

BASTION - From Basic to Translational Research in Oncology
Kick-off Meeting / International Advisory Board Meeting
Medical University of Warsaw, November 27th 2012

University Hospital of Ulm

-

Focus on Hematology / Oncology

Lars Bullinger

Department of Internal Medicine III



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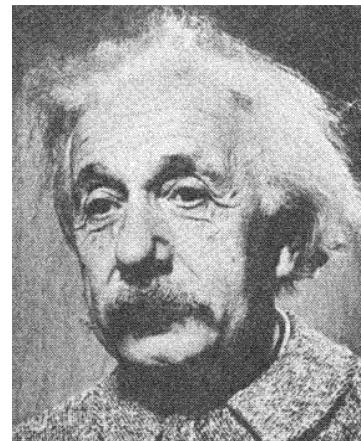
AML
STUDY
GROUP

Ulm, Germany



Ulm: A City of Extremes....

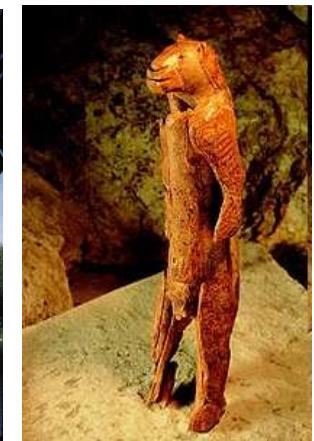
1879 – 1955



161.4 m



35000 yrs



.... in a Prospering Region!



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Ulm University

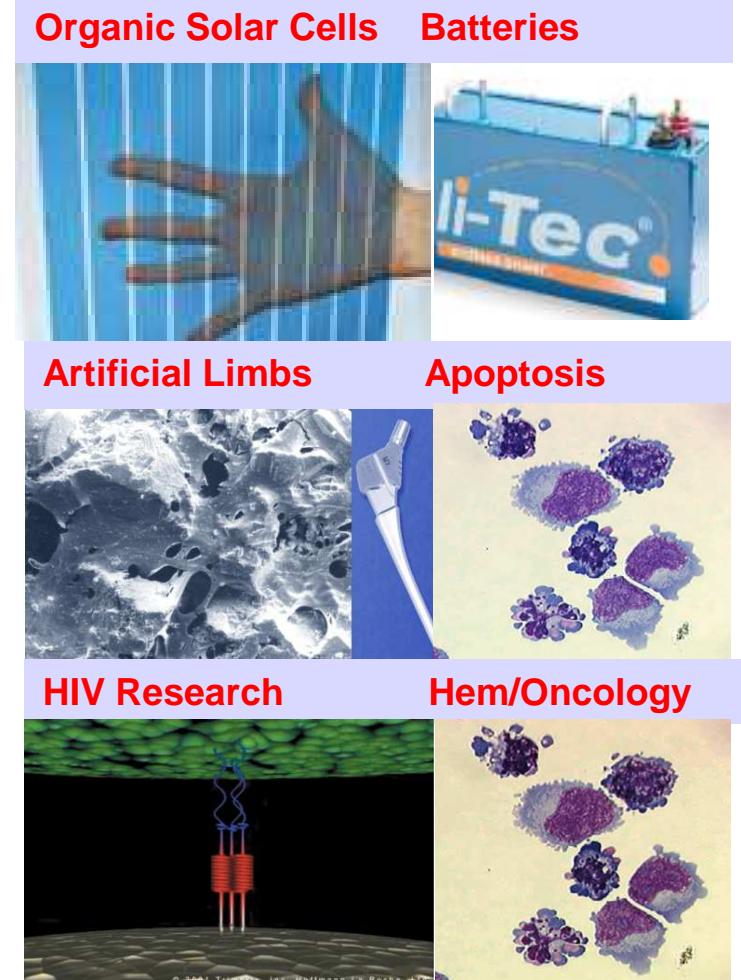
Public university in the Federal State of Baden-Württemberg, founded in 1967 as a medical-technical university

~8.700 students (35% in medicine),
12% international, 200 professors,
~77 Mio. Euro third-party funding

Campus integrated in Science City Ulm including several hospitals and applied research institutes and two business parks with Daimler, Siemens, and Nokia

In 2011:

