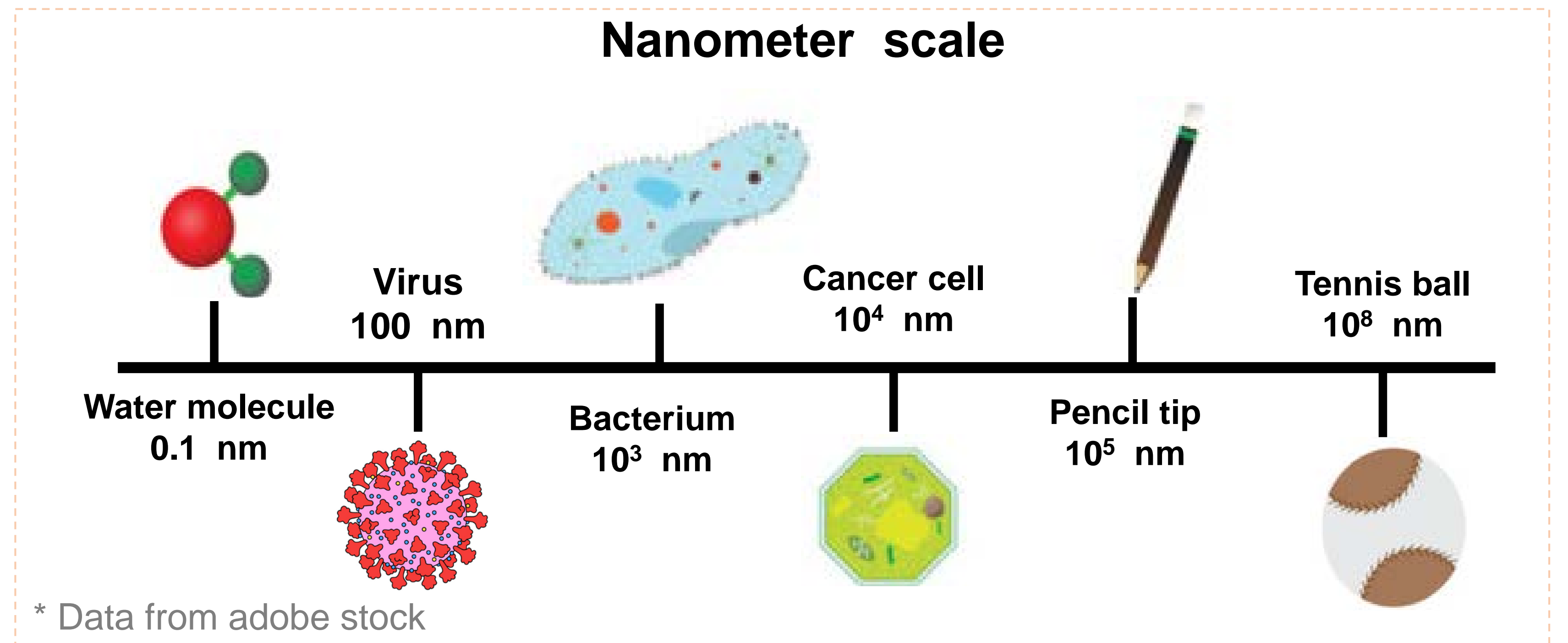
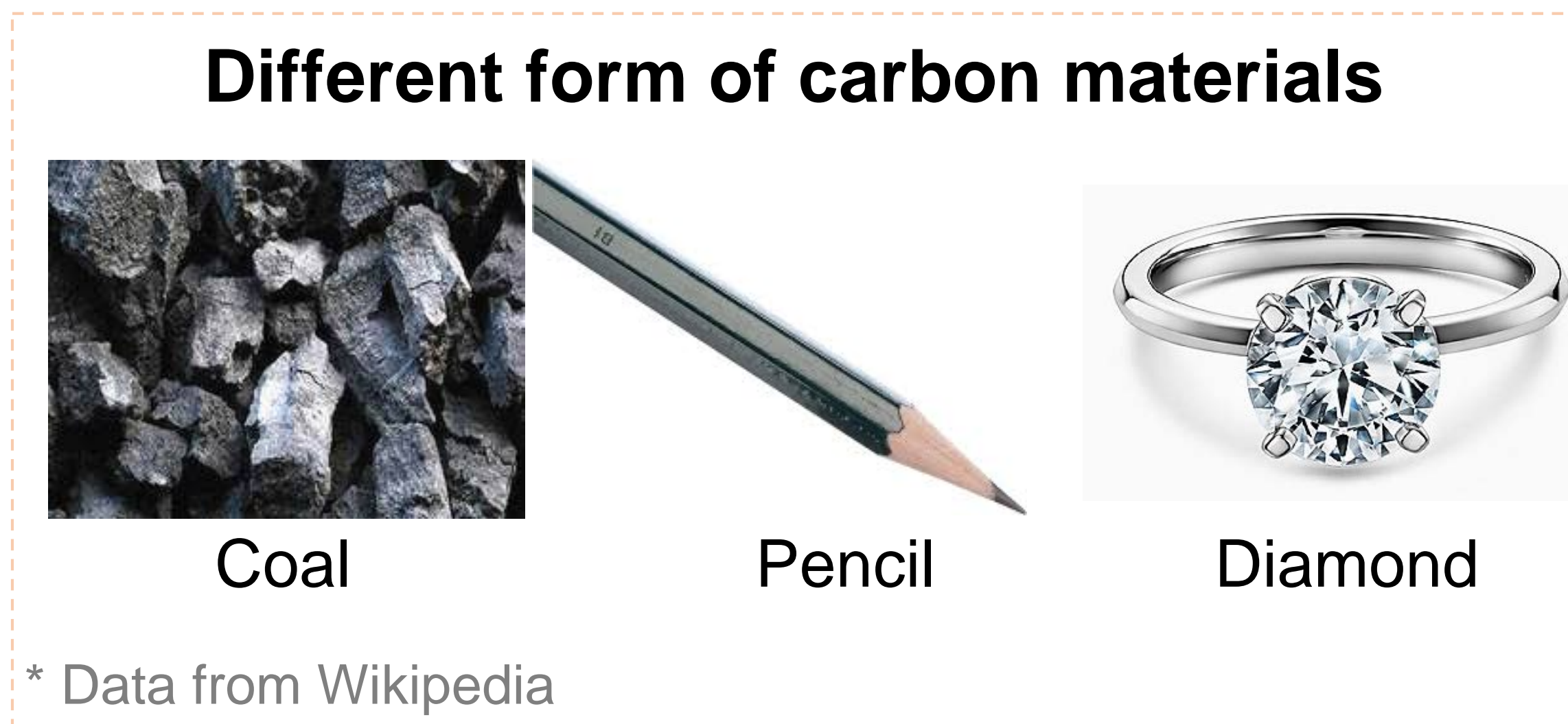


