

SHORT ABSTRACT

ECTS EXCHANGE SCHOLARSHIP GRANT

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Title of the project

Functional analysis of *TNFSF11* gene promoter region polymorphisms

RANKL has an important role in osteoclastogenesis and development of osteoporosis. The polymorphisms in the promoter region could alter the expression of *TNFSF11* gene and play an important role in the development of osteoporosis. The aim of our project was therefore to perform functional analysis of the promoter region polymorphisms, using reporter assay, and to evaluate the effects of polymorphisms on the gene expression.

During my work at Rheumatology Unit of Molecular Medicine Centre at the University of Edinburgh I have learned tissue culture and cloning techniques, luciferase reporter assay, and also learned to use some bioinformatics tools.

Genomic DNA from 2 patients with 2 most common *TNFSF11* gene promoter haplotypes (CCG and TTC) was used for PCR amplification. The PCR products were cloned into pGL3-basic plasmid and HEK293 cells were transfected. Renilla and firefly luciferase activities were measured 24 and 48 hours post transfection and statistically significant differences in ratios were observed between CCG and TTC haplotypes. P-values after 24 and 48 hours were 0.031 and 0.018, respectively.

To learn new approaches is a step forward in the research work of our lab. The most important thing that I have learned is not just the approach itself, but how to perform the experiments, how to deal with problems, what can go wrong and how to avoid it. Another good part of my experience was also to see how work is organised in other laboratories.

The experience of working and learning abroad was of great value to me as I gained new knowledge and experiences, and meet other people, who are working in the field of bone diseases. I am grateful to ECTS for this grant, which made it possible for me to learn, work and live in Edinburgh for 3 months.