

# Linear models in biology. Joint studies in quantitative genetics

Mirella Sari-Gorla

*University of Milano, Italy*

## Abstract

This presentation has the purpose of recalling the more than 30 years of fruitful cooperation with Tadeusz Caliński, first, and then also with the group of the Polish Academy of Sciences, Zygmunt Kaczmarek and Pawel Krajewski, which supported our work with their statistical expertise, giving value to the data we produced and rigorous shape to the biological model we studied.

I'll give a general view of the researches we performed, applying proper statistical methods, for the study of fitness components in higher plants. A first field of cooperation was statistical approaches for the genetic analysis of complex traits, such as plant fertility. A second research area is linkage analysis with molecular markers, for the detection of quantitative trait loci, which, since the 90's appeared to be a powerful tool for dissecting quantitative traits into Mendelian factors. Novel methods has been developed and applied to detect the genetic architecture underlying plant adaptability to environmental stresses.

## Keywords

Maize, Pollen, Quantitative genetics, Fitness components, Interval mapping, Multivariate approach.

## References

- Caliński, T., E. Ottaviano, and M. Sari-Gorla (1990). A statistical approach to the study of pollen fitness. In: R. Cooke and D. Costantini (Eds), *Statistics in Science*. Dordrecht: Kluwer Acad. Publ.
- Sari-Gorla, M., T. Caliński, Z. Kaczmarek, and P. Krajewski (1997). Detection of QTL x environment interaction in maize by a least squares interval mapping method. *Heredity* 78, 146–157.
- Caliński, T., Z. Kaczmarek, P. Krajewski, C. Frova, and M. Sari-Gorla (2000). A multivariate approach to the problem of QTL localization. *Heredity* 84, 303–310.