Code used in production of plots for this section can be found at https://github.com/cfmcginn/SystBio/tree/master/HW6.

1 1.d

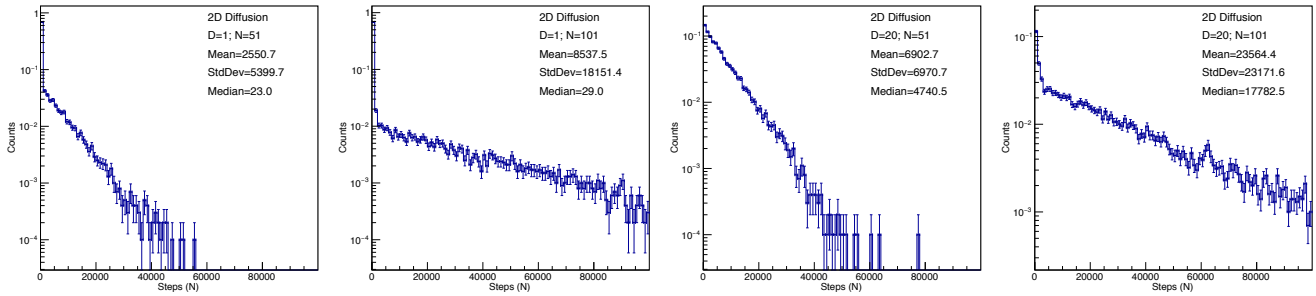

Figure 1: Left to Right: (1) nGrid = 51, nTarget=1, (2) nGrid = 101, nTarget=1, (3) nGrid = 51, nTarget=20, (4) nGrid = 101, nTarget=20. All for pure 2-D diffusion

Dependencies by taking ratios, mean goes as L*L*sqrt(d/2PI), standard deviation goes as L*L*sqrt(d/pi). So contra my guess, it is $d^{.5}$, not d, and there are constant factors accounting for the radial distance is distributed as 2pi in azimuthal angle.

2 1.e

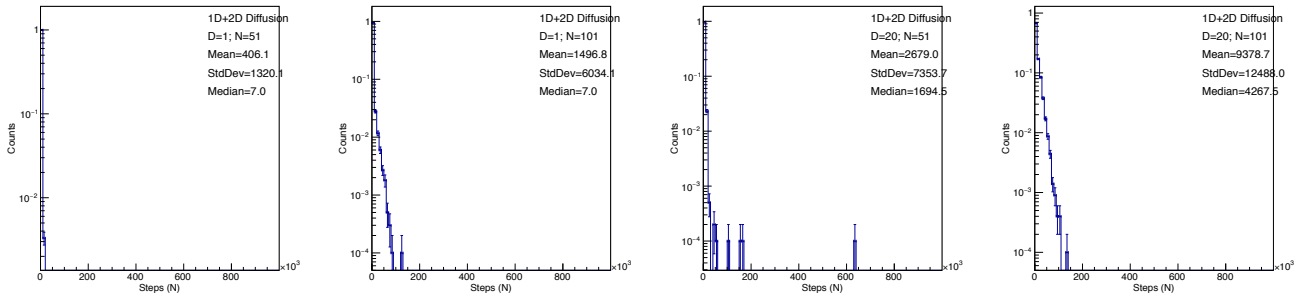

Figure 2: Left to Right: (1) nGrid = 51, nTarget=1, (2) nGrid = 101, nTarget=1, (3) nGrid = 51, nTarget=20, (4) nGrid = 101, nTarget=20. All for 2-D+1-D diffusion

1-D diffusion reduces the total number of steps in all cases (mean, median, standard deviations), but not necessarily time. The latter depends on the average time to take each step in 2-D and 1-D cases.