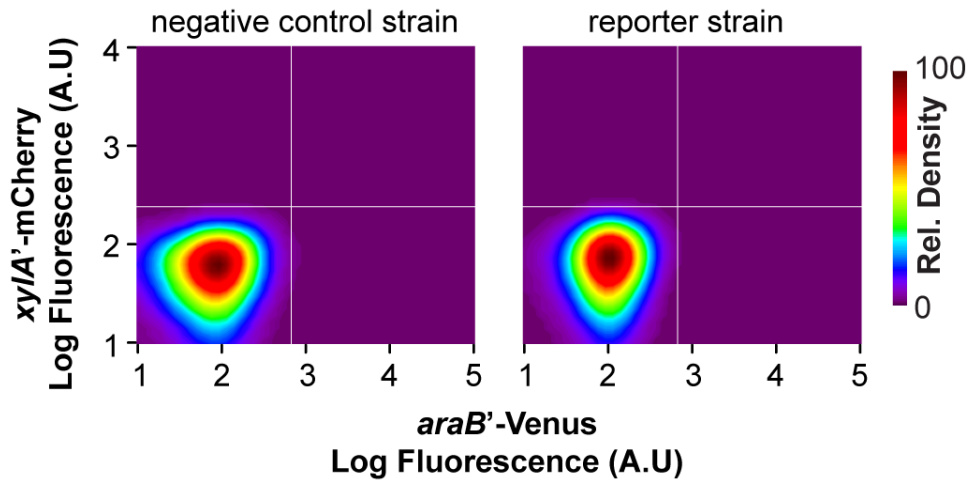


**SUPPLEMENTARY MATERIAL**

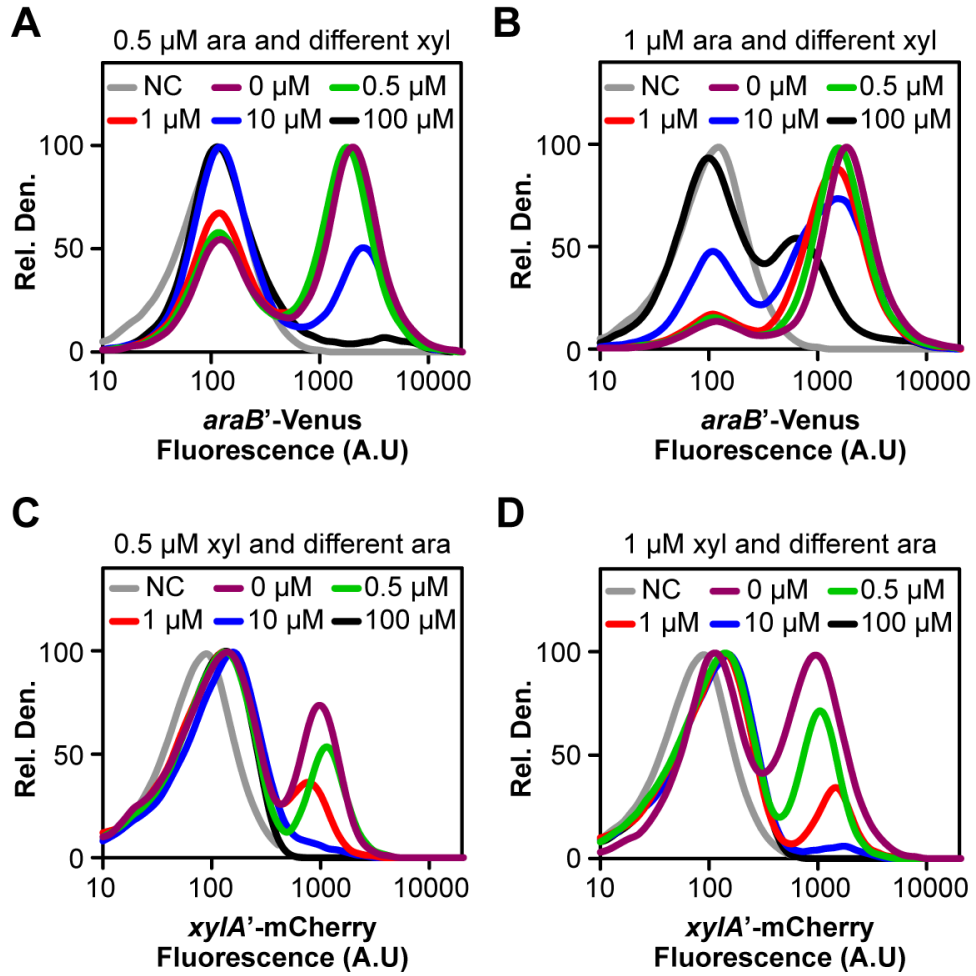
**Supplementary Figures S1-S4: Pages 2-5**