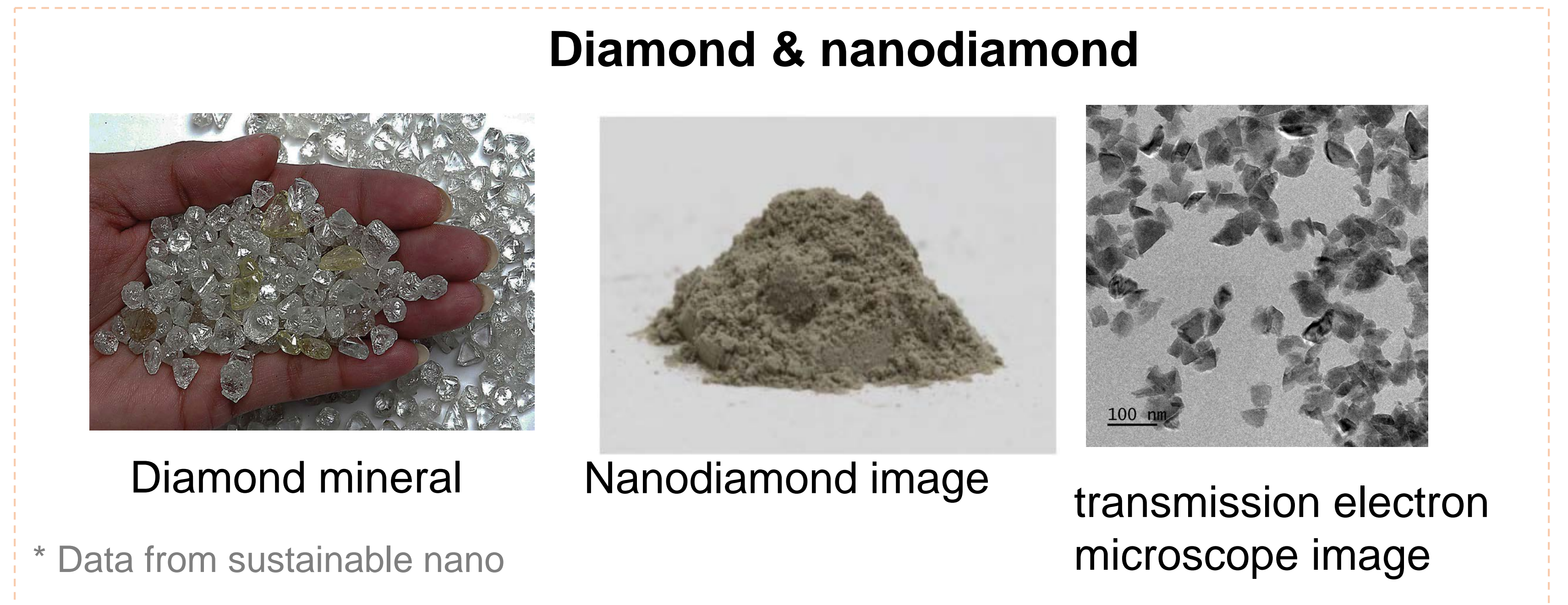
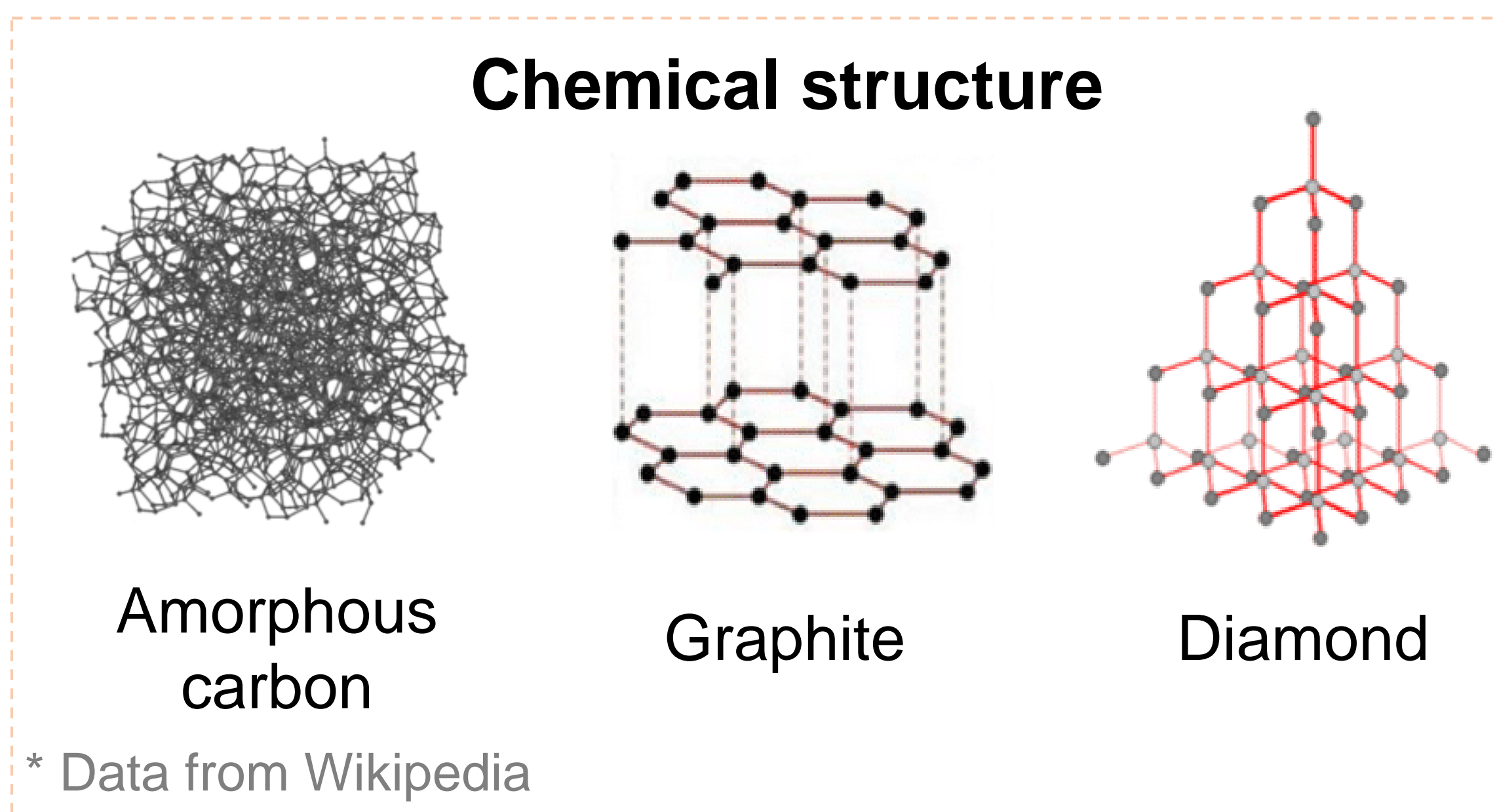
### Introduction 研究の背景

#### ◆ What is nanodiamond? (ナノダイヤモンドとは)

- Diamond is a form of carbon materials (ダイヤモンドは炭素材料の一種です)
- Nanodiamond is diamond with a size below 100 nanometers (ナノダイヤモンドは100ナノメートル以下の大きさのダイヤモンドです)