1369 Graduates (Bachelor, Master)
409 Doctorate Degrees
41 Habilitation Degrees



University Hospital of Ulm

1967

Foundation of University,
start to develop the
Medical Faculty of the
University of Ulm



1982

Formation of the
University Hospital of Ulm



Facts

| | |
|-------------|----------|
| Employees | ~6000 |
| Beds | ~1150 |
| Inpatients | ~40,000 |
| Outpatients | ~224,224 |

Department of Internal Medicine III

The Department of Internal Medicine III comprises inpatient wards, a day-care clinic, outpatient clinics, trials office and routine as well as research laboratories

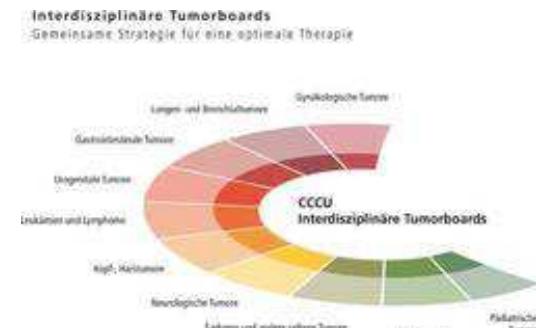
Special Facts:

2012 ~3,000 inpatient cases
 ~10,000 outpatient cases

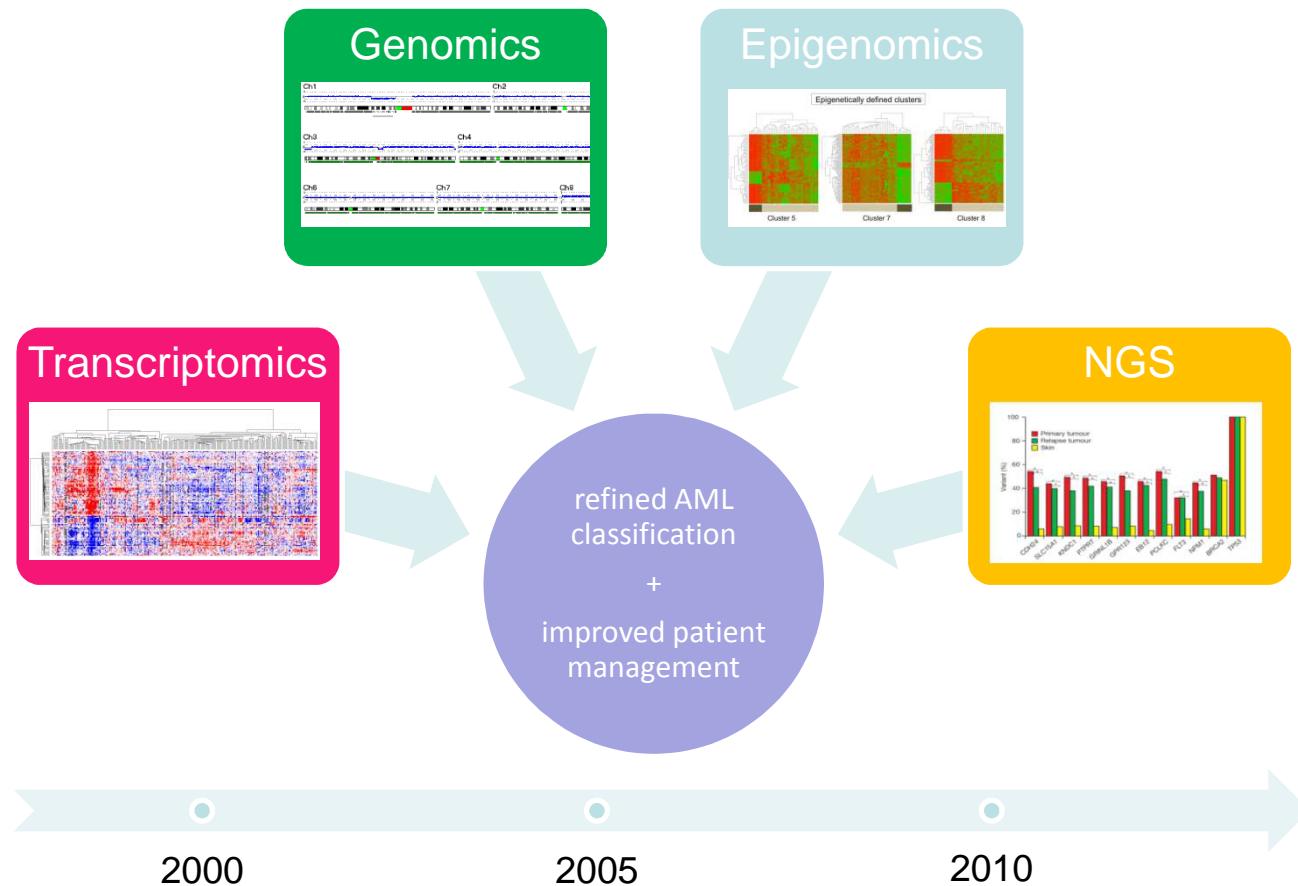
BMT unit since 1972 (70-80 allogeneic HSCTs)
CCCU (Comprehensive Cancer Center Ulm)
Clinical Trials unit (Phase I-III studies)