**Supplementary Table S1: Page 6**

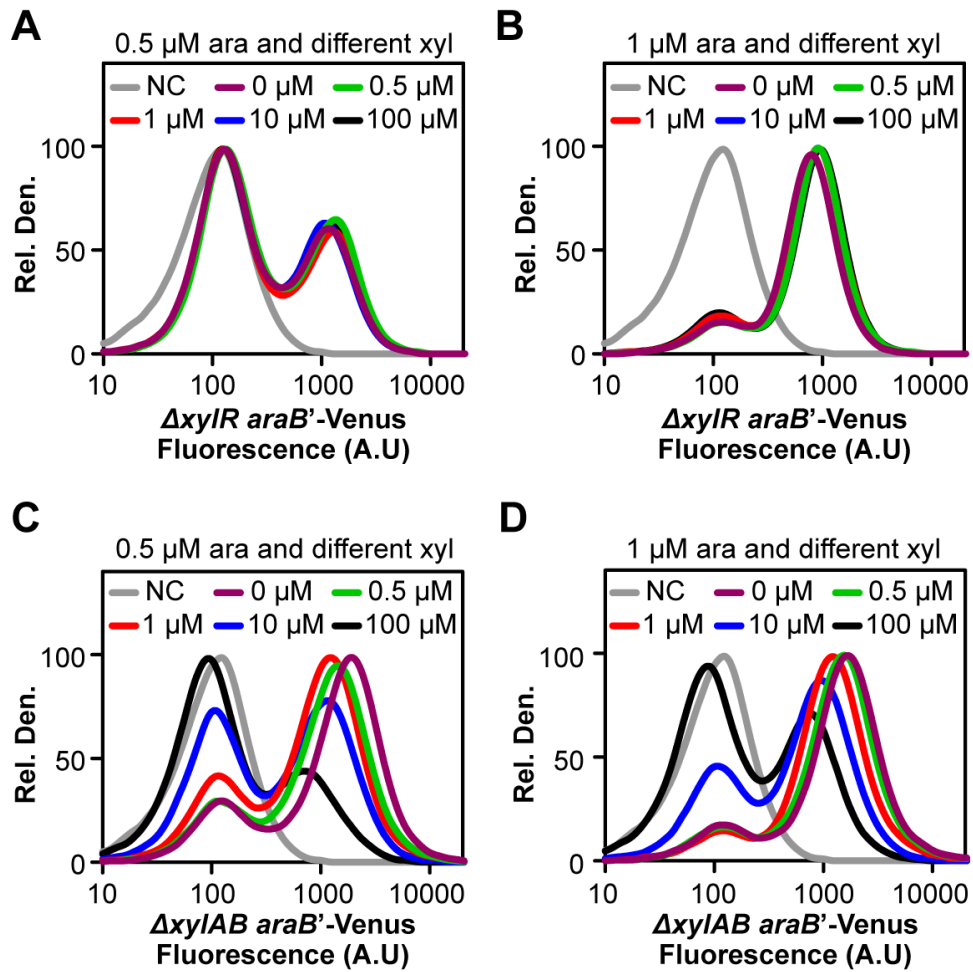
## SUPPLEMENTARY FIGURES



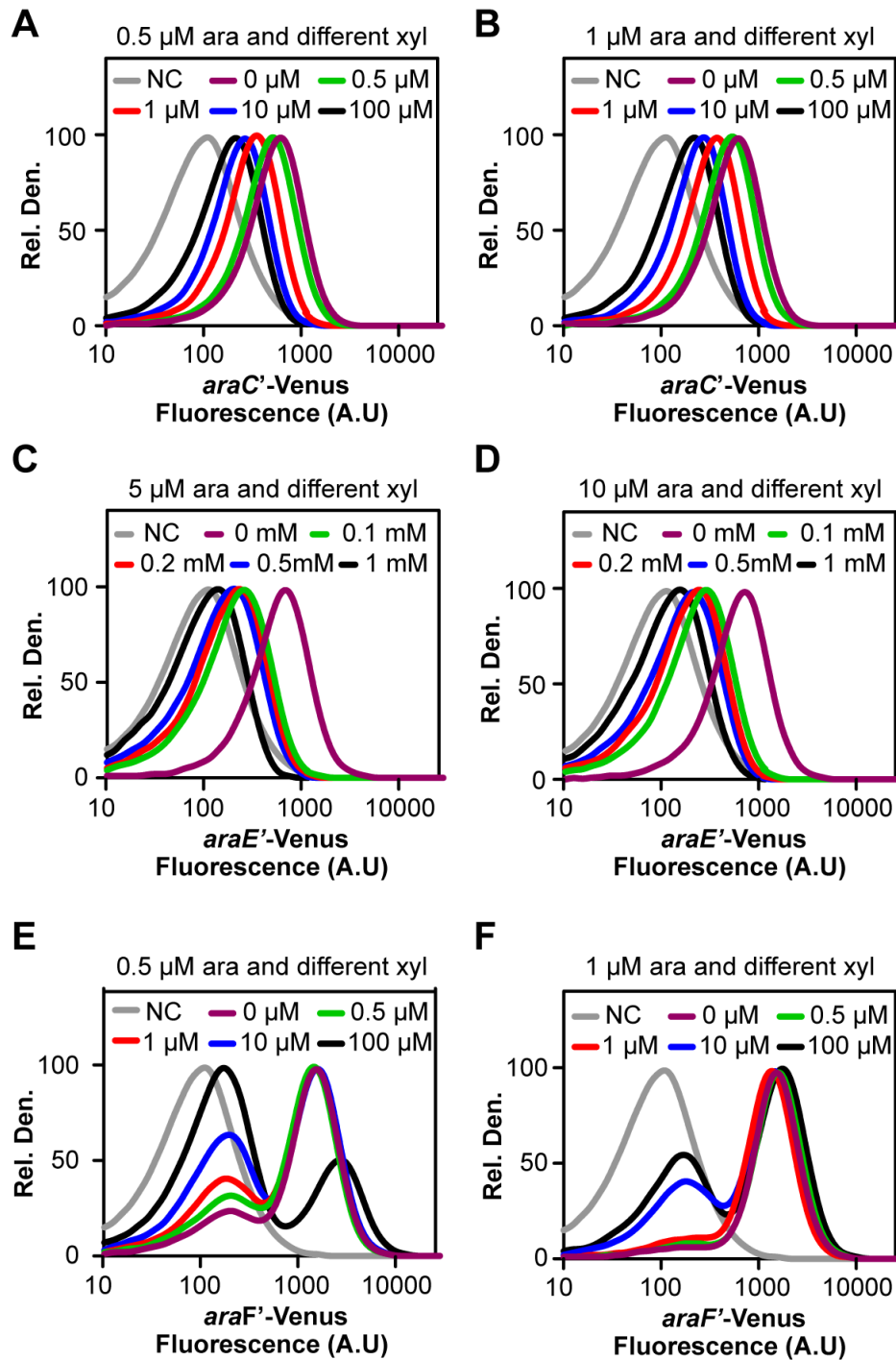
**Figure S1.** Cells grown without any sugar provide the same response as the negative control strain. The observed fluorescence level of the negative control strain was used as a reference for uninduced population of the reporter strain. The reporter strain contains single-copy, chromosomal transcriptional fusions of the  $P_{araB}$  promoter to the Venus fluorescent protein and the  $P_{xyIA}$  promoter to the mCherry fluorescent protein. The negative control strain lacks both fluorescent proteins.



