



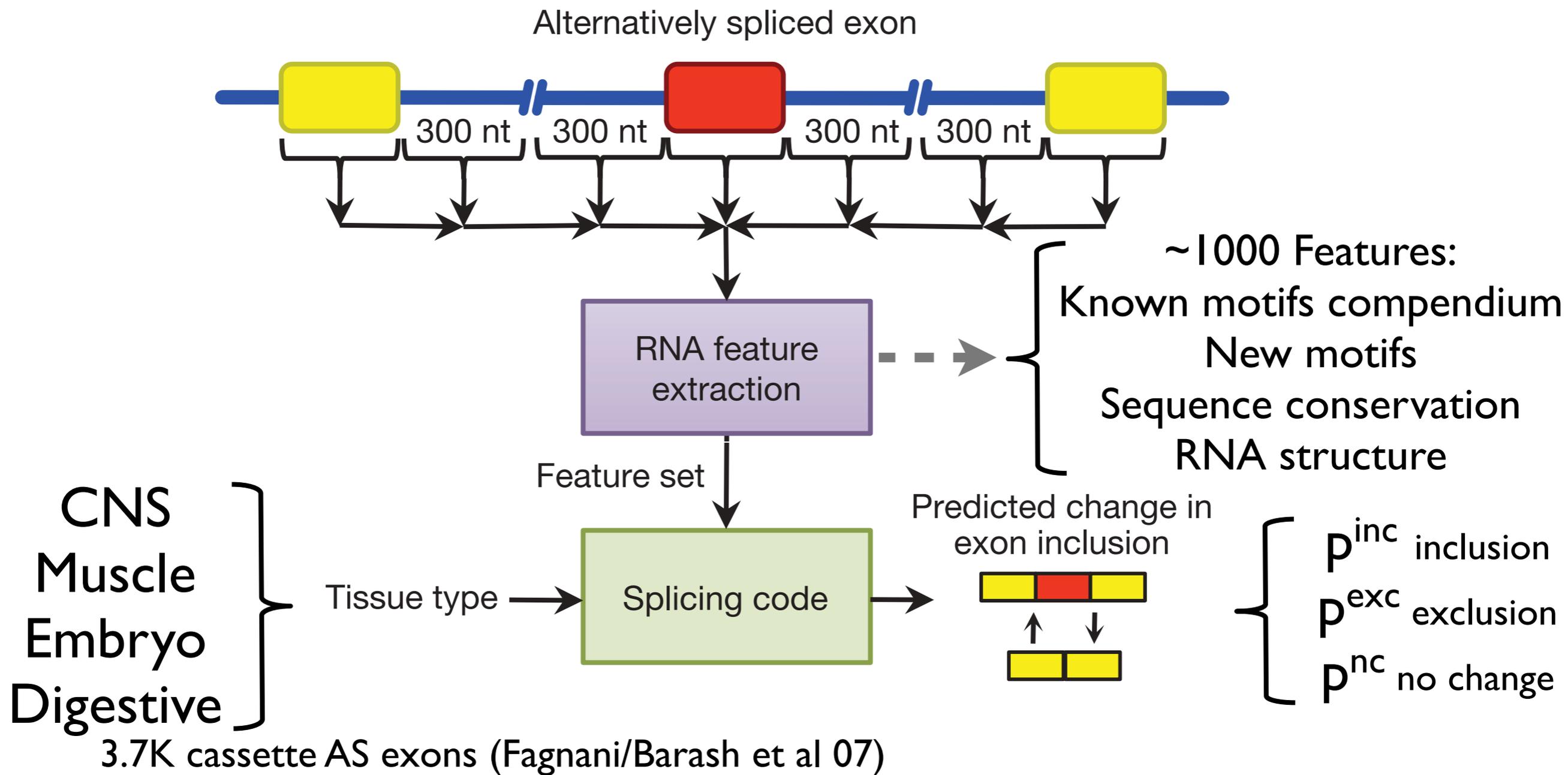
# AVISPA

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# How to derive a predictive splicing code?



