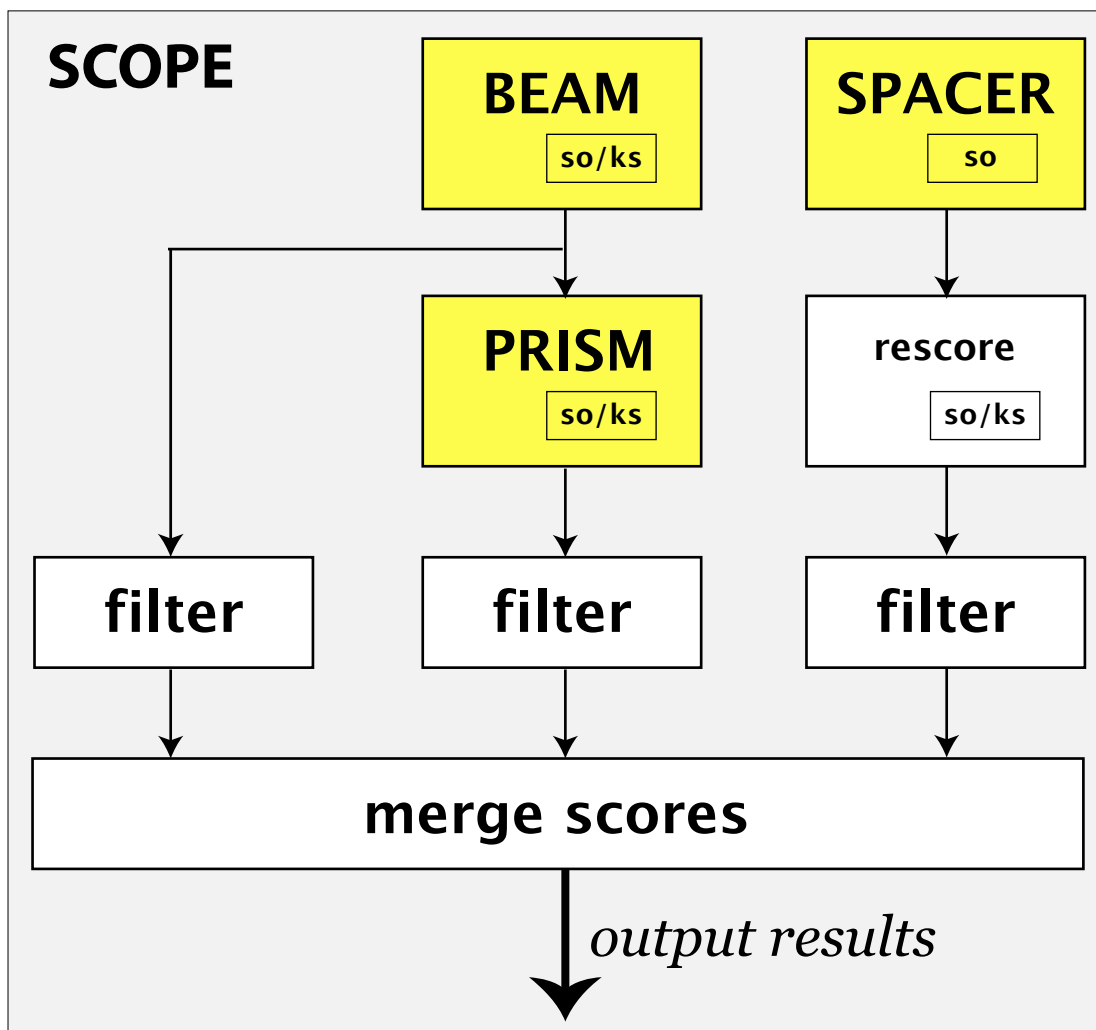


# 5

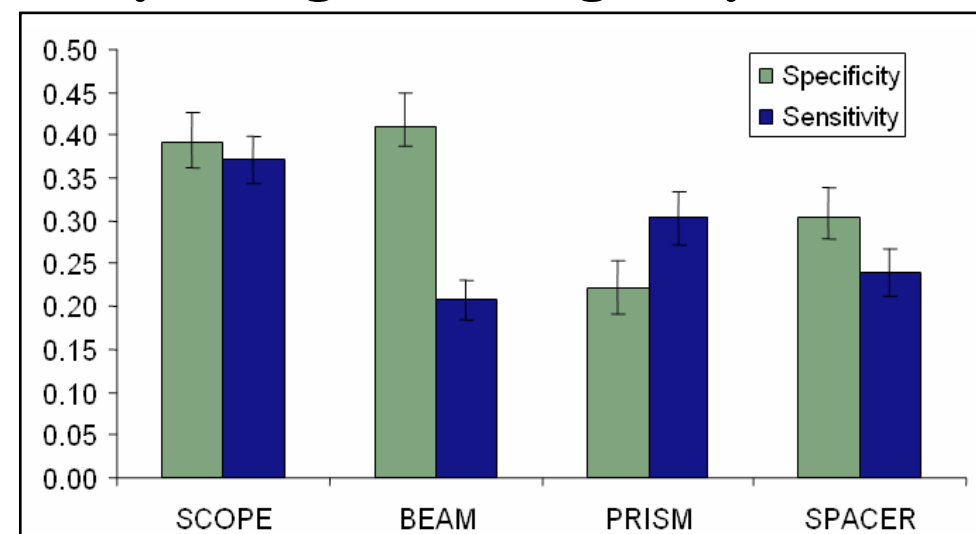
Each of the three algorithms is designed to find a particular type of motif and all three use the same scoring system.



