

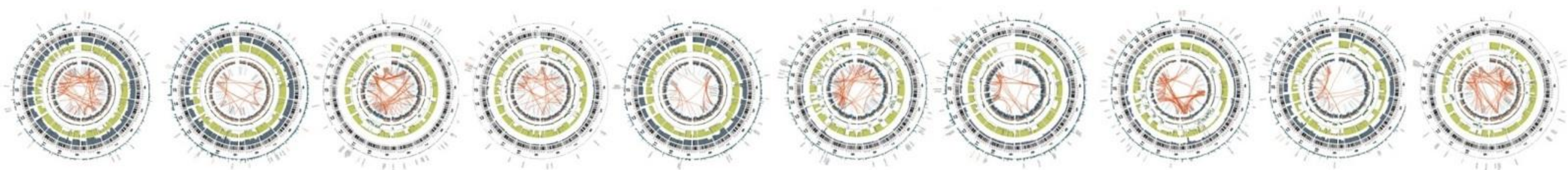
Clinical Biomarkers for Osteosarcoma Stratification (cBOSS)

**Insights from an
international working group**

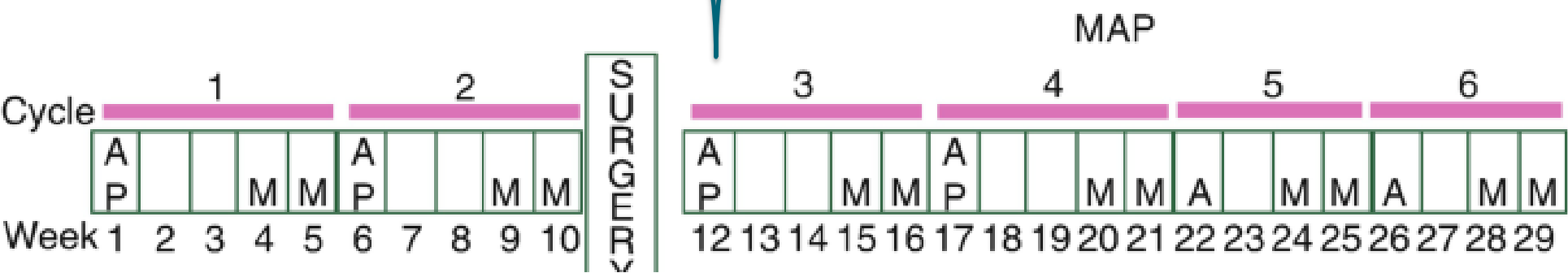
Amanda Marinoff, MD
UCSF Benioff Children's Hospital



