

# A BRIDGE BETWEEN THE OVULE AND OVARY WALL IN *MANGIFERA INDICA* L. (ANACARDIACEAE)

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## SUMMARY

A bridge was found to connect the dorsal side of the ovule with the ovary wall of *Mangifera indica* L. (the mango). This bridge, termed a *ponticulus*, is formed after pollination by the fusion of both an ovary protuberance and a protuberance of the ovule.

## 1. INTRODUCTION

In some species of the Anacardiaceae a protrusion develops on the ventral side of the funicle, facing the integuments. This protrusion is usually termed an *obturator* (COPELAND & DOYEL 1940; COPELAND 1955; KELKAR 1958; GRUNDWAG 1976). According to SCHNARF (1929) the obturator functions as a transmitting tissue for the pollen tubes, but until now there has been no evidence to support this view (GRUNDWAG 1976). The present study on the mango ovary reveals the presence of a bridge which connects the dorsal side of the funicle with the ovary wall.

## 2. MATERIALS AND METHODS

The material was collected from mango trees (*Mangifera indica* L.) vars. Haden and Tommy, which grow in the Volcany Centre, Bet Dagan. Flowers of various ages and young fruits were fixed in FAA, embedded in paraffin wax and sectioned on a Reichert rotary microtome (8–12  $\mu$ m). The sections were stained in Alcian green 2GX and Safranin 0, dehydrated with ethanol, and mounted with Permount. Pollen tubes were located in squash preparation by staining in Aniline blue, and observed in a UV microscope.

## 3. RESULTS

A detailed study of the anatomy of the ovary of *Mangifera indica* L. reveals the existence of a special structure, the *ponticulus* (latin: a little bridge), which is formed after pollination from both an ovary protuberance and a protuberance of the ovule (*fig. 1*). In contrast to the obturator which is found in many other Anacards on the ventral side of the funicle, adjacent to the micropyle, the ovular protuberance of the mango is located on the dorsal side of the ovule and faces the base of the style. The pollen tube passes through the style and through

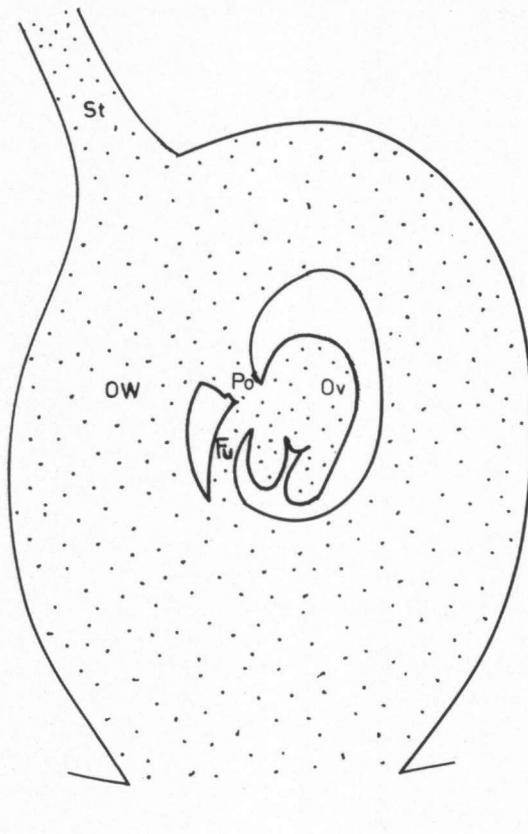


Fig. 1. Schematic drawing of l.s. of mango ovary after anthesis. The ponticulus (Po) is seen to connect the ovary wall (OW) with the ovule (Ov). Fu - Funicle; St - style.  $\times 200$ .

