

Lead Inventor

Zhiyu Li, Ph.D., Professor

Unmet Need

Targeted and long-lasting formulations of chemotherapeutics with low doses and few side effects.

Opportunity

Simple formulations to delivery two or more therapeutics to cancers with similar pharmacokinetic profiles. Easier to manufacture than nano / micro particles. Good combination with immune checkpoint inhibitors.

Unique Attