

Box 1

Different classes of molecular assemblies

Molecular machines

- Stoichiometric
- Specific interactions
- Fixed size
- discrete molecular states
- Functional assembly requires complete set of subunits (assembly highly cooperative)
- Amenable to structural biology tools
- Examples: ribosomes, molecular motors, nuclear pore complex, flagella, proteasomes...

Pleiomorphic ensembles

- Non-stoichiometric
- Combinatorial interactions
- Heterogeneous size
- Spectrum of molecular states
- Lifetime of assembly greater than subunit residency (assembly may or may not be cooperative)
- New experimental and mathematical tools needed
- Examples: receptor complexes, adhesion complexes, mRNA splicing complexes, trafficking intermediates...