

## Studies on the variation in caudal spination of *Epidinium*

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### Abstract

A clone culture of *Epidinium caudatum* was observed to contain cells with different numbers of caudal spines, suggesting that caudal spination may not be a valid criteria for classification into separate species. Thus, five clone cultures, with either 1, 3 or 5 caudal spines, were established from a culture which was originally started with a single cell of *E. caudatum*. After sufficient growth, each culture was divided into two separate cultures and then transferred and sampled for counting after incubation periods of 3, 4, and 3 days, respectively. The two clone cultures started with either one or three spines gave rise to populations with cells having from 0–5 spines, with the highest percentages having 3 or 5 spines. In contrast, caudal spination remained the same in the three clone cultures of 5-spined cells. In some cells, bifurcate spine forms were observed. All cultures were grown under similar conditions in the absence of predatory species, suggesting that although probably not as metabolically efficient as propagation of forms with a lower number of spines (0–2), the 5-spined form is apparently quite stable.

**Key words:** Ciliates, caudal spines, *Epidinium*, in vitro culture, protozoa, rumen

### Introduction

Variation in caudal spines of the entodiniomorphs was first documented by Poljansky and Strelkow (1934) when they observed the forms *bovis* and *monolobum* in a clone culture of *Eudiplodinium bilobum*. They also observed variation in the caudal spination of *Diplodinium dentatum*. In later studies by these same authors (Poljansky & Strelkow 1938), they describe six different forms of caudal spination observed in clone cultures of *Entodinium caudatum*. Their observations were subsequently verified by Hungate (1942, 1943) and Lubinsky (1957). Clarke (1963) reported that *Epidinium* species with 1–5 spines were initially present in mixed cultures of rumen protozoa. However, after growth for seven months in vitro all caudal spines had disappeared. Coleman et al. (1972) reported a similar loss of spines in *Epidinium* cells after culturing 4–5 months in vitro. Variations in