

Sectioning fluorescence labeled bone with Rowiak TissueSurgeon: Laser does not bleach fluorescence labels

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Introduction

Labeling bone with fluorochromes is an important technique in bone research. Fluorochromes are sensitive to light, bleaching is a common problem. As the Rowiak TissueSurgeon works with a near infrared laser (1030 nm), this study proofs that the laser does not bleach fluorochromes which are activated in shorter wavelength than the laser works with.

Material and Methods

A macerated hemimandible, labeled with tetracycline and calcein (in vivo), was cut into adequate samples with a low speed saw equipped with a diamond blade (Buehler Isomet 1000, Düsseldorf, Germany). The cut surfaces were mounted on a microscope slide with Epo-Tec (Polytec, Waldbronn, Germany) without any further preparation. After curing process, samples were sectioned with Rowiak TissueSurgeon at 70 µm thicknesses and cover slipped with Epo-Tec. The samples were documented with Zeiss Axio Observer with equipped fluorescent light before and after sectioning.

Results

Samples show equal fluorescent expression before (Fig. 1) and after sectioning with Rowiak TissueSurgeon (Fig. 3). Quality of section is displayed in Fig. 2.

Conclusion

Fluorochromes in sections prepared with Rowiak TissueSurgeon **do not bleach out!** Standard Fluorochromes in bone research, activated in short wavelengths, are compatible with lasermicrotomy without loss of information.

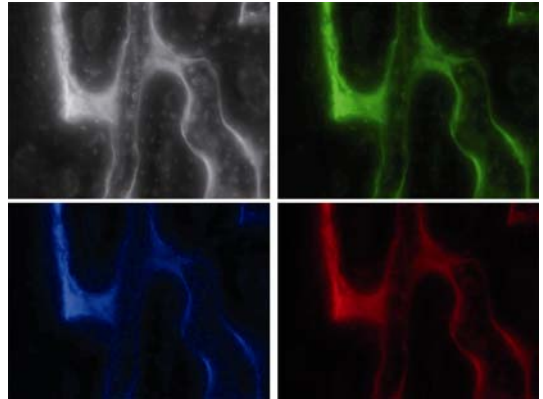


Fig. 1: Fluorescent bone before section with TissueSurgeon, illustrated with different filters

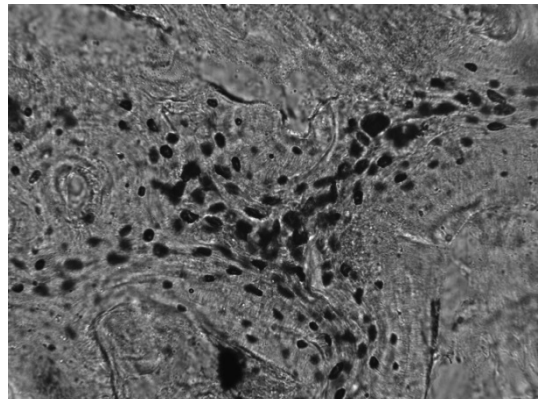


Fig. 2: Section of fluorescent bone, prepared with TissueSurgeon, transmitted light

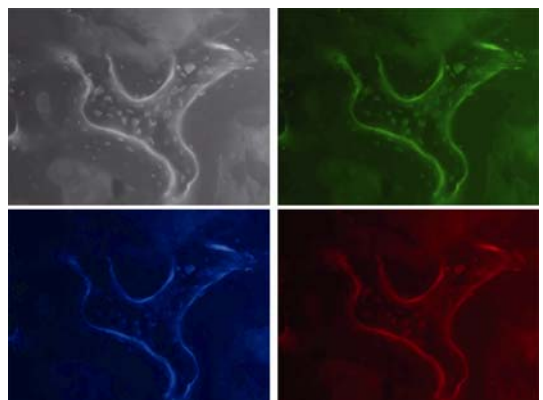


Fig. 3: Fluorescent bone after section with TissueSurgeon, illustrated with different filters