**Code Quality**

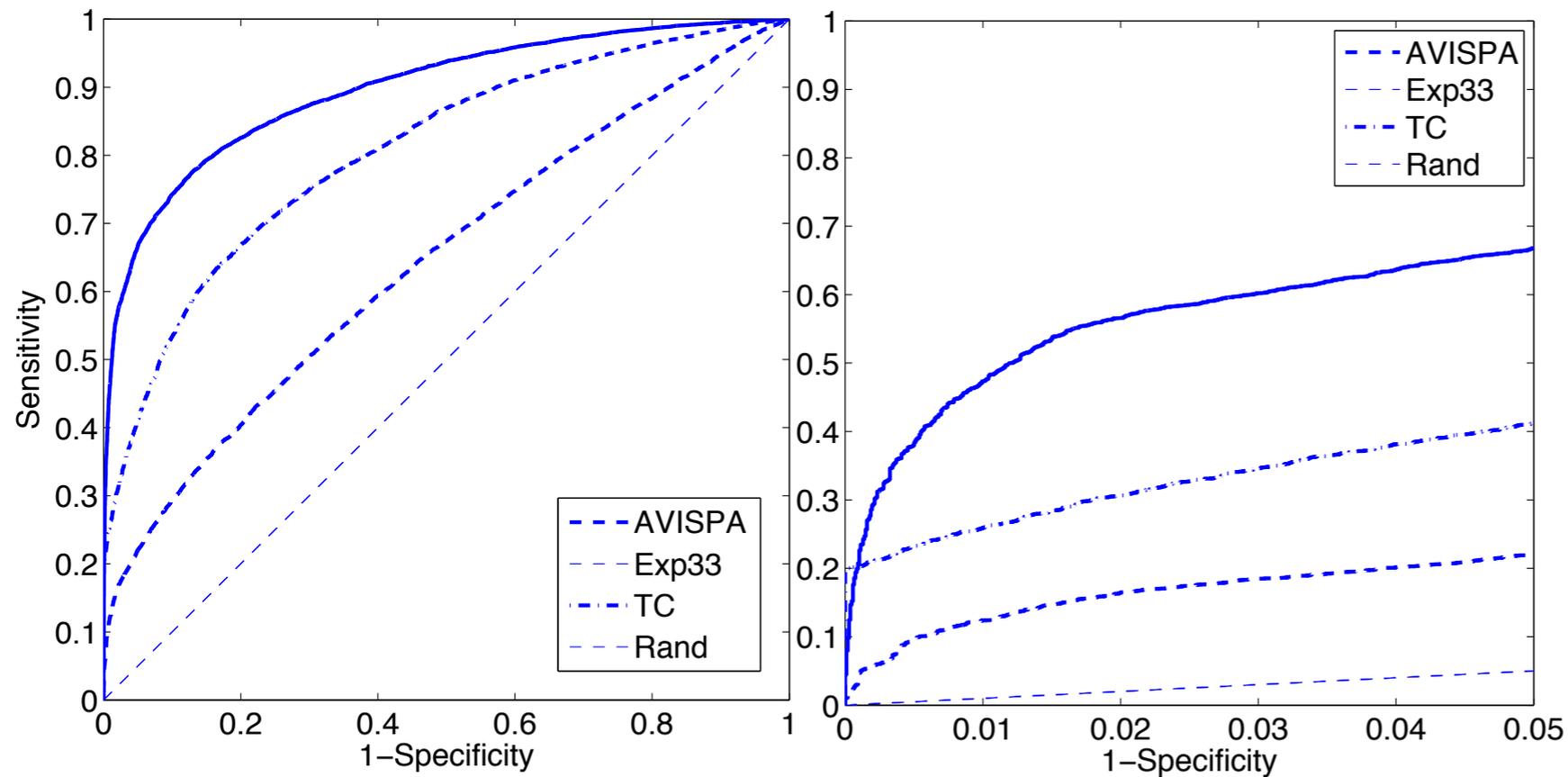
$$H = \frac{1}{N} \sum_{i=1}^N \sum_{s \in \{inc, exc, nc\}} q_i^s \log \left( \frac{p^s(c_i, r_i)}{\bar{q}^s} \right),$$

