

### **Publications in peer-reviewed journals (\* = main author publication)**

1. Chalut, K.\*, Ekpenyong, A., Clegg, W., Melhuish, I., and Guck, J. Monitoring cell differentiation by physical phenotype using digital holographic microscopy. Submitted to *Integrative Biology*, under review.
2. Chalut, K.\*, Höpfler, M., Lautenschläger, Martinez-Arias, A., and Guck, J. Locking down pluripotency: chromatin decondensation and softening nucleus key to differentiation. Submitted to *Science*.
3. Chalut, K.\*, Kulangara, K., Wax, A., and Leong, K. Stem cell differentiation indicated by changes across scales in subcellular architecture. *Integrative Biology*, 2011, 3, 863-867.
4. Wax, A. and Chalut, K.\* (2011). Nuclear morphology measurements with angle-resolved low coherence interferometry for application to cell biology and early cancer detection. *Analytical Cellular Pathology*, 2011, 1, 1-16.
5. Boyde, L., Chalut, K.\*, and Guck, J. Near- and Far-Field Scattering from Arbitrary 3D Aggregates of Coated Spheres Using Parallel Computing. *Physical Review E*, 2011, 83(2), 026701:1-14.
6. Boyde, L., Chalut, K., and Guck, J. Exact Analytical Expansion of an Off-Axis Gaussian Laser Beam Using the Translation Theorems for the Vector Spherical Harmonics. *Applied Optics*, 50, 1023-1033.
7. Boyde, L., Chalut, K., and Guck, J. Interaction of Gaussian Beam with Near-Spherical Particle: an Analytic-Numerical Approach for Assessing Scattering and Stresses. *Journal of the Optical Society of America A*, 2009, 26(8), 1814-1826.
8. Kreysing, M., Boyde, L., Guck, J., and Chalut, K.\* Physical insight into light scattering by photoreceptor cell nuclei. *Optics Letters*, 2010, 35(15), 2639-2641.
9. Giacomelli, M., Chalut, K., Ostrander, J., and Wax, A. Review of the application of T-matrix calculations for determining the structure of cell nuclei with angle-resolved light scattering measurements. *IEEE Journal of Selected Topics in Quantum Electronics*, 2010, 16(4), 900-908.
10. Chalut, K.\*, Kulangara, K., Giacomelli, M., Wax, A., and Leong, K. Deformation of Stem Cell Nuclei by Nanotopographical Cues. *Soft Matter*, 2010, 6(8), 1675-1681.
11. Chalut, K.\*, Ostrander, J., Giacomelli, M., and Wax, A. Light scattering measurements of subcellular structure provide noninvasive early detection of chemotherapy-induced apoptosis. *Cancer Research*, 2009, 69(3).
12. Finan, J., Chalut, K., Wax, A., and Guilak, F. Nonlinear osmotic properties of the cell nucleus. *Annals of Biomedical Engineering*, 2009, 37(3), 477-491.
13. Amoozegar, C., Giacomelli, M., Keener, J., Chalut, K.\*, and Wax, A. Experimental verification of T-matrix-based inverse light scattering analysis for assessing structure of spheroids as models of cell nuclei. *Applied Optics*, 2009, 48(10), D20-D25.
14. Chalut, K.\*, Chen, S., Finan, J., Giacomelli, M., Guilak, F., Leong, K., and Wax, A. Label-free, precision optical measurements of dynamic changes in cell nuclei. *Biophysical Journal*, 2008, 94(12), 4948-4956.
15. Giacomelli, M., Chalut, K., Ostrander, J., and Wax, A. Application of the T-matrix method to determine the structure of spheroidal cell nuclei with angle-resolved light scattering. *Optics Letters*, 2008, 33(21), 2452-2454.
16. Chalut, K.\*, Giacomelli, M., and Wax, A. Application of Mie theory to assess structure of spheroidal scattering in backscattering geometries. *Journal of the Optical Society of America A*, 2008, 25(8), 1866-1874.
17. Brown, W., Pyhtila, J., Terry, N., Chalut, K., D'Amico, T., Spom, T., Obando, J., and Wax, A. Review and recent development of angle-resolved low coherence interferometry for detection of pre-cancerous cells in human esophageal epithelium. *IEEE Journal of Selected Topics in Quantum Electronics*, 2008, 14(1), 88-97.
18. Chalut, K.\*, Brown, W., and Wax, A. Quantitative phase microscopy with asynchronous digital holography. *Optics Express*, 2007, 15(6), 3047-3052.

19. Chalut, K.\*, Kresty, L., Pyhtila, J., Nines, R., Baird, M., Steele, V., and Wax, A. In situ assessment of intraepithelial neoplasia in hamster trachea epithelium using angle-resolved low coherence interferometry. *Cancer Epidemiology Biomarkers and Prevention*, 2007, 16(2), 223-227.
20. Pyhtila, J., Chalut, K., Boyer, J., Keener, J., D'amico, T., Gottfried, M., Gress, F., and Wax, A. In situ detection of nuclear atypia in Barrett's esophagus using angle-resolved low coherence interferometry. *Gastrointestinal Endoscopy*, 2007, 65(3), 487-491.
21. Keener, J., Chalut, K., Pyhtila, J., and Wax, A. Application of Mie theory to determine the structure of spheroidal scatterers in biological materials. *Optics Letters*, 2007, 32(10), 1-4.
22. Pyhtila, J., Boyer, J., Chalut, K., and Wax, A. Fourier Domain Angle-Resolved Low Coherence Interferometry Through an Endoscopic Fiber Bundle for Light Scattering Spectroscopy. *Optics Letters*, 2006, 31(6), p. 772-774.
23. Chalut, K.\*, Pinayev, I., and Litvinenko, V. Method of Phase-Space Tomography of Rapidly Evolving E-beams. *Physical Review, Special Topics, Accelerators and Beams*, 2005, 8(10).
24. Pinayev, I., Chalut, K., and Litvinenko, V. Observation of a giant pulse time structure produced by a storage ring FEL. *Nuclear Instruments and Methods in Physics Research*, 2004, 528, 283-286.
25. Chalut, K.\*, Cheng, H., Frampton, P., Stowe, K., Yoshikawa, T. Sufficiently Small  $\bar{\theta}$  in  $SU(3)^3 \times S_3$  Unification Model. *Modern Physics Letters A*, 2002, 17(23), 1513-1526.
26. Wagner, A., Tan, W., Chalut, K., Charity, R., Davin, B., Larochelle, Y., Lennek, M., Liu, T., Liu, X., Lynch, W., Ramos, A., Shomin, R., Sobotka, L., de Souza, R., Tsang, M., Verde, G., and Xu, H. Energy resolution and energy light response of CsI(Tl) scintillators for charged particle detection. *Nuclear Instruments and Methods in Physics Research A*, 2001, 456(3), 290-299.

### **Book Chapters**

1. Chalut, K.\*, Kulangara, K., and Leong, K. (2010). Cellular response to continuous nanostructures. In K. Sattler (Ed.), *Handbook of Nanophysics, V.5*. Oxford: Taylor and Francis.
2. Chalut, K.\* and Foster, T. (2009). Subcellular Light Scattering Microscopy. In A. Wax and V. Backman (Eds.), *Biomedical Applications of Light Scattering*. New York: McGraw-Hill.