



Figure 1

Models representing the basic mechanisms of Hsp70 and chaperonin action in protein folding. **(a)** Mechanism of the *Escherichia coli* Hsp70 system DnaK (Hsp70), DnaJ and GrpE. Note that DnaJ binds to the unfolded polypeptide (U) in the absence of other chaperones but this might not be the case for other Hsp40 homologs, such as mammalian Hsp40 (see text for details). Whenever U is released, folding to the native state (N) might occur, provided that all structural elements necessary for folding are available (e.g. upon release of a single-domain nascent chain from the ribosome). Otherwise, U will undergo another cycle of interaction with the Hsp70 system. **(b)** Mechanism of *Escherichia coli* GroEL-GroES. A vertical section of the GroEL double-ring is shown in light blue representing the three-domain structure of the GroEL subunits (see Ref. 3 for details). GroES is shown in dark blue. Note that, in contrast to (a), folding occurs in the protected environment of the GroEL-GroES cage, not in free solution.

NETZER & HARTL - BESPOKE OUTFITTERS

Proteins synthesized, pressed and folded while U wait

Drawn for TIBS by TAB

Whirr... unfolded polypeptides

1. **LOAD POLYPEPTIDE INTO UPPER CHAMBER.** (CAUTION: PEPTIDES OF 25-55 KDa ONLY)

2. **FIX GroES LID FIRMLY IN PLACE, SWITCH ON POWER AND WAIT (~15 SECONDS)**

3. **CHECK FOLDING. REPEAT CYCLE IF NECESSARY UNTIL FOLDING IS COMPLETE**

4. **REMOVE FOLDED PROTEIN FROM CHAMBER**

POP

Fssshht

No good!

Voila!

PERFECT!

Native folded protein

OPERATING INSTRUCTIONS:

7 ATP SUPPLY

GroEL-GroES AUTOMATED SUIT PRESSING MACHINE

TO HATS, GLOVES & ACCESSORIES DEPT.