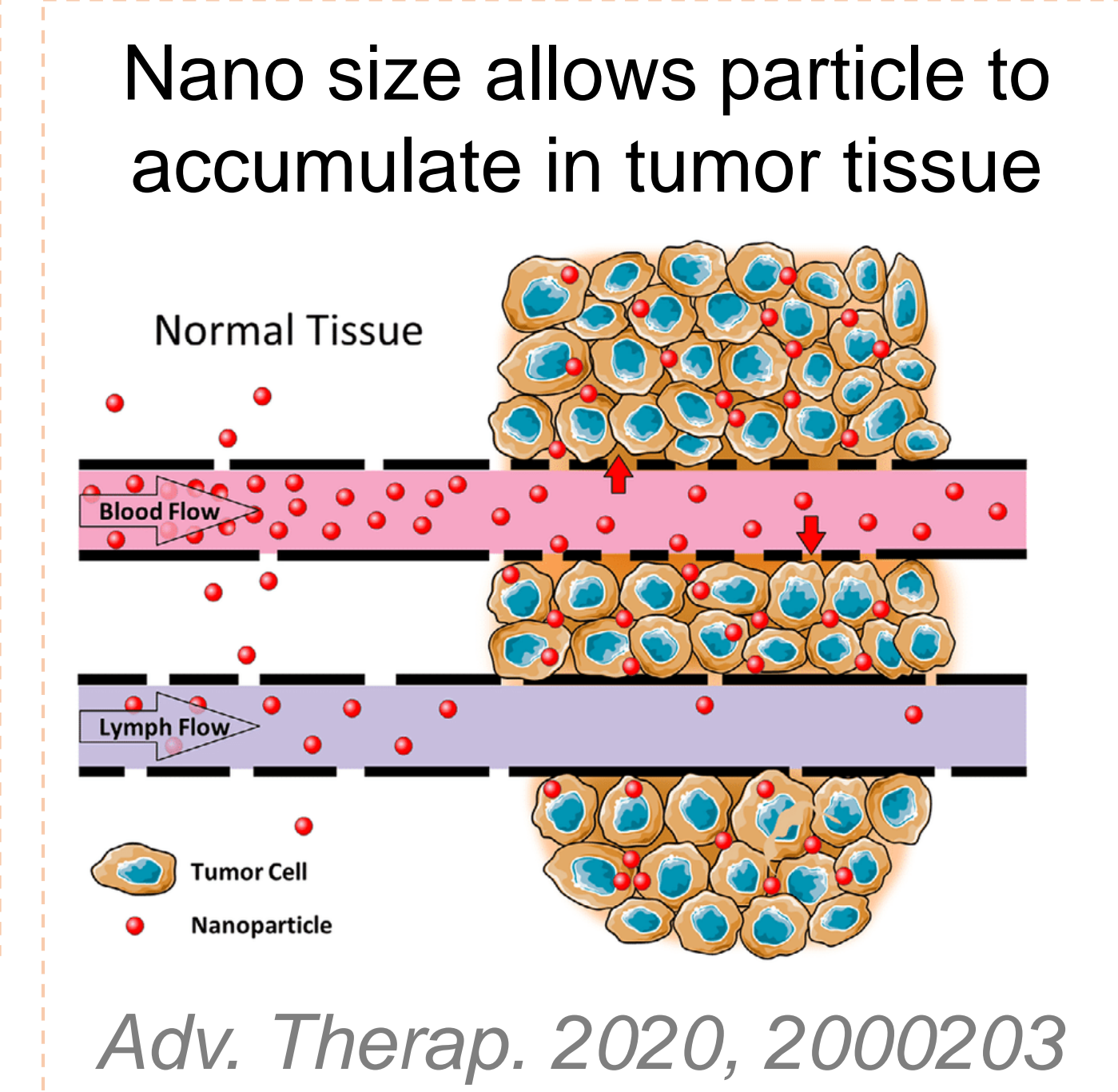
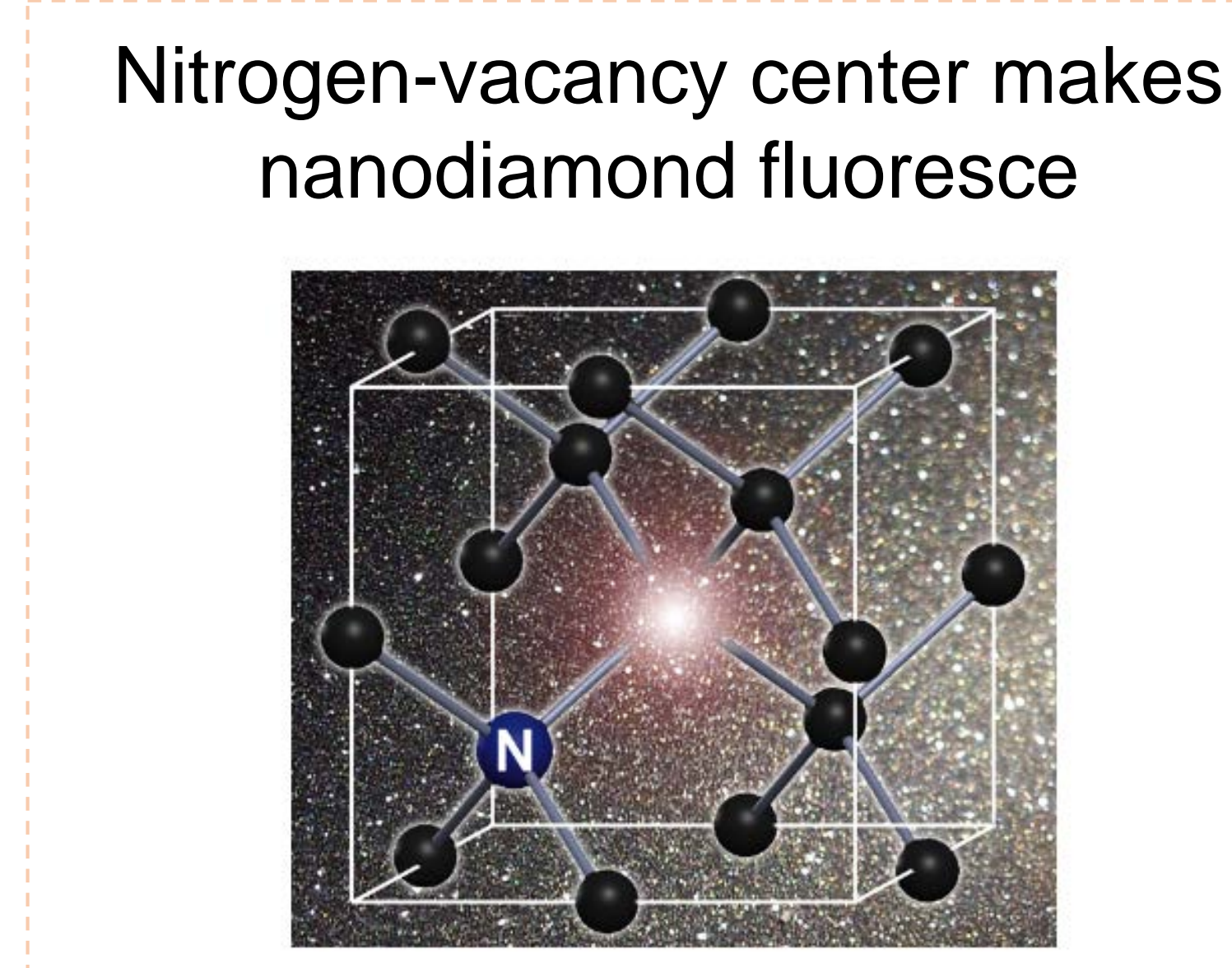