# What do we need for a genome wide tool?

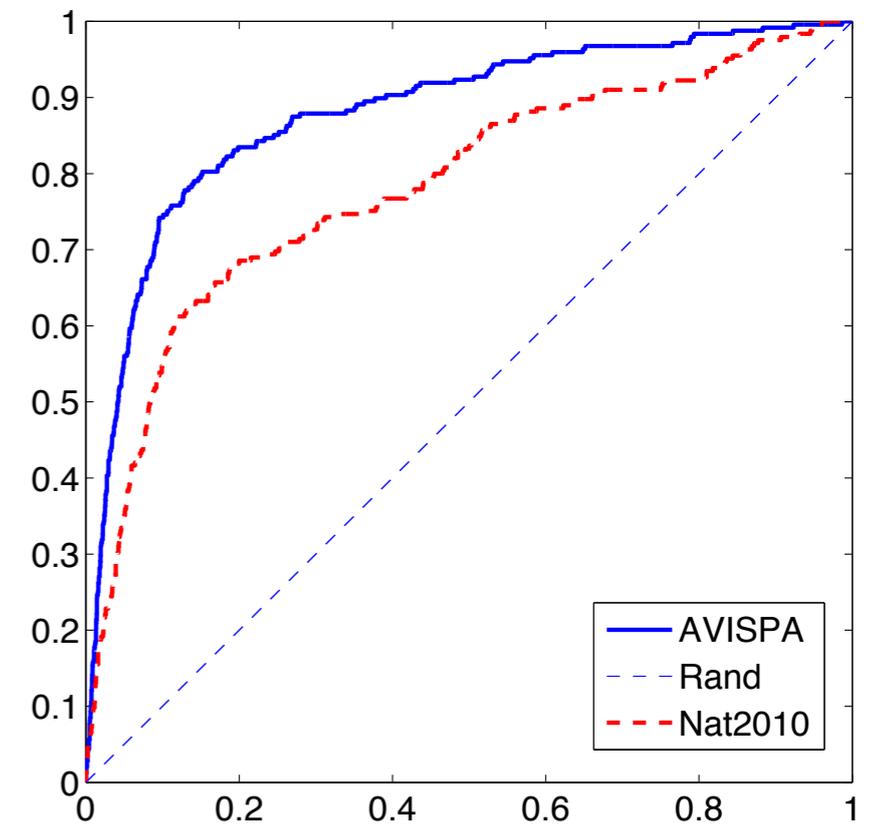
- More data!
  - Is it alternative?
  - Is it tissue specific?
- More features
- Assess effect of features (*in silico* experiments)

