Cancer biomarkers are often glycosylated membrane receptor proteins present on the cellular surface. In order to utilize such receptor proteins in designing specific and sensitive diagnostic tools or as immunogens for vaccination based treatments, they need to be expressed in their native conformation. However, membrane receptor proteins are notoriously difficult to produce due to their hydrophobic nature and complex structure. The human epidermal growth factor receptor 2 (HER2) is known to be upregulated in a number of cancers including breast cancer, lung cancer, gastric cancer and glioblastoma multiforme and was therefore chosen as tumor antigen in our studies. Here we used the baculovirus-insect cell expression vector system (BEVS) to produce budded virus-like particles (VLPs) serving as a display platform for the antigen. VLPs displaying HER2 were produced in Spodoptera frugiperda (Sf9) insect cells and were purified by sucrose gradient ultracentrifugation. The number of secreted particles was quantified by nanoparticle tracking analysis. To confirm the presence and functionality of displayed HER2, VLPs were labeled with gold-conjugated antibodies, were analyzed by transmission electron microscopy and the ability to present native epitopes was tested through enzyme-linked immunosorbent assay (ELISA). Trastuzumab, an anti-HER2 antibody, showed significant binding to antigen displaying VLPs, which demonstrates the potential of this platform to display cell surface biomarkers in their authentic conformation. In the second part of the study, the efficacy of the aforementioned characterized VLPs as a cancer vaccine was investigated. BALB/c mice were injected intramuscularly with control VLPs and HER2-displaying VLPs in combination with two different adjuvants in a prime-boost regimen. As verified by ELISA, HER2-displaying VLP vaccines induced strong antibody responses when tested against recombinant HER2, with variability observed amongst the different adjuvant groups. For further characterization the antibody-dependent cell-mediated cytotoxicity (ADCC) potential of the induced antibodies will be investigated and vaccinated mice will be challenged with HER2 expressing tumors to test the potential of antigen-displaying VLPs as a cancer vaccine. Overall, using our strategy, many other membrane proteins including tumor antigens, immune cell markers and immune receptors could be expressed. These tools could further be instrumental in cancer vaccine design and diagnostics, as well as antibody selection and engineering.