- Difference in chemical structures (化学構造の違い)



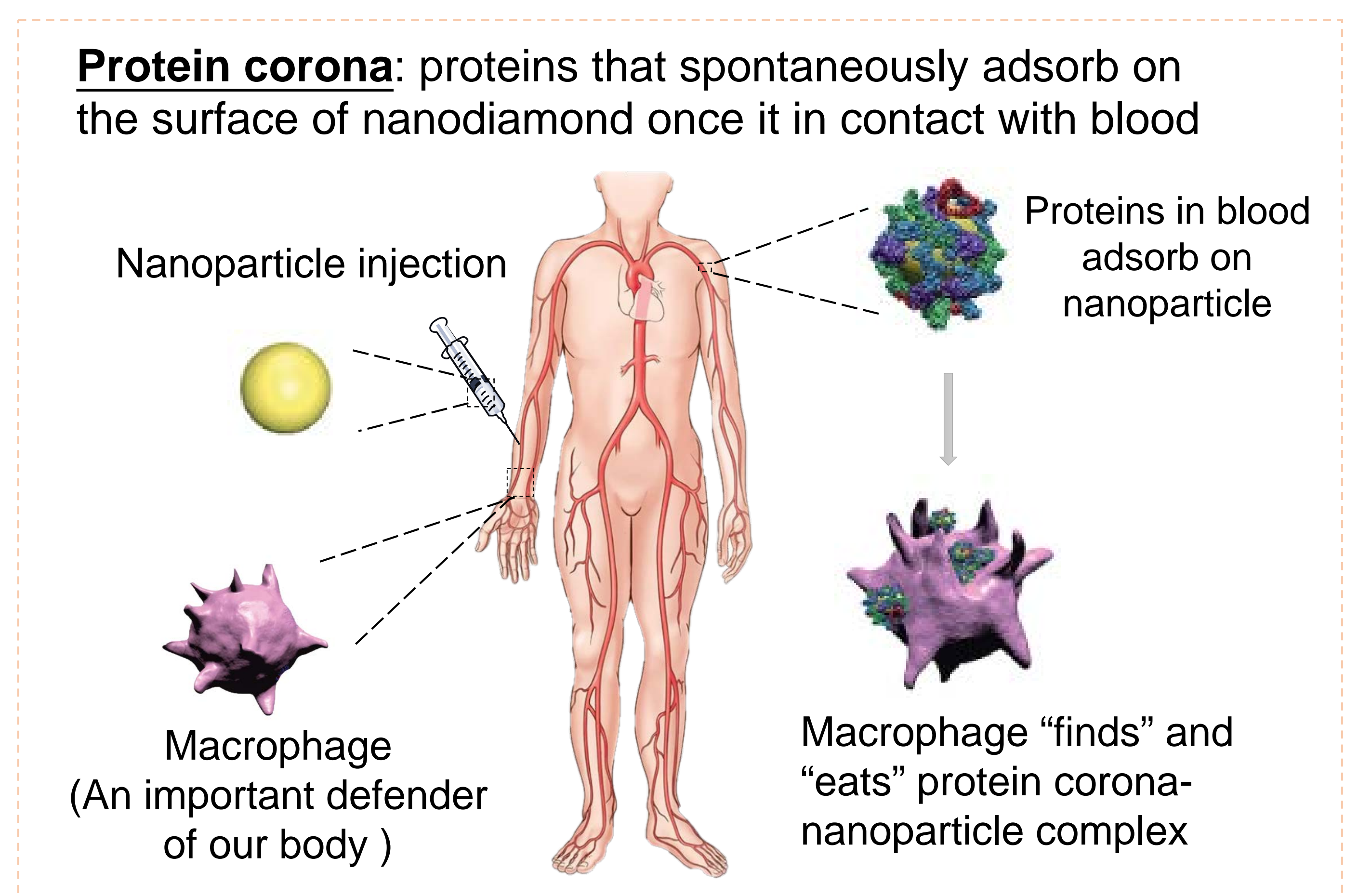
#### ◆ What are the advantages of nanodiamond in biomedicine? (医療応用におけるナノダイヤモンドの利点は何ですか)

- Superior hardness, fluorescence (優れた硬度、蛍光特性)
- Chemical stability of core, tailorable surface chemistry (コアの化学的安定性、表面修飾可能)
- Nanometer size, non-toxicity (小さい、毒性が無い)



#### ◆ What are limitations of nanodiamond in biomedicine? (医療応用におけるナノダイヤモンドの限界は何ですか)

- Easy to aggregate (凝集しやすい)
- Poor dispersibility in water (水への分散性が低い)
- Protein corona formation (タンパク質コロナの生成)
- Non-selectivity to malignant tumor cells (悪性腫瘍細胞への選択性が無い)

