

CONTENTS

1. Abstract	1
2. Introduction	2 – 4
3. Materials and Methods	5 – 10
1) Animals	5
2) Isolation of muscle SP cells	5 – 6
3) Preparation of satellite cell-derived myoblasts	6
4) Cell transplantation	6 – 7
5) Retrovirus transduction <i>in vitro</i>	7
6) Immunohistochemistry	7 – 8
7) RNA isolation and real-time PCR	8
8) Cell proliferation assay	8 – 9
9) Gene expression profiling	9
10) In situ zymography	9 – 10
11) Statistics	10
4. Results	11 – 28
1) Marker expression on muscle-derived CD31(-) CD45(-) SP cells	11 – 12
2) Efficiency of myoblast transplantation is increased by co-transplantation of muscle CD31(-) CD45(-) SP cells in <i>NOD/scid</i> mice	13 – 14

3) Co-transplantation of myoblasts with muscle CD31(-) CD45(-) SP cells significantly increased efficiency of myoblast transplantation in <i>mdx</i> mice	15 – 16
4) Localization of transplanted myoblasts and CD31(-) CD45(-) SP cells after intramuscular injection	17
5) CD31(-) CD45(-) SP cells promote proliferation of myoblasts <i>in vivo</i> and <i>in vitro</i>	17 – 21
6) Gene expression profiling of CD31(-) CD45(-) SP cells	21 – 22
7) CD31(-) CD45(-) SP cell-derived MMP-2 promotes the migration of myoblasts	22 – 27
5. Discussion	29 – 33
1) Are CD31(-) CD45(-) SP cells mesenchymal stem cells?	29
2) CD31(-) CD45(-) SP cells promote proliferation of myogenic cells	30
3) MMP-2 derived from CD31(-) CD45(-) SP cells promote the migration of myoblasts	31 – 32
4) CD31(-) CD45(-) SP cells are third cellular component of muscle regeneration	33
6. References	34 – 40
7. Publication List	41
8. Oral Publication List	42