**Figure S2.** Single-cell data for Figure 4. The negative control (NC) strain does not have the fluorescent reporter.



**Figure S3.** Single-cell data for Figure 5. The negative control (NC) strain does not have the fluorescent reporter.



**Figure S4.** Single-cell data for Figure 7. The negative control (NC) strain does not have the fluorescent reporter.

**SUPPLEMENTARY TABLES**

**Table S1:** Population distribution at various concentrations of arabinose and xylose obtained using quadrant gate in FCS Express version 4 (De Novo Software)

| Arabinose<br>( $\mu$ M) | Xylose<br>( $\mu$ M) | Both<br>Uninduced (%) | $P_{araB}$<br>Induced (%) | $P_{xyIA}$<br>Induced (%) | Both<br>Induced (%) |
|-------------------------|----------------------|-----------------------|---------------------------|---------------------------|---------------------|
| 0                       |                      | 99                    | 1                         | 0                         | 0                   |
| 0.1                     |                      | 98                    | 2                         | 0                         | 0                   |
| 0.25                    |                      | 72                    | 27                        | 0                         | 0                   |
| 0.5                     | 0                    | 45                    | 55                        | 0                         | 0                   |
| 0.75                    |                      | 29                    | 71                        | 0                         | 0                   |
| 1                       |                      | 24                    | 76                        | 0                         | 0                   |
| 10                      |                      | 3                     | 97                        | 0                         | 0                   |
| 100                     |                      | 3                     | 97                        | 0                         | 0                   |
|                         | 0                    | 99                    | 1                         | 0                         | 0                   |
|                         | 0.1                  | 99                    | 1                         | 0                         | 0                   |
|                         | 0.25                 | 98                    | 1                         | 1                         | 0                   |
| 0                       | 0.5                  | 78                    | 0                         | 22                        | 0                   |
|                         | 0.75                 | 72                    | 0                         | 28                        | 0                   |
|                         | 1                    | 59                    | 0                         | 41                        | 0                   |
|                         | 10                   | 17                    | 0                         | 83                        | 0                   |
|                         | 100                  | 0                     | 0                         | 99                        | 1                   |
|                         | 0                    | 38                    | 62                        | 0                         | 0                   |
|                         | 0.1                  | 35                    | 64                        | 0                         | 0                   |
|                         | 0.25                 | 36                    | 62                        | 1                         | 1                   |
| 0.5                     | 0.5                  | 34                    | 54                        | 6                         | 6                   |
|                         | 0.75                 | 33                    | 50                        | 10                        | 8                   |
|                         | 1                    | 31                    | 47                        | 12                        | 10                  |
|                         | 10                   | 14                    | 6                         | 53                        | 27                  |
|                         | 100                  | 0                     | 0                         | 86                        | 14                  |
|                         | 0                    | 23                    | 77                        | 0                         | 0                   |
|                         | 0.1                  | 19                    | 81                        | 0                         | 0                   |
|                         | 0.25                 | 19                    | 79                        | 0                         | 2                   |
|                         | 0.5                  | 21                    | 69                        | 3                         | 7                   |
| 1                       | 0.75                 | 19                    | 64                        | 6                         | 12                  |
|                         | 1                    | 18                    | 60                        | 8                         | 14                  |
|                         | 10                   | 7                     | 5                         | 40                        | 48                  |
|                         | 100                  | 0                     | 0                         | 81                        | 19                  |