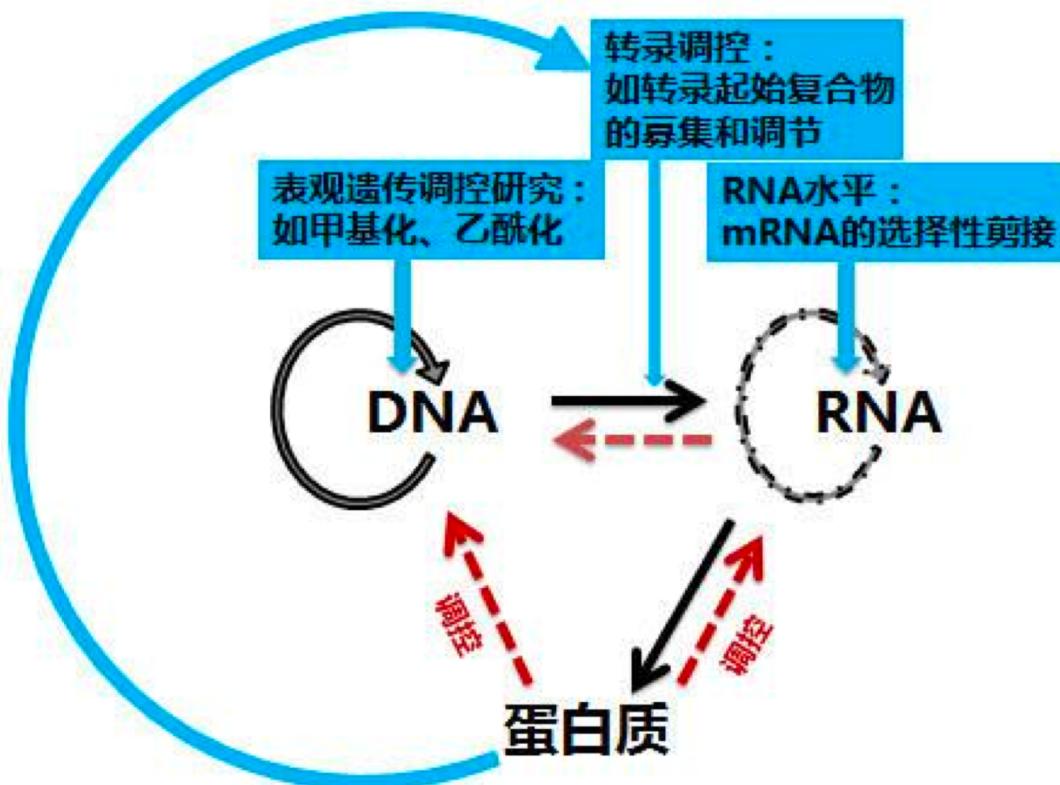


cDeepbind: A context sensitive deep learning model of RNA- protein binding

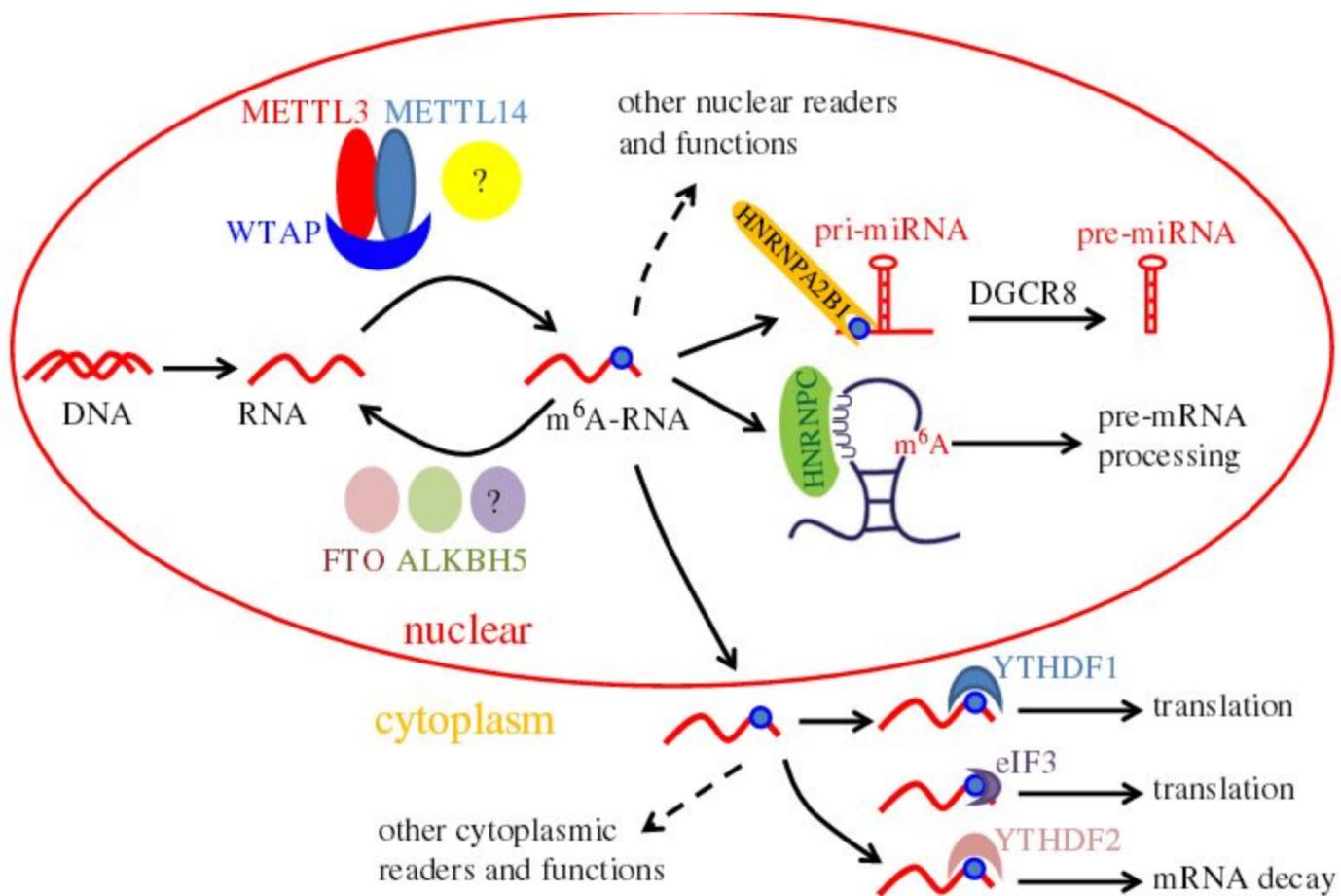
杨明钰

2018.12.17

Background