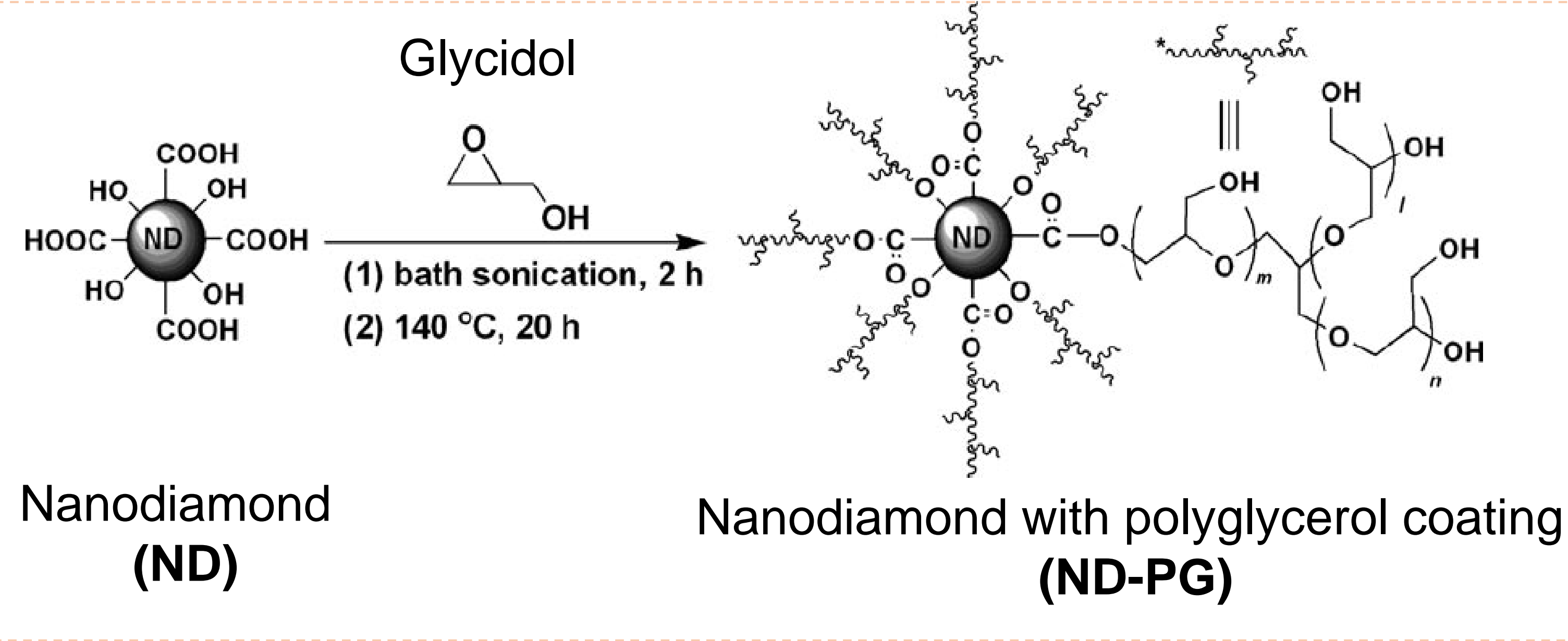




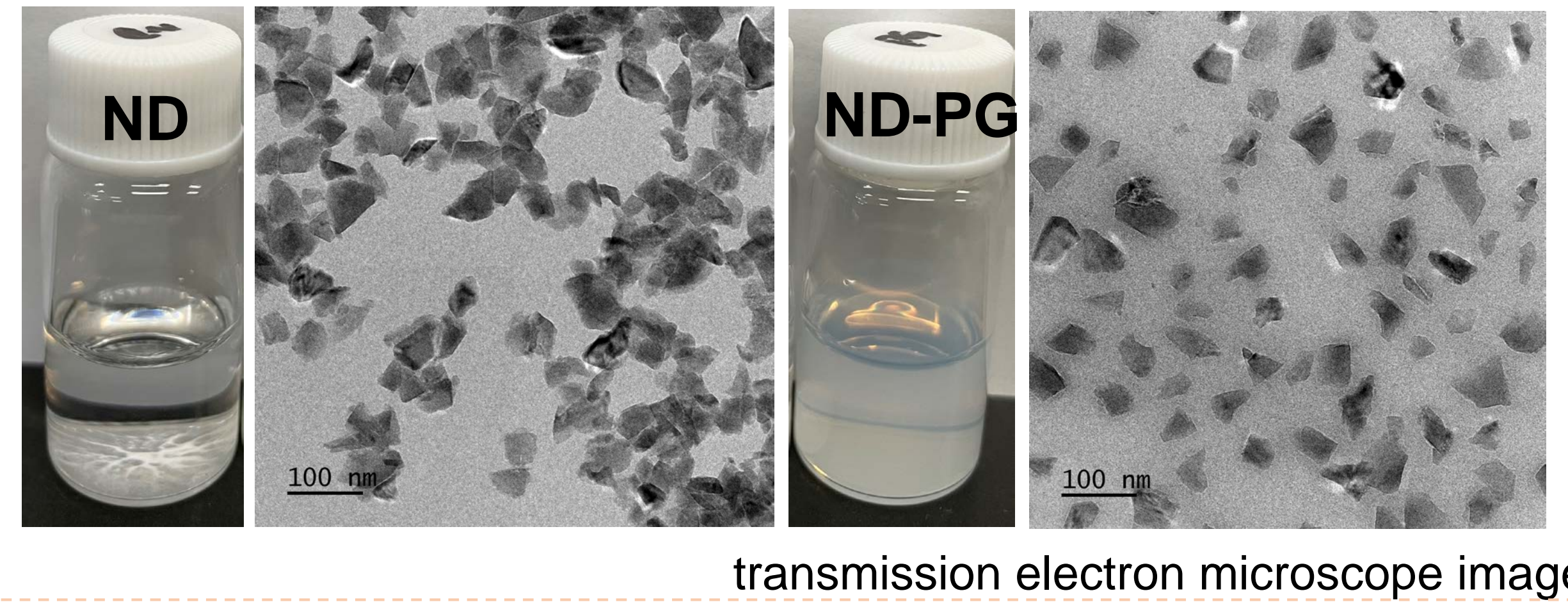
# Our research 我々の研究

## ◆ Polyglycerol coating — invisible cloak for