Jim Brewer, Executive Director
The Leukemia and Lymphoma Society
Arizona Chapter
Aligning the Players in the Innovation Ecosystem

- Patients
- Academic Research
- Biopharma
- Government
- Third-Party Payors
- Health Care Professionals
- Clinical Trials
- Advocacy
- Patient Programs and Support
- Therapy Acceleration
- Access

LLS
1976 - 1980


AML, MM, NHL, CLL, ALL (Age 20+), ALL (Age <20)
1986 - 1990

Incidence Scale

1996 - 2000

2006 - 2010

Source: SEER 18 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana, New Jersey and Georgia excluding ATL/RG). Median age and incidence counts include cases diagnosed in 2006-2010. Relative survival rates include cases diagnosed in 2003-2009.
Dr. Ian DeRoock
Ironwood Cancer and Research Center
Disease: Hodgkin Lymphoma

Therapy: Immune checkpoint inhibitors

Findings:
• Two Phase I trials with distinct anti PD-1 antibodies
• Extraordinary response in patients with relapsed Hodgkin lymphoma (overall response rate = 50-87%)
• Well tolerated

Why it’s important: This is a promising new approach to treating patients who have very poor prognosis

How did LLS help?
• LLS funded investigators who found very high expression of PD-1 in HL
• Multiple new grant awards in progress to expand utility to other lymphomas
**Disease:** Acute Lymphoblastic Leukemia (ALL) & lymphomas

**Therapy:** CAR-T Immunotherapy

**Findings:**
- Two phase I clinical trials; 90% response rate in ALL
- Long-term response rates in ALL (> 2 years)
- New data shows utility in patients with B-cell lymphomas

**Why it’s important?** Groundbreaking approach to treating relapsed/refractory patients; durable responses for many of the patients.

**How did LLS help?**
- LLS has funded a team at University of Pennsylvania and Children’s Hospital of Philadelphia for nearly two decades with a commitment of $21 million
- Numerous on-going grants to expand utility and examine resistance
**Blinatumomab Approval**

**Disease:** Acute Lymphoblastic Leukemia (ALL)

**Therapy:** Blinatumomab: bispecific T-cell antigen

**Findings:**
- FDA approved on December 3, 2014 for Philadelphia chromosome-negative (PH-) relapsed or refractory B-cell precursor ALL
- Phase II clinical trial presented at ASH2014
- 43% complete response rate; 40% go on to transplant

**Why it’s important?** New option for patients with poor prognosis. First approval for new type of antibody as therapeutic

**How did LLS help?** LLS did not fund the advance of blinatumomab, but this is a promising advance for patients we serve
NEW THERAPIES EMERGING FOR MYELOMA

Disease: Multiple Myeloma (MM)

Therapy: Anti-CD38 antibody, carfilzomib

Findings:
- Encouraging single agent activity with anti-CD38 antibodies
- Phase II studies on-going with anti-CD38 Abs or elotuzumab + standard therapies likely to increase survival times by multiple years
- Phase III: carfilzomib + standard therapy increase progression-free survival time (+9 mo) compared to standard therapy

Why is this important? New immunotherapy approach to treating myeloma patients has therapeutic effects; additional combinations possible

How did LLS help? LLS did not fund these advances but nicely complements our ongoing efforts with grants/TAP programs for other MM targets
**Targeting IDH in Acute Myeloid Leukemia**

**Disease:** Acute Myeloid Leukemia (AML)

**Therapy:** IDH Inhibitors – AG-221, AG120

**Findings:**
- About 15-20% of AML patients have IDH mutations
- Phase I trial with oral (pill) IDH1 or 2 inhibitors show 50-60% response rate in refractory AML patients

**Why is this important?** Therapy shows promise of durable response for subset of AML patients. No change in standard of therapy for AML in past 40 years

**How did LLS help?** LLS is funding one of the researchers in the study & LLS has numerous grants in progress studying this target
TARGETING EZH2 IN CHRONIC MYELOID LEUKEMIA

**Disease:** Chronic Myeloid Leukemia

**Therapy:** EZH2 Inhibitor

**Findings:** Pre-clinical evidence that EZH2 inhibitor may eradicate CML leukemia stem cells (LSC)

**Why is this important?** Experimental therapy targeting the cancer stem cells and may lead to complete eradication of disease (vs. long-term disease control with imatinib)

**How did LLS help?** LLS is funding a researcher, Huafeng Xie, at Dana-Farber Cancer Institute, through our Career Development Fellow Program. He is planning a clinical trial.
Hairy Cell Leukemia

Disease: Hairy Cell Leukemia

Therapy: B-RAF inhibitor (vemurafenib)

Findings:
• Two Phase II trials (US and Italy)
• Extraordinarily high response rate (overall response rate= 95-100%) that is rapid and durable

Why is this important?
• Hairy cell leukemia remains incurable with 30-40% pts.
• 95%+ patients have activating mutation of B-RAF (“V600E”)
• Excellent example of “right patient, right therapy” (like imatinib)
• New treatment alternative with long-term disease control potential

How did LLS help?
• Lead Italian investigator (Dr. Tiacci) is an LLS CDP Scholar funded for this trial
• First author of US trial (Dr. Park) is an LLS CDP Special Fellow in Clinical Research
# Clinical Trials Division TAP Pipeline

## Blood Cancer Research Partnership (BCRP):
To establish a collaborative partnership between LLS, DFCI, and community oncologists

- A Phase 1/2 Open-label Study to Assess the Safety, Tolerability and Preliminary Efficacy of TH-302, A Hypoxia-Activated Prodrug, and Dexamethasone with or without Bortezomib in Subjects with Relapsed/Refractory Multiple Myeloma (NCT01522872)
- A Phase I/Ib Study of Ipilimumab in Patients with Relapsed Hematologic Malignancies After Allogeneic Hematopoietic Cell Transplantation (NCT01822509)
- Open-label Study of the Safety and Activity of Oprozomib in Patients With Hematologic Malignancies (NCT01416428)

## TAP Special Initiatives

### A Simple Patient Care Strategy to Reduce Early Deaths in Acute Promyelocytic Leukemia (APL)

### Precision Medicine to Beat Acute Myeloid Leukemia (AML)

### Equity Investment in Multiple Small Molecules and Targets for Hematological Malignancies

---

**someday is today**