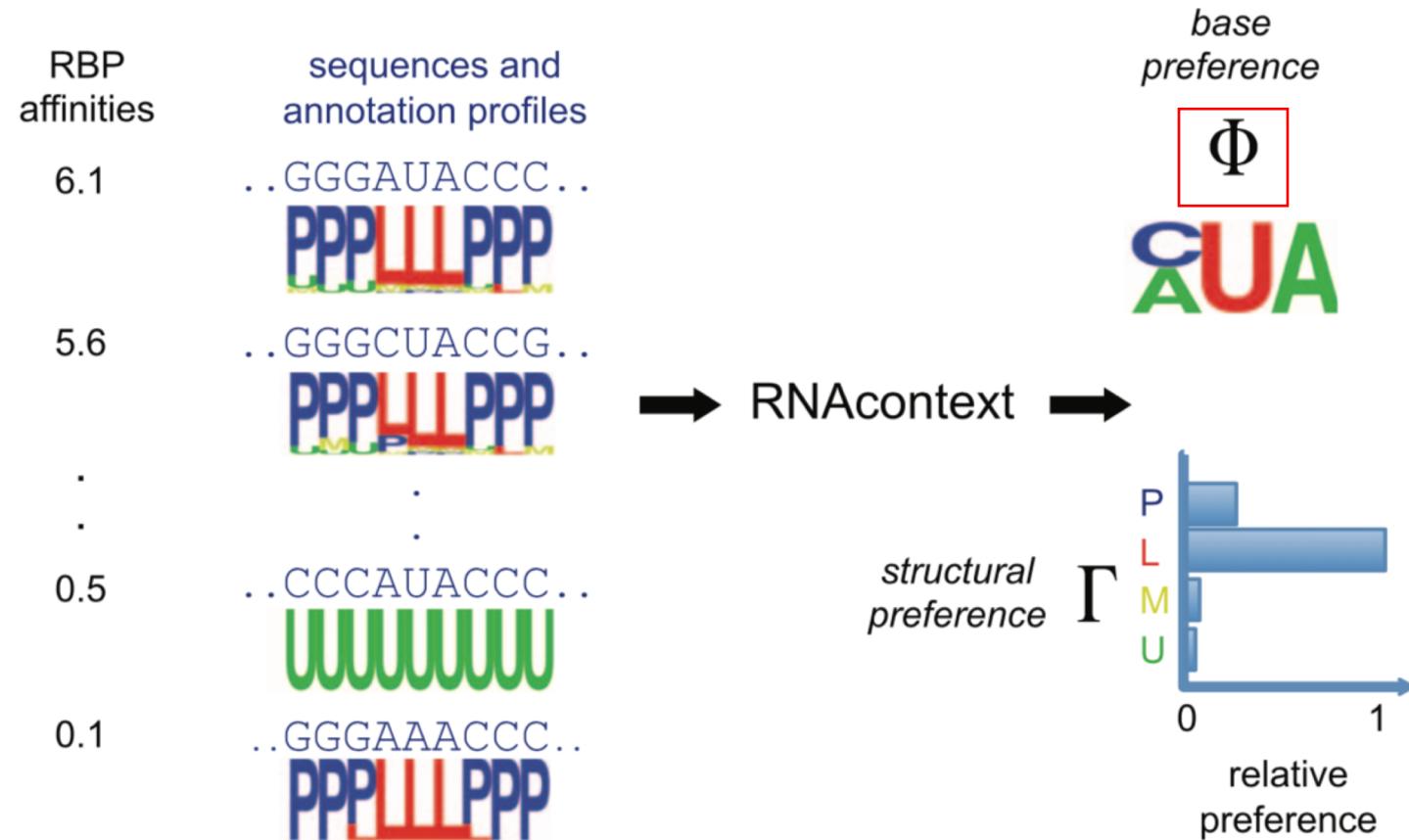
Background



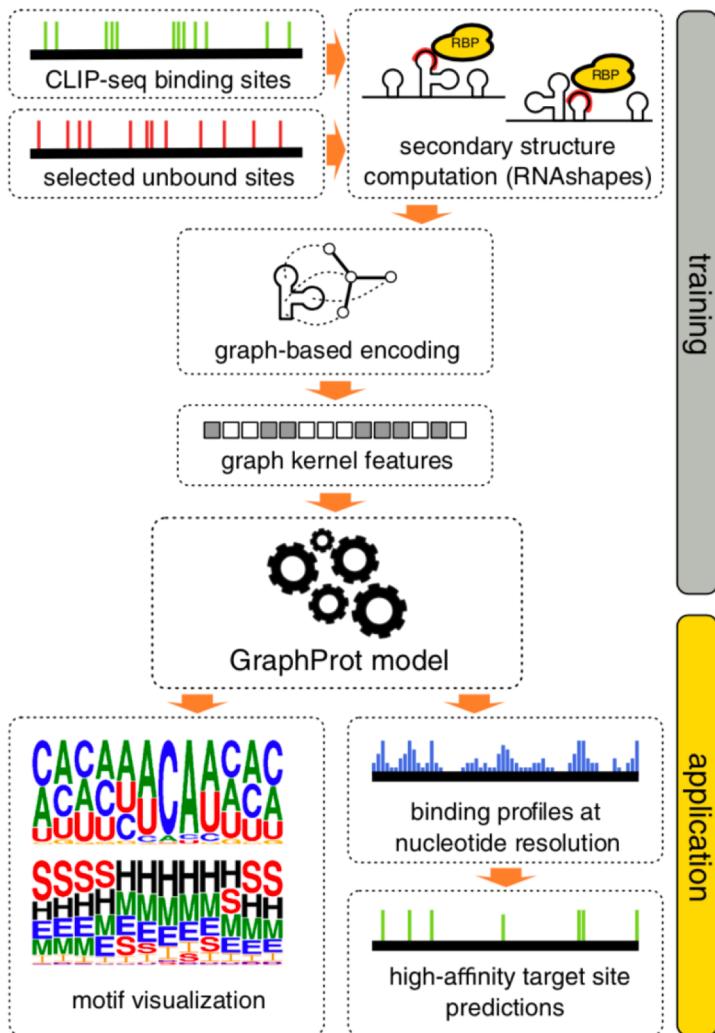
Related Work

- RNAcontext (2010)
- Graphprot (2014)
- Deepbind(2015)
- RCK(2016)

