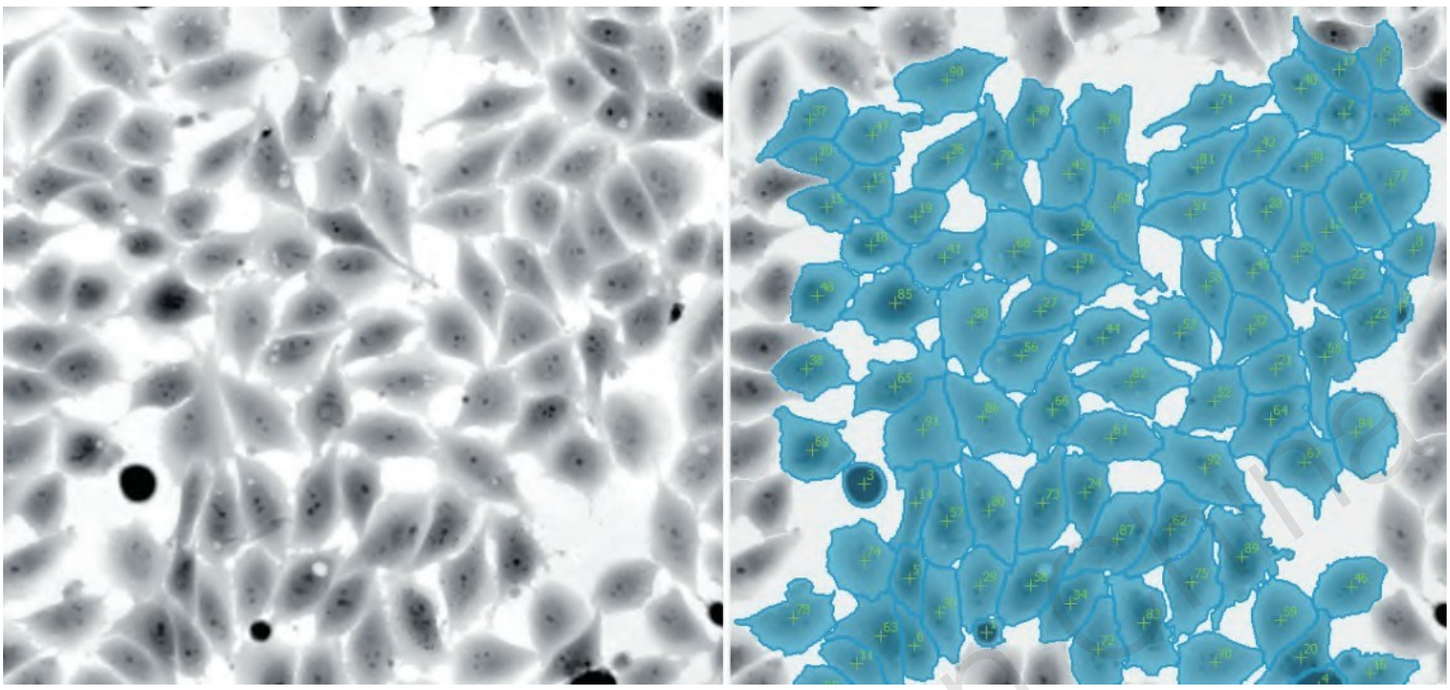
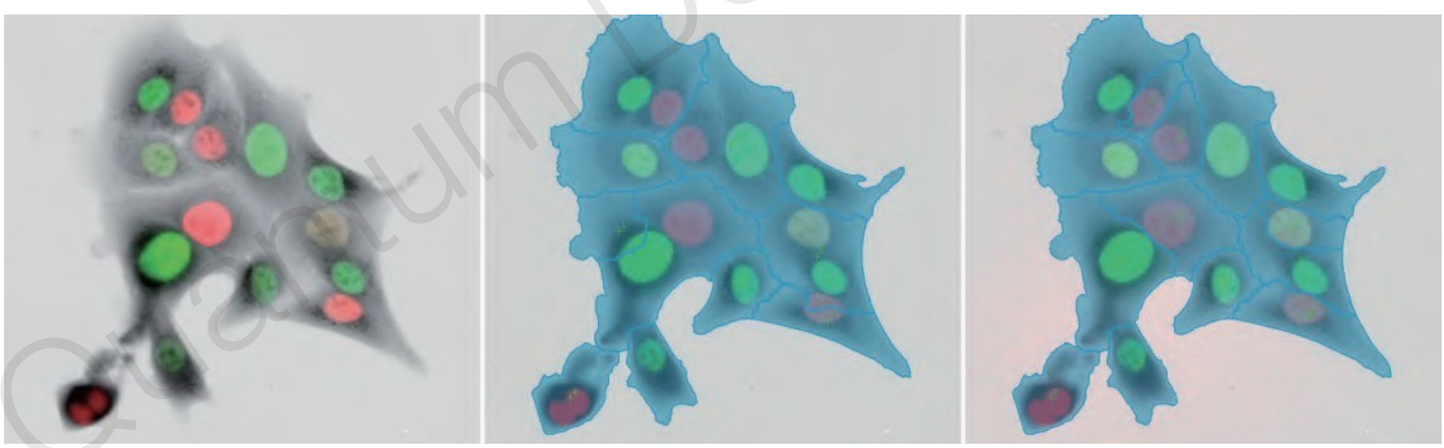
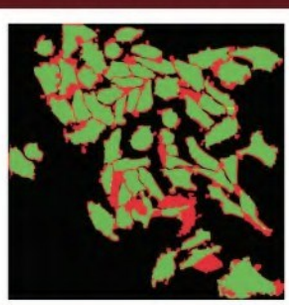
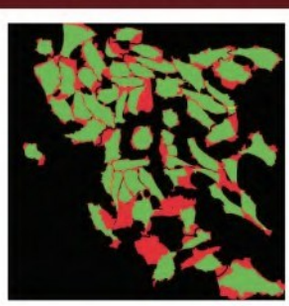
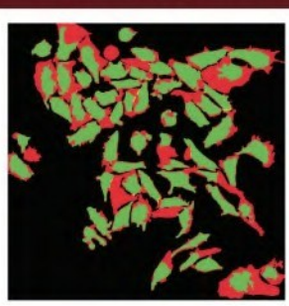
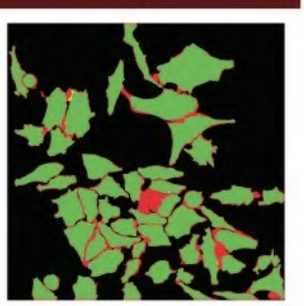
Q-Phase无标记活细胞成像分析系统



