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# ORIGINAL BIOTECHNOLOGIES AND AGENETS IN GENE THERAPY AND REGENERATIVE MEDICINE

*Gene/Viral Therapy vectors for potently and safely treating cancer et. al*


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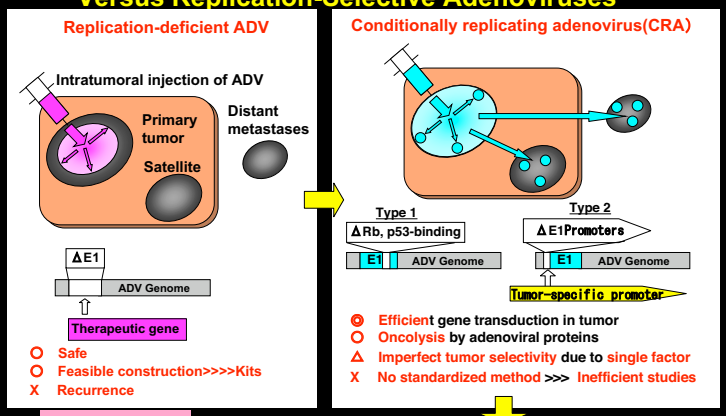
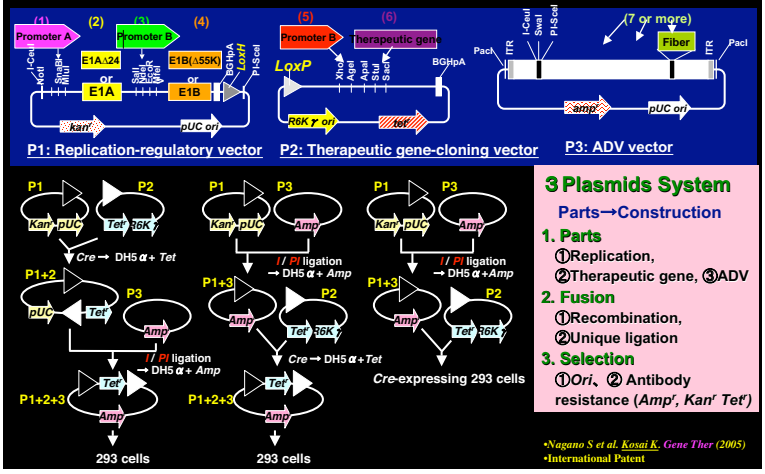
## Cancer Gene Therapy Using Replication-Deficient Versus Replication-Selective Adenoviruses




**m-CRA!!** (CRA that specifically target tumor cells with "multiple" factors )

## Constitution and Construction of m-CRA







**3 Plasmids System**

Parts→Construction

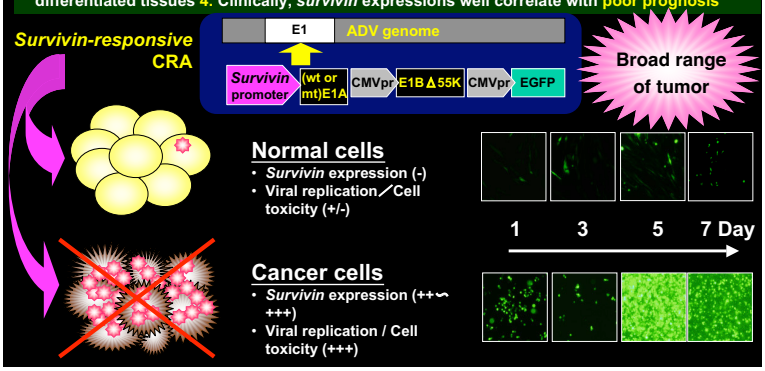
1. **Parts**
   ①Replication, ②Therapeutic gene, ③ADV
2. **Fusion**
   ①Recombination, ②Unique ligation
3. **Selection**
   ①*Ori*、② Antibody resistance (*Amp*$^r$, *Kan*$^r$ *Tet*$^r$)

