system utilising components of the endogenous Mer operon. A constitutive promoter allows constant expression of MerR, MerT, MerP and a Hg-binding metallothionein. Hg is transported across the bacterial inner membrane by metallothioneins. Hg binds to a Hg-binding metallothionein and hence aggregation of cells.

**Proposed Parts**

**BBa_K205000**
**Name:** GroEL  
**Function:** In conjunction with GroES, GroEL is a chaperone protein that is responsible for the prevention of polypeptide misfolding.

**BBa_K205001**
**Name:** GroES  
**Function:** In conjunction with GroEL, GroES is a chaperone protein that is responsible for the prevention of polypeptide misfolding.

**BBa_K205002**
**Name:** DnaK  
**Function:** In conjunction with DnaJ and GrpE, DnaK assists in correct polypeptide folding and is the prokaryotic homologue of the eukaryotic chaperone system 'Hsp70'.

**BBa_K205003**
**Name:** DnaJ and GrpE  
**Function:** In conjunction with DnaK, DnaJ and GrpE assist in correct polypeptide folding.

**MerT**  
**Function:** Facilitates the transport of Hg(II) across the bacterial inner membrane from the environment.

**MerP**  
**Function:** A periplasmic mercury binding protein, transferring Hg to the MerT transporter on the inner membrane. Hg is sequestered in the cytoplasm by metallothioneins. Hg binds to a Hg-binding metallothionein and hence aggregation of cells.

**MerR**  
**Function:** A transcription factor that activates transcription of the mercury responsive promoter element.

**Figure 1**

Mercury biofiltration system utilising components of the endogenous Mer operon. A constitutive promoter allows constant expression of MerR, MerT, MerP and a Hg-binding metallothionein. Hg is transported across the bacterial inner membrane by metallothioneins. Hg binds to a Hg-binding metallothionein and hence aggregation of cells.