【別紙２】

論文名：Implantation of Mesenchymal Stem Cells into the Coronal Pulp of Rat Molars
（要約）

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Rodents such as rats and mice, are used as models in medical and dental research due to their genetic, biological, and behavioral similarities to humans and thus many symptoms of human conditions can be replicated. However, the dental pulp is difficult to mimic in the rodent model due to the lack of specialized equipment and procedures for implanting cells and scaffolds into narrow rodent pulp chambers. Thus, we examined an in vivo stem cell implantation procedure in pulpotomized rat teeth using a surgical microscope. The procedure involves rat bone marrow mesenchymal stem cells (RBM-MSCs), biodegradable preformed scaffolds, and hydrogel constructs. Under a surgical microscope, the constructs were implanted into pulpotomized pulp chambers. After 7 d, the tissue in the implanted region was observed, and there were no signs of inflammation. After 3 d, β-galactosidase was detected in the RBM-MSCs transfected with a LacZ reporter plasmid. Although we did not observe dentin bridge formation, odontoblast-differentiation marker dentin sialophosphoprotein mRNA was significantly upregulated in the implanted regions after 7 d. The present study indicates that the rat experimental model will contribute to the progress and development of stem cell research in regenerative pulp biology.