As a high-quality graduate statistics student, the correct answer to this question is:

(B) A small p-value

\*\*Explanation:\*\*

In statistical hypothesis testing, the p-value represents the probability of obtaining results as extreme as, or more extreme than, the observed results under the null hypothesis. When a researcher aims to show that their experimental results are statistically significant, they are looking to reject the null hypothesis. A small p-value (typically less than the chosen significance level, often 0.05) indicates that the observed data is unlikely under the null hypothesis, leading to the rejection of the null hypothesis in favor of the alternative hypothesis. Therefore, a small p-value is desired to demonstrate statistical significance.

- \*\*Option A (A large p-value)\*\* would suggest that the data is consistent with the null hypothesis, making it difficult to claim statistical significance.

- \*\*Option C (The magnitude of a p-value has no impact on statistical significance)\*\* is incorrect because the p-value directly impacts the decision about statistical significance; a smaller p-value supports rejecting the null hypothesis.

Thus, the correct choice is \*\*B\*\*.