Soft Matter

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Supplementary information: Geometric effects in random assemblies of ellipses

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1. Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.2$.
2. Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.35$.
3. Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.5$.
4. Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.65$.
5. Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.8$.
6. Flowchart of the algorithm used to generate assemblies.
7. Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.2$.
8. Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.35$.
9. Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.5$.
10. Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.65$.
11. Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.8$.
12. Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.2$.
13. Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.35$.
14. Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.5$.
15. Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.65$.
16. Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.8$.
17. Distributions and standardised distributions of selected morphological measures for all studied ellipse assemblies.
18. Details of fits of gamma distribution to the cell elongation measure.
19. Comparison between shape-based and standard Voronoi tessellations.

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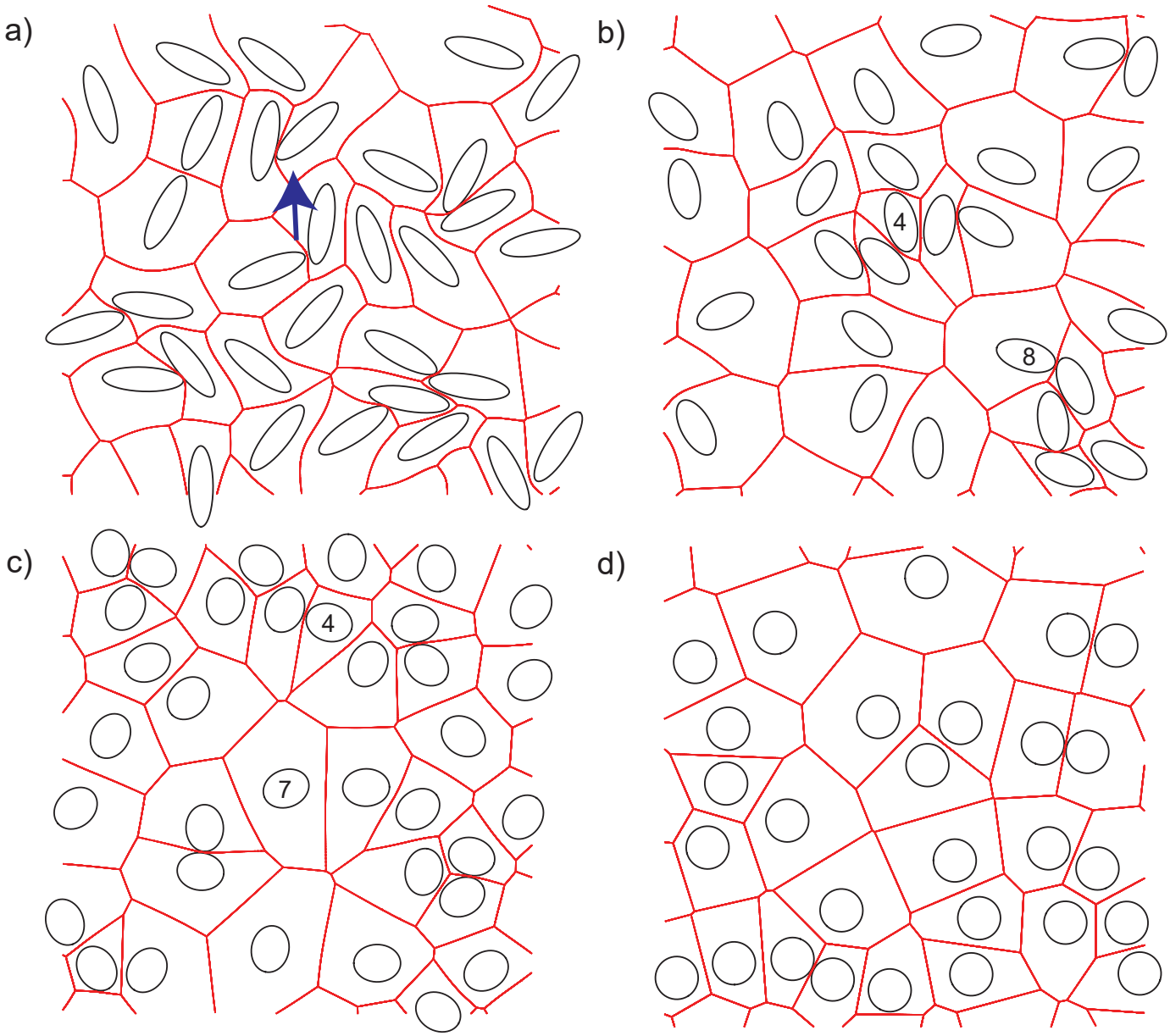

Fig. 1 Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.2$. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

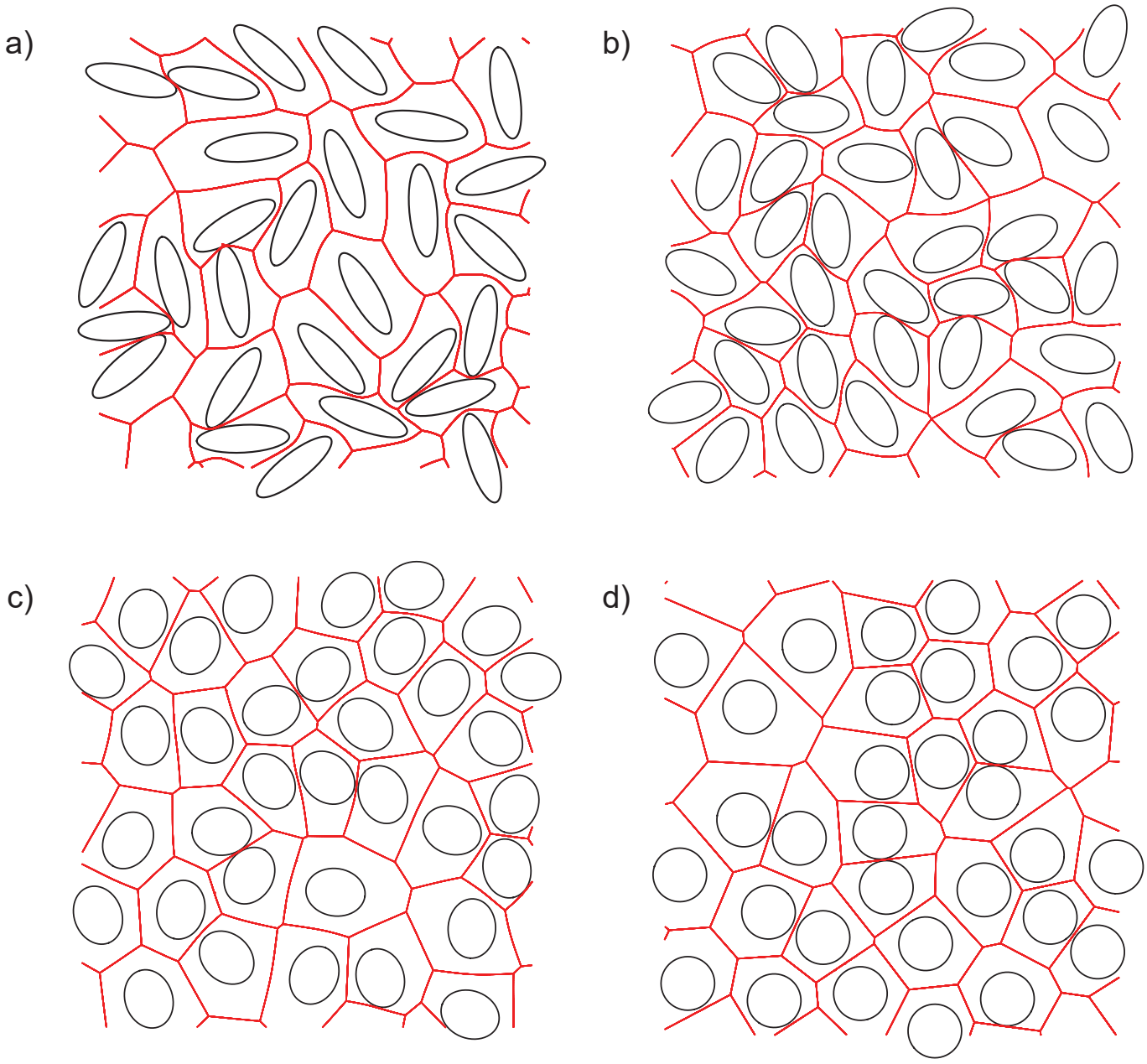

Fig. 2 Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.35$. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