nanodiamond (ポリグリセロールコーティング—ナノダイヤモンドの透明マント)

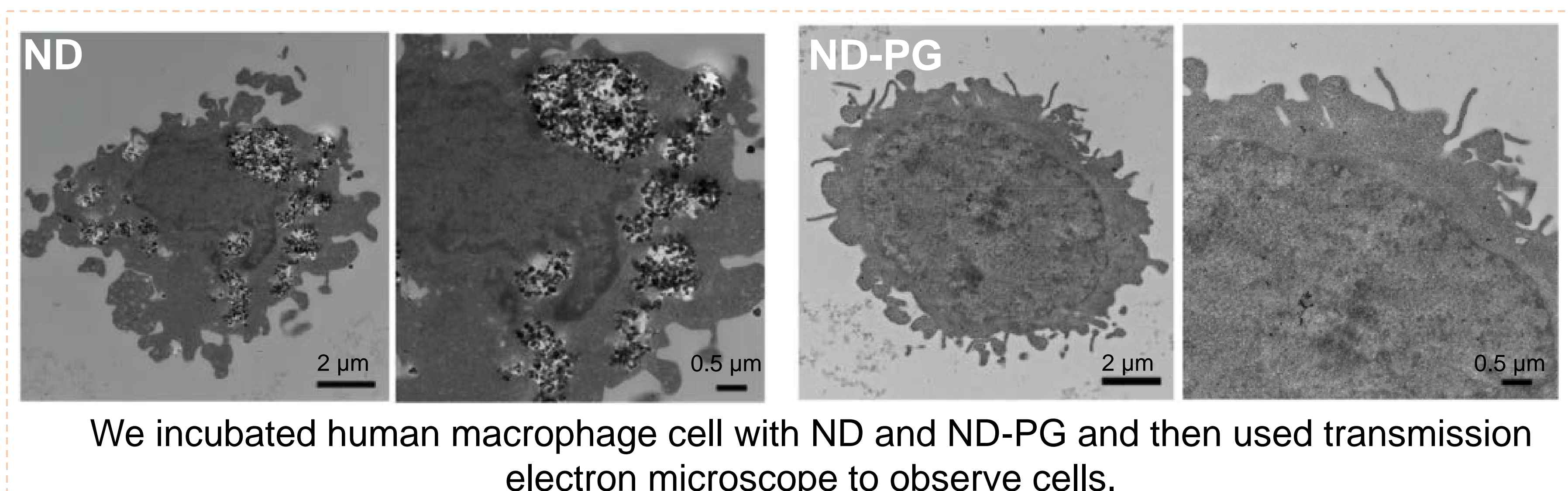
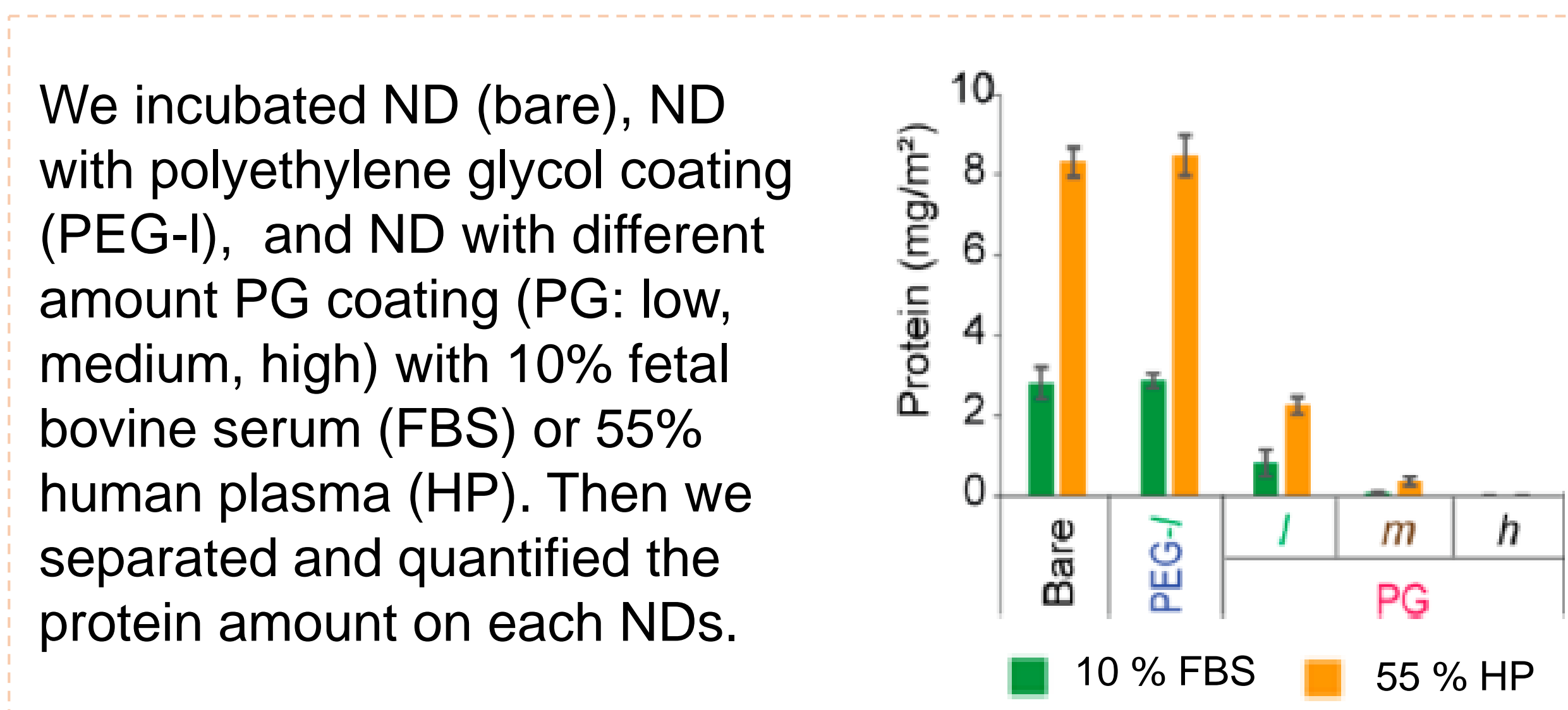
- Synthesis route (合成法)