Research Focus:

CLL, MM, NHL, AML and solid tumors
(sarcomas and neuro-oncological tumors)



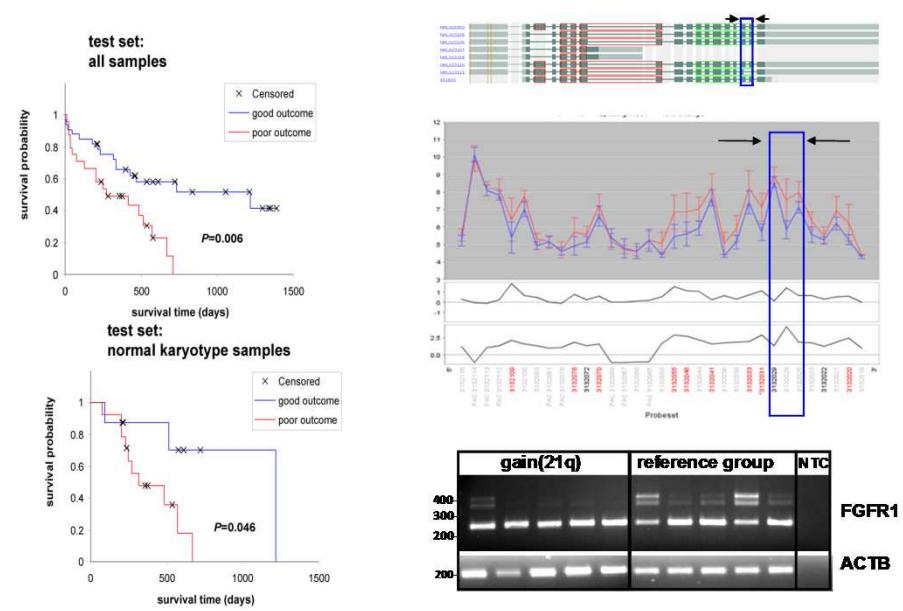
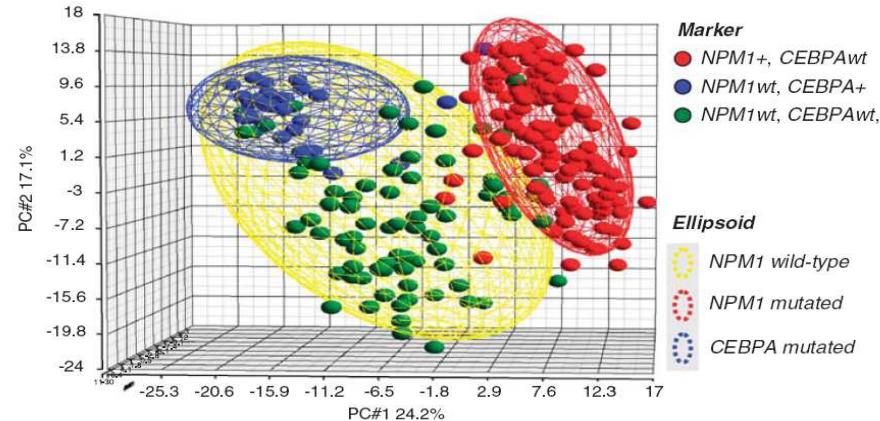
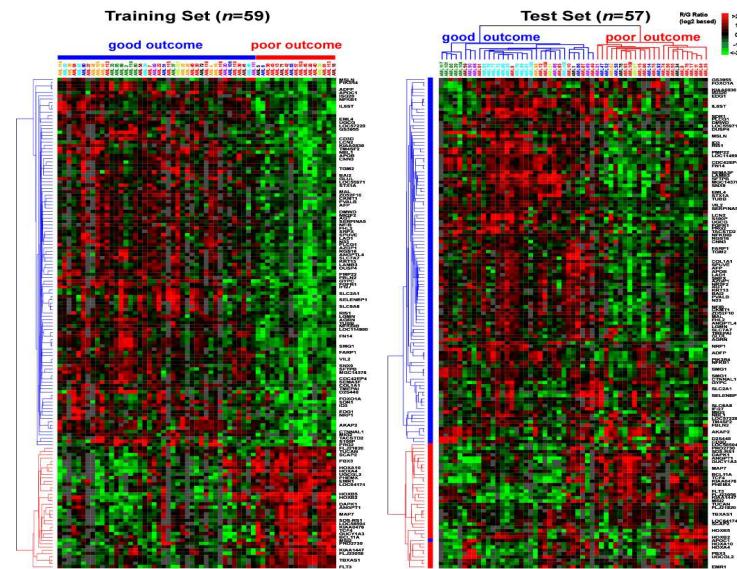
Omics and NGS in acute myeloid leukemia



