



# Targeting the Chromatin Regulatory System

Broadening the Impact of Precision Medicines for Oncology and Other Diseases

**FCGHORN**<sup>®</sup>  
THERAPEUTICS

**Research & Development Webinar**

June 15<sup>th</sup>, 2021



**9:00 – 9:10 a.m.**

## **Welcome and Introduction**

Adrian Gottschalk, President and CEO, Foghorn Therapeutics

**9:10 – 9:25 a.m.**

## **Chromatin Regulatory System – Disease Relevance**

Cigall Kadoch, Ph.D., Broad Institute, DFCI, Scientific Co-Founder Foghorn Therapeutics

**9:25 – 9:45 a.m.**

## **Gene Traffic Control Platform**

Steve Bellon, Ph.D, SVP, Head of Drug Discovery, Foghorn Therapeutics

**9:45 – 10:05 a.m.**

## **FHD-286 – Clinical Applications of Dual BRM/BRG1 Inhibition**

Sam Agresta, MP, MPH & TM, CMO, Foghorn Therapeutics

**10:05 – 10:20 a.m.**

## **Acute Myeloid Leukemia**

Eytan Stein, M.D., Memorial Sloan Kettering Cancer Center

**10:20 – 10:30 a.m.**

## **Synovial Sarcoma – FHD-609**

Sam Agresta, MP, MPH & TM, CMO, Foghorn Therapeutics

**10:30 – 10:45 a.m.**

## **Targeting the Chromatin Regulatory System in Cancer**

Howard “Skip” Burris III, MD, FASCO, FACP, Sara Cannon Research Institute

**10:45 – 11:00 a.m.**

## **Q&A**



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# Welcome and Introduction

*Adrian Gottschalk*

*Chief Executive Officer, Foghorn Therapeutics*

# Forward-Looking Statements



This presentation contains forward-looking statements. All statements other than statements of historical facts contained in this presentation are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplate,” “believe,” “estimate,” “predict,” “potential” or “continue” or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. Forward-looking statements include, but are not limited to, statements concerning: the initiation, timing, progress and results of our research and development programs and preclinical and clinical trials, our ability to advance product candidates that we may develop and successfully complete preclinical and clinical studies; our ability to leverage our initial programs to develop additional product candidates using our Gene Traffic Control Platform; the impact of the COVID-19 pandemic in our and our collaborators’ business operations, including our research and development programs and preclinical studies; developments related to our competitors and our industry; our ability to expand the target populations of our programs and the availability of patients for clinical testing; our ability to obtain regulatory approval for FHD-286, FHD-609 and any future product candidates from the FDA and other regulatory authorities; our ability to identify and enter into future license agreements and collaborations; our ability to continue to rely on our CDMOs and CROs for our manufacturing and research needs; regulatory developments in the United States and foreign countries; our ability to attract and retain key scientific and management personnel; the scope of protection we are able to establish, maintain and enforce for intellectual property rights covering FHD-286 and FHD-609, our future products and our Gene Traffic Control Platform; and our use of proceeds from our initial public offering, estimates of our expenses, capital requirements and needs for additional financing. Any forward-looking statements represent the Company’s views only as of today and should not be relied upon as representing its views as of any subsequent date. The Company explicitly disclaims any obligation to update any forward-looking statements. The Company’s business is subject to substantial risks and uncertainties which are described under the heading "Risk Factors" in our Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission and are accessible on the SEC's website at [www.sec.gov](http://www.sec.gov).

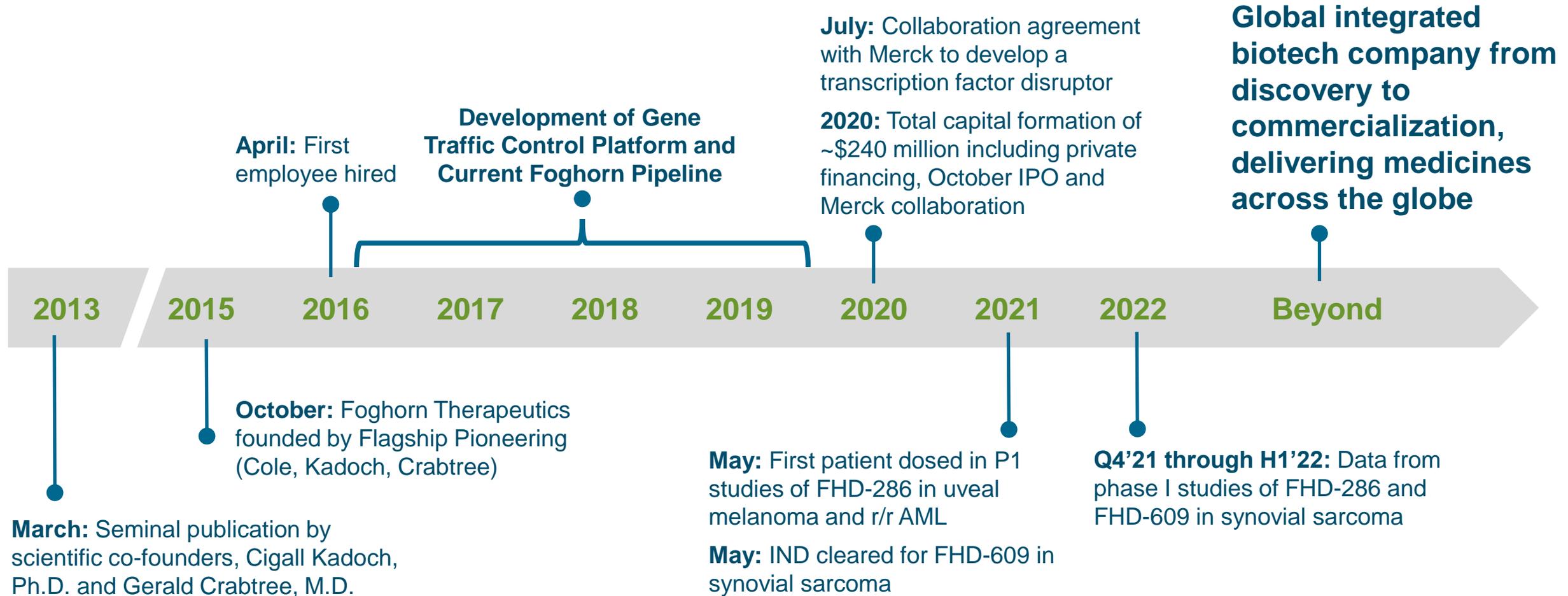


## OUR PLEDGE

At Foghorn, we pledge to partner with patients as we work to discover and develop new, effective therapies for a wide spectrum of diseases, including many types of cancer. Every member of our team is committed to making a difference in the lives of others.



# Broadening the Impact of Precision Medicines for Oncology and Other Diseases: Targeting the Chromatin Regulatory System



# Dysregulation of the Chromatin Regulatory System Has Been Implicated in up to 50% of All Cancers



**50%**  
of All Cancers

Based on exome sequencing, the chromatin regulatory system is implicated in ~50% of all cancers



**2.5M**  
People

Potential impact for Foghorn's pipeline of precision oncology programs



**\$400+**  
billion

2030 global oncology market opportunity

# First Two Programs in the Clinic, Broad Pipeline Advancing

Precision Oncology / Breadth and Depth



Program / Target	Modality	Discovery	IND-enabling	Phase 1	Phase 2	Phase 3	Global Rights
<b>FHD-286 (BRG1 / BRM)</b>	Enzyme inhibitor	AML		Early Clinical Data (Q4 2021)			
		Uveal melanoma		Early Clinical Data (Q4 2021)			
<b>FHD-609 (BRD9)</b>	Protein degrader	Synovial sarcoma		Early Clinical Data (H1 2022)			
<b>Selective BRM</b>	I) Enzyme inhibitor	BRG1 mutated cancers	IND 2022				
	II) Protein degrader	BRG1 mutated cancers					
<b>Selective ARID1B</b>	Protein degrader	ARID1A mutated cancers					
<b>Synthetic Lethal Targets (multiple)</b>	I) Enzyme inhibitors						
	II) Protein degraders						
<b>Transcription Factors (multiple)</b>	I) Transcription factor disruptors						
	II) Protein degraders						
<b>Partnered program (undisclosed)</b>	Transcription factor disruptor						

Gene Traffic Control® Platform



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## Chromatin Regulatory System – Disease Relevance

*Cigall Kadoch, Ph.D.*

*Broad Institute, DFCI, Scientific Co-Founder of Foghorn Therapeutics*

# Targeting chromatin regulatory system perturbations in human disease

*A new class of opportunities*

Cigall Kadoch, Ph.D.  
Dana- Farber Cancer Institute  
Harvard Medical School  
Broad Institute



**Dana-Farber**  
Cancer Institute



**HARVARD**  
MEDICAL SCHOOL



**BROAD**  
INSTITUTE

# Chromatin architecture and accessibility govern gene expression

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# Chromatin architecture and accessibility govern gene expression

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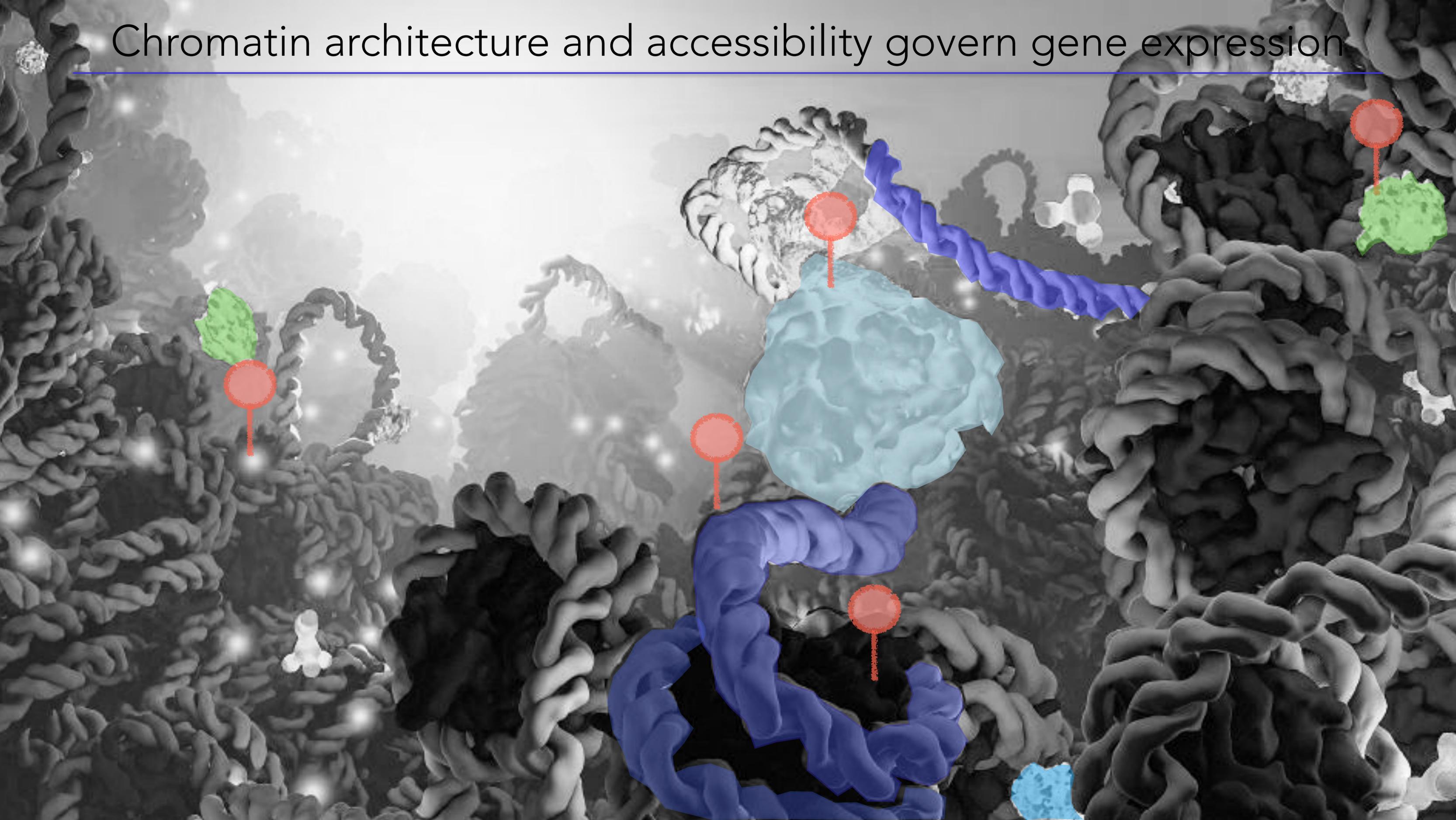
# Chromatin architecture and accessibility govern gene expression

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# Chromatin architecture and accessibility govern gene expression

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# The chromatin regulatory system

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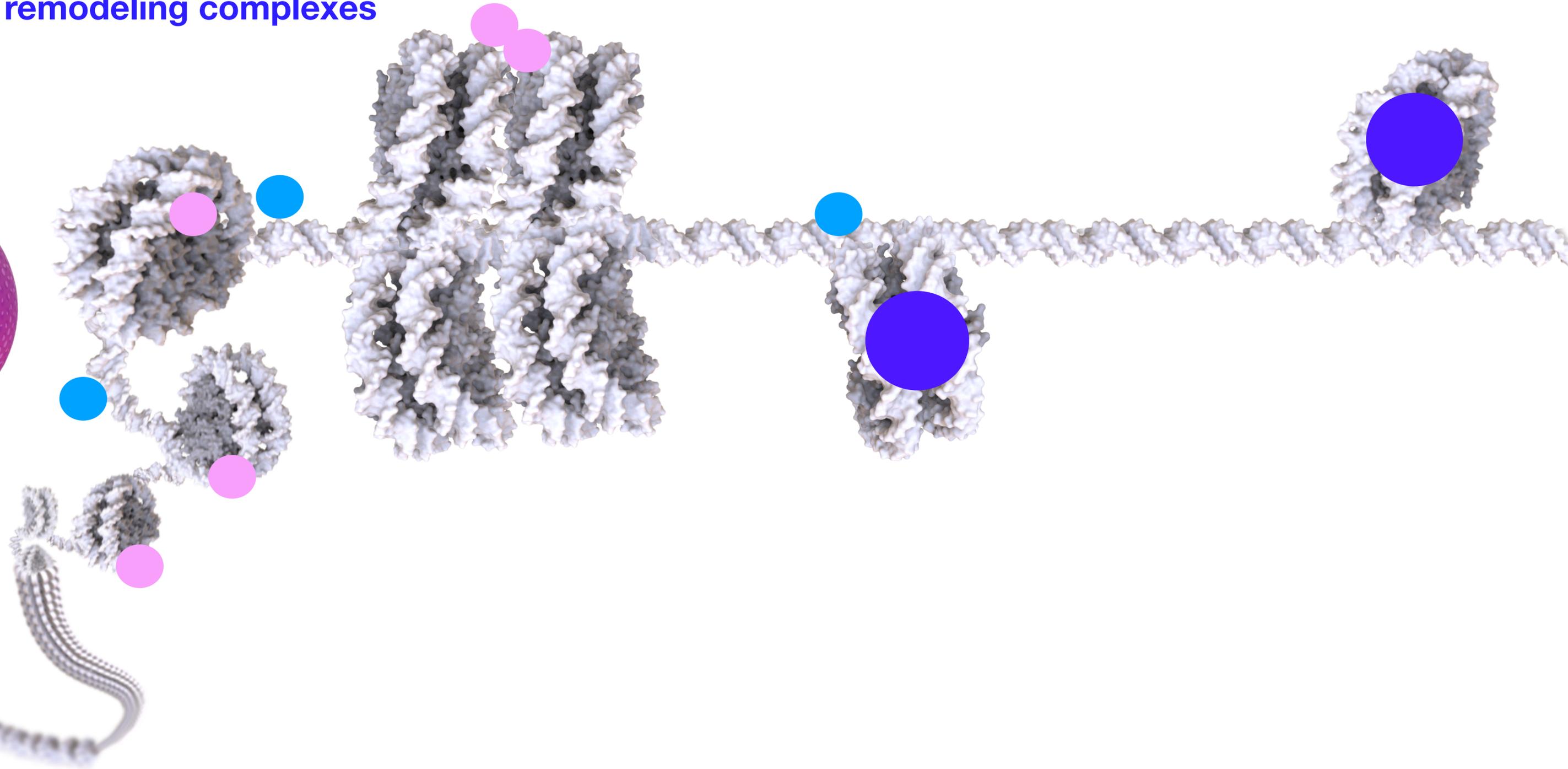
**Nucleus**



# The chromatin regulatory system

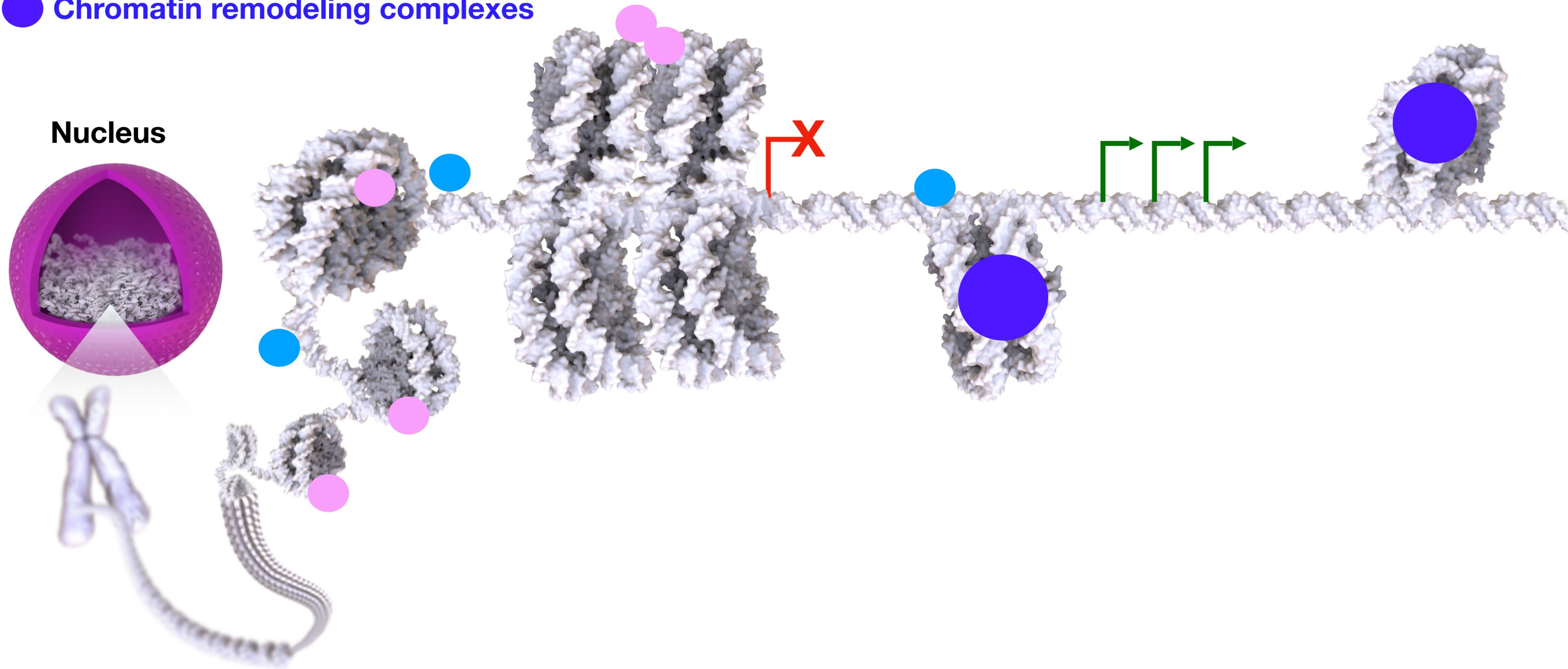
- DNA modification
- Histone modification
- Chromatin remodeling complexes

**Nucleus**



# The chromatin regulatory system

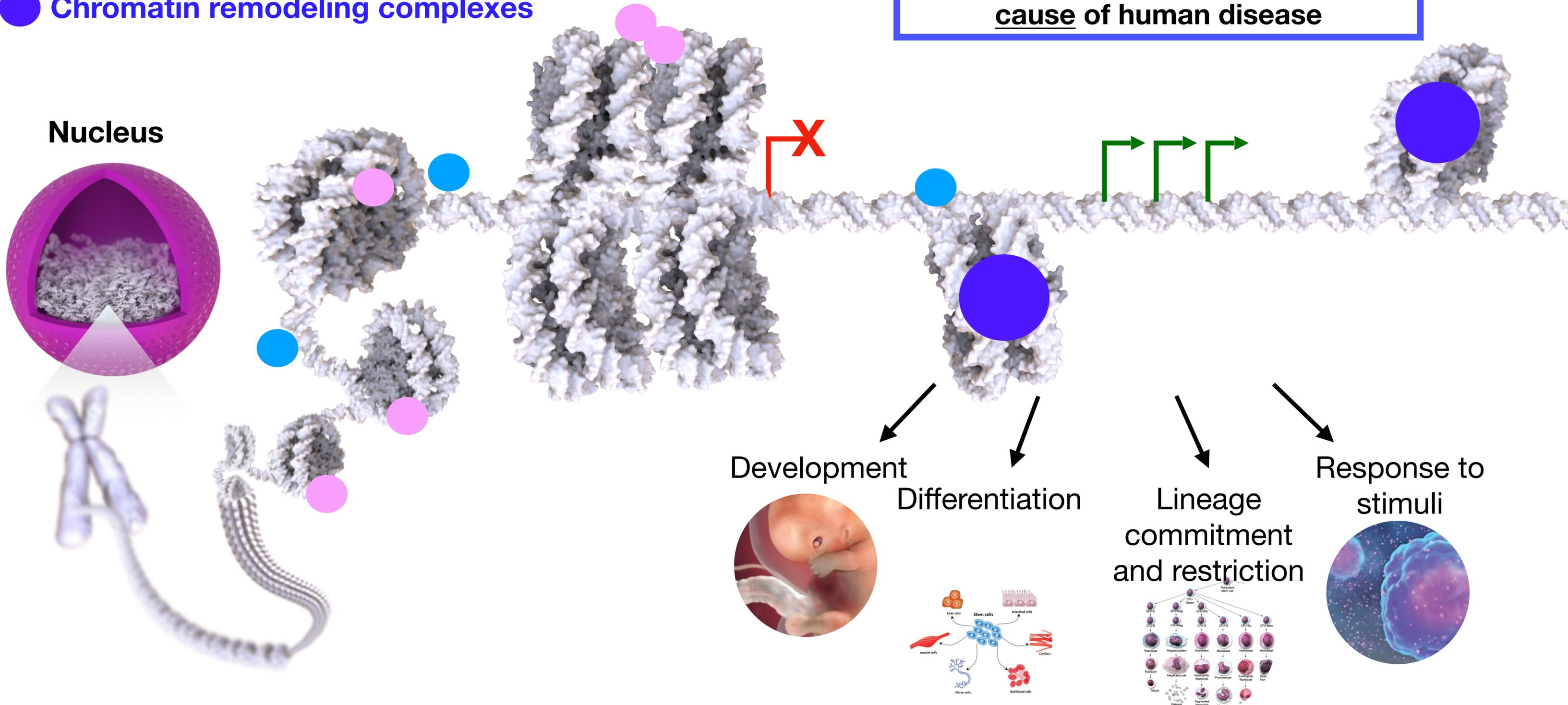
- DNA modification
- Histone modification
- Chromatin remodeling complexes



# The chromatin regulatory system

- DNA modification
- Histone modification
- Chromatin remodeling complexes

**Defects in the control of chromatin structure are a major cause of human disease**



# Human genetic studies unlock new biology

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Cancer  
Neurodevelopment disorders  
Immune conditions  
Heart development and disease  
Others

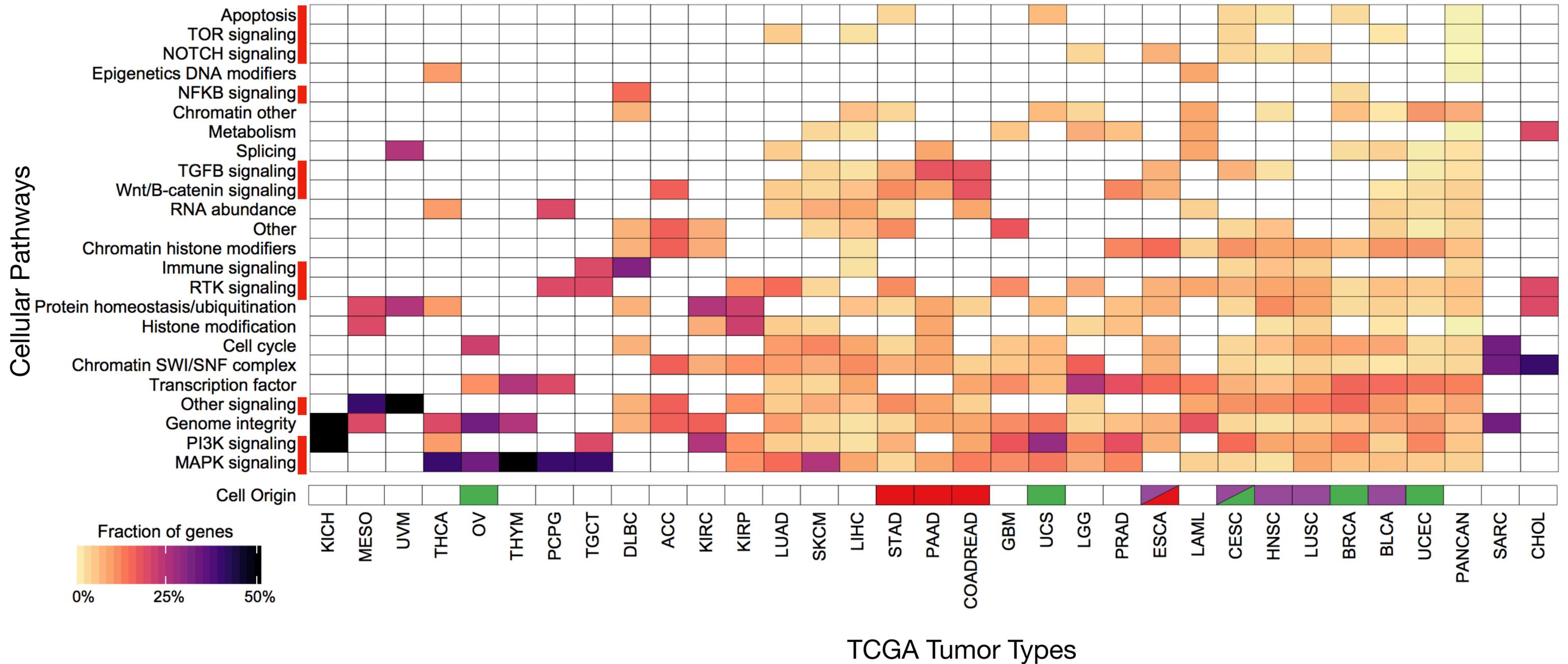
# Cancer mutations span multiple cellular pathways

30+ Cancer Types

>10,000 tumor samples sequenced

~300 driver genes

>3,400 putative missense driver mutations



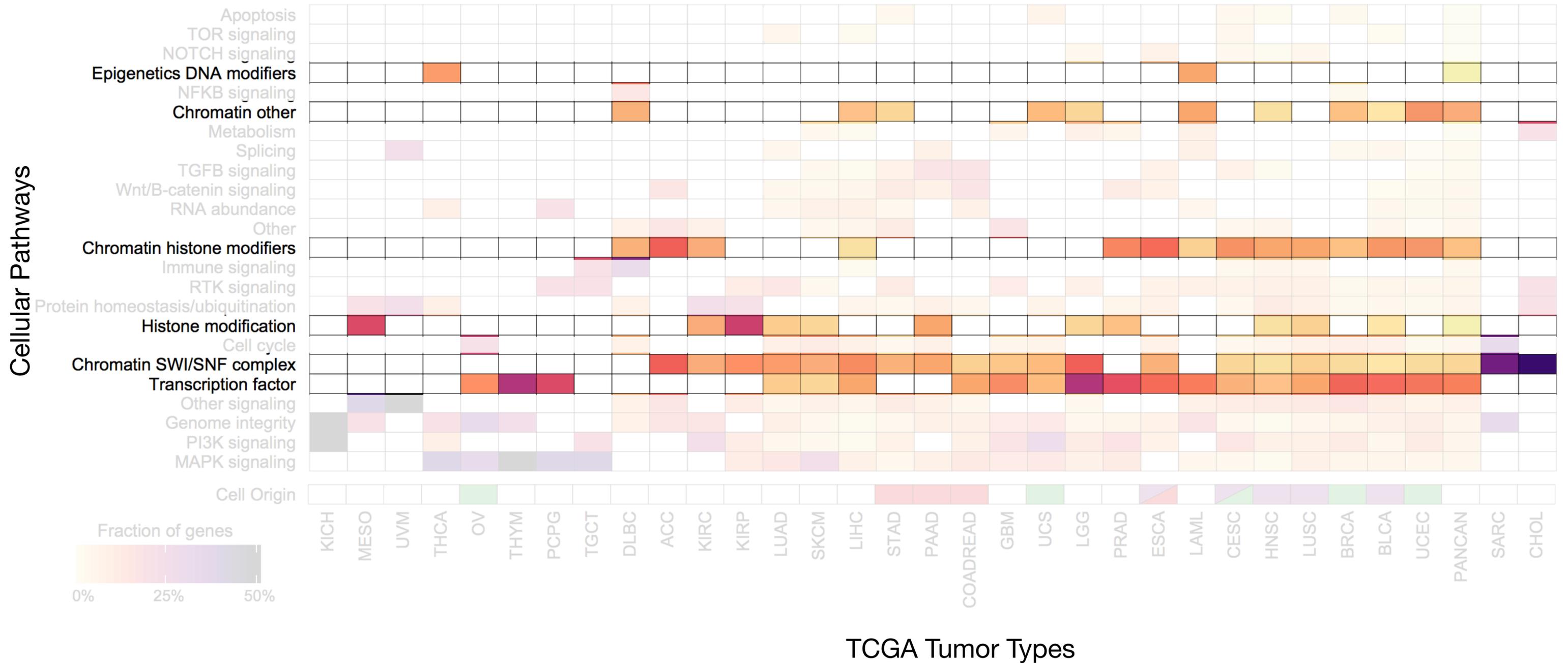
# Chromatin regulatory system disruptions are extensive

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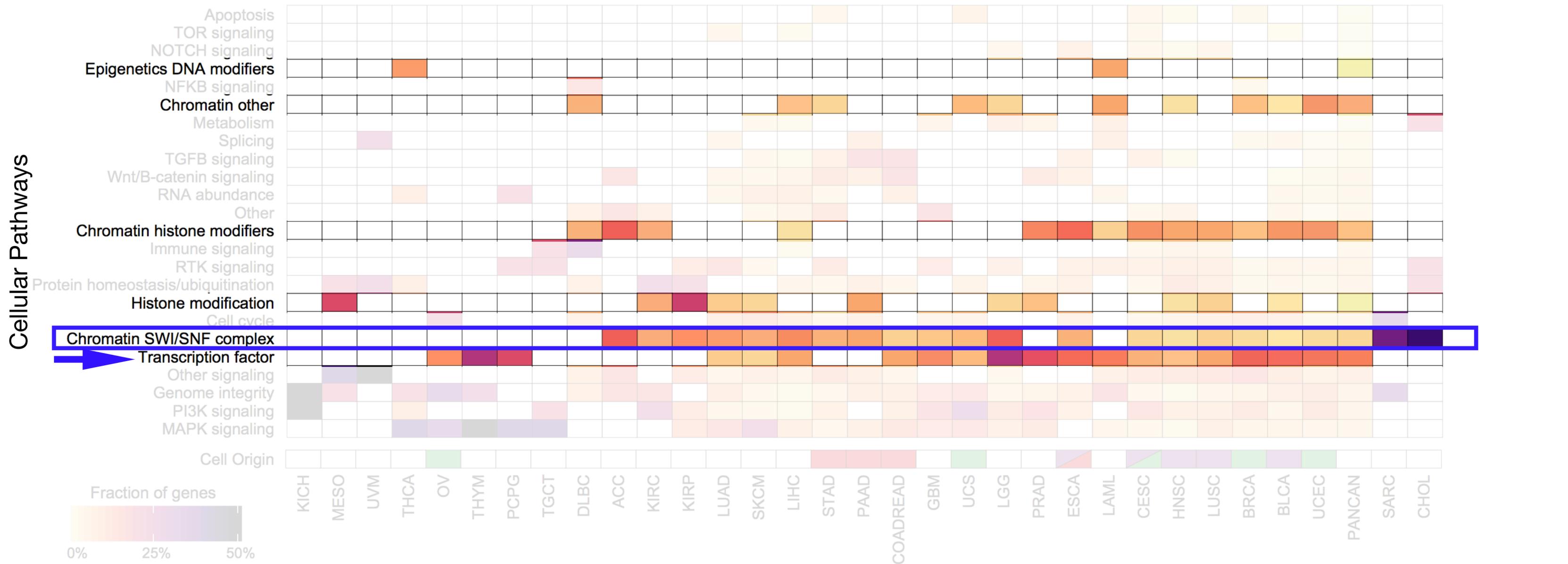
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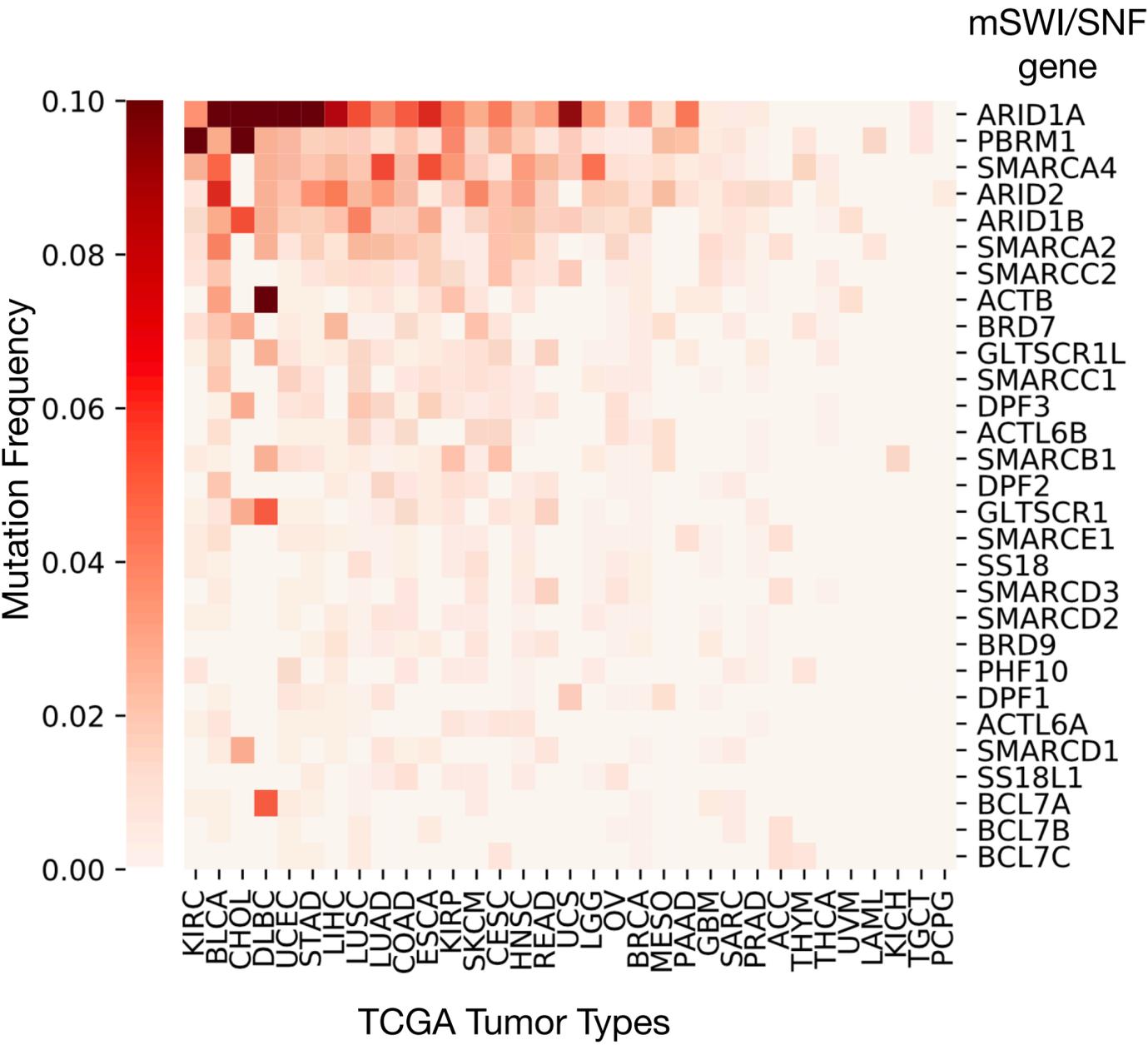


SWI/SNF complexes, other ATP-dependent remodelers, helicases, etc.