RNAcontext

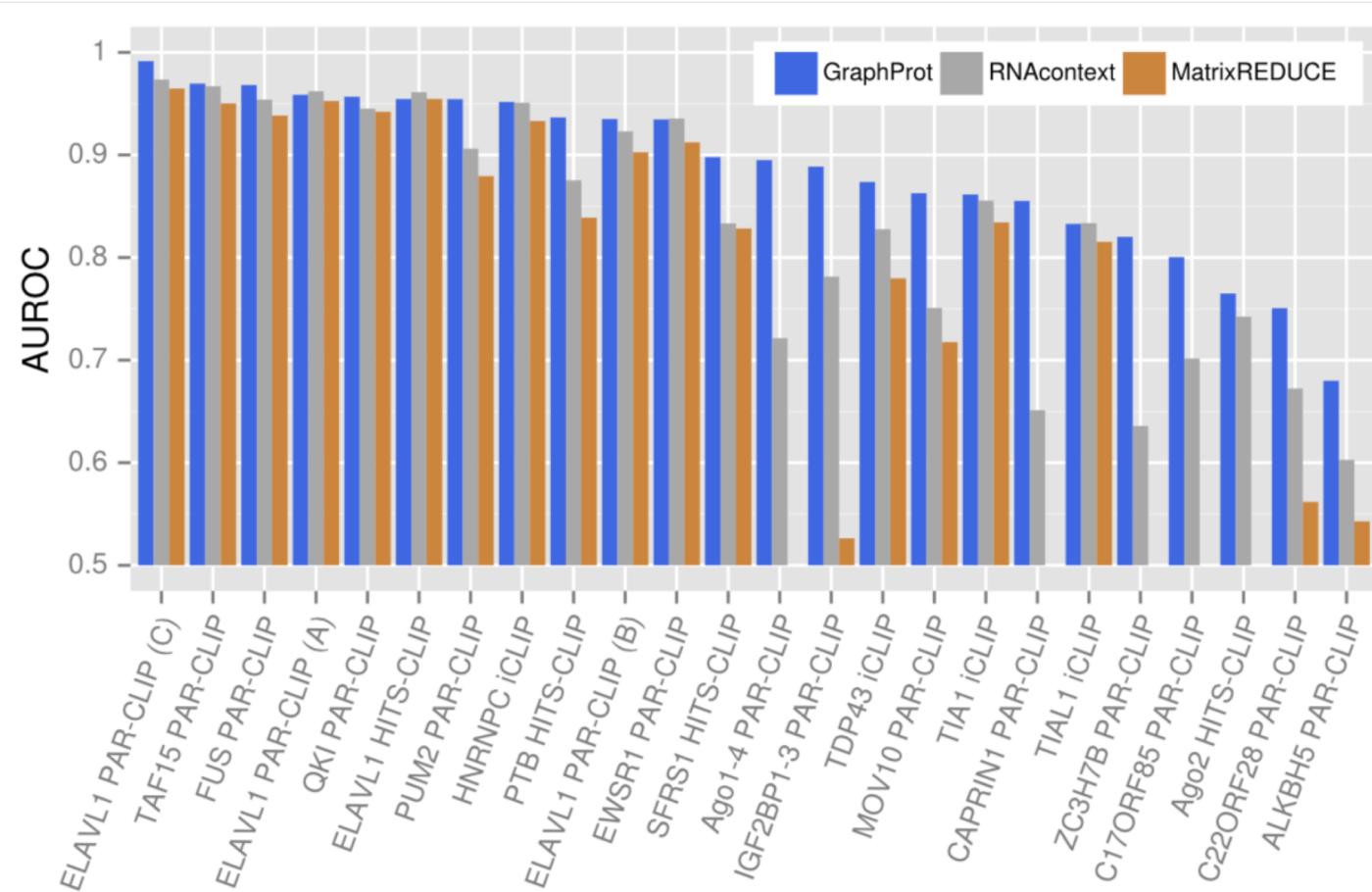


Graphprot

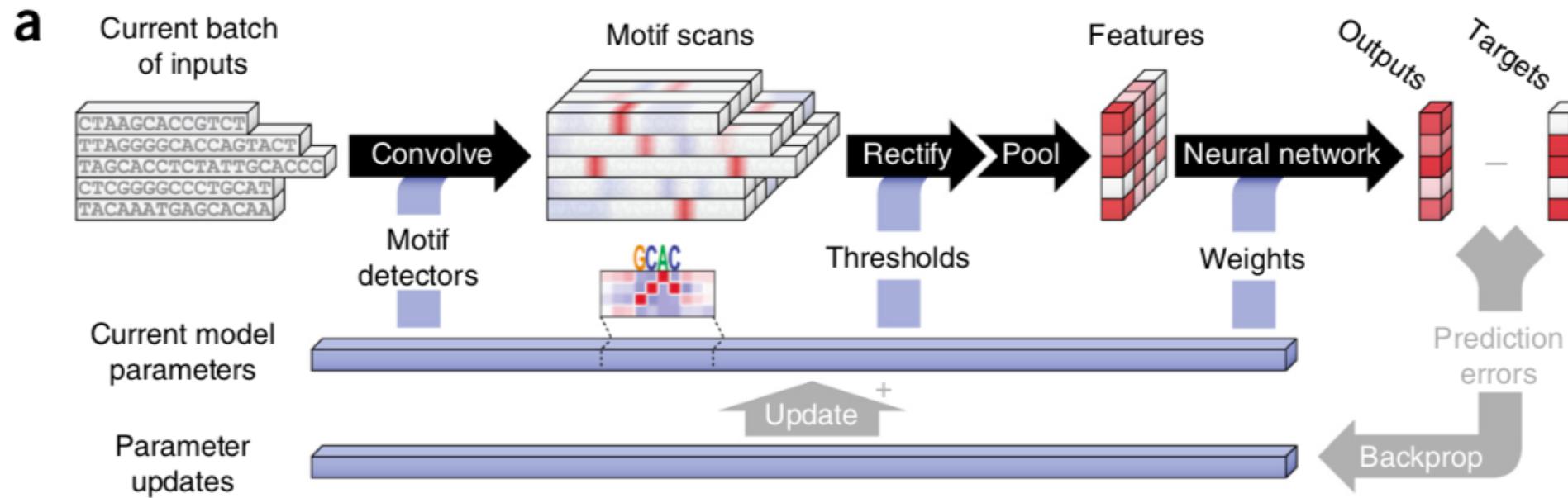


7 days

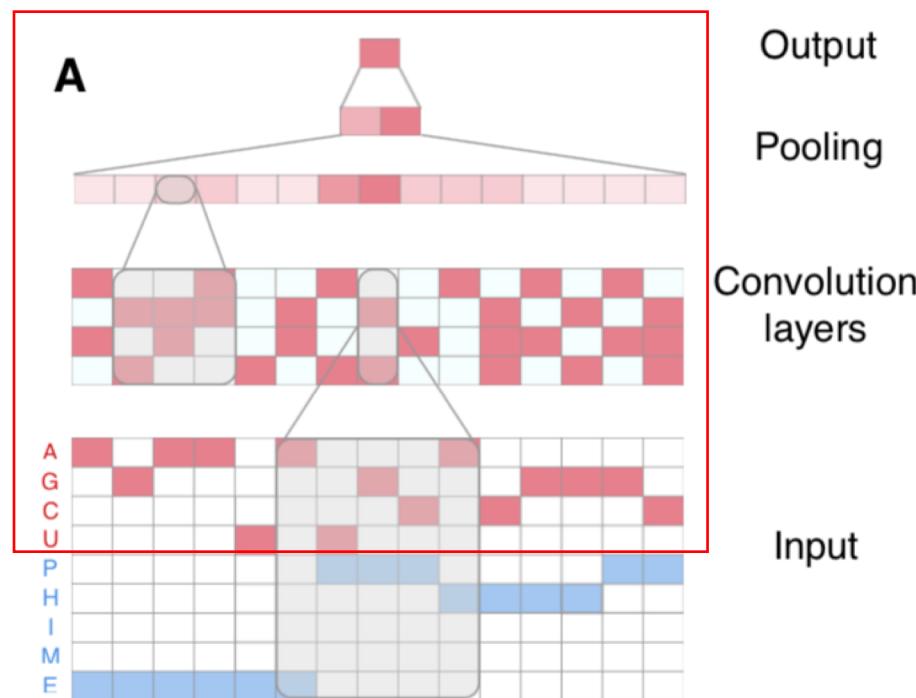
