1. **Evolution**
a. Darwin: Organismal Evolution
b. Nucleic Acid and Protein Evolution
2. **Cell Polarity**
a. Animal Epithelia and Yeast Sex
b. Cyanobacteria: Unequal Cell Division
c. Shigella and Listeria: Actin Nucleation
d. DNA Segregation and Chemotaxis in E. coli
e. Caulobacter Morphogenesis: A Molecular Beacon
f. Myxobacterial Differentiation
g. Cell-Cell Interactions: Embryos and Myxobacteria
3. **Cell Recognition and Movement**
a. Bacterial Adhesins
b. Bacterial Flagella
c. Mot/Exb Energizers
4. **Chemoreception and Signal Transduction**
a. Bacterial Chemotaxis: An Historical Account
b. Molecular Mechanisms of Activation and Adaption
c. Swimming vs. Swarming
d. Emotions, Behavior and Psychic Phenomena
5. **Sensing Physical Forces**
a. Thermotaxis
b. Aerotaxis
c. Magnetotaxis
6. **Alternative Types of Bacterial Motility**
a. Archaeal Flagella
b. Bacterial Type IV Pili
c. Social and Adventurous Gliding
i. Jet Propulsion
ii. Slime Secretion
d. Ratchet Structures
e. Contractile Cytoskeletons
7. **Molecular Motors**
a. F- and V-type ATPases
b. Flagellar Motors
c. Bacteriorhodopsin
d. Proton Pumps
e. Photosynthetic Systems
f. The 24-Hour Clock (Circadian Rhythms)
8. **Bacterial Organelles/Machines (Somes)**
a. Cellulosomes
b. Exosomes
c. Carboxysomes
d. Proteosomes
e. Chaperonins
9. **Chemical Communication**

a. Quorum Sensing
i. Between Members of a Species
ii. Between Different Species and Phyla
iii. Between Different Domains of Life
b. Intracellular Communication
c. Protein Secretion Systems

10. Bacterial Behavior

a. Bacterial Altruism
b. Programmed Cell Death
c. Bioelectricity via Nanowires
d. Bacterial Biological Warfare

11. Overview, Conclusions and Perspectives