



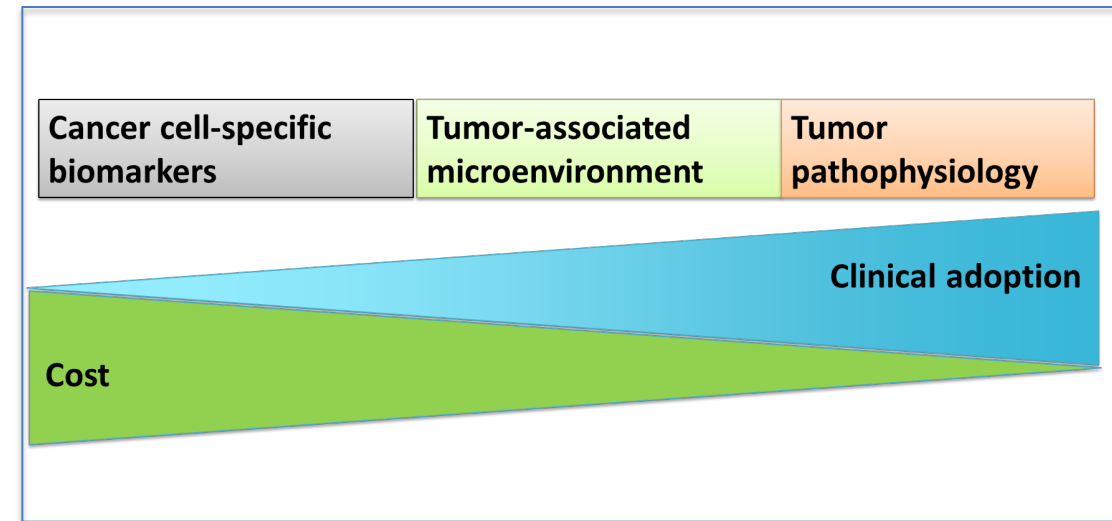
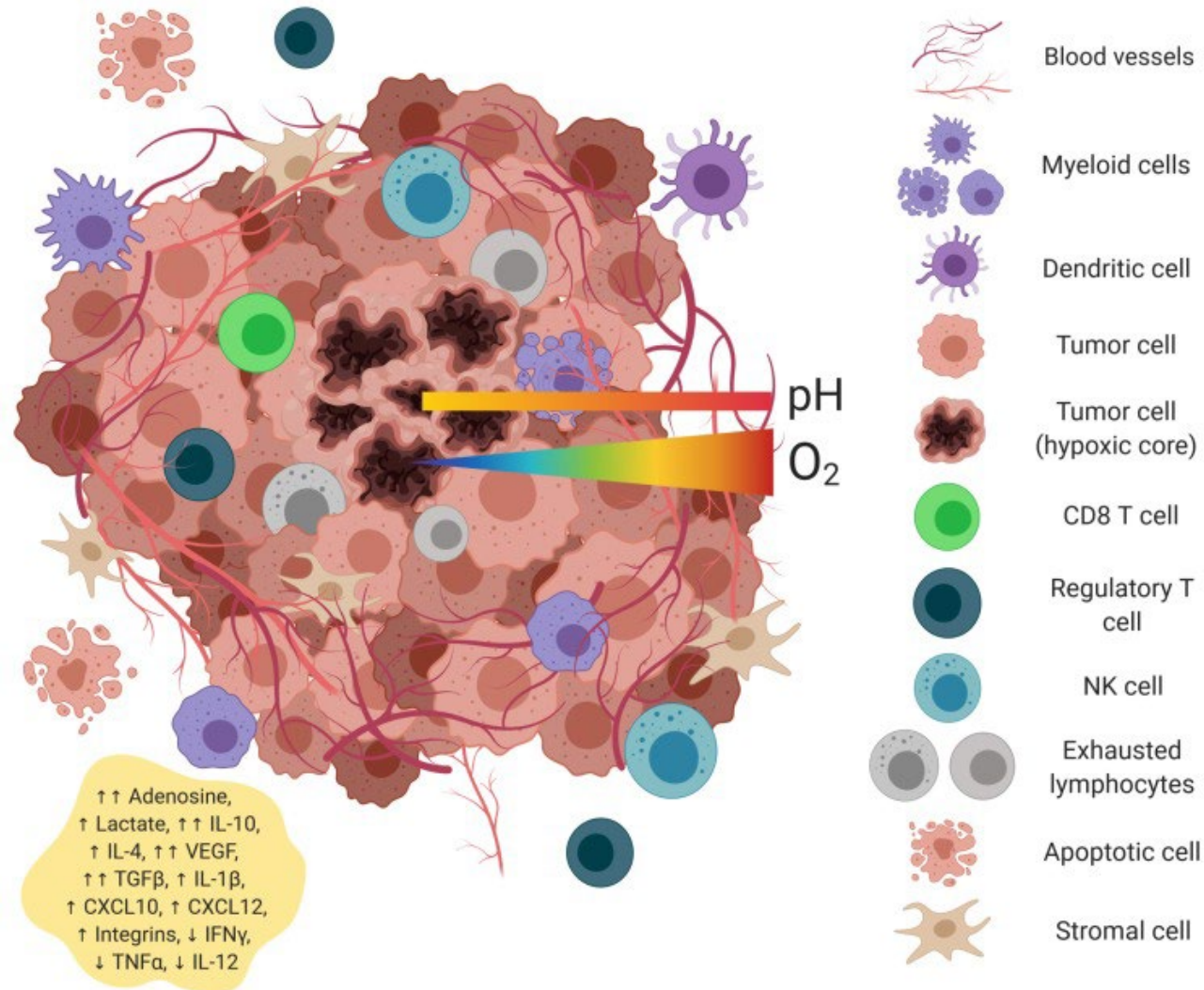
UT Southwestern
Medical Center
Biomedical Engineering
Dallas, TX