Graphprot



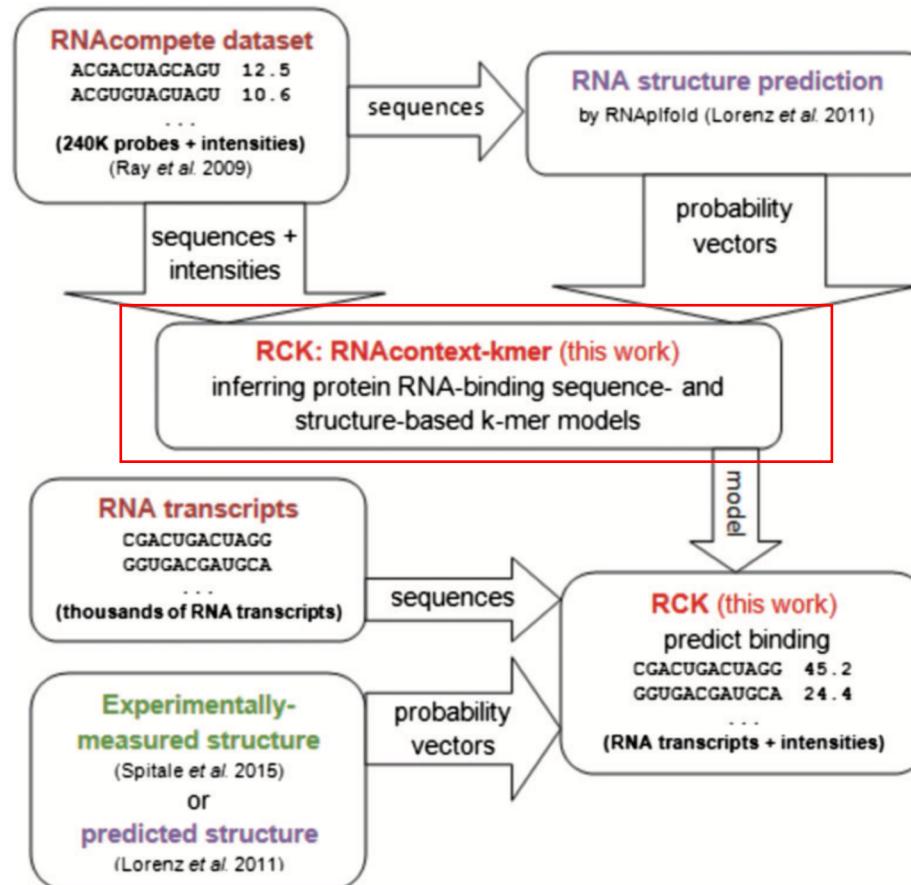
Deepbind



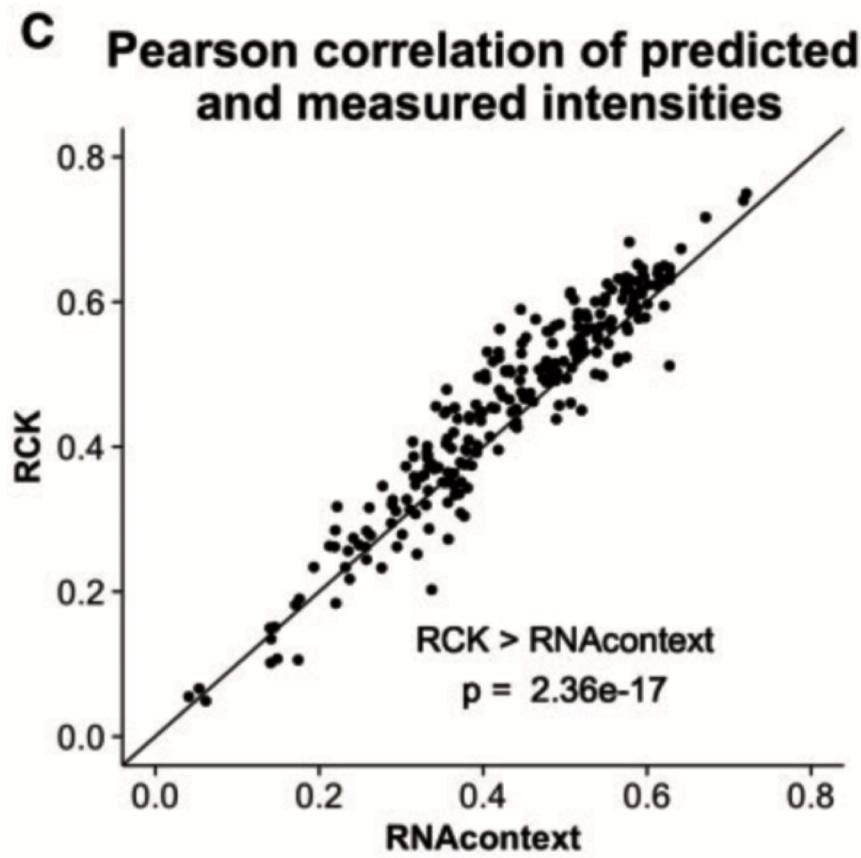
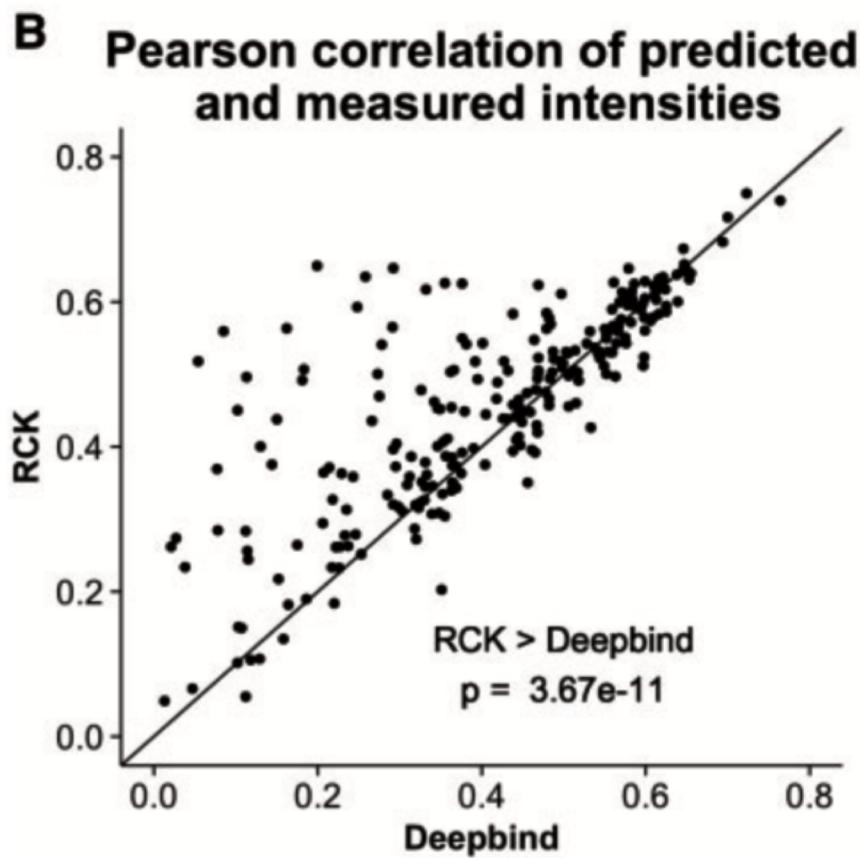
Deepbind



