The recognized need for new PET tracers is associated with increases in available PET instrumentation and with unmet clinical challenges in the early diagnosis and staging of diseases. The clinical success of (18)F-FDG PET has resulted in the acceptance of biologic signals as part of disease management. The advantages of PET technology over SPECT will lead to the introduction of new PET tracers for established nuclear medicine imaging indications. Disease-specific markers such as amyloid ligands will lead to new applications of PET to neurodegenerative diseases that are prevalent in aging societies. The translation of molecular imaging to clinical applications will require combining specific tracer approaches with targeted therapy for the realization of personalized medicine. An important aspect of the introduction of new PET tracers will be the emergence of a specialized radiopharmaceutical industry and professional distribution networks. The number of available PET tracers not only will follow rules of demand and supply but also will be dependent on the regulatory environment of individual health care systems.