



FIGURE 18.2 The Philadelphia chromosome. The Philadelphia chromosome occurs by a genetic event called a reciprocal translocation. The reactants are chromosome 9 and chromosome 22, and the products are collectively referred to as the Philadelphia chromosome. ABL, *Abelson oncogene locus*; BCL, *breakpoint cluster locus*.

2. Chronic Lymphocytic Leukemia

In the United States, there are about 15,000 new cases of CLL per year (93). CLL involves fever without evidence of infection, extreme fatigue, night sweats, weight loss (94,95). The disease also results in anemia or thrombocytopenia due to bone marrow failure. Infections are frequent. The disease also involves a rapidly rising lymphocyte count in peripheral blood, with a doubling time of less than 6 months.

The criteria for response to treatment include blood counts (lymphocytes, platelets,

neutrophils), blood hemoglobin, and the number of nodules in the bone marrow, as set forth by the Guidelines from the NCI-sponsored Working Group Response Criteria for CLL (96), as well as progression-free survival (PFS) (97) and time to progression (TPP) (98). The endpoints of PFS and TTP require and depend upon acquiring data as set forth in these Guidelines.

Hallek et al. (99) provide methods for diagnosing CLL, for assessing the course of CLL, for assessing response of CLL to treatment,

⁹³National Cancer Institute. What you need to know about leukemia. NIH publication no.08-3775; 2008 (55 pp.).

⁹⁴Montserrat E, Moreno C. Chronic lymphocytic leukaemia: a short overview. *Ann. Oncol.* 2008;19(Suppl. 7):vii320–5.

⁹⁵Yee KW, O'Brien SM. Chronic lymphocytic leukemia: diagnosis and treatment. *Mayo Clin. Proc.* 2006;81:1105–29.

⁹⁶Cheson BD, Bennett JM, Grever M, et al. National Cancer Institute-sponsored Working Group guidelines for chronic lymphocytic leukemia: revised guidelines for diagnosis and treatment. *Blood* 1996;87:4990–7.

⁹⁷Hillmen P, Skotnicki AB, Robak T, et al. Alemtuzumab compared with chlorambucil as first-line therapy for chronic lymphocytic leukemia. *J. Clin. Oncol.* 2007;25:5616–23.

⁹⁸Elter T, Borchmann P, Schulz H, et al. Fludarabine in combination with alemtuzumab is effective and feasible in patients with relapsed or refractory B-cell chronic lymphocytic leukemia: results of a phase II trial. *J. Clin. Oncol.* 2005;23:7024–31.

⁹⁹Hallek M, Cheson BD, Catovsky D, et al. Guidelines for the diagnosis and treatment of chronic lymphocytic leukemia: a report from the International Workshop on Chronic Lymphocytic Leukemia updating the National Cancer Institute-Working Group 1996 guidelines. *Blood* 2008;111:5446–56.