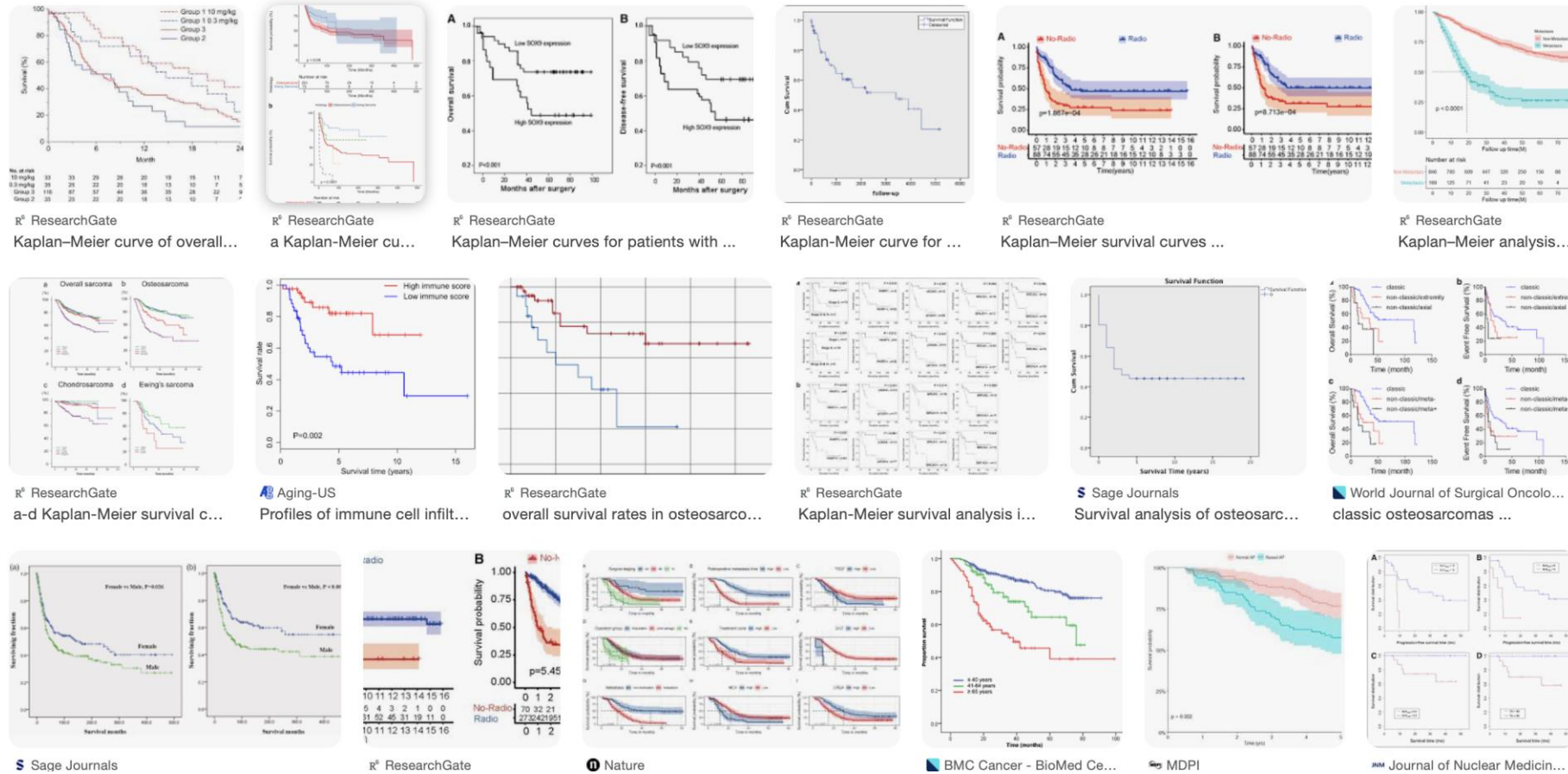
Osteosarcoma is heterogeneous; treatment is not



One-size fits all treatment



Many candidate prognostic markers for risk stratification in osteosarcoma



But none are currently used in the clinical setting

Goals of the cBOSS working group

- Evaluate the current landscape of prognostic and predictive biomarkers
- Build a v1 framework for **clinical** risk stratification
- Prioritize classifiers with potential for near-term clinical use
- Identify evidence gaps and unmet needs
- Align future trials and correlative studies around shared priorities

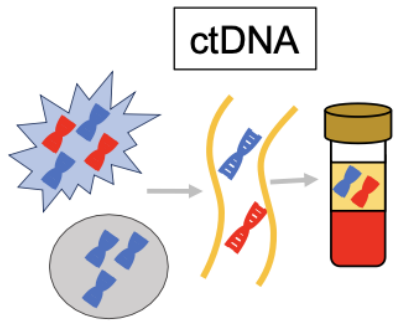
**Laying the groundwork for precision medicine in
osteosarcoma**

Our Team

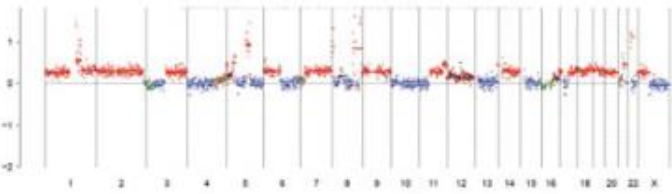
- Ryan Roberts (Nationwide Children's)
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- Amanda Marinoff (UCSF)
- Samuel Abbou (Gustave Roussy)
- Katie Albert (Seattle Children's)
- Brian Crompton (Dana-Farber)
- Isidro Cortes-Ciriano (EMBL-EBI)
- Christina Curtis (Stanford)
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- Sarah Whittle (Texas Children's)