高清晰度QPI图像允许系统自动基于细胞边界自动识别细胞，并且能够定量所识别细胞的质量分布。尤其适合大量细胞同时监测。由于基于QPI的分割非常快，这使得整个系统能够同时追踪数千个细胞的变化。此外配合荧光数据能够更为高效的探究细胞的行为学变化。



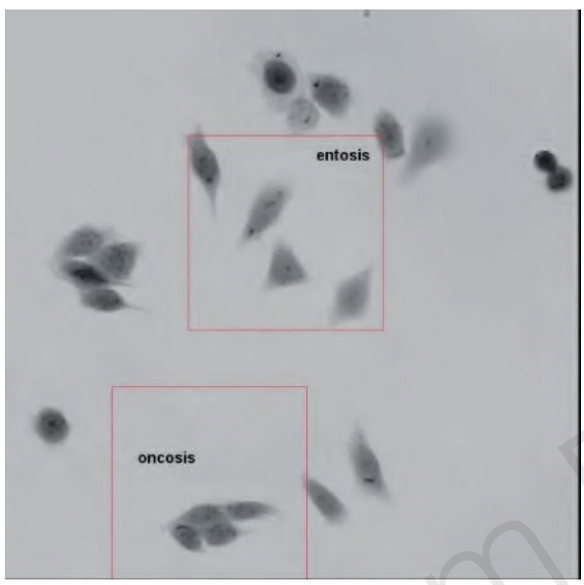
Fucci-expressing NMuMG cells. A. Segmentation of QPI data. B. Segmentation of QPI data corrected by nuclear fluorescence.

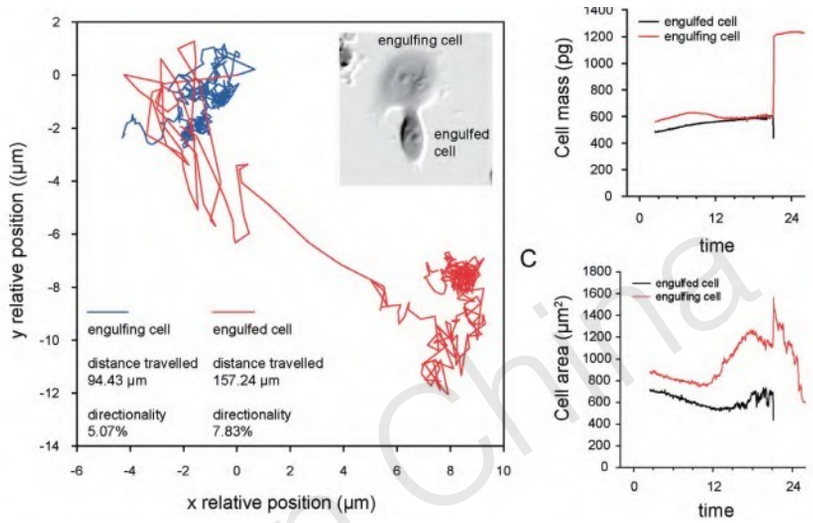
Method	DIC (algorithm 1)*	DIC (algorithm 2)**	Phase Contrast (algorithm 1)*	QPI
				