•*Nagano S et al. Kosai K. Gene Ther (2005)*
•International Patent

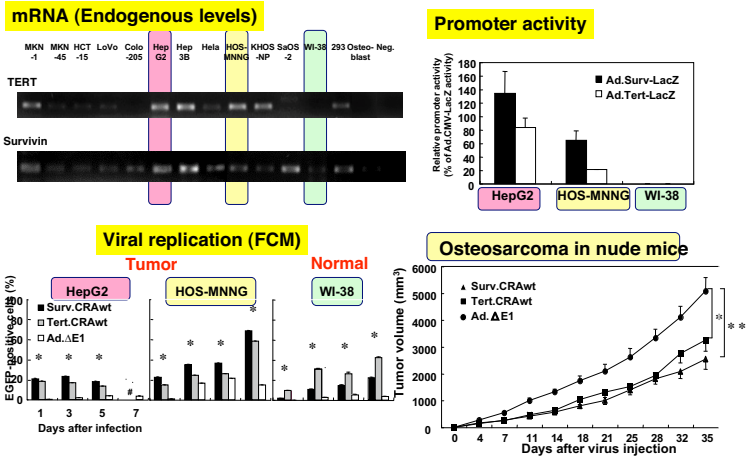
## *Survivin*-Responsive CRA Replicates in Tumor-Specific Manner

***Survivin*?**

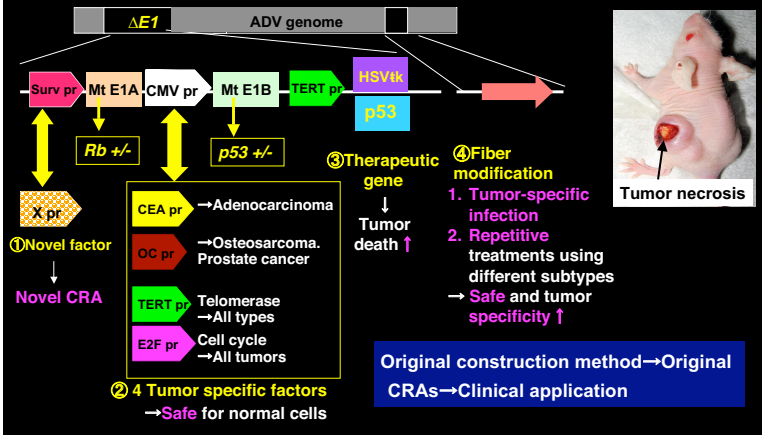
1. Inhibitor of apoptosis gene family 2. Predominantly G2/M specific expression and interaction with microtubules 3. High expression in cancer, but undetectable in normal differentiated tissues 4. Clinically, *survivin* expressions well correlate with poor prognosis




## Surv.CRA Elicits More Tumor-Specific Killing Than Tert.CRA

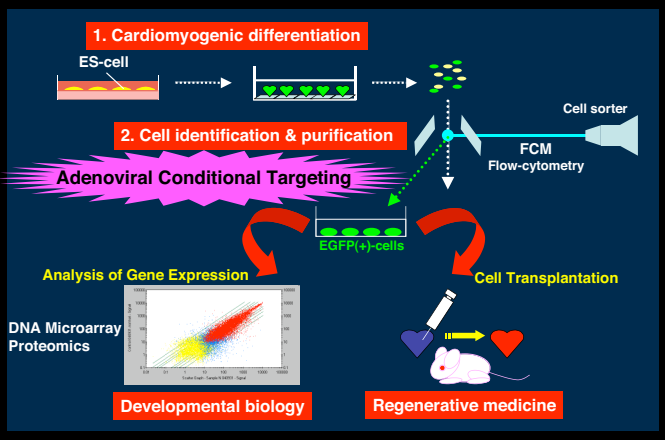



## Enormous Potentials of Our Method to Efficiently Develop and Improve m-CRAs for Innovative Anti-Cancer Agents



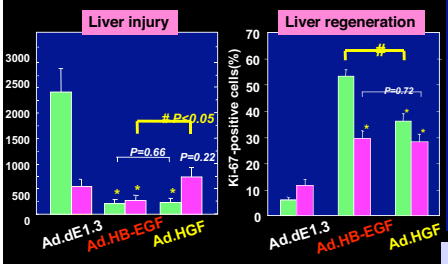

**Original construction method→Original CRAs→Clinical application**

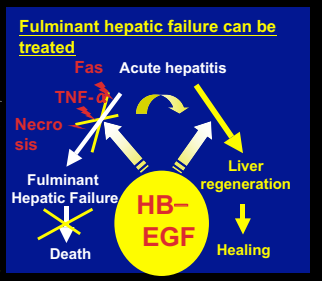
## ES Cell-based Regenerative Medicine And Developmental Biology




## 3. HB-EGF for Treating Liver Disorders

### Regenerative Medicine




Regeneration and treatment within the body→ Ideal medicine

**HB-EFG is more potent than HGF**
**→A novel therapeutic agent for liver diseases**

*NC Khai et al. & Kosai K. J Hepatol (2006)*