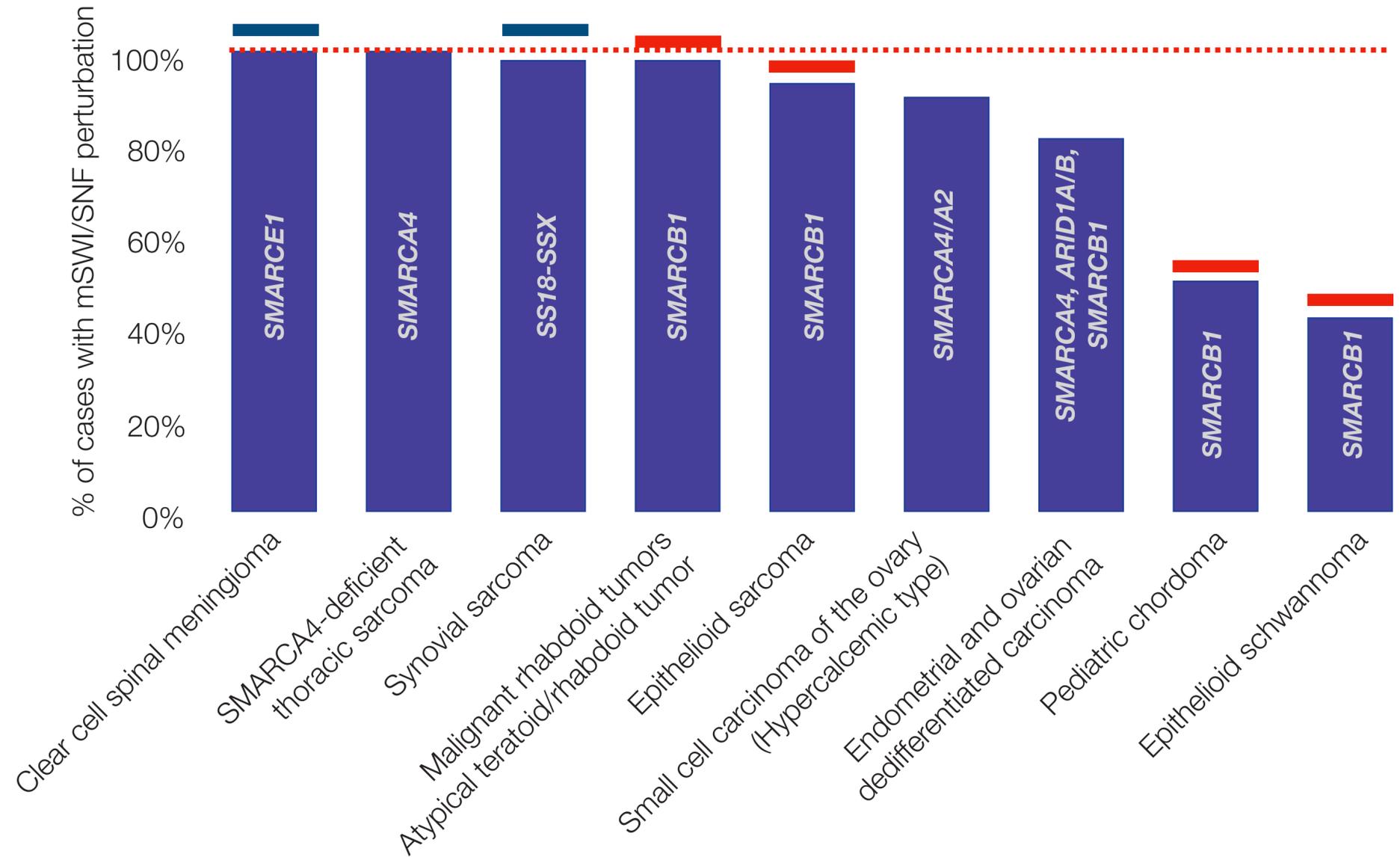
TCGA Tumor Types

# An example: mutational landscape of mSWI/SNF genes in human cancer

~20+% of human cancers



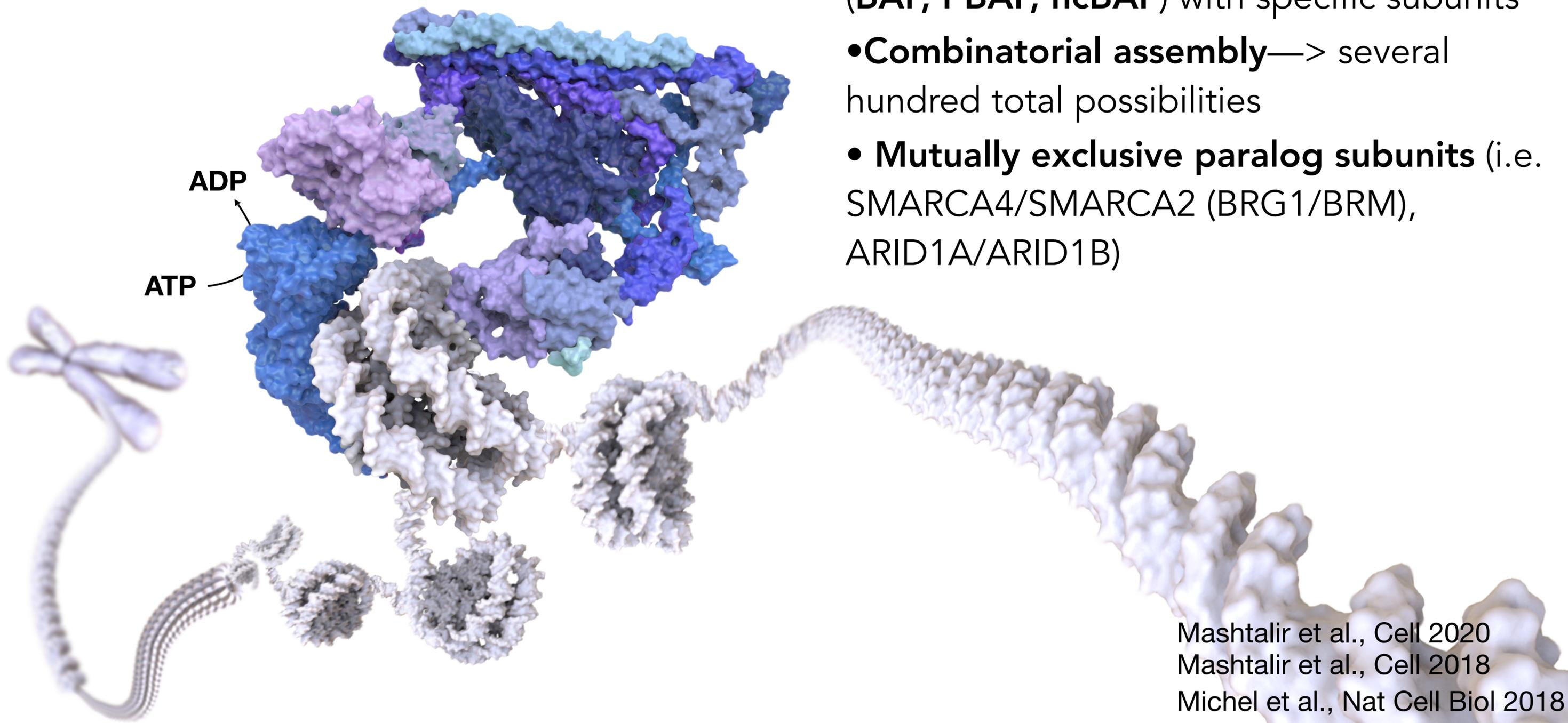
Drivers of rare cancers (many 90-100% of cases)



# Mammalian SWI/SNF complexes: chromatin remodeling machines

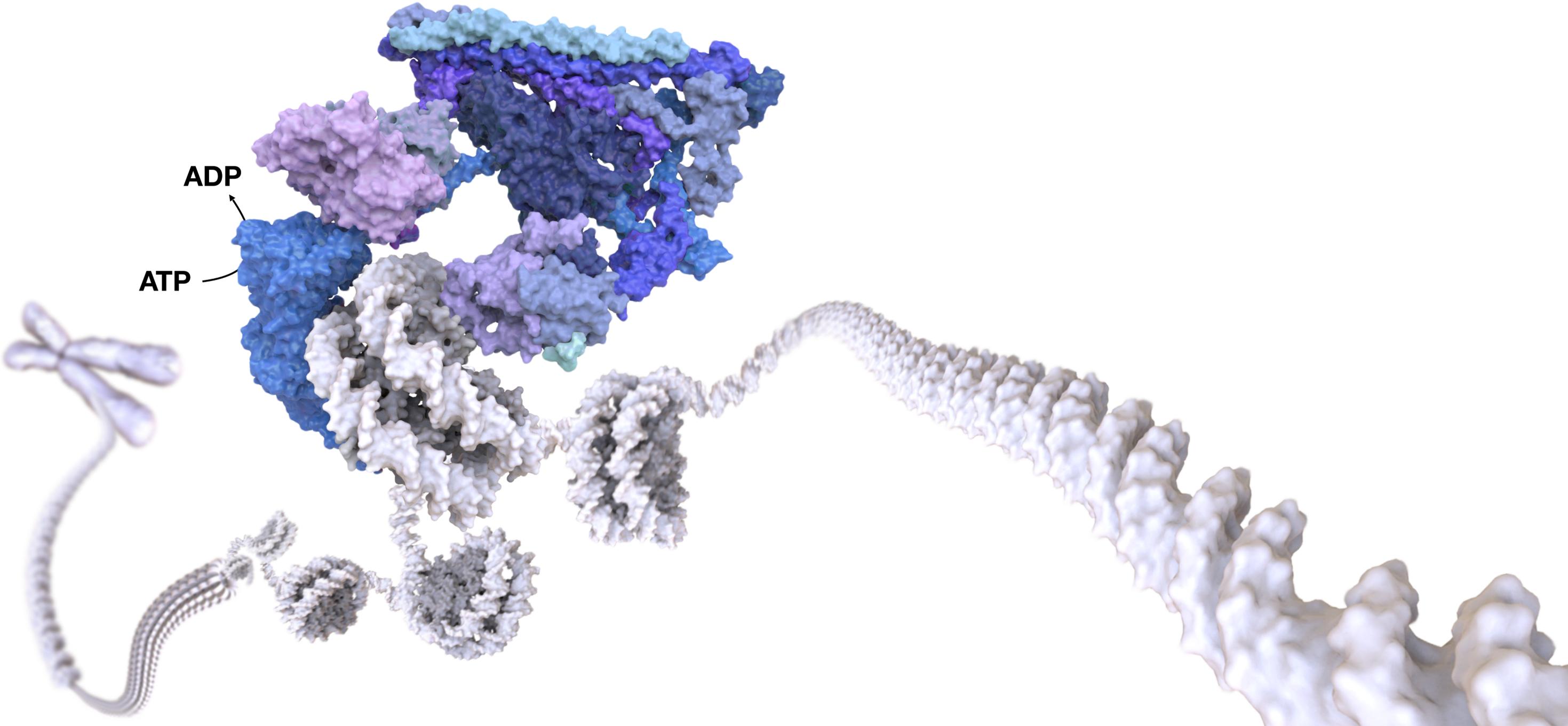
ARID1A  
ARID1B  
ARID2  
SMARCA4  
SMARCA2  
SMARCC1  
SMARCC2  
SMARCD1  
SMARCD2  
SMARCD3  
SMARCE1  
SMARCB1  
PBRM1  
DPF1  
DPF2  
DPF3  
PHF10  
BRD7  
BRD9  
SS18  
SS18L1  
ACTL6A  
ACTL6B  
ACTB  
GLTSCR1  
GLTSCR1L  
BCL7A  
BCL7B  
BCL7C

## mSWI/SNF (BAF) complex



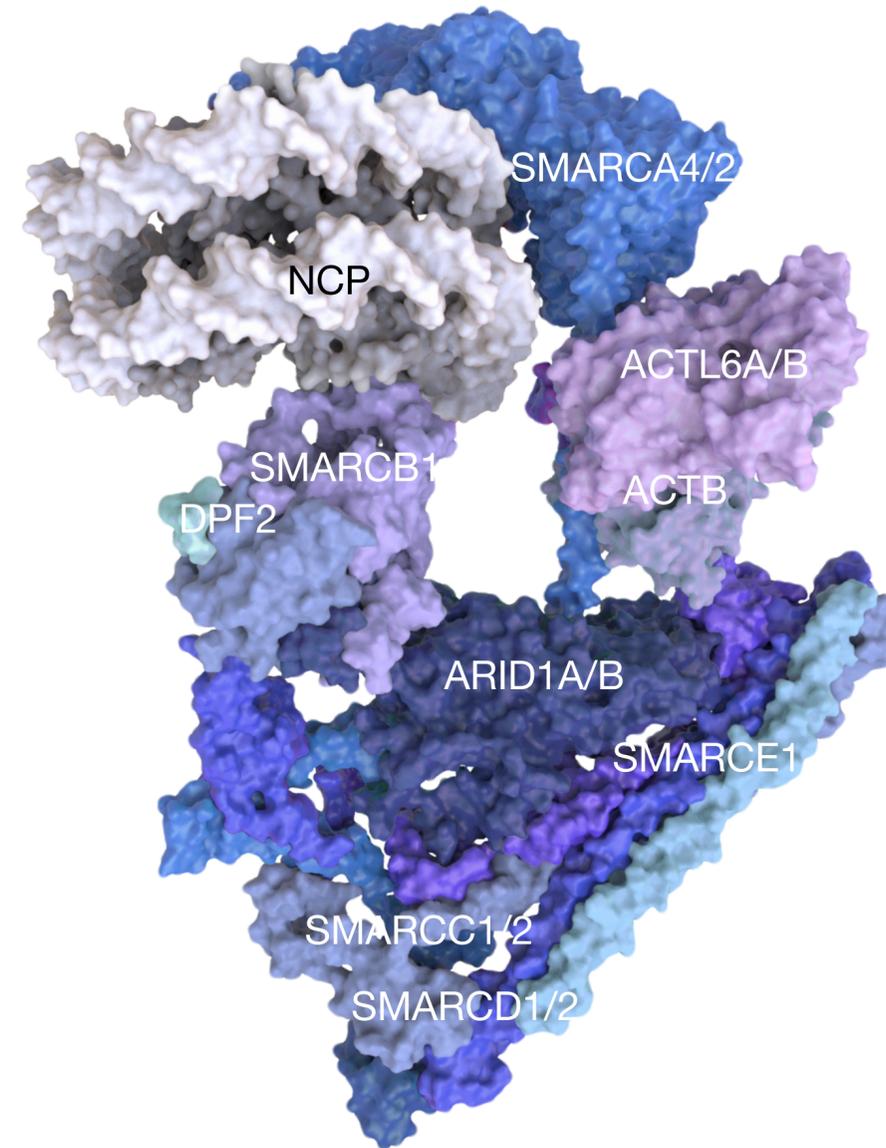
# Mammalian SWI/SNF complexes: chromatin remodeling machines

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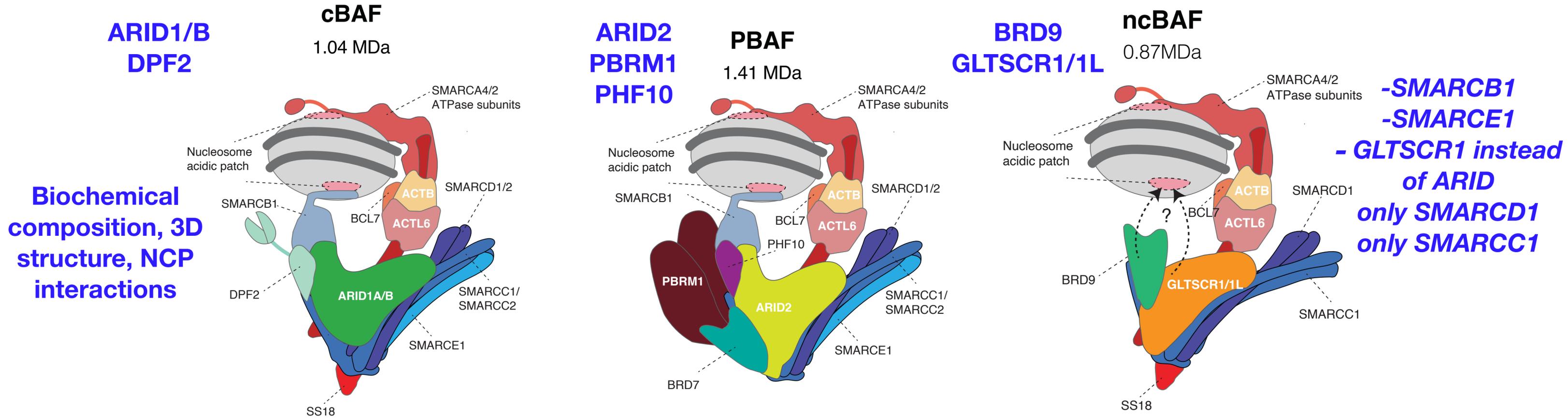


# mSWI/SNF family complexes: cBAF, PBAF, and ncBAF types

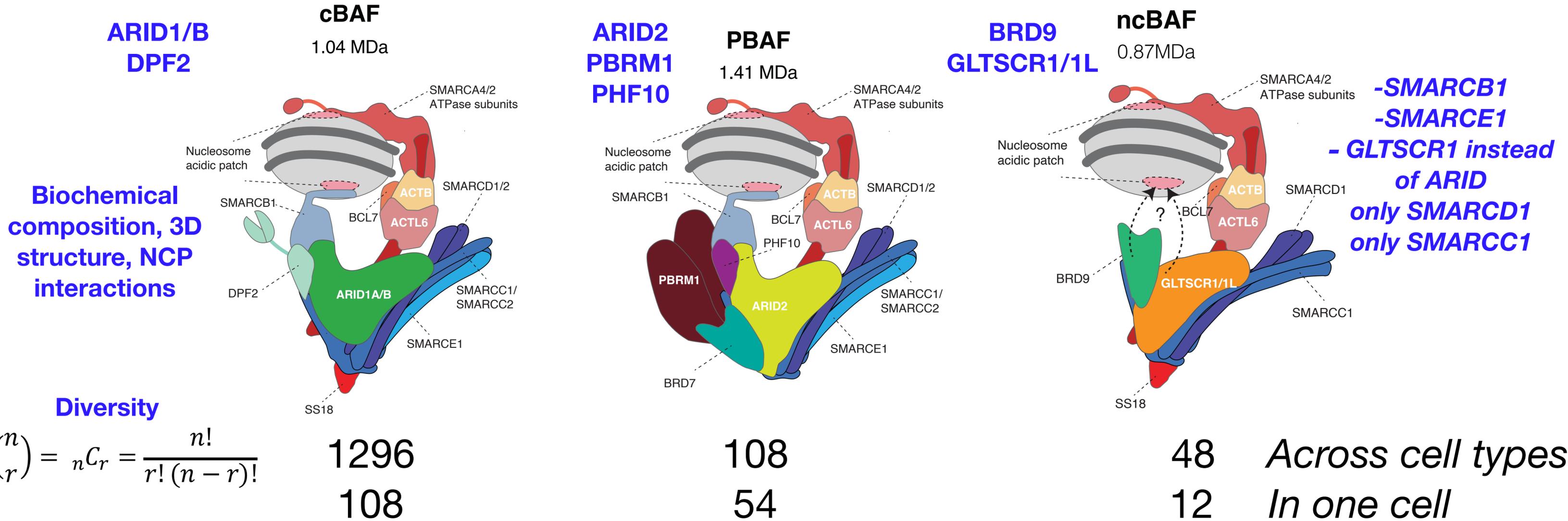
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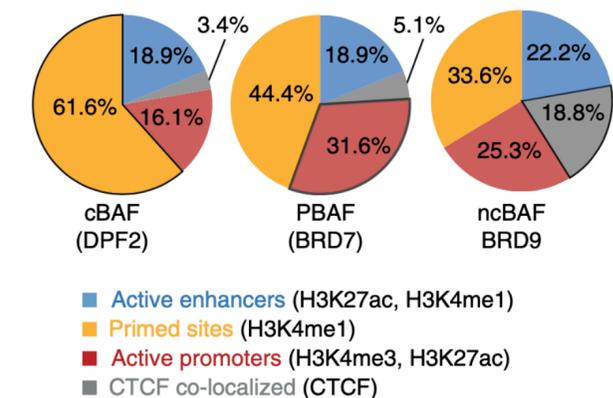
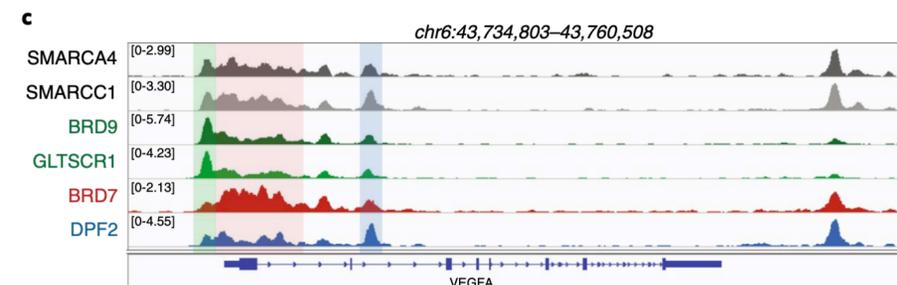
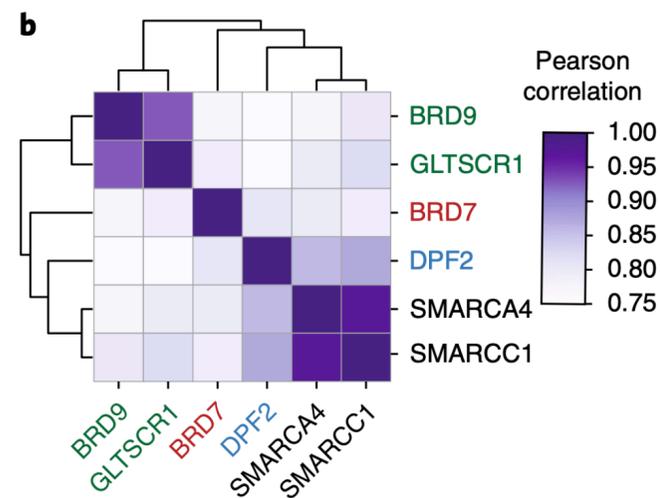
# mSWI/SNF: diverse assemblies yield diverse opportunities for targeting



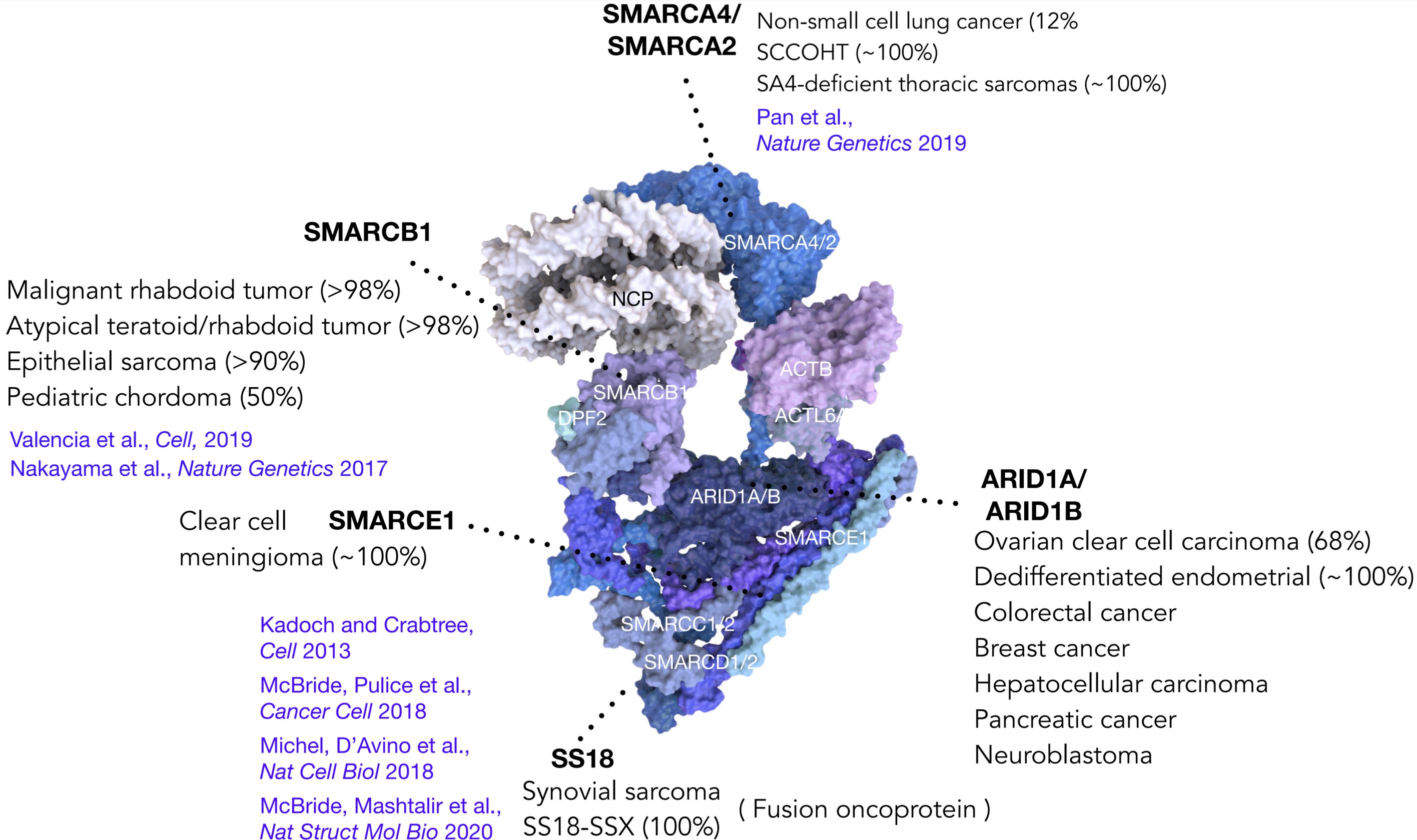
# Compositional and functional diversity of mSWI/SNF complexes



## Targeting on chromatin



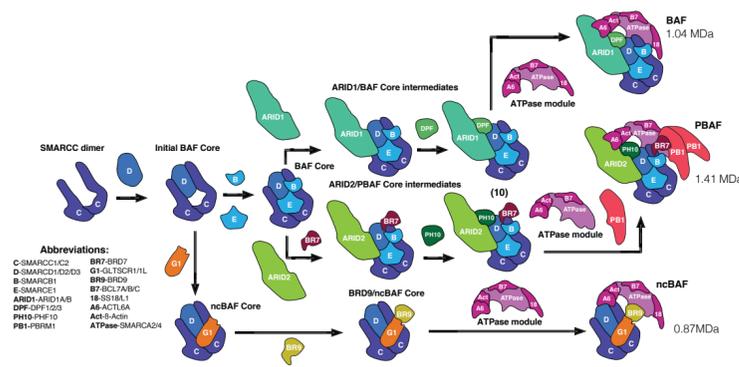
# Multi-subunit/multi-cancer studies potentiate identification of new mechanisms



# Multi-subunit/multi-cancer studies potentiate identification of new mechanisms

## Biochemical assembly and modularity

Mashtalir et al., *Cell* 2018

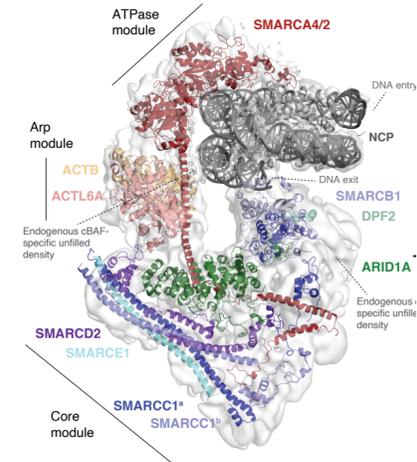


## SMARCA4/ SMARCA2

SCCOHT (~100%)  
SA4-deficient thoracic sarcomas (~100%)  
Non-small cell lung cancer (12%)  
Pan et al.,  
*Nature Genetics* 2019

## 3D structural studies

Mashtalir et al., *Cell* 2020



## SMARCB1

Malignant rhabdoid tumor (>98%)  
Atypical teratoid/rhabdoid tumor (>98%)  
Epithelial sarcoma (>90%)  
Pediatric chordoma (50%)

Valencia et al., *Cell*, 2019

Nakayama et al., *Nature Genetics* 2017

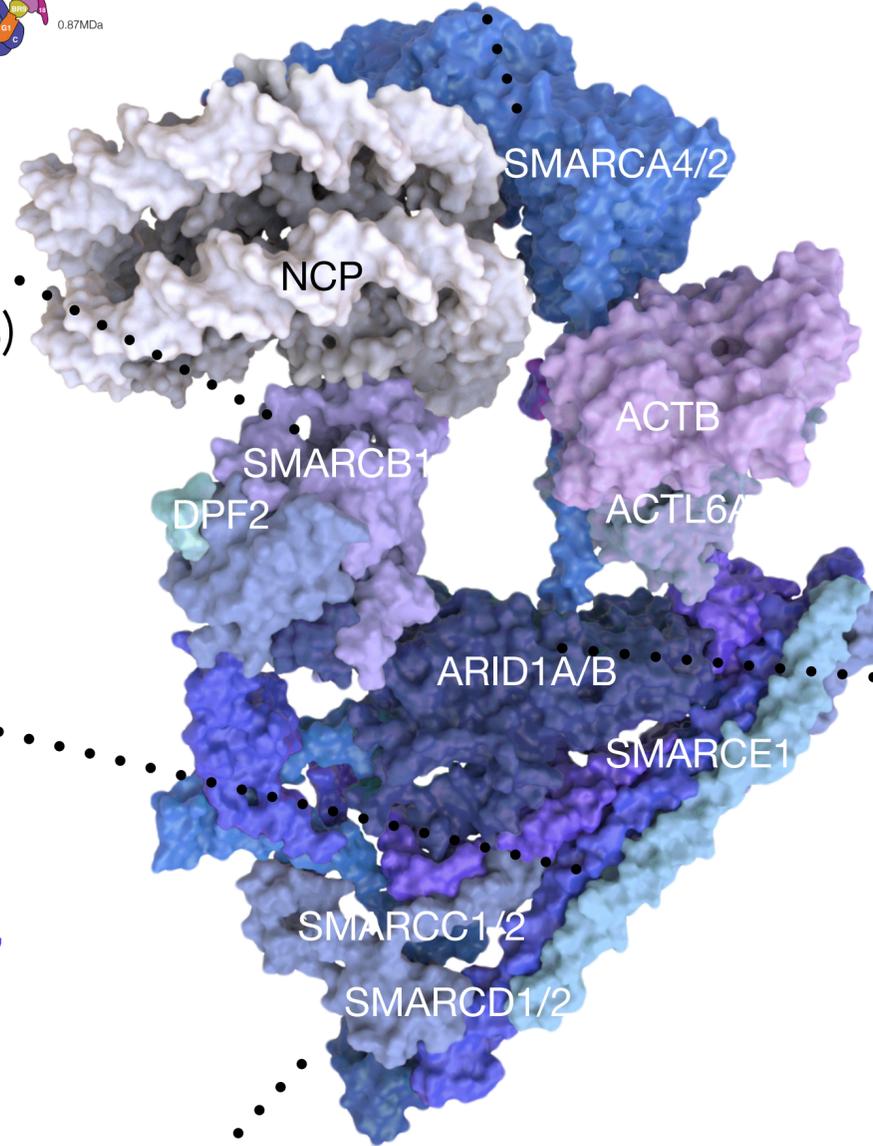
Clear cell meningioma (~100%)  
**SMARCE1**

Kadoch and Crabtree,  
*Cell* 2013

McBride, Pulice et al.,  
*Cancer Cell* 2018

Michel, D'Avino et al.,  
*Nat Cell Biol* 2018

McBride, Mashtalir et al.,  
*Nat Struct Mol Bio* 2020

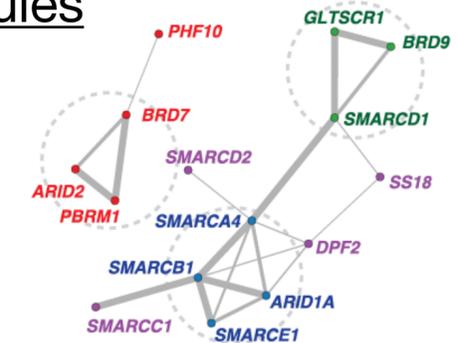


## SS18

Synovial sarcoma  
SS18-SSX (100%) ( Fusion oncoprotein )

## Functional modules

Pan, Meyers et al.,  
*Cell Systems* 2018



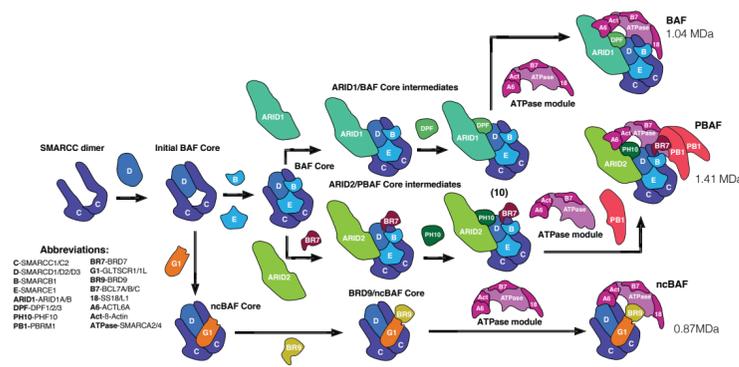
## ARID1A/ ARID1B

Ovarian clear cell carcinoma (68%)  
Dedifferentiated endometrial (~100%)  
Neuroblastoma

# Multi-subunit/multi-cancer studies potentiate identification of new mechanisms

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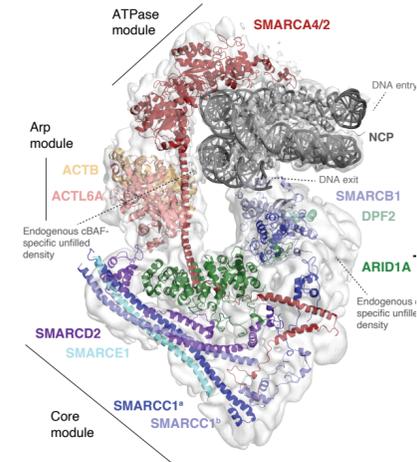


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Nakayama et al., *Nature Genetics* 2017

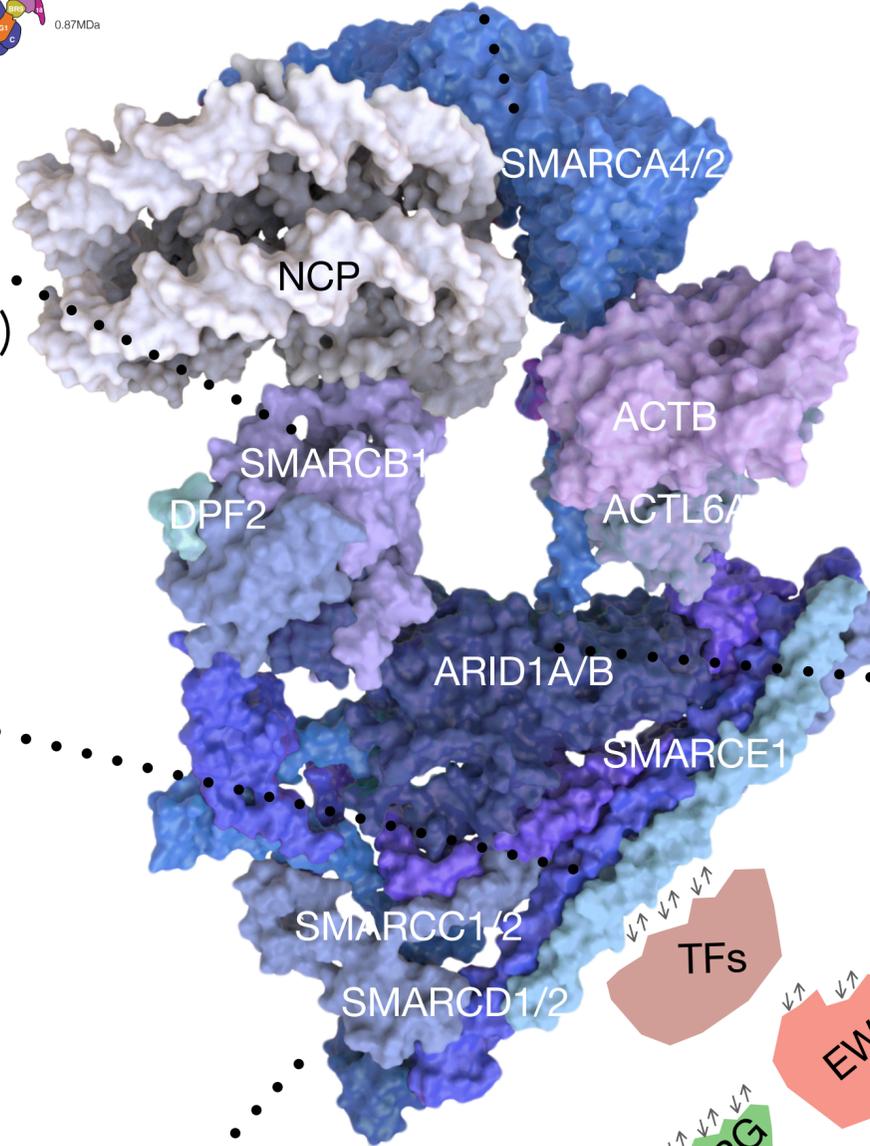
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McBride, Mashtalir et al.,  
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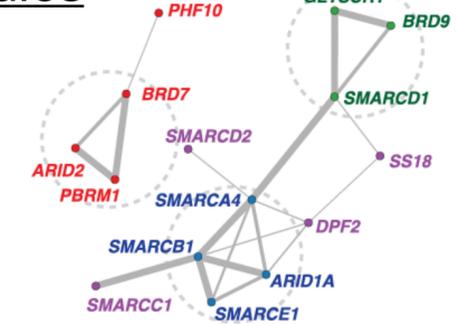
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Sandoval et al.,  
*Mol Cell* 2018

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Pan, Meyers et al.,  
*Cell Systems* 2018

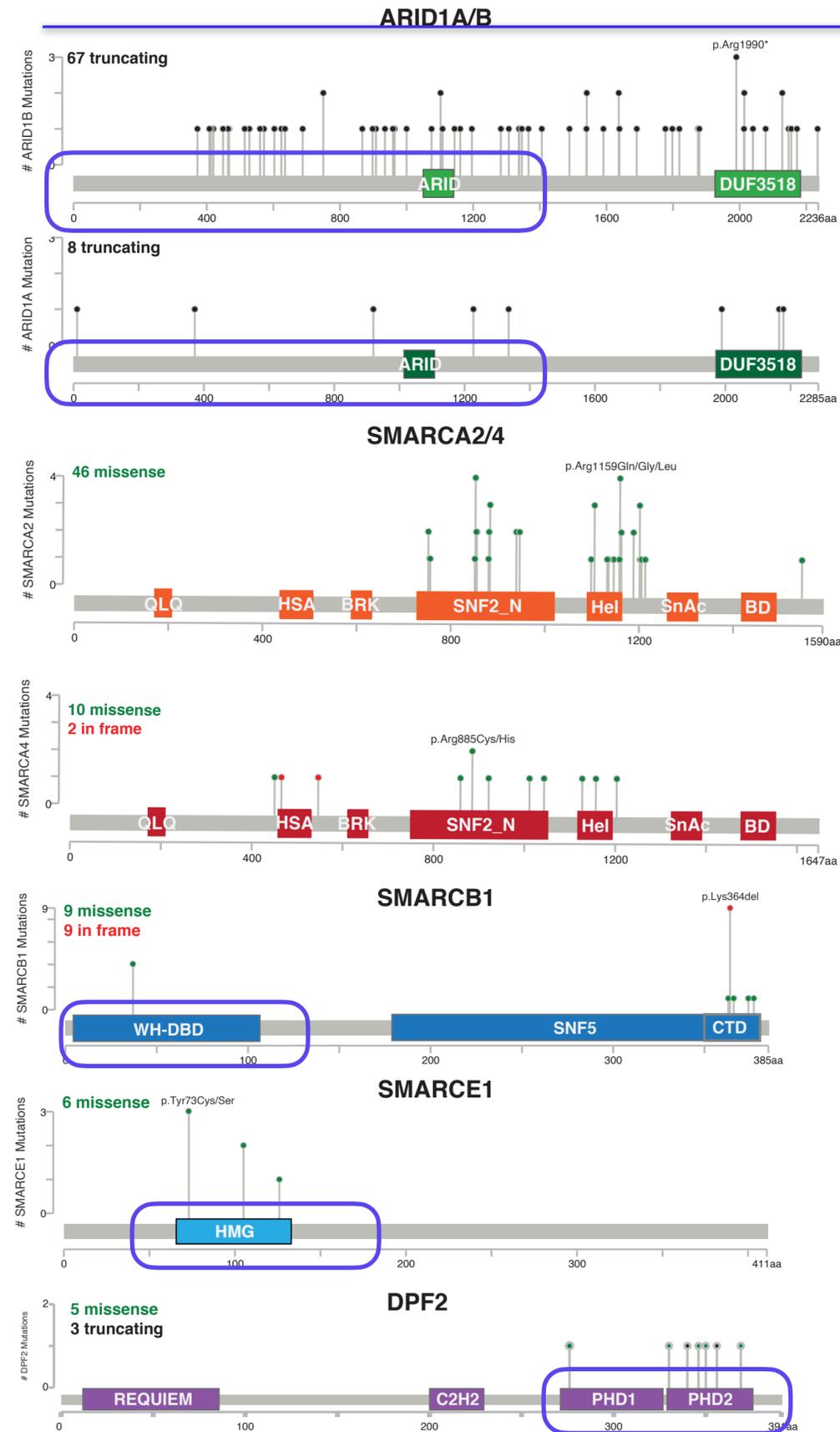


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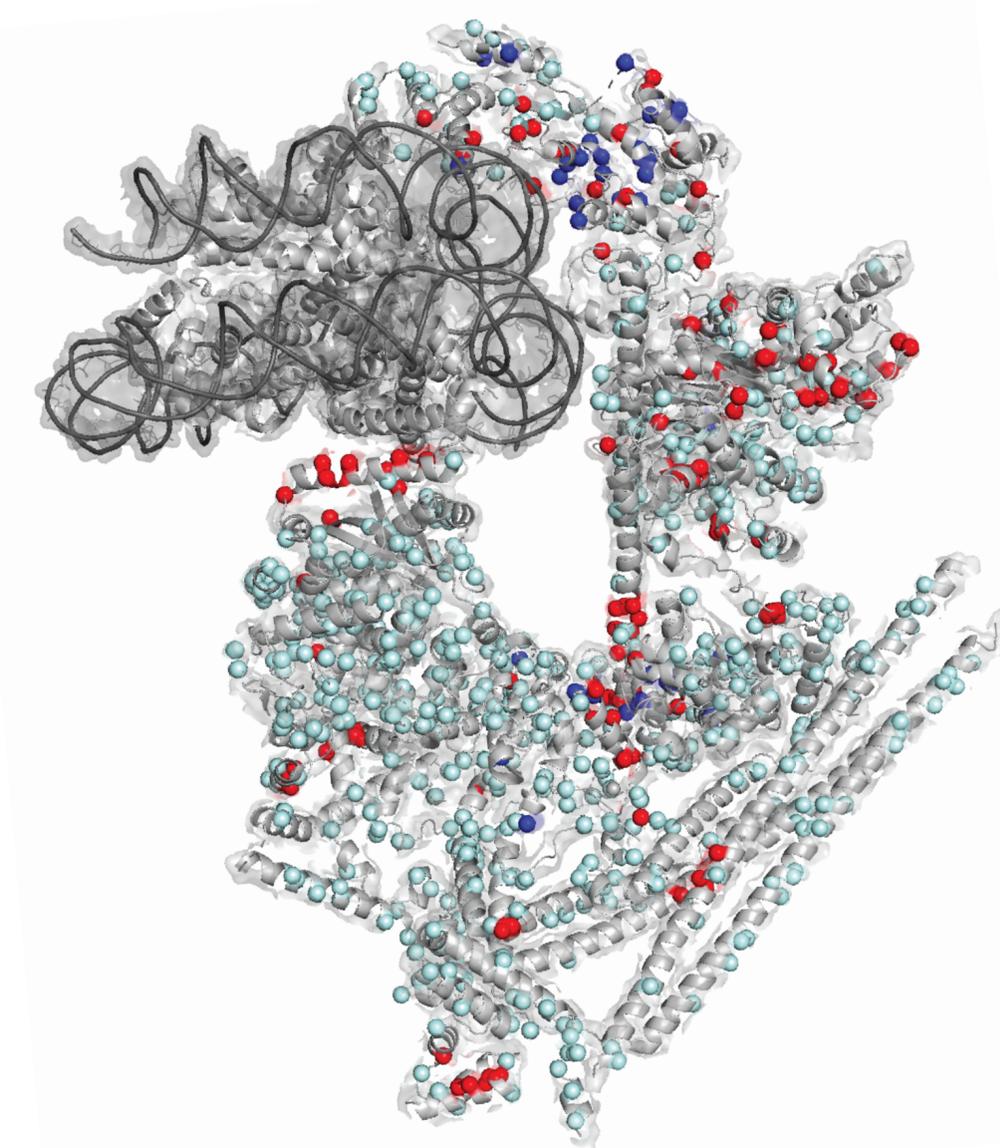
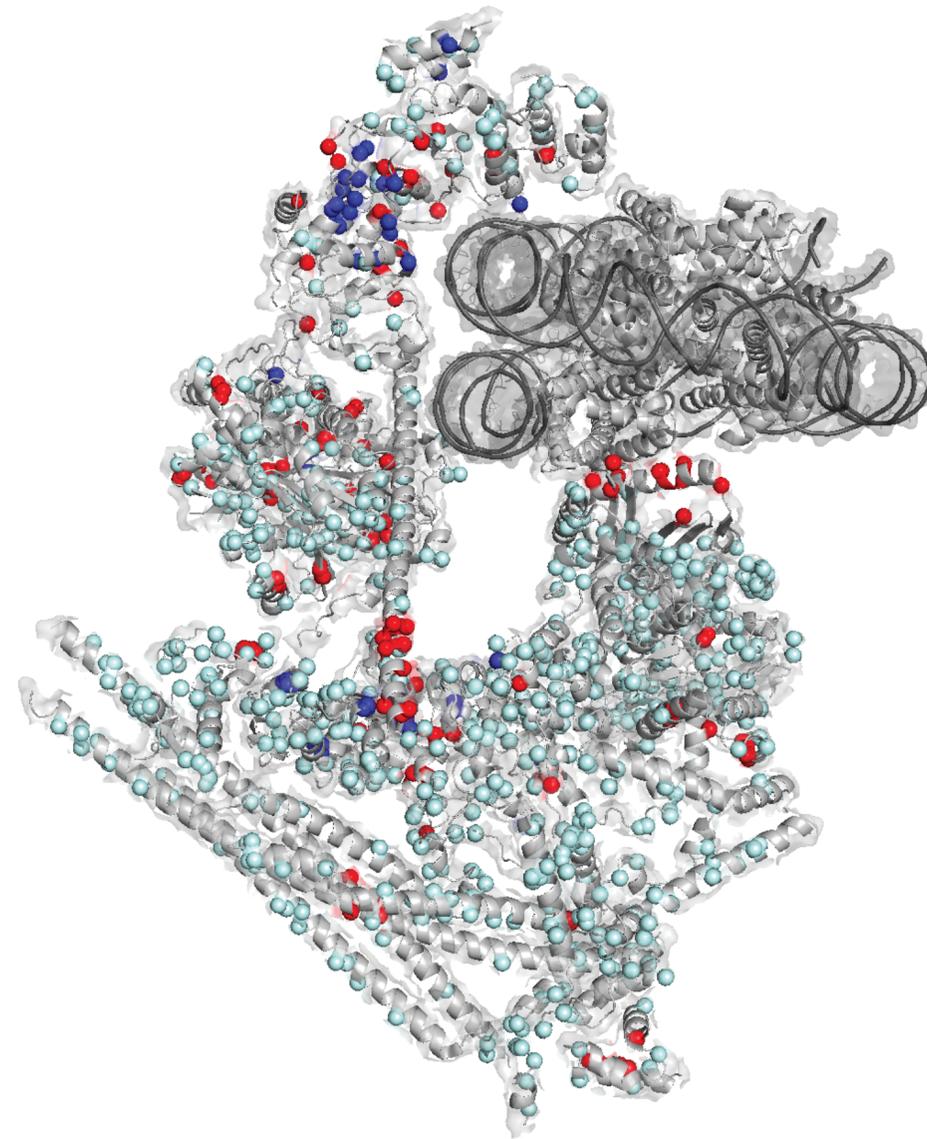
Boulay et al.,  
*Cell* 2017

