

NANO-BME Seminar

Time: 4:00PM Thursday, Feb 3

Location: EP253 / <https://sdsmt.zoom.us/j/94046899625>

Photothermal nanomaterials for stopping cancer metastasis

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Abstract: Our research group mainly focuses on the understanding and harnessing the biophysical impact of nanomaterials on biological systems (e.g., proteins and cells) to improve human health. We are particularly interested in how nanomaterials affect the actin cytoskeleton (i.e., “the bone structure” of cells) in normal and cancer cells. In this seminar, I will present our recently published research results regarding how we use photothermal nanomaterials including polydopamine nanoparticles and black phosphorus nanosheets to modulate the phenotype, actin cytoskeleton, and migration behavior of cancer cells [1,2]. We believe these nanomaterial-based approaches hold tremendous potential in complementing current cancer treatments including surgical resection and chemotherapy to prevent cancer metastasis (the cause of 90% of human cancer deaths).

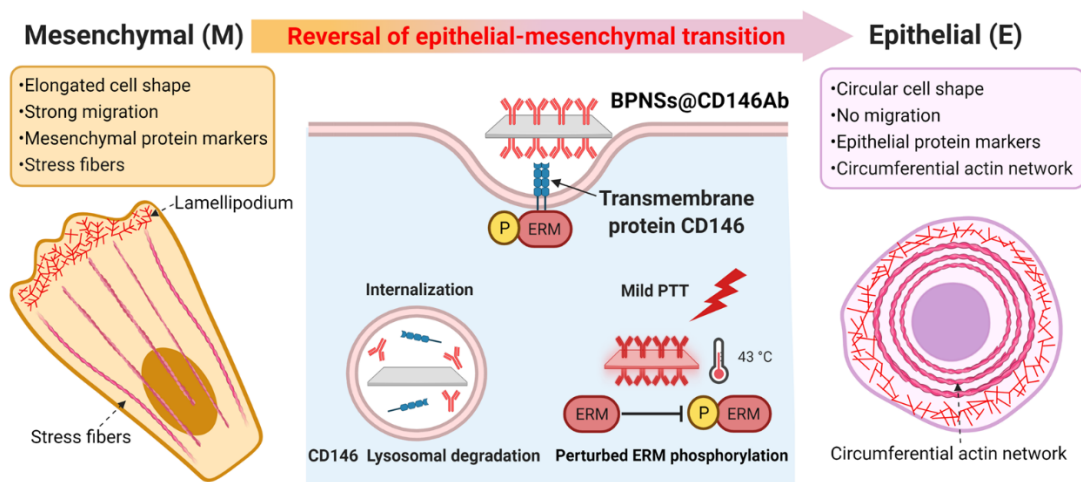


Figure: The concept of reversing epithelial-mesenchymal transition (EMT) in metastatic cancer cells *via* targeting a transmembrane EMT inducer, CD146, using engineered black phosphorus nanosheets (BPNSs) and a mild photothermal treatment (PTT). This approach completely stops the migration of breast cancer cells.

References:

1. J. Liu, S. Smith, C. Wang*, ACS Nano, 2022, <https://doi.org/10.1021/acsnano.1c11070>
2. J. Liu, K. Lang, S. Smith, C. Wang*, Nano Letters, 2021, <https://doi.org/10.1021/acs.nanolett.1c03377>