- Good dispersibility in saline and no aggregation after PG coating (PGコーティングにより生理食塩水への高い分散性)

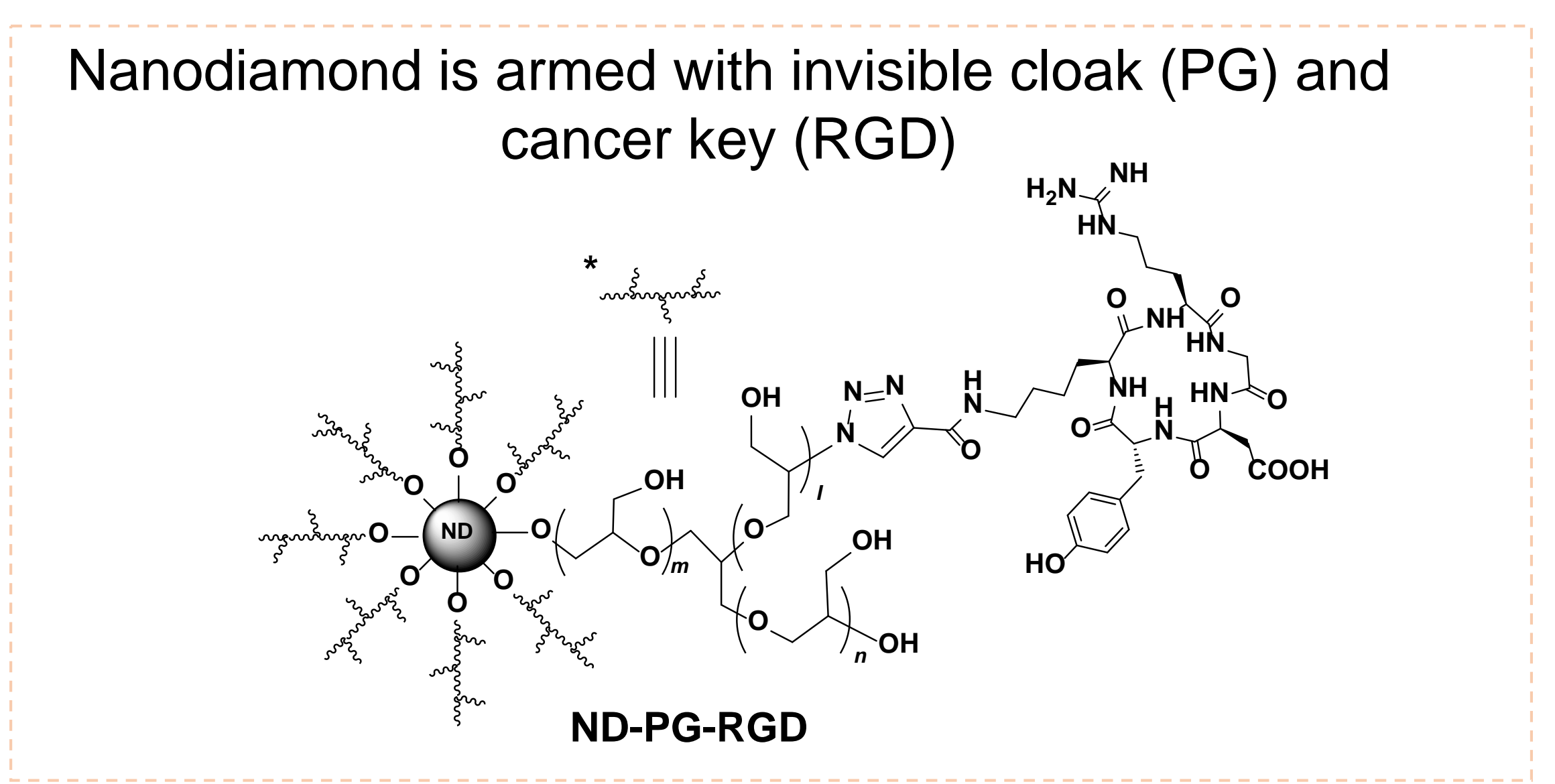
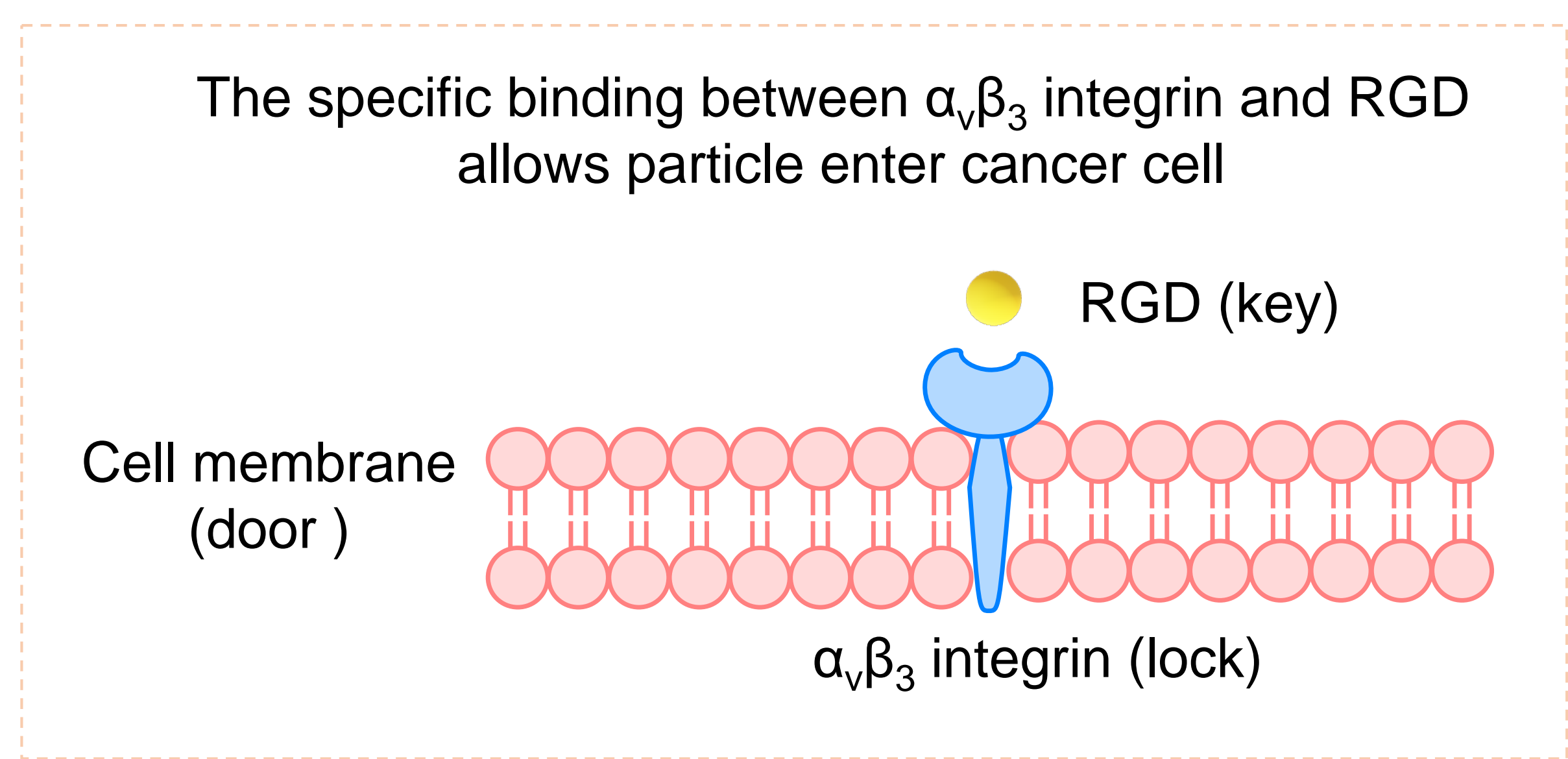
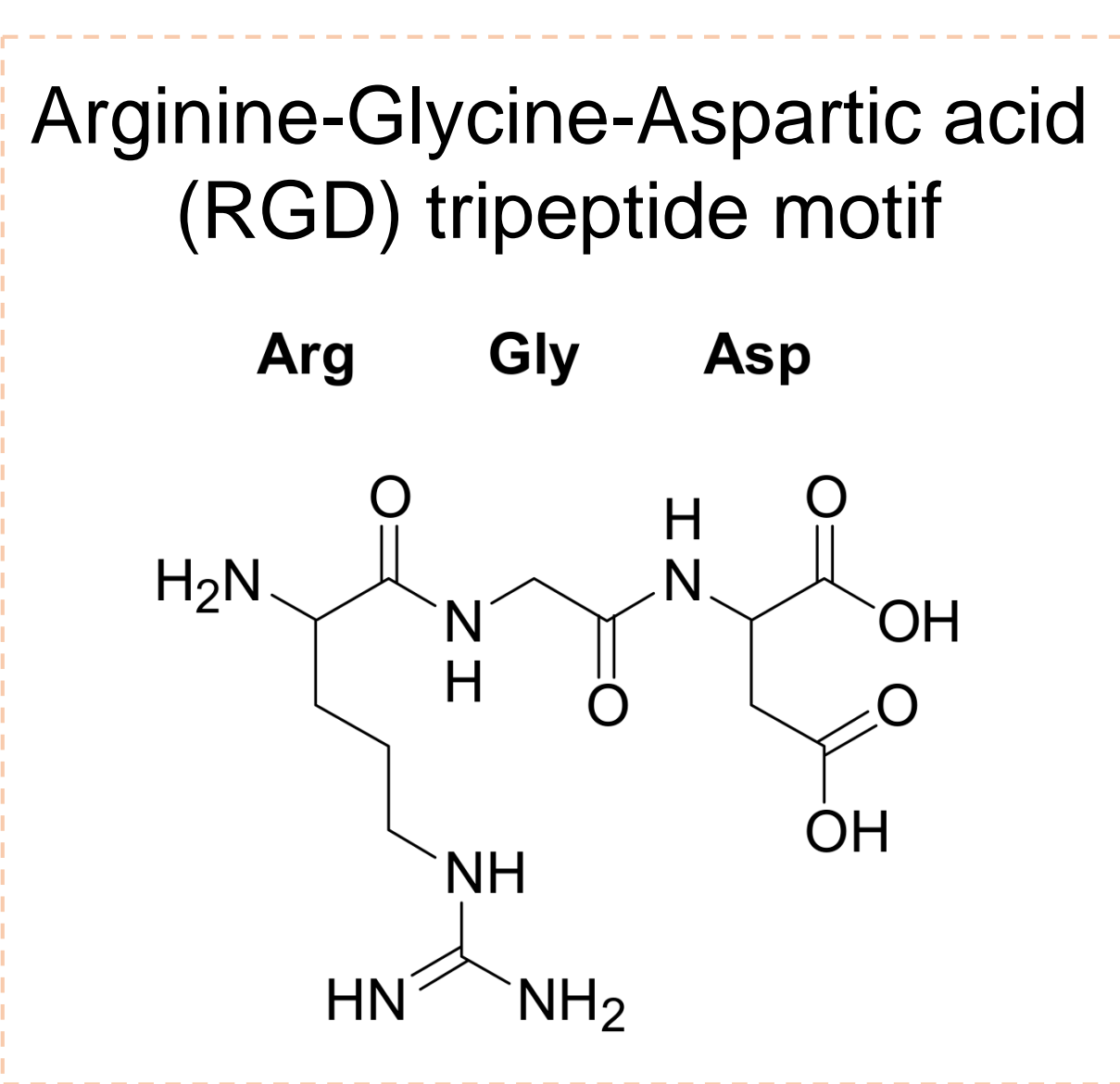


