CONJUGATES FOR TREATING DISEASES CAUSED BY PSMA EXPRESSING CELLS

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Application Serial No. 61/726,991, filed November 15, 2012, U.S. Provisional Application Serial No. 61/788,382, filed March 15, 2013, and U.S. Provisional Application Serial No. 61/875,971, filed September 10, 2013, in which all of which are incorporated herein by reference in their entirety.

TECHNICAL FIELD

The invention described herein pertains to the diagnosis, imaging, and/or treatment of pathogenic cell populations. In particular, the invention described herein pertains to the diagnosis, imaging, and/or treatment of diseases caused by PSMA expressing cells, such as prostate cancer cells, using compounds capable of targeting PSMA expressing cells.

BACKGROUND AND SUMMARY OF THE INVENTION

The prostate is a male reproductive organ and functions to produce and store seminal fluid that provides nutrients and fluids for the survival of sperm introduced into the vagina during reproduction. Like other tissues, the prostate gland may develop either malignant (cancerous) or benign (non-cancerous) tumors. In fact, prostate cancer is one of the most common male cancers in western societies, and is the second leading form of malignancy among American men. Current treatment methods for prostate cancer include hormonal therapy, radiation therapy, surgery, chemotherapy, photodynamic therapy, and combination therapy. However, many of these treatments affect the quality of life of the patient, especially for those men who are diagnosed with prostate cancer over age 50. For example, the use of hormonal drugs is often accompanied by side effects such as osteoporosis and liver damage. Such side effects might be mitigated by the use of treatments that are more selective or specific to the tissue being responsible for the disease state, and avoid non-target tissues like the bones or the liver.

Prostate-specific membrane antigen (PSMA) is a biomarker that is overexpressed on prostate cancer. PSMA is over-expressed in the malignant prostate tissues when compared to other organs in the human body such as kidney, proximal small intestine, and salivary glands. PSMA is also expressed on the neovasculature within many non-prostate solid tumors, including lung, colon, breast, renal, liver and pancreatic carcinomas, but not on normal vasculature. PSMA is also expressed minimally in brain. PSMA is a type II cell