

## Polychrome labelling of bone using different tetracyclines and spectral image analysis [Abstract]

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**O11.39****Polychrome labelling of bone using different tetracyclines and spectral image analysis****C. Pautke<sup>\*</sup>, T. Tischer, C. Haczek, S.Vogt, H.-H. Horch, A. Kolk***Department of Oral and Maxillofacial Surgery, Technical University of Munich, Germany*

Polychrome sequential labelling of bone is the standard investigation technique to analyse bone growth or regeneration in vivo. Due to the fact, however, that the fluorochromes are not approved for a human application, this technique can only be applied in animal models. An exception is tetracyclines. Because the fluorescence of all tetracyclines is very similar, they cannot be distinguished by conventional methods (different fluorochrome filter sets). The aim of this study was therefore to establish a polychrome sequential labelling of bone using different tetracyclines and spectral image analysis. For this purpose 15 male Wistar rats received 9 different tetracyclines subcutaneously in a 3-day interval sequentially. Bone specimens were embedded in methylmetacrylate and investigated by a spectral camera. Each tetracycline derivative revealed a characteristic fluorescence spectrum. Four out of the nine tetracyclines were distinguishable using spectral image analysis. After linear unmixing, the four suitable tetracyclines could be singly depicted when applied in a polychrome sequential labelling. The technique of polychrome sequential labelling is feasible using different tetracycline derivatives and spectral image analysis. Having established this technique, the transfer of the polychrome labelling of bone for a human application is possible for the first time.

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