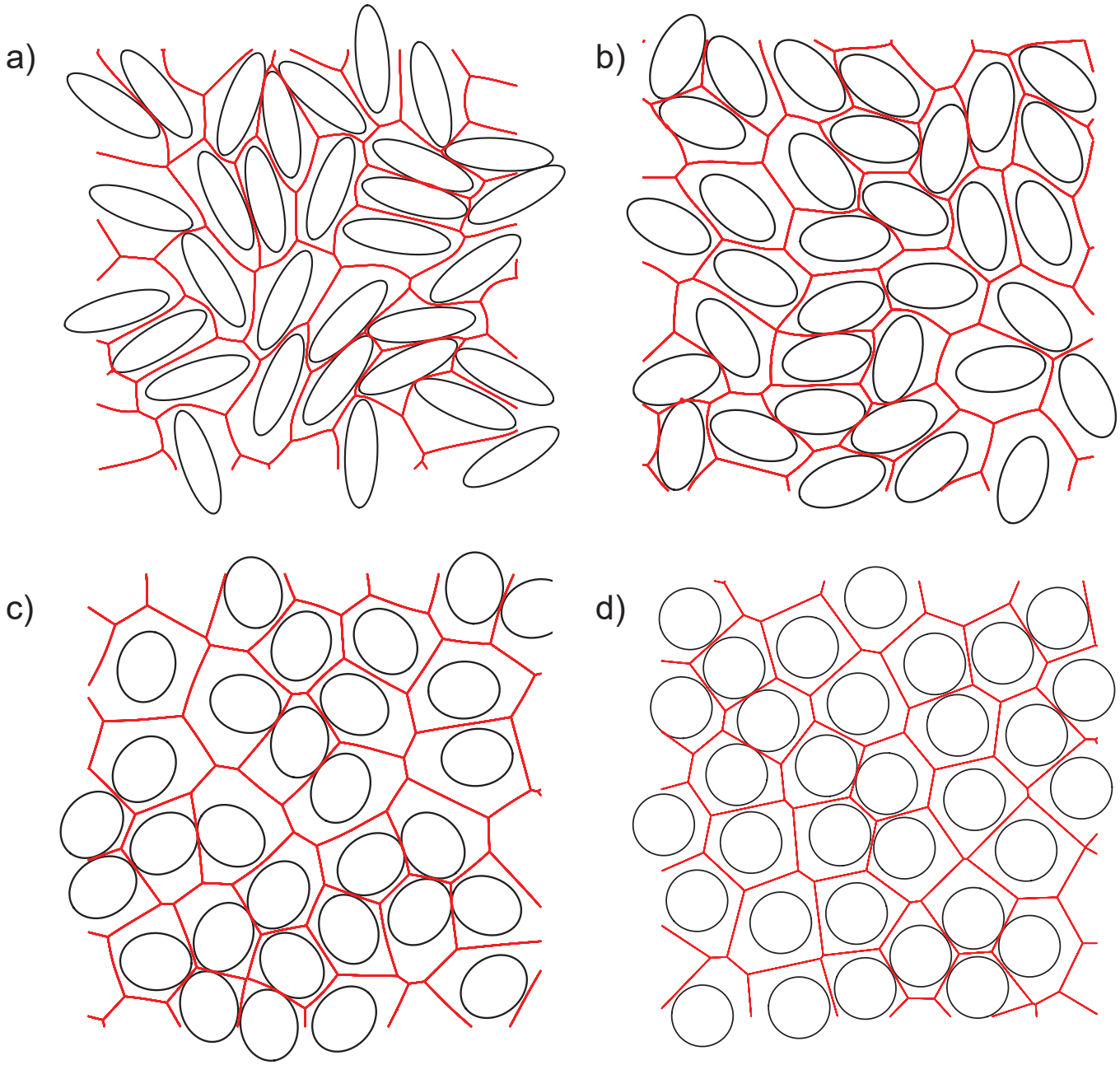

Fig. 3 Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.5$. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

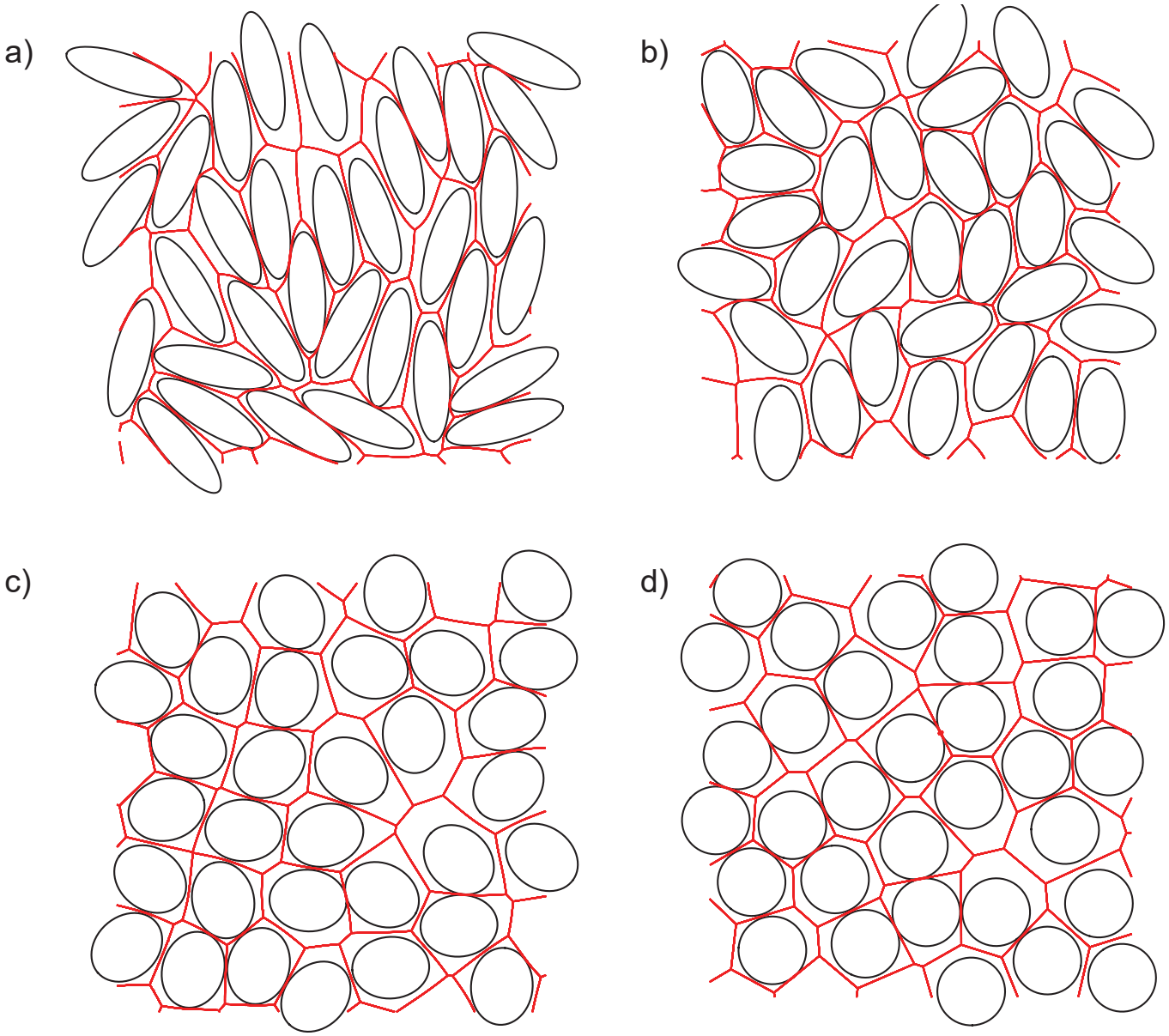

Fig. 4 Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.65$. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