# Much more to do: chromatin remodeler complex mutations are widespread



**cBAF Non-truncating Neurodevelopmental Disorder (NDD) Mutations**

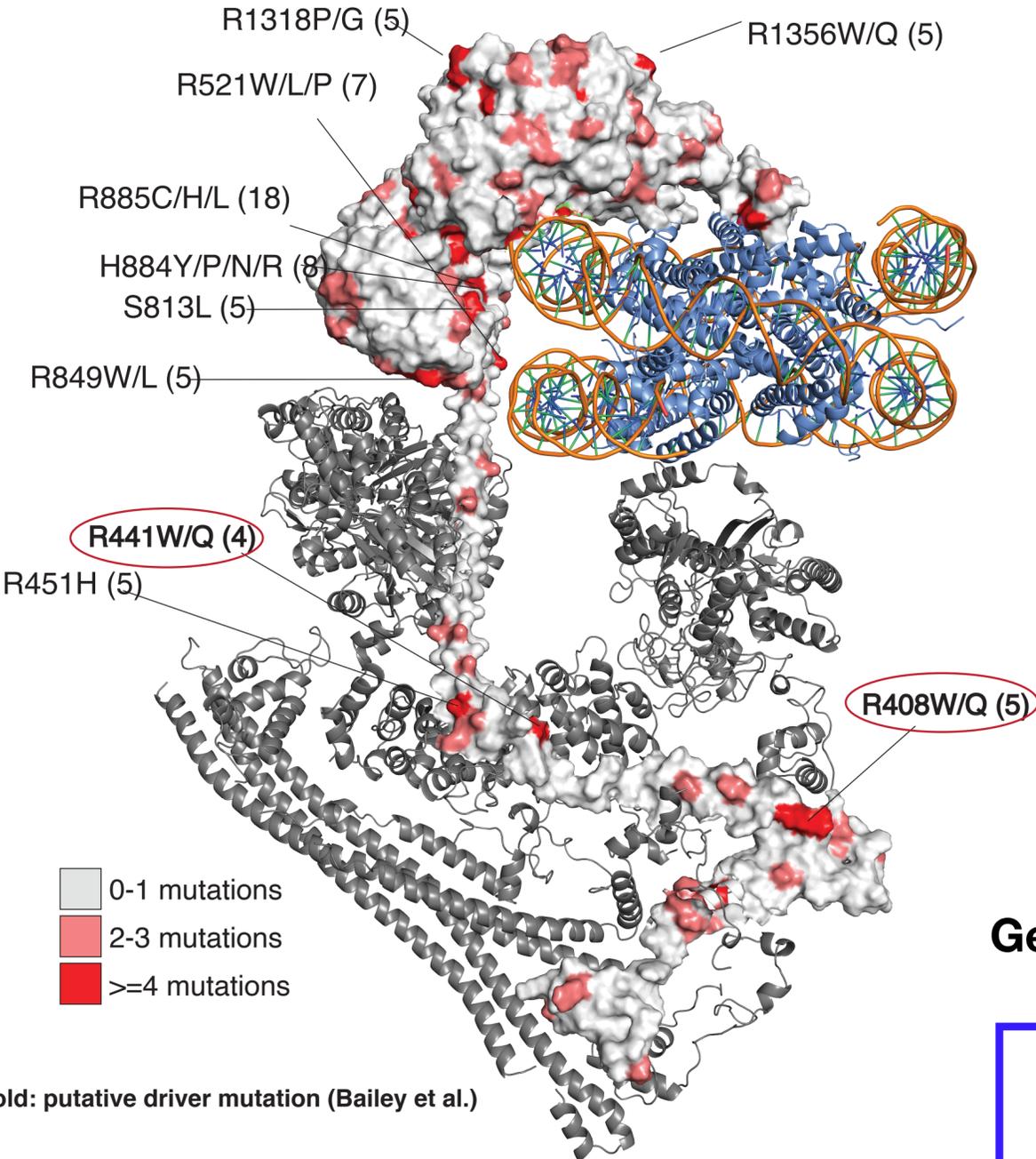
- NDD-subunit specific
- NDD-mapped from paralog
- gnomAD (general population)



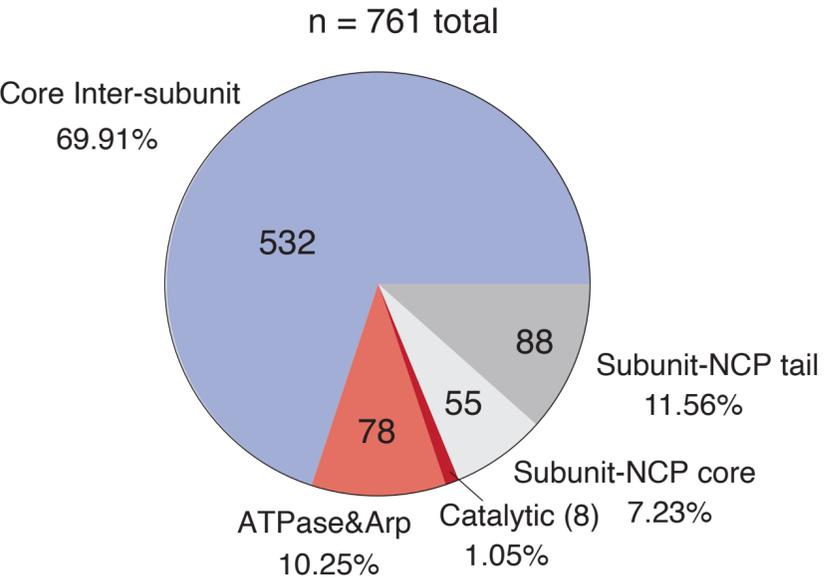
**DNA-binding domains**  
**Histone reader domains**  
**Unstructured regions**

# Recurrent cancer-associated mutations highlight broad opportunity for precision medicine

Missense mutations in SMARCA2/4



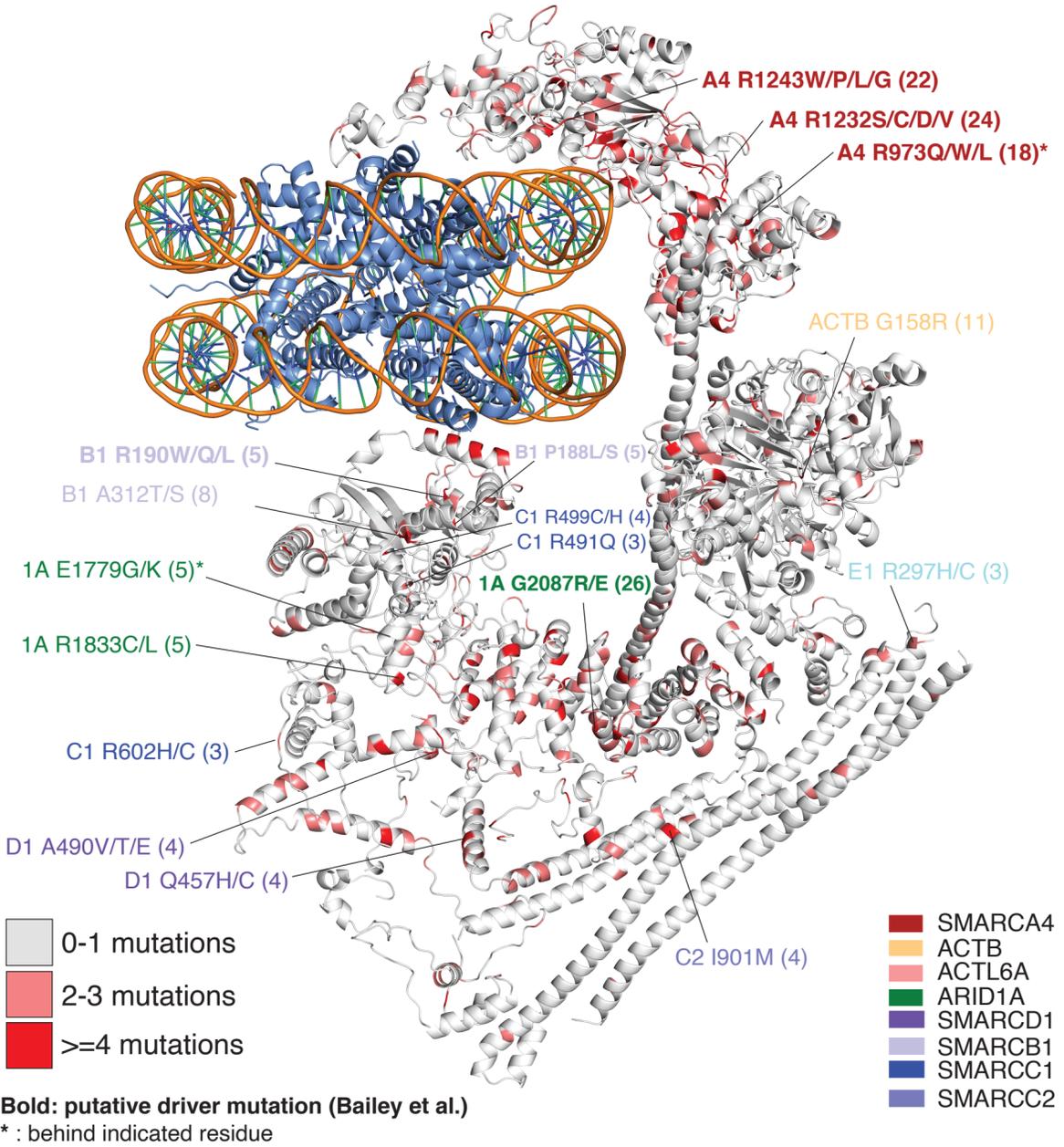
Structural classification of BAF complex cancer-associated missense mutations



**Generate functional classes of mutations**

**Provide foundation for therapeutic stratification**

Pan-Cancer Mutations (COSMIC) mapped on to endogenous cBAF complex model

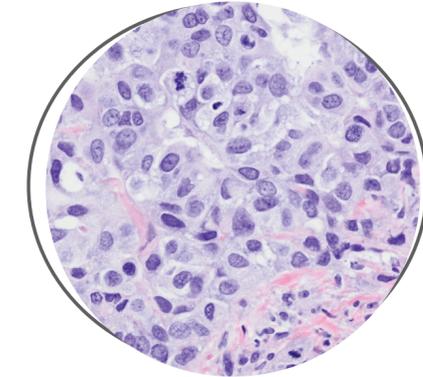


# Chromatin remodeling complexes are *major determinants* of chromatin architecture and gene expression

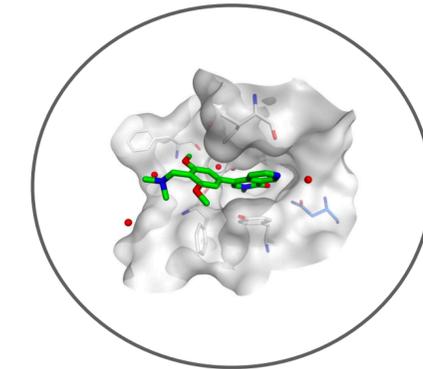
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- Actionable dependencies arise from:
  - Paralog deletions/mutations
    - SMARCA4/SMARCA2, ARID1A/B, others
  - Shifted assembly and activities of complexes
    - cBAF-perturbed cancers—> BRD9/ncBAF
  - Transcription factor network across cancers
    - SMARCA4/2 dual ATPase inhibition
  - Locus-specific/process-specific activity
    - Additional targets in development (see pipeline)
  - Chromatin remodelers with other functions (DNA repair, DNA damage, loop architecture, others)

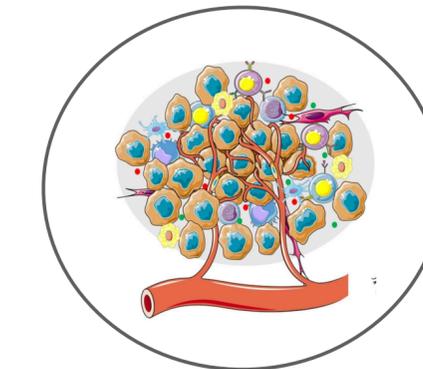
Tissue-specific context



Therapeutic approaches



Cell extrinsic sequelae





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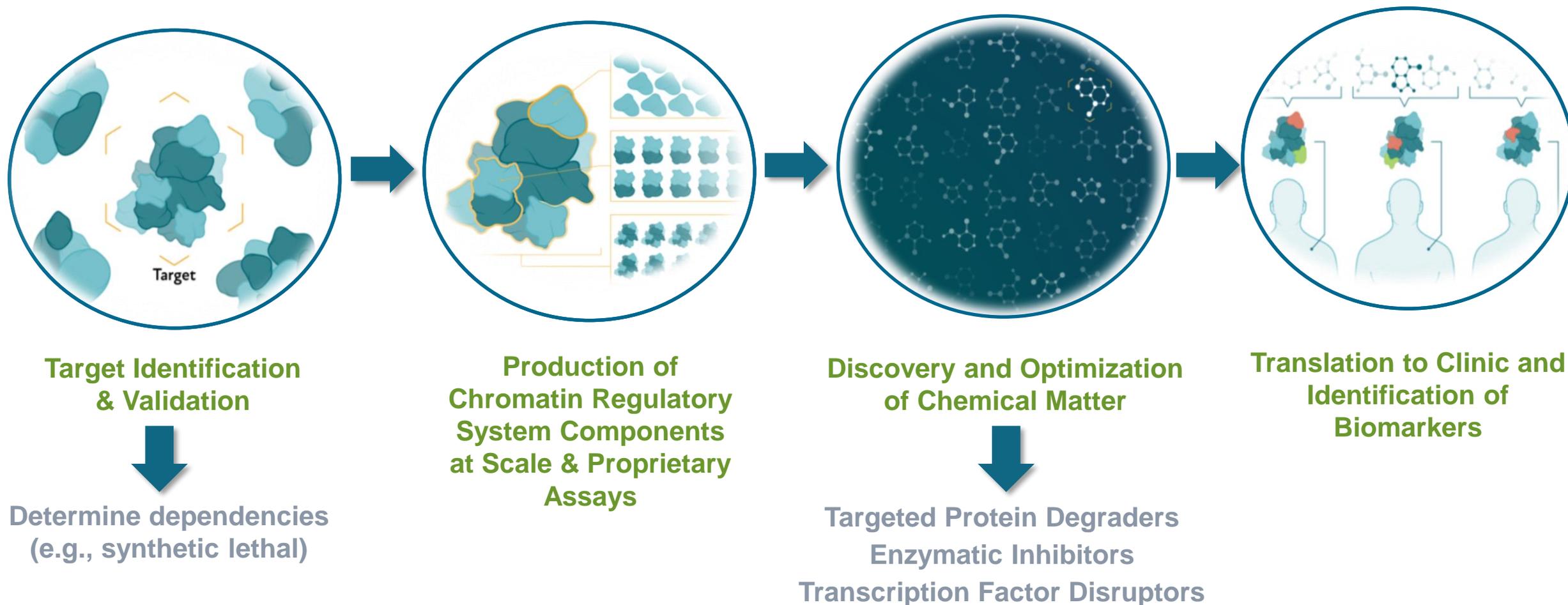
# Gene Traffic Control Platform

*Steve Bellon, Ph.D.*

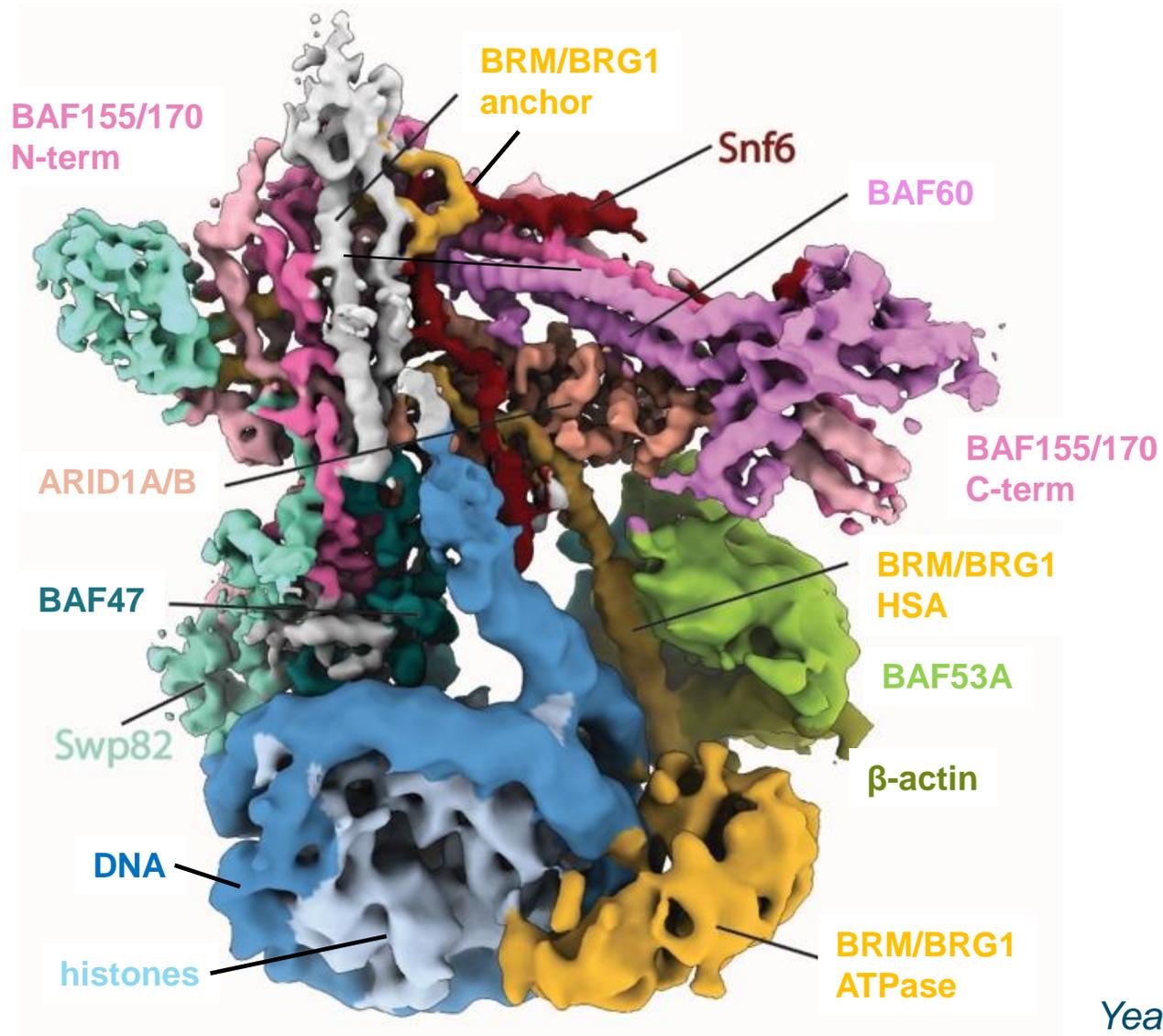
*SVP of Drug Discovery, Foghorn Therapeutics*

# Our Gene Traffic Control Platform Makes It Possible to Understand and Drug Genetic Dependencies within the Chromatin Regulatory System

Integrated, Scalable, Efficient – Repeatable Paradigm



# Rational for BAF Targets: BRM/BRG1 Threads Through Entire Complex



**Allostery!**

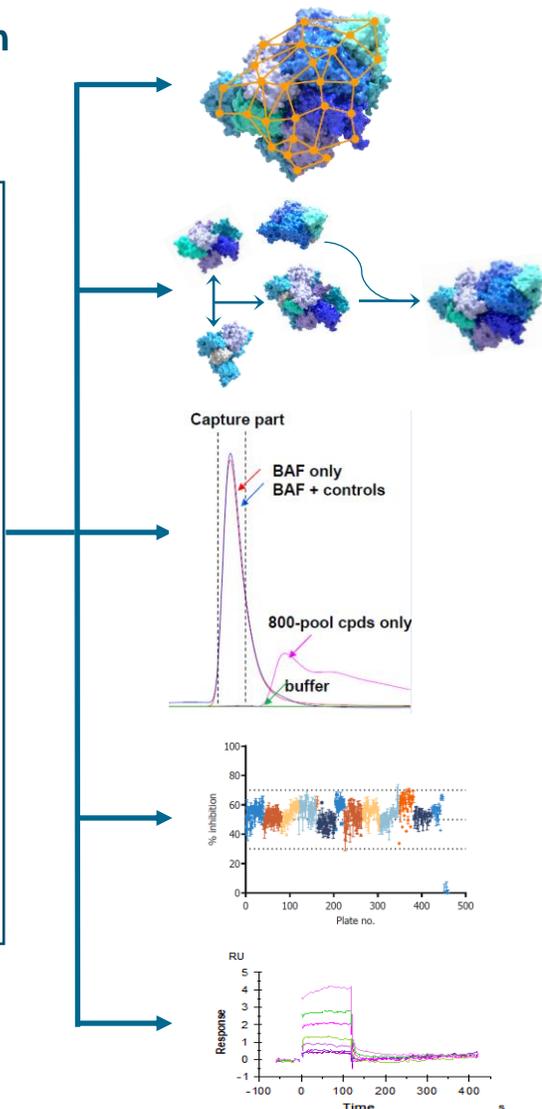
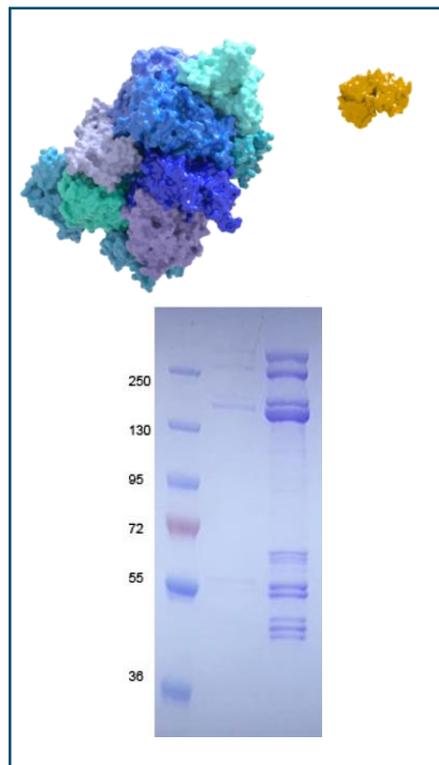
*Yeast Swi/Snf cryo EM structure*

# Platform is Powered by Ability to Produce Components at Scale

Drives Drug Discovery Pipeline with Cutting Edge Technology



## Production of Chromatin Regulatory System Components



## Features

## Benefits

Surface Mapping

Characterize TF/BAF Binding Sites

Assembly

Synthesize subcomplexes to enable drug discovery

Affinity Screening and Validation

ASMS on full complex to yield novel degraders

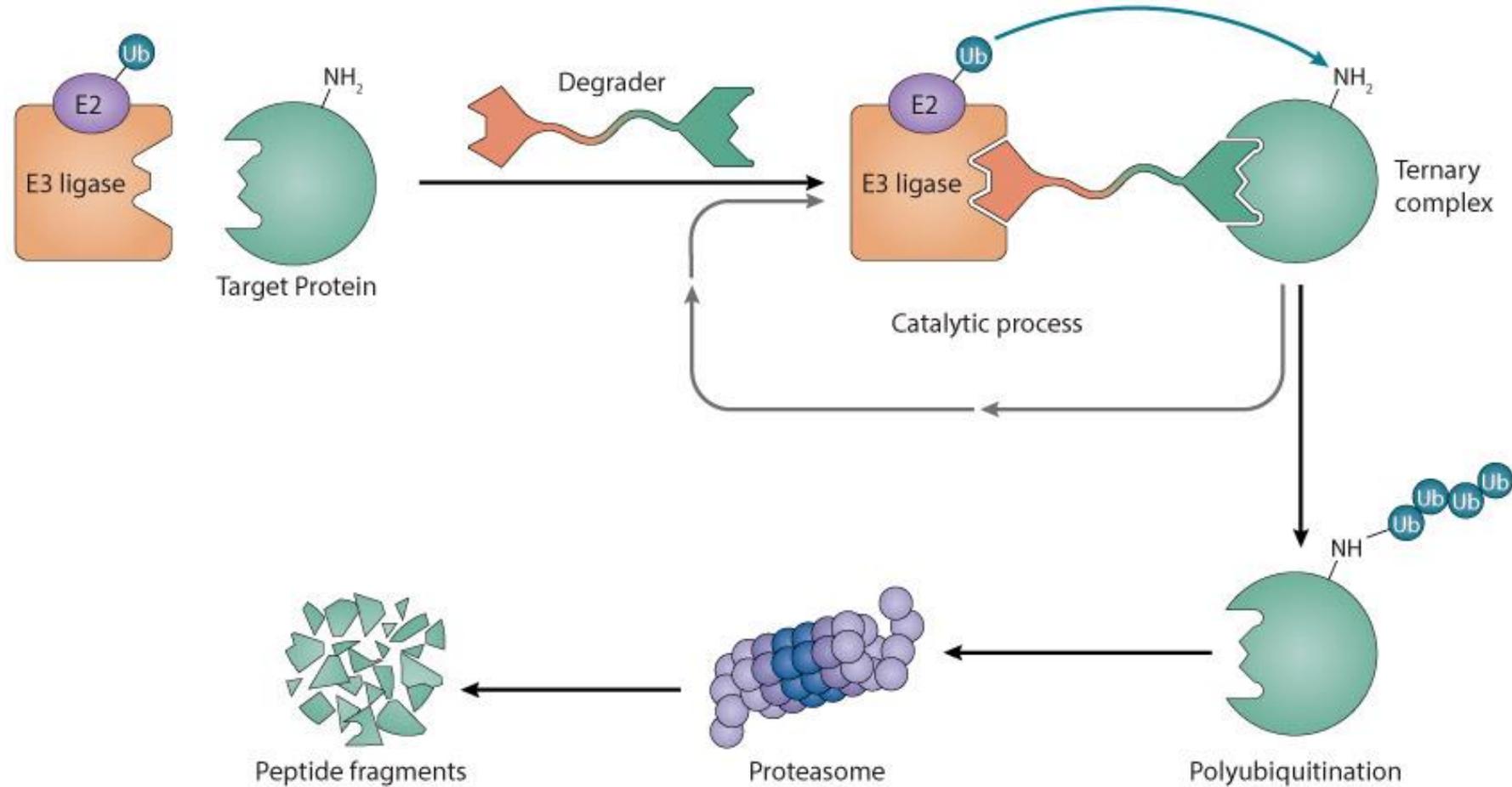
HTS

Multiple screening options with full complex

Biophysics/SPR

Validation of novel small molecule binders

# Protein Degradation – Evolving Therapeutic Modality



# Heterobifunctional Degradator Platform

Foghorn Pursuing >8 Targeted Protein Degradators



## Bioinformatics

- Optimal E3 ligase target pairing
- Proteomics

## Screening and Characterization

- Proprietary chromatin remodeling assays
- Protein degradation kinetics

## Chemical Toolbox

- Proprietary library of drug-like linkers and E3 ligase binders
- Chemistry to rapidly identify and optimize degradators

## Structural and Computational Approaches to Degradator Design

- Structure based optimization of binders
- Ternary complex crystal structures and modeling approaches for degradator optimization

## Optimization of Degradator Drug Properties

- Guidelines for both of oral and IV administered degradators
- PKPD/efficacy and safety modeling to optimize dosing and scheduling

# Targeting ARID1A Mutated Cancers: ARID1B Protein Degradator

Advantaged by Gene Traffic Control Platform and Protein Degradator Capabilities



## Gene Traffic Control Platform

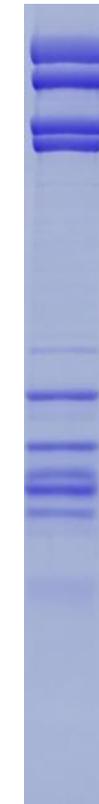
- Platform produces BAF complexes and subcomplexes containing either ARID1A or ARID1B at scale
- Enables proprietary screens against ARID1B

## Protein Degradator Capabilities

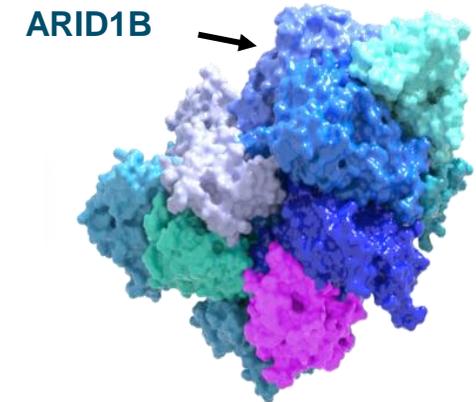
- Utilize protein degrader toolbox to create ARID1B hetero-bifunctional degraders

## Biology & Opportunity

- ARID1A is the most highly mutated subunit of the BAF complex in cancer
- ~5% of all tumors harbor ARID1A mutations including; endometrial cancer (~40%), bladder cancer (~25%) and ovarian (~15%)
- Synthetic lethal relationship with ARID1B



Highly purified ARID1B / BAF complex



# First Two Programs in the Clinic, Broad Pipeline Advancing

Precision Oncology / Breadth and Depth



Program / Target	Modality	Discovery	IND-enabling	Phase 1	Phase 2	Phase 3	Global Rights
<b>FHD-286 (BRG1 / BRM)</b>	Enzyme inhibitor	AML		Early Clinical Data (Q4 2021)			
		Uveal melanoma		Early Clinical Data (Q4 2021)			
<b>FHD-609 (BRD9)</b>	Protein degrader	Synovial sarcoma		Early Clinical Data (H1 2022)			
<b>Selective BRM</b>	I) Enzyme inhibitor	BRG1 mutated cancers	IND 2022				
	II) Protein degrader	BRG1 mutated cancers					
<b>Selective ARID1B</b>	Protein degrader	ARID1A mutated cancers					
<b>Synthetic Lethal Targets (multiple)</b>	I) Enzyme inhibitors						
	II) Protein degraders						
<b>Transcription Factors (multiple)</b>	I) Transcription factor disruptors						
	II) Protein degraders						
<b>Partnered program (undisclosed)</b>	Transcription factor disruptor						

**Gene Traffic Control® Platform**



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# Selective BRM Modulators for BRG1 Mutated Cancers

Enzymatic Inhibitor and Protein Degradation Programs

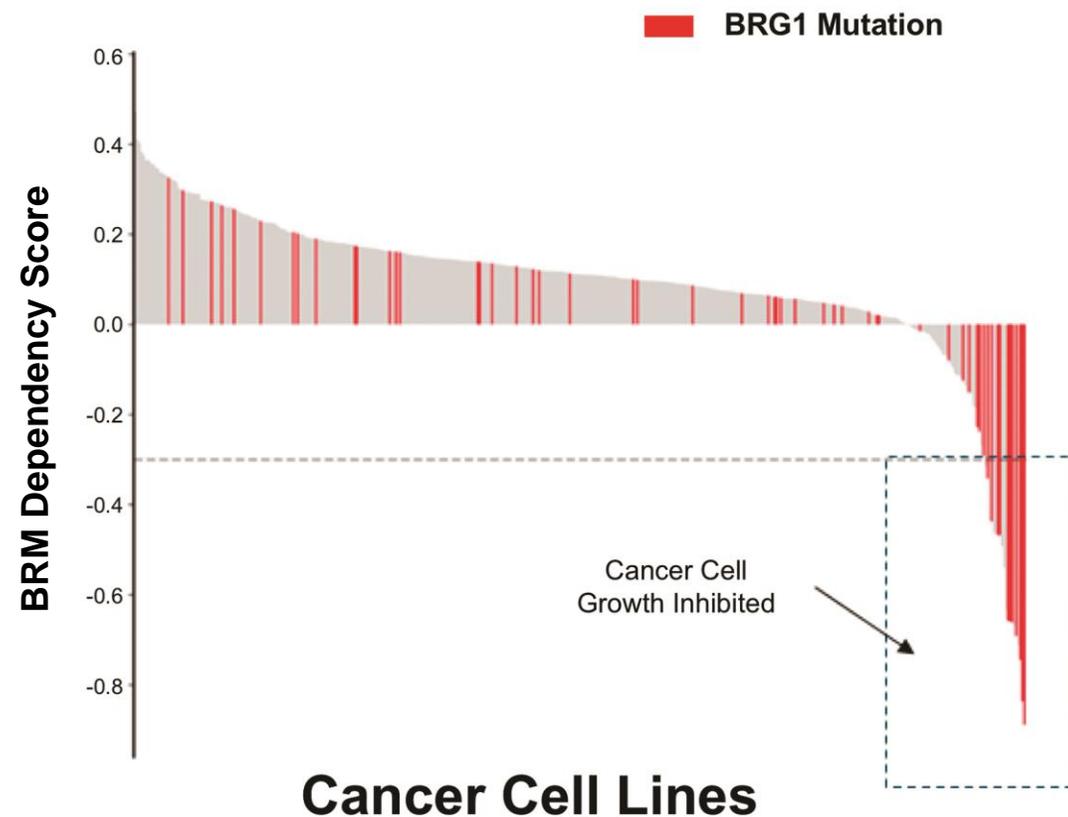
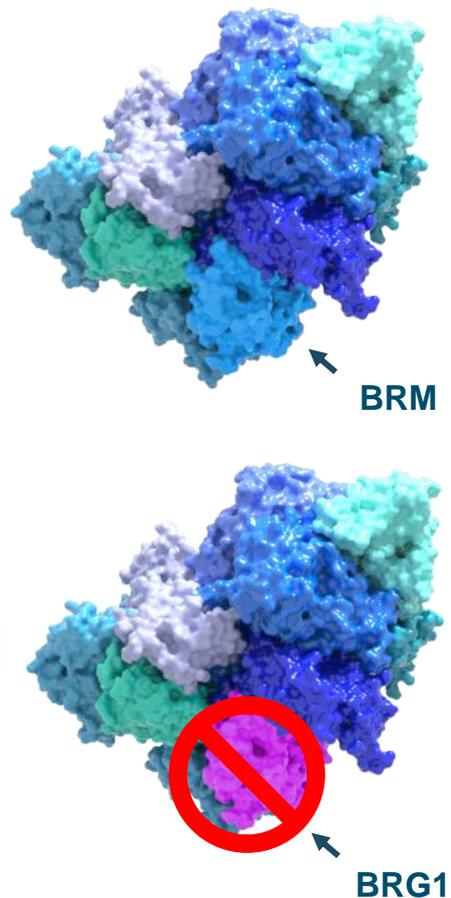
# BRG1 Mutations Create a Genetic Dependency on BRM

## Selective BRM Modulators Overview



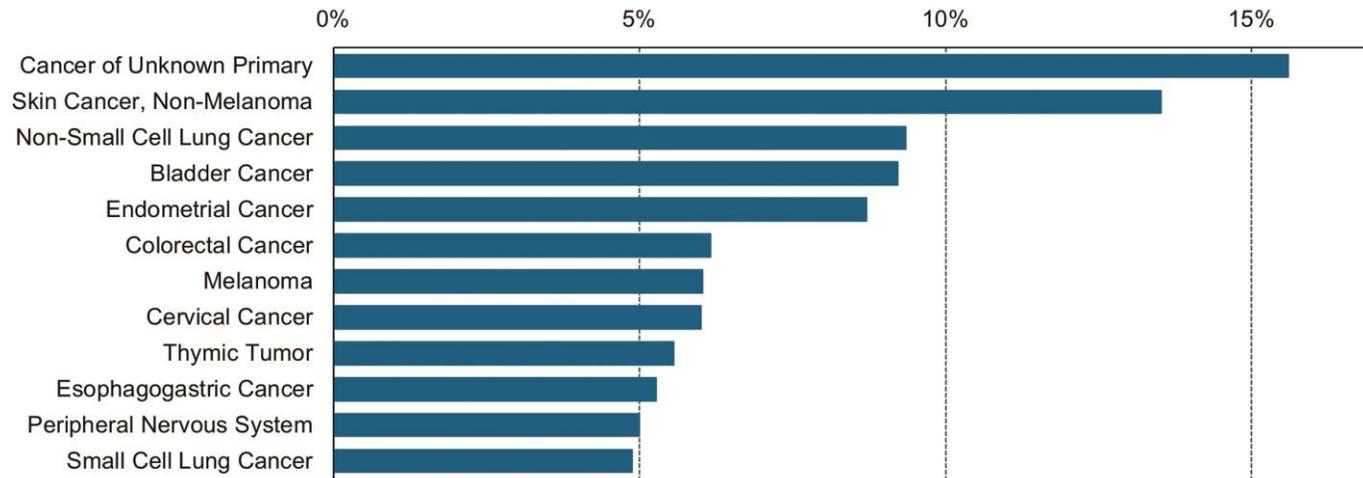
<b>Target / Approach</b>	<ul style="list-style-type: none"><li>• BRM</li><li>• Enzymatic inhibitor</li><li>• Targeted protein degrader</li></ul>
<b>Indication</b>	<ul style="list-style-type: none"><li>• BRG1 mutated cancers (e.g., NSCLC), 30+ cancers with BRG1 mutations</li></ul>
<b>Mutation / Aberration</b>	<ul style="list-style-type: none"><li>• BRG1</li></ul>
<b>Stage</b>	<ul style="list-style-type: none"><li>• Pre-clinical</li></ul>
<b>New Patients Impacted / year*</b>	<ul style="list-style-type: none"><li>• &gt; 100,000</li></ul>

