Results

TEM of the cornea

A Descemet's membrane sample of approximately 2.5 to 3 μm thick was observed between the endothelium and stroma (Fig. 1). The endothelial surface of the membrane showed an irregular profile, which corresponded to the undulation of the facing basal surface of the endothelium. The protruded part of the endothelium showed high electron-density. Pinocytotic vesicles were also visible beneath the basal cell membrane (Fig. 1, large arrow and inset). At the endothelial side, the membrane was composed of amorphous materials, whereas a high electron-density zone was noted at the stromal side. Aggregations of microfibrils were visible on the stromal side of the membrane (Fig. 1, small arrow), which appeared to be interwoven into the stroma and unite Descemet's membrane to the stroma, resulting in an unclear border between them.

SEM of the mechanically-fractured cornea

Surfaces of the endothelium, Descemet's membrane and stroma were directly observed on a mechanically-fractured cornea by SEM (Fig. 2). Using the mechanical separation method, lots of small wrinkles of approximately 100 to 150 nm in diameter and small openings of approximately 200 nm in diameter were seen on the basal surface of the endothelium (Fig. 3a). Uneven structures and small projections were seen on the endothelial surface of the membrane (Fig. 3b), which may correspond to the small wrinkles and openings.

SEM of Descemet's membrane

Descemet's membrane was successfully separated from the stroma by the exfoliating method using surface tension (Fig. 4). The endothelial surface of the membrane with platinum coating in a surface tension specimen was composed of relatively uniform, granular substances of approximately 10 to 58 nm in diam

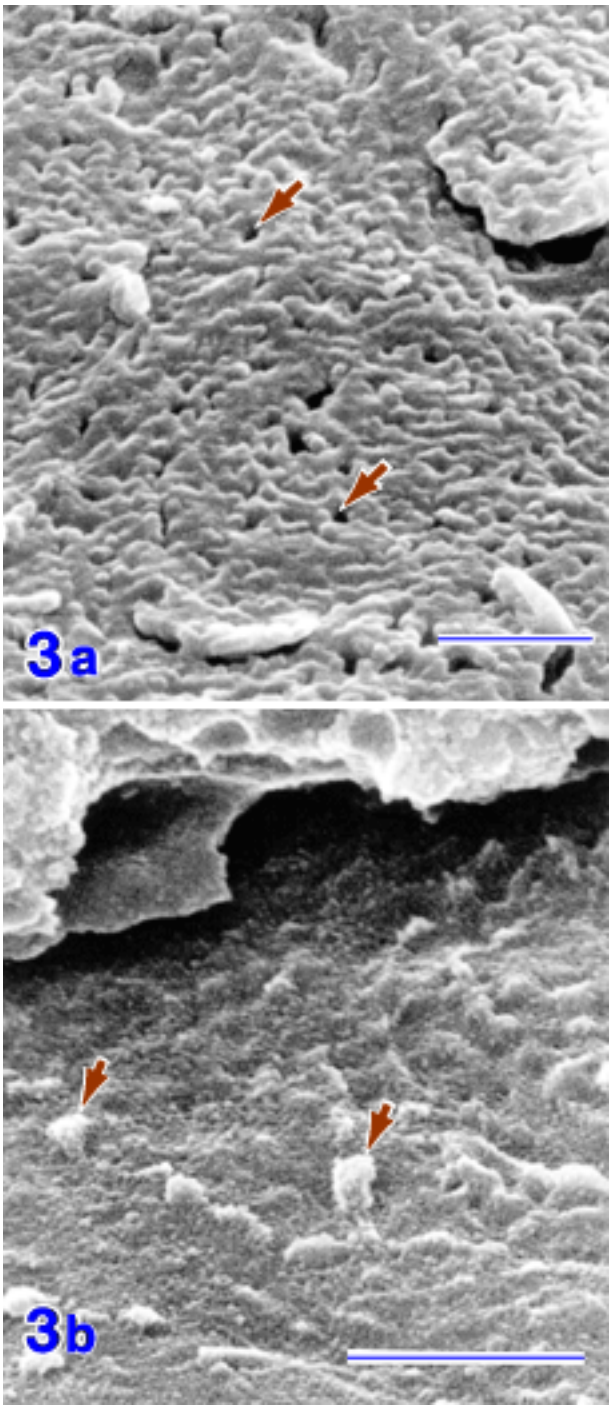

Fig. 3. SEM images of the basal surface of the endothelium (**a**) and the endothelial surface of Descemet's membrane (**b**) from the specimens prepared by the mechanical separation method.

a: The basal surface of the endothelium showing lots of small wrinkles and small openings (arrows). Bar = 2 μm.

b: The endothelial surface of Descemet's membrane showing uneven structures and small projectings (arrows), which may correspond to the small wrinkles and openings on the basal surface of the endothelium. Bar = 1 μm.