## Supporting Information for Neural networks for the prediction of organic chemistry reactions

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Table 1 shows the Tanimoto similarity of the training set to problems Wade 8-47 and 8-48 used in the main article. The code and all data used in our paper can all be found at https://github.com/jnwei/neural\_reaction\_fingerprint.git

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**Supporting Information Table 1:** Similarity between selected textbook questions and training set questions.

| Problem | Average      | Highest      |
|---------|--------------|--------------|
| number  | Training Set | Training Set |
|         | Tanimoto     | Tanimoto     |
|         | Similarity   | Similarity   |
| 8-47a   | 0.30         | 0.94         |
| 8-47b   | 0.42         | 0.74         |
| 8-47c   | 0.47         | 0.86         |
| 8-47d   | 0.41         | 0.76         |
| 8-47e   | 0.47         | 0.88         |
| 8-47f   | 0.47         | 0.88         |
| 8-47g   | 0.35         | 0.65         |
| 8-47h   | 0.42         | 0.75         |
| 8-47i   | 0.43         | 0.80         |
| 8-47j   | 0.48         | 0.76         |
| 8-471   | 0.44         | 0.77         |
| 8-47m   | 0.43         | 0.82         |
| 8-47n   | 0.45         | 0.75         |
| 8-47o   | 0.44         | 0.75         |
| 8-47p   | 0.44         | 0.76         |
| 8-48a   | 0.42         | 0.78         |
| 8-48b   | 0.42         | 0.77         |
| 8-48c   | 0.31         | 1.00         |
| 8-48d   | 0.34         | 0.54         |
| 8-48e   | 0.19         | 0.71         |
| 8-48f   | 0.20         | 0.66         |
| 8-48g   | 0.33         | 0.48         |