This paper reported on studies to determine the precise levels of origin on the neural crest of the autonomic ganglia, in particular, those composing the enteric nervous system. Regions of the neural primordium in a chick embryo were replaced by their quail counterparts (and vice versa). The cells from host and donor could be easily distinguished by the differences in the structure of their nuclei, thus making it possible to deduce the ontogenetic history of any of the cells forming the autonomic ganglia. (The SCI® indicates that this paper has been cited in over 200 publications.)

Anyone trying to understand how embryos develop would want to visualize embryo component cells while they migrate and interact until differentiation and morphogenesis are completed. This was impossible in 1968, when I noticed that cells in the vertebrate embryo of the Japanese quail had extremely prominent nucleoli due to their association with large masses of heterochromatin. This feature, which distinguishes quail nuclei from those of most animal species, in which the heterochromatin is dispersed, can be readily perceived by staining with any dye having an affinity for DNA.

Before this observation my research interest was centered on the role of mesoderm/endor-derm interactions in the development of liver in the chick embryo. However, it so happened that a French geneticist, E. Bösliger, working at that time on hybrid vigor in quails, became so overrun by quail eggs that he offered them to embryology laboratories as a replacement for the classical chick material. I thought it would be worth checking whether mesoderm/endor-derm interactions could occur when quail hepatic mesenchyme was associated with chick endoderm in organotypic culture.

When endodermal cells become hepatocytes, they undergo a dramatic change in their DNA. I chose the neural crest, an interstitial structure whose cells migrate all over the embryo and differentiate into a large variety of cell types.

The description of the marker and its application to neural crest ontogeny were published in French in 1969. About then, I was joined by several young students, including M.-A. Teillet. At first our results were reported in various French journals. It was only after 1973 that our results were published in English. In my view the 1973 paper has been quoted often because it was the first in which the quail marker and its potential use were exposed to the international community in English, and it settled a long-standing controversy about the embryonic origin of the enteric ganglia. (The French paper was not cited frequently until after 1973, as well.) We had no difficulty publishing this paper: it was reviewed by C.L. Yntema, who immediately recognized the promise of this new tool.

Work on neural crest ontogeny using quail/chick chimeras has since been actively pursued by my group and in other laboratories as well. Revived interest in this subject invited me to write a monograph on the neural crest. 30 years after S. Hörd lifestyles® book on the same subject. The quail/chick chimera system has also contributed to the resolution of many other questions in developmental biology.

Thanks to the quail/chick marker and its applications, I became laureate of the Royal Academy of Belgium in 1973 and was awarded the Lacassagne prize of the Collège de France in 1973, the Kyoto Prize in 1986, and the Gold Medal of the Centre National de la Recherche Scientifique in 1986.