891 Method to establish average relationships among Holstein bull populations over time. B. Auvray*[1], G.R. Wiggans[2], F. Miglior[3], and N. Gengler[1,4], [1]*Gembloux Agricultural University, Belgium,* [2]*Agricultural Research Service, USDA, Beltsville, MD,* [3]*Canadian Dairy Network, Guelph, Canada,* [4]*National Fund for Scientific Research, Brussels, Belgium*.

Average relationship coefficients between groups of animals were calculated by repeating three calculation steps until convergence was reached. The first step was a stratified sampling of pedigrees. Second, relationships between animals in the sample were calculated, using the group relationships computed in a previous round for unknown parent relationships. Third, results were accumulated by group. Average relationship coefficients calculated in this way can be used for such purposes as to better understand the structure of a population, to more accurately calculate inbreeding coefficients, and to assign unknown parent groups using clustering methods. This method was applied to the pedigree data for the worldwide Holstein sire population. The data was derived from Interbull and North American pedigree databases. Groups were defined by year of birth, sex, and country. Average relationships between US and Canadian bulls increased across time from 0.02 in 1960 to 0.12 in 1999. The increase was continuous except for a plateau in 1992, followed by a slight decrease until 1995 when the trend to increase resumed. Average relationships across time comparing Canadian with European bulls and US with European bulls are quite similar. They increased from about 0 in 1963 to 0.10 in 1999. After a peak of 0.05 in 1966, the relationships dropped to 0.03 in 1976 before starting to increase again. For bulls born in 1996 in the US, Canada, and Germany (representing a typical European country), the average relationships were: 0.116 (Canada-Canada), 0.112 (Canada-USA), 0.1 (Canada-Germany), 0.101 (USA-USA), 0.101 (USA-Germany) and 0.084 (Germany-Germany). These results demonstrate the recent dramatic increase in relationships and inbreeding in the worldwide Holstein population, and show the power of this method of calculating relationship coefficients.

Key Words: Relationship, Holstein, Bull population