Among these discoveries are the following:

1. **Acute myeloid leukemia**: The discovery of the activity of interferon. Later confirmatory studies of the efficacy of cladribine, and the discovery of the efficacy of rituximab. This led to the development of the cladribine + rituximab regimen, associated with a 10-year disease-free survival of 80 percent.

2. **Chronic myeloid leukemia (CML)**: The creation of the definitions of accelerated phase and of cytogenetic response criteria. The discovery of the activity of imatinib. The development of imatinib, nilotinib, dasatinib, and ponatinib. These endeavors in long-term historical studies demonstrated the survival benefit with TKIs. The development of enaemotaxine for the treatment of CML.

3. **Chronic myeloid leukemia (CML)**: The definition of the activities of accelerated phase and of cytogenetic response criteria. The discovery of the activity of imatinib. The development of imatinib, nilotinib, dasatinib, and ponatinib. These endeavors in long-term historical studies demonstrated the survival benefit with TKIs. The development of enaemotaxine for the treatment of CML.

4. **ALL**: The development of the hyper-CVAD regimen in 1992. Subsequent follow-up regimens including hyper-CVAD plus TKIs in Ph+ ALL; hyper-CVAD + rituximab in Burkitt Leukemia and pre-B-ALL. The development of clofarabine and liposomal vincristine. Replacement of CNS radiation prophylaxis with intrathecal chemotherapy prophylaxis. The discovery of the activity of imatinib and other monoclonal antibodies as single agents and in combinations in ALL. These studies have established new standards of care and have improved long-term survival in adult ALL. Several of the discoveries were then incorporated also into the pediatric regimens (CNS intrathecal prophylaxis; clofarabine; combinations of TKIs and chemotherapy in Ph+ ALL; monoclonal antibodies). The development of clofarabine and liposomal vincristine. Replacement of CNS radiation prophylaxis with intrathecal chemotherapy prophylaxis. The discovery of the activity of imatinib and other monoclonal antibodies as single agents and in combinations in ALL. These studies have established new standards of care and have improved long-term survival in adult ALL. Several of the discoveries were then incorporated also into the pediatric regimens (CNS intrathecal prophylaxis; clofarabine; combinations of TKIs and chemotherapy in Ph+ ALL; monoclonal antibodies).

5. **MDS and MPNs**: The development of decitabine in MDS and MPNs: combinations of TKIs and chemotherapy in Ph+ ALL; monoclonal antibodies.

6. **Chronic lymphocytic leukemia**: The discovery of the activity of fludarabine (F). Later development of F + cyclophosphamide (FC), and FC + rituximab (FCR). The development of alemtuzumab and other monoclonal antibodies as single agents and in combinations in CLL. The development of decitabine in MDS and MPNs: combinations of TKIs and chemotherapy in Ph+ ALL; monoclonal antibodies.

Prominent among these discoveries are the following:

1. **Hairy cell leukemia**: The discovery of the activity of interferon. Later confirmatory studies of the efficacy of cladribine, and the discovery of the efficacy of rituximab. This led to the development of the cladribine + rituximab regimen, associated with a 10-year disease-free survival of 80 percent.

2. **Acute myeloid leukemia**: The development of cytarabine, cytarabine + anthracycline combinations, and high-dose cytarabine regimens in 1983. The expansion of the discovery of the activity of ATRA and arsenic trioxide in acute promyelocytic leukemia, and the development of the ATRA + arsenic trioxide regimen. The development of nucleoside combinations with cytarabine and anthracyclines (e.g., FLAG-IDA). The development of epigenetic therapy with decitabine.

3. **Chronic myeloid leukemia (CML)**: The creation of the definitions of accelerated phase and of cytogenetic response criteria. The discovery of the activity of imatinib. The development of imatinib, nilotinib, dasatinib, and ponatinib. These endeavors in long-term historical studies demonstrated the survival benefit with TKIs. The development of enaemotaxine for the treatment of CML.

4. **ALL**: The development of the hyper-CVAD regimen in 1992. Subsequent follow-up regimens including hyper-CVAD plus TKIs in Ph+ ALL; hyper-CVAD + rituximab in Burkitt Leukemia and pre-B-ALL. The development of clofarabine and liposomal vincristine. Replacement of CNS radiation prophylaxis with intrathecal chemotherapy prophylaxis. The discovery of the activity of imatinib and other monoclonal antibodies as single agents and in combinations in ALL. These studies have established new standards of care and have improved long-term survival in adult ALL. Several of the discoveries were then incorporated also into the pediatric regimens (CNS intrathecal prophylaxis; clofarabine; combinations of TKIs and chemotherapy in Ph+ ALL; monoclonal antibodies).

5. **MDS and MPNs**: The development of decitabine in MDS. The development of ruxolitinib and investigation of multiple JAK2 inhibitors in myelofibrosis.

6. **Chronic lymphocytic leukemia**: The discovery of the activity of fludarabine (F). Later development of F + cyclophosphamide (FC), and FC + rituximab (FCR). The development of alemtuzumab and other monoclonal antibodies as single agents and in combinations in CLL. The development of alemtuzumab and other monoclonal antibodies as single agents and in combinations in CLL. The development of alemtuzumab and other monoclonal antibodies as single agents and in combinations in CLL.