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**116 - Nanometer-scale imaging by the modulation tracking method**

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We developed an optical imaging method based on a feedback principle in which the specific scan pattern is adapted according to the shape of the sample. The feedback approach produces nanometer-resolved 3D images of very small and moving features in live cells and in seconds. We show images of microvilli in live cultured opossum kidney cells expressing NaPi co-transporter proteins with different GFP constructs and images of cell protrusions in a collagen matrix with a resolution of about 20 nm. We found that in the microvilli the NaPi proteins can be found clustered. Along cell protrusions in 3D we identified cellular adhesions to the extracellular matrix. Our approach to super-resolution and to 3D nanoimaging is different than other proposed methods that break the diffraction limit using non-linear effects or are based in single molecule localization.

**Monday, August 29, 2011 10:20 AM**

[Advanced Microscopy Techniques for Biophysical Questions \(08:20 AM - 12:00 PM\)](#)

**Location: Colorado Convention Center**

**Room: 1E**

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