Gene expression profiling (GEP) in AML

GEP - powerful tool for

- Class prediction
- Class discovery
- Outcome prediction
- Prediction of drug action
- Alternative splicing

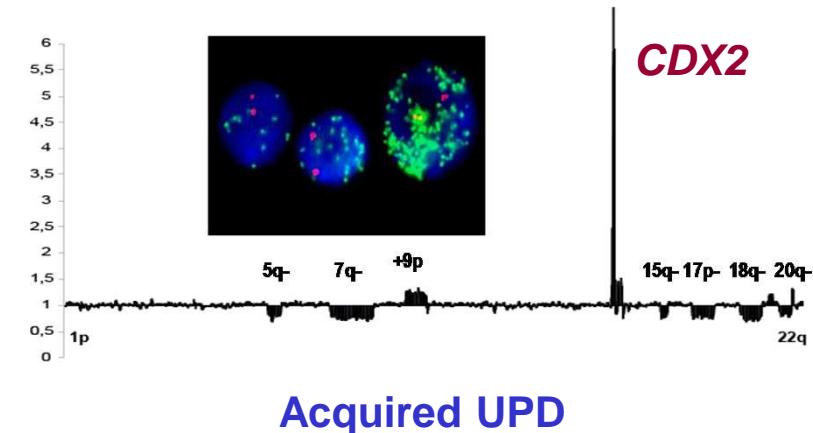
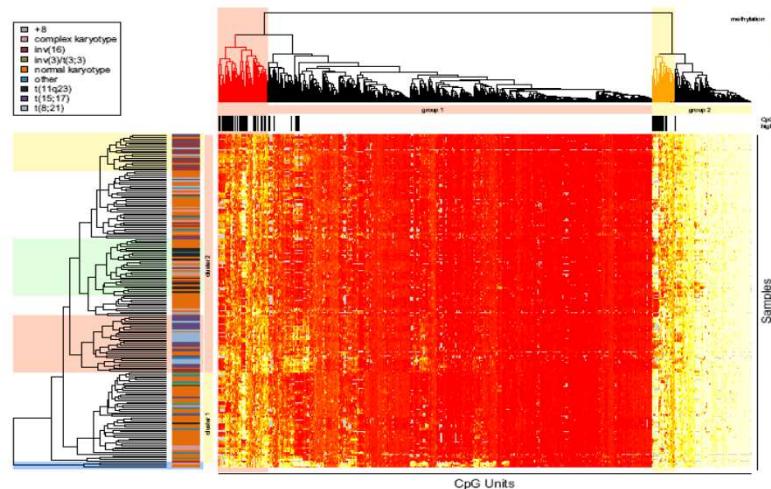


Bullinger et al. N Engl J Med 2004, Bullinger et al. Blood 2008;
Giannopoulos et al. Leukemia 2009; Kohlmann et al. Leukemia 2010

