

Origin of Rutgers *Haskin CROSBreed* and *Haskin NEH*
Disease-Resistant Oyster Lines
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In 1988, Dr. Standish Allen and Gregory A. DeBrosse became custodians of six MSX-disease resistant strains (AOFA, ARDN, ASOLD, AVA, BLA, CXF) of the eastern oyster, *Crassostrea virginica*. These strains had been developed in Delaware Bay during the previous 25 years by Dr. Hal Haskin and Dr. Susan Ford and their colleagues at Rutgers University. In areas where MSX was present, survival rates of these oysters had been documented to be up to 10 times greater than that of unselected oysters.

While these oysters were resistant to the disease MSX (caused by the protozoan parasite *Haplosporidium nelsoni*), the only disease present in Delaware Bay at the time, they were not resistant to Dermo (caused by the protozoan parasite *Perkinsus marinus*), a second disease causing high mortality in oyster populations in Chesapeake Bay and the southern United States. The MSX-resistant lines were therefore of limited utility for use in aquaculture in areas where both diseases were present (which now includes almost the entire East Coast from ME to FL). In 1990, the disease “Dermo” began to appear in Delaware Bay, where it is now endemic. This event provided Rutgers the opportunity to subject their MSX-resistant lines to a constant Dermo-disease pressure, and therefore beginning a dual resistance selection program.

Beginning in 1992, we initiated a dual resistance breeding program using the Rutgers MSX-resistant lines as the founder population (parent stock) to produce two new geographic synthetic lines. The first of the geographic races was produced by crossing three MSX-resistant strains originating in the mid-Atlantic (BOF, DF, XOL) and a wild stock from Delaware Bay, and was labeled the “DBHSRL” (Delaware Bay High Survival Resistant Line). This stock was used in an ongoing, multi-University selective breeding program (CROSBreed Project) funded by the Sea Grant ODRP program from 1995 through 2006. In 1998, in recognition for the ongoing support received by this program, the name of the DBHSRL line was changed to the “CROSBreed” line. In 2000, the U.S. Patent and Trademark Office issued Rutgers University a trademark for the name “*Haskin CROSBreed*” for this line.

The second geographic synthetic line created in 1992 was produced using two succeeding generations (BLA, CLA) of the Long Island derived Rutgers MSX-resistant lines, as well as the Frank Flowers Co. (NY) and Ocean Pond, Inc. (NY) varieties of Rutgers “BLA” line. This race, produced from northeastern-derived parent stocks was named the NorthEastern High Survival Resistant Line (NEHSRL). The name of this line was formally shortened on February 1, 2008 when the trademark application for the name “*Haskin NEH*” was submitted to the U.S. Patent and Trademark Office.