



**Figure 15.1** The phage replication cycle. Phage adsorbs to the bacterial cell (a) and injects its genome (b) to follow the lytic or the lysogenic pathway (c). In the lysogenic pathway, the genome integrates in the bacterial chromosome (d) and replicates with the cell (e). Continuing to the lytic pathway, the phage genes are translated (f) and proteins (including those composing the virus particle) are produced (g), assembled with the replicated phage genome (h) and the cell bursts to release the progeny (i) that will start a new cycle (a). (See insert for color representation of the figure.)

DNA ejection of a virulent phage, early genes are immediately expressed (Figure 15.1f). These genes are responsible for host takeover by hijacking its cellular machinery, redirecting it to replicate the phage genome. Virion accessory and structural proteins are thus expressed and the phage genetic material is packaged into the empty capsids (Figure 15.1g). All the phage pieces that were expressed separately are now assembled and the new progeny is ready to start a new cycle (Figure 15.1h). However, phage particles are still trapped within the host cell. While the phage is replicated inside the cell, two other phage-encoded proteins are also expressed – the holin and the endolysin. The