Features evaluated by cBOSS



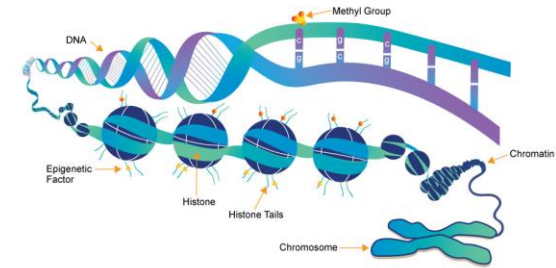
Copy Number Alterations



Transcriptome



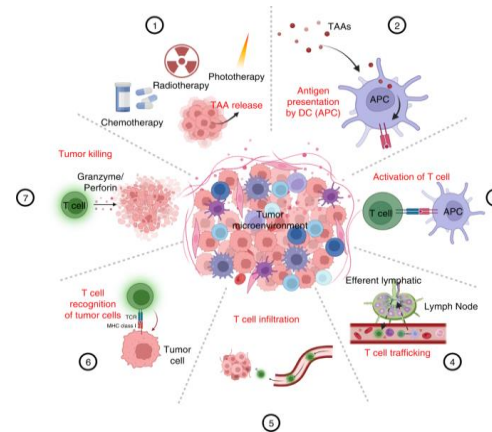
Epigenetics



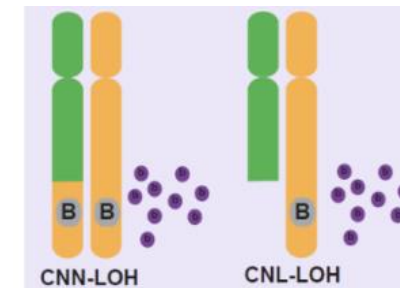
Clinical Features

- Stage
- Resectability
- Location
- % necrosis

Tumor microenvironment



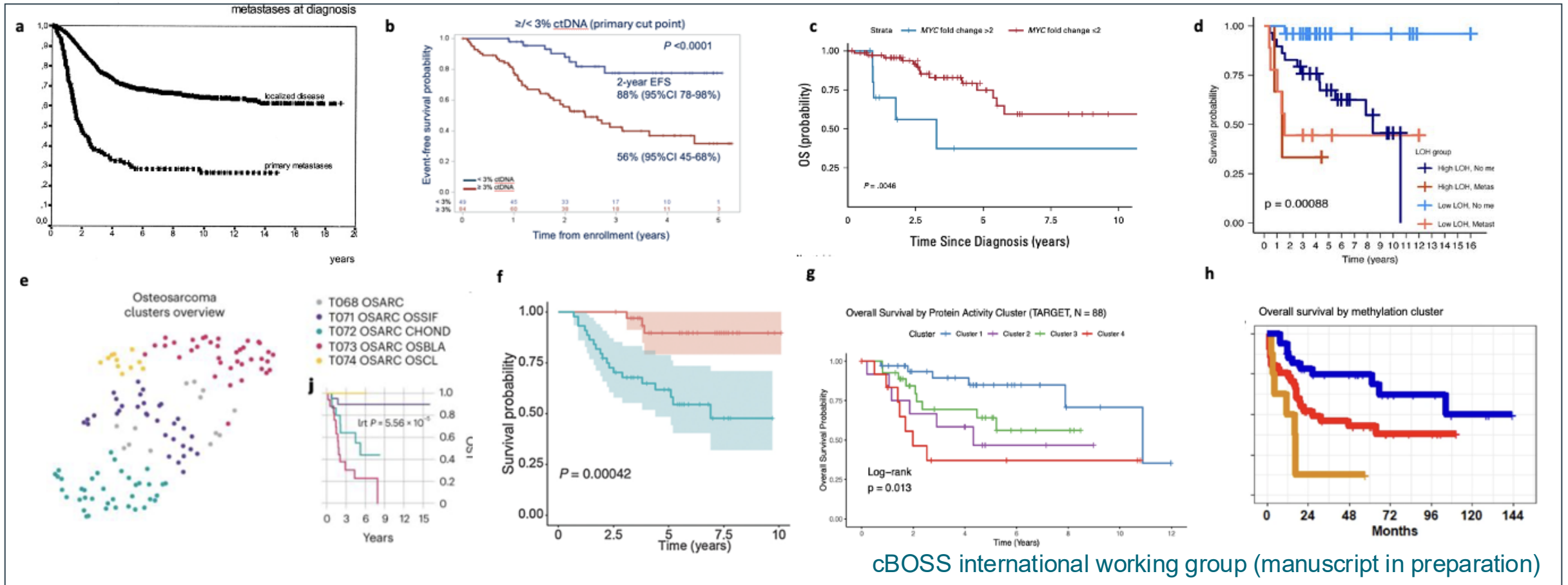
LOH



Therapeutic targets










- Surfaceome (cellular therapy, ADCs)
- DDR pathway

Many candidate prognostic markers for stratification in osteosarcoma



How can we translate them into treatment strategies that improve survival and reduce treatment-related toxicity?