\* US, EU5, Japan



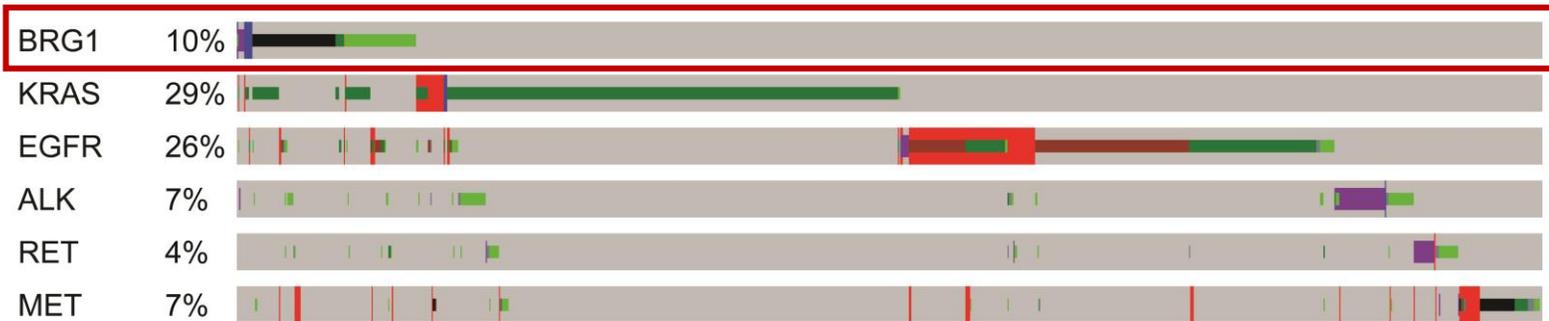
# BRG1 Mutated in ~5% of All Tumors

Broad Addressable Patient Population



**BRG1 mutated across range of tumors**

**Accounts for ~5% of all tumors**



**BRG1 mutated in up to 10% of NSCLC tumors, minimal overlap with other mutations**

**Genetic Alteration**

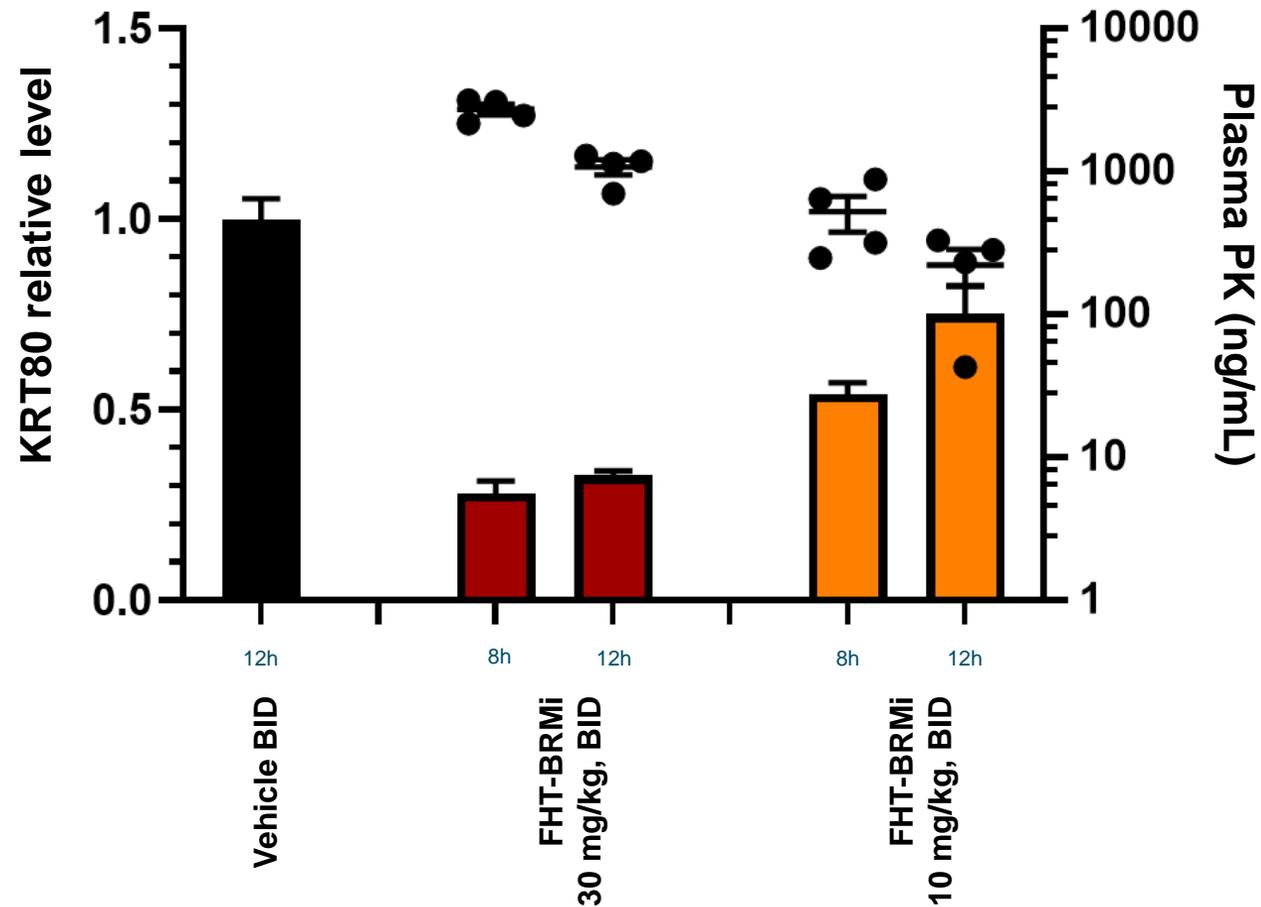
- Inframe Mutation (putative driver)
- Inframe Mutation (unknown significance)
- Missense Mutation (putative driver)
- Missense Mutation (unknown significance)
- Truncating Mutation (putative driver)
- Truncating Mutation (unknown significance)
- Fusion
- Amplification
- Deep Deletion
- No alterations

# In Vivo Target Engagement With ~20X Selective BRM Selective Inhibitor

PD Modulation in the H1299 BRG1-Null NSCLC PD Model Establishing a Direct Exposure-Response Relationship



## Targeting BRM: KRT80 PD Biomarker

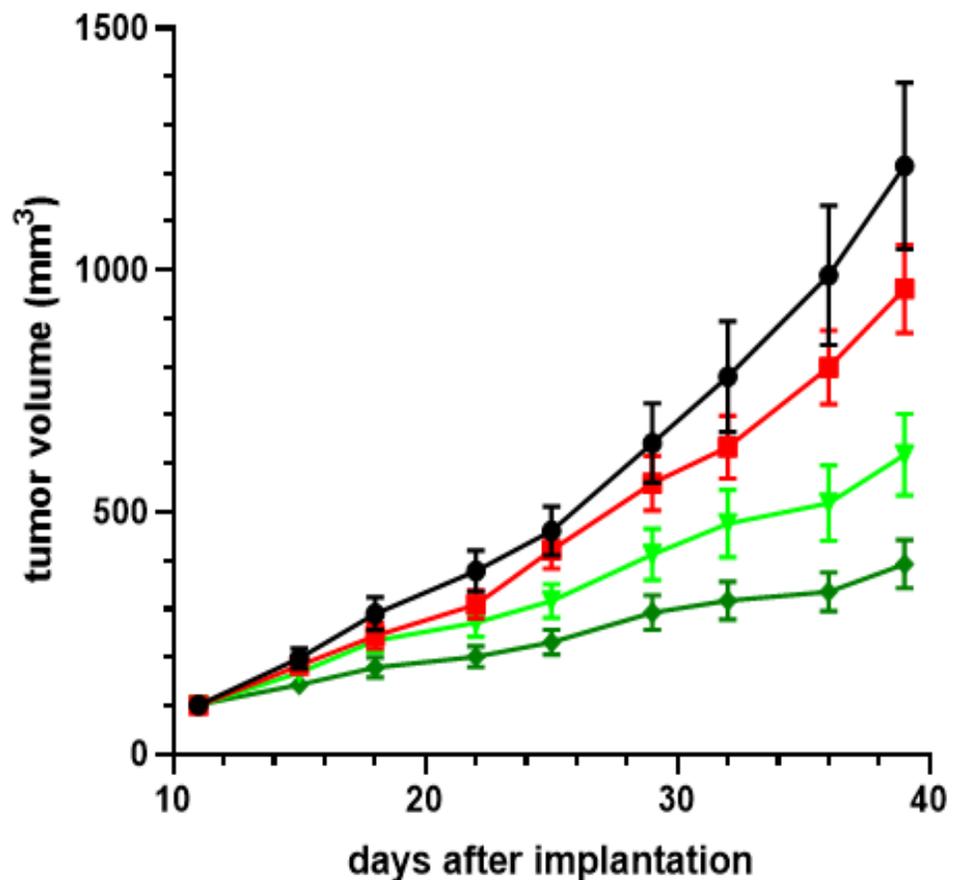


# BRM Selective Inhibitor In vivo Efficacy

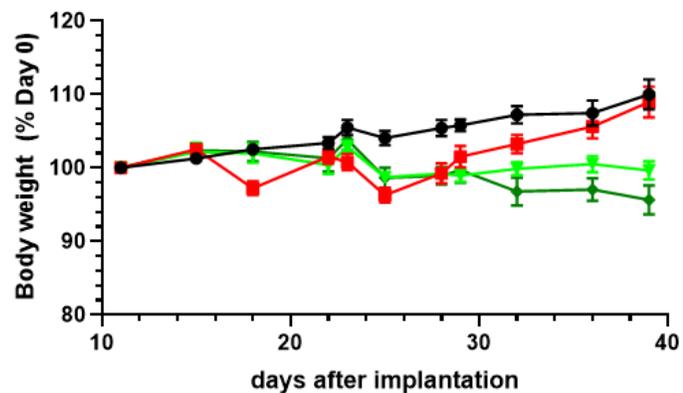
Demonstrates PK/PD and In vivo Efficacy in a BRG1 Mutant Lung CDX Model



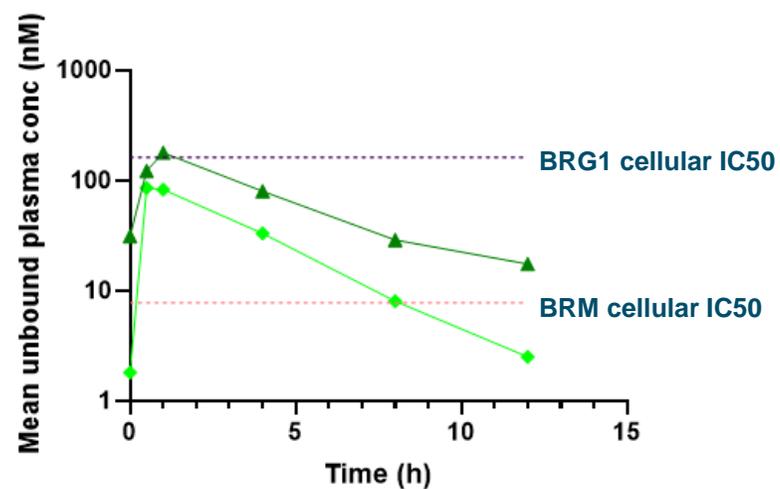
## A549-BRG1 Mutant NSCLC Model



## Body Weight

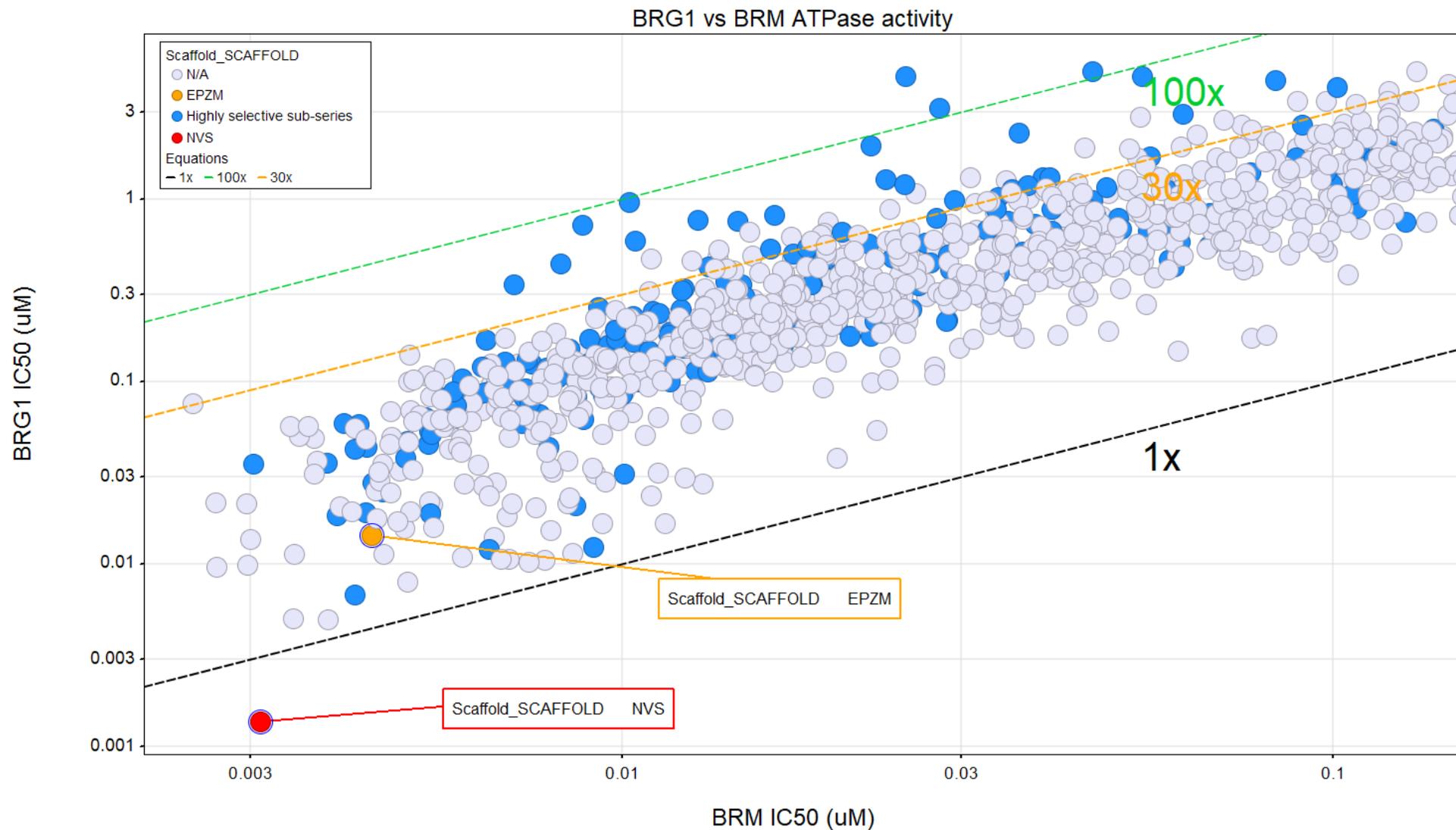


## Plasma Exposure

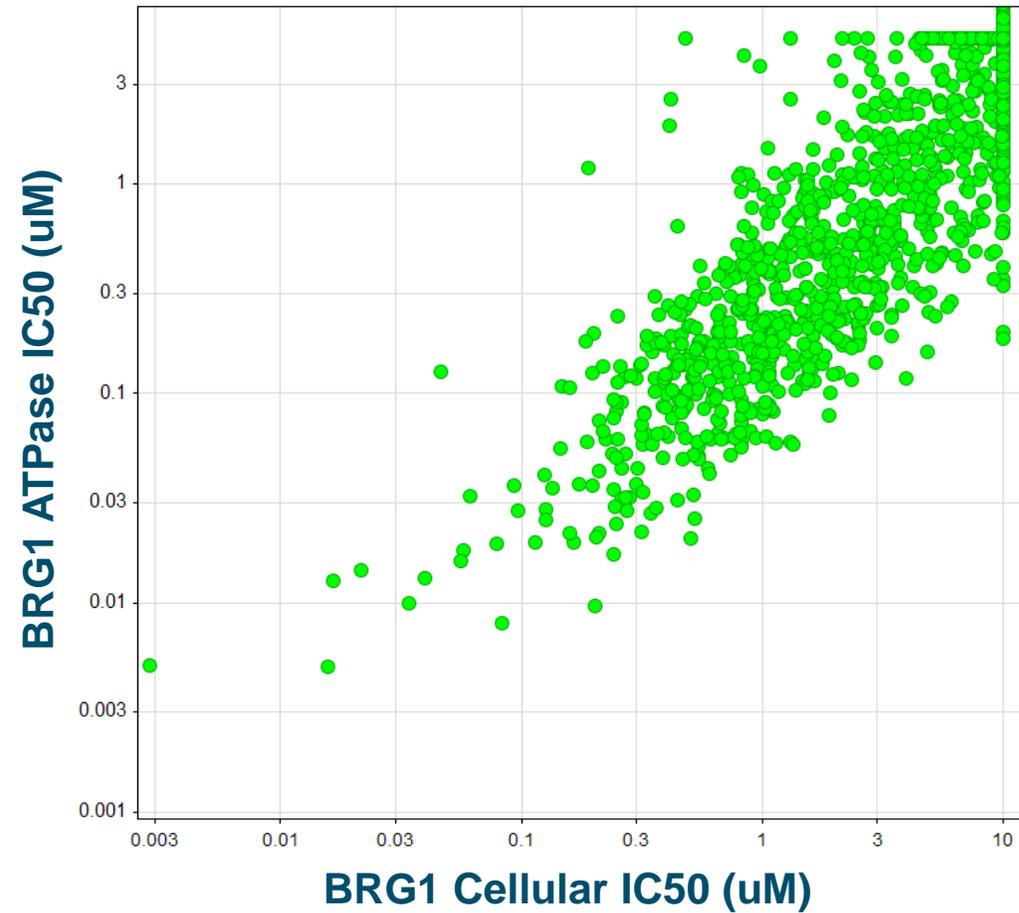
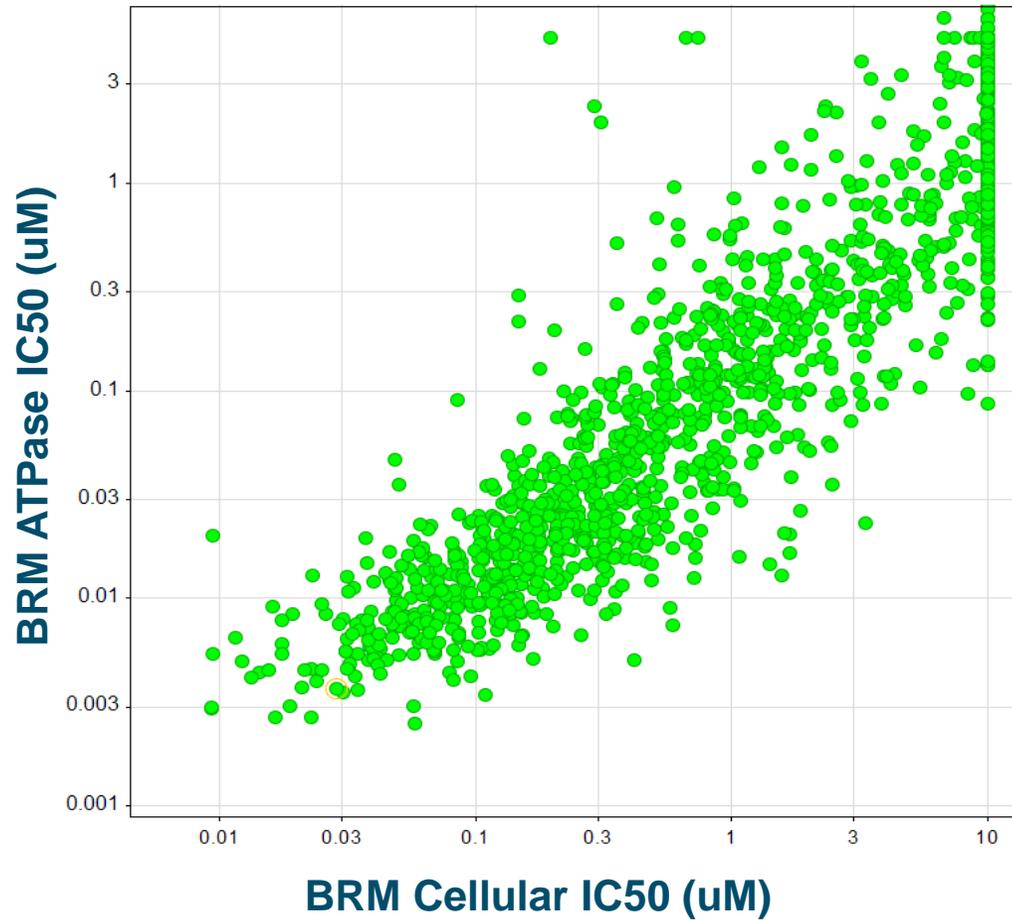


- Vehicle Control (BID)
- Cisplatin 4 mg/kg (IP)
- ▼ FHT-BRMi 15 mg/kg (BID)
- ◆ FHT-BRMi 30 mg/kg (BID)

# Scaffolds With Enzymatic Selectivity > 100X



# Strong Correlation from Enzyme to Cellular Reporter Assays

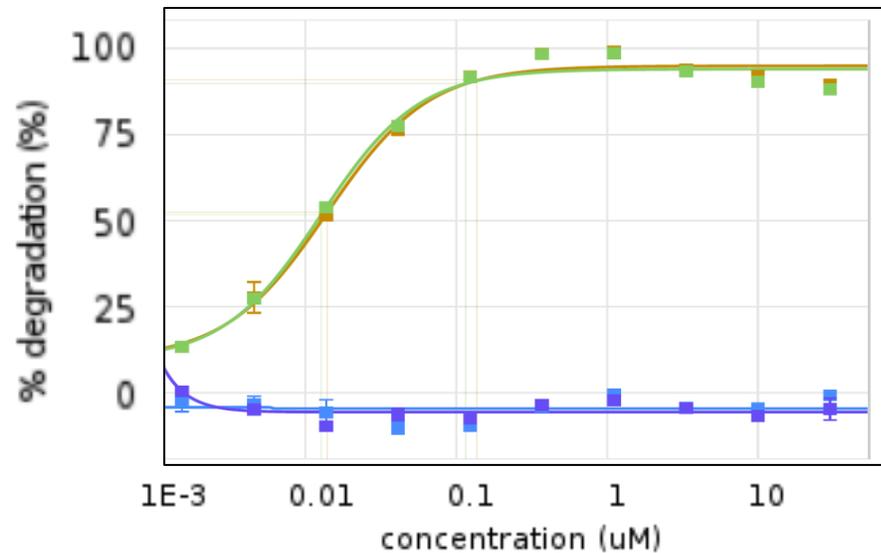


# Advancing BRM Selective Degraders

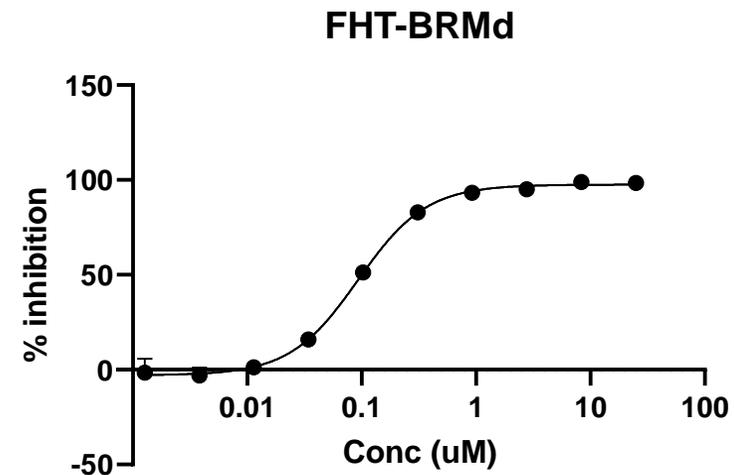
Achieving Complete BRM Degradation



## BRM/BRG1 HiBit Data



## A549 Ten-Day Proliferation Assay



**Degraders cause time- and dose-dependent BRM degradation, antiproliferative effects in A549 BRG1 mutant NSCLC lung model**

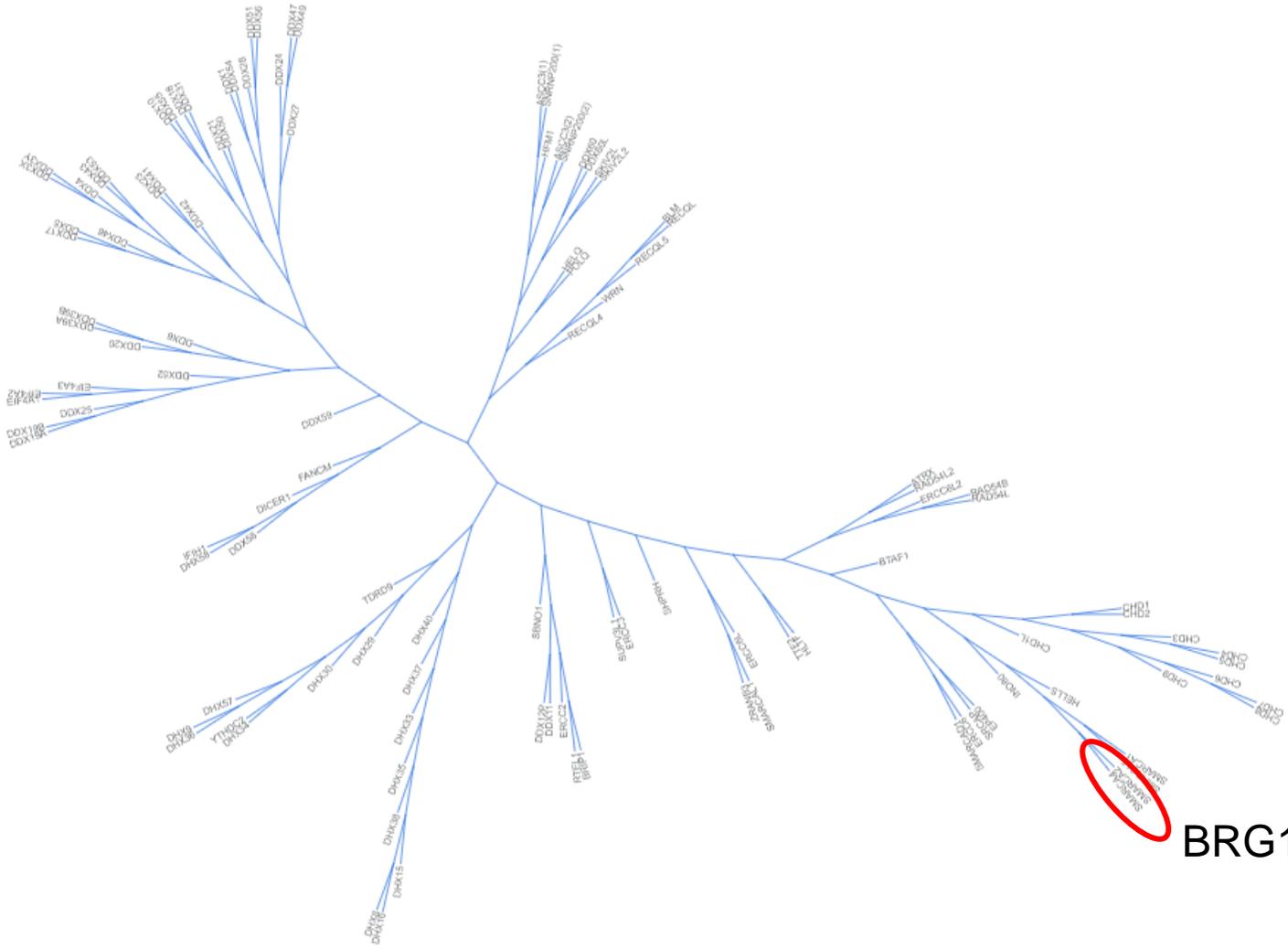


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## Target Hopping to Related Helicase Targets

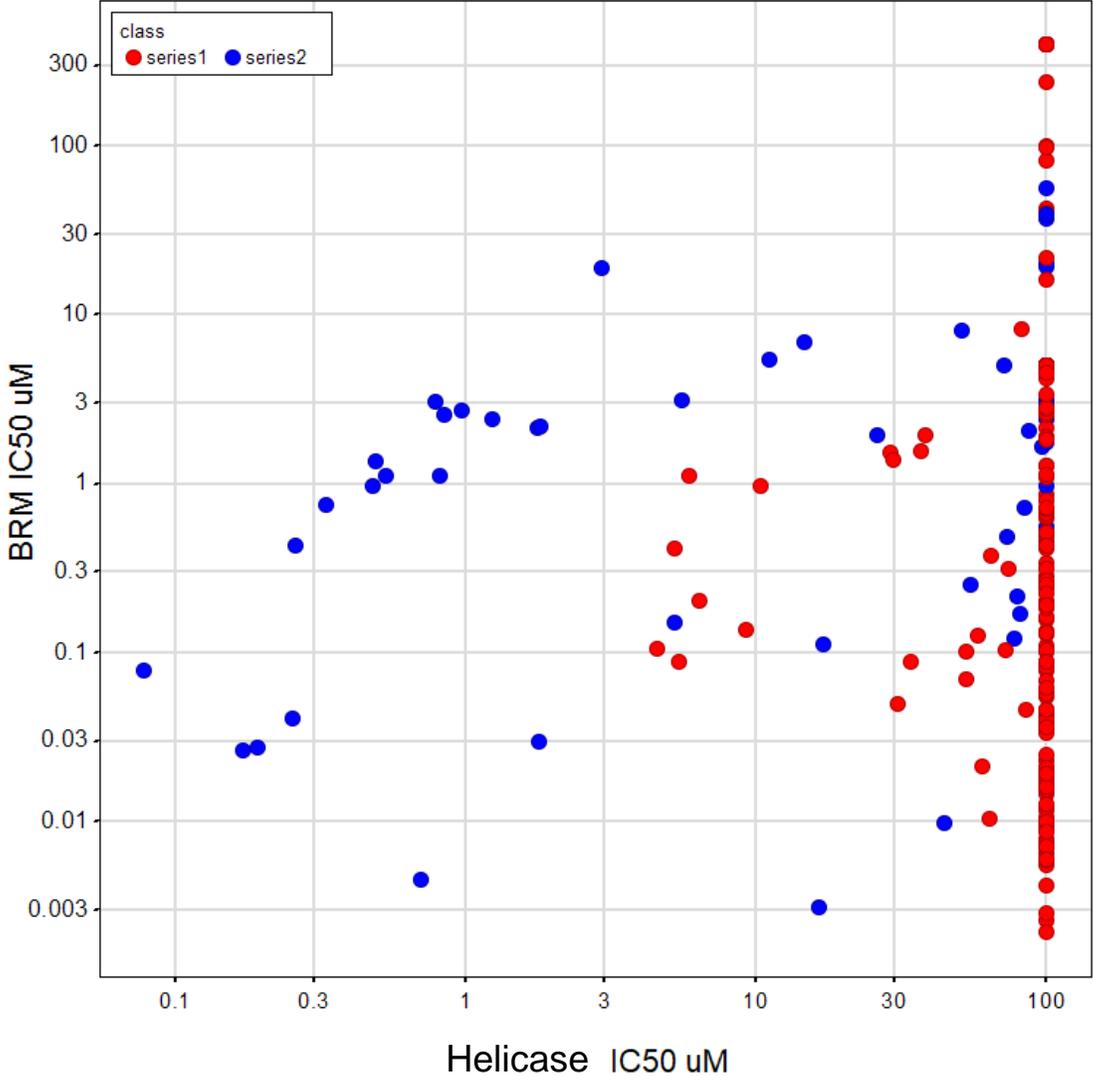
# ATP Dependent Helicases

Potential to Broaden Pipeline and Further Validate Platform Breadth



BRG1/BRM

# Target Hopping to Related Helicase Targets



# Potency Improved to Sub 100 nM

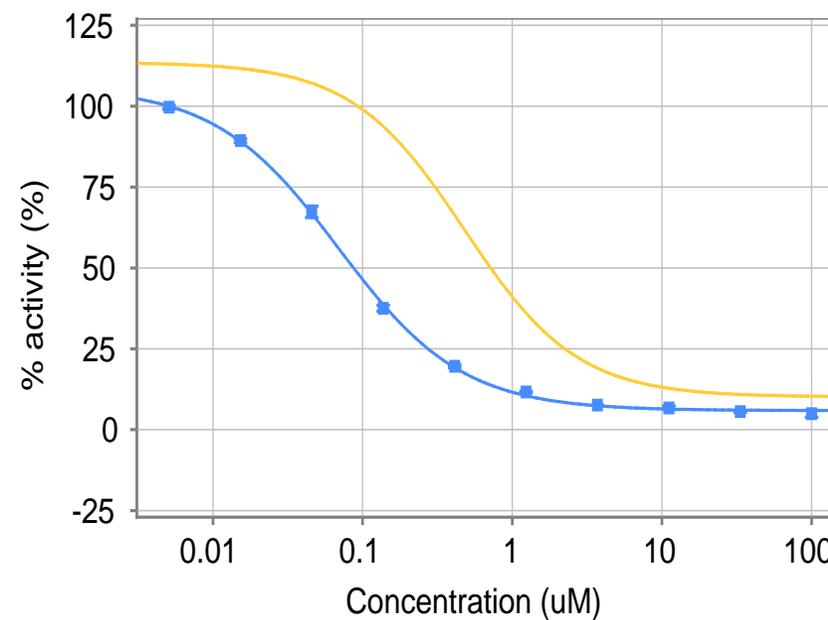
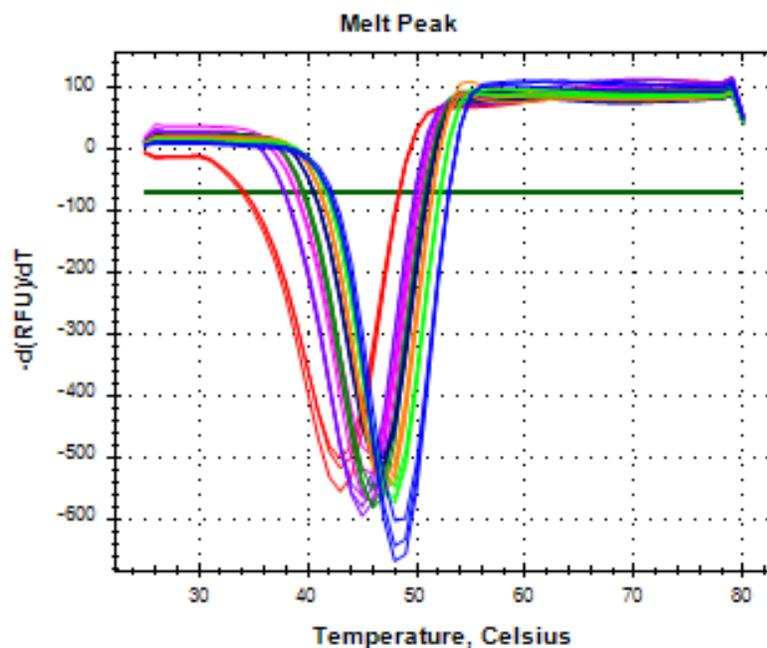


Target Hopping  
Hits

Validation by  
ASMS and DMF

Medicinal  
Chemistry

IC<sub>50</sub> = 70 nM





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# Novel Approach to Targeting Transcription Factors

Disrupting Transcription Factor – Chromatin Remodeling Complex Interactions

# A New Approach to Drugging Transcription Factors

Enabled by Proprietary Ability to Purify and Synthesize Chromatin Regulatory System Components

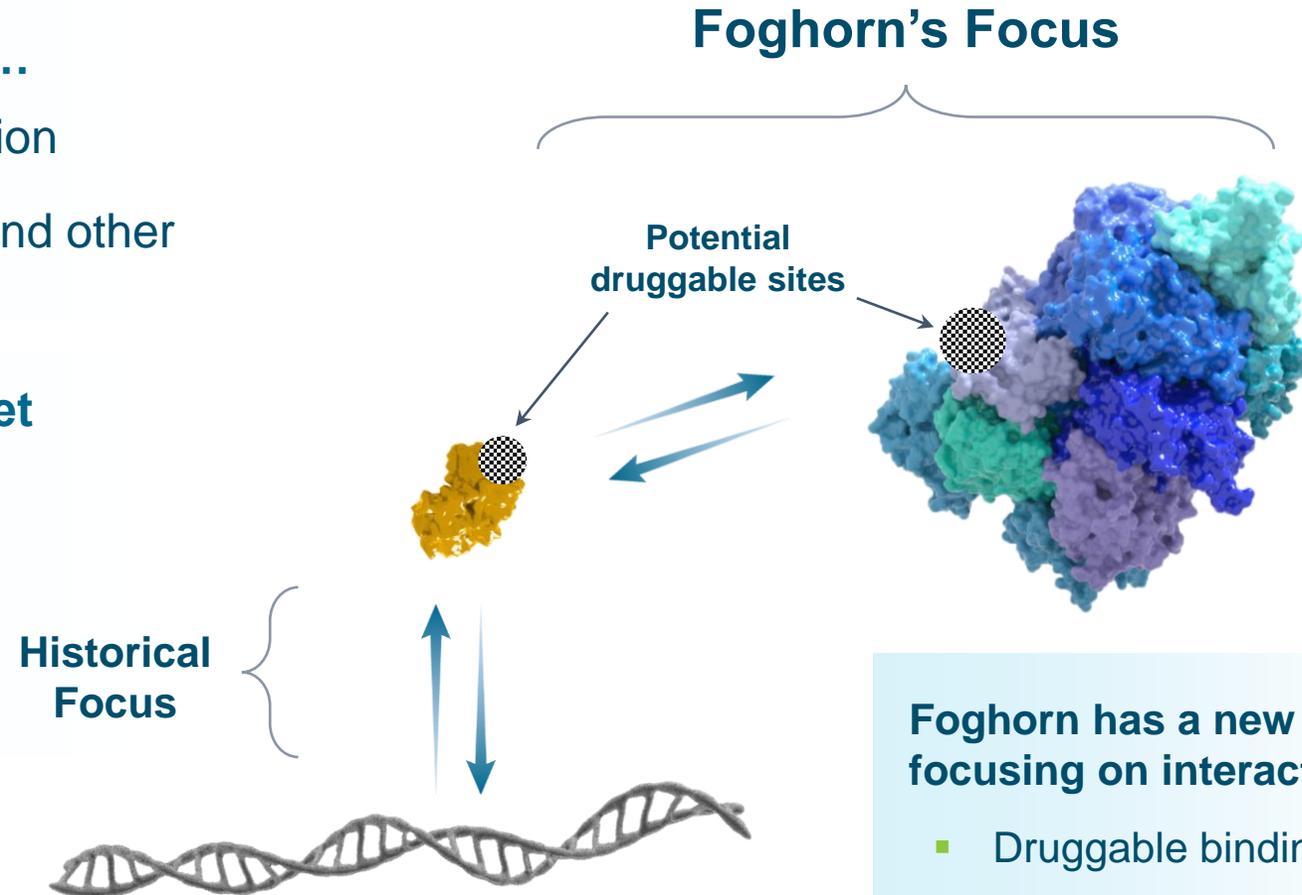


## TFs are compelling drug targets...

- Highly involved in gene expression
- Implicated in range of cancers and other diseases

## ...but historically difficult to target

- Featureless surface: no druggable binding pocket
- Tight interactions with DNA: undruggable affinities



Foghorn has a new approach focusing on interaction with BAF

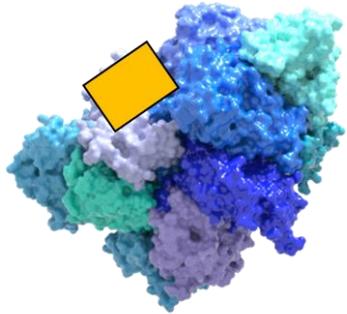
- Druggable binding pockets
- Druggable affinities

# Transcription Factor-Chromatin Remodeling Complex Interactions

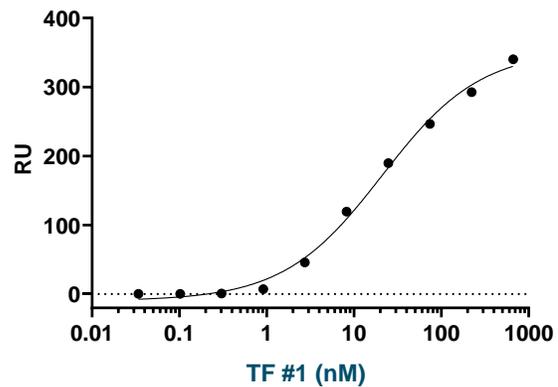
Unique Insights in Where and How Transcription Factors Bind