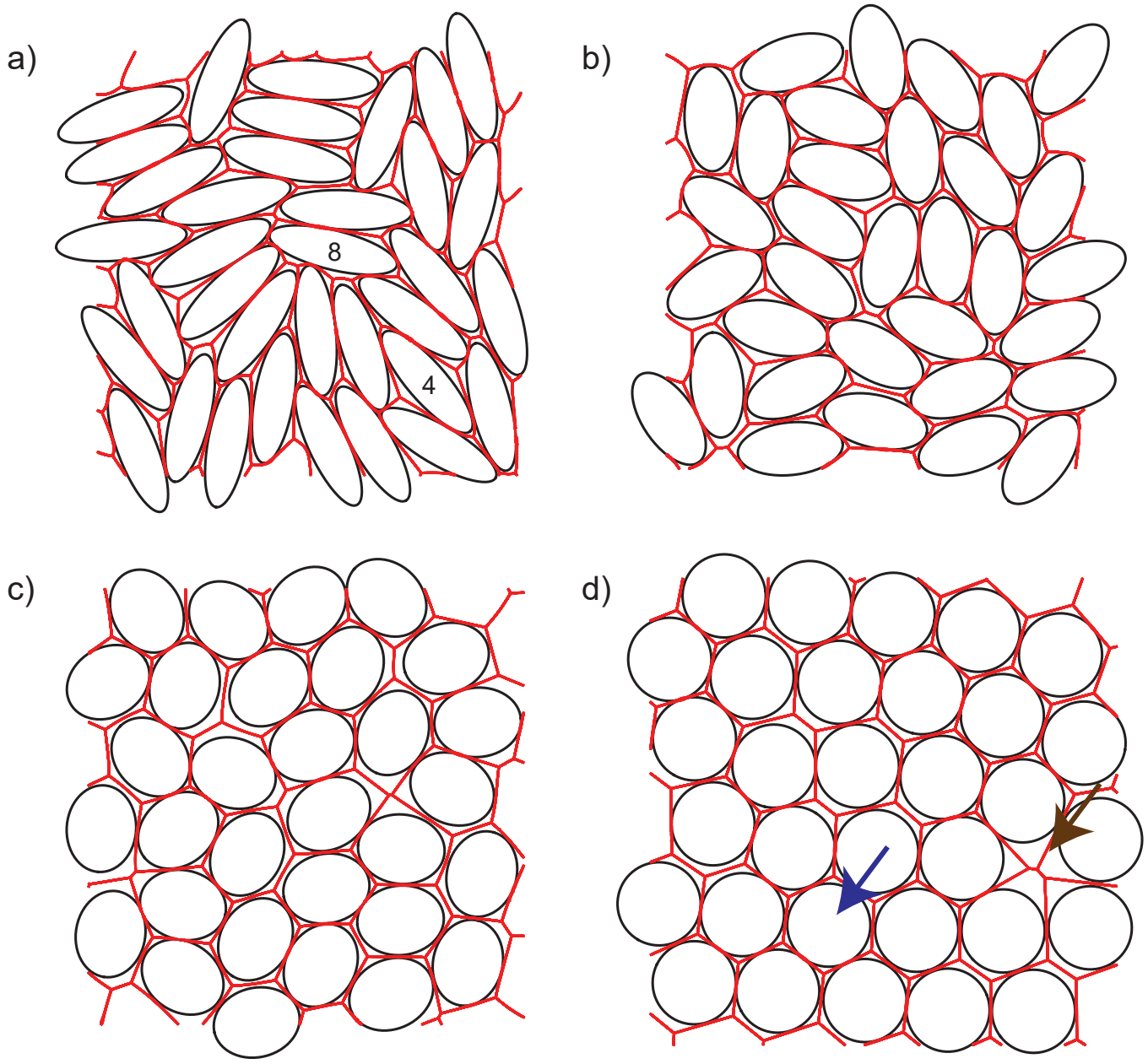

Fig. 5 Voronoi tessellation of randomly assembled ellipses at packing fraction $\phi_g = 0.8$. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

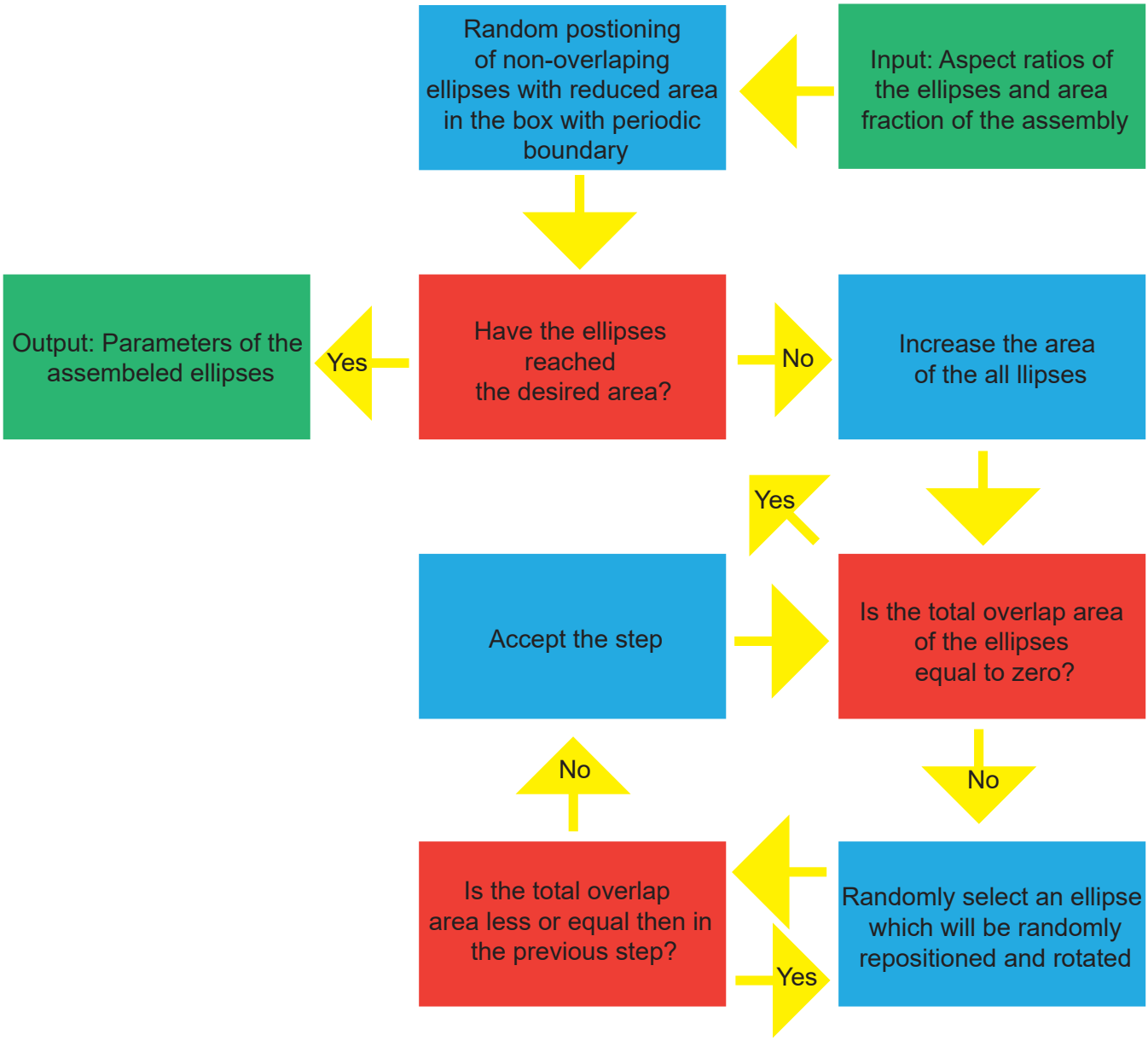

Fig. 6 Flowchart of the algorithm used to generate assemblies.

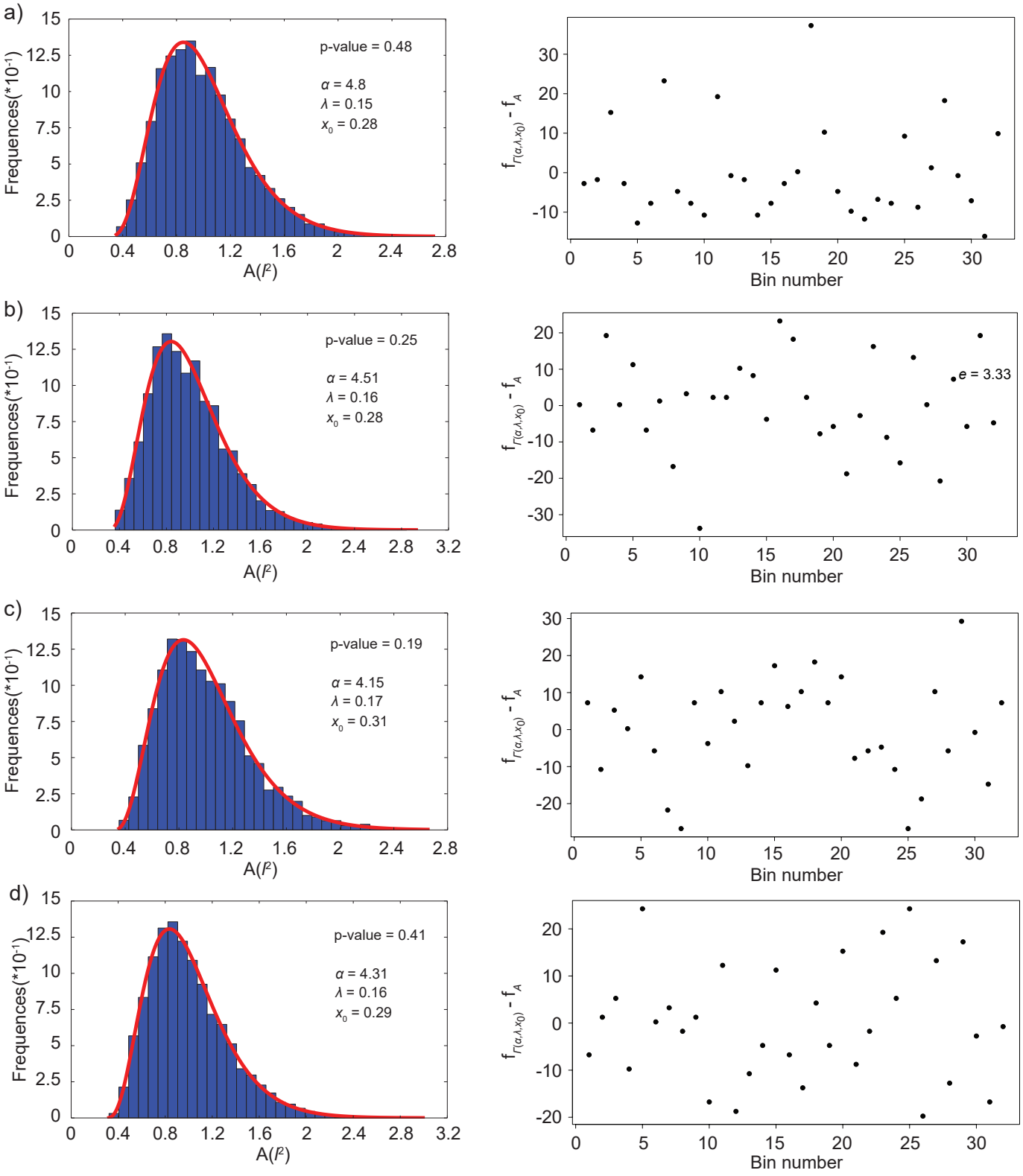

Fig. 7 Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.2$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