Samuel Achilefu, PhD

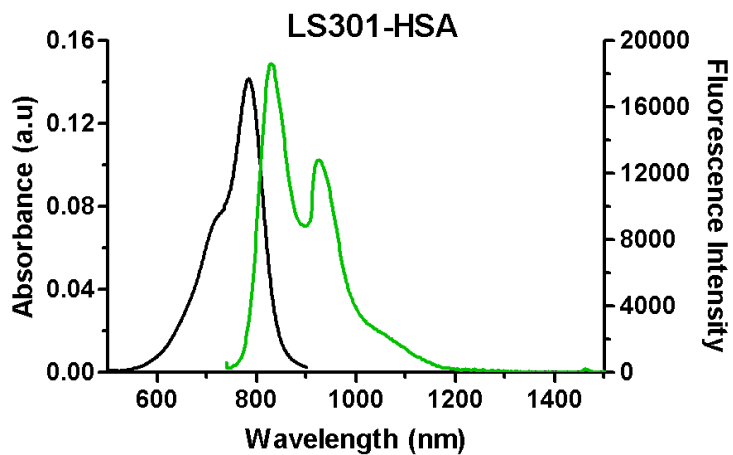
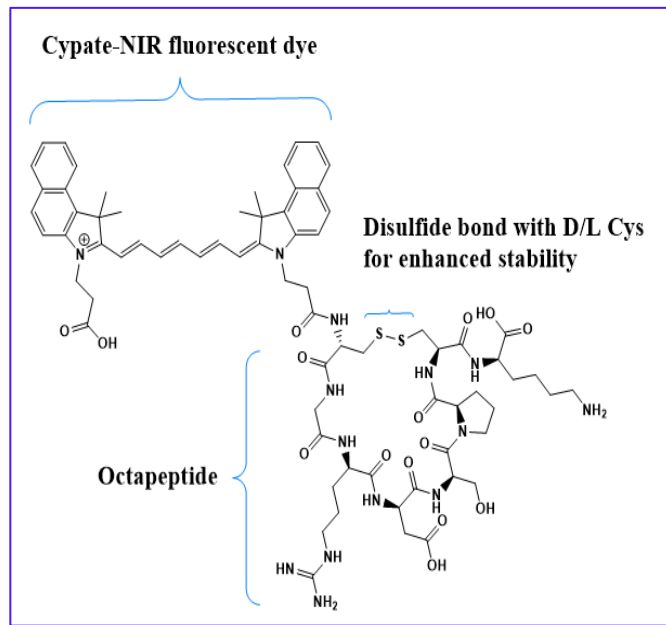
Engineering Molecular Cancer Imaging and Image-Guided Therapy

Cancer Engineering: The Convergence of
Engineering and Health to Advance Cancer
Research and Care
NASEM May 20, 2025, Washington DC