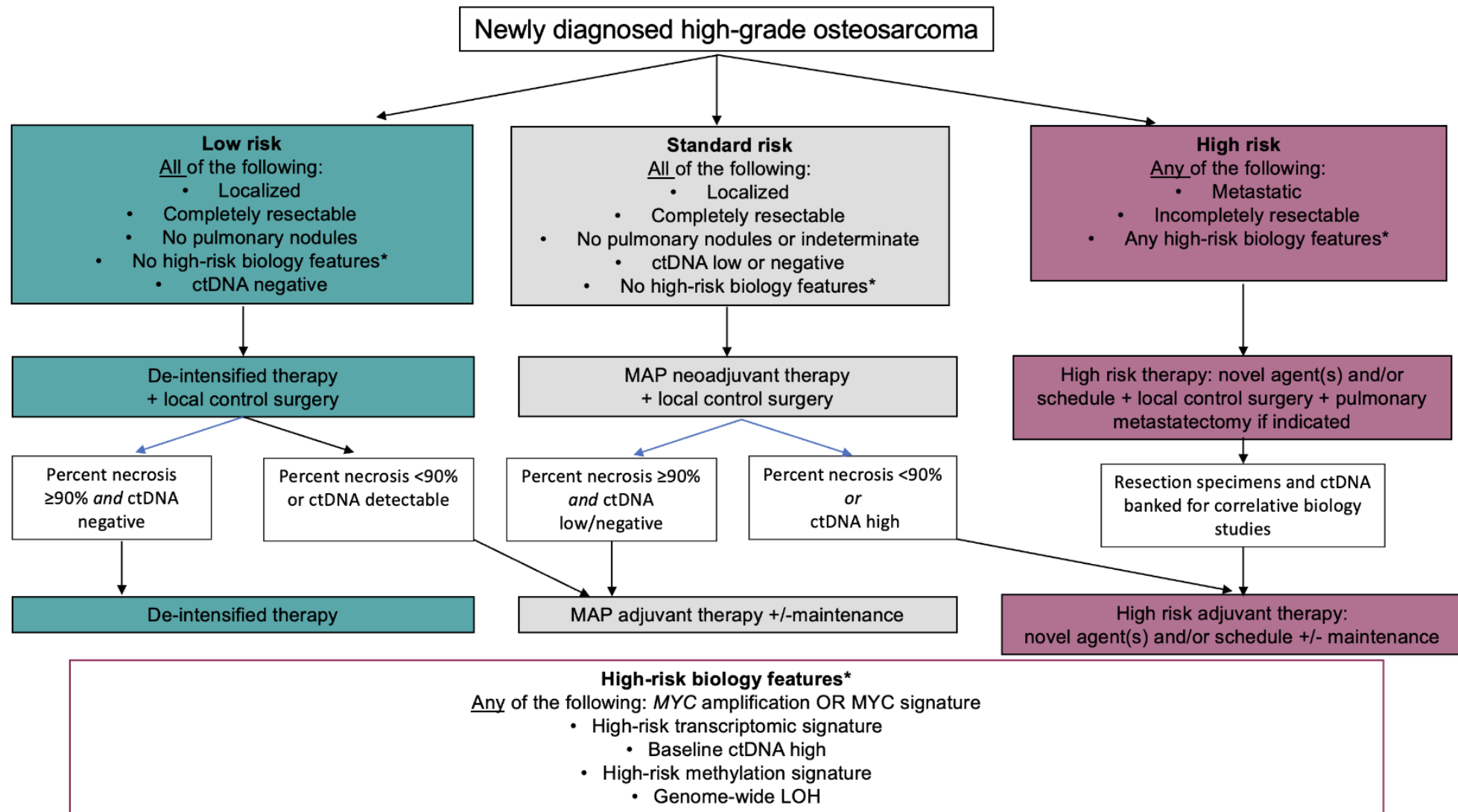
Clinical readiness of evaluated prognostic features

Prognostic feature	cBOSS Consensus Category
Clinical features: stage, resectability, primary tumor site	 Ready for trial stratification
Pre-treatment ctDNA burden	 Ready for trial stratification
MYC amplification	 Needs prospective validation
Transcriptomic signatures	 Needs larger cohort
Methylation	 Needs larger cohort
Immune composition	 Needs larger cohort
Chromatin (ATAC-seq)	 Research only
Genome-wide LOH	 Research only
Structural variant patterns	 Research only

