Orhan EO, Maden M, Senguüven B. Odontoblast-like cell numbers and reparative dentine thickness after direct pulp capping with platelet-rich plasma and enamel matrix derivative: a histomorphometric evaluation. International Endodontic Journal, 45, 317-325, 2012. ABSTRACT: Aim To collect quantitative information about the numbers of odontoblast-like cells and reparative dentine thickness after direct pulp capping with platelet-rich plasma (PRP) and enamel matrix derivative (EMD). Methodology The experiment was conducted on 36 Wistar albino rats and a total of 144 incisor teeth. Calcium hydroxide, mineral trioxide aggregate, PRP and EMD were applied as direct capping agents on the pulps of 96 incisors (n = 24). Positive and negative control groups were created on the remaining 48 incisors. The teeth were extracted on the 7th and 28th days. After routine histological preparation, cross-sections were stained with haematoxylin and eosin. The numbers of the odontoblast-like cells were measured histomorphometrically on day 7 and day 28. The thickness of the reparative dentine was also measured. The number of odontoblast-like cells was also measured beneath the dentine bridge. The normal distribution of all data was tested with the Mann-Whitney U test. The statistical differences between groups were analysed using the Kruskal-Wallis test. Results The mean number of odontoblast-like cells increased between day 7 and 28 following pulp exposure (P > 0.01) in all groups except for the EMD group (P < 0.01), when compared with both the experimental and negative control groups (P < 0.01). Reparative dentine formation was observed in all groups of teeth (P > 0.01). Conclusions Reparative dentine formation was observed, but with no significant difference between the groups. Odontoblast-like cells were observed in association with the outcome of pulps capped with PRP and EMD. PRP and EMD are possible capping agents that influence the thickness of reparative dentine formation.