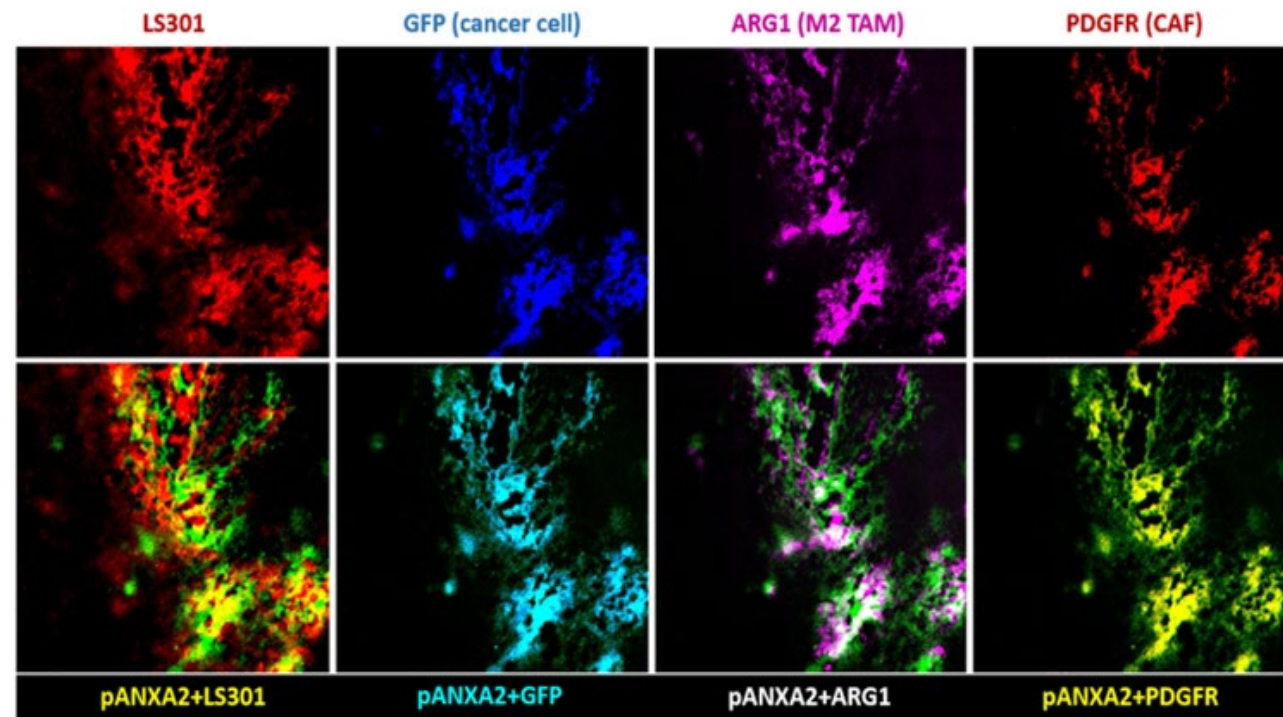
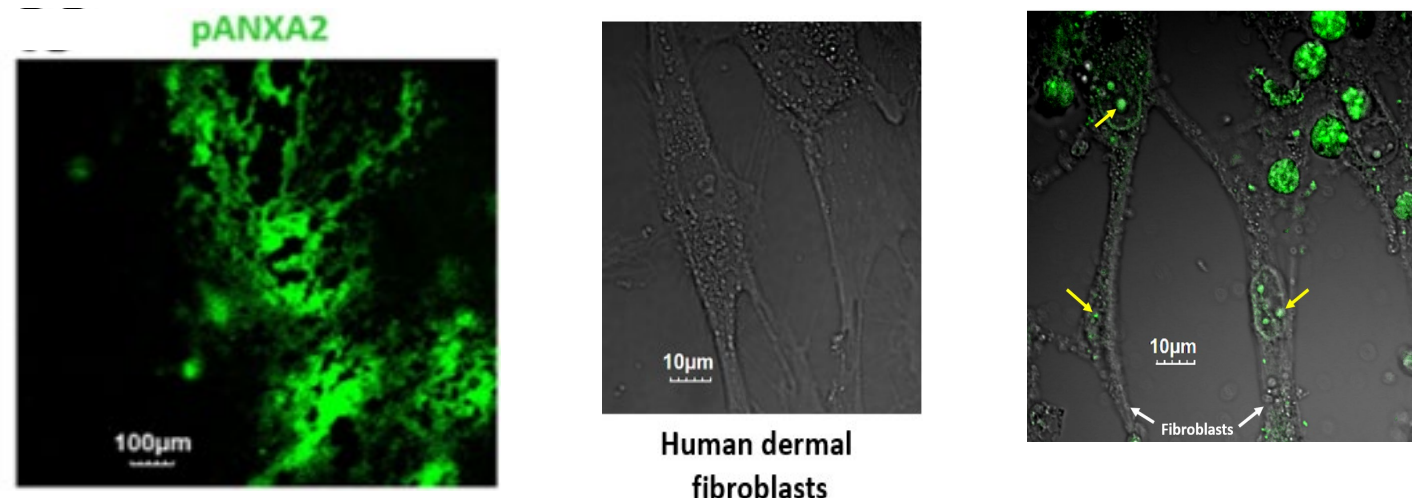
1. Engineering cancer zip code