# AVISPA Performance

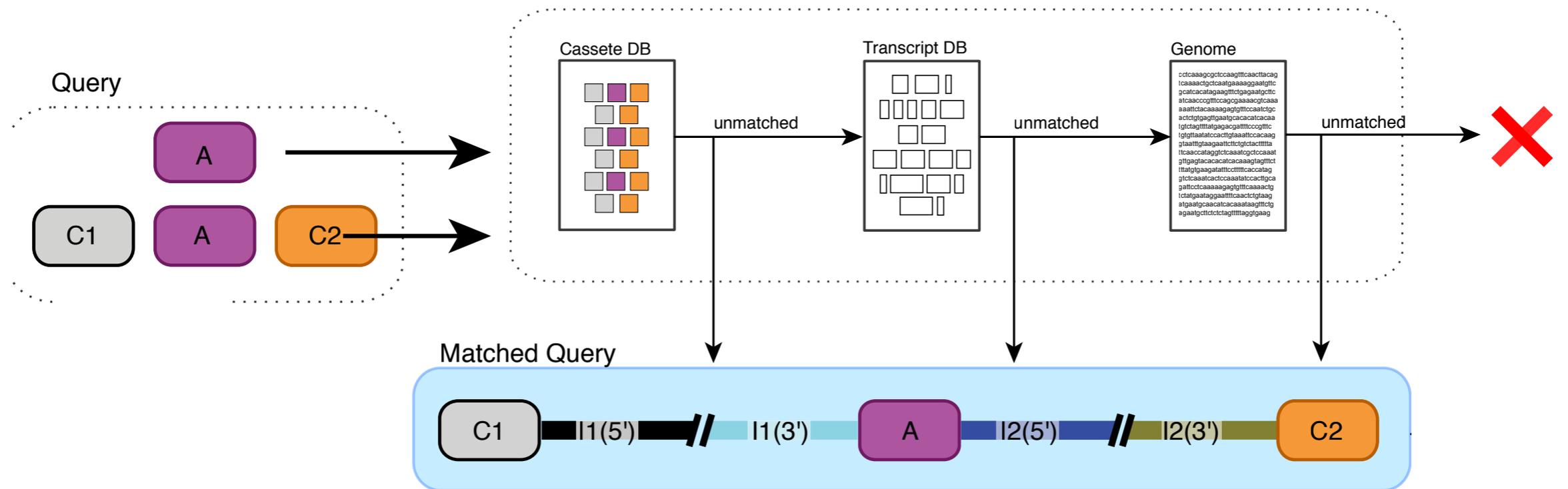
## Alternative vs. Constitutive



## CNS, Inclusion



# AVISPA: Advanced Visualization of Splicing Prediction Analysis

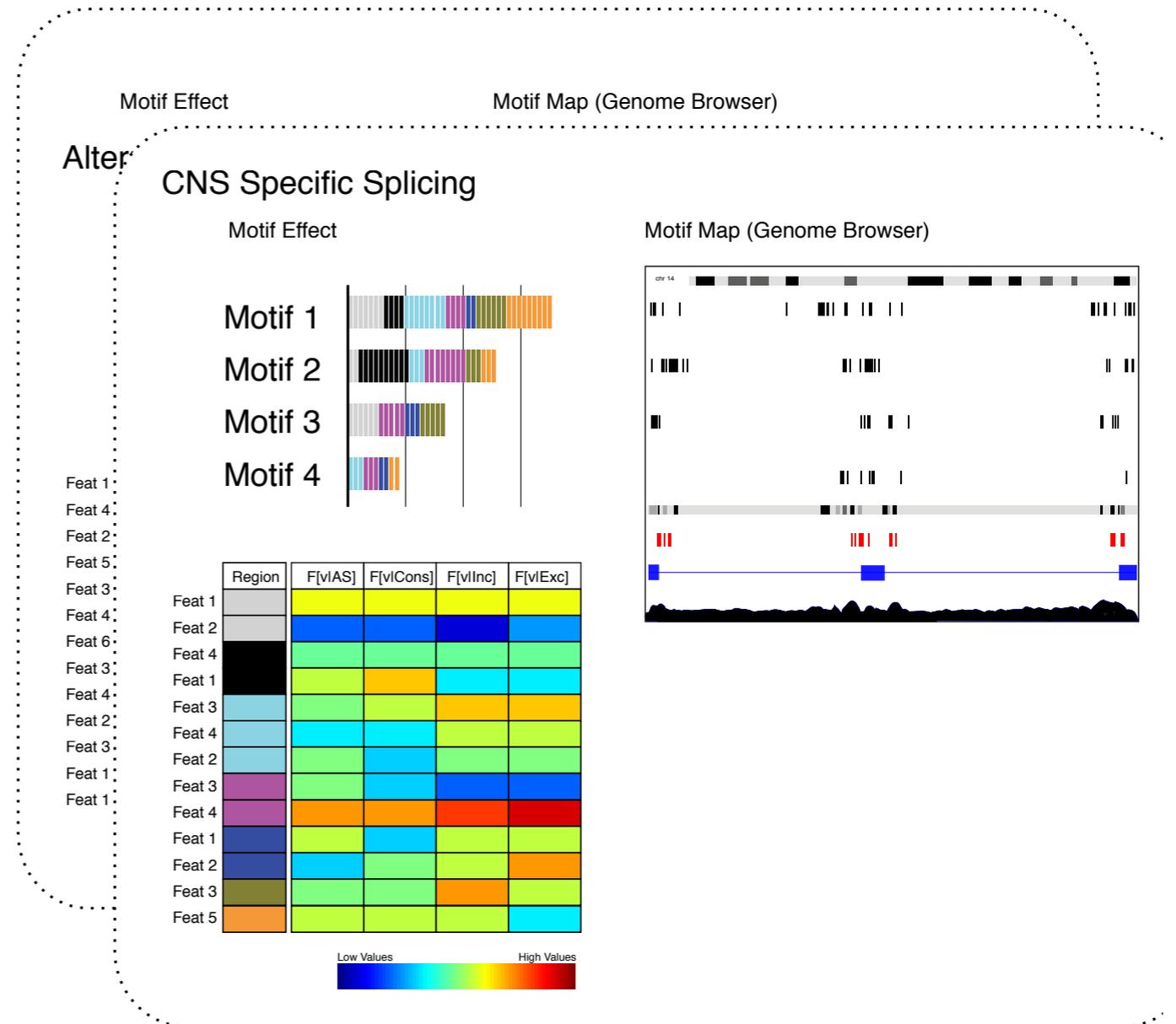
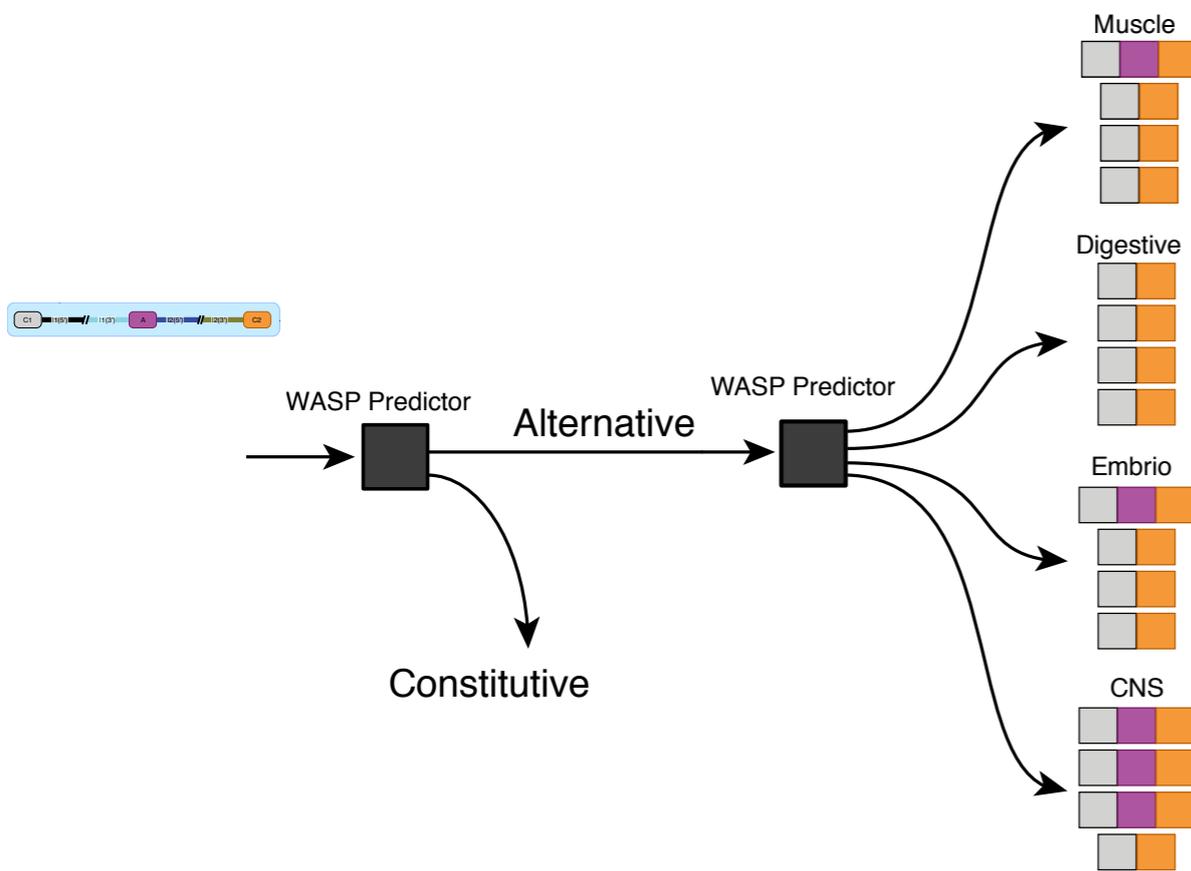


