Figure 1: The spectrum of monocyte-derived suppressor APCs.Suppressor macrophages and DCs can be generated from monocytes with M-CSF or GM-CSF, with or without IL-4. Development of immature DCs into mature, activating DCs can be blocked by various substances, including rapamycin, dexamethasone or vitamin D. DCs can also be rendered tolerogenic by culture in low-dose GM-CSF or by addition of suppressive cytokines, such as IL-10 or TGF-β1. Mesenchymal stem cells (MSC) can induce a suppressor phenotype in cocultured macrophages. Myeloid-derived suppressor cells (MDSC) can be generated by exposing monocytes/macrophages to tumour-secreted factors, most notably PGE2.