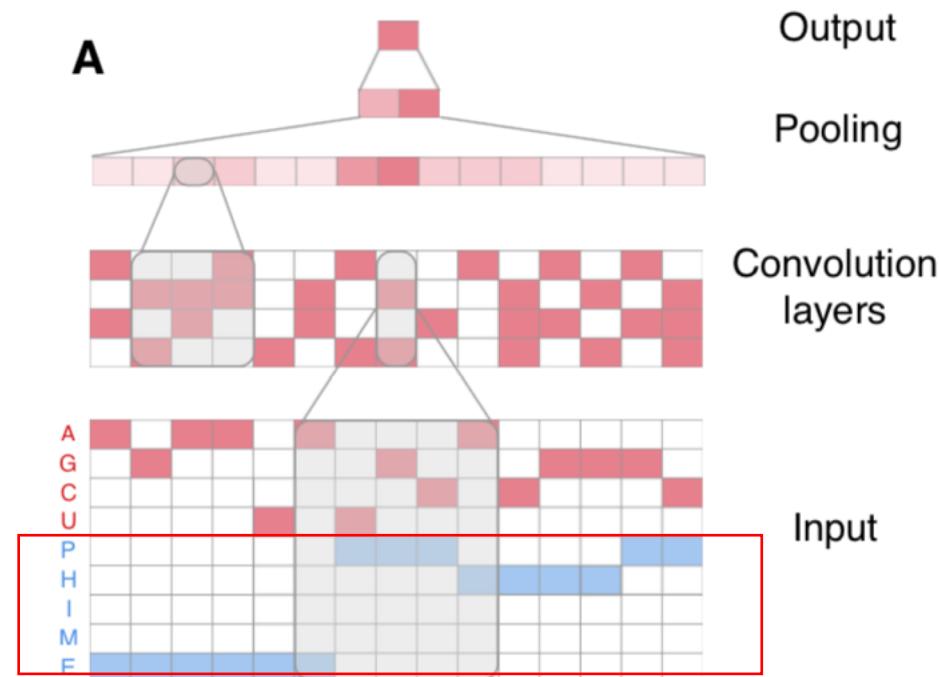
RCK



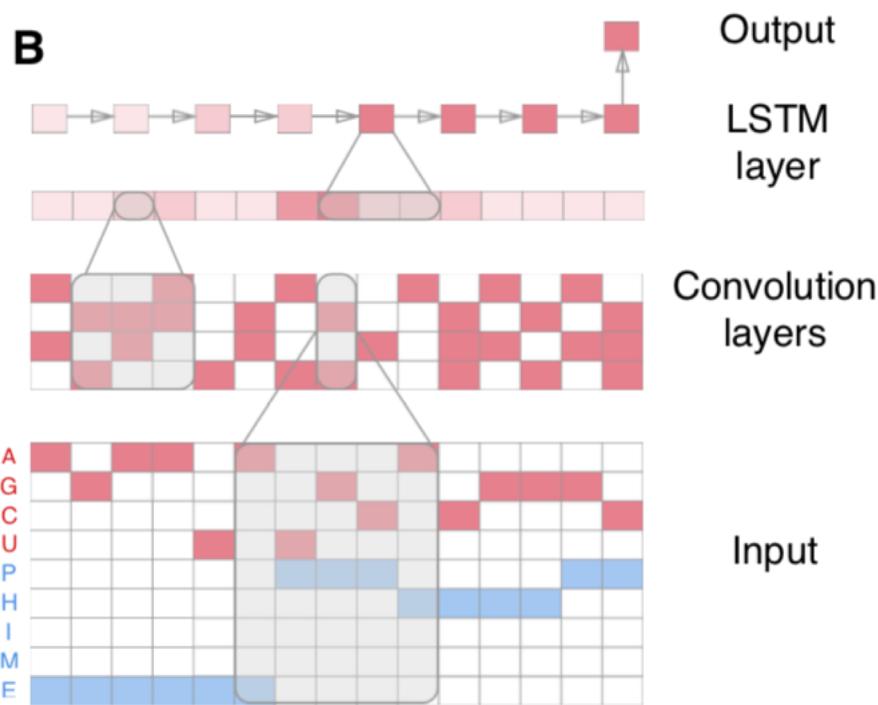
RCK



Method



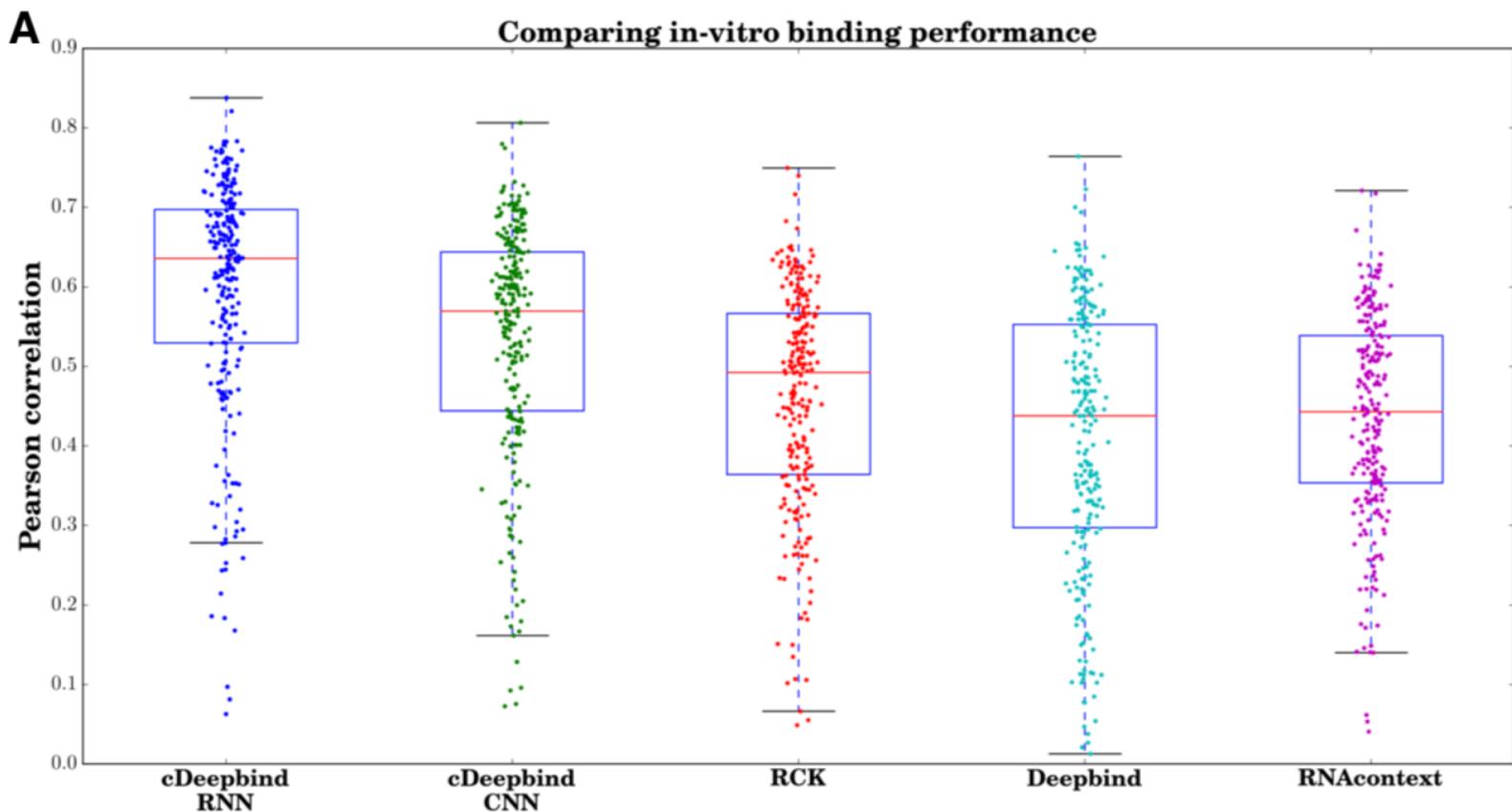
Method



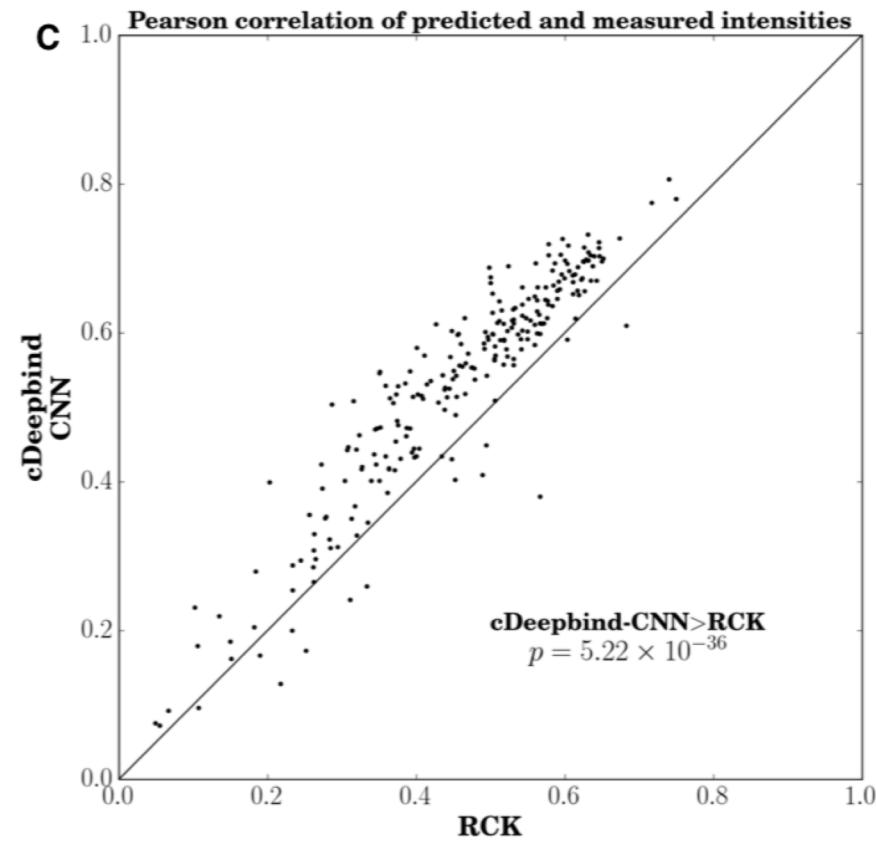
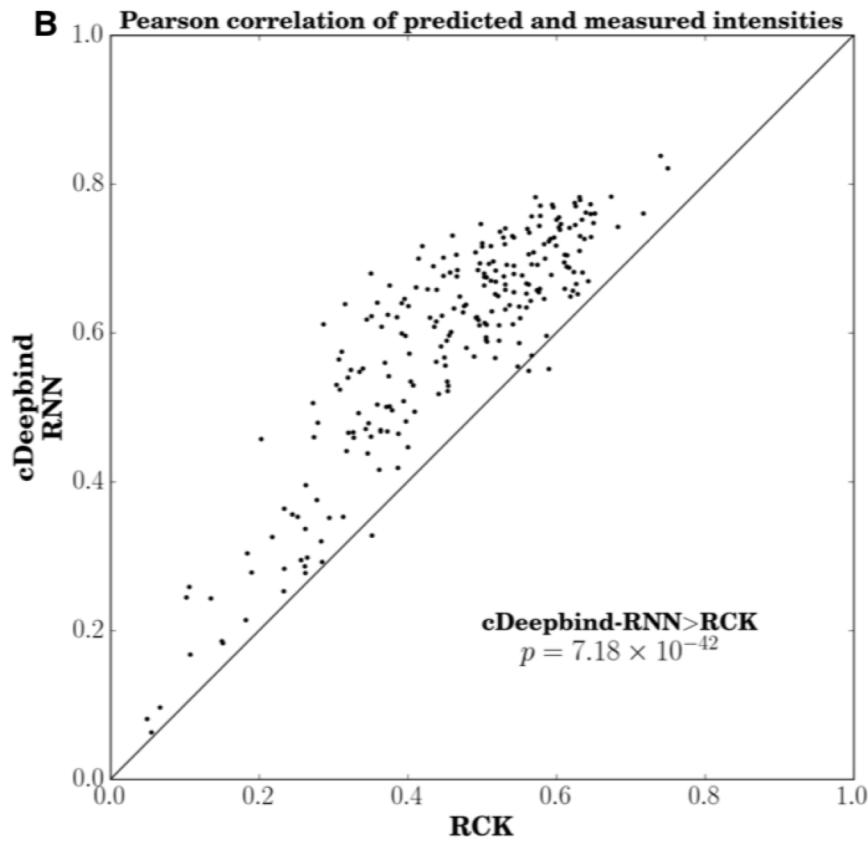
Hyperparameters

- Epochs: 15