Jordi Vaquero

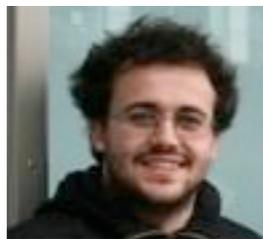


Juan Vallinas

# AVISPA: Advanced Visualization of Splicing Prediction Analysis



Jordi Vaquero



Juan Vallinas

# Why AVISPA?



Advanced Visualization of Splicing Prediction Analysis

## Pokémon Evolution



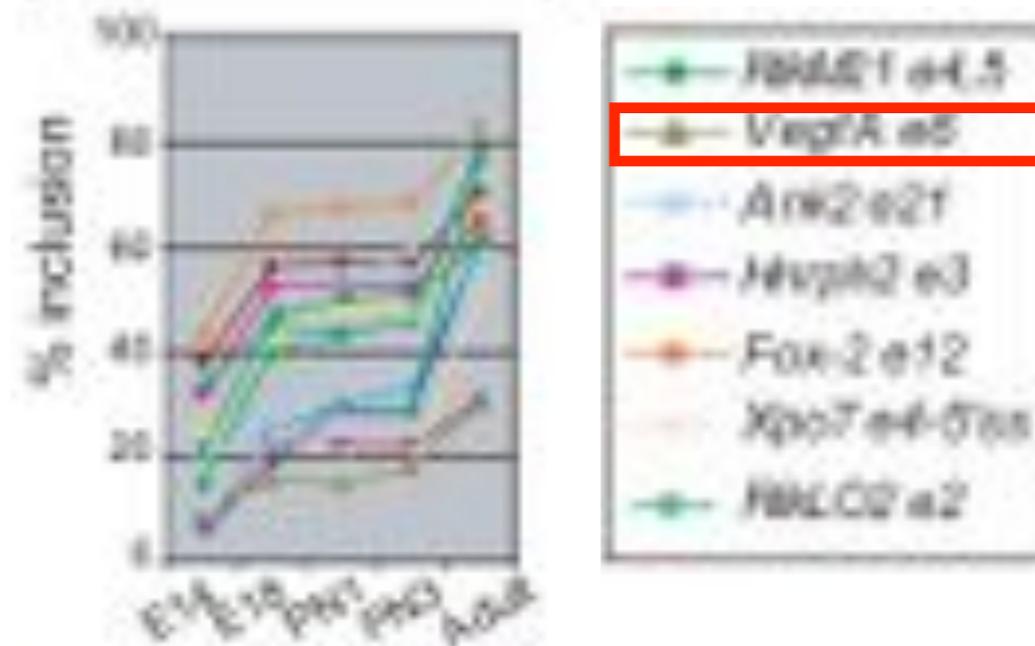
# AVISPA Demo

The screenshot displays the BioCiphers Galaxy web interface. The browser address bar shows the URL `pano.pcbi.upenn.edu/galaxy/`. The main header features the BioCiphers logo and navigation tabs for `Analyze Data`, `Workflow`, `Shared Data`, `Visualization`, `Help`, and `User`. A left sidebar contains a `Tools` panel with a search bar and categories like `Gen/DNA`, `AVISPA`, and `Workflows`. The central content area is titled `The BioCiphers Lab (BCL) Galaxy` and includes a welcome message, a `Tools` section with an AVISPA icon, and a `News` section. A right sidebar shows a `History` panel with a list of recent jobs, including `22. AVISPA on sat7 release` and `20. AVISPA on sat7 default`.

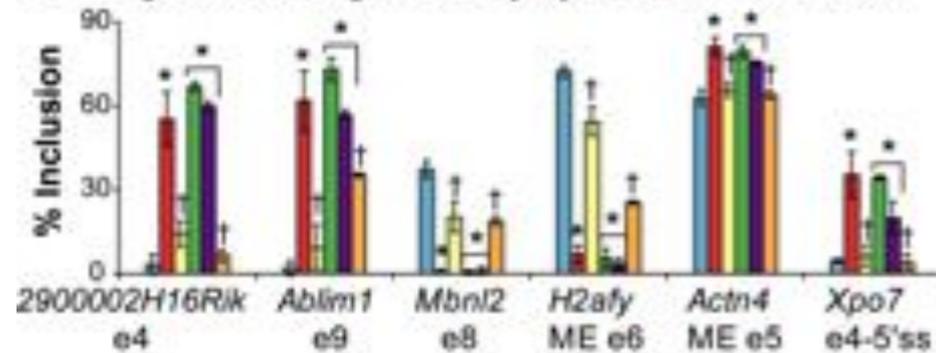
# Case study: Vegfa in developing heart

Kalsotra et al. PNAS 2008

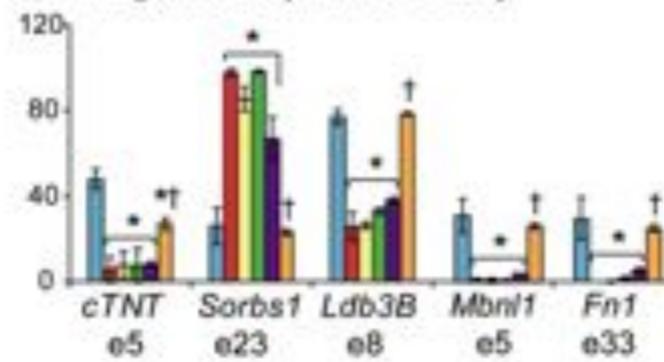
## Biphasic Increase



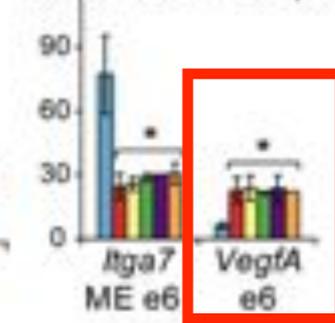
### A Regulated Antagonistically by CUGBP1 & MBNL1



