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Kinetic and Stochastic Models of 1D yeast "prions"[1] KAY KUNES, DANIEL COX, RAJIV SINGH, UC Davis — Mammalian prion proteins (PrP) are of public health interest because of mad cow and chronic wasting diseases. Yeasts have proteins, which can undergo similar reconformation and aggregation processes to PrP; yeast "prions" are simpler to experimentally study and model. Recent in vitro studies of the *SUP*35 protein (1), showed long aggregates and pure exponential growth of the misfolded form. To explain this data, we have extended a previous model of aggregation kinetics along with our own stochastic approach (2). Both models assume reconformation only upon aggregation, and include aggregate fissioning and an initial nucleation barrier. We find for sufficiently small nucleation rates or seeding by small dimer concentrations that we can achieve the requisite exponential growth and long aggregates.

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