- Filters width: 8-16
- Number of filters: 8-24
- Hidden units for the LSTM: 10-30
- Random sample 5 sets of parameters

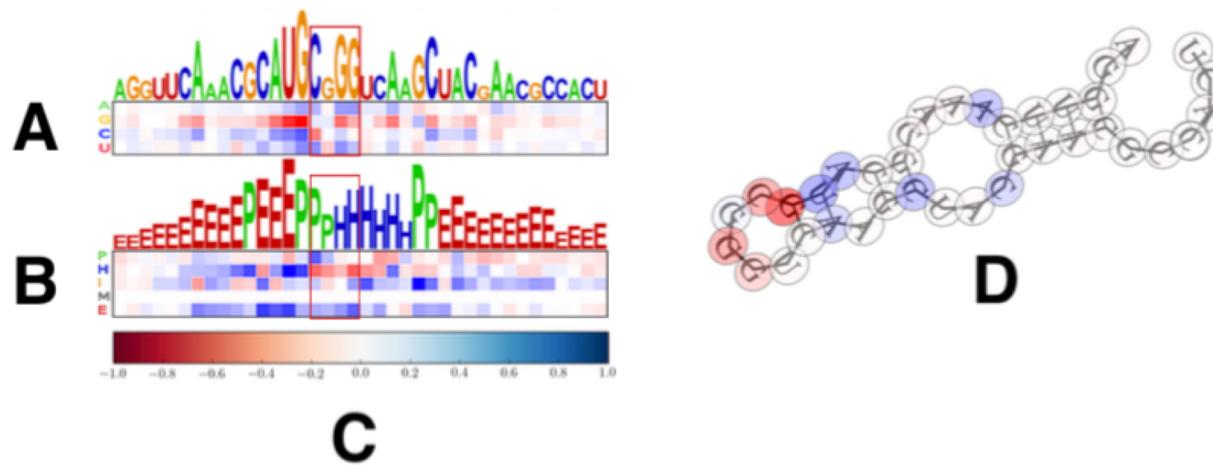
Results



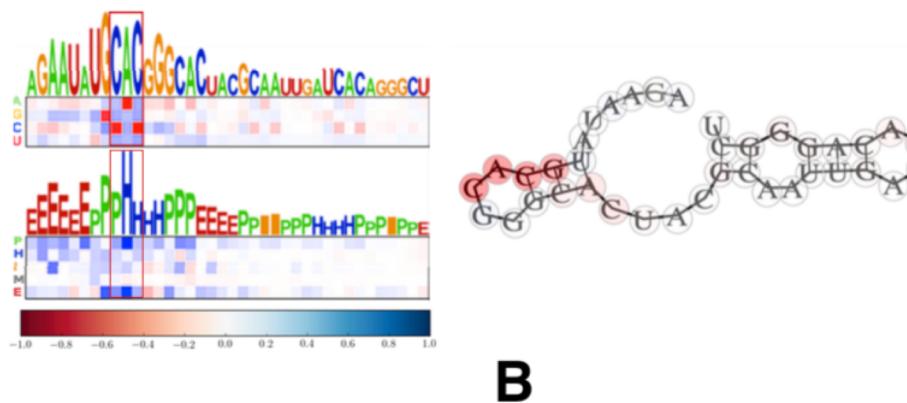
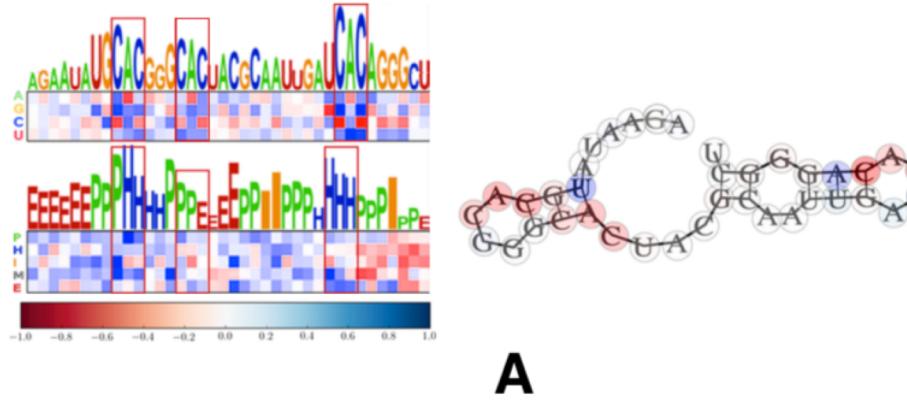
Results

