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REVIEW ARTICLE: *CLOGMIA ALBIPUNCTATA*: A SYSTEMATIC REVIEW OF FREQUENCY STUDIES

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Abstract:

Clogmia albipunctata (Diptera: Psychodidae), It is one of the widespread and universal species that abounds in tropical and temperate climates around the world. It is conspicuous and abundant and is widely found in human environments like kitchens, sewage water and bathrooms, and it multiplies in water-filled tree pits.

Keywords: Clogmia albipunctata, Psychodidae, Reverse-engineering and Moth midge.

INTRODUCTION

Clogmia albipunctata is a small-sized fly belonging to Psychodidae, it typically lives in sewers and bathrooms and its larvae multiply in the water of expenses, These flies are a worldwide species, and they are also known as drain, they live in places with defective sewage systems (Hribar *et al*.,2004 ; Boumans *et al*.,2009), which are not satisfactory, but when they are present in large numbers, they can cause health problems, especially in hospitals, but they can carry diseased types of other organisms, For Psychodidae long hair that covers the veins, wings, legs and body, in addition to the attractive colors and distinctive signs of the wings. The hairs do not have a distinct role in classifying of Pscychodidae during the life cycle. In addition, insects cannot be collected and prepared without harming these hairs. When insects are preserved in ethanol for the purpose of studying some other structures such as structures or sexual appendages, this weakens the presence of these hairs. It's a huge gray or brown moth insect with a gray or brown coloration (Sebastiani,1978). Clear white dots may be found on the wings, and the longitudinal veins' ends are organized in the shape of a V, with the V pointing upwards.

Clogmia albipunctata is one of the most famous species of Psychodidae that larvae develop in shallow and polluted places, moist organic and muddy materials, It uses its lower jaws (mandibles) to cut organic matter (Vaillant, 1971) The time of development of eggs to adulthood is 17 days, and according to temperature, adults live 10 days The larval stage takes place in a laboratory at 22 °C. It ranges 5-6 days (Sebastiani,1972). Males and females may mate and breed in about 9 hours after becoming sexually mature. Females deposit 200-300 eggs that hatch in a matter of days, resulting in the generation of thousands of individuals from one pair mating within a few months. *Clogmia albipunctata* found in temperate and tropical regions in natural environments in shallow ponds and in rotting trees (Englund *et al*.,2007). Its presence may cause disturbance in some places, especially hospitals, the larvae can multiply in the orifices of the bodies of patients who live in poor sanitary environments (Verheggen *et al*., 2008). They can be used as excellent models for laboratory studies of a toxicological and evolutionary nature as well as genetic studies (Garc'a-Solache et al., 2010; Rohr et al., 1999)

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Fig. 1: *Clogmia albipunctata* (moth midge).

BIOLOGY

Clogmia albipunctata is a member of the Psychodidae family. The larvae shred organic matter in shallow, polluted water containers, as well as moist organic detritus and slime, with their mandibles. Adults survive for around ten days, depending on temperature, while eggs take roughly seventeen days to grow into adults (Vaillant,1971). In the laboratory, the larval stage lasts sixteen to seventeen days at 22° C. The larval stage lasts 16–17 days, while the pupal stage is 5–6 days long (Sehgal et al. 1977). Sebastiani is a character in the film Sebastiani (1978) defines courting and sexual behavior as follows: In around nine hours, newly emerged adults reach sexual maturity. Both sexes are capable of mating and reproducing with several people. According to Sehgal et al. 1977, Simes et al. 1977, and Sebastiani 1978, a female produces 200 to 300 eggs, which hatch in a few days. A single couple can give birth to thousands of progenies in just a few months.

LIFE CYCLE

At 25°C, According to earlier study, the life cycle of C. albipunctata spans around three weeks from oviposition to adult emergence (Vaillant,1971). C. albipunctata colonies were cultivated at a temperature of 25°C with a 16/8-hour day/night cycle and a relative humidity of 75%. It observed embryogenesis complete in around 3 days under these settings. There are four larval stages that take an average of 4.5, 3.5, 3.75, and 6.25 days to complete. Pupae take about 5 days to develop, while adults live for an average of 12 days. Adults mate soon after emerging from the pupa, and eggs can be laid three days later. Overall, the life cycle from adult to adult (Figure 2) takes roughly 275 days (n = 8) to complete.