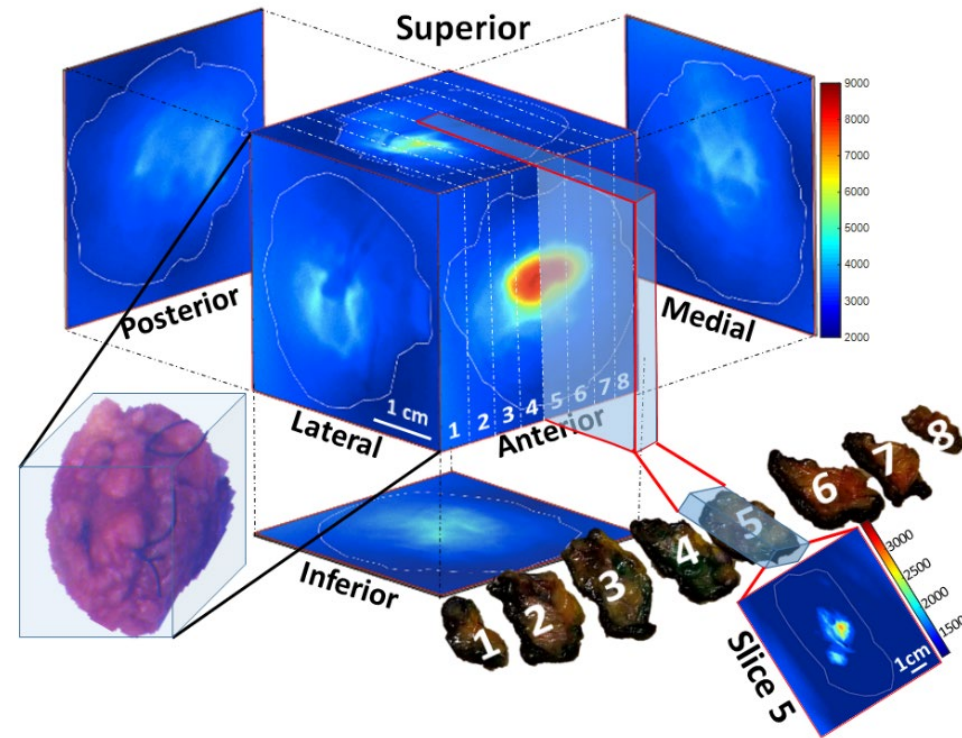
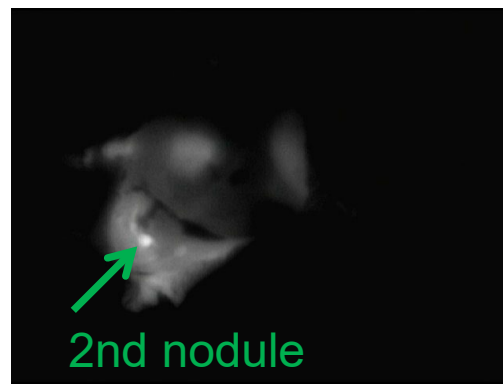
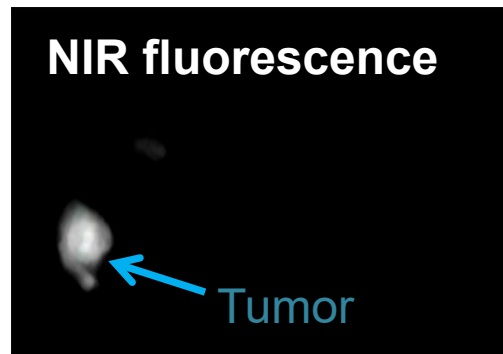
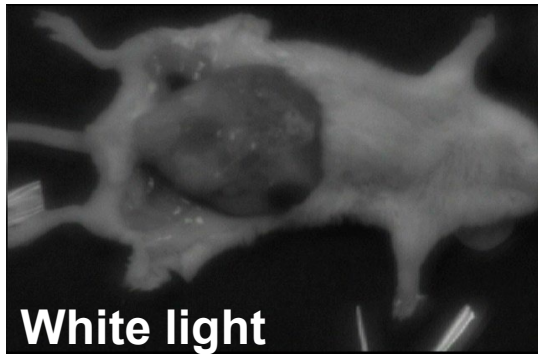
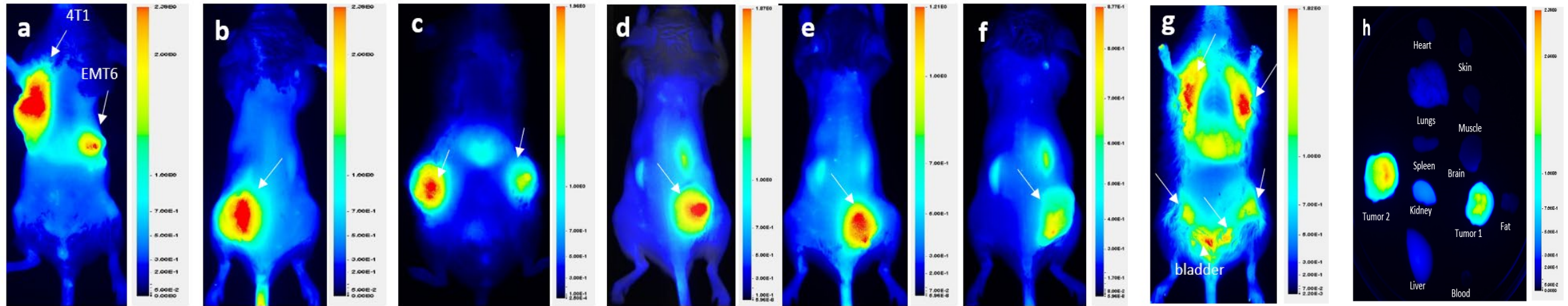
1. Mapping cancer zip code with small molecules



