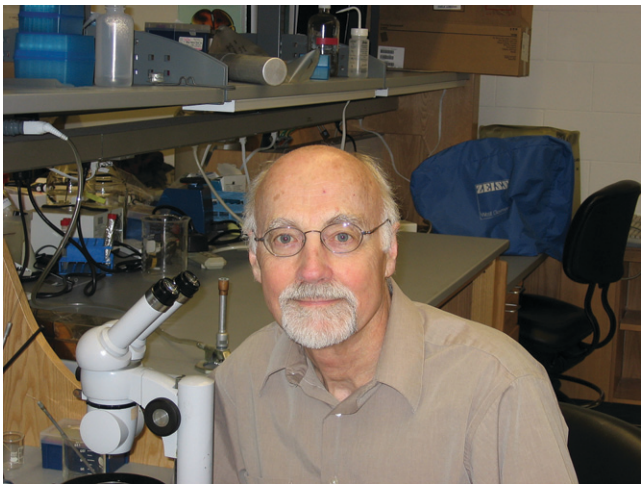

Robert K. Herman

The 2007 George W. Beadle Medal

Robert K. Herman

THE Genetics Society of America has awarded the 2007 George W. Beadle Medal to Robert K. Herman for his outstanding contributions to the genetics research community. Indeed, for those of us who grew up working with the nematode *Caenorhabditis elegans*, Bob Herman is a hero. For nearly 3 decades now, it has been almost impossible for a "worm person" to perform an experiment, read an article, or converse with a colleague without encountering a genetic tool, methodology, or idea derived from Bob Herman's research. Bob's contributions to the research community are broad and deep. Not only has he developed invaluable research tools and uncovered fundamental principles of worm genetics, but also he has directed the *C. elegans* Stock Center at the University of Minnesota since 1992, served on numerous committees of the NIH, contributed insightful reviews of manuscripts for numerous journals, and served the Genetics Society of America in various capacities, including as an editor of Genetics for more than 2 decades.

The University of Minnesota has been Bob's professional home for more than 40 years, ever since he joined the faculty as an assistant professor in 1966. After a successful early career studying chromosome dynamics and gene expression in bacteria, Bob began working with *C. elegans* in 1974, during a sabbatical with Sydney Brenner at the Medical Research Council (MRC) laboratory in England. Bob recognized that the potential success of *C. elegans* as a model genetic system would depend on the availability of basic tools for maintaining and manipulating complex genotypes. Accordingly, Bob developed and characterized sets of chromosomal rearrangements, crossover suppressors, duplications, and deletions that are the mainstays of every worm lab's genetic tool kit (Herman 1978; Herman *et al.* 1979; Meneely and Herman 1979). In the course of this work, Bob not only produced genetic tools of universal utility to *C. elegans* workers, but also uncovered fundamentals of mutagenesis (Hartman and Herman 1982), chromosome behavior (Herman *et al.* 1982), and sex determination (Madl and Herman 1979) in *C. elegans*.

In 1984 Bob published his method for mosaic analysis in *C. elegans* (Herman 1984). It is perhaps impossible to overstate the importance of this particular contribution to the *C. elegans* research community. Mosaic analysis had long been available to Drosophila geneticists, as an indispensable means for determining precisely where and when specific fly genes function to control developmental processes. Bob realized that mosaic analysis was vital if the *C. elegans* research community were to truly harness the potential of the worm model system. The simple anatomy of the animal, its invariant development, and the ease by which interesting worm mutants were being identified cried out for a way to examine gene function on the cellular level in the intact worm. Bob's method for generating genetically mosaic worms employed mitotically unstable chromosome fragments ("free duplications") that his lab had characterized previously (Herman *et al.* 1979). As Bob proposed (Herman 1989), this duplication loss method was easily adapted to artificial chromosome fragments containing transgenic DNA, enabling mosaic analysis to be applied, in principle, to any gene in the worm genome. It is fair to say that mosaic analysis has contributed to the deeper understanding of essentially every phenomenon under study by worm geneticists. To this day, Bob Herman's approach remains the best and most rigorous mosaic analysis method for *C. elegans* and has been used by countless investigators.

Not only did Bob devise the method, but also he and his co-workers applied genetic mosaic analysis to advance a series of discoveries in diverse areas. These included showing the locus of action of genes controlling nervous system development and function (Herman 1987; Collet *et al.* 1998; Lundquist *et al.* 1998) and characterizing Wnt-related cell polarity signals (Herman *et al.* 1995, 1999). In a pioneering analysis, Herman and Hedgecock (1990) were the first to propose that the

sensitivity of vulval cells to inductive signals is regulated by the surrounding hypodermis. Although these achievements would suffice to assure Bob of the respect and gratitude of the community, he has further continued to pioneer innovative *C. elegans* genetics through his investigation of genetic redundancy (Davies *et al.* 1999; Yochem *et al.* 2004).

For more than 30 years, Bob Herman's research has energized, inspired, and helped propel the success of an entire community of scientists. It is a pleasure to celebrate Bob's scientific accomplishments, to thank him for his spectacular contributions to the scientific community, and to congratulate him on his being awarded the 2007 George W. Beadle Medal from the Genetics Society of America.

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