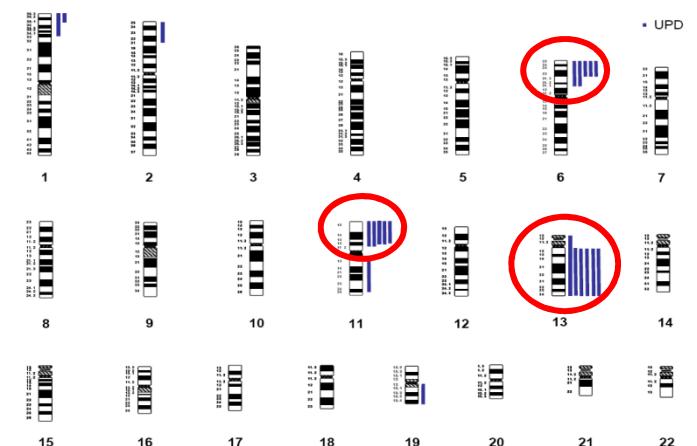
Genomic and epigenomic profiling reveals novel genomic aberrations

High-resolution analysis:

- Recurrent genomic gains/losses including high-level amplifications
- Structural variation (chromothripsis)
- Areas of uniparental disomies
- NGS in AML
- Prognostic epigenetic patterns



Acquired UPD

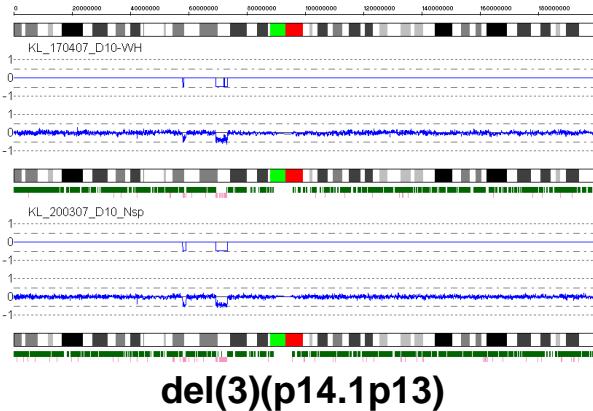


Rücker/Bullinger et al. J Clin Oncol 2006; Bullinger et al. Leukemia 2010;
Bullinger et al. Blood 2010; Rausch et al. Cell 2012; Dolnik et al. Blood 2012

Integrated genomics in AML

Genomic analysis

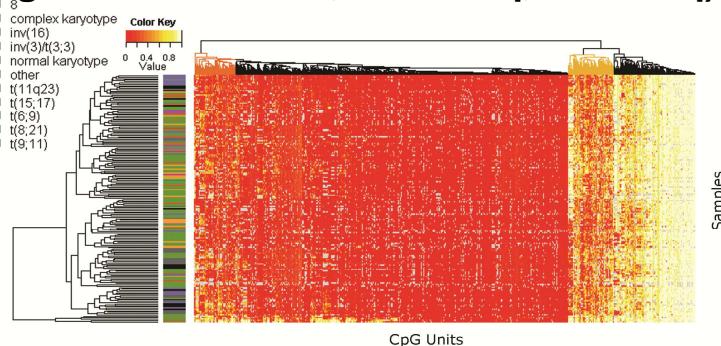
(e.g. SNP-chip analysis, NGS)



del(3)(p14.1p13)

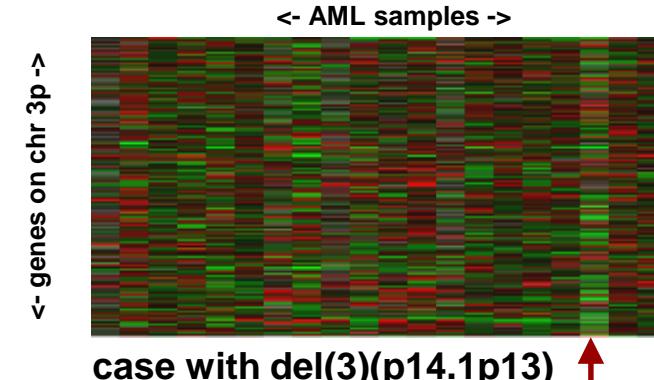
Epigenetic profiling

(e.g. MALDI-TOF MS, mCIP-seq, ChIP-seq)



Gene/miRNA expression profiling

(e.g. oligo-microarrays, RNA-seq)