D. Shen. Nat Biomed Eng 2020; S. Mondal, et al. In prep

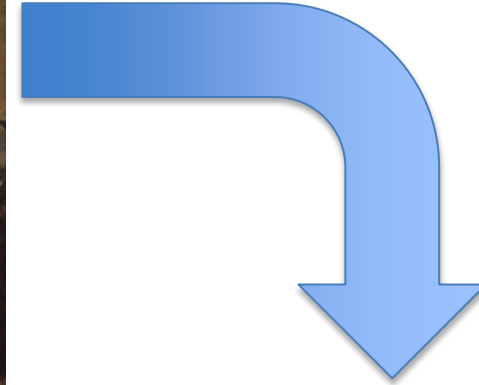


1. Mapping cancer zip code with small molecules



D. Shen. Nat Biomed Eng 2020; S. Mondal, et al. In preparation

2. Engineering smart, compact, and portable imaging



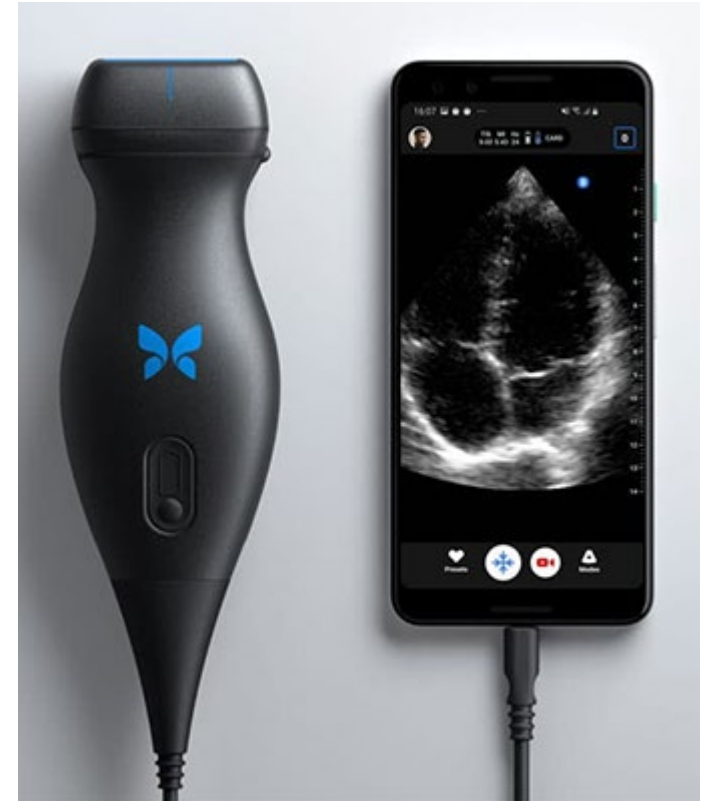
2. Engineering smart, compact, and portable imaging systems



