

This Week's Citation Classic

Glick B, Chang T S & Jaap R G. The bursa of Fabricius and antibody production. *Poultry Sci.* 35:224-5, 1955. [Ohio Agricultural Experiment Station, Columbus, OH]

Removal of the bursa of Fabricius during its rapid growth period abrogated the ability of 89% of the birds to produce antibody to *Salmonella typhimurium*. Therefore, this paper suggests that the bursa, a lymphoepithelial structure, plays a role in the regulation of humoral immunity. [The *SCI*[®] indicates that this paper has been cited over 305 times since 1961.]

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"The selection of our bursa paper as a Citation Classic is an honor not only to the authors of this paper but also to the Land Grant System that made the research possible.

"I entered the doctorate program at Ohio State University because Dr. R. George Jaap, Poultry Science Geneticist, was willing to take a chance on a naive student. One cold evening in September, 1952, I observed Dr. Jaap remove from a goose an obscure gland which he identified as the bursa. My query, 'What is its function?' was answered, 'Good question, you find the answer.' In December, 1952, I initiated experiments which (among other things) demonstrated that the chicken's bursa grew most rapidly during the first three weeks after hatching. This observation convinced me that functional studies with the bursa would only be successful if the bursa were removed (bursectomy, BSX) within its rapid growth period. While the initial BSX experiments were interesting, they did not yield a dramatic role for the bursa. In the summer of 1954, T.S Chang, a fellow graduate student, needed birds for the purpose of

developing antibody against *Salmonella*. The only birds available were mine. He injected several and to his surprise they failed to produce antibody. The wing band numbers revealed that I had bursectomized these birds. Obviously we were quite excited even though we did not recognize the true significance of our observation. We cooperated on several experiments which led to the paper in question. The paper was rejected by *Science* with the suggestion that '...further elucidation of the mechanism should be attempted before publication.' Now, over twenty years later, we are just beginning to understand the mechanism."

"After leaving Ohio State University in 1955, I joined the Poultry Science Department at Mississippi State University and continued my studies of the bursa. The bursa has led my research into the specialties of endocrinology, neurophysiology, genetics, anatomy, and immunology. We have made many significant observations which were not a part of the original research. For example, in an experiment designed to define the immunological system I observed that male dysgammaglobulinemic chickens failed to mate if previously treated as embryos with testosterone propionate. The flexibility of the administration and administrators and the freedom from 'time and schedule' formats allowed us to further investigate this phenomenon which led to the concept of a critical period in the development of the chicken's hypothalamus.¹⁻³ The increased pressure on the researcher to abide by forms, schedules and other regulations could very well reduce the opportunity for chance discoveries such as the 'bursa' and 'critical period.' I look to the universities to supply the leadership which will encourage new and established researchers to follow their chance observations which lead to the progress of tomorrow."

1. Glick B. The reproductive performance of birds hatched from eggs dipped in male hormone solutions. *Poultry Sci.* 40:1408, 1961.
2. Wilson J & Glick B. Ontogeny of mating behavior in the chicken. *Amer. J. Physiol.* 218:951-5, 1970.
3. Crawford W C & Glick B. The function of the preoptic. mammilaris laieralis and ruber nuclei in normal and sexually inactive male chickens. *Physiol. Behav.* 15:171-5, 1975.