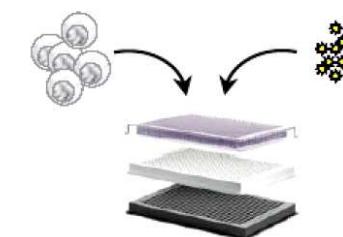
case with del(3)(p14.1p13) ↑

Target gene analysis

(e.g. functional genomics, mouse models)

Mutant *KRAS*-dependent cell lines

NOMO-1
DLD-1
HCT-116
MDA-MB-231

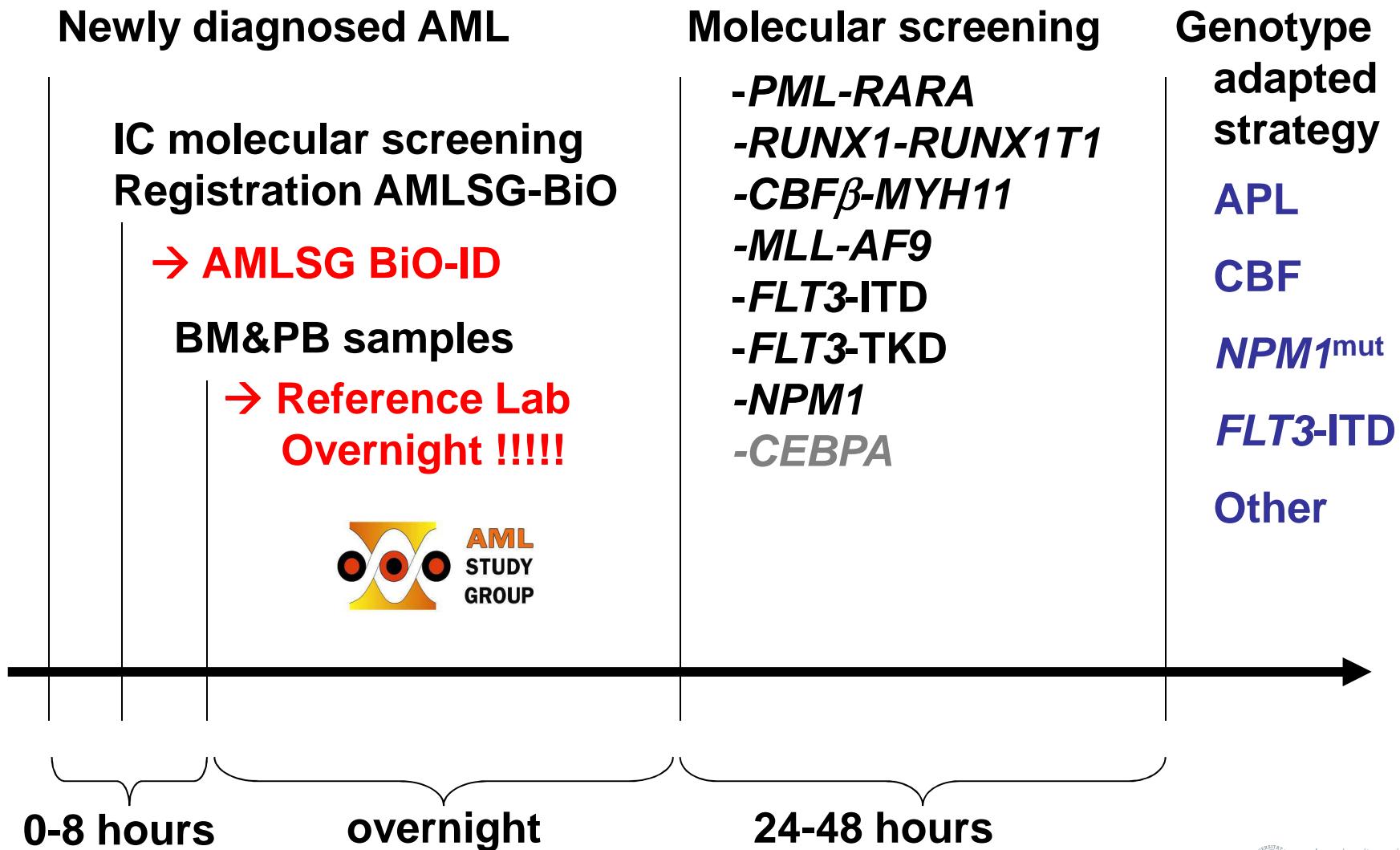


Arrayed
lentiviral
shRNA
library

