Engineered Proteinticles for Targeted Cancer Therapy

Jeewon Lee

Dept. of Chemical & Biological Engineering
College of Engineering
Korea University

KOREA UNIVERSITY

Biomolecular Engineering Lab.
국가지정연구실 National Research Lab

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ARTICLE

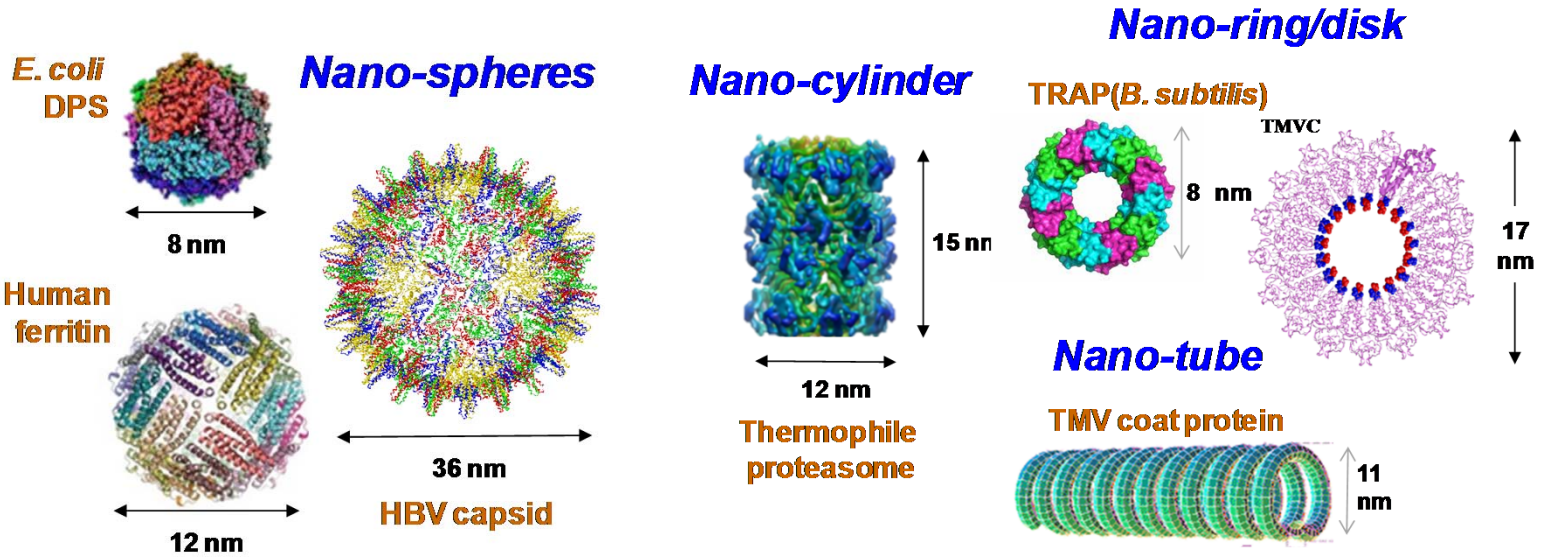
Proteinticle Engineering for Accurate 3D Diagnosis

Jong-Hwan Lee,[†,∥] Hyuk Seong Seo,[†,∥] Jong Am Song,[†,∥] Koo Chul Kwon,[†] Eun Jung Lee,[†] Ho Jin Kim,[‡] Eun Bong Lee,[§] Young Joo Cha,[⊥] and Jeewon Lee[†,*]

