the role of science and medicine in society—long overdue for adoption.

Bear with my somewhat presumptuous intentions to offer our readership of reproductive medicine specialists the following essay, for reasons beyond those of editorial prerogative. You will hopefully see that through vicarious mentorship, chance meetings, or riding his bumpy bandwagon on the way to establishing the field of ARTs, Bob Edwards has influenced the course of science and medicine for the future like few before him have.

In fairness to the reader, I should identify my sources for the following essay. First and foremost was a chance meeting with Bob that took place in Kilpisjärvi, Finland, in June of 1999. Second (and most highly recommended), is his book with Patrick Steptoe, entitled “A Matter of Life: The story of a medical breakthrough,” published in 1980 (William Morrow and Company, New York; ISBN 0-688-03698-8).

Perhaps my most memorable experience with Bob was spent in 1999 in the remotest of places, Kilpisjärvi, Finland. The occasion was a small ESHRE workshop organized by Outi Hovatta and held at the northernmost tip of Finland, 400 km north of the Arctic Circle. As it so happened, the conference coincided with the summer solstice in this land of nightless nights, leaving most of us ample opportunity for conversation in the clean arctic air, while alternating visits to the sauna with a dunk in the lake, or relaxing within the confines of a darkened tavern. For those who know Bob, our appointed evening in the latter was predictable.

With unbridled enthusiasm, he treated me to a five-hour lecture on the origins and outcomes of his quest to accomplish human IVF. My own entry into the field of egg biology was fostered by the likes of Arthur Hertig, with whom I worked as an undergraduate, and who steered me in this direction for a Ph.D. While Bob was familiar with the Hertig and Rock alliance, and valued the contributions of Gregory Pincus and M.C. Chang (see below), he clearly took pride in his solo efforts to accomplish human IVF, once the fundamental principles of oocyte maturation could be established for other mammalian model systems. In his own staccato manner of speaking, the highlights and lowlights of each experience that carried his discoveries from the bench to the bedside consumed me for hours in the darkened bar—taking on an almost surreal quality, given that my own career path as an egg biologist had raised boundless

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questions for him. It was not as if the pump needed to be primed! Among the lessons that I learned that evening was how vital it was for Bob to carry his message to his contemporaries and expose even the most solid of his observations to scrutiny; maintaining, through this crusade, a keen awareness of how society would view his efforts with Dr. Steptoe, once they reached fruition.

Little had I realized that what I had been privileged to, a first-person chronicling of the roots of human IVF, was deposited in great detail in the book he published with Patrick Steptoe, in 1980. More than 10 years later, I came across the book in a used book store and for the handsome sum of 1 dollar scooped it up at once (original cover price \$9.95). What followed are several insights into the crusade that bear witness to the recognition Professor Edwards has been accorded on this special occasion. Along with this, come lessons in how to approach and effect a career in science; lessons that all of us would do well to adopt.

Recently, many have raised the question of why Professor Edwards only was recognized for the Nobel prize. Surely, Dr. Steptoe would have shared the stage, had he survived to this time. Many ask, “What about the ‘founders’ of IVF in animals? Would Pincus and Chang also have been duly honored?” Beyond the survivorship factor, there was indeed a breakthrough from these pioneers, having to do with the maturity status of the oocyte and its ability to form a blastocyst after IVF, that Bob cites. Specifically, Edwards notes that after many years of using oocyte in vitro maturation, a paper from Chang illustrated the importance of having rabbit oocytes mature for at least four hours in vivo prior to extraction and

fertilization. Had this critical period not been satisfied, oocytes, once fertilized, would not have acquired what we now refer to as the developmental competence it takes to produce a viable blastocyst skilled for the business of implantation and supporting term development. This work completely changed Bob’s strategy and made it necessary to retrieve oocytes only after they had experienced some sort of an LH surge within the follicle. The rest is history, as they say.

How about determination? Consider those 250,000 miles of commuting between Cambridge and Oldham with Jean Purdy, while balancing a home life and a laboratory where some of the leading reproductive biologists of our time would be trained—remarkable! Bob refers to this as the journey from “Science to Medicine.” And then there is the visit to Washington, D.C., where he would have his first confrontation with DNA Nobelist, Jim Watson. I recall from the Kilpisjarvi experience how disturbing this was to Bob, by the glare in his eyes, as only a Yorkshireman could emote. That Bob would use this experience to launch a second career in bioethics and policy making comes as no surprise, because to him, the stakes were high and the societal obstacles many in making IVF a reality for human medicine.

Professor Edwards has indeed built our proverbial house and we do well in celebrating the man who assembled a respectable foundation for our field, evidenced in his journey from “Science to Medicine.” We congratulate him as the 2010 Nobel laureate in Physiology or Medicine, and recognize what will be a long-lasting impact on the reproductive health of humans.