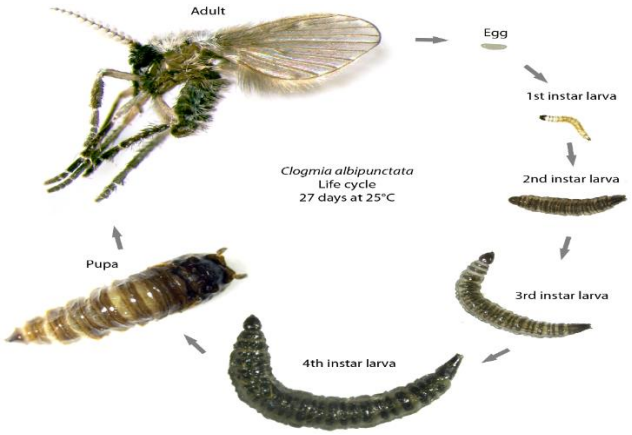

Fig. 2: Life cycle of C. *albipunctata [Jiménez-Guri, Eva, et al. 2014].*

CLOGMIA ALBIPUNCTATA'S CONTRIBUTION

A *lbipunctata Clogmia* (family: Psychodidae). Gap and pair-rule gene expression in the vinegar fly Drosophila melanogaster exhibits a number of noteworthy qualitative alterations when compared to the traditional model for dipteran segmentation, the Drosophila melanogaster. When compared to D. melanogaster, *C. albipunctata* has altered posterior gap domain expression and delayed pair-rule stripes. We used immunofluorescence in combination to construct a quantitative atlas of protein expression patterns for the gap gene hunchback (hb) and the pair-rule gene evenskipped using confocal scanning microscopy and a data processing pipeline adopted from D. melanogaster to investigate these differences in greater depth (eve) [Janssens, Hilde, *et al*. 2014].

Traditional genetic and molecular approaches have limitations in tracking many regulatory interactions at the same time. As a result, systems biology techniques based on mathematical modeling and analysis must be used in conjunction with them. Such evolutionary systems biology techniques are beginning to give novel and intriguing insights into developmental processes' function, dynamics, and origins simulating the formation and development of mammalian tooth cusps, for example, was done using a gene regulatory network model. On the one hand, this technique has uncovered some fascinating new information on biological systems' evolvability and resilience [Cronbach, Anton, *et al,.*2014].

Because transcription factors frequently control a large number of downstream genes, any change in their expression patterns or binding specificity can have

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a significant impact. If additional transcription factors' genes are among their targets, this can be enhanced even further. Furthermore, because many genes are controlled by many transcription factors, their regulatory regions are complex, containing multiple protein binding sites. Regulatory regions can be divided into modules (or enhancers) that work on their own and can be found far from the transcription start site. The enhancers that control the expression of Ultrabithorax (Ubx, a Drosophila Hox gene) are spread out throughout 70 kb, for example [Simpson and Pat. 2002].

CLOGMIA ALBIPUNCTATA'S DISADVANTAGE

Psychodidae has a convoluted taxonomic history, with several names for the same kind of animal When Williston first described *Clogmia albipunctata* in 1893, he called it Psychoda albipunctata. Enderlein classified this species as the type species of the genus *Clogmia* in 1937, although experts considered *Clogmia* was a synonym of Telmatoscopus Eaton 1904. The majority of *Clogmia* species, including this one, are found in the genus *Clogmia*, were grouped together in the newly designated genus Telmatoscopus Vaillant 1972 by Vaillant. Tinearia alternata, Psychoda cinerea Banks, 1894, P. albipennis Zetterstedt, 1850, and P. parthenogenetica Tonnoir, 1940 are some of the other moth flies that have been linked to anthropogenic settings. Some publications accept the latter two species as synonyms, whereas others don't. Psychoda albipennis is a sexual species with fifteen antennal segments, while P. parthenogenetica is a triploid parthenogenetic lineage with fourteen segments [Boumans., *et al*. 2009].

When these insects' hairs are ingested, individuals find it difficult to breathe or function normally, which can lead to respiratory disorders in humans such as allergic rhinitis and asthma. Adult moth flies can also serve as mechanical vectors for a variety of bacteria linked to nosocomial illnesses. Myiasis (urinary, intestinal, and nasal myiasis). The larvae of the moth fly can cause it. [Önder, Zuhal, *et al*. 2018]. Psychoda flies are non-biting and do not transmit any known illnesses; nonetheless, big infestations of drain flies can cause respiratory issues owing to thin hair-like scales that fall off their bodies and wings. Drain flies may be found around a variety of badly maintained drains, both indoors and out, such as in public restrooms and camping grounds. Because drain flies have low flying abilities, finding their immature developing sites is typically simple because it is the nearest drain. The flies, on the other hand, may thrive everywhere there is standing water and organic matter [Griffith *et al*. 2018]

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