- PG coating prevents protein corona formation and clearance by macrophage (PGコーティングはタンパクコロナの形成とマクロファージによるクリアランスを防止します)

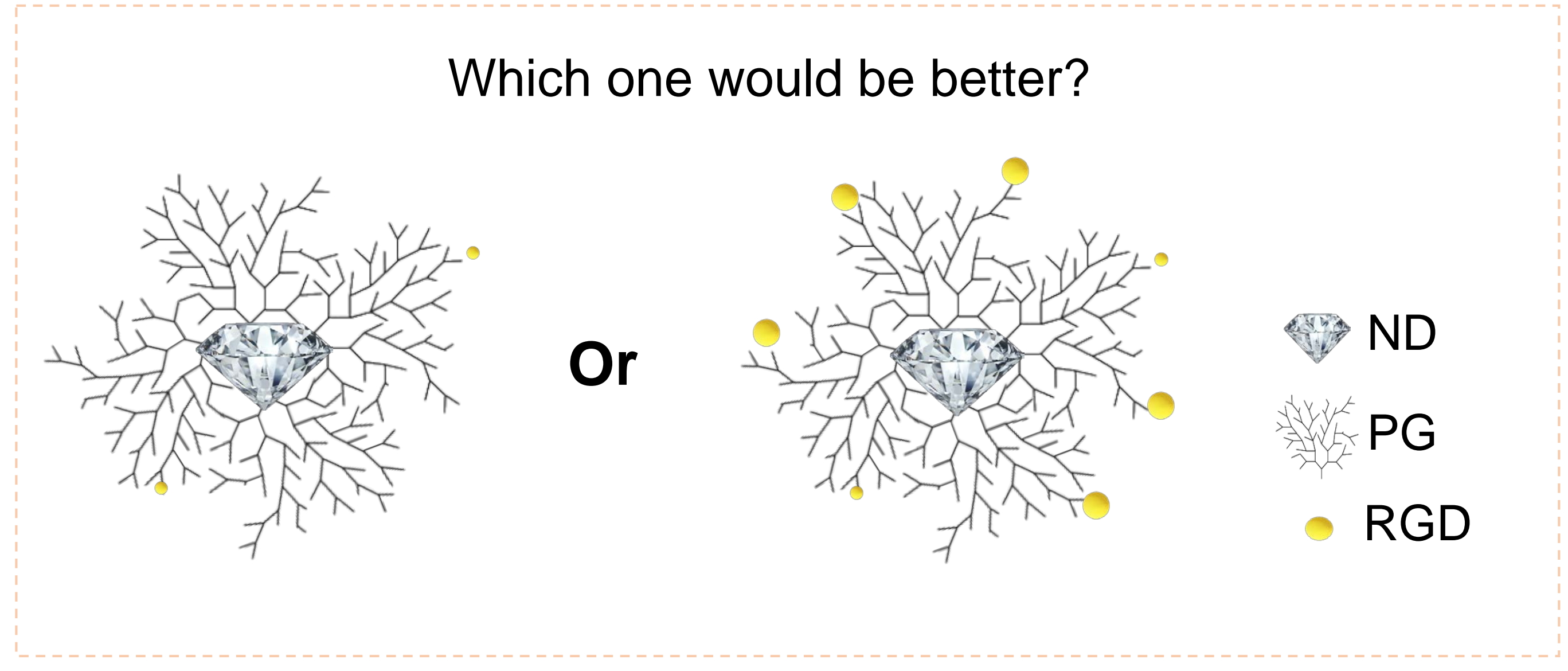
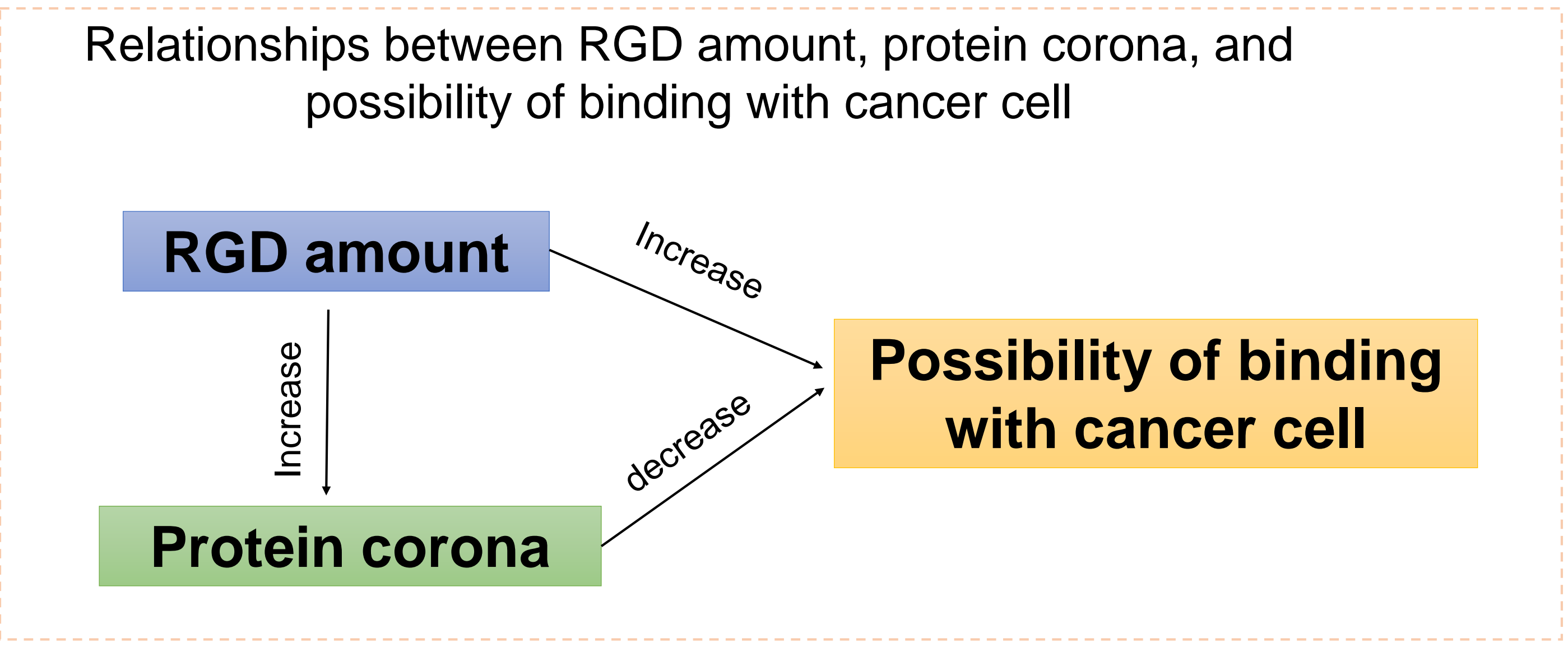


## ◆ Navigation to specific cancer cells (特定のがん細胞を標的にする)

- The lock and key to cancer cells (がん細胞の錠と鍵)



- Question: Is “less” or “more” more efficient? (質問 — 多い方が効果的、少ない方が効果的?)



- Preliminary results --- “Less” is more efficient (予備的結果 — 少ない方が効果的)

We synthesized ND-PG-RGD with different RGD amount (-l: low, -m: medium, -h, high) and incubated with two kinds of tumor cells