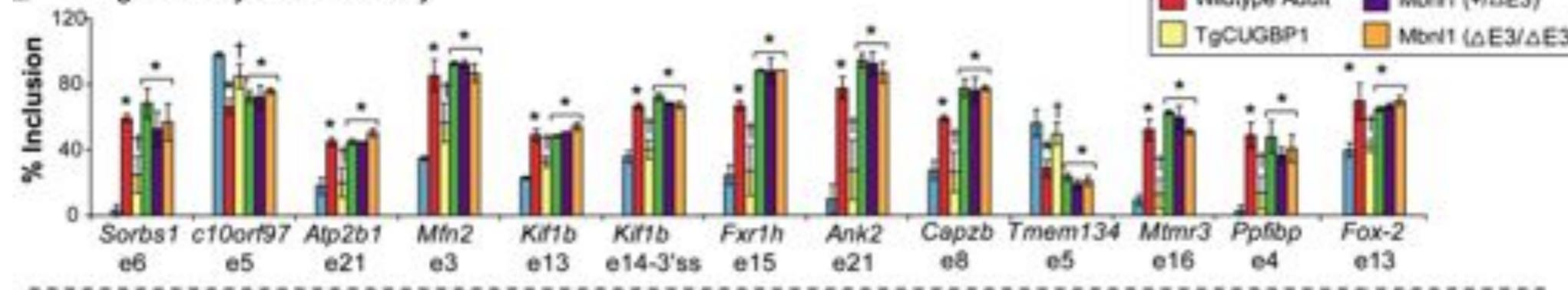
### C Regulated by MBNL1 only



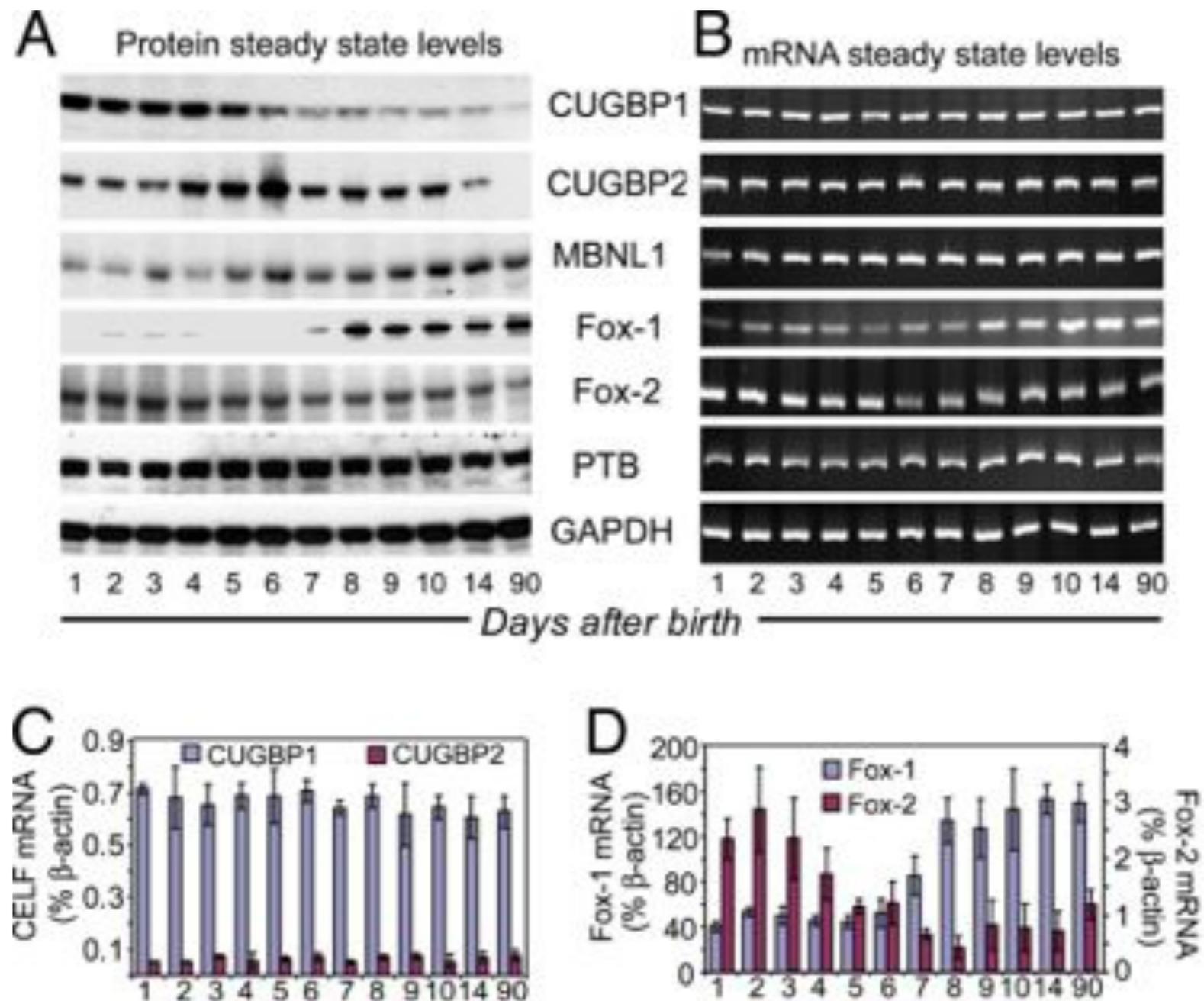
### D CUGBP1 and MBNL1 independent



### B Regulated by CUGBP1 only



# Splice factors in developing heart

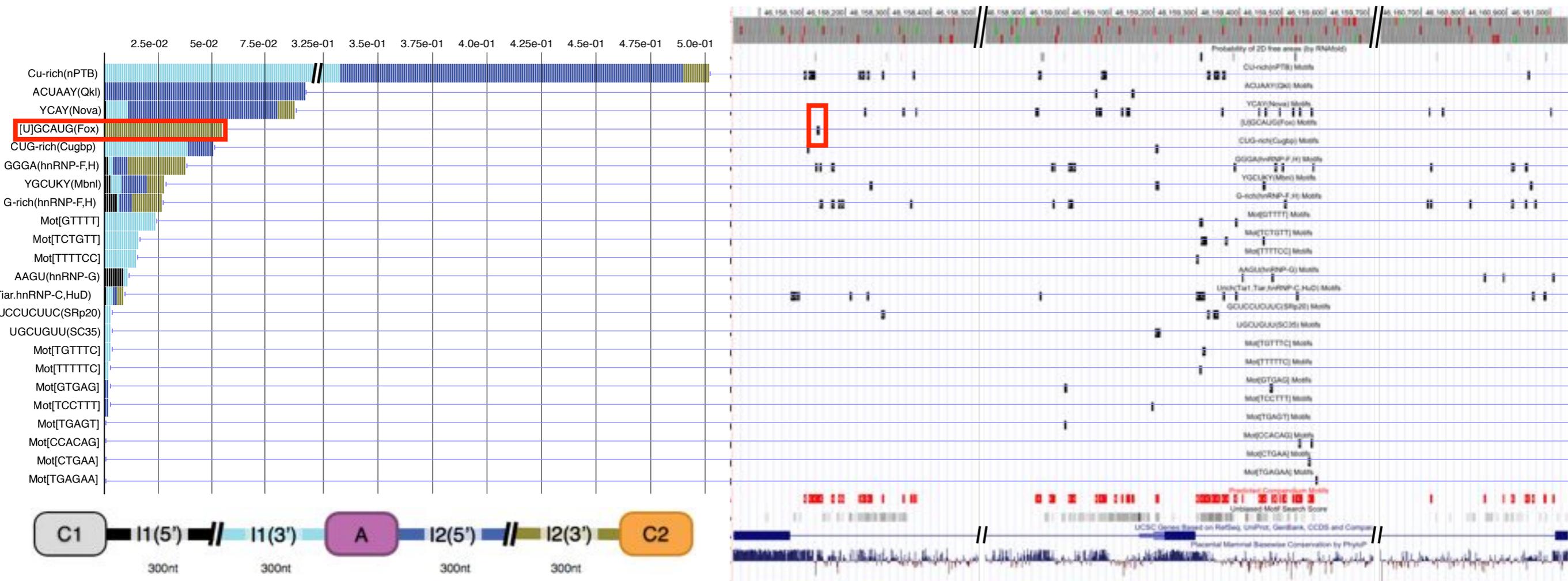


Kalsotra et al. PNAS 2008

# AVISPA predictions for Vegfa exon 6

- Good correspondence to known biology
- Suggested new regulators have experimental support

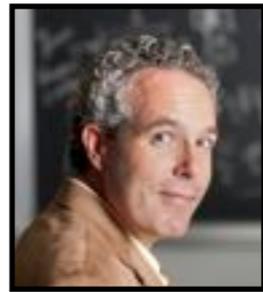
# AVISPA predictions for Vegfa exon 6



- Good correspondence to known biology
- Suggested new regulators have experimental support



Ben  
Blencowe



Brendan  
Frey



Hui Xiong



Jordi  
Vaquero



Juan  
Vallinas

# Thank You



Weijun Gao



Leo Lee



Kristen  
Lynch



Xiang-Dong Fu  
UCSD

