**Figure S5.** Protocol for interconnected feedback loops. Evolution of the DEG-FB loop is used as an example. For robust operation, a heat shock system lacking regulated degradation of $\sigma^{32}$ by a member of its own regulon could evolve an independent controller that stabilizes the levels of FtsH tightly around its desired value (A). A more straightforward solution to the problem is to employ the protocol of an interconnected loop whereby the FtsH module is evolved just by fusing a promoter for binding of $\sigma^{32}$ to the FtsH gene (B). In both cases, the red symbols must be added for a robust modular system.