Portable MRI Scanner



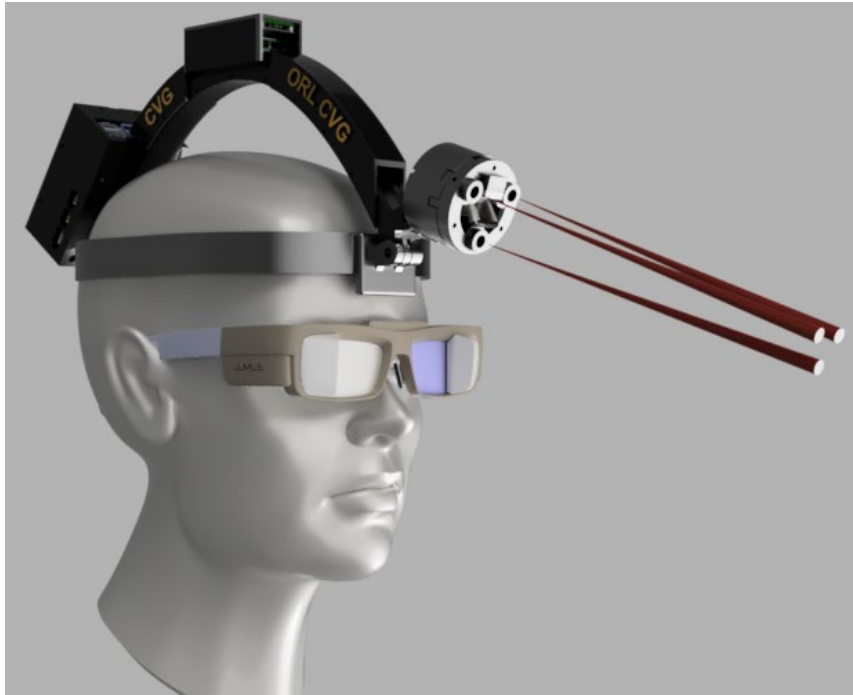
Portable PET Scanner



Portable ultrasound device

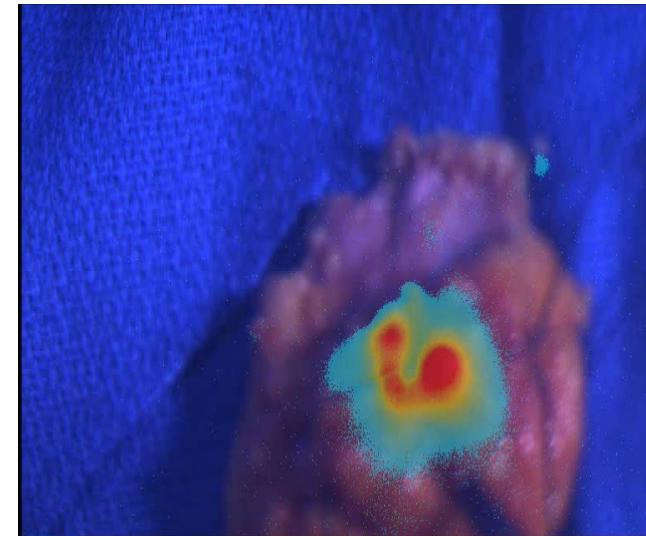
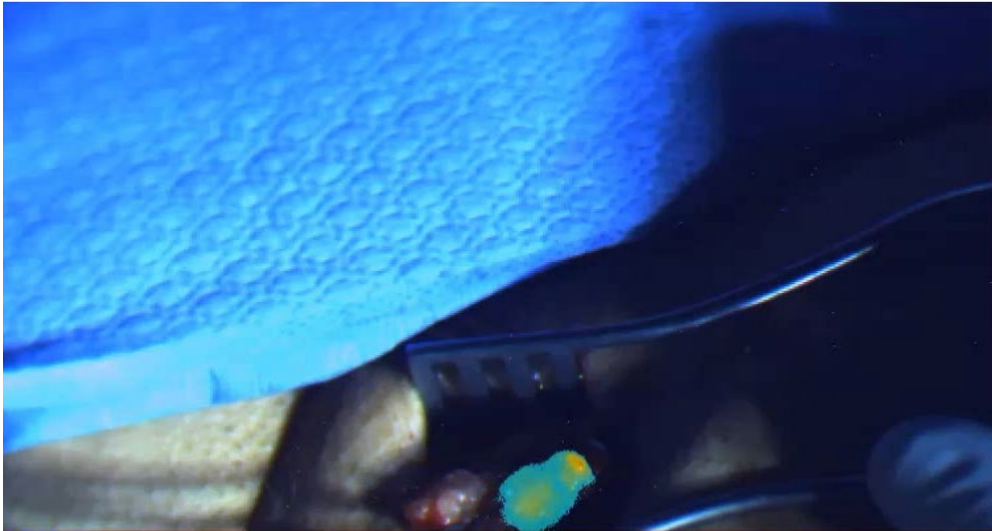
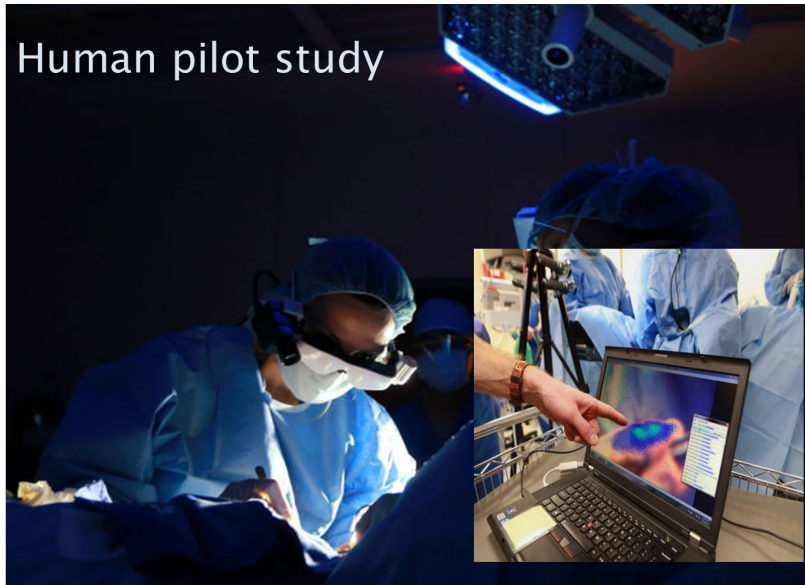
2. Engineering smart, compact, and portable imaging systems