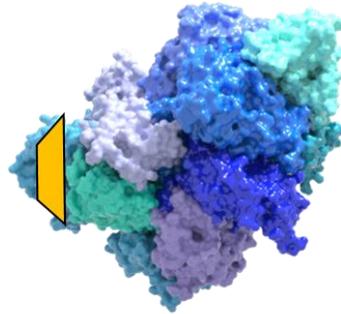
TF #1



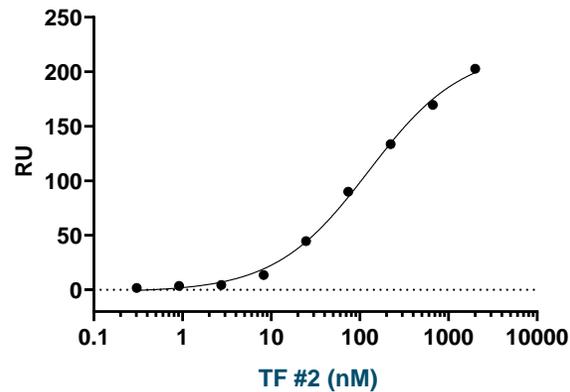
KD = 21 nM



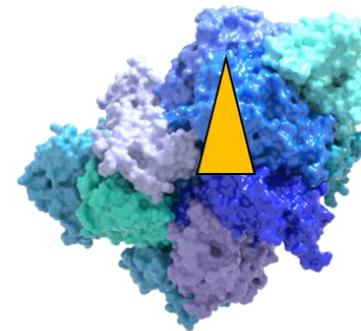
TF #2



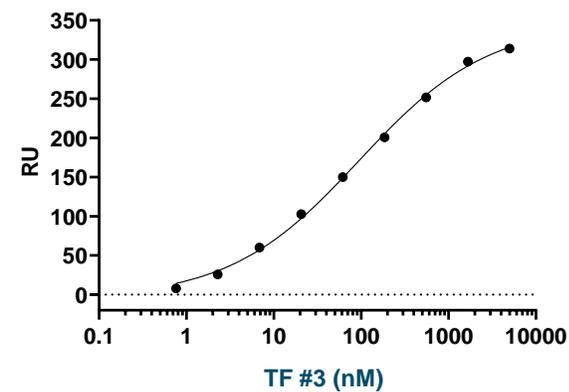
KD = 125 nM



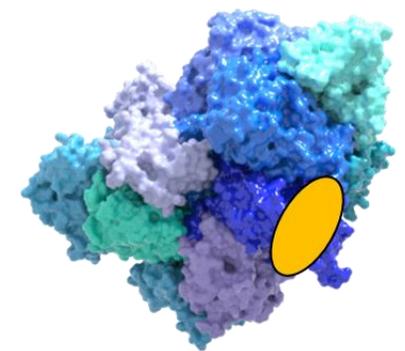
TF #3



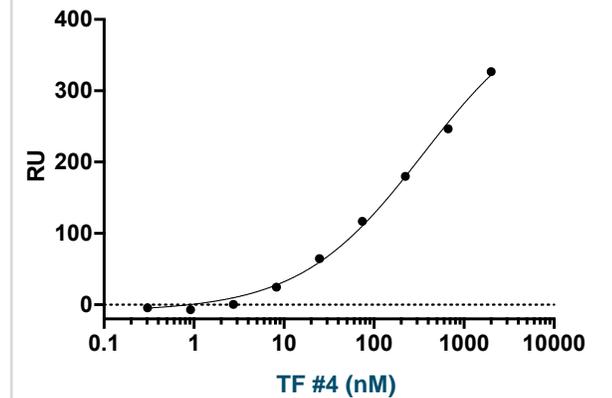
KD = 94 nM



TF #4



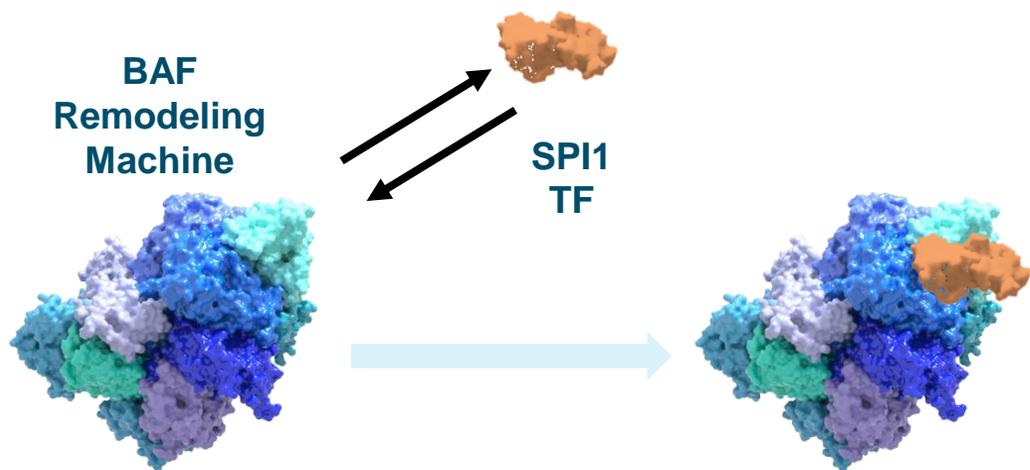
KD = 351 nM



# SPI1: Transcription Factor SPI1 Dependency in AML



**Aberrant SPI1  
overexpression**

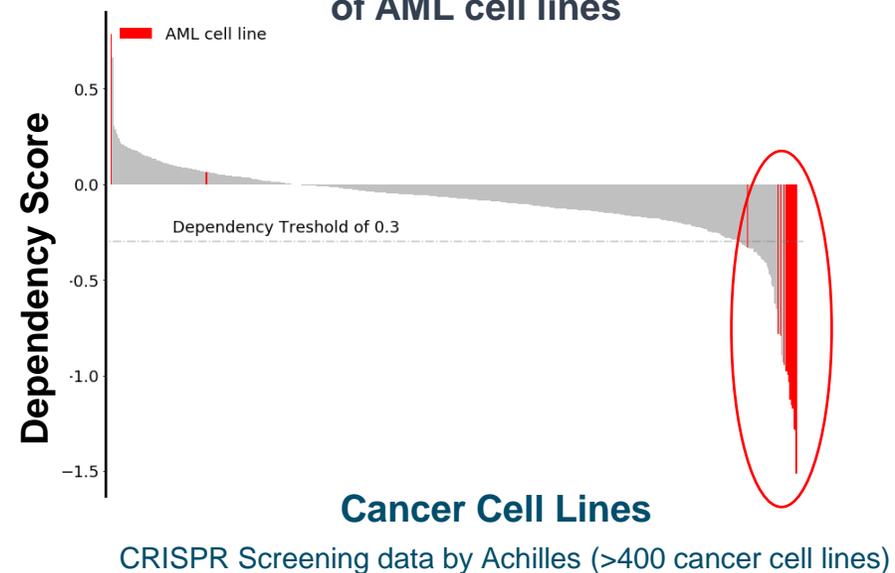


**SPI1 Target  
Gene Sites**

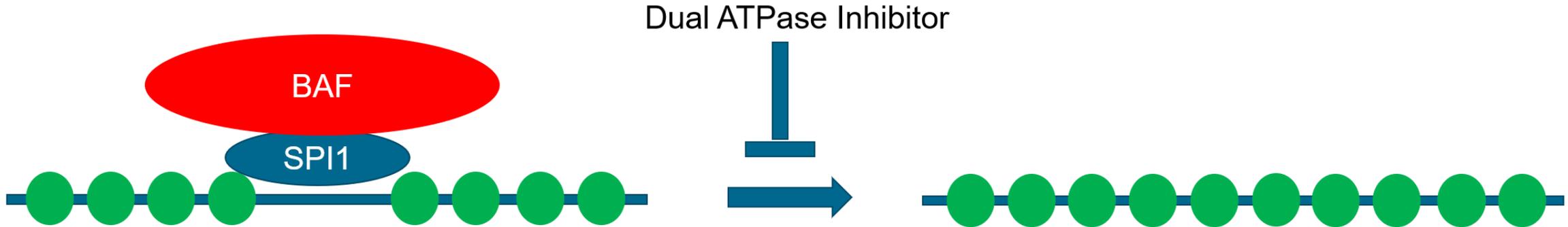
**Overexpression  
of Genes  
Regulated by  
SPI1**

**AML**

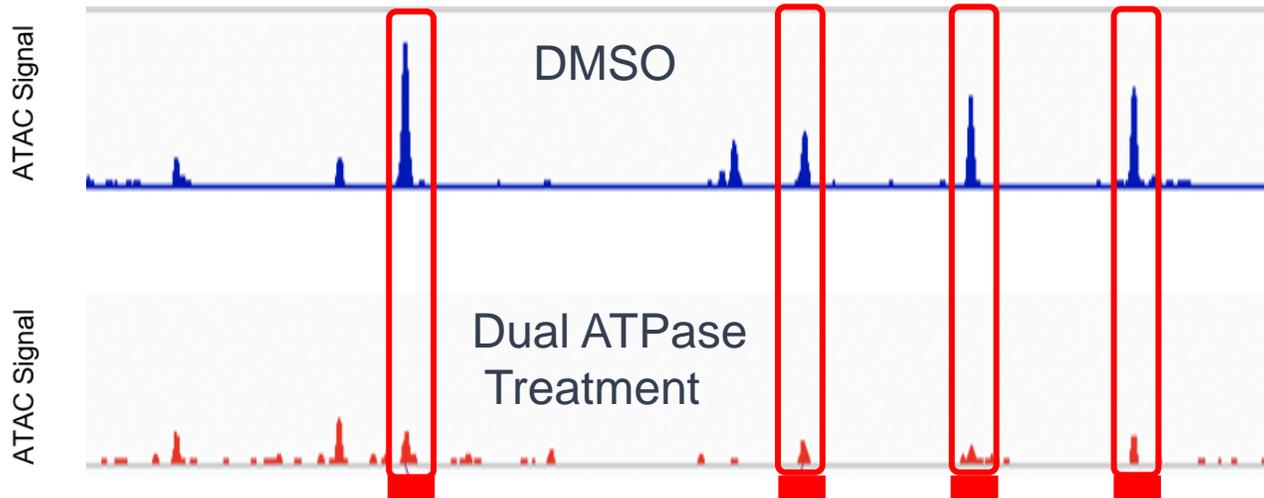
**SPI1 inhibition selectively inhibits the growth  
of AML cell lines**



# ATAC-seq Shows SPI1 Regulatory Elements are BAF Dependent



ATAC-Seq measures open regions of genome



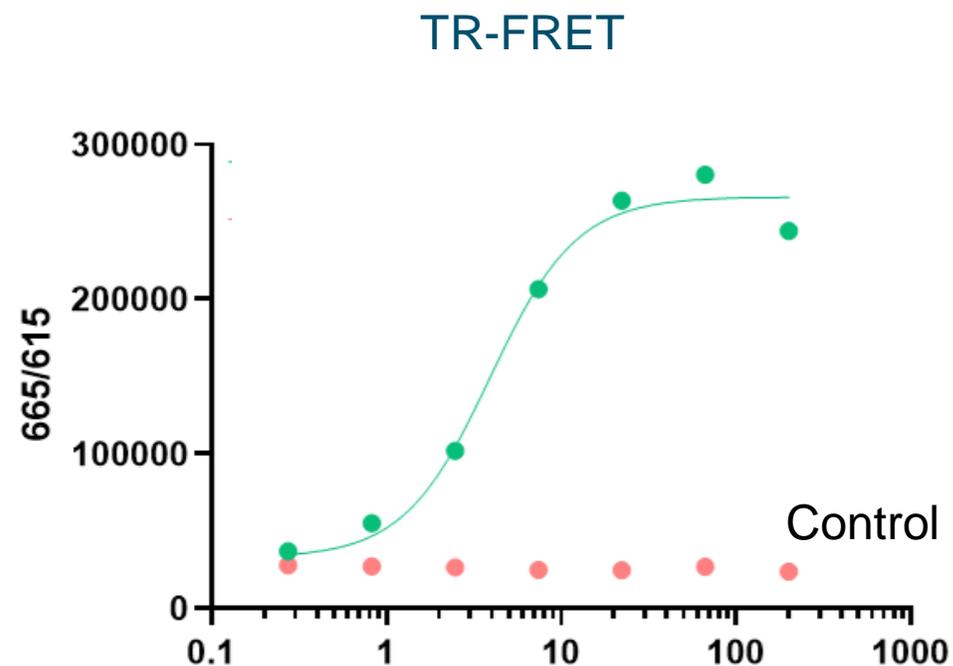
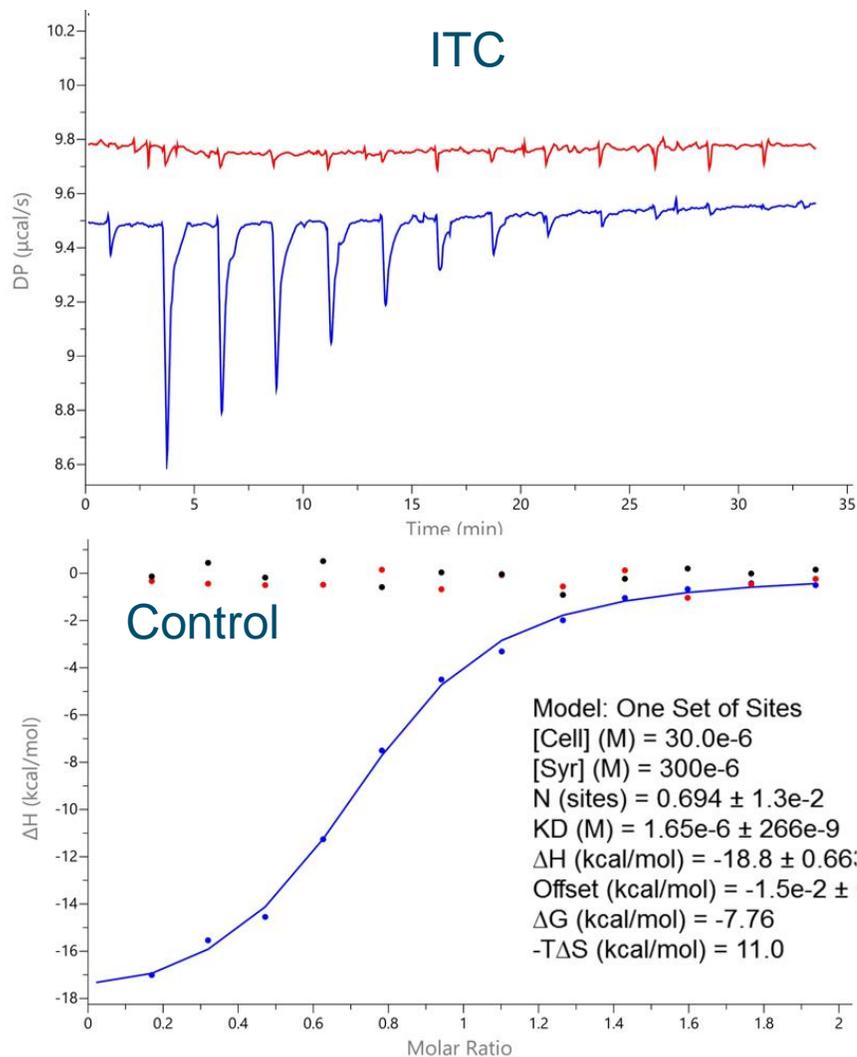
Rank	Motif	Name	P-value	log P-value
1		PU.1(ETS)/ThioMac-PU.1-ChIP-Seq(GSE21512)/Homer	1e-95	-2.209e+02
2		ELF5(ETS)/T47D-ELF5-ChIP-Seq(GSE30407)/Homer	1e-77	-1.792e+02
3		SpiB(ETS)/OCILY3-SPIB-ChIP-Seq(GSE56857)/Homer	1e-63	-1.471e+02
4		PU.1-IRF8(ETS:IRF)/Bcell-PU.1-ChIP-Seq(GSE21512)/Homer	1e-61	-1.412e+02
5		EHF(ETS)/LoVo-EHF-ChIP-Seq(GSE49402)/Homer	1e-57	-1.329e+02
6		ELF3(ETS)/PDAC-ELF3-ChIP-Seq(GSE64557)/Homer	1e-56	-1.295e+02
7		PU.1:IRF8(ETS:IRF)/pDC-Irf8-ChIP-Seq(GSE66899)/Homer	1e-55	-1.268e+02

What motifs exist at newly closed chromatin?

All SPI1 Binding Signature

# Full BAF Mapping Identifies Key Interactions With SPI1

TR-FRET Based Screening Assays Constructed



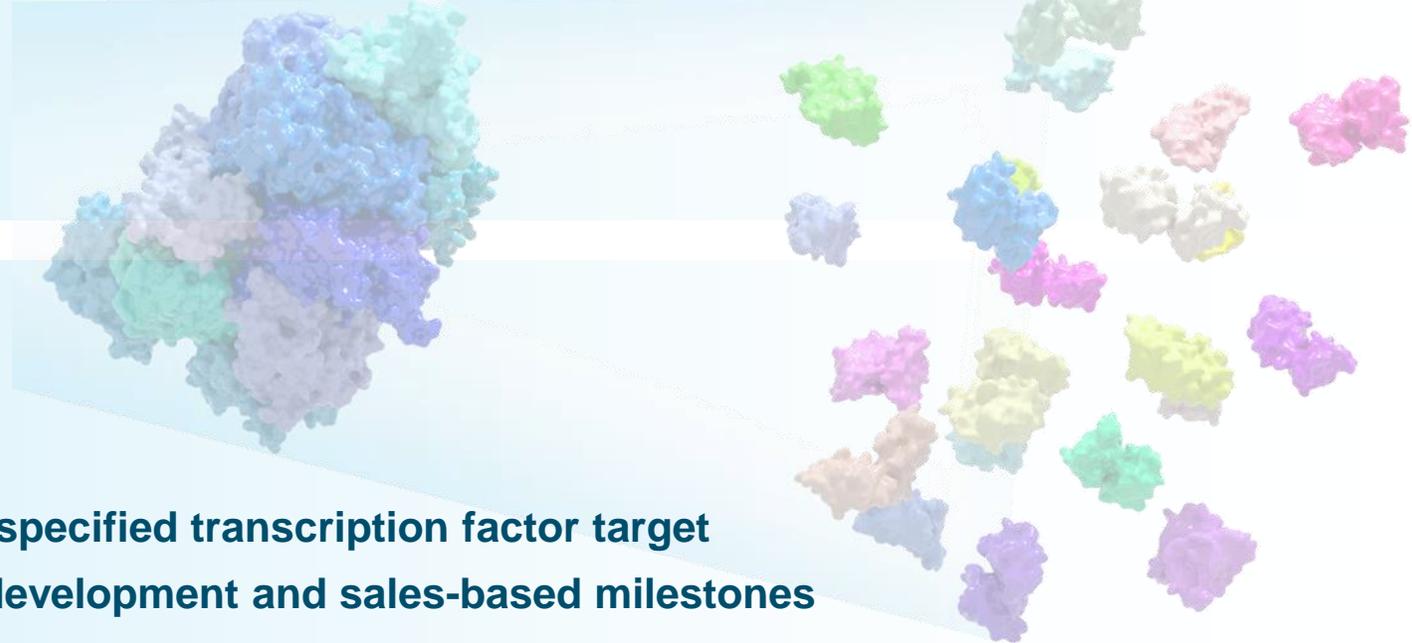
Control curves have key interaction residues deleted from BAF subunit

# Highly Scalable Approach and Significant Unmet Medical Need

Potential to Drug > 100 TFs Associated with BAF



- >100 TFs estimated associated with BAF
- Foghorn pursuing multiple TFs in parallel
- Approach highly scalable and potential broad application – other chromatin remodeling complexes and other diseases



- Merck collaboration to drug single specified transcription factor target
- \$425 million in up-front, research, development and sales-based milestones
- Up to low double-digit royalties on product sales



# **FHD-286: Clinical Entry Point - AML and Uveal Melanoma**

*Sam Agresta, MP, MPH & TM*

*Chief Medical Officer, Foghorn Therapeutics*

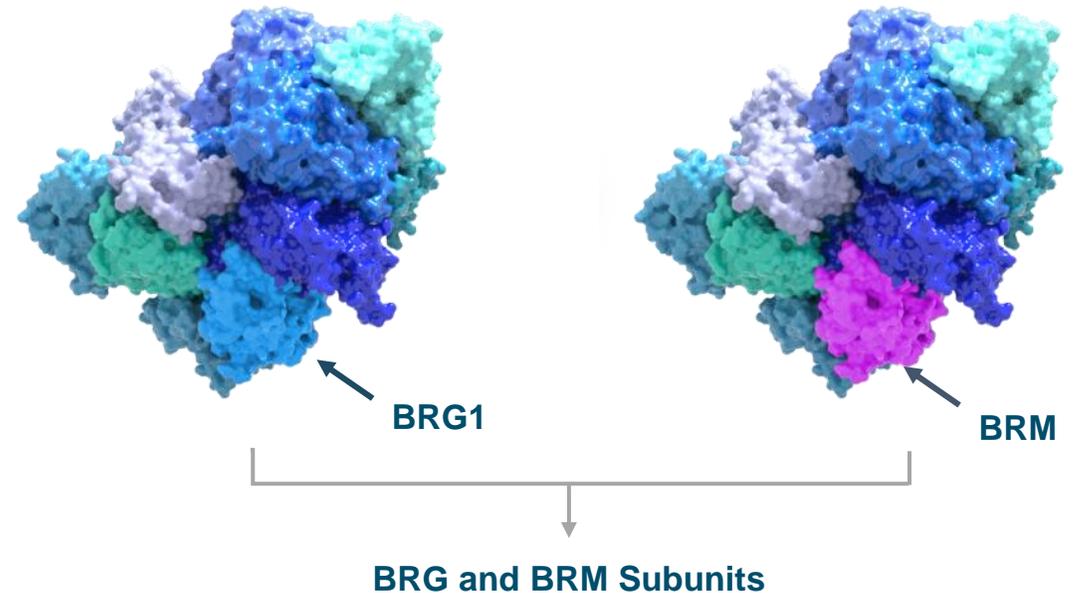
# FHD-286 Targets Abnormal Dependencies on BAF in Cancer



<b>Target / Approach</b>	<ul style="list-style-type: none"> <li>BRG1/BRM ATPase</li> <li>Small molecule, allosteric, oral enzymatic inhibitor</li> </ul>
<b>Indications</b>	<ul style="list-style-type: none"> <li>Acute myelogenous leukemia (AML)</li> <li>Uveal melanoma</li> <li>Indication expansion work ongoing in multiple solid tumors</li> </ul>
<b>Mutation / Aberration</b>	<ul style="list-style-type: none"> <li><b>AML:</b> Elevated BRG1-BAF / TF activity in AML blast cells</li> <li><b>Uveal Melanoma:</b> GNAQ/GNA11 mutated UM is driven by dependency on BAF / TF activity</li> </ul>
<b>Program Status / Milestones</b>	<ul style="list-style-type: none"> <li>Phase I studies enrolling in AML and metastatic uveal melanoma</li> <li>Phase I data as early as Q4'21</li> </ul>
<b>New Patients Impacted / Year*</b>	<ul style="list-style-type: none"> <li><b>AML: Over 20,000 relapsed and/or refractory patients</b></li> <li><b>Uveal melanoma: Over 5,000 patients</b></li> </ul>

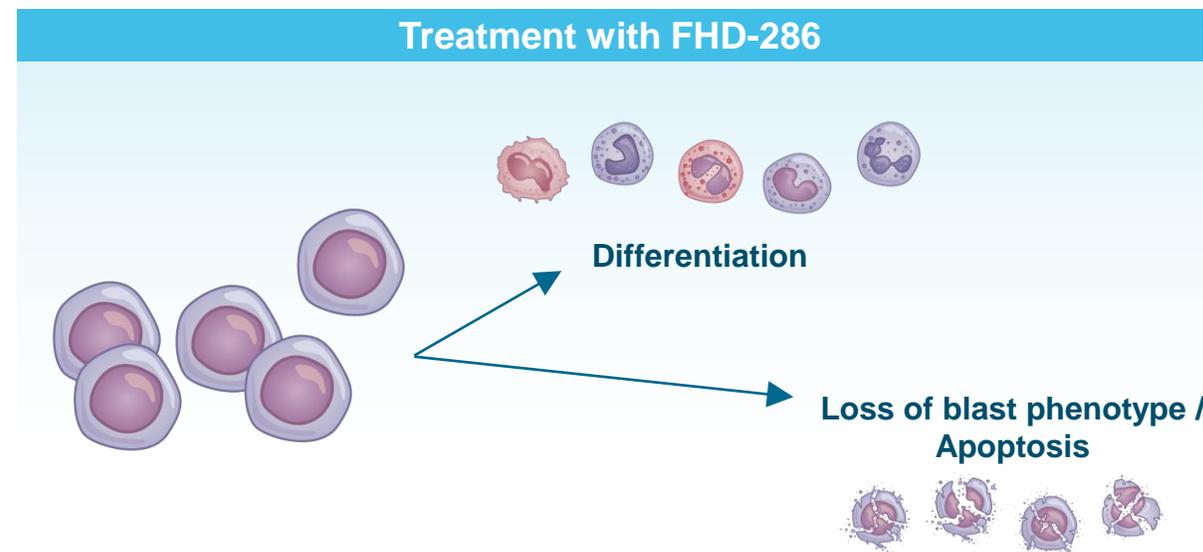
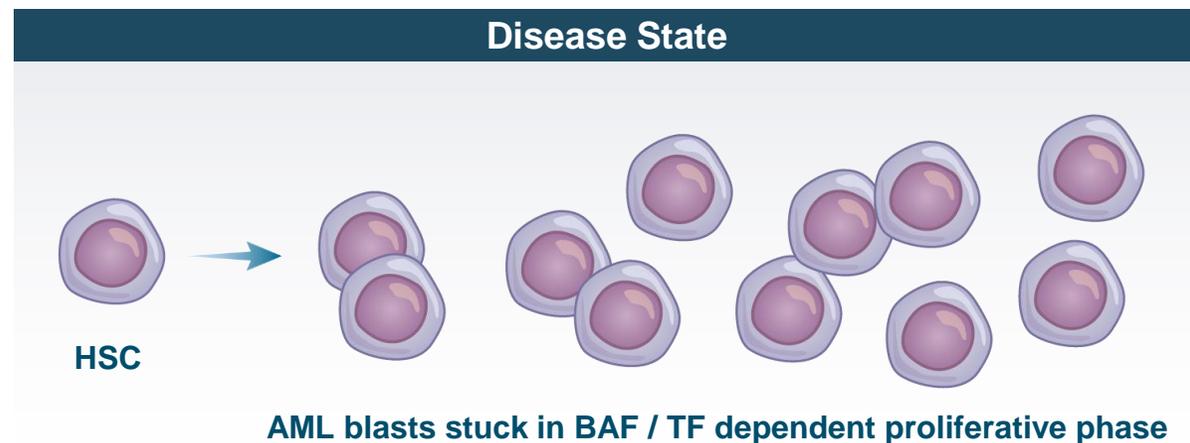
\* US, EU5, Japan

## BAF Chromatin Remodeling Complex

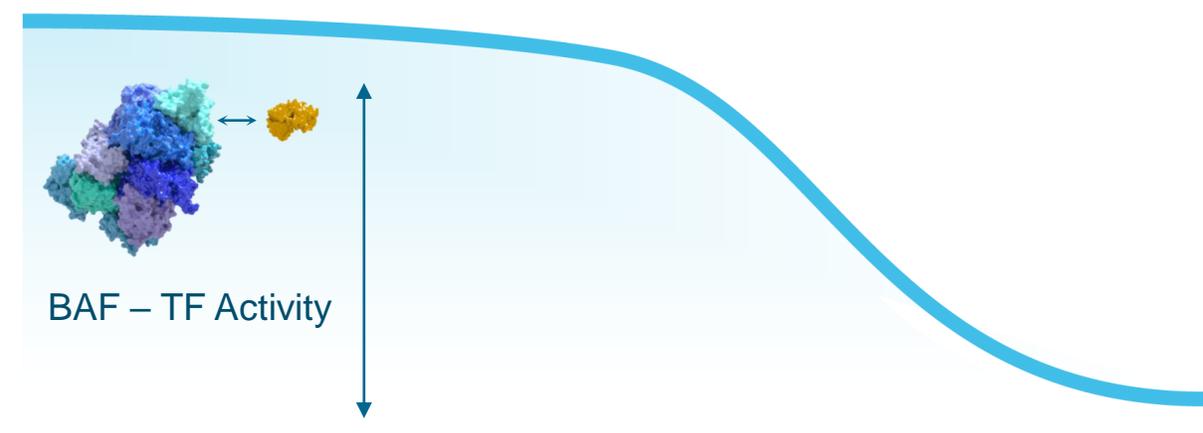
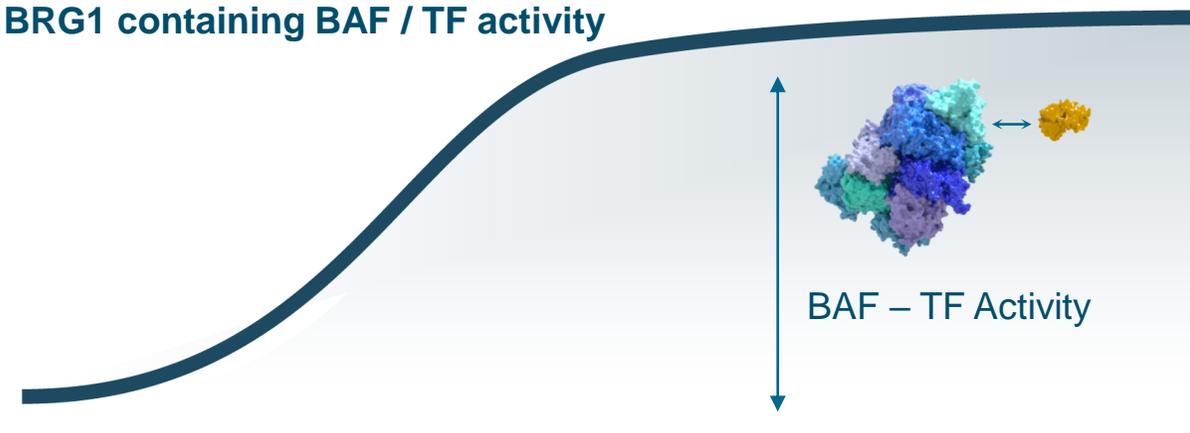


- BRM/BRG1 is the engine (ATPase) of the BAF chromatin remodeling complex
- BRG1 & BRM are highly similar proteins

# AML & Dependency on BRG1 / Lineage Dependent TF Interactions



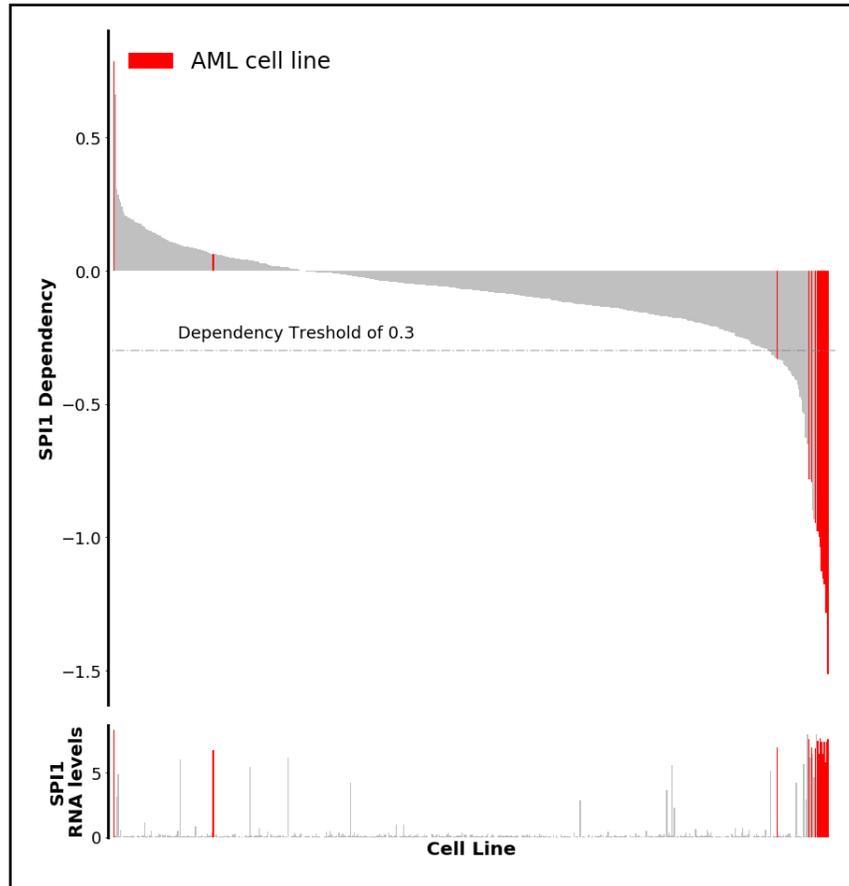
Cancerous blast cells rely on BRG1 containing BAF / TF activity



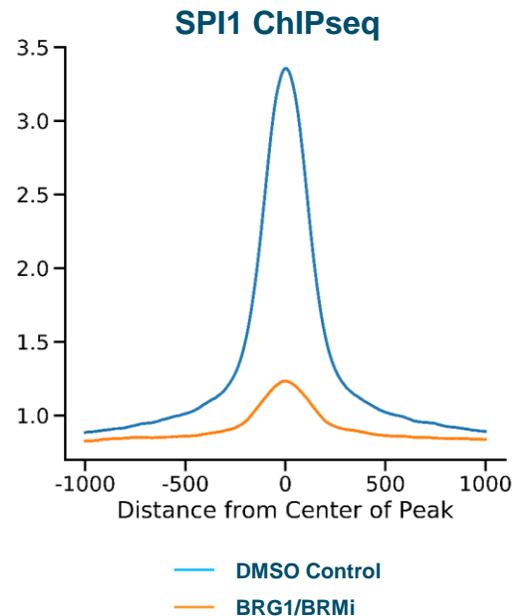
# AML Dependent on BRG1 / Lineage TF Interaction



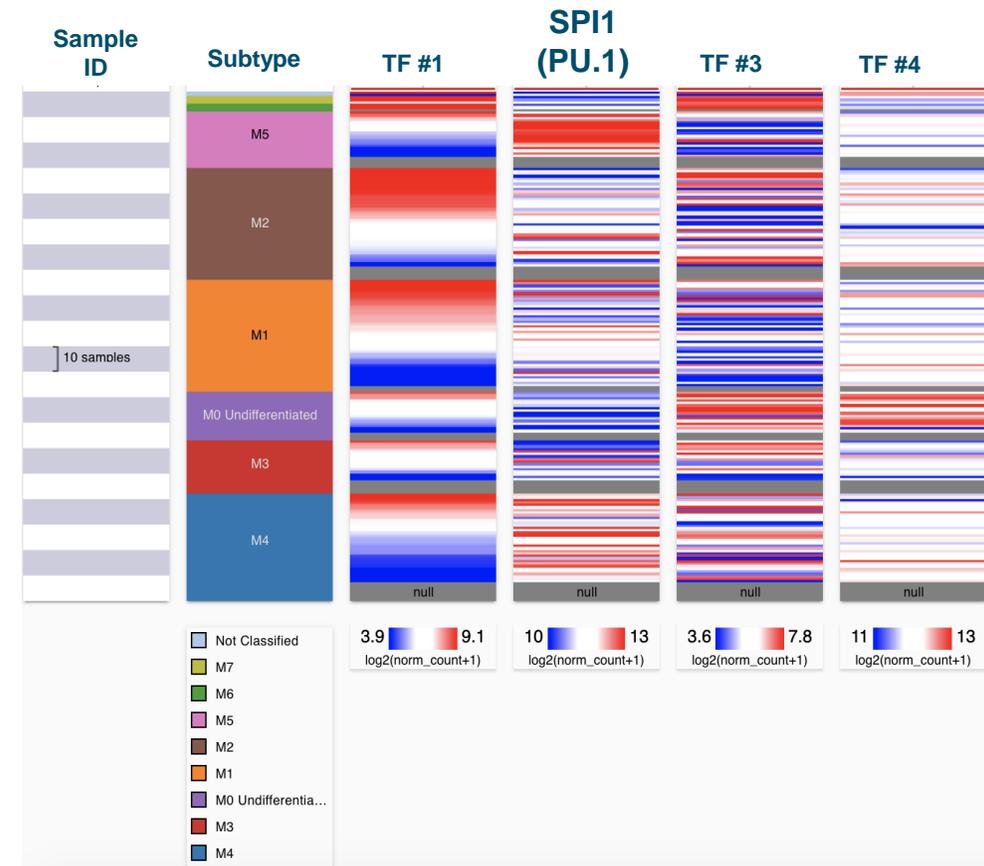
## SPI1 (PU.1) / BAF Dependency



## BRG1 Inhibition Leads to Loss of SPI1 (PU.1) Occupancy on Chromatin



## Four TF's Associated With 70% of AML

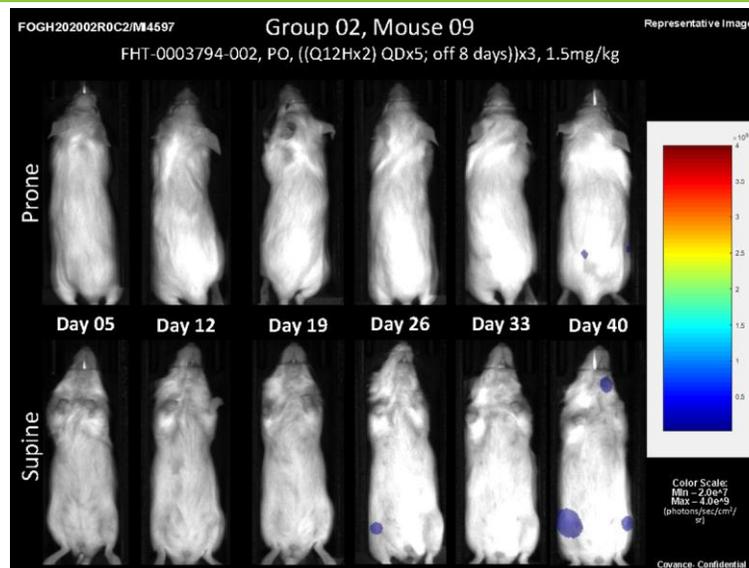
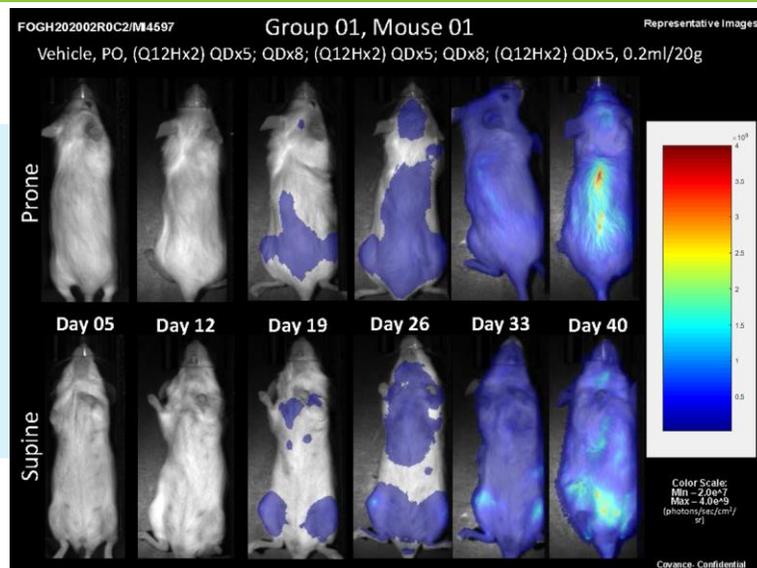


# Tumor Growth Inhibition with FHD-286 Treatment Observed by Bioluminescence

Imaging in a Disseminated AML model

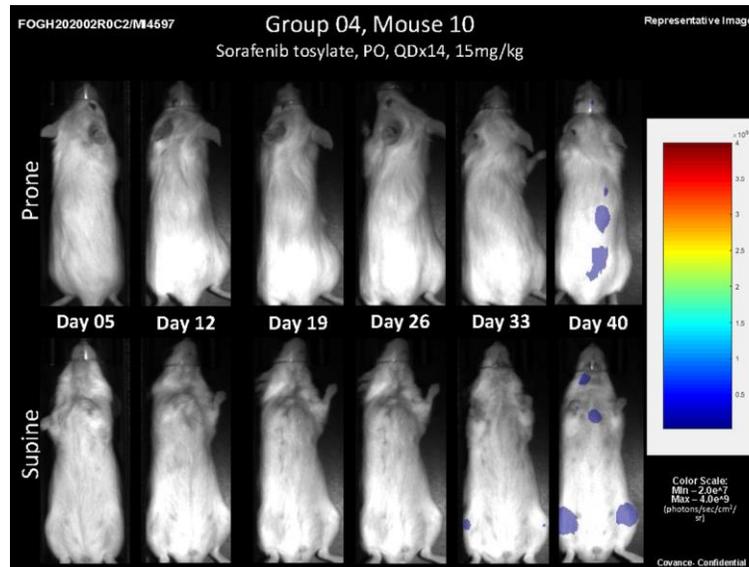
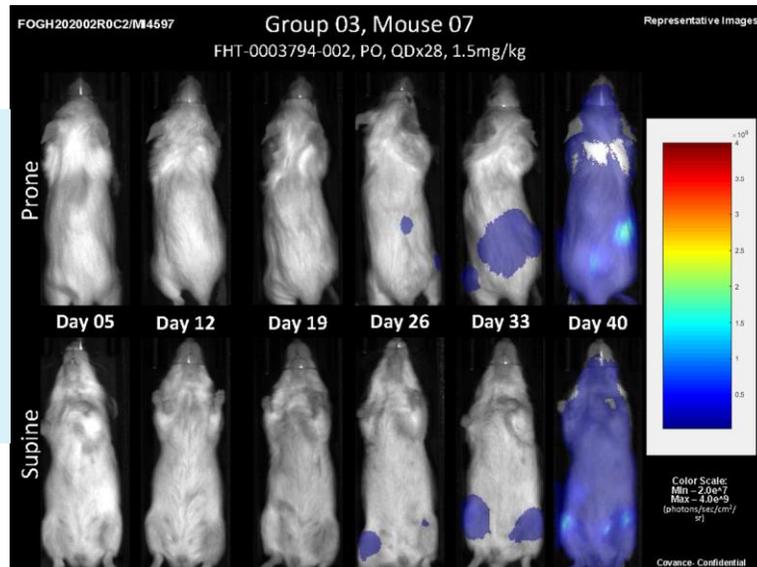