Priorities for translation

- Compare classifiers across datasets to define redundancy vs. complementarity
- Collect multi-omics data linked to clinical outcomes to validate stratification strategies in retrospective and prospective cohorts
- Shift to WGS and WTS using validated FFPE-compatible pipelines
- Prioritize clinical development of promising biomarkers for targeted therapies
- Address key implementation questions, including cutpoints and treatment strategies for high-risk patients

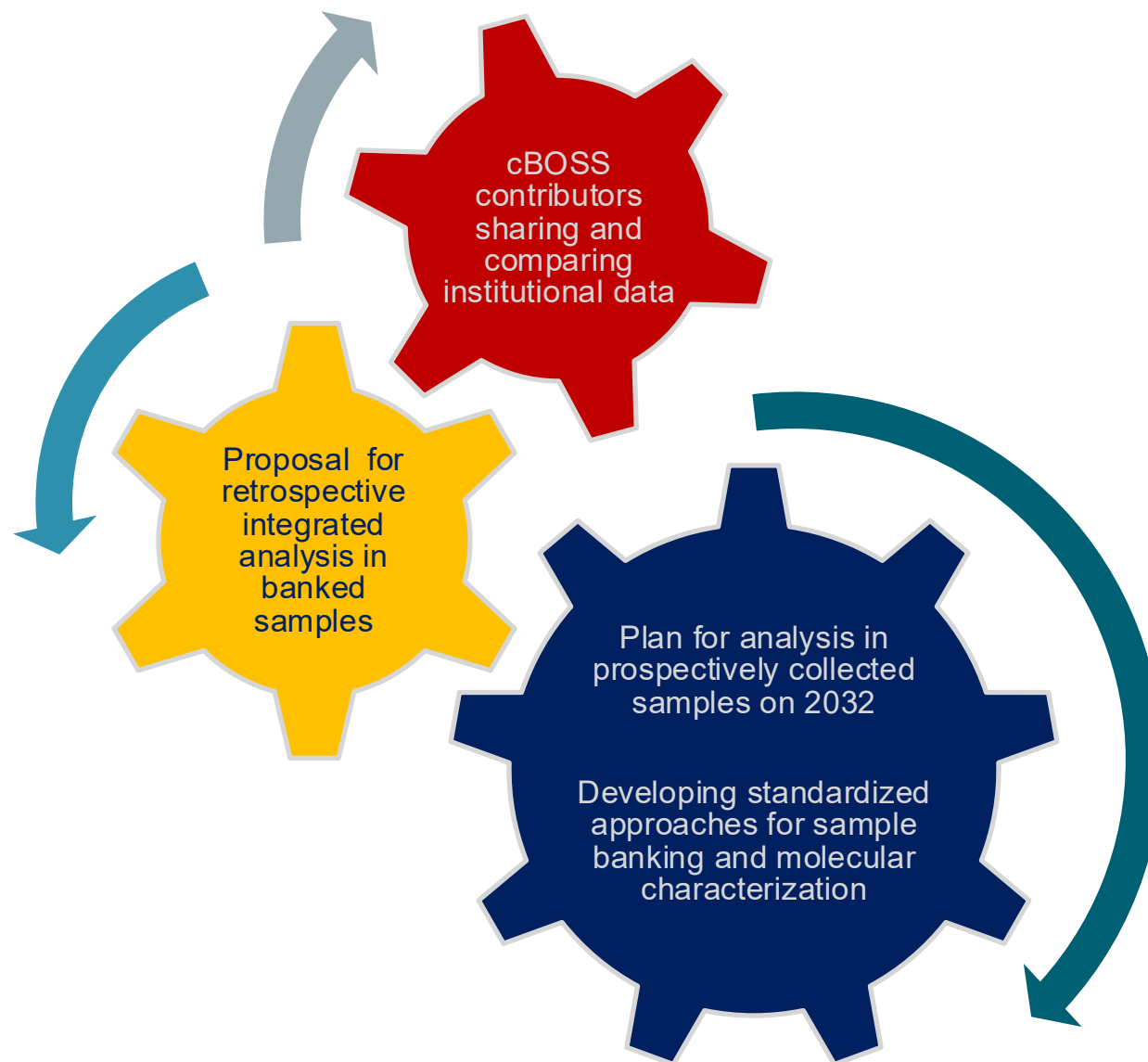
A path toward risk- and biology-informed care



Summary and conclusions

- We now have the data to act.
- Let's move from discovery to implementation.
- cBOSS provides a foundation, but success depends on collaboration, infrastructure, and shared urgency.

Next steps and outputs spinning out of cBOSS



Thank you!

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To the patients and family who inspire this work and make it possible to make it better