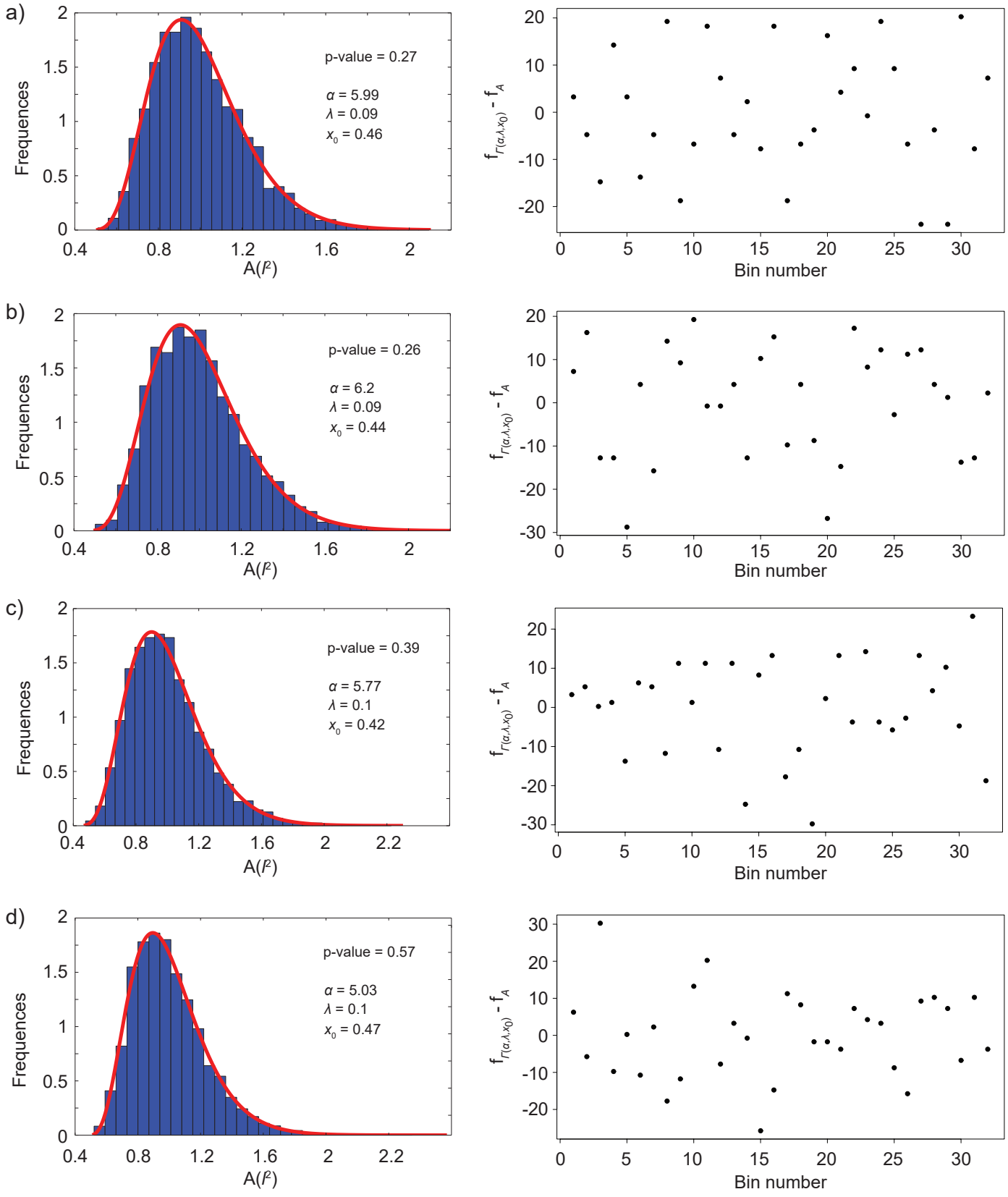

Fig. 8 Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.35$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

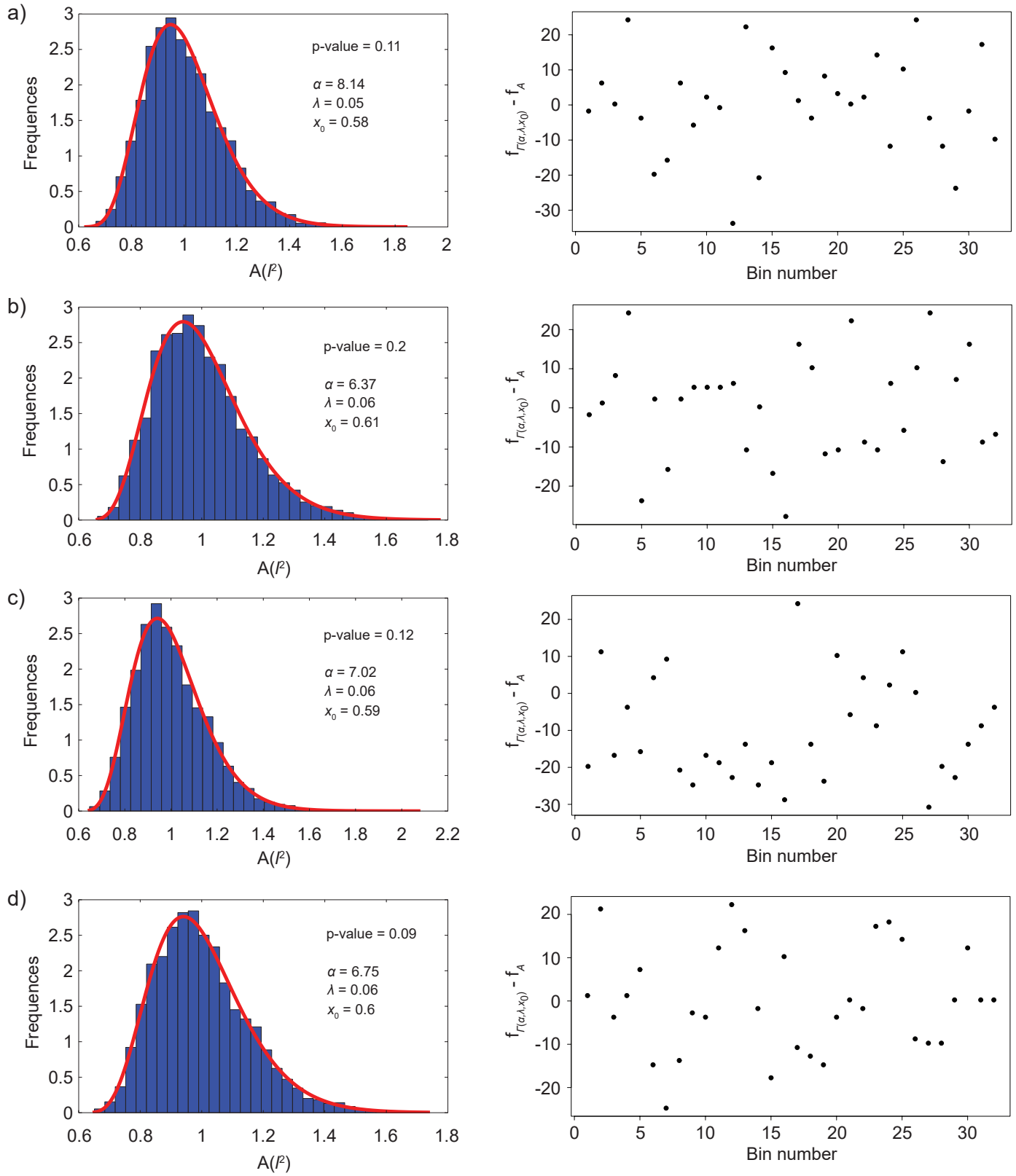

Fig. 9 Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.5$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

