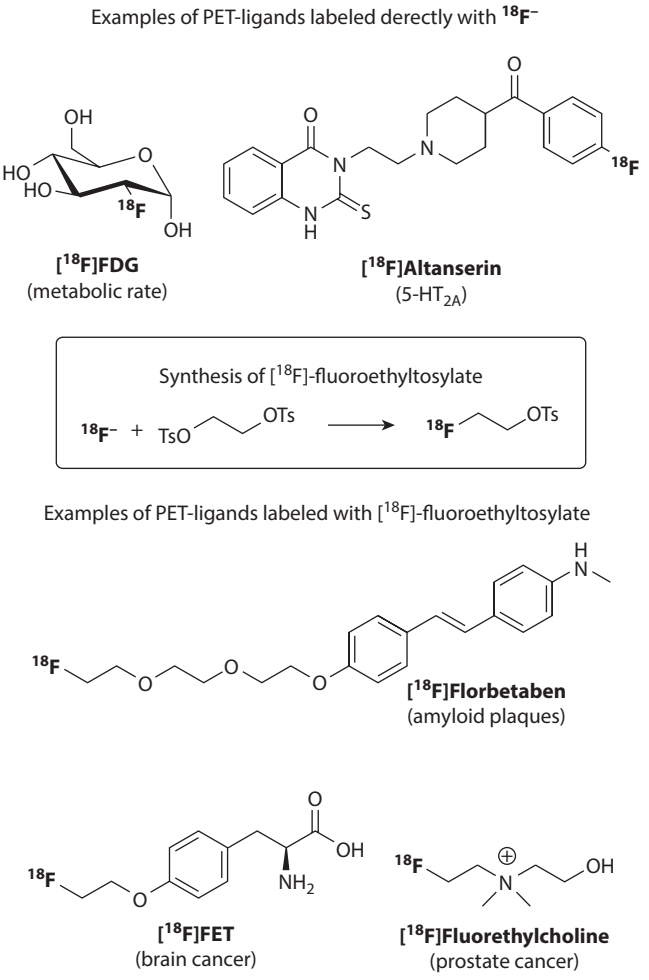

FIGURE 8.6 Representative structures of ^{18}F-labeled PET ligands.

direct or indirect fluorination are presented. [^{18}F]2-fluoro-2-deoxy-*d*-glucose ([^{18}F]FDG) is one of the most widely used PET ligands used primarily in cancer diagnostics. [^{18}F]altanserin, also labeled via a nucleophilic labeling of a suitable precursor, can be used to image the 5-HT$_{2A}$ receptor in the CNS.

[^{18}F]Fluoroethyl tosylate is readily prepared and can be used in analogy with [^{11}C]CH_3I to alkylate a wide range of precursors. [^{18}F]Florbetaben is used to image amyloid plaques in analogy to [^{11}C]PiB in Figure 8.5; [^{18}F]FET and [^{18}F]Fluorethylcholine are used to image specific types of cancers. Again, a plethora of other ^{18}F-based PET ligands, synthons, and procedures are available.

8.7 METABOLISM OF PET LIGANDS

The site of labeling in a given molecule needs to be considered carefully. The most obvious and easiest way of labeling a molecule may not be the optimal solution as the metabolism of the PET ligand needs to be considered. As the ligand is metabolized, one (or more) derivatives of the original PET ligand can compromise the outcome of the experiments. Changing the site of labeling may alleviate that problem, see Figure 8.7.