Mean Dice Index	0.71	0.66	0.61	0.84
Processing Time	Minutes	Minutes	Minutes	Seconds

Correct segmentation - green, incorrect segmentation - red (compared to ground truth)

应用案例

QPI技术能够对细胞微小的质量变化进行监控，具备极高的灵敏度。并且能够同时分析细胞的各种形态变化，诸如质量变化、面积、方向性等。这种对于大量细胞的分析能力能够为肿瘤起源和肿瘤耐用性研究提供诸多帮助。

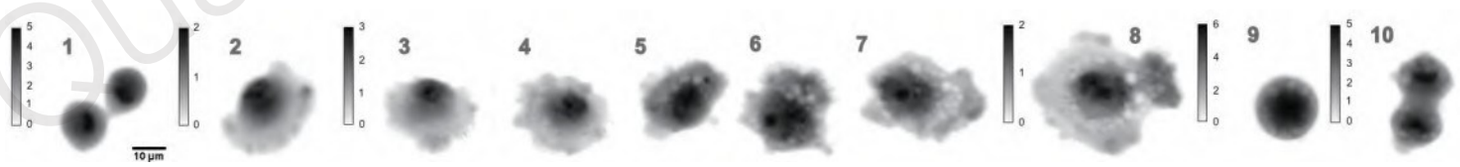




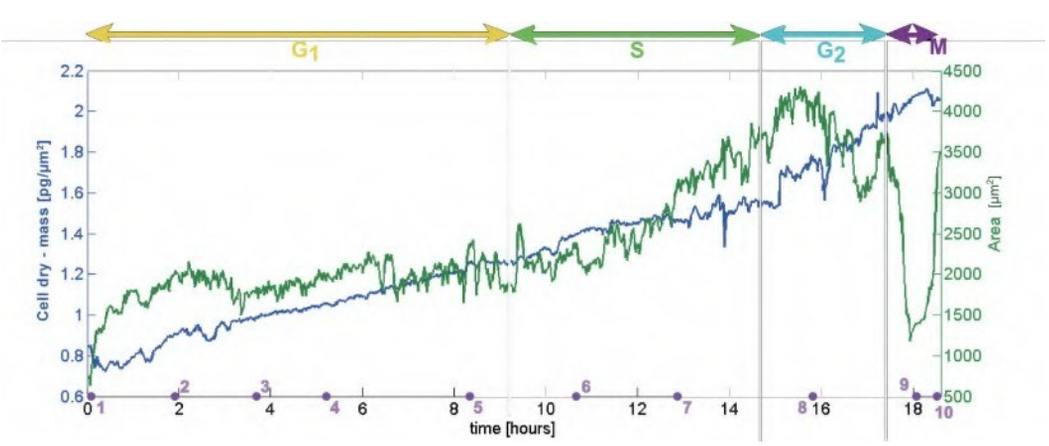
- 单个细胞的行为鉴定
- 罕见细胞事件的检测
- 清晰洞察各种细胞的活动

Role of entosis in oxidative stress resistance of PC-3 prostate cancer cells For more details see: J. Balvan, et al.: Oxidative Stress Resistance in Metastatic Prostate Cancer:Renewal by Self-Eating, PLoS One 10(12), 2015.
Renewal by Self-Eating, PLoS One 10(12), 201

细胞周期的变化是细胞的基本特征。细胞周期的研究在传统上依靠对特定的标记或使用转基因系统，使得很难在不干扰细胞的情况下确定细胞周期阶段。QPI独有的Tescan Q-PHASE模式能够在无标记的情况下监控细胞生长以及形态学和单细胞水平的表型变化。



QPI images illustrating cell morphology at marked out points in the life cycle of LW13K2 cell



Changes in cellular mass and area during the cell cycle of LW13K2 cell. The value of mass has deen doubled betweentwo mitosis.