



Alon Greenbaum



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Advanced bio-imaging and computational lab

Research emphasis:

Dr. Greenbaum's laboratory focuses on the development of complex imaging devices and algorithms to advance 3D profiling of intact organs to answer biological questions regarding aging and disease progression. While we are especially interested in profiling bones, we are also capable of clearing and imaging other organs, such as the heart and the brain. Application areas will span the development of (i) adaptive light-sheet microscopes and algorithms for rapid high-resolution imaging of whole organisms, (ii) computational tools to handle big data, and (iii) translational applications, such as exploration of rare stem-cell niches in the context of age-associated diseases.

Selected publications:

A. Greenbaum, K. Chan, T. Dobreva, D. Brown, D. H. Balani, R. Boyce, H. M. Kronenberg, H. J. McBride and V. Gradinaru, "Bone CLARITY: Clearing, imaging, and computational analysis of osteoprogenitors within intact bone marrow," *Science Translational Medicine*, 9, eaah6518 (2017).

A. Greenbaum, Y. Zhang, A. Feizi, P. L. Chung, W. Luo, S. R. Kandukuri and A. Ozcan, "Wide-field computational imaging of pathology slides using lens-free on-chip microscopy," *Science Translational Medicine* 6, 267ra175 (2014).

A. Greenbaum, W. Luo, T-W. Su, Z. Gorocs, L. Xue, S.O. Isikman, A.F. Coskun, O. Mudanyali, and A. Ozcan, "Imaging without lenses: achievements and remaining challenges of wide-field on-chip microscopy," *Nature Methods* 9, 889-895 (2012).

Application :

- Light sheet microscopy
- Tissue clearing
- Image processing

Collaboration potential:

- Development of new imaging devices tailored for specific application
- 3D anatomical profiling of intact organs
- Biodistribution