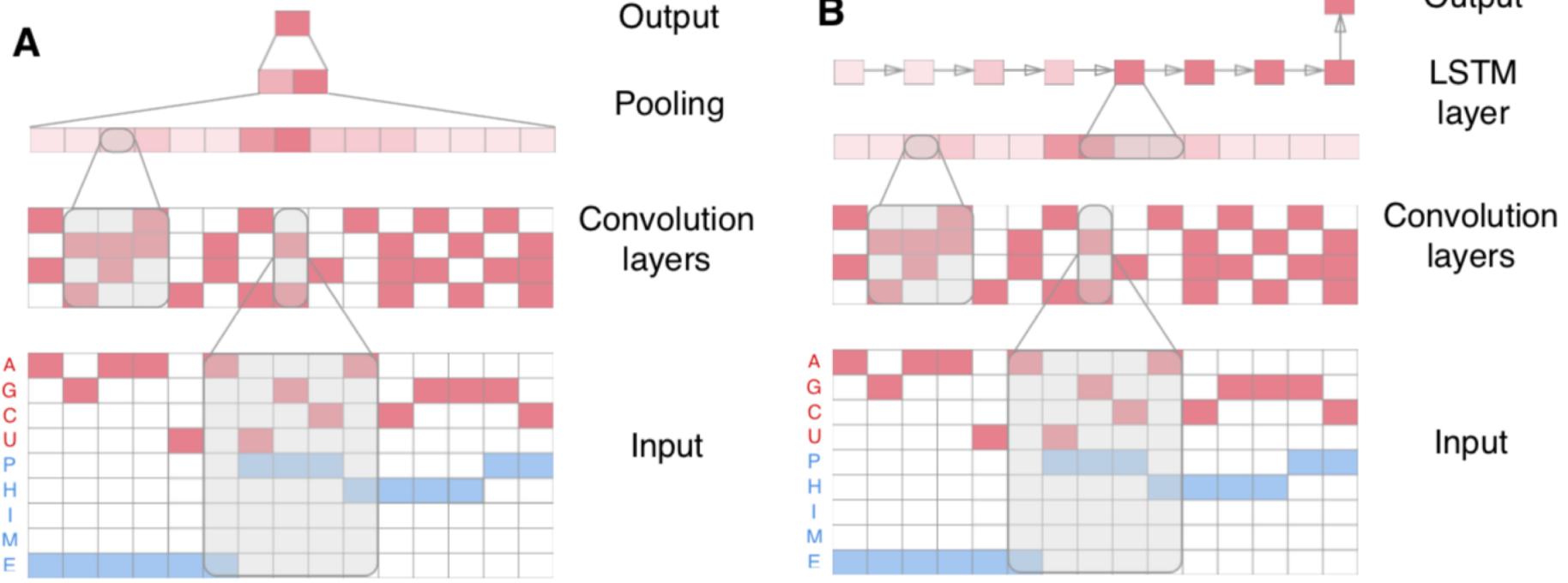


Results

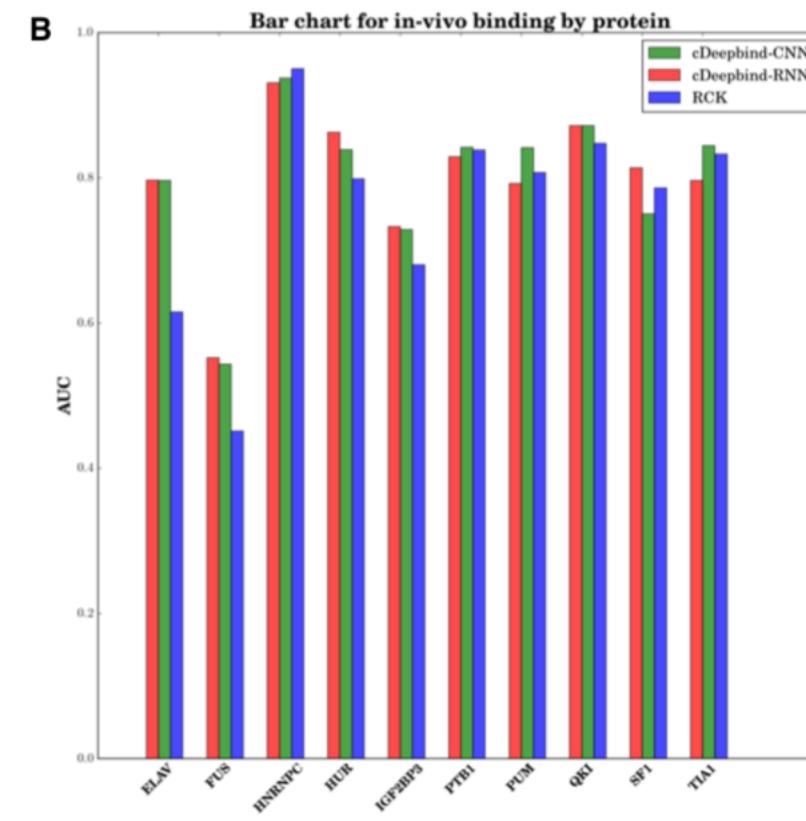
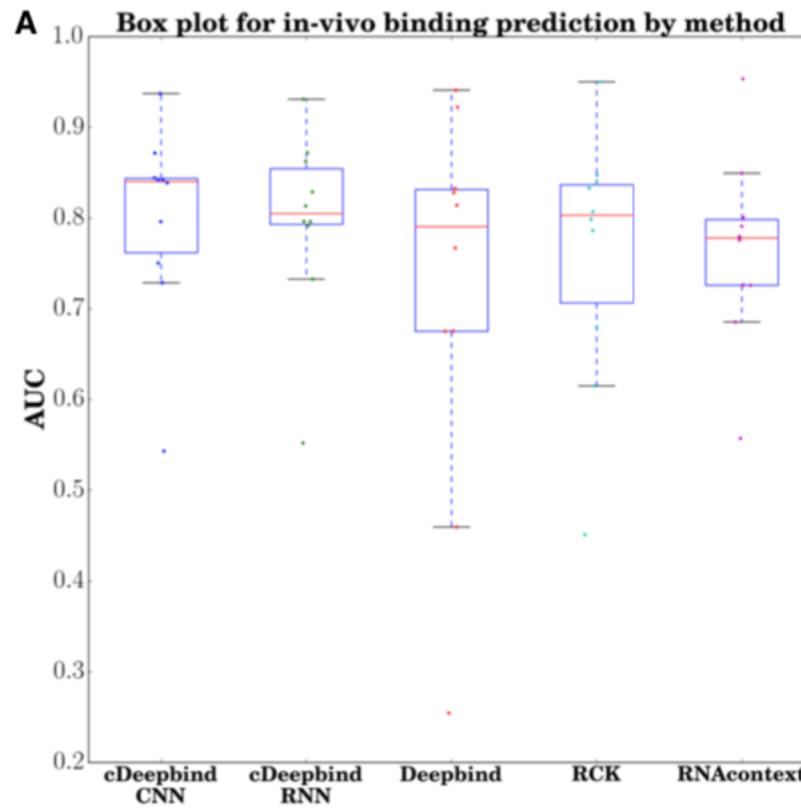