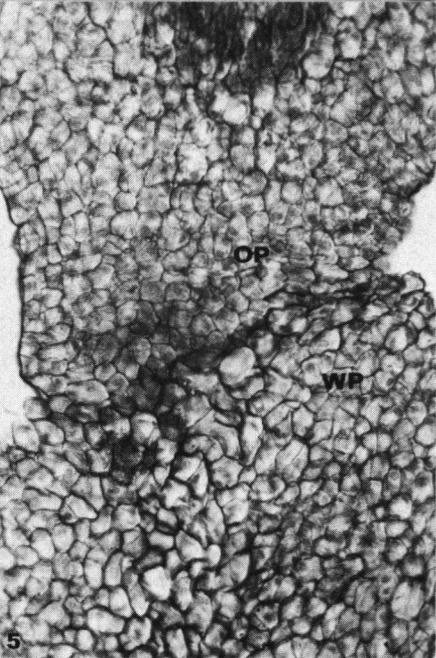
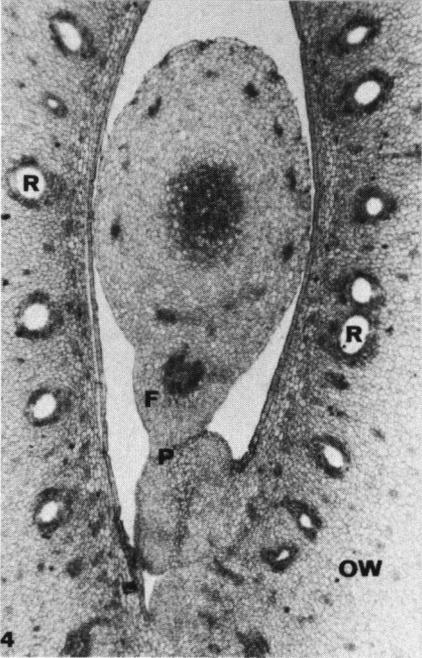
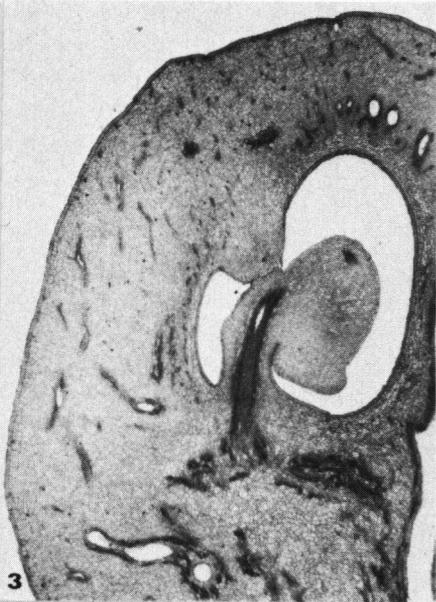
the contact region between the ovary wall and the ovule, directly into the nucellus and the embryo sac (*fig. 2*). At an early stage of anthesis the epidermal cells at the sites of the future protuberances (of both the ovule and the ovary wall) are large and possess a dense cytoplasm. These cells become meristematic after pollination has taken place, and form two large protuberances. These protuberances fuse, forming one continuous organ which connects the ovary wall with the dorsal side of the ovule (*figs. 3, 4, 5*).

Fig. 2. The pollen tube passing from the dorsal side of the ovule into the embryo sac. Aniline blue.  $\times 400$ .

Fig. 3. L.s. of ovary, showing the ponticulus. A resin duct passes along the funicle.  $\times 200$ .

Fig. 4. C.s. of ovary, showing the ponticulus (P) connecting the funicle (F) with the ovary wall (OW). R - resin duct.  $\times 500$ .

Fig. 5. The ponticulus. A magnified portion of *fig. 4*. The protuberance of the ovule (OP) and the protuberance of the ovary wall (WP) are already fused.  $\times 2500$ .



It is possible that the presence of the pollen tube induces the growth of the protuberances and the formation of the ponticulus. However, further studies should be made in order to understand the relationship between the pollen tube and the development of the ponticulus.

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