Vehicle



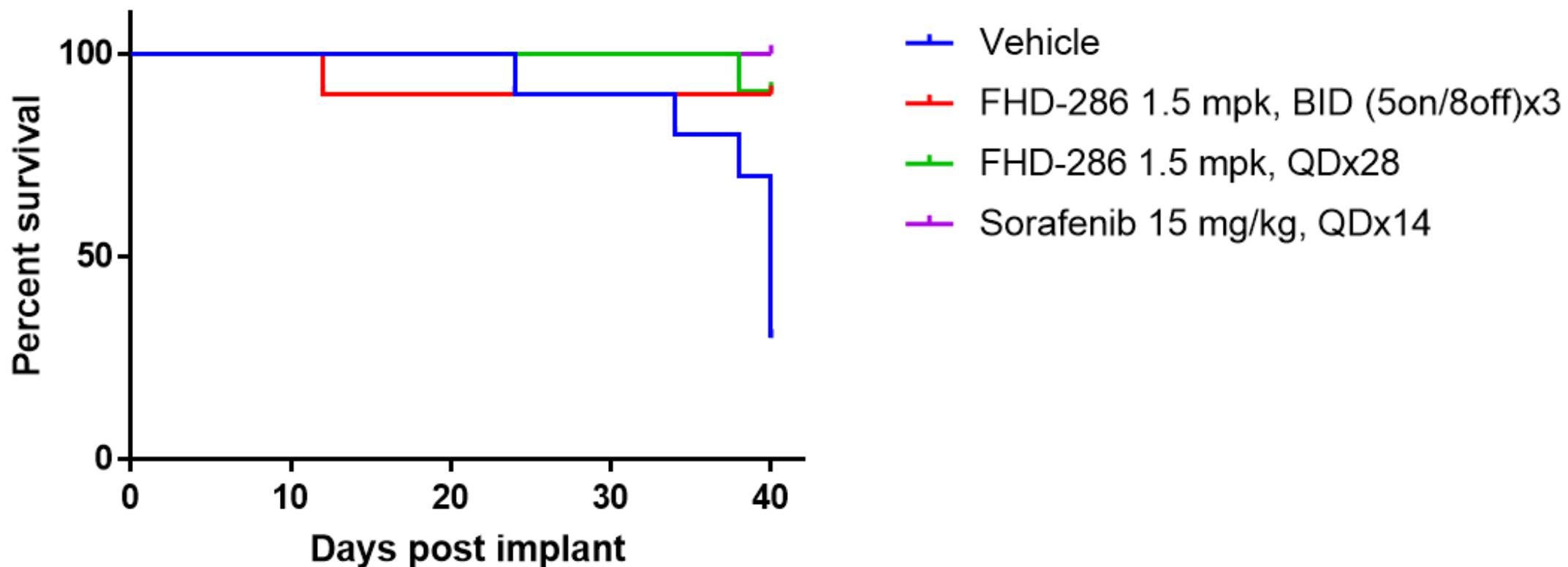
FHD-286  
1.5 mg/kg, BID  
(5on / 8off) x3

FHD-286  
1.5 mg/kg  
QDx28



Sorafenib  
15 mg/kg,  
QDx14

# FHD-286 Survival Advantage in Disseminated AML Model



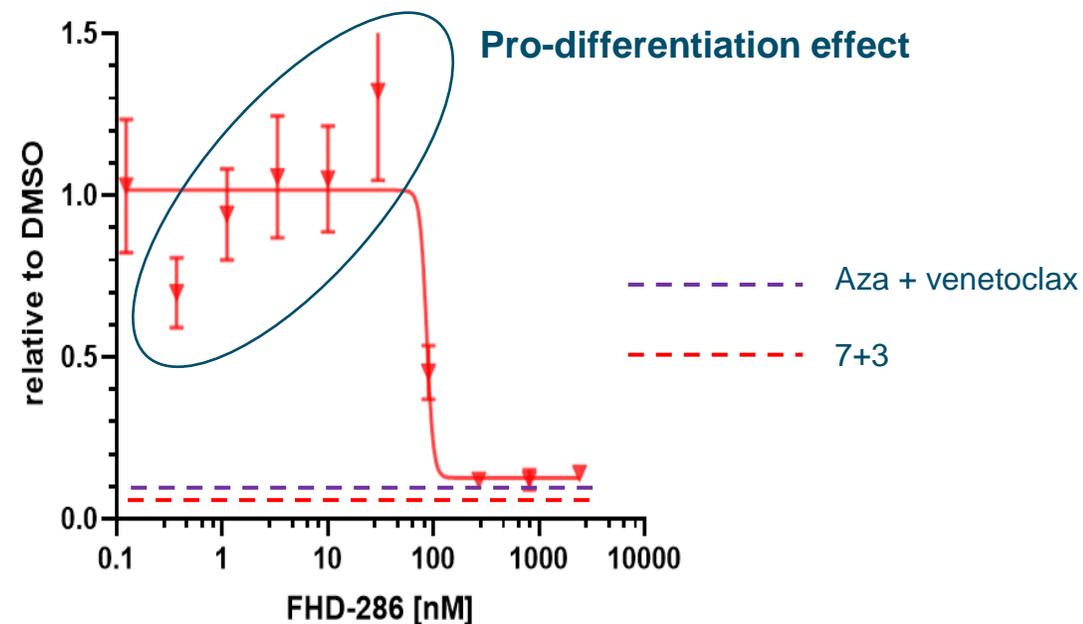
# FHD-286 Shows Broad Efficacy Across AML Patient Derived Samples



Notable Patient ID	Deep Response	Pathology Review	Disease Status
1690AML1	Y	AML	Secondary
1695AML1	Y	AML/MDS	Secondary
1696AML1	Y	AML	Secondary
1701AML1	Y	AML	Secondary
1893AML1	Y	AML	R/R
1899AML1	Y	AML	R/R
1990pAML1	Y	AML	R/R
1991pAML1	Y	AML	de novo
2041AML1	Y	N/A	de novo
2043pAML1	Y	AML	R/R
2059AML1	Y	AML	R/R
1682AML1	~	N/A	N/A
1689AML1	~	AML/MDS	de novo
1684AML1	N	CML	R/R
1924AML1	N	AML/MDS	R/R

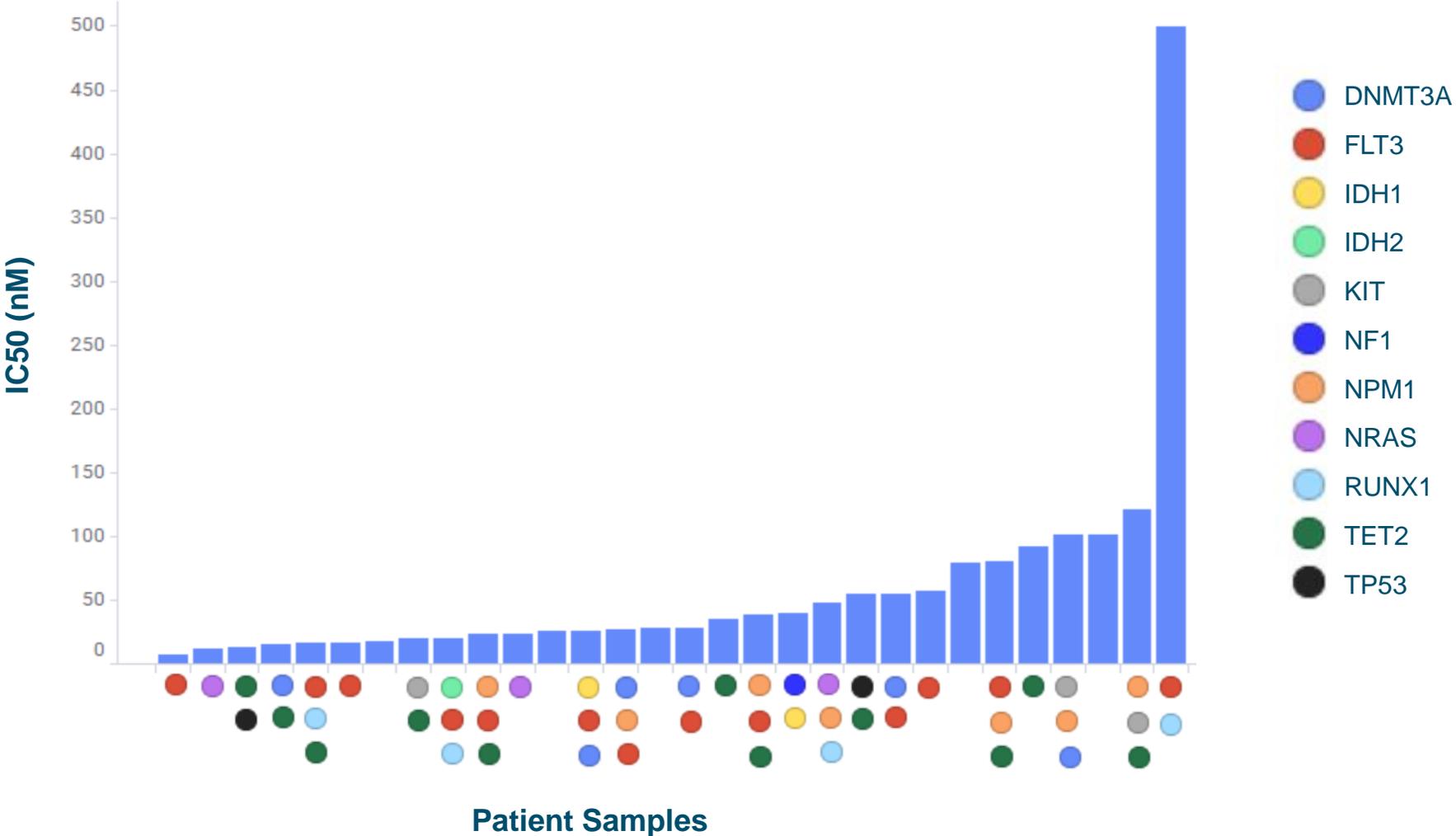
Y = Deep reduction in blast cells  
 ~ = Partial reduction  
 N = No response

1695AML1 – BM-secondary AML



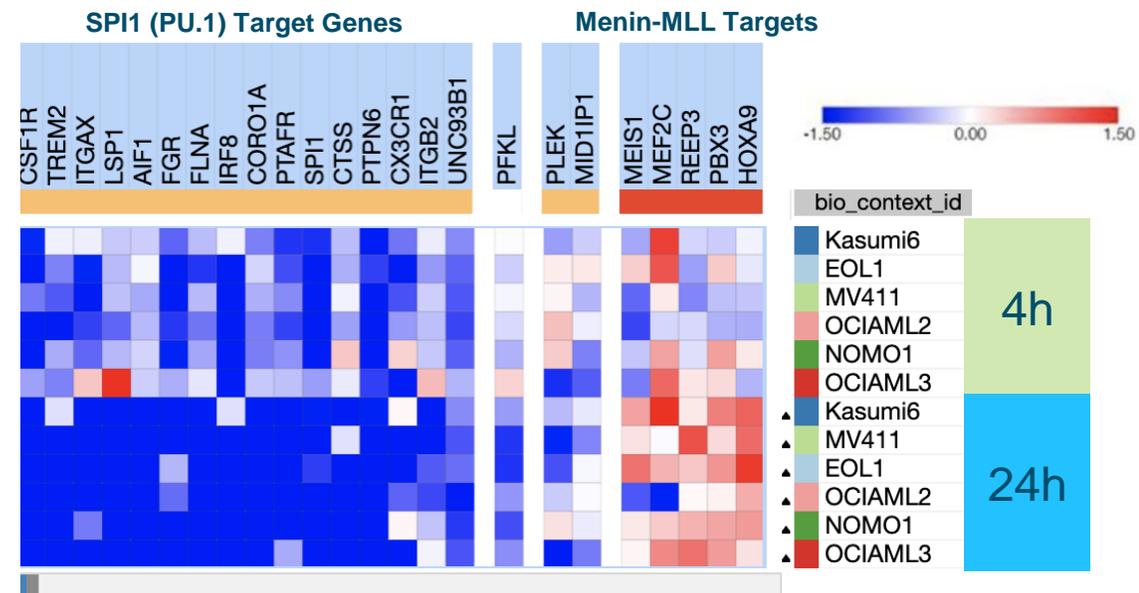
- Response observed in a majority of primary AML samples, irrespective of prior treatment or disease stage
- Additional data set from patient derived samples demonstrate mutation agnostic responses

# FHD-286 Shows Effect Across a Range of Mutations in AML Patient-Derived Samples

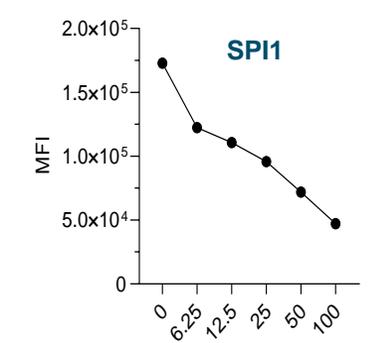
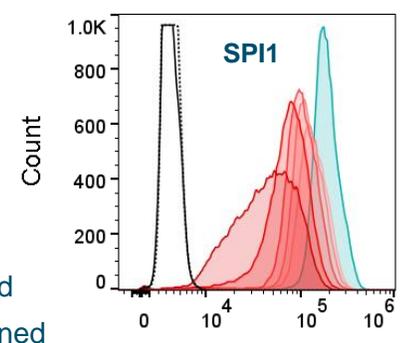
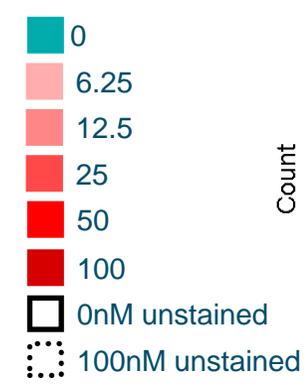


# Potential PD Marker: AML TFs and Gene Signatures

BAF Regulates SPI1, A Key Transcription Factor in AML Subsets



nM FHT-BRG1/BRMi



# Uveal Melanoma

## Disease Overview

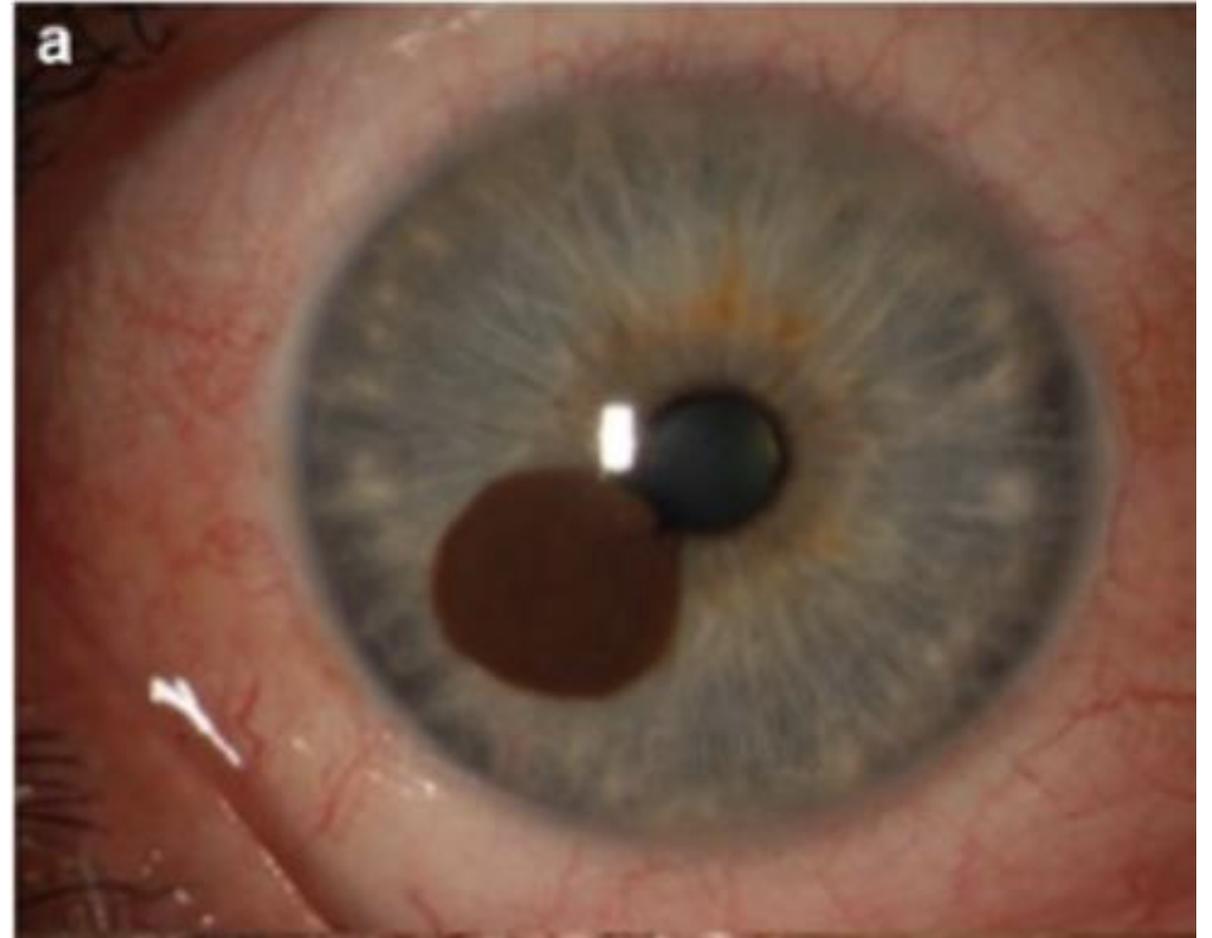


### Primary Disease:

- ~1,500 cases diagnosed each year, US
- Age at diagnosis: early 60s-median, 70s-peak
- ~30% asymptomatic
  - Lesion found on routine eye exam
- Mild symptoms such as blurry vision in one eye
- 95+% are primary disease at diagnosis

### Metastatic Disease:

- Over 50% of patients develop metastatic disease, typically in the liver.



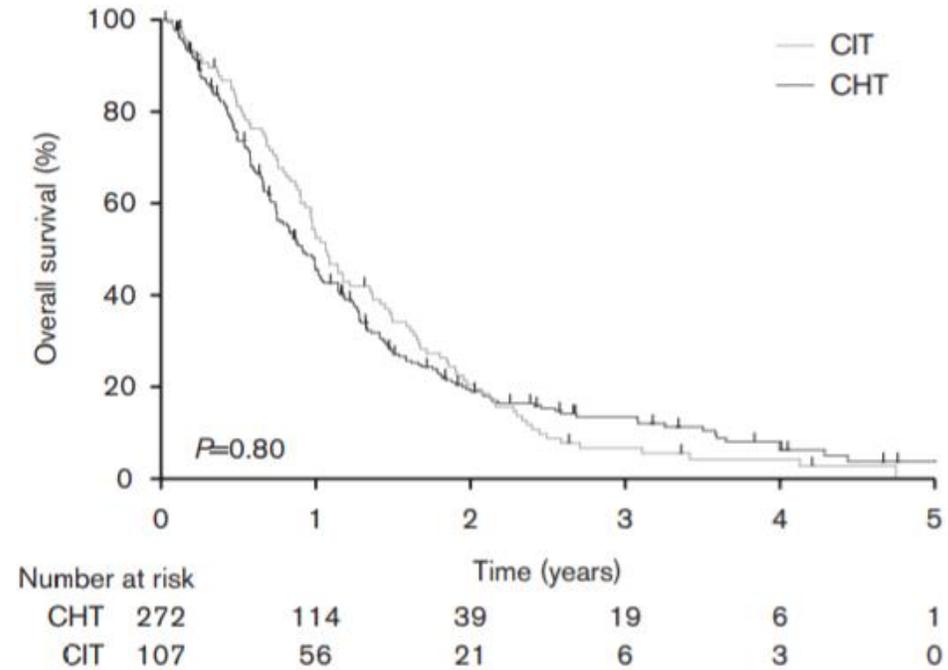
# Metastatic Uveal Melanoma

## Disease Overview



- Treatment: No approved treatments
  - Liver Directed: Chemoembolization, radioablation, immunotherapy
  - Systemic: Ipilimumab + nivolumab, dacarbazine, temozolomide
- Majority (~80%) of patients die within 1 year of detection of metastasis
- Median survival is ~6-9 months

**High Unmet Need**



*Rantala, et. al, Melanoma Research, 2019, Vol 29 No 6*

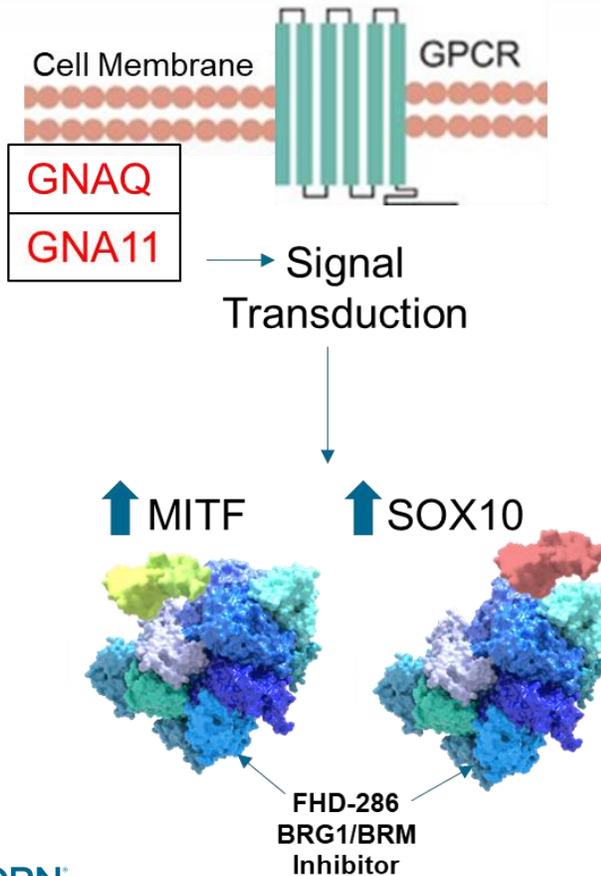
# Therapeutic Rationale for Uveal Melanoma: Dependency on MITF / SOX10 TF's and BAF Complex Interaction



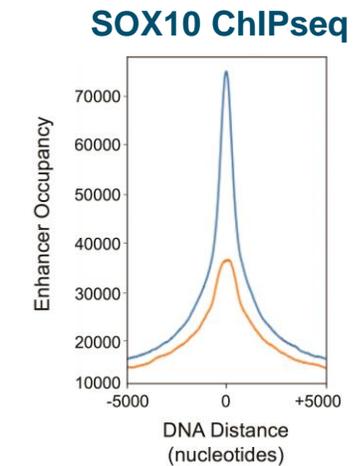
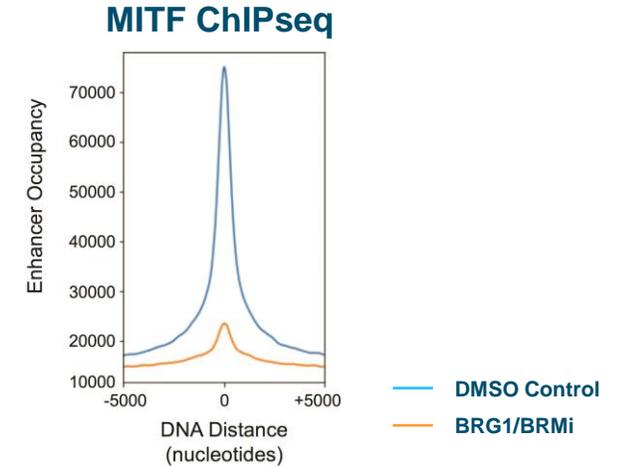
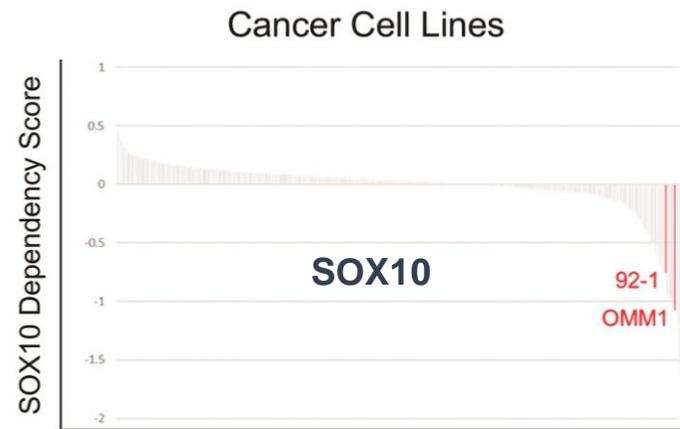
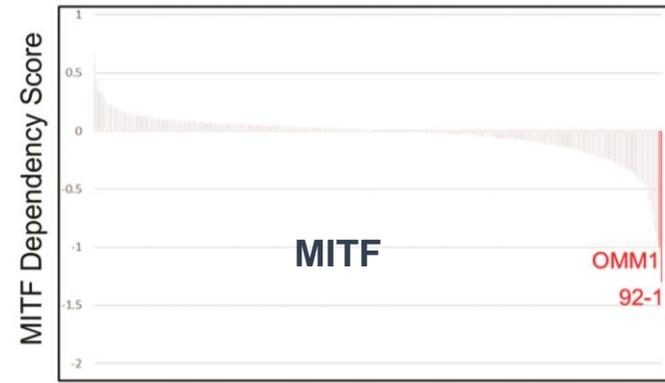
Inhibiting BRG1/BRM to Shut Down the Abnormal TF Interaction with the BAF Complex

## Biology

Over 85% of uveal melanoma cancers have GNAQ or GNA11 mutations

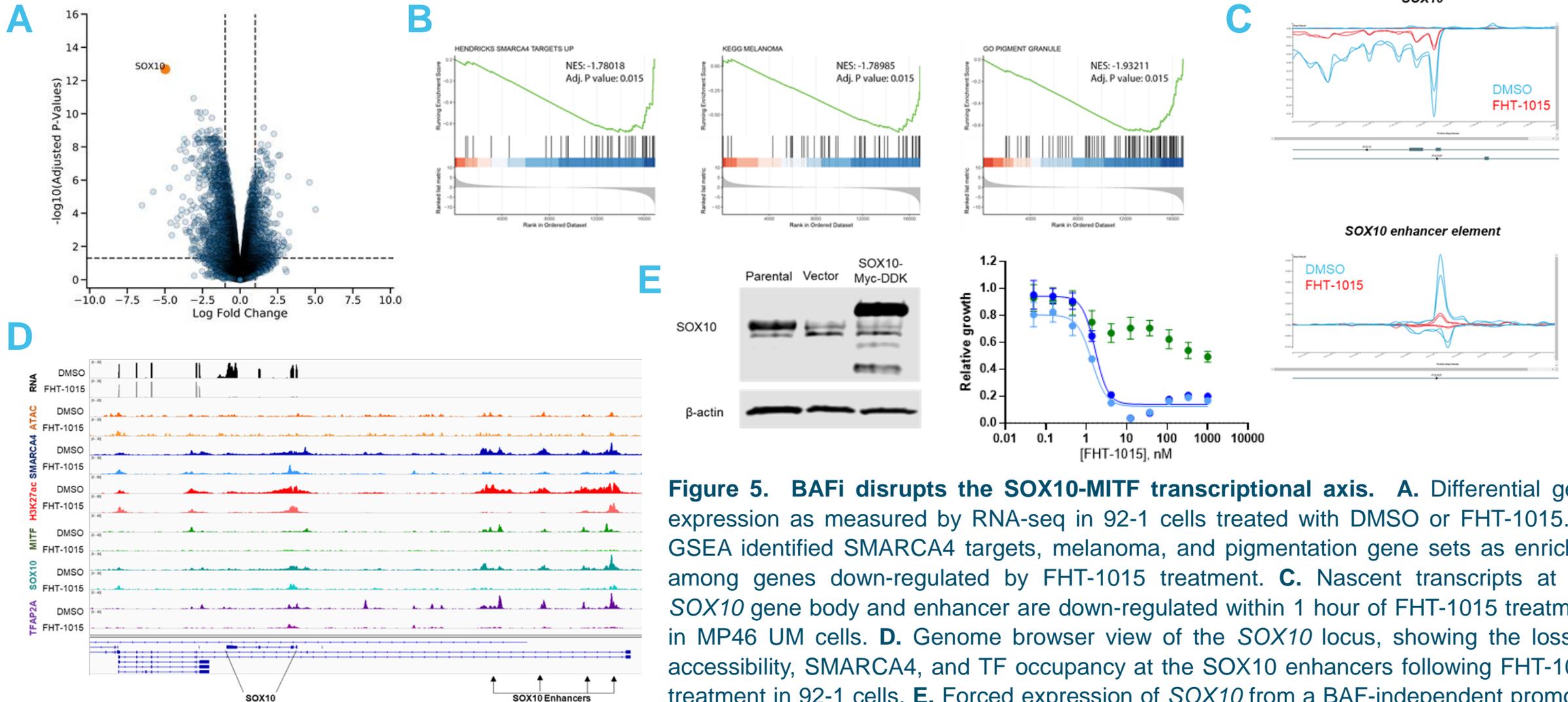


## Validation of Dependency and Approach



# Dual BRG1/BRM Inhibition

Disrupts the SOX10-MITF Transcriptional Axis in Uveal Melanoma



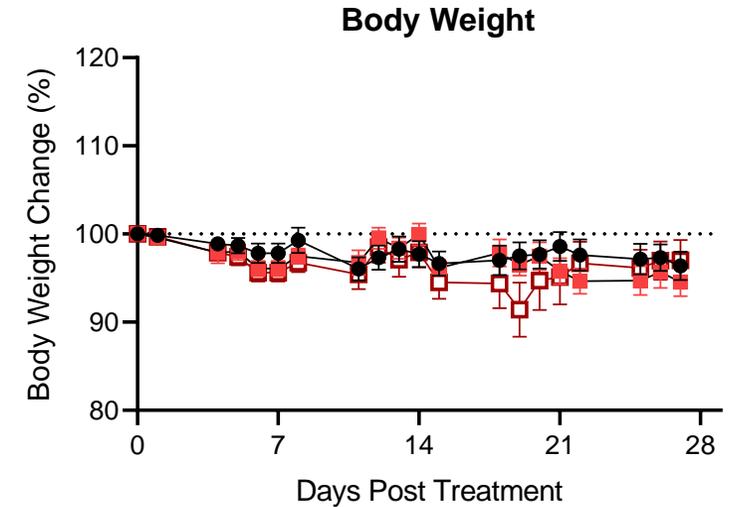
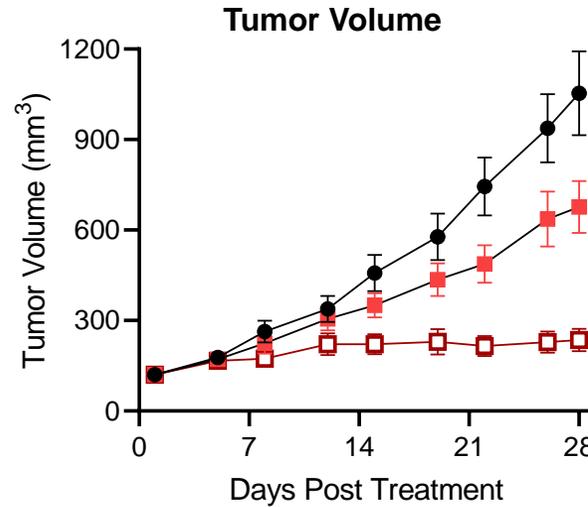
**Figure 5. BAFi disrupts the SOX10-MITF transcriptional axis.** **A.** Differential gene expression as measured by RNA-seq in 92-1 cells treated with DMSO or FHT-1015. **B.** GSEA identified SMARCA4 targets, melanoma, and pigmentation gene sets as enriched among genes down-regulated by FHT-1015 treatment. **C.** Nascent transcripts at the SOX10 gene body and enhancer are down-regulated within 1 hour of FHT-1015 treatment in MP46 UM cells. **D.** Genome browser view of the SOX10 locus, showing the loss of accessibility, SMARCA4, and TF occupancy at the SOX10 enhancers following FHT-1015 treatment in 92-1 cells. **E.** Forced expression of SOX10 from a BAF-independent promoter can rescue the growth inhibition phenotype elicited by FHT-1015.

# FHD-286 was Associated with Dose-Dependent Tumor Regression in Uveal Melanoma CDX Models at Tolerated Doses



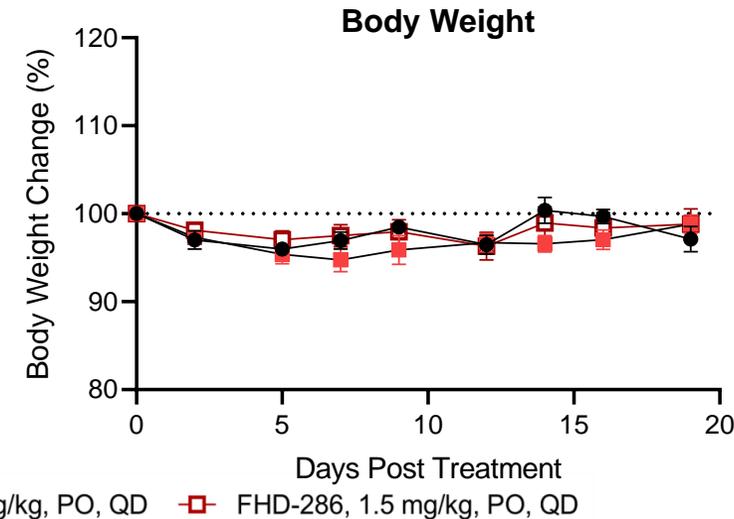
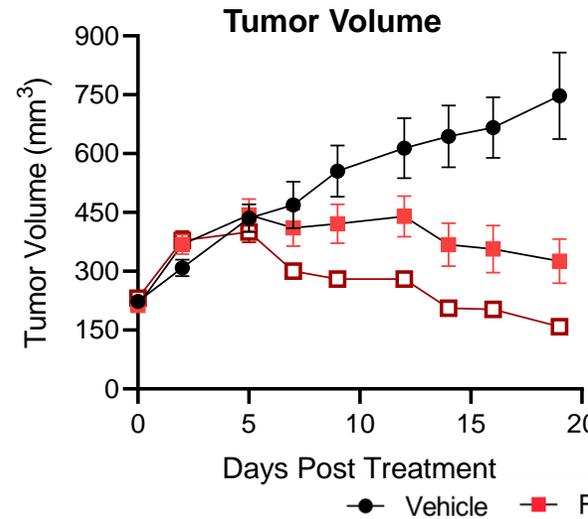
## MP-46 uveal melanoma CDX model

- Dose-dependent tumor growth inhibition
- Well tolerated

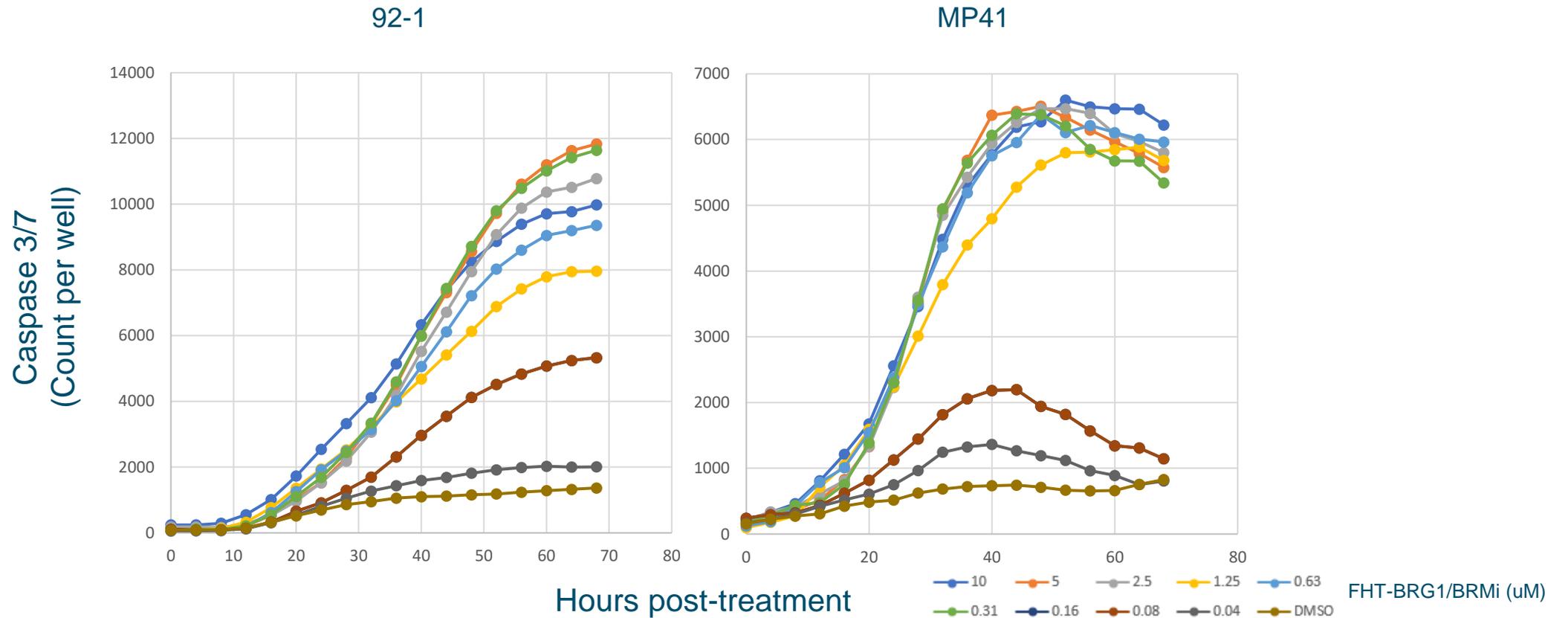


## 92-1 uveal melanoma CDX model

- Dose-dependent tumor growth inhibition
- Tumor regression at 1.5 mg/kg, PO, QD
- Well tolerated



# BRG1/BRM Inhibition Induces Apoptosis in UM Cell lines



**Significantly faster onset (3 days) and potent growth inhibition with apoptosis in UM cell lines**

# FHD-286 Clinical Development Plan

Two Parallel Phase 1 Studies Activated



## CLINICAL PLAN

### *AML & Uveal Melanoma FIH Phase 1 Studies*

**Relapsed / Refractory AML & MDS**

**Metastatic Uveal Melanoma**

#### **Trial Designs**

- Single patient accelerated titration (n=1)
- Convert to 3+3 once relevant PK/PD, safety or clinical activity observed
- Retrospective biomarker analysis to further evaluate safety and efficacy
- Assess safety, PK, biomarkers and efficacy

**Expansion cohorts in AML, UM and potentially other indications**

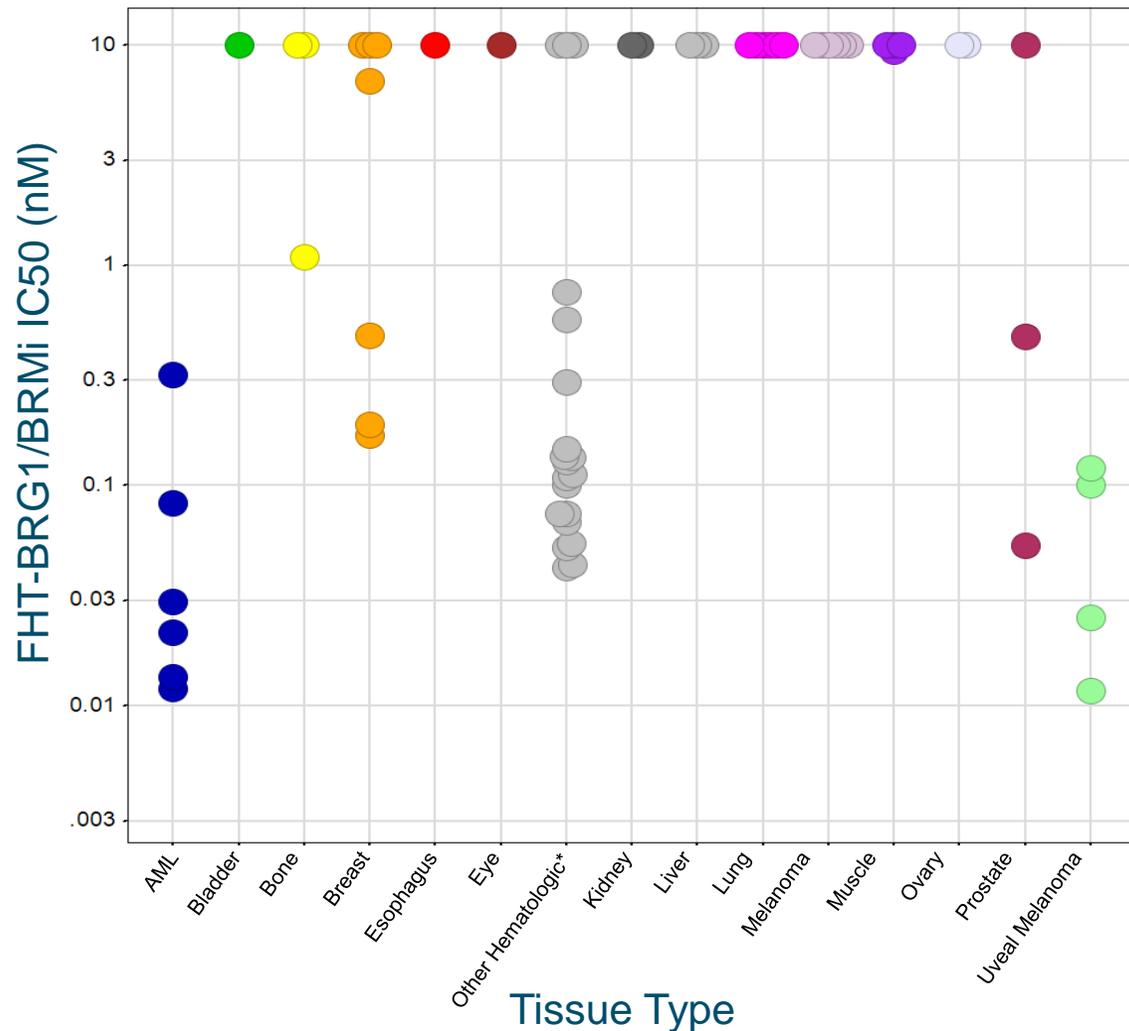
*Potential for entry into definitive efficacy trials in AML*

*Potential for entry into definitive efficacy trials in metastatic uveal melanoma*

*Potential for Indication Expansion Beyond AML and UM*

**Clinical data as early as Q4 2021**

# Indication Expansion Opportunities for FHD-286



\*DLBCL, B-ALL, T-ALL, MDS, MM, Burkitt's Lymphoma, Mantle Cell Lymphoma



ARTICLE

Check for updates

<https://doi.org/10.1038/s41467-020-19328-1> OPEN

Role of specialized composition of SWI/SNF complexes in prostate cancer lineage plasticity

