Cancer is a genetic disease that originates in the nucleus, but ironically, our immune system cannot screen for abnormalities beyond the superficial cell surface. As such, designing novel immunotherapeutics requires key knowledge and targeting of cancer-specific proteins, antigens and protein complexes that are exposed on the plasma membrane. Here, by mimicking the vision of immune cells, I will describe how I scrutinize the outer surface of tumors, for therapeutic leads and preventive medicine.