Davenas paper:

Strengths
1. A new finding is presented
2. Proper negative controls were used in most experiments- water, albumin, IgG against IgG rather than IgE
3. Experiments of counting basophil degranulation at different dilutions and treatments were blinded
4. Experiments were repeated
5. Arguments that dilutions were properly done are strong
6. Data in Table 1 show good reproducibility
7. Several different stimuli for degranulation in addition to anti-IgE were used
8. Attempts were made (by electrophoresis) to demonstrate no presence of anti-IgE immunoglobulins at high dilutions of anti-IgE anti-serum
9. The authors tried to rule out the possibility of experimental error
10. Paper had a starting observation and hypothesis
11. A hypothesis was proposed to explain the results
12. Careful attention was paid to preparation of dilutions, with changing of pipet tips between each dilution.

Weaknesses
1. Data observed have no known physiologic explanation
2. Representative experiments were shown, not a summary of all experiments performed
3. Assay used is manual rather than automated, which suggests observer variability
4. Assay does not account for, and so could be affected by, different numbers of basophils potentially plated in each well
5. Assay is an indirect measure of basophil degranulation, not a direct measure
6. Assay counts only small numbers of cells per condition
7. Results are given as mean plus/minus SE rather than SD
8. Methods for assessment by collaborators at other sites not described clearly- what was replicated?
9. Statistical analyses are vague in many places
10. Attempt to show absence of anti-IgE in dilutions did not use sensitive methods
11. Some experiments not well controlled or described (e.g., “almost identical” experiment of gel without human serum albumin)
12. Degranulation at any point in the dilution curve is considered a reproducible finding when the dilution at which it occurs may matter
13. Lack of description of characteristics of assay used (reproducibility, variability, cv)
14. Many results mentioned in the paper were not shown. E.g, use of different stimuli for degranulation, studies of the effect of vortexing
15. Several references referred to unpublished results (although this is mostly in the speculative part of the paper)
16. No clearly defined postulated mechanisms of data, especially oscillations of basophil degranulation at different dilutions of anti-IgE anti-serum
17. The underlying motivation for studying whether water has memory of exposure to anti-IgE is not explained.