How to know which one is better?

1. ~~Experiment~~
2. Math Model

Experiment:

Doing Research on Particles/Cells etc will face lots of difficulties (Can only done **Qualitatively** (only detect if it’s successful, rather statistically)), since:

Every experiment can vary by conditions:

* 1. Environment: concentrations, injection time, temperatures
  2. Nature of Cells: Type, Size, fluorescence strength, cell movements
  3. Design: Method of Injection, Detection, etc

Therefore, Dosimetry (Measurement) can vary a lot, with data uncertain

Thus, Need Math Equations to solve, For **Quantitative** analysis (increases how much etc)

Math Solving: Combine these two together for **Experiment Use in Vitro** (In solution, Lab Environment)

1. Association Model: Biological Interaction with Cells-Particles
2. Dosimetric Model: Particle Movements in Vitro (out of body, in solution, lab-related)

* : function of Dosimetry parts, {on cells: Logo

  Description automatically generated; not on cells: 0}
* ： Function of Association parts (cell related)

Table

Description automatically generated with medium confidence

1. SC: surface coverage of cells (How many cells) Pos
2. r: rate of association (particle into cells rate) Pos
3. u: Concentration of Particles Pos
4. P\_capactiy: Cell’s **inside** capacity for particles Pos
5. P\_assoc: num of particles **inside** cells Neg
6. S\_capacity: Cell’s **Surface** capacity for particles Pos

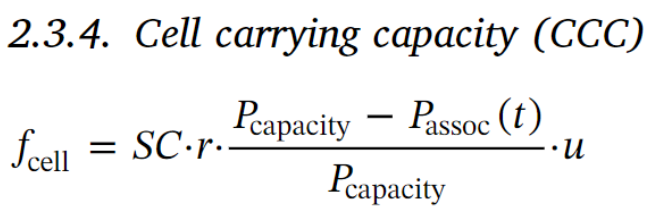
Visualise:

Incubate Cells(1,2) => Put Particles into fluid(3) => Particles move onto cells’ surfaces(6) => Particles move from surfaces into Cells(4, 5)

Performance Measure:

A picture containing text

Description automatically generated , (0<P<1), where err\_best is fixed and err\_model is current one

Best Model:  --------Indicates S\_capacity is not important (threshold may be P\_ instead, association speed rather than surface capacity)

Determine Association rate **r** :

Bigger, larger cell may have high **association(brighter, settling faster),** but may not have high **Association rate r** .(Easy to identify but may not be efficient)

Targeting Behavior is shown, but still phagocytic cell can still associate many particles

A further experiment given different conditions leads to same association rate r, (meaning r is more cell-oriented and independent of experiment elements)

Conclusion:

* Found rate of association r, this parameter stands for characteristics of cells (independent of environment). Enable us to do quantitative analysis by using it (control variables of environmental elements)
* Math Modelling: model association rate considering environmental elements as well

Questions:

Why does this report mention **phagocytic** a lot?

**Diffusion Formula:**

Text

Description automatically generated with medium confidence

**Sedimentation Velocity:**

A picture containing text

Description automatically generated

**Surface Area:**

A picture containing text

Description automatically generated