Battery-powered, single-operator low-cost Cancer Vision Goggles



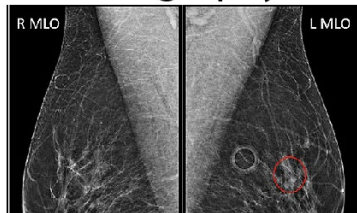
Shmuylovich L, et al. Sci Rep. 2024:24402
Xu X, Zhang H, et al. Submitted

2. Engineering smart, compact, and portable imaging systems



CVG Data Integration Platform

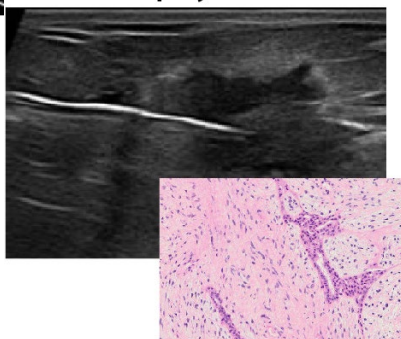
Mammography



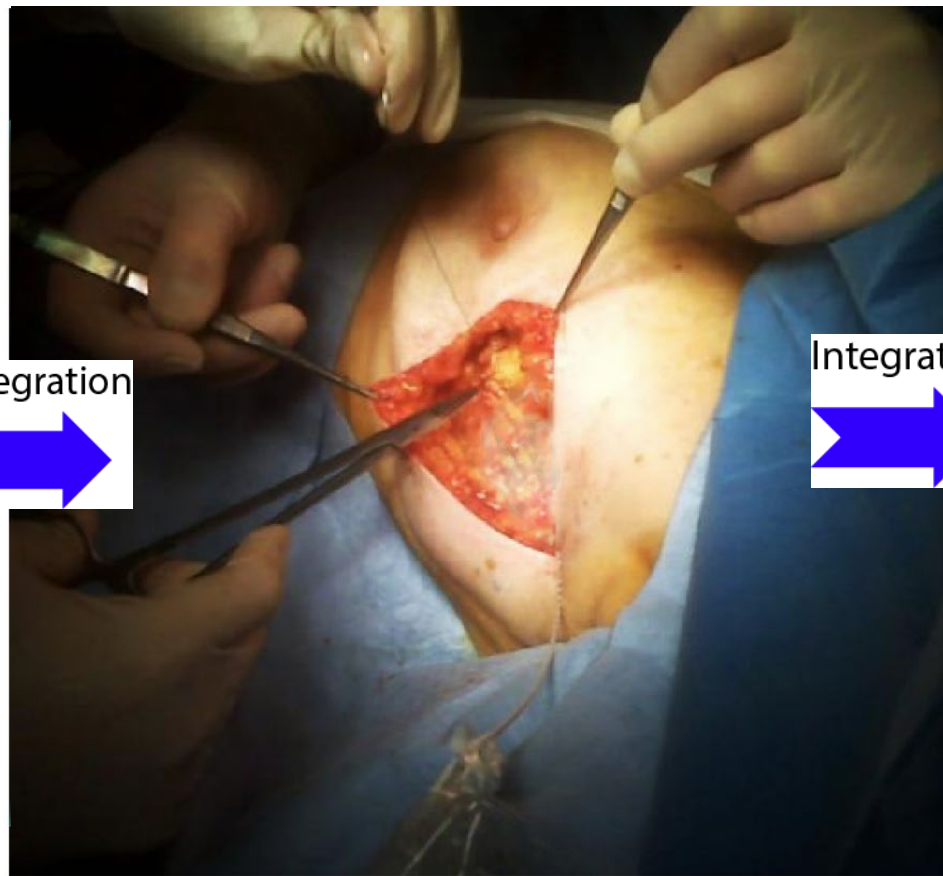
Molecular Imaging