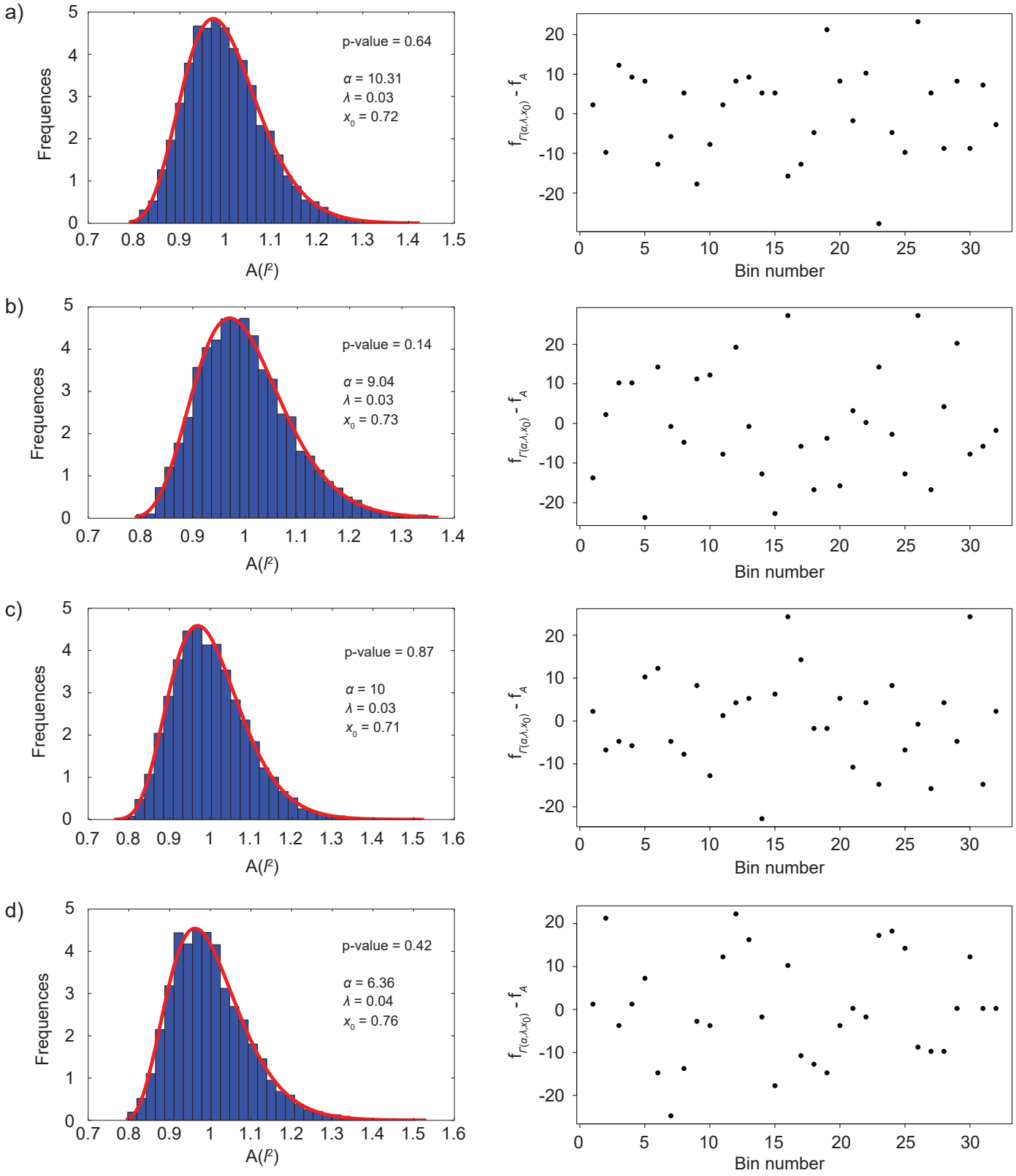

Fig. 10 Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.65$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

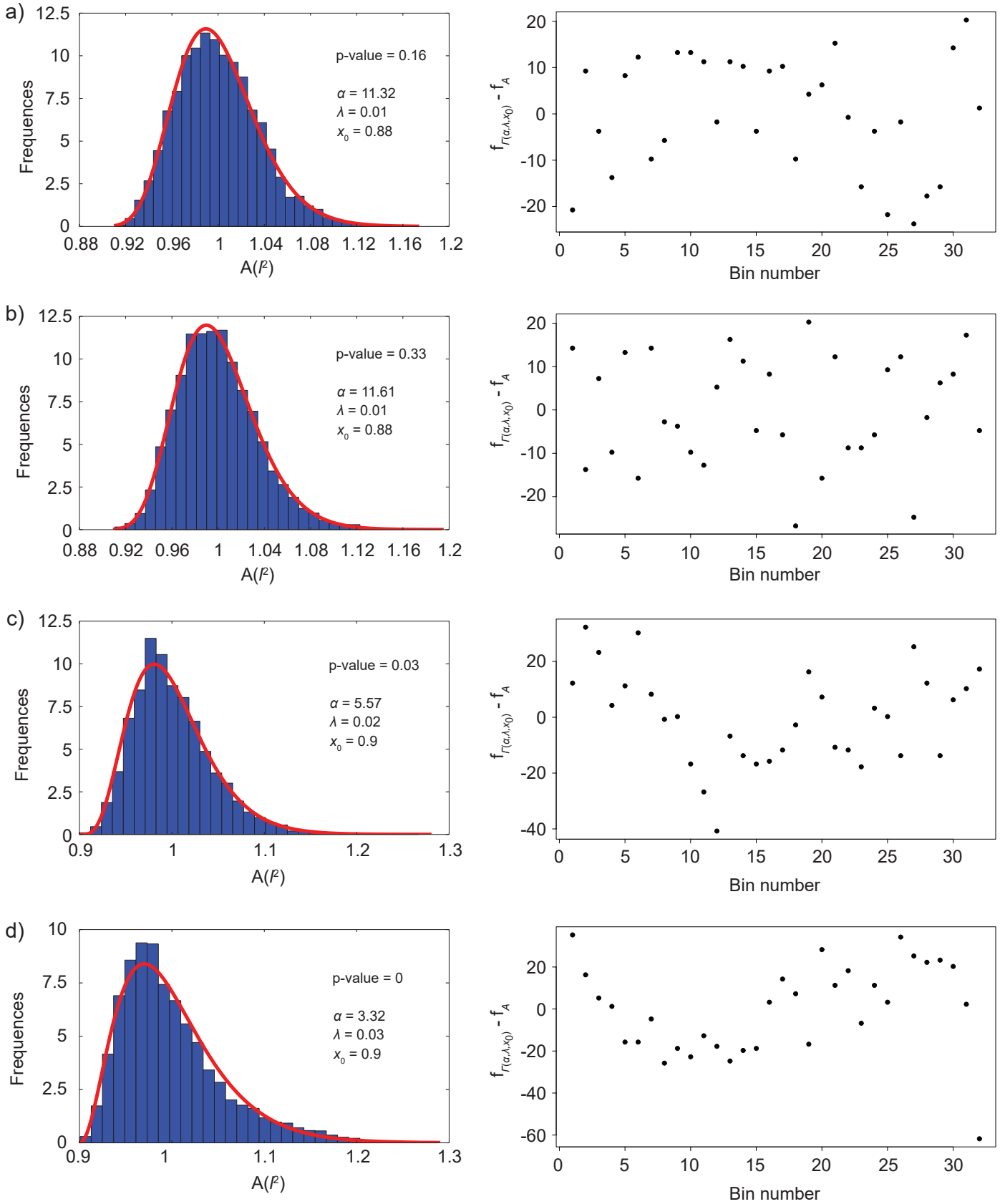

Fig. 11 Fits of gamma distribution to the cell area measure at packing fraction $\phi_g = 0.8$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

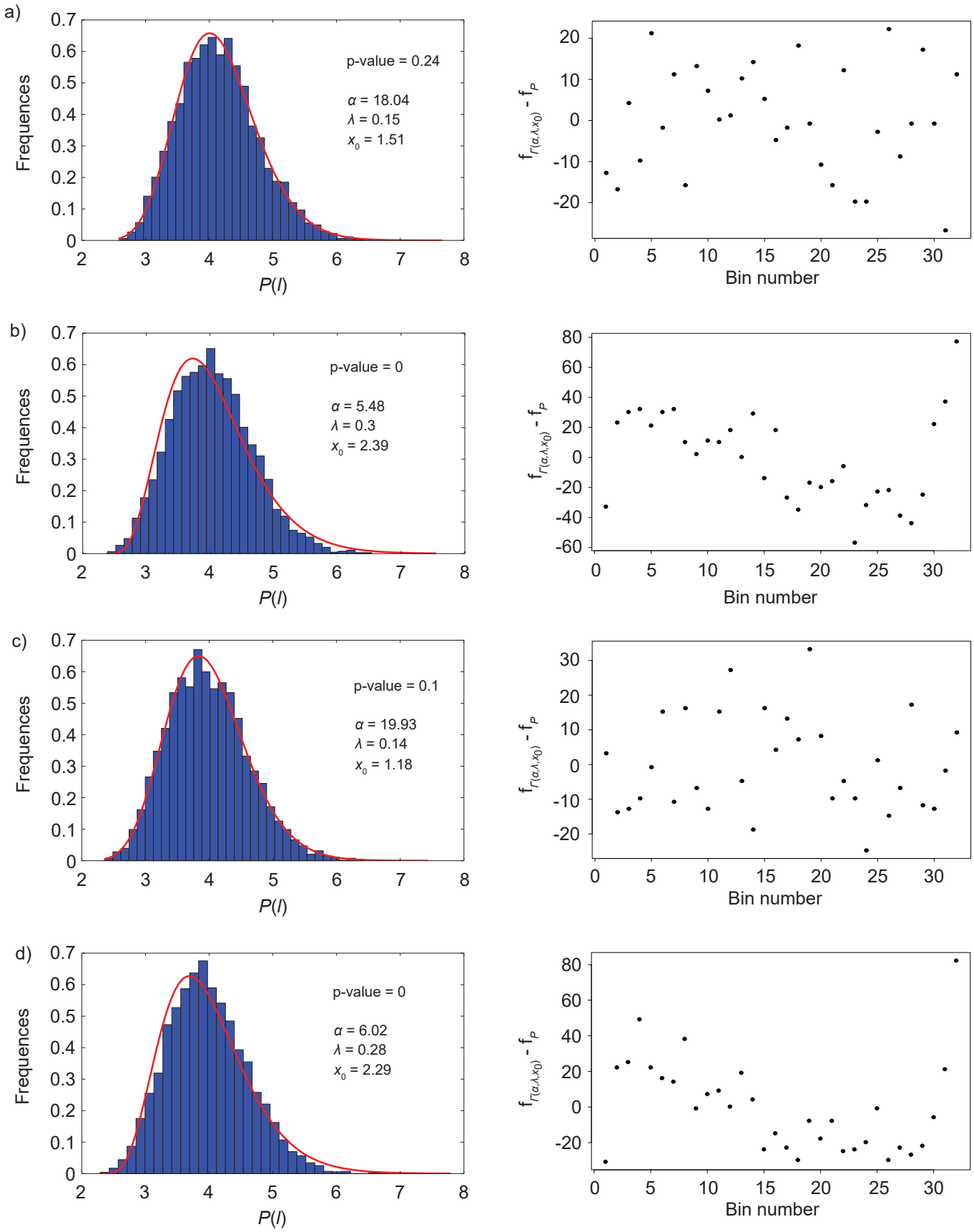

Fig. 12 Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.2$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