Joanna Cyrta et al.<sup>#</sup>

SCIENTIFIC  
REPORTS  
nature research

SMARCA2-deficiency confers sensitivity to targeted inhibition of SMARCA4 in esophageal squamous cell carcinoma cell lines

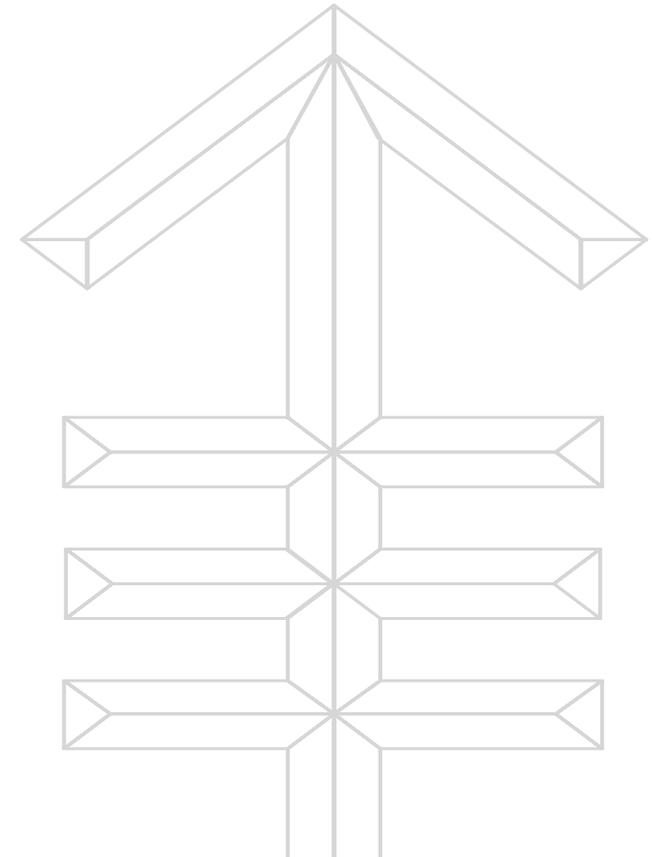
Katharina Ehrenhöfer-Wölfer<sup>1</sup>, Teresa Puchner<sup>1</sup>, Cornelia Schwarz<sup>1</sup>, Janine Rippka<sup>1</sup>, Silvia Blaha-Ostermann<sup>1</sup>, Ursula Strobl<sup>1</sup>, Alexandra Hörmann<sup>1</sup>, Gerd Bader<sup>1</sup>, Stefan Kornigg<sup>1</sup>, Stephan Zahn<sup>1</sup>, Wolfgang Sommergruber<sup>1</sup>, Norbert Schweifer<sup>1</sup>, Thomas Zichner<sup>1</sup>, Andreas Schlattl<sup>1</sup>, Ralph A. Neumüller<sup>1</sup>, Junwei Shi<sup>2</sup>, Christopher R. Vakoc<sup>3</sup>, Manfred Kögl<sup>1</sup>, Mark Petronczki<sup>1</sup>, Norbert Kraut<sup>1</sup>, Mark A. Pearson<sup>1</sup> & Simon Wöhrle<sup>1</sup>



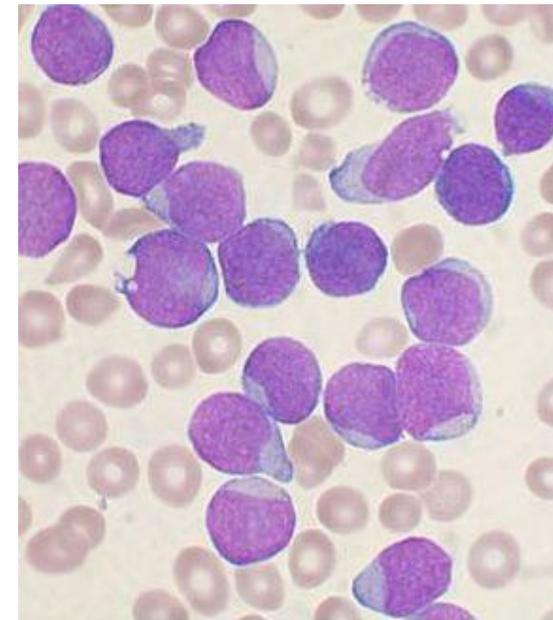
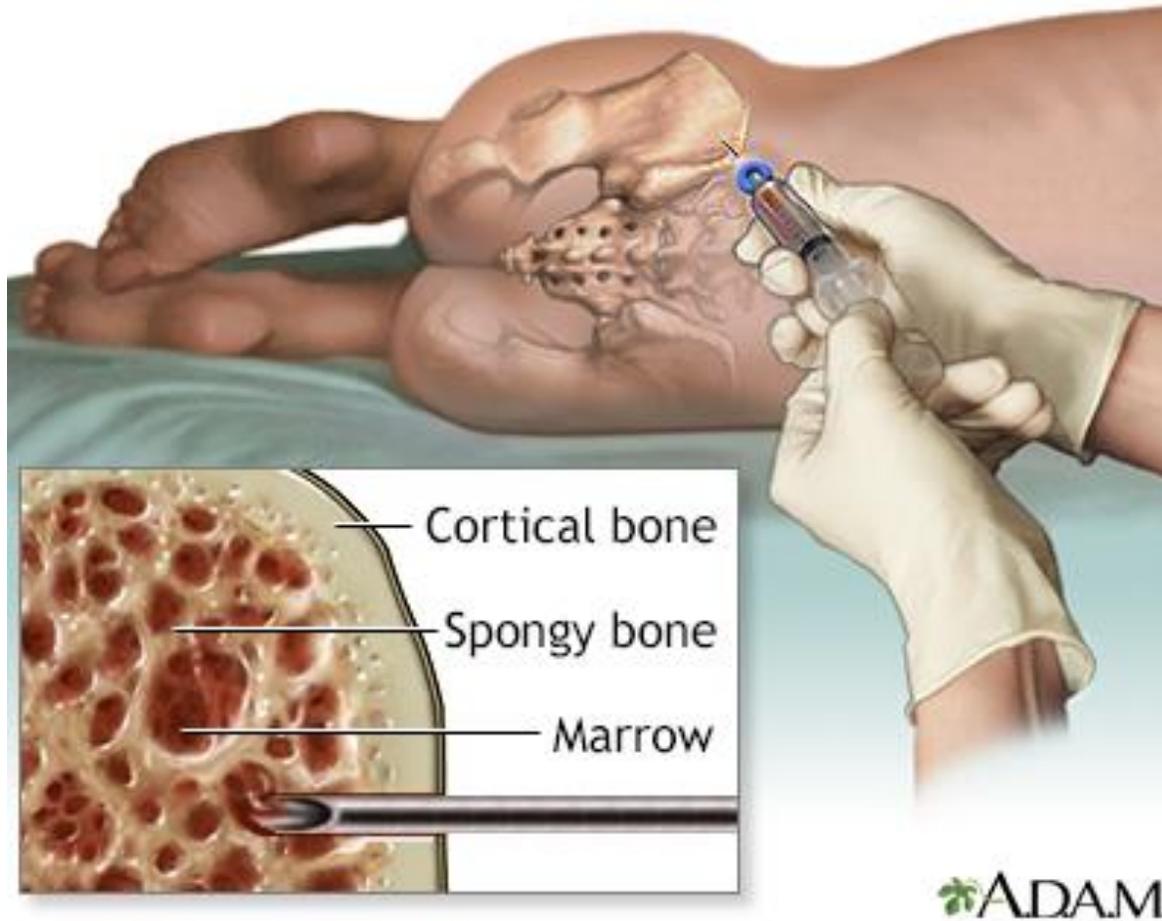
Memorial Sloan Kettering  
Cancer Center

# Acute Myeloid Leukemia in 2021

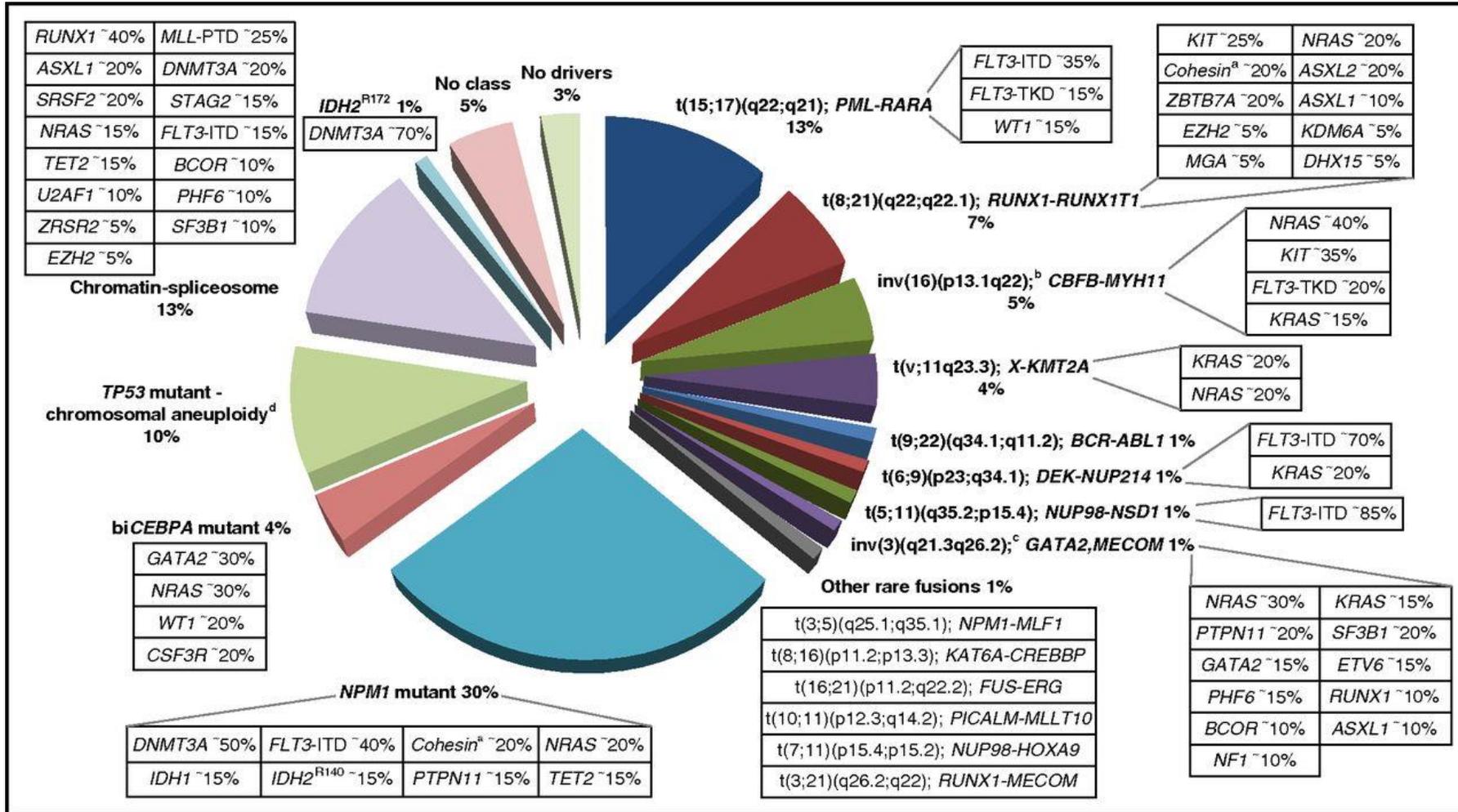
Eytan M. Stein, MD  
Director, Program for Drug Development in Leukemia  
Leukemia Service  
Memorial Sloan Kettering Cancer Center  
New York, New York



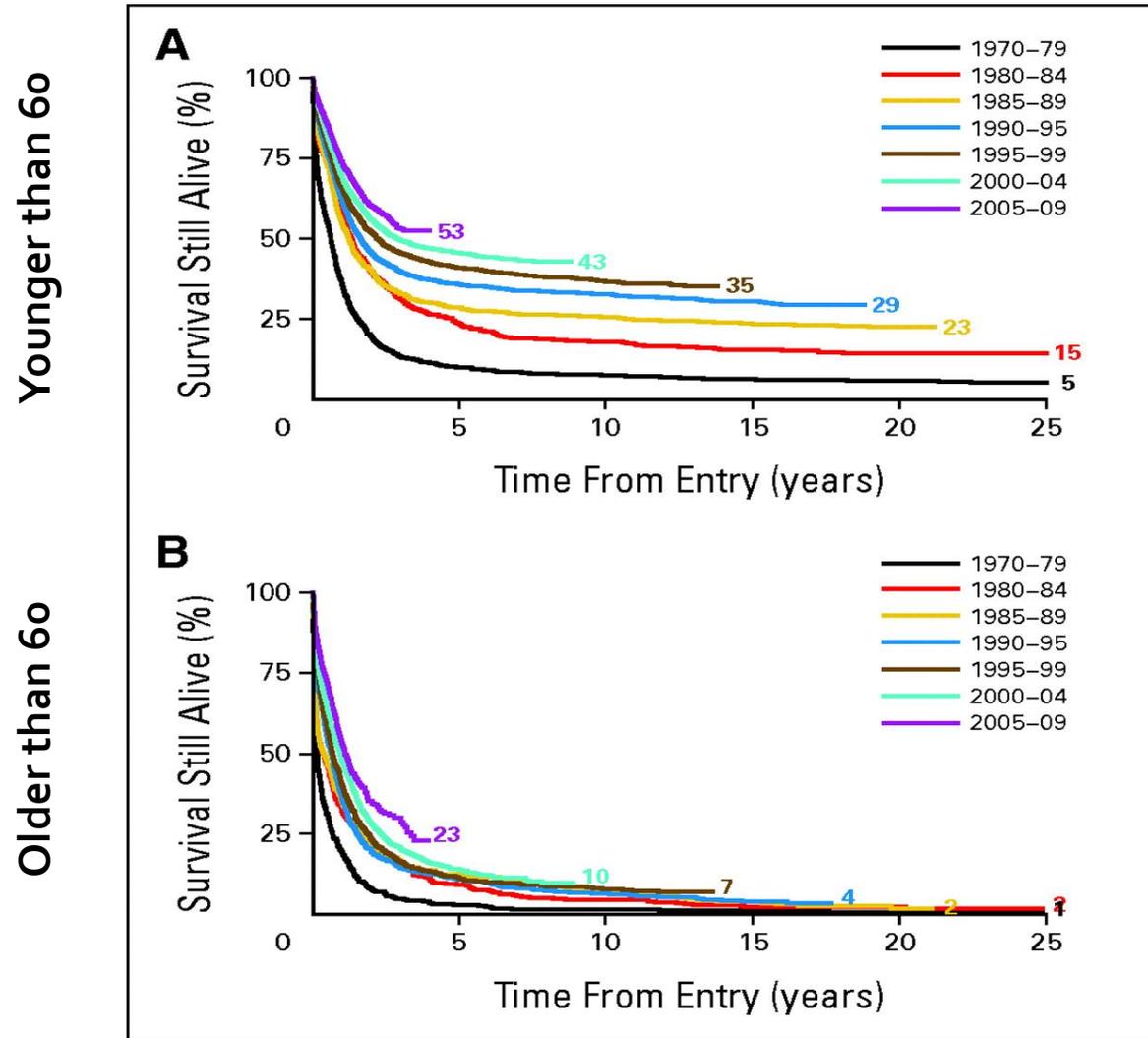
# Acute Myeloid Leukemia



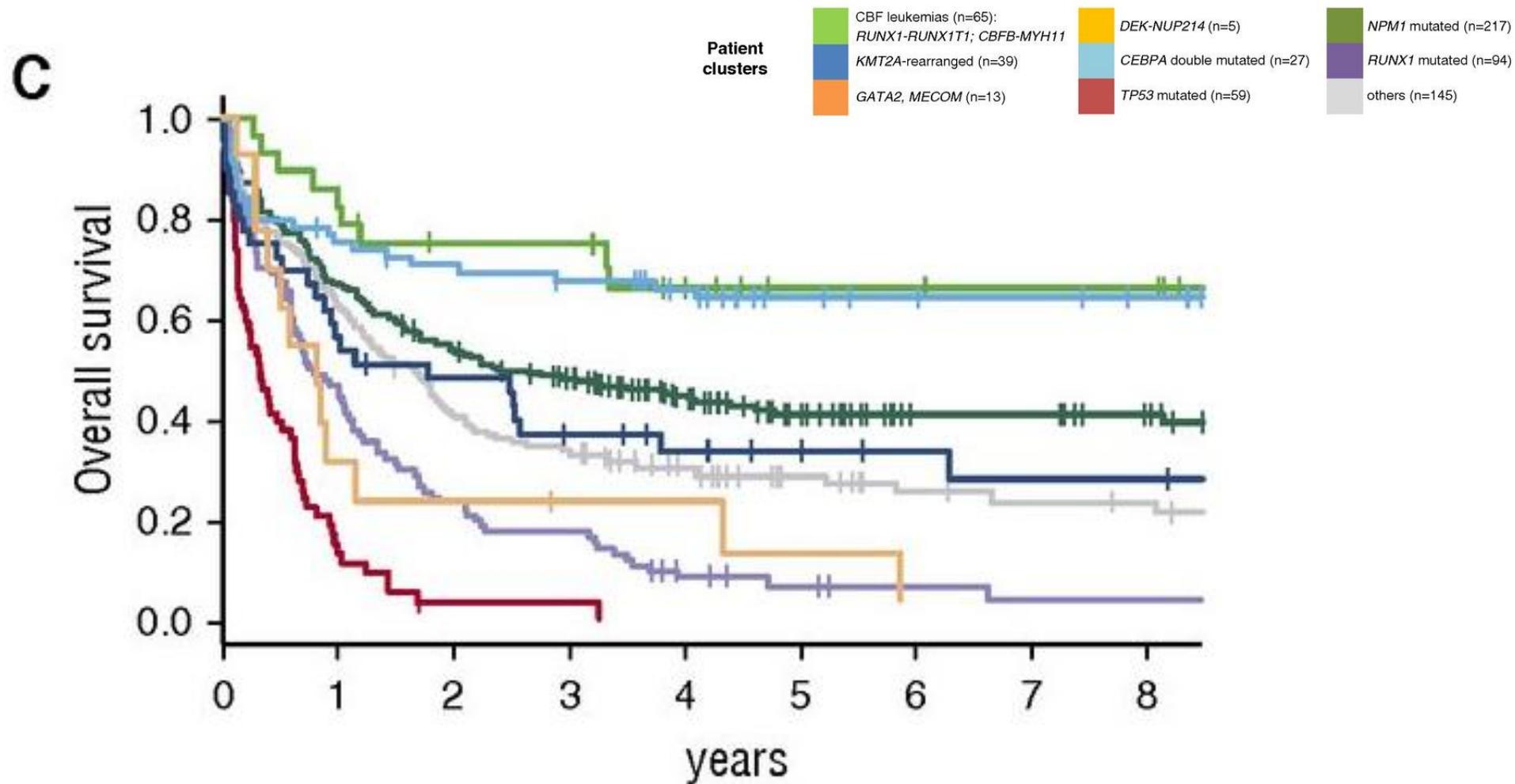
# AML is Complicated



# Overall Survival in AML

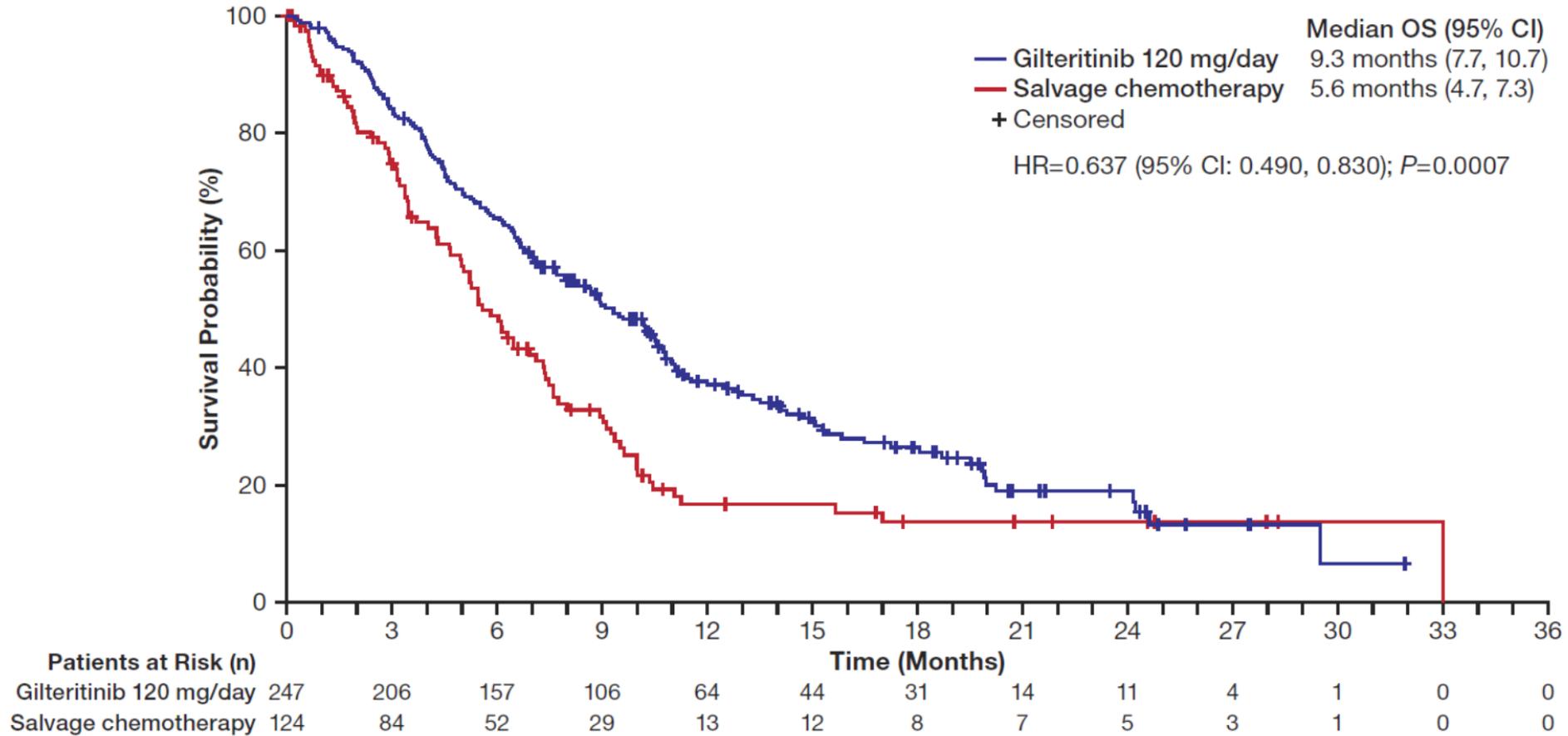


# Survival Can be Stratified Based on Genetics

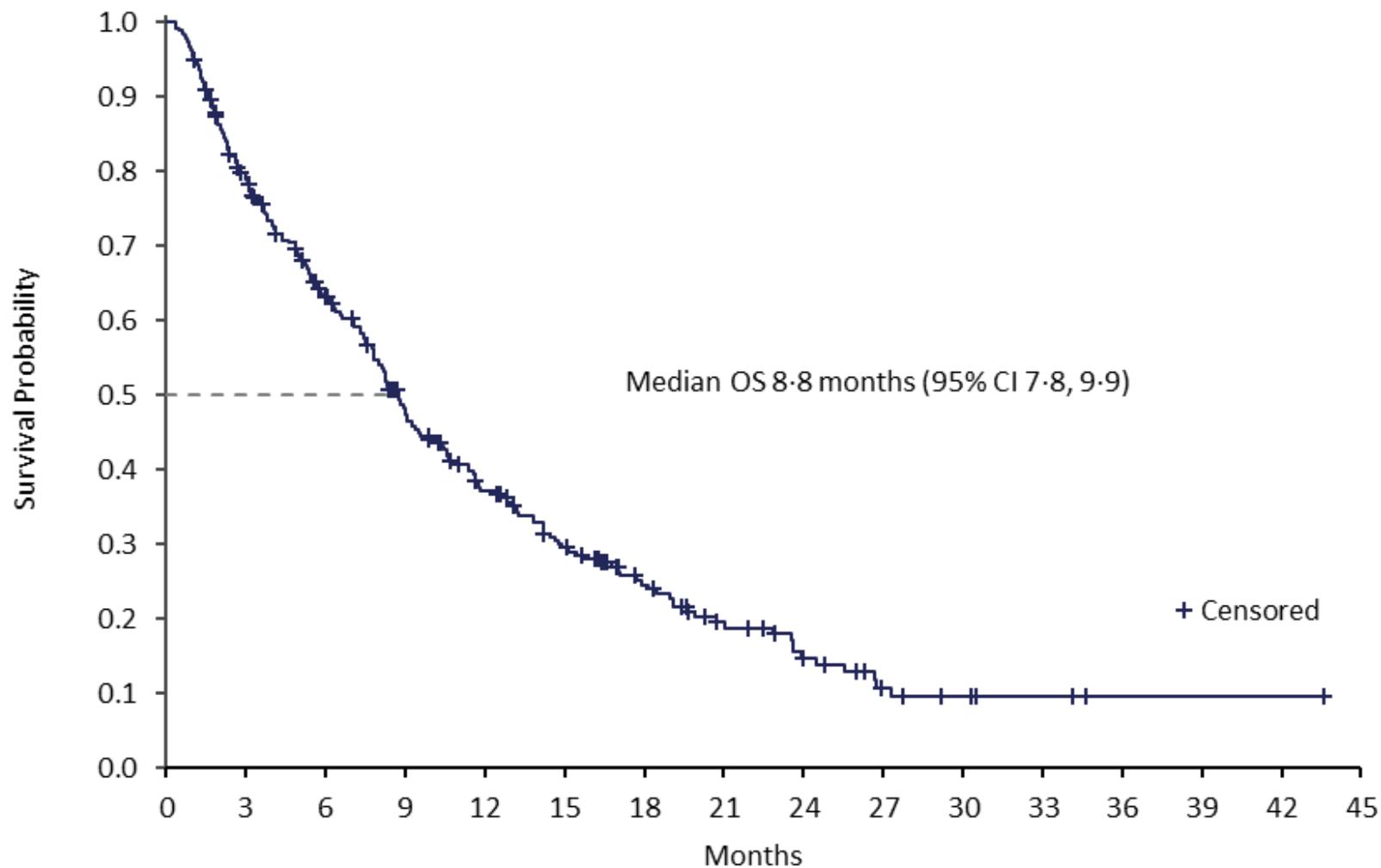




# Gilteritinib for Relapsed/Refractory AML with FLT3 Mutation

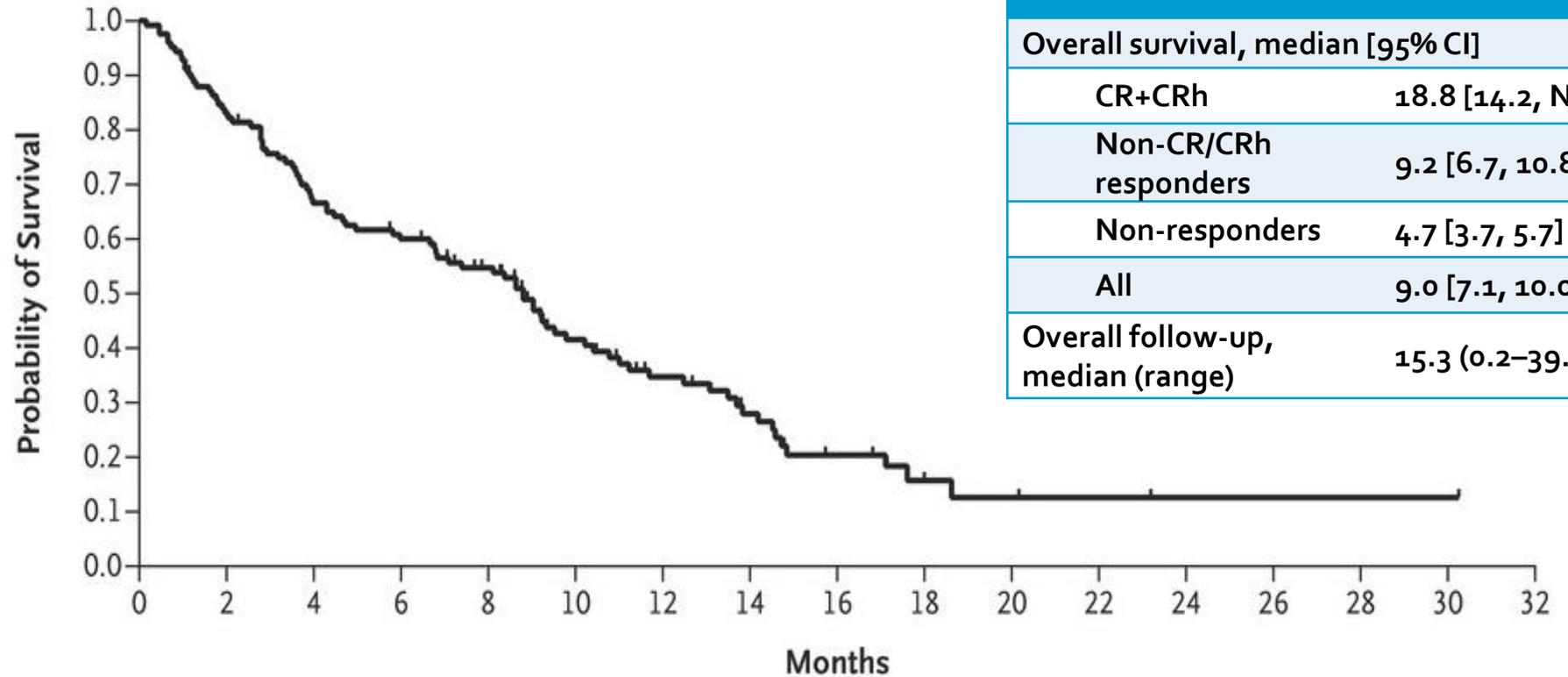


# Enasidenib (IDH2) Overall Survival – All R/R Patients



# Ivosidenib (IDH1) Overall Survival – All R/R Patients

## A Overall Survival



Months	
Overall survival, median [95% CI]	
CR+CRh	18.8 [14.2, NE]
Non-CR/CRh responders	9.2 [6.7, 10.8]
Non-responders	4.7 [3.7, 5.7]
All	9.0 [7.1, 10.0]
Overall follow-up, median (range)	15.3 (0.2–39.5)

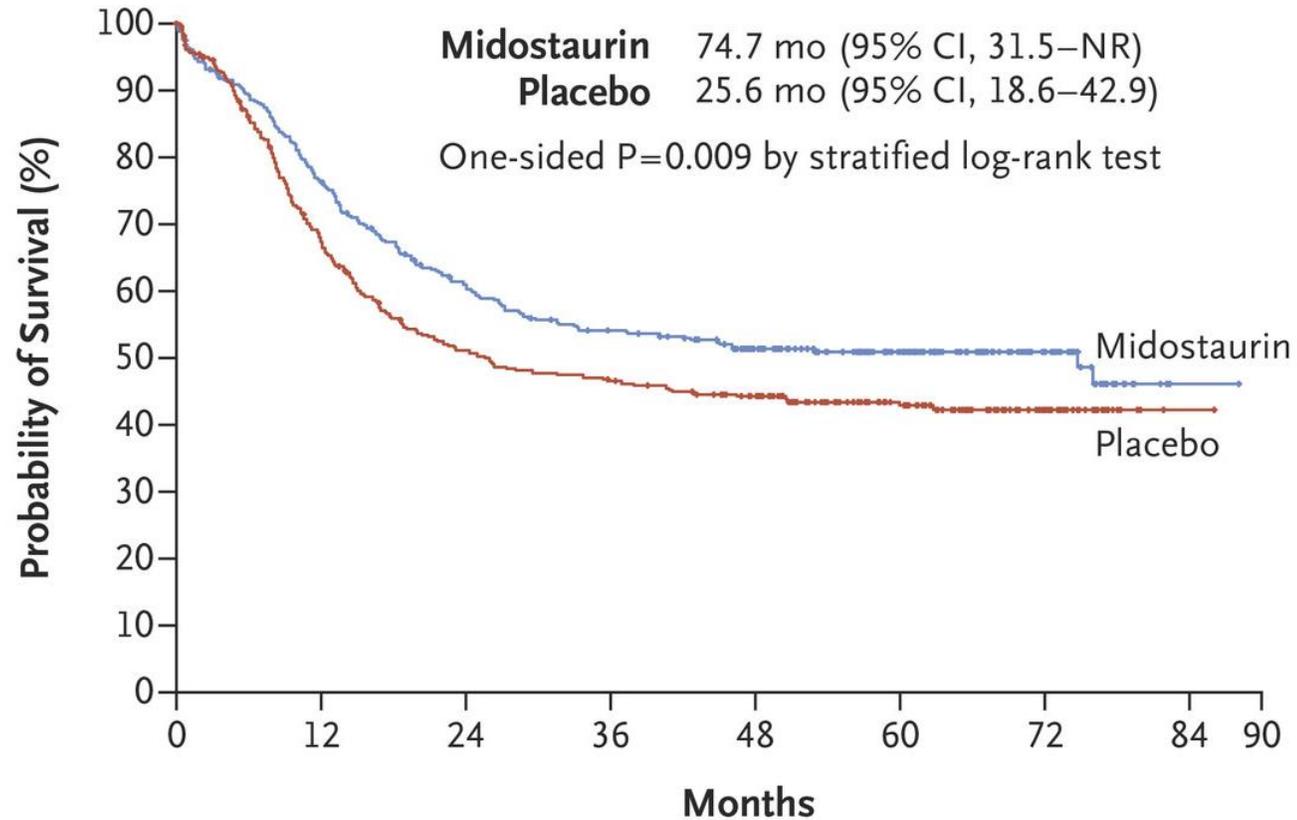
No. at Risk

125 102 81 72 59 38 28 19 11 6 4 3 1 1 1 1 0



# Combining Midostaurin with Chemotherapy

## A Median Overall Survival

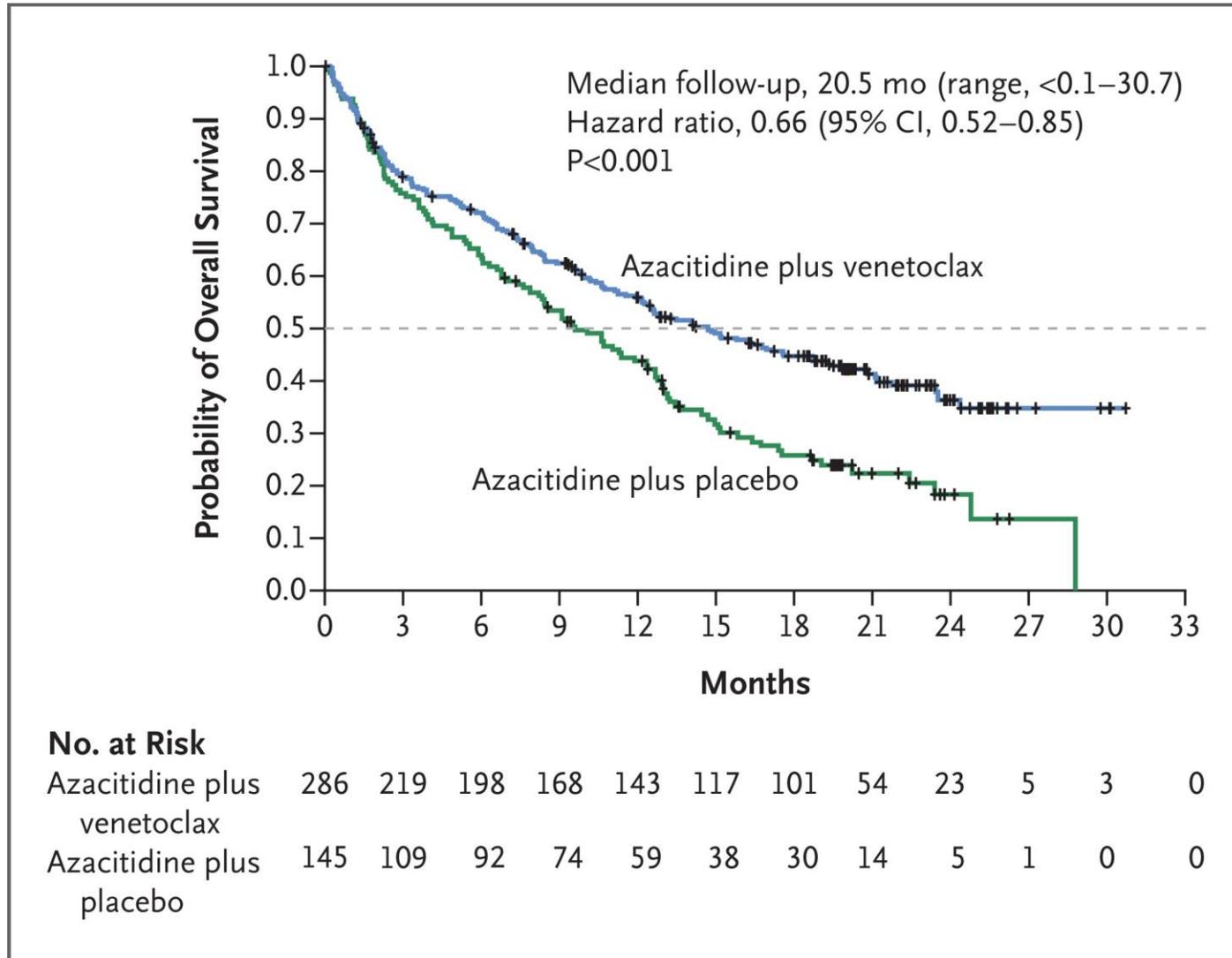


### No. at Risk

Midostaurin	360	269	208	181	151	97	37	1
Placebo	357	221	163	147	129	80	30	1

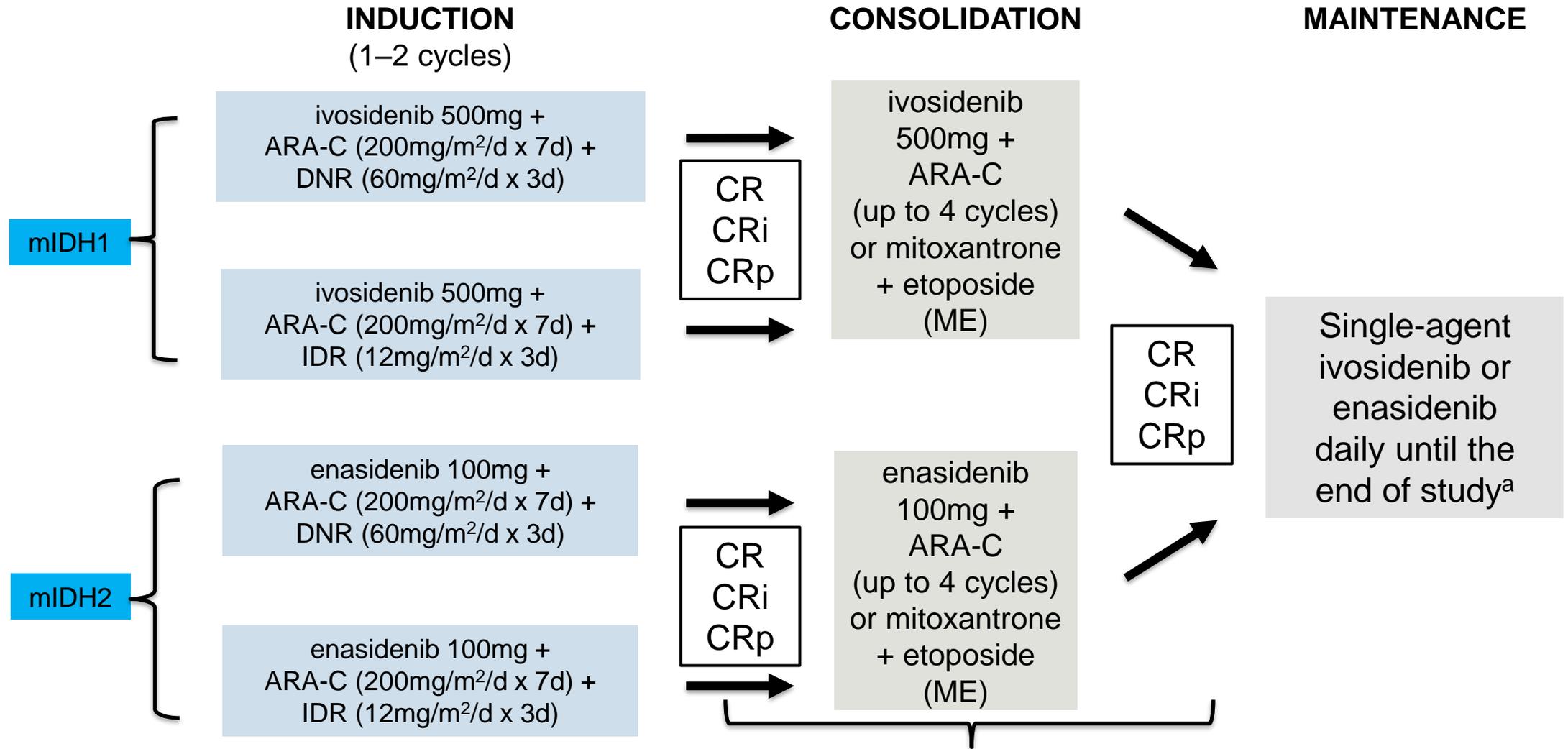


# Aza/Ven



# Enasidenib/Ivosidenib with Induction Chemotherapy

SCREENING

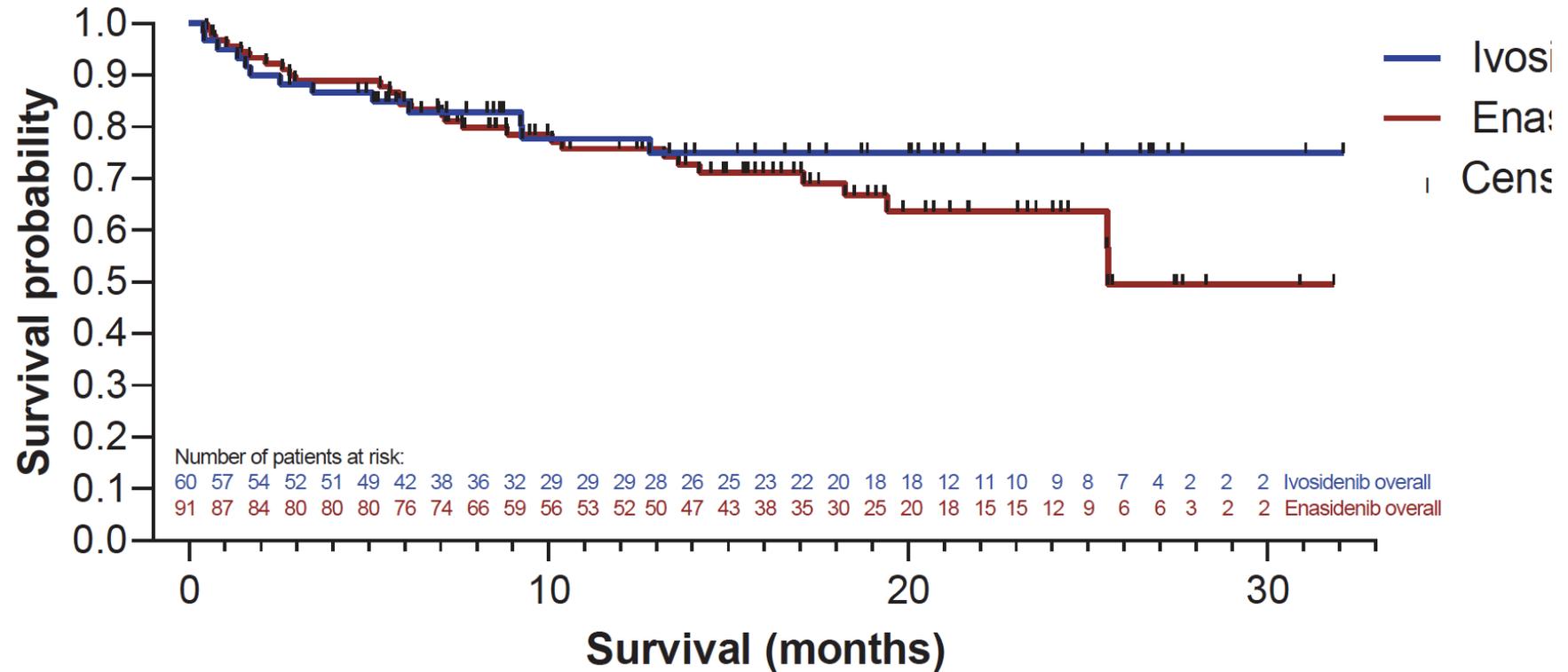


Ivosidenib and enasidenib are discontinued and not resumed in patients who proceed to transplant