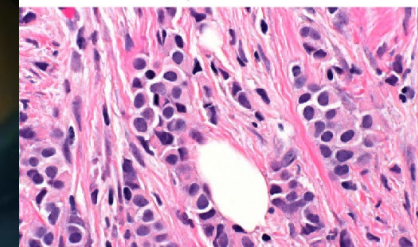
Core Biopsy



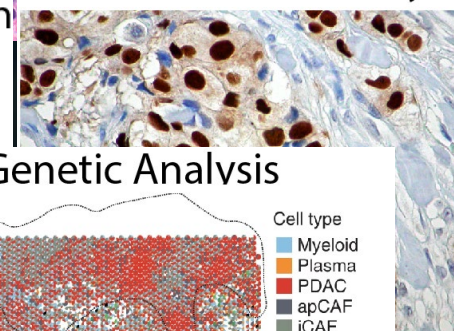
Integration



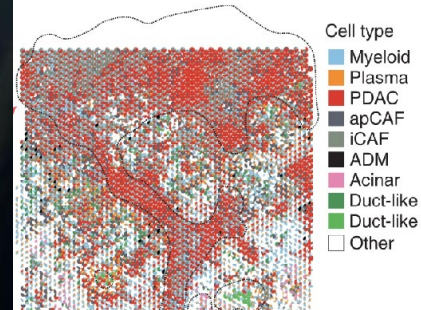
Pathology



Immunohistochemistry

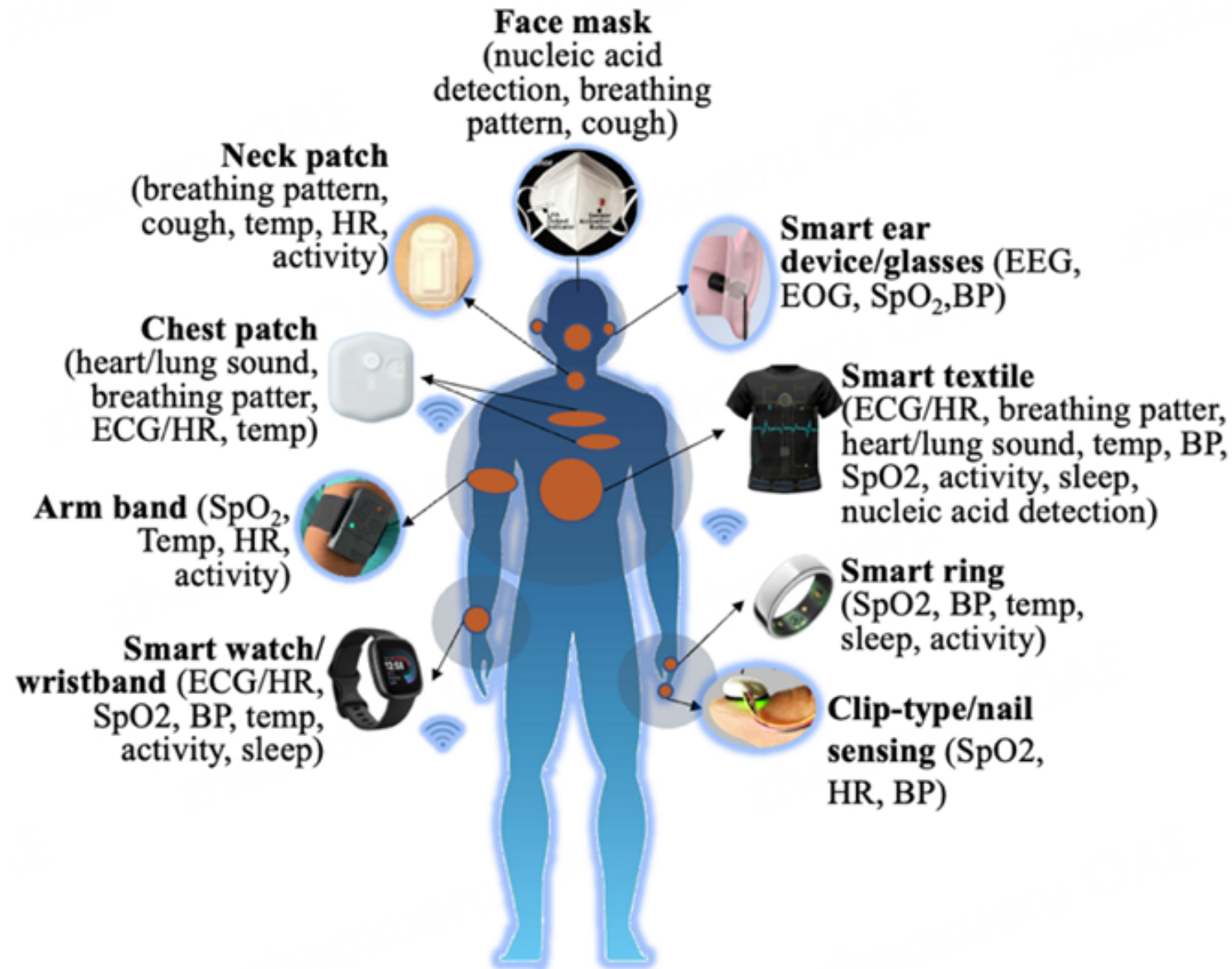


Genetic Analysis



Low- and high-resource clinical centers

3. Engineering early cancer detection and prevention



3. Engineering early cancer detection and prevention