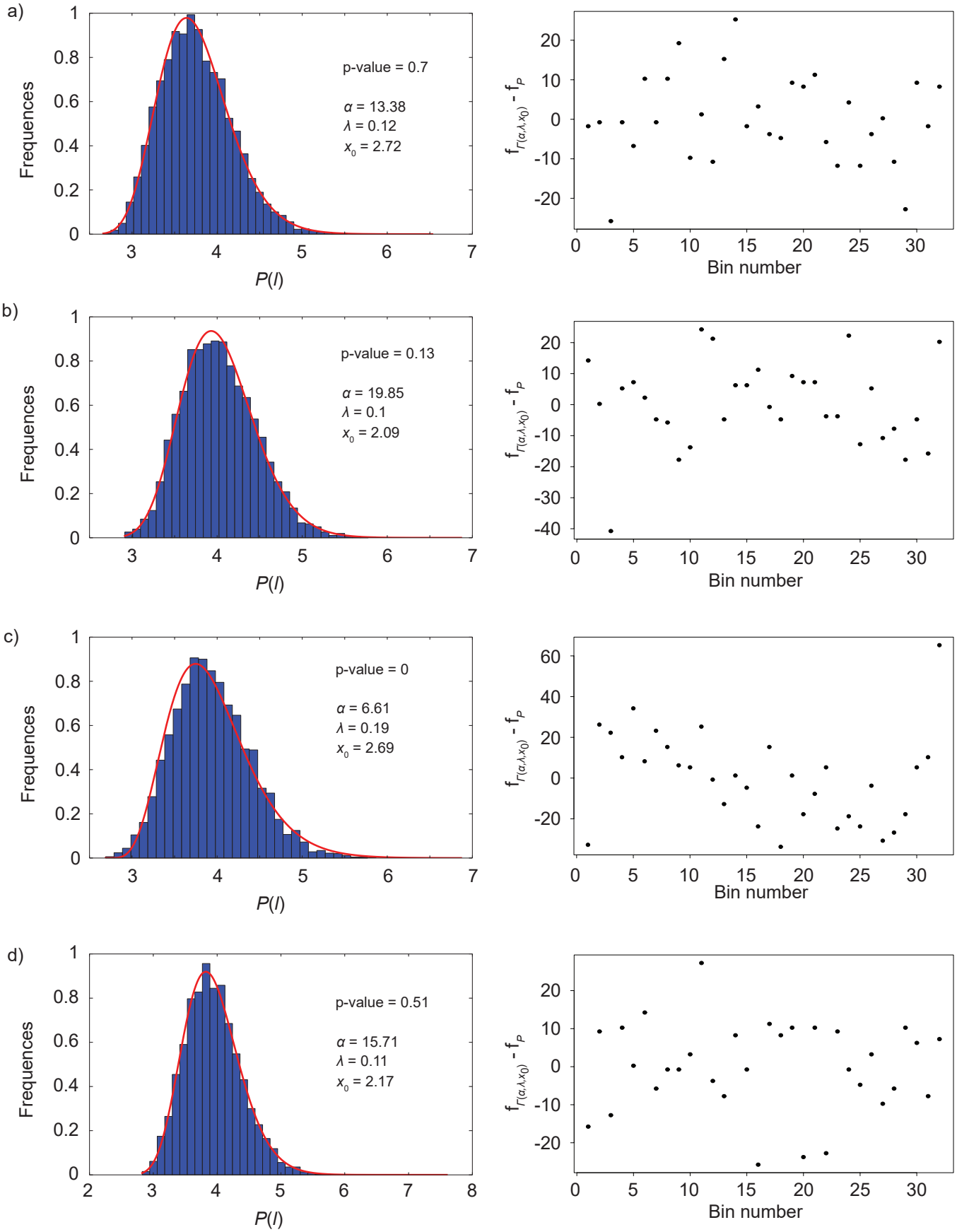

Fig. 13 Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.35$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$. c) $e = 1.25$, d) $e = 1$

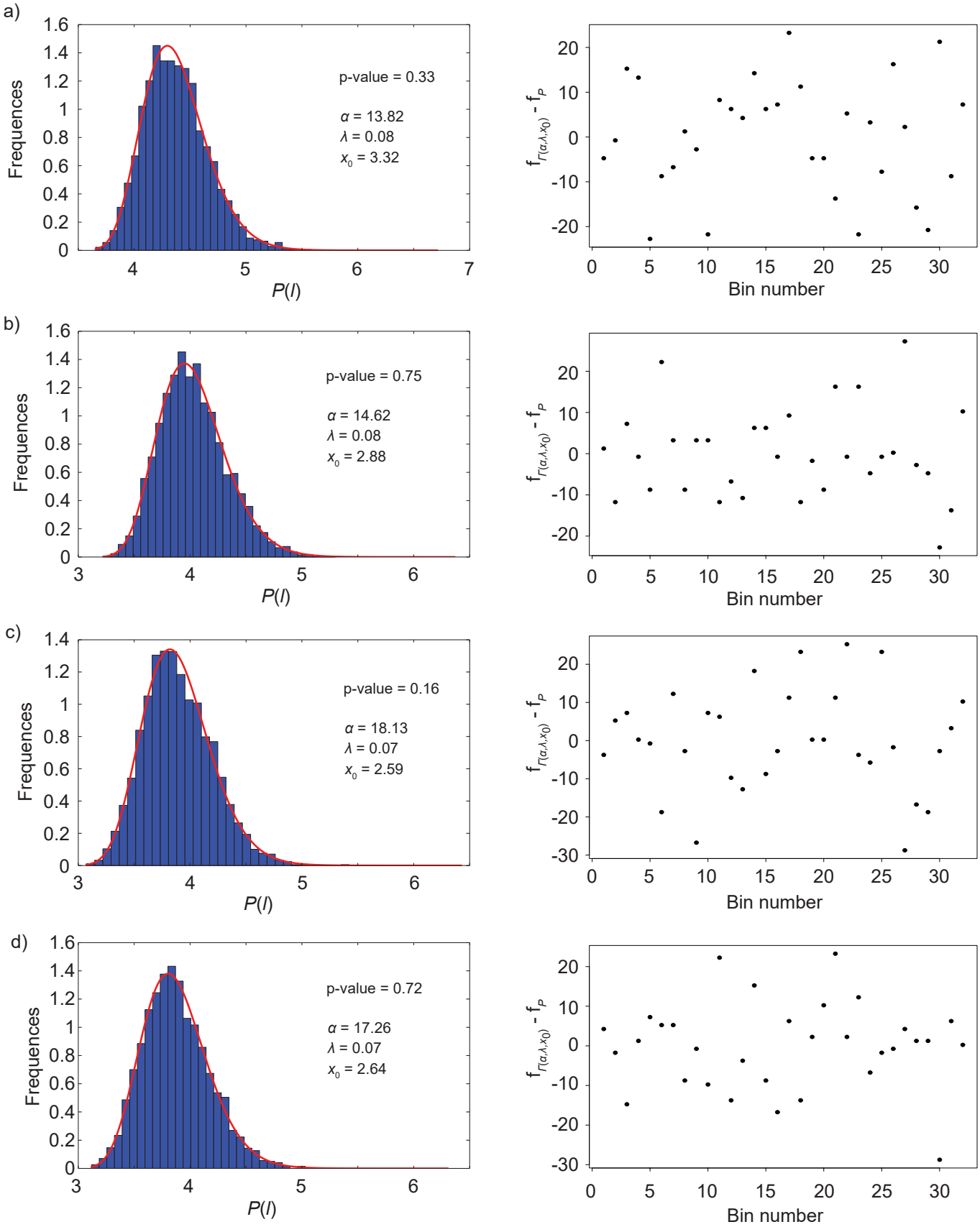

Fig. 14 Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.5$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