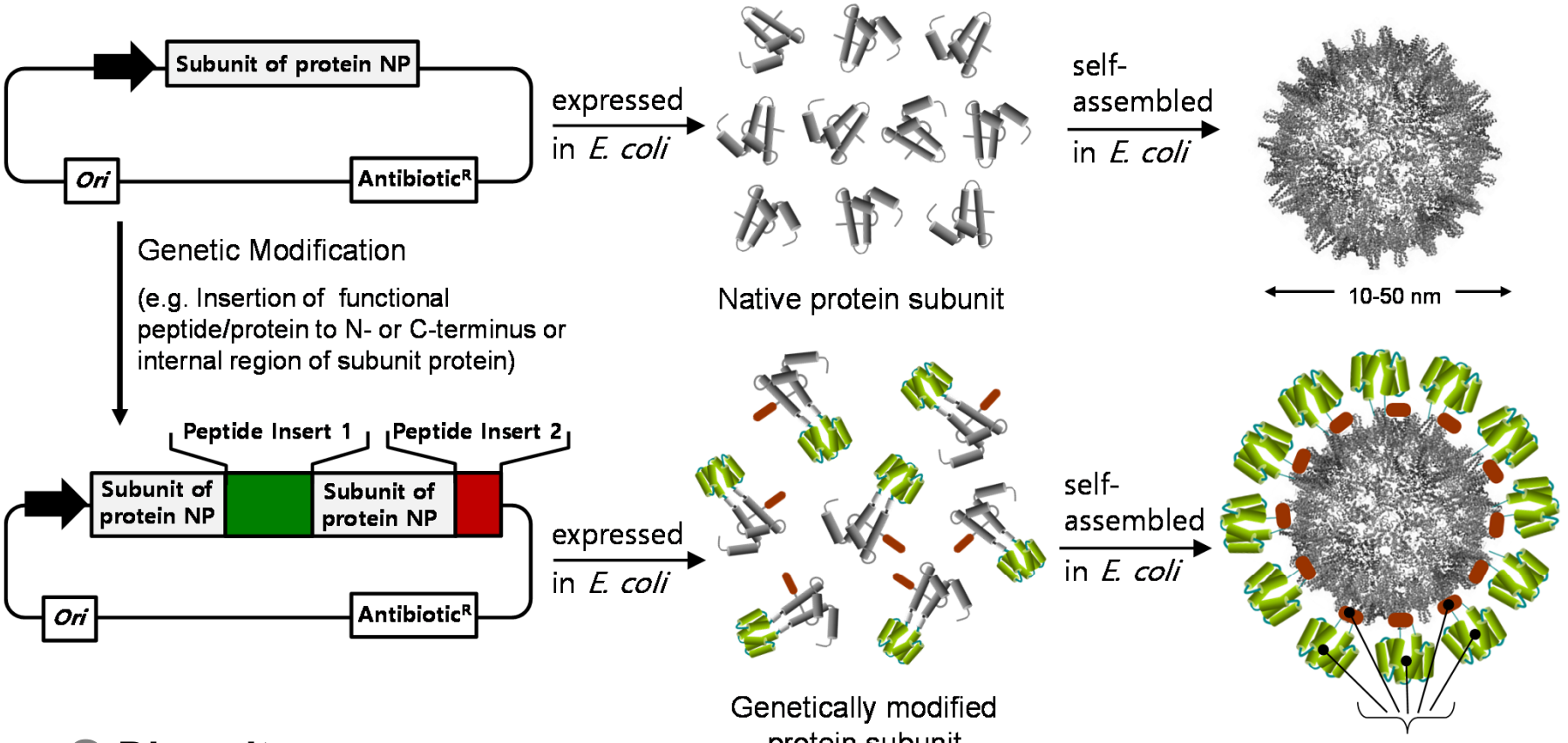
[†]Department of Chemical and Biological Engineering, College of Engineering, Korea University, Anam-Ro 145, Seoul 136-713, Republic of Korea,

* ***Proteinticles***:

- Nano-scale protein particles that are self-assembled inside cells



Proteinticle: synthesis and surface engineering



- **Diversity**
- **Size and shape uniformity**
- **Biocompatibility**
- **Surface engineering at gene level**
- **Cost-effective production**

