

Kidney360

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On the Cover

Human kidney stones entomb microbes *in vivo* during their formation. These high resolution microscopy images are taken from 25 mm-thick doubly-polished petrographic thin sections of struvite and brushite stones and provide first direct evidence of this process. Background Image: Brushite kidney stone thin section under plane polarized transmitted light exhibiting tabular and acicular radiating low-birefringence gray crystals of brushite. Images within circles: Struvite kidney stone thin section showing brightfield images overlaid on superresolution autofluorescence (merge of blue, green and red channel images) taken at 140 nm resolution (Zeiss LSM 880 Airyscan Superresolution microscope). Entombed rod- and coccoid-shaped bacteria with bright red autofluorescence (AF) entombed in radiating acicular struvite crystals (uppermost left circle) and spherules of calcium phosphate (middle circle). The lowermost right circle shows dumbbell-shaped brushite crystals with dark blue AF and rod-shaped bacteria with light blue AF entombed at the center (nidus). Adapted from figures presented in "In Vivo Entombment of Bacteria and Fungi during Calcium Oxalate, Brushite and Struvite Urolithiasis" by Jessica J. Saw*, Mayandi Sivaguru*, Elena M. Wilson, Yiran Dong, Robert A. Sanford, Chris J. Fields, Melissa A. Cregger, Annette C. Merkel, William J. Bruce, Joseph R. Weber, John C. Lieske, Amy E. Krambeck, Marcelino E. Rivera, Timothy Large, Dirk Lange, Ananda S. Bhattacharjee, Michael F. Romero, Nicholas Chia, and Bruce W. Fouke. KIDNEY360 2: 298–311, 2021. doi: 10.34067/KID.0006942020.

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