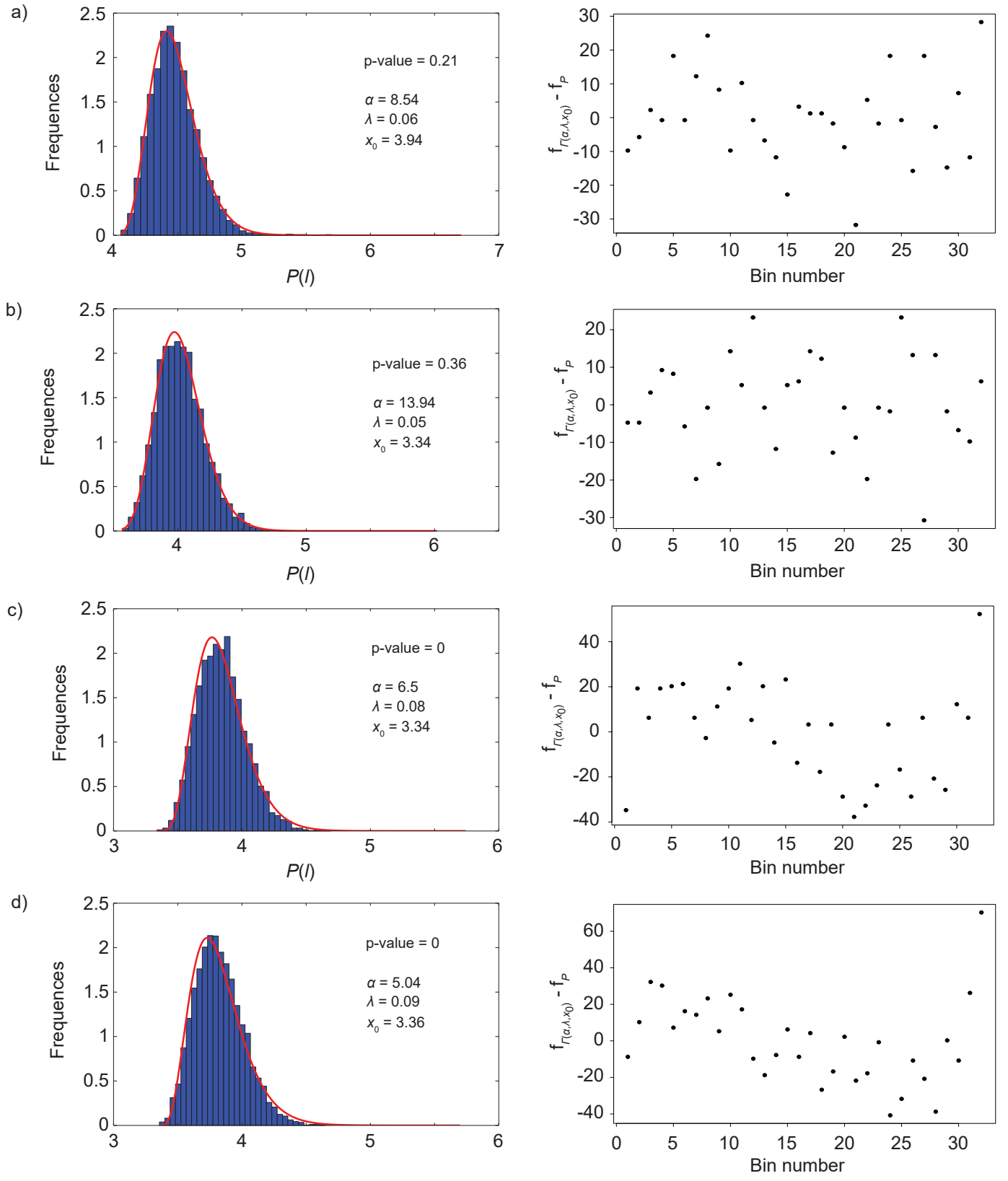

Fig. 15 Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_g = 0.65$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

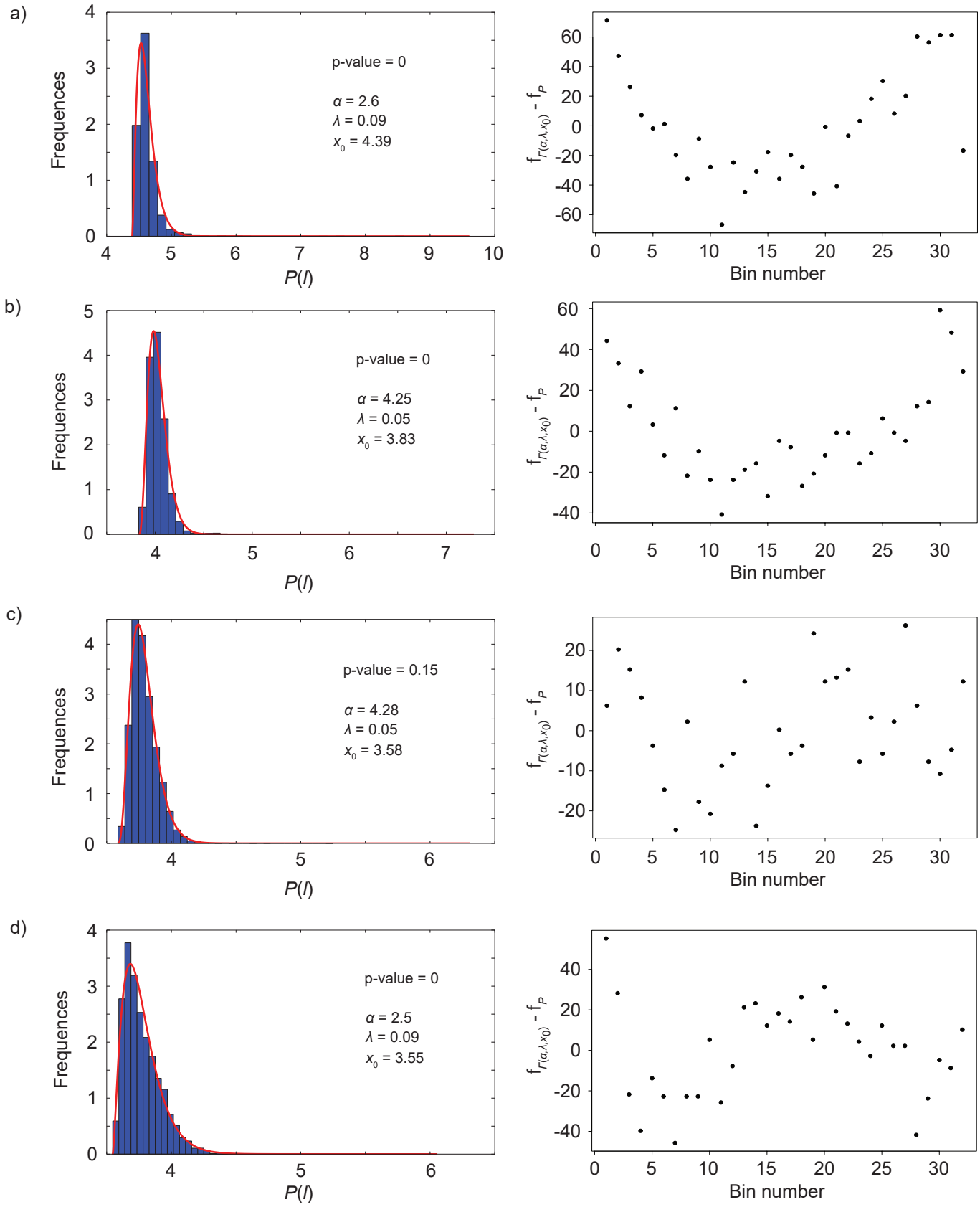

Fig. 16 Fits of gamma distribution to the cell perimeter measure at packing fraction $\phi_s = 0.8$. Left figure shows fit together with p-value of χ^2 test and parameters of fitted distribution. Right figure shows difference between estimated(fitted) frequencies and observed frequencies for each bin in χ^2 test. a) $e = 3.33$ b) $e = 2$, c) $e = 1.25$, d) $e = 1$