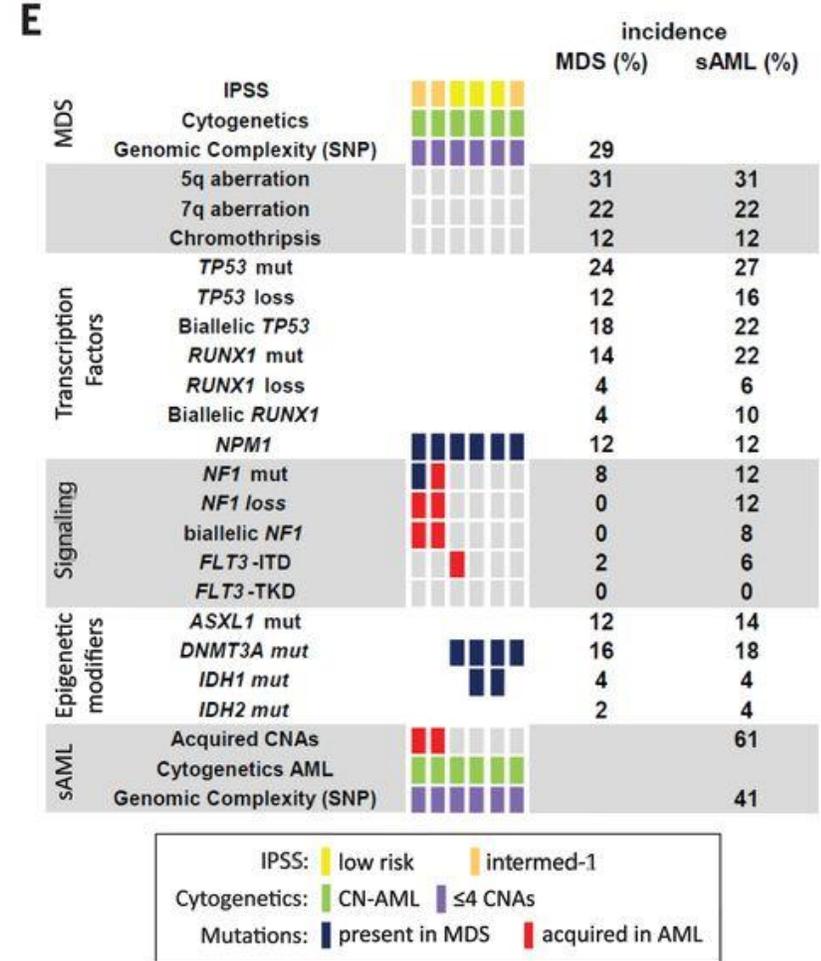
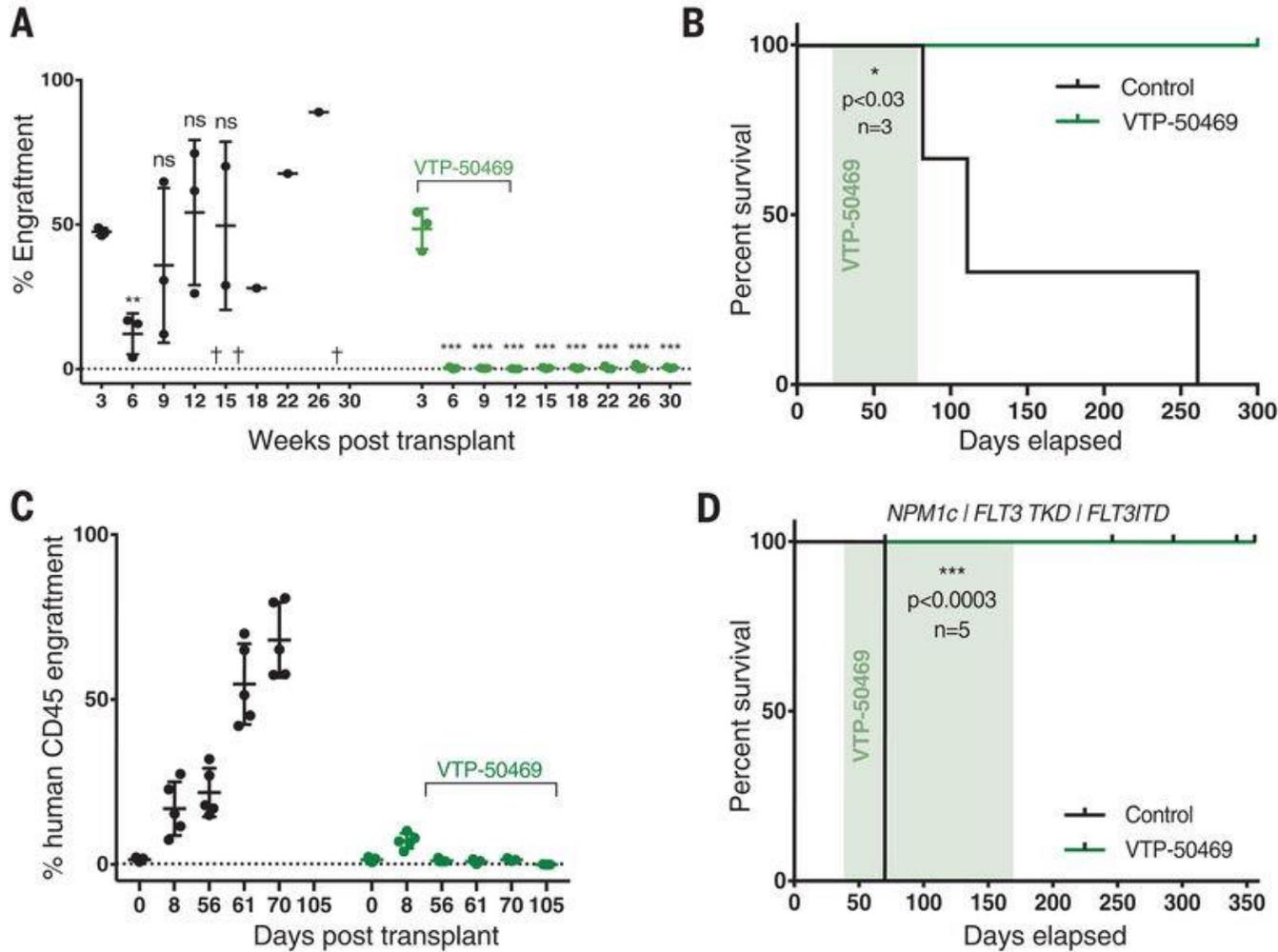


# Enasidenib/Ivosidenib with Induction Chemotherapy

Figure 2



# Novel Investigational Therapies are Effective



# Transcription Factor Modifiers in Action - Menin Inhibitors

Best Response at data cutoff	Response Evaluable n = 31 (%)
<b>Overall Response Rate*</b>	<b>15/31 (48%)</b>
CR/CRh	5
CRp	5
CRi/MLFS	5
MRD negative^ ORR	10/15 (67%)
MLLr overall response rate	13/24 (54%)
mNPM1 overall response rate	2/7 (29%)
<b><i>4 MRD- patients went on to receive stem cell transplant</i></b>	



# Conclusions

- **Molecular studies are now part of the routine assessment of patients with newly diagnosed and relapsed acute myeloid leukemia**
- **Despite the approval of novel agents, the median and two year overall survival with these agents leaves many opportunities for the use of novel agents**
  - **Overall survival at two years with aza-ven is 40%**
- **Moving effective agents into combinations earlier in the course of therapy, are crucial for deriving the maximum benefit from novel agents**
- **Foghorn is exploring a novel approach to altering gene expression through dual inhibition of BRG1/BRM, and subsequent transcription factor modulation, such as SPI1 and others.**



# Thank You!





**FOGHORN**<sup>®</sup>  
THERAPEUTICS

# **FHD-609: Clinical Entry Point – Synovial Sarcoma**

*Sam Agresta, MP, MPH & TM*

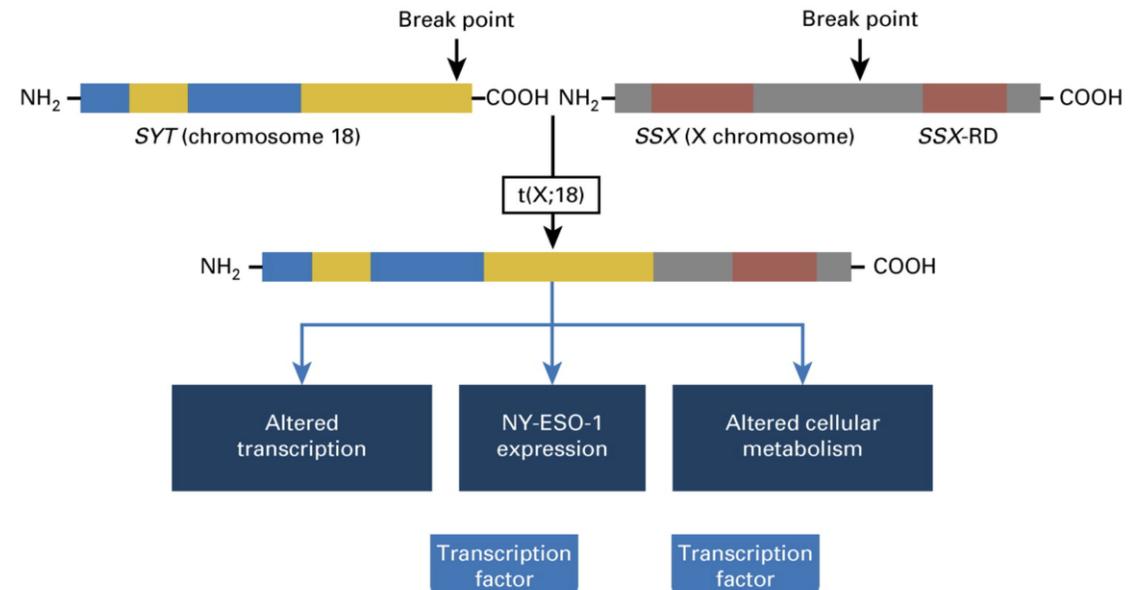
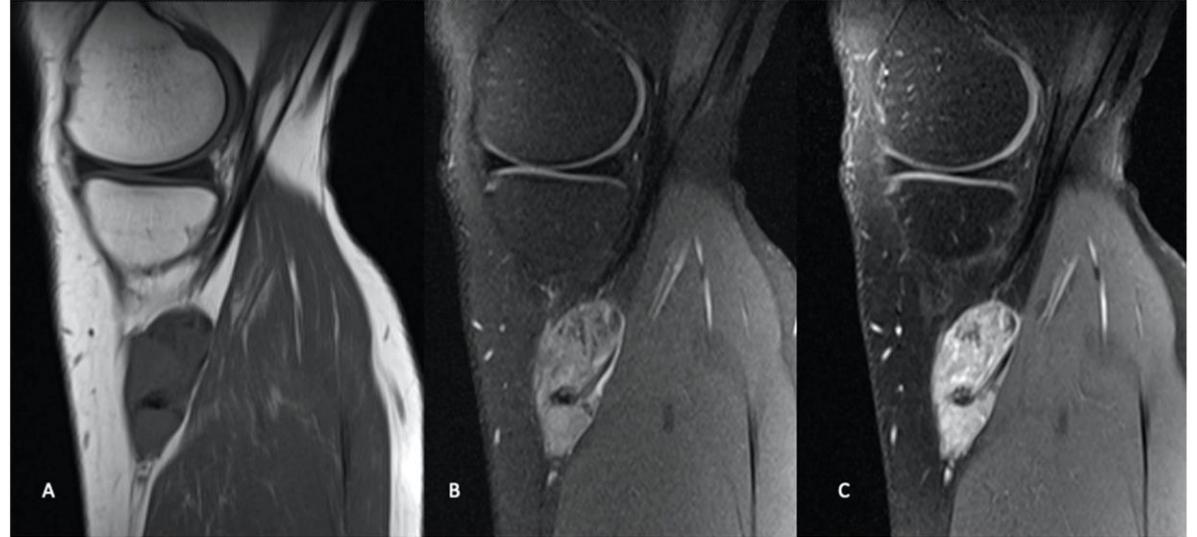
*Chief Medical Officer, Foghorn Therapeutics*

# Synovial Sarcoma

## Disease Overview



- 5-10% of all soft tissue sarcomas
- Most common presentation: Soft tissue tumor of the extremities in young adults
- Characterized by the translocation  $t(X;18)(p11.2;q11.2)$
- *SS18* gene product:
  - Encodes for a protein subunit of the mSWI/SNF (BAF) chromatin remodeling complex
  - *SS18-SSX* gene competes with the endogenous *SS18* protein, forming an altered complex lacking the tumor suppressor BAF4

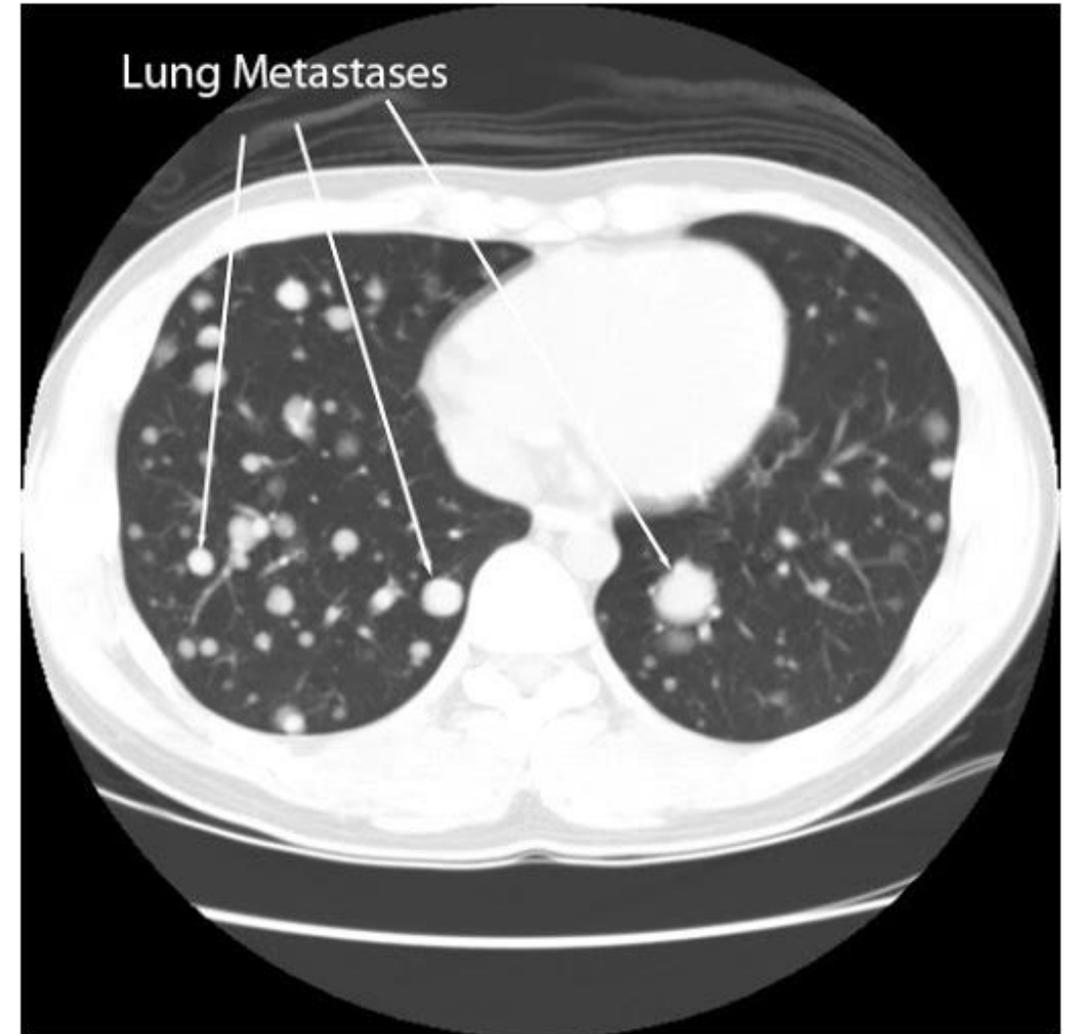


# Metastatic Synovial Sarcoma

## Disease Overview



- Surgical resection of metastatic disease
  - Can provide long-term relapse-free survival in selected patients.
- Chemotherapy
  - Administered with palliative intent, with the goals of decreasing tumor bulk, diminishing symptoms, improving quality of life, and prolonging survival.
- Advanced unresectable
  - Candidates for clinical trials
- Prognosis:
  - Localized disease: 5-year PFS range from 26% - 80.7% and 5-year OS from 40% - 90.7%
  - Metastatic disease: 5-year OS is very low, 0-10%



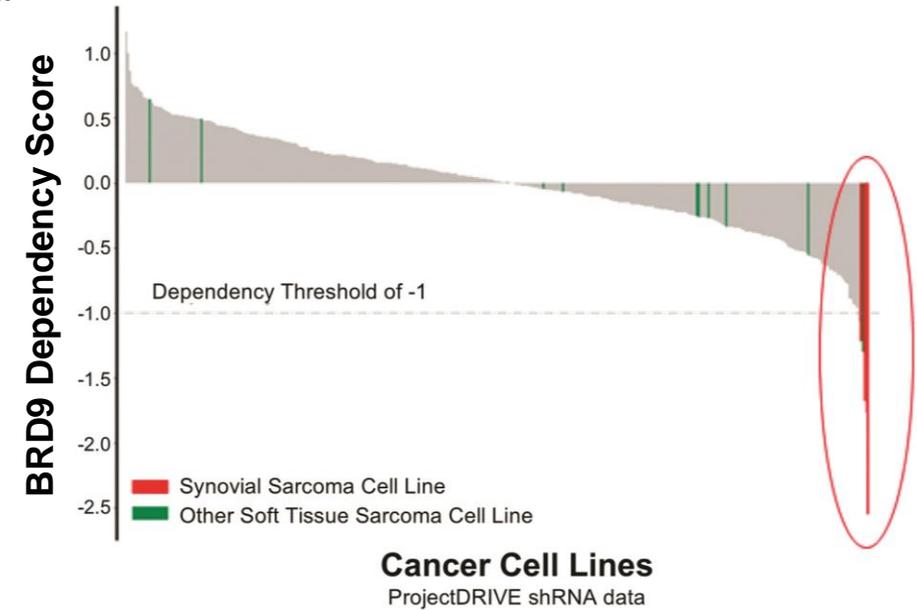
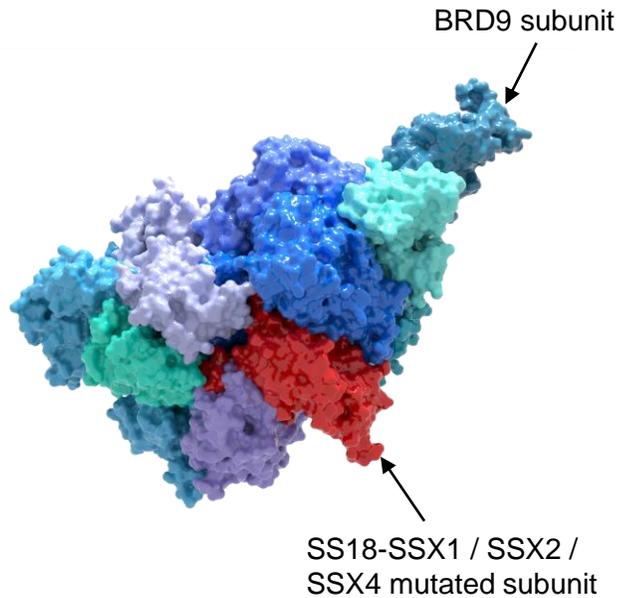
# FHD-609 Targets and Degrades the BRD9 subunit of BAF which is Required for Synovial Sarcoma Cells to Survive

Selective, Potent BRD9 Targeted Protein Degradator



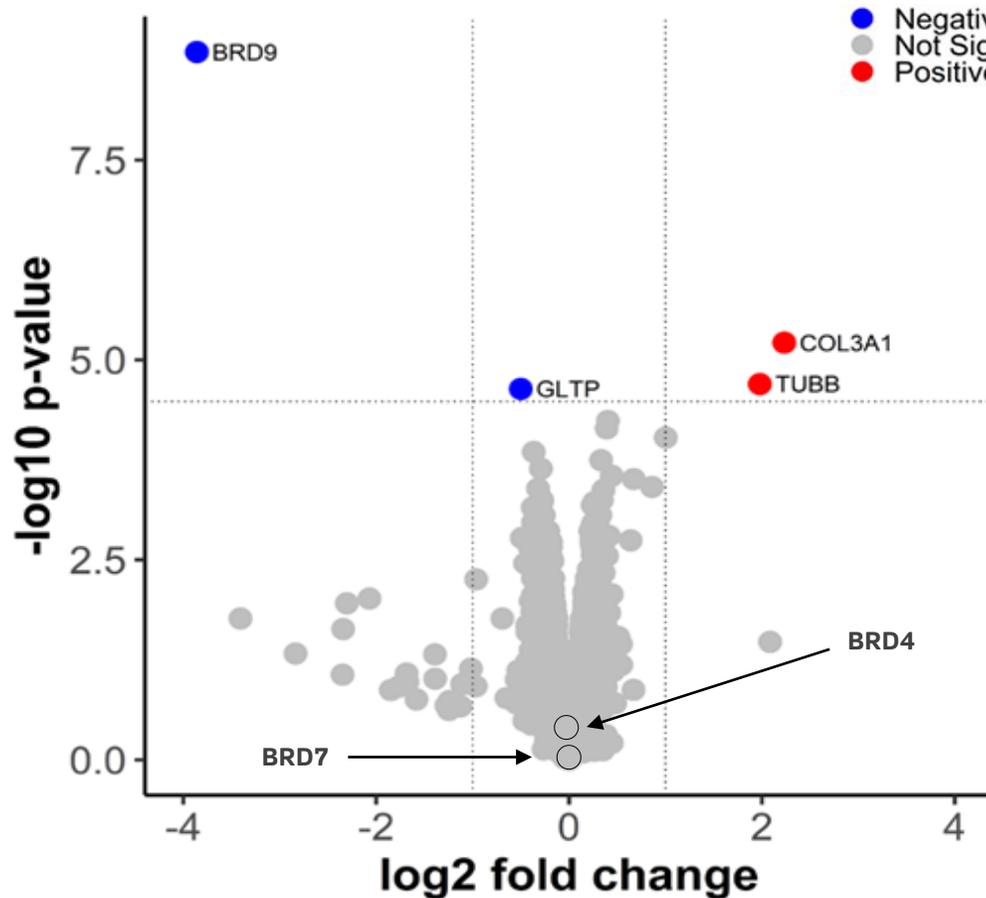
<b>Target / Approach</b>	<ul style="list-style-type: none"><li>BRD9</li><li>Intravenous Protein Degradator</li></ul>
<b>Initial Indication</b>	<ul style="list-style-type: none"><li>Synovial Sarcoma</li></ul>
<b>Mutation / Aberration</b>	<ul style="list-style-type: none"><li>SS18-SSX1 / SSX2 / SSX4 protein fusions</li></ul>
<b>Program Status / Milestones</b>	<ul style="list-style-type: none"><li>Phase I data as early as H1'22</li></ul>
<b>New Patients Impacted / Year*</b>	<ul style="list-style-type: none"><li>Synovial Sarcoma: Over 1,800 patients / year</li></ul>

\* US, EU5, Japan



**BRD9 is required for the survival of synovial sarcoma cells**

# FHD-609 Selectively Degrades BRD9: Global Proteomic Assessment



- Data shown for SYO1 synovial sarcoma cells treated with 16nM of FHD-609 (~200x DC50) for 4h.
- BRD9 is the only protein significantly degraded, with 16-fold reduction, by quantitative MS analysis.
- Similar selectivity observed for 24h treatment of 16nM FHD-609, or higher concentration of 78nM (~1000x DC50) for 4h, data not shown

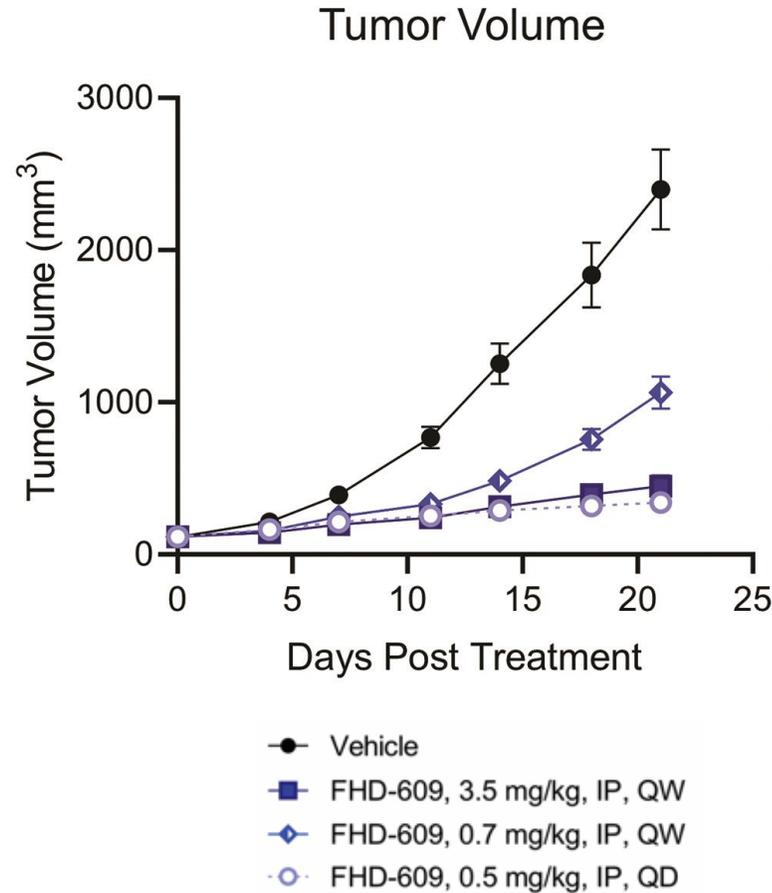
# Robust *in vivo* Activity Observed in Synovial Sarcoma Model and BRD9 Degradation Associated with FHD-609 Treatment

Weekly Dosing of FHD-609 Achieved Sustained BRD9 Degradation

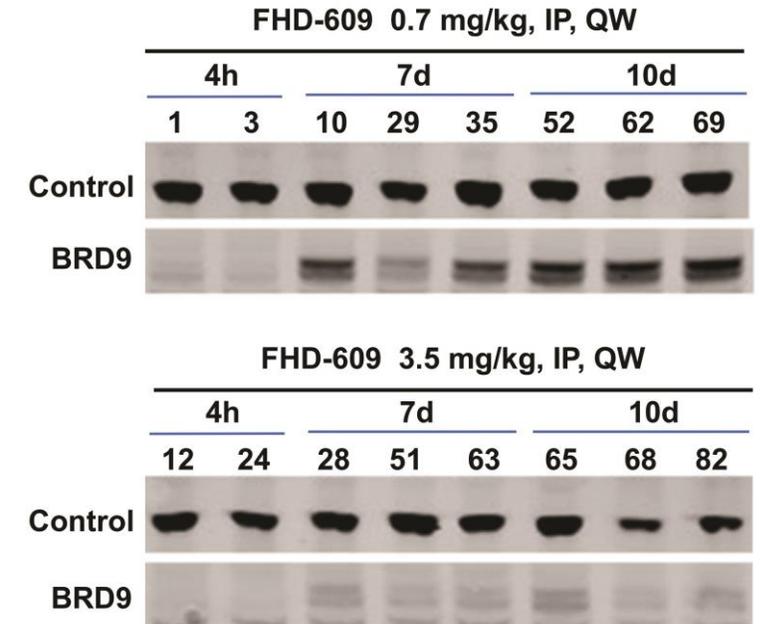


## SY01 Synovial Sarcoma CDX Model

- Mutation: **SS18-SSX2**
- Inhibited tumor growth
- Dose dependent BRD9 degradation correlated with anti-tumor activity



## Sustained BRD9 Degradation

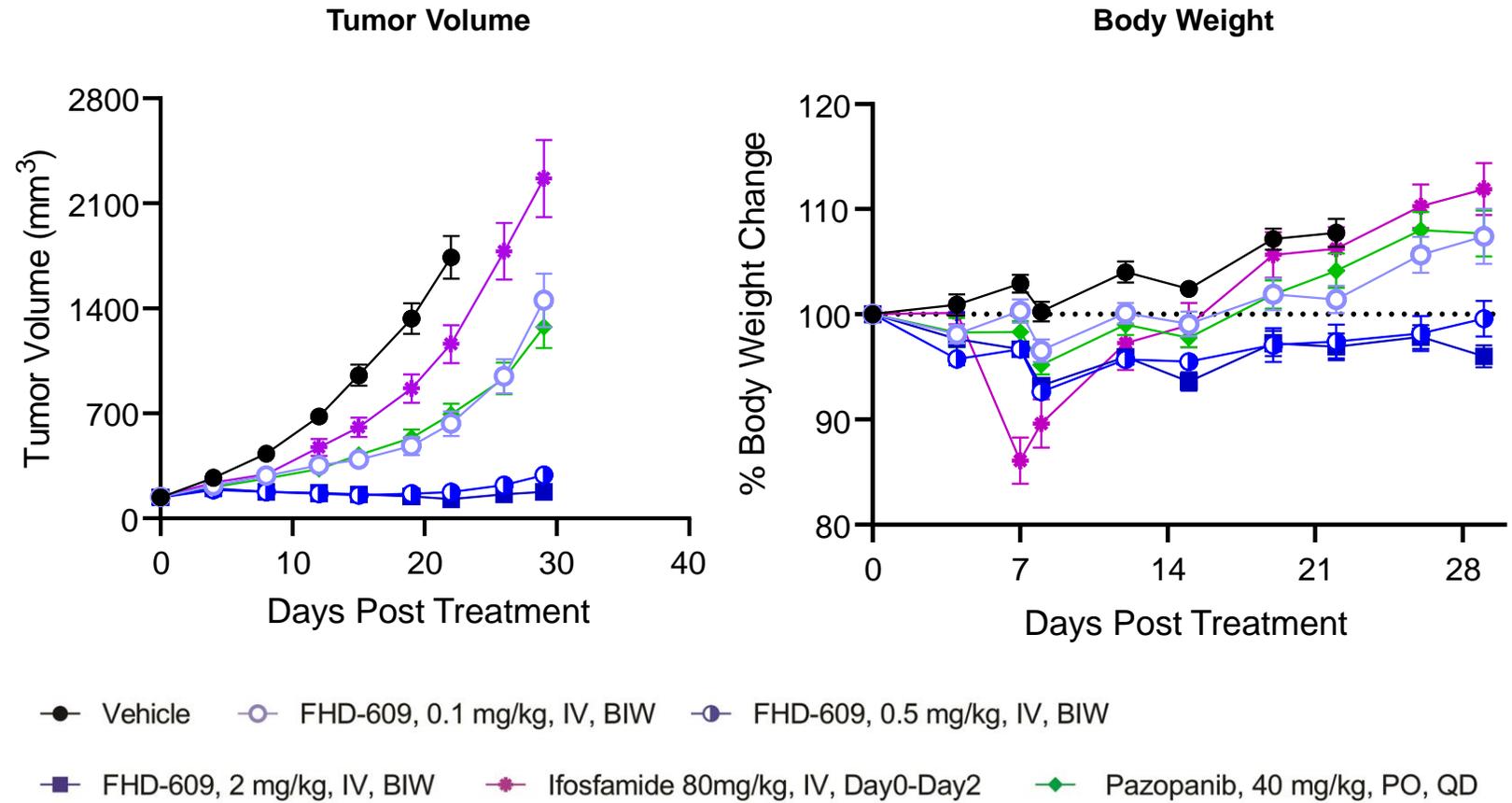


# Superior Tumor Growth Inhibition of FHD-609 in a Synovial Sarcoma Model as Compared to Ifosfamide and Pazopanib



## ASKA CDX Model

- Mutation: **SS18-SSX1**
- Superior tumor growth inhibition compared to ifosfamide and pazopanib
- Complete suppression observed over 30 days at 2 mg/kg of FHD-609





## CLINICAL PLAN

### *Synovial Sarcoma FIH Phase 1*

#### Metastatic Synovial Sarcoma

##### Trial Designs

- Single patient accelerated titration (n=1)
- Convert to 3+3 once relevant PK/PD, safety or clinical activity observed
- Assess safety, PK, clinical activity and biomarkers

##### Biomarkers:

- SS18-SSX1, SS18-SSX2 or SS18-SSX4 translocation

Synovial Sarcoma  
expansion cohorts

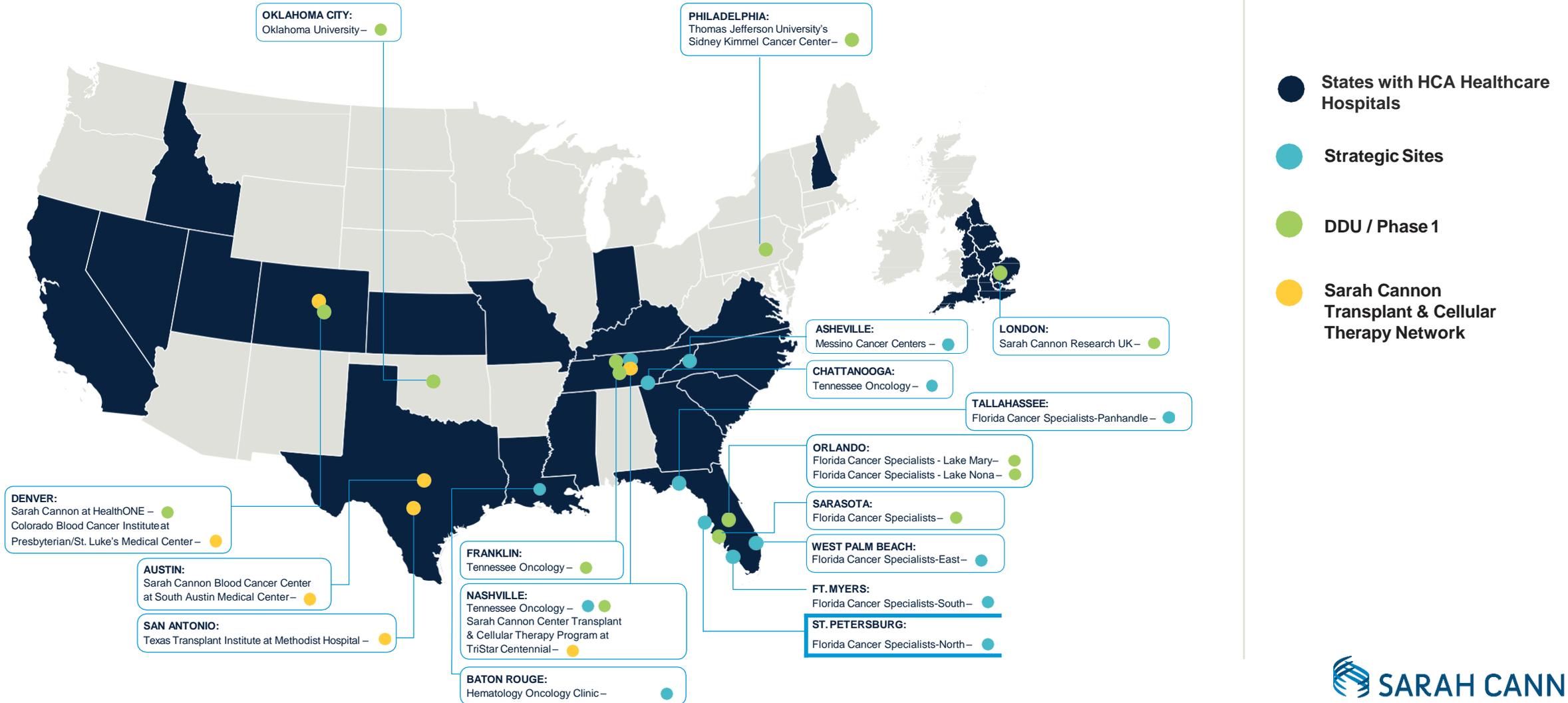
SMARCB-1  
deleted tumors and  
potentially other  
indications

*Potential for entry into definitive  
efficacy trials in synovial sarcoma*

**Clinical data as early as H1 2022**

**Howard “Skip” Burris III, MD, FASCO, FACP**  
**Sarah Cannon Research Institute**

# Sarah Cannon Research Sites



# Phase I Drug Development Program

**50+**

Phase 1 Studies in  
Presentations at ASCO 2020

**500+**

First-in-Human Trials  
Conducted

Clinical Trial Leader in the **Majority**  
of Approved Cancer Therapies  
over the Last 10 Years

**200+**

Unique Agents per Year



**1,200+**

Patients Treated on  
Phase 1 Trials in 2020

**250+**

Physicians who Engage  
in P1 Research



**Tennessee  
Oncology**  
Nashville  
Franklin



**Florida Cancer  
Specialists**  
Sarasota  
Lake Mary  
Lake Nona



**Oklahoma Univ.  
Medical Center**  
Oklahoma City



**Sarah Cannon  
UK**  
London



**Sarah Cannon  
HealthONE**  
Denver



**SKCC-Jefferson  
Health**  
Philadelphia

# First Two Programs in the Clinic, Broad Pipeline Advancing

Precision Oncology / Breadth and Depth



Program / Target	Modality	Discovery	IND-enabling	Phase 1	Phase 2	Phase 3	Global Rights
<b>FHD-286 (BRG1 / BRM)</b>	Enzyme inhibitor	AML		Early Clinical Data (Q4 2021)			
		Uveal melanoma		Early Clinical Data (Q4 2021)			
<b>FHD-609 (BRD9)</b>	Protein degrader	Synovial sarcoma		Early Clinical Data (H1 2022)			
<b>Selective BRM</b>	I) Enzyme inhibitor	BRG1 mutated cancers	IND 2022				
	II) Protein degrader	BRG1 mutated cancers					
<b>Selective ARID1B</b>	Protein degrader	ARID1A mutated cancers					
<b>Synthetic Lethal Targets (multiple)</b>	I) Enzyme inhibitors						
	II) Protein degraders						
<b>Transcription Factors (multiple)</b>	I) Transcription factor disruptors						
	II) Protein degraders						
<b>Partnered program (undisclosed)</b>	Transcription factor disruptor						

Gene Traffic Control® Platform

# Thank you



**FOGHORN**<sup>®</sup>  
THERAPEUTICS

# Concluding Remarks

## Q&A

*Adrian Gottschalk*

*Chief Executive Officer, Foghorn Therapeutics*