Results





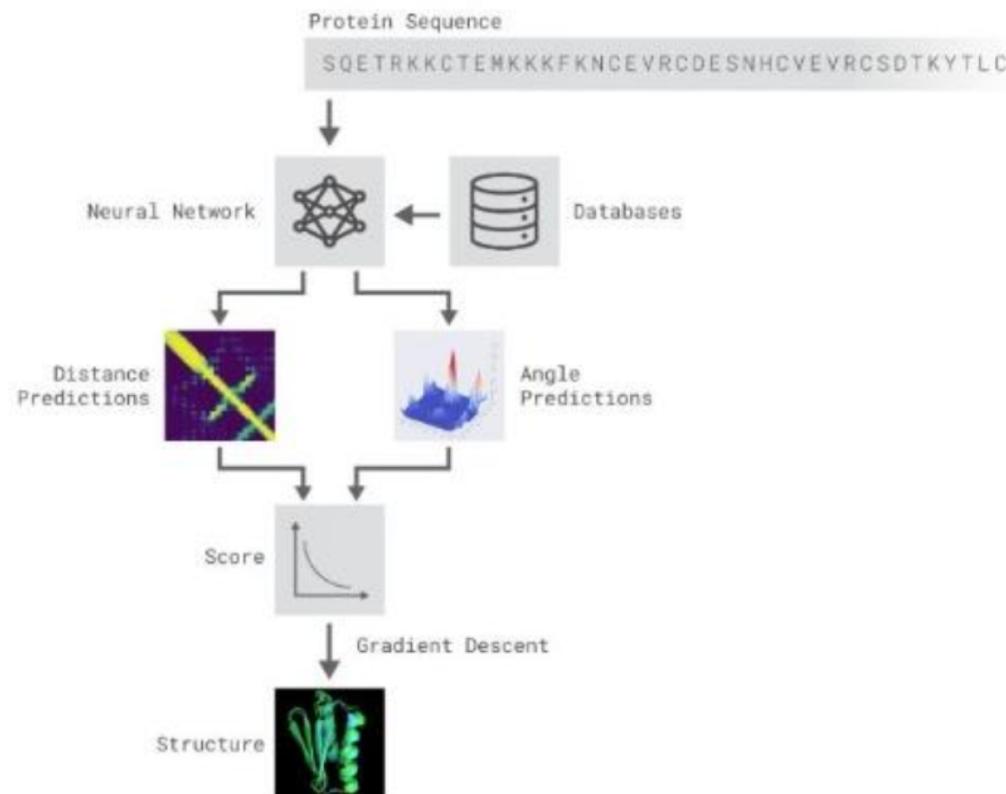
Result



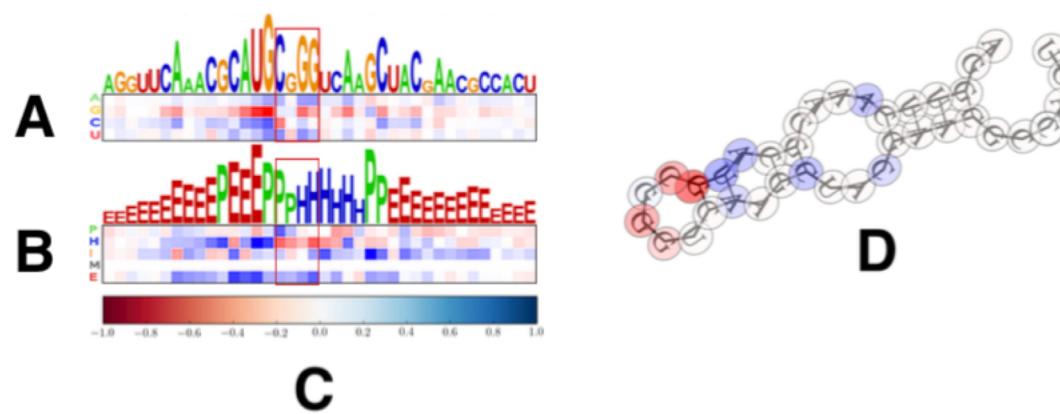
Reviews

- LSTM made an impressive performance
- Structure information made a significant improvement (0.594 vs 0.528)
- Hyperparameters regulation could be optimized
- New structure predict method could be applied
- Experiments may validate results better

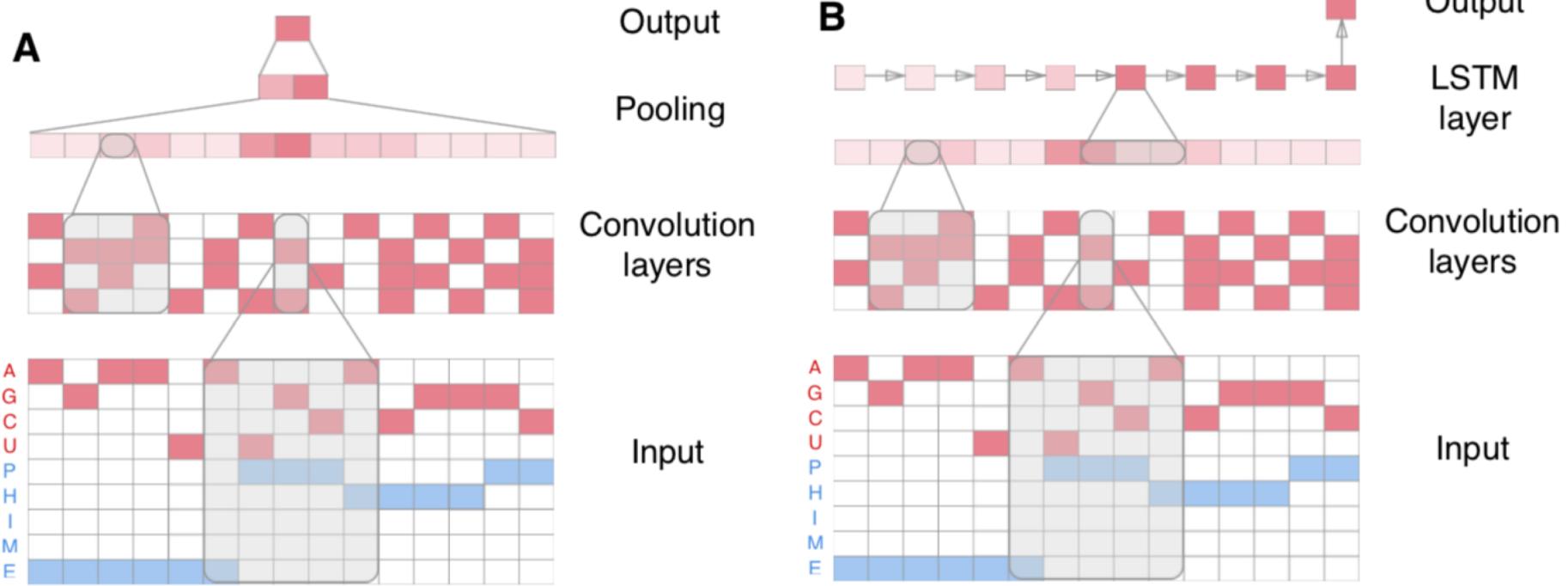
Alpha-fold



Possible experiment



Relation with my project



Thank you