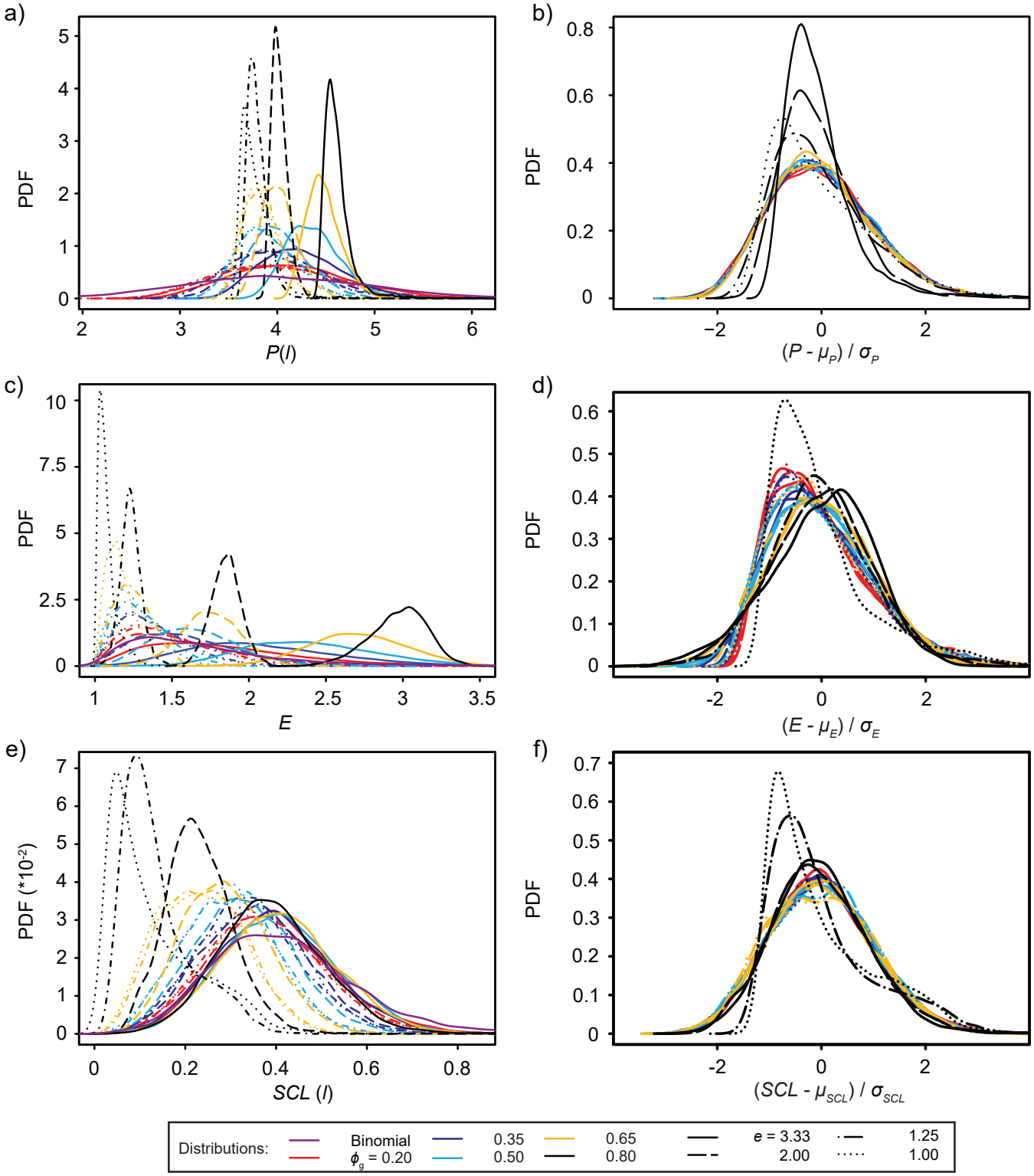

Fig. 17 Distributions and standardised distributions of selected morphological measures for all studied ellipse assemblies. a) Cell perimeter. b) Cell elongation. c) Stadard deviation of contact lengths.

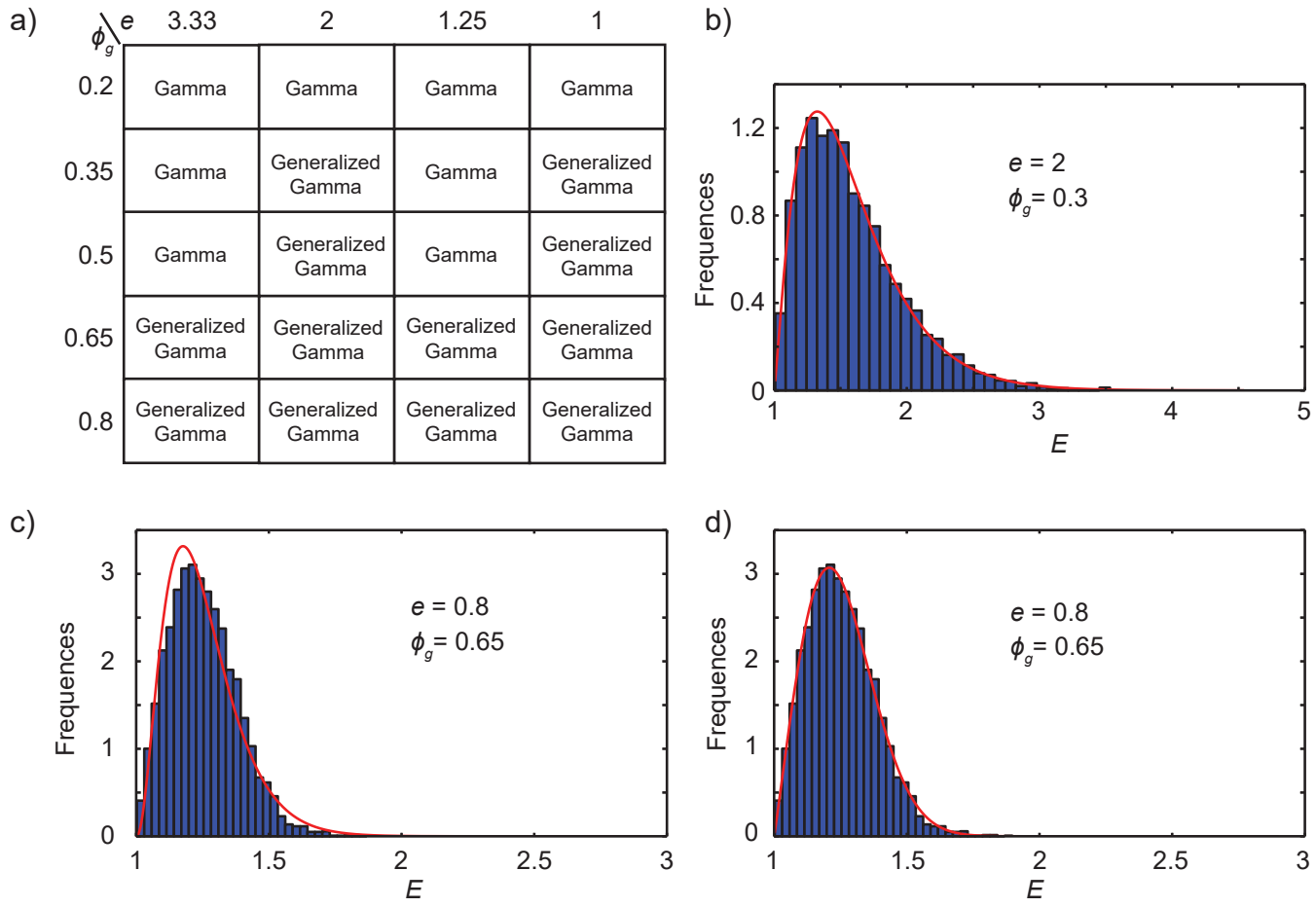

Fig. 18 Details of fits of gamma distribution to the cell elongation measure. a) Table shows where gamma distributed was successfully fitted across whole phase space of studied assemblies. b) Example of a good fit of gamma distribution to cell elongation measure. c) Example of a bad fit of gamma distribution to cell elongation measure. d) Example of a good fit of generalized gamma distribution to cell elongation measure.

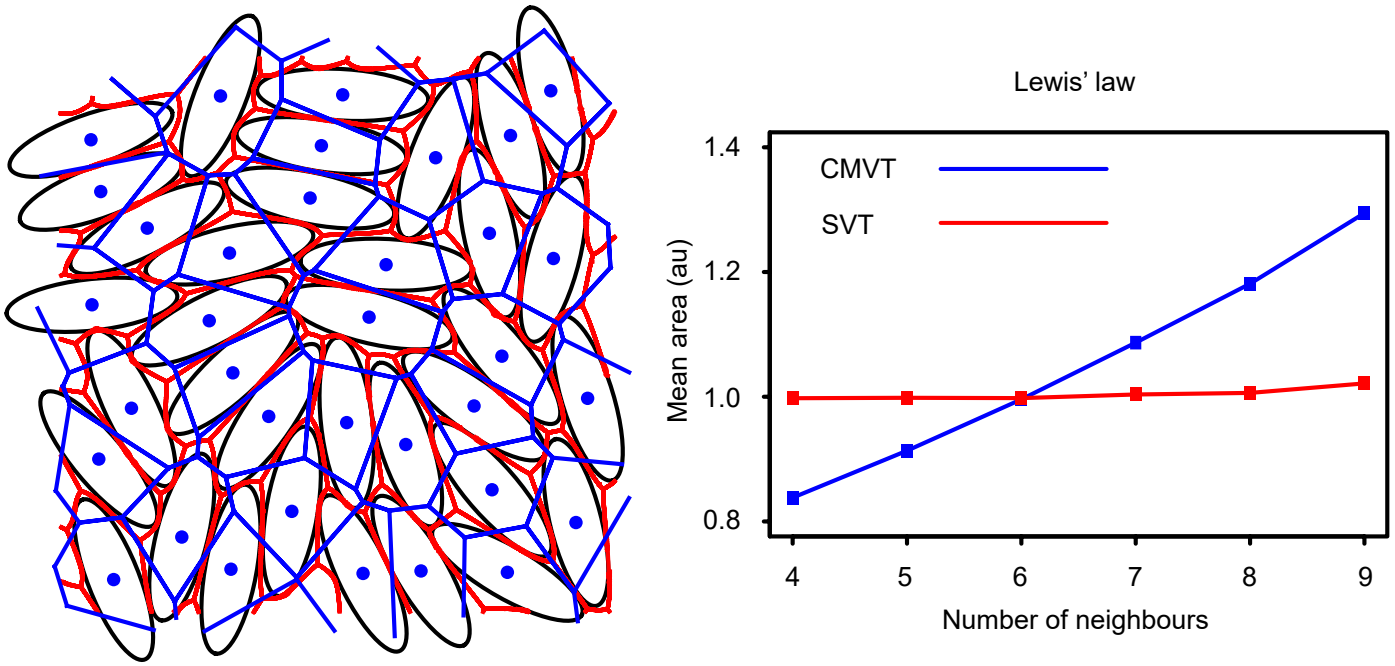

Fig. 19 Comparison between shape-based and standard Voronoi tessellations. Difference between tessellations clearly emerge when Lewis' law lines are plotted.