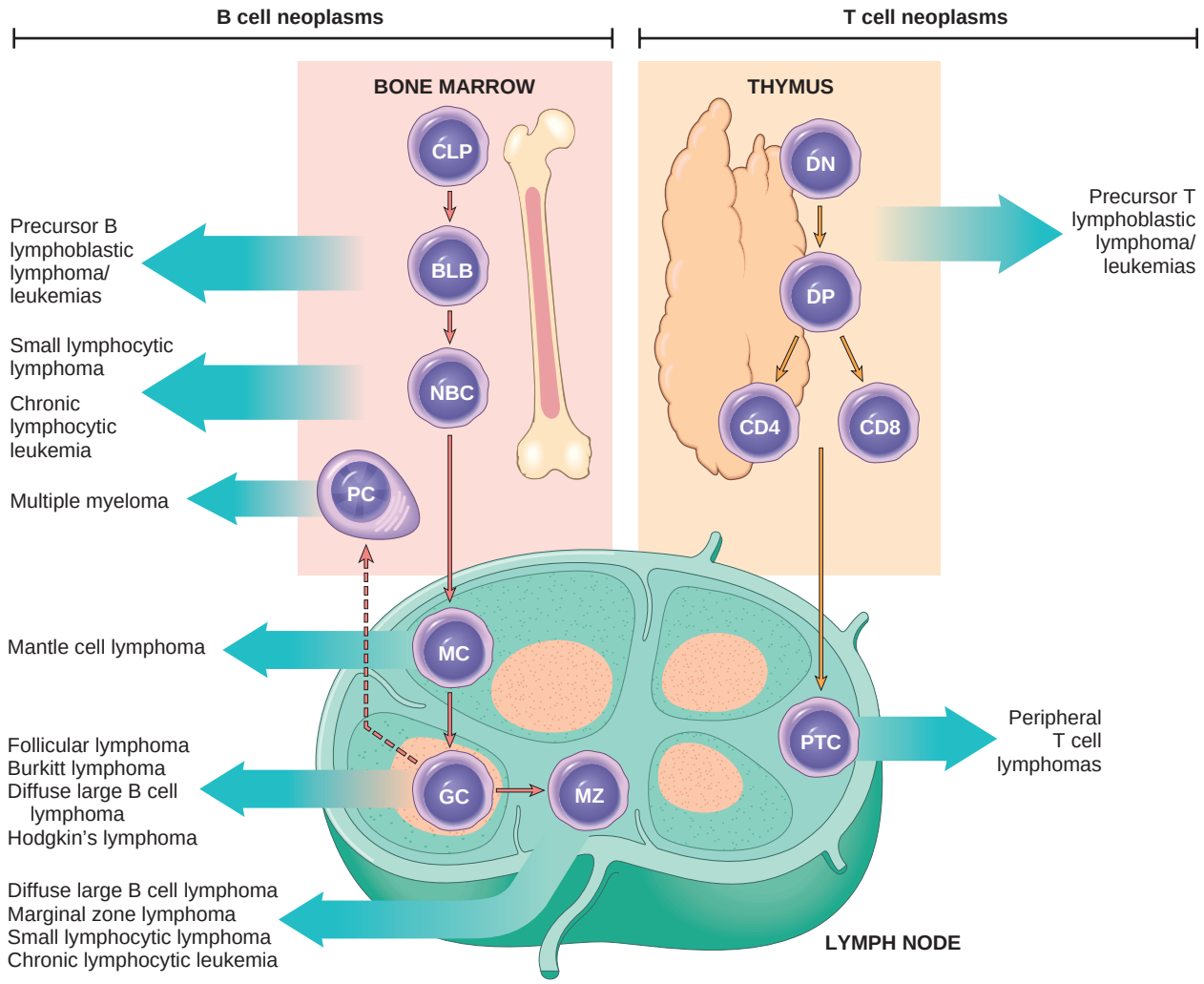

Figure 13-5 Origin of lymphoid neoplasms. Stages of B- and T-cell differentiation from which specific lymphoid tumors emerge are shown. CLP, Common lymphoid precursor; BLB, pre-B lymphoblast; DN, CD4/CD8 double-negative pro-T cell; DP, CD4/CD8 double-positive pre-T cell; GC, germinal-center B cell; MC, mantle B cell; MZ, marginal zone B cell; NBC, naive B cell; PTC, peripheral T cell.

- **Antigen receptor gene rearrangement generally precedes transformation of lymphoid cells; hence, all daughter cells derived from the malignant progenitor share the same antigen receptor gene configuration and sequence, and synthesize identical antigen receptor proteins (either Igs or T-cell receptors)**. In contrast, normal immune responses are comprised of polyclonal populations of lymphocytes that express many different antigen receptors. Thus, analyses of antigen receptor genes and their protein products can be used to distinguish reactive (polyclonal) and malignant (monoclonal) lymphoid proliferations. In addition, each antigen receptor gene rearrangement produces a unique DNA sequence that constitutes a highly specific clonal marker, which can be used to detect small numbers of residual malignant lymphoid cells after therapy.
- **Most lymphoid neoplasms resemble some recognizable stage of B- or T-cell differentiation** (Fig. 13-5), a feature that is used in their classification. The vast majority (85% to 90%) of lymphoid neoplasms are of B-cell origin, with most of the remainder being T-cell tumors; only rarely are tumors of NK cell origin encountered. Markers recognized by antibodies that are helpful in the characterization of lymphomas and leukemias are listed in Table 13-5.
- **Lymphoid neoplasms are often associated with immune abnormalities.** Both a loss of protective immunity (susceptibility to infection) and a breakdown of tolerance (autoimmunity) can be seen, sometimes in the same patient. In a further ironic twist, individuals with inherited or acquired immunodeficiency are themselves at high risk of developing certain lymphoid neoplasms, particularly those caused by oncogenic viruses (e.g., EBV).
- **Neoplastic B and T cells tend to recapitulate the behavior of their normal counterparts.** Like normal lymphocytes, neoplastic B and T cells home to certain tissue sites, leading to characteristic patterns of involvement. For example, follicular lymphomas home to germinal centers in lymph nodes, whereas cutaneous T-cell lymphomas home to the skin. Like their normal counterparts, particular adhesion molecules and chemokine receptors govern the homing of the neoplastic lymphoid cells. Variable numbers of neoplastic B and T