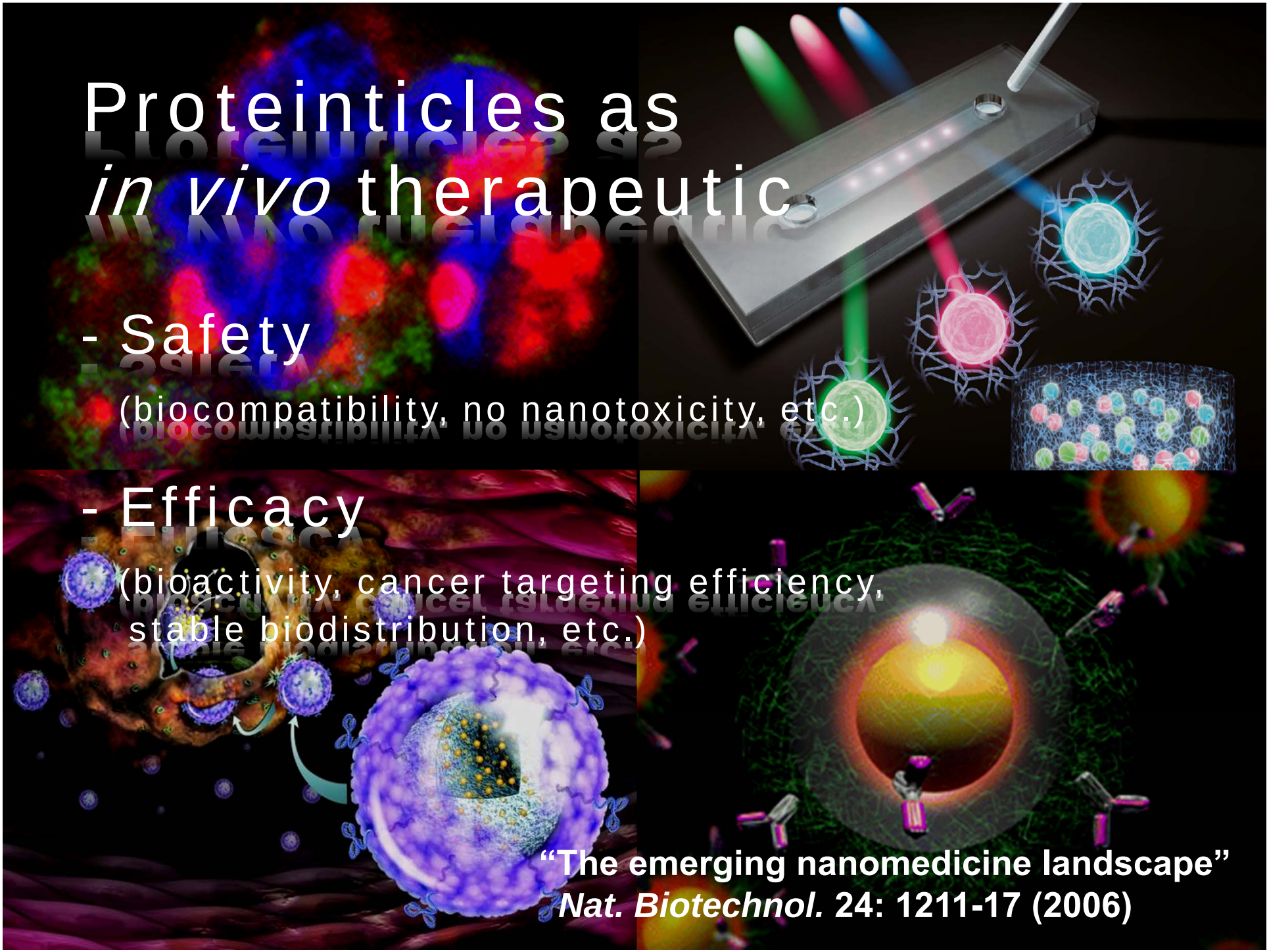
Proteinticles as *in vivo* therapeutic

- Safety

  (biocompatibility, no nanotoxicity, etc.)

- Efficacy

  (bioactivity, cancer targeting efficiency, stable biodistribution, etc.)