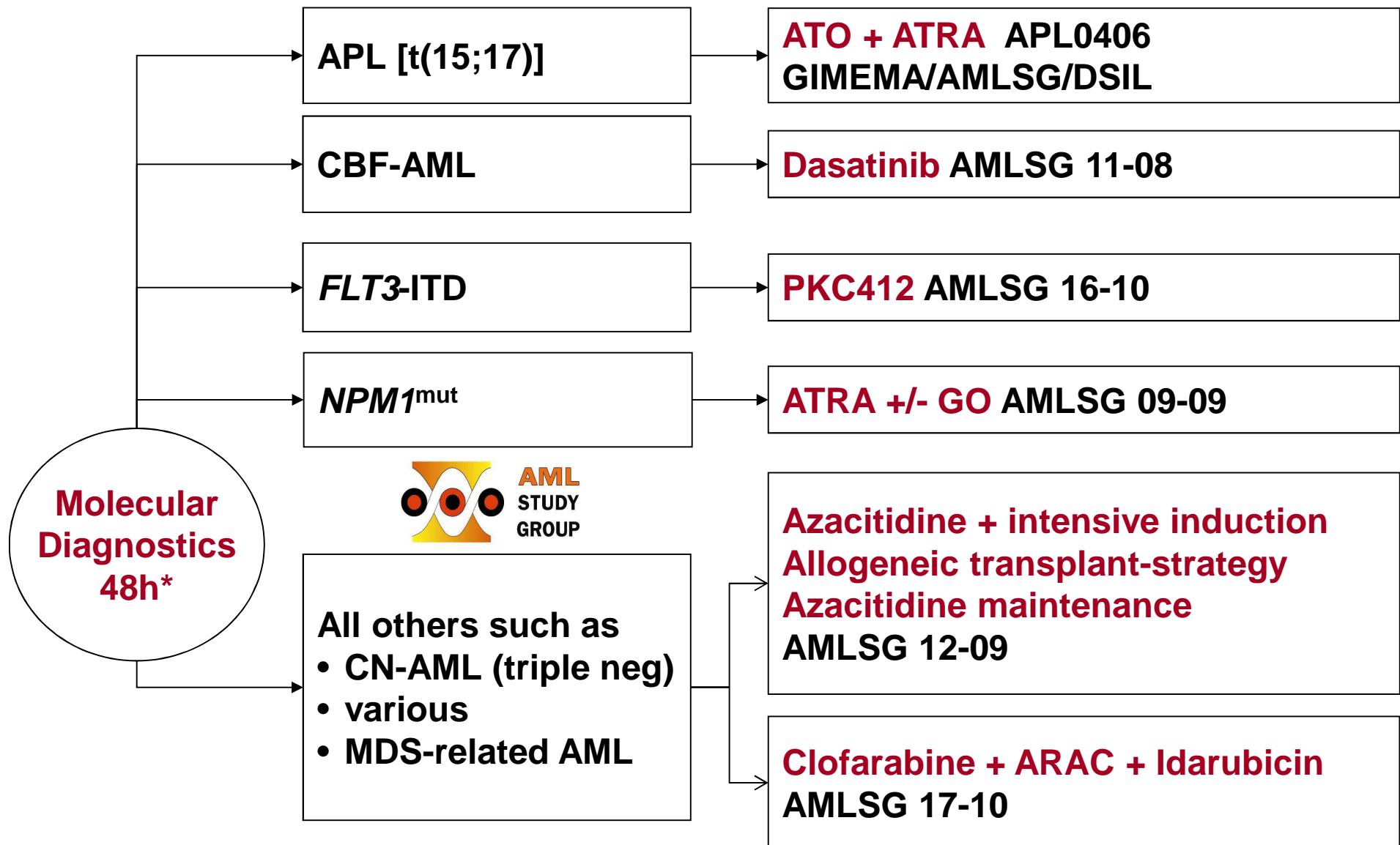


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Translation into the clinic



Genotype-specific treatment in AML



* 7 days a week

Acknowledgements



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Nationales
Gesamtforschungsnetz

