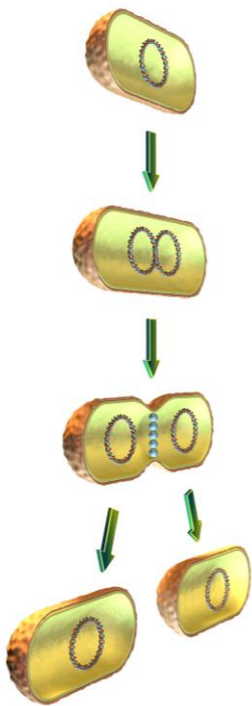
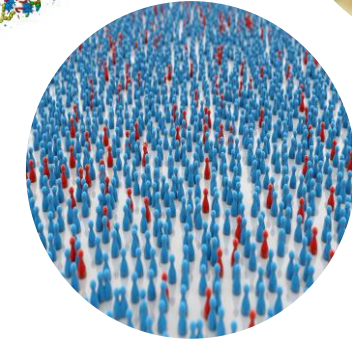
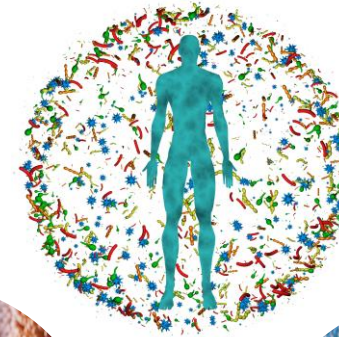


Bacterial Multiplication

Binary Fission: 20 minutes or less when intrinsic and extrinsic factors are optimal.



<u>Time</u>	<u># of Bacteria</u>
0 minutes	1
20 minutes	2
40 minutes	4
1 hour	8
2 hours	64
4 hours	4,096
6 hours	262,144
8 hours	16,777,216
12 hours	68,719,476,736



<u>Bacteria</u>	<u>Estimated Infective Dose*</u>
<i>Salmonella</i> serovars	<10 cells
Shiga toxin-producing <i>E. coli</i>	10 to 100 cells
<i>Cronobacter sakazakii</i>	10 to 100 cells
<i>Listeria monocytogenes</i>	<1000 cells
<i>Campylobacter</i> spp.	5000 to 10,000 cells
<i>Staphylococcus aureus</i>	>100,000 cells
<i>Vibrio cholerae</i>	1,000,000 cells

Information and photos are modified and adopted from BBB of Food and Drug Administration, BAM Resources of Centers for Disease Control and Prevention. Photo Courtesy: Adobe Stock (standard license of photos purchased by the Public Health Microbiology laboratory).

* Calculated for oral ingestion based on epidemiological data from outbreaks and human feeding trials of volunteers. Data obtained from BBB of Food and Drug Administration (2nd edition).

Public Health Microbiology Laboratory: Education, Research, Outreach, and Technical Assistance: <https://publichealthmicrobiology.education/>