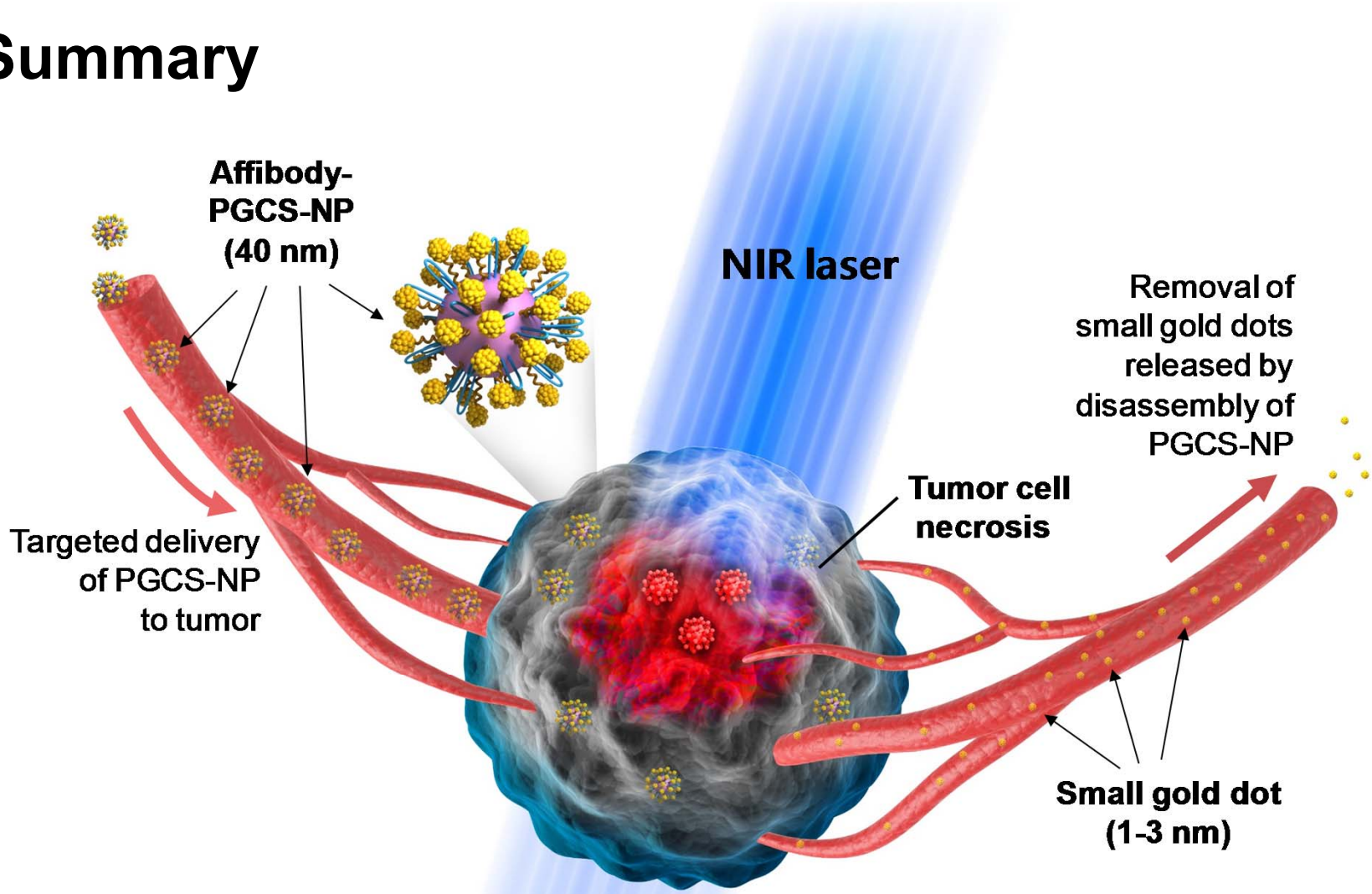
"The emerging nanomedicine landscape"
***Nat. Biotechnol.* 24: 1211-17 (2006)**

* Case 1:

Proteinticle-based

targeted therapy of cancer

Summary

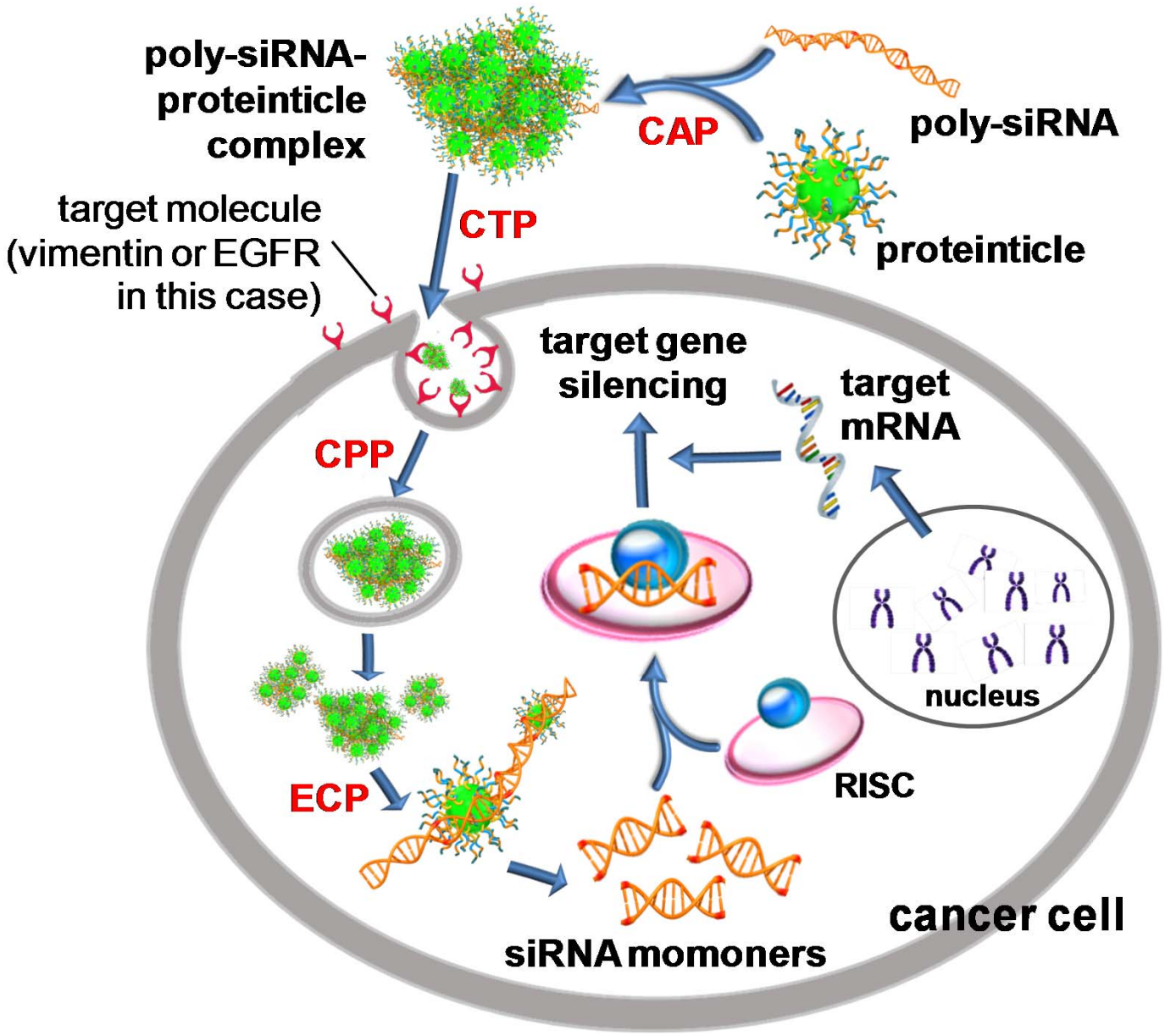


1) Targeted delivery of proteinticle-associated AuNPs to tumor,
2) the release of small Au dots following proteinticle disassembly, and
3) finally the efficient clearance of AuNPs, indicating "smart BNP" which is very useful to any case of *in vivo* application of metal NPs.

* Case 2:

Proteinticle-mediated siRNA delivery to cancer cells

Summary


poly-siRNA-
proteinticle
complex
CAP
poly-siRNA
proteinticle
target molecule
(vimentin or EGFR
in this case)
CTP
target gene
silencing
target
mRNA
CPP
nucleus
ECP
RISC
siRNA momoners
cancer cell

Proteinticles: versatile platform of nanomedicine