The 2001 GSA Honors and Awards

The Genetics Society of America annually honors members who have made outstanding contributions to genetics. The Thomas Hunt Morgan Medal recognizes a lifetime contribution to the science of genetics. The Genetics Society of America Medal recognizes particularly outstanding contributions to the science of genetics within the past 15 years. The George W. Beadle Medal recognizes distinguished service to the field of genetics and the community of geneticists. We are pleased to announce the 2001 awards.

The 2001 Thomas Hunt Morgan Medal

Yasuji Oshima

Many great geneticists have contributed to making yeast genetics the remarkable experimental system that it has become. Dr. Yasuji Oshima’s contributions stand out, however, because he has provided the genetic groundwork for two major pathways of cell physiology and gene regulation (phosphate regulation and mating-type switching) and has made fundamental contributions to another (galactose regulation).

Yasuji Oshima was born in Japan in 1932. He graduated from the Department of Fermentation Technology in the Faculty of Engineering of Osaka University in 1955 and went on to receive his doctoral degree there in 1960. He then moved to Carbondale, Illinois, for postdoctoral research with the pioneering yeast geneticist Carl Lindegren from 1963 until 1965. He returned to Japan and worked in the research laboratories of Suntory Ltd. until 1970, when he assumed a faculty position in the Department of Fermentation Technology at Osaka University. In 1990 he became Director of the International Center of Cooperative Research and Development in Biotechnology at Osaka, and in 1996 he moved to his present position as Professor at Kansai University. Throughout his career, Professor Oshima has been active in the Society of Fermentation and Bioengineering (formerly the Society of Fermentation Technology), serving as Director and Member of the Council since 1973. He has also been awarded several prestigious prizes.

What is particularly notable in all of the work from Professor Oshima’s laboratory is the unerring logic and critical analysis that led to the discovery of essentially all of the genes of the phosphatase pathway and their organization by incisive epistasis analysis. These studies provided the pathway that has subsequently been mined...
by others to understand in exquisite detail how the genes discovered by Oshima regulate nuclear import and export of a transcription factor. Oshima’s incisive studies of the galactose regulatory genes exploited fine-structure mapping to place a dominant constitutive mutation among the null mutations that inactivate the \textit{GAL4} gene and result in an uninducible phenotype. This observation, together with the judicious use of temperature-sensitive mutants and temperature-shift experiments, overturned a dogma that had grown up around this pathway and set the stage for the galactose genes (and their positive regulatory protein, Gal4, in particular), to become one of the most fertile grounds for studies of gene regulation in yeast. Finally, the contributions of the Oshima laboratory to mating-type switching were pioneering and remarkable. His earliest studies began in 1967 to understand the unusual life cycle of \textit{Saccharomyces oviformis}, in which only one of the two mating types can switch. In a series of rigorous papers published with his students I. Takano and S. Harashima in \textit{Genetics}, Oshima proposed that mating-type switching results in a genetic change at the mating-type locus and that the \textit{HM\alpha} and \textit{HM\alpha} genes were transposable elements that associated with the mating-type locus to confer a or \alpha mating type. In a remarkable 1974 paper, Harashima, Nogi, and Oshima demonstrated that the simplest explanation for mating-type switching is that actual a or \alpha information resides in the donor \textit{HM} loci, that the information in the donor loci can be either a or \alpha, depending on the strain, and that the genetic information for mating type is actually transferred from the donor into the mating type locus itself to effect the change in mating type. These studies of unstable genes represent a pinnacle of genetics and led to subsequent genetic and molecular studies in other laboratories that revealed this system to involve transposable structural genes governed by a double-strand break repair process.

We feel particularly connected to Dr. Oshima since our own research has built so heavily on his pioneering studies in phosphate regulation and in mating-type interconversion. We and many others in yeast genetics have truly stood on the shoulders of a giant.

\textbf{Ira Herskowitz}  
\textbf{Erin O’Shea}