This important fact allows us to merge the output from the three approaches as shown in **Figure 9**.

When comparing the output from the three algorithms, it is seen that

SCOPE generates the best overall specificity and sensitivity using 79 biologically verified regulons from *S. cerevisiae*, *E. coli*, *B. Subtilis*, and *D. melanogaster*



**Figure 10.** SCOPE is the best performer overall of the three algorithms

*S. cerevisiae*, *E. coli*, *B. Subtilis*, and *D. melanogaster* (**Figure 10**).

**Figure 11** shows the overall comparison with SCOPE winning 90% of the time.

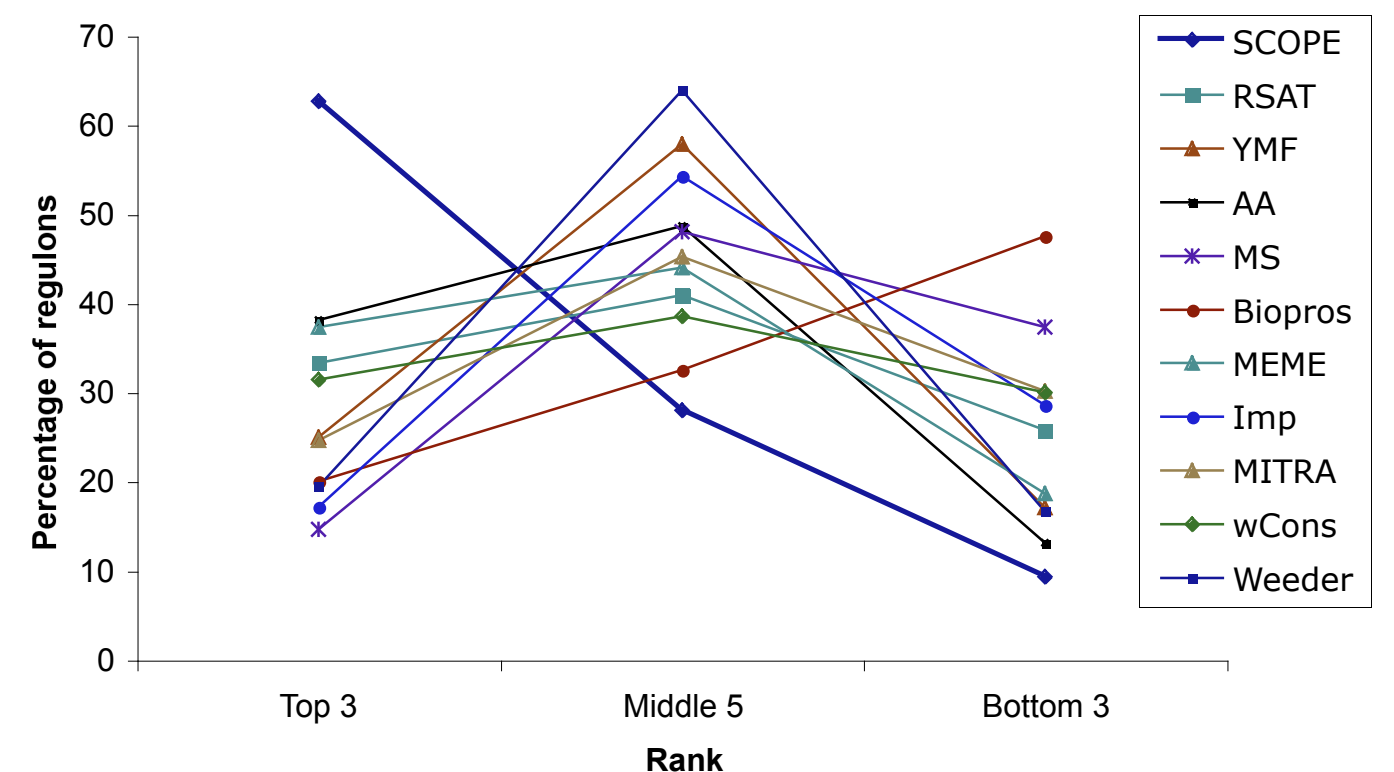
## SCOPE

was also compared to the 10 most popular motif finders currently available.

|                         | SCOPE | BEAM  | PRISM  | SPACER |
|-------------------------|-------|-------|--------|--------|
| Average                 | 0.24  | 0.17  | 0.15   | 0.17   |
| Stderr                  | 0.02  | 0.02  | 0.02   | 0.02   |
| Wins                    | 22    | 14    | 7      | 17     |
| scores $\geq 0.50$      | 8     | 8     | 6      | 5      |
| scores $\geq 0.33$      | 21    | 15    | 12     | 14     |
| scores $\geq 0.20$      | 39    | 23    | 19     | 26     |
| Regulons returned       | 78    | 78    | 78     | 78     |
| clear win for SCOPE vs  | -     | 28    | 27     | 19     |
| clear loss for SCOPE vs | -     | 6     | 0      | 3      |
| t-test p-value          | -     | 0.001 | 2 E-07 | 0.001  |

**Figure 11.** SCOPE does better than its component algorithms

**Figure 12** shows the percentage of regulons for which a given program's accuracy places it in the Top 3, Middle 5 or Bottom 3 relative to the other 10 programs. For 63% of the regulons, SCOPE is in the top three programs, while it is among the worst three programs for only 9% of the regulons.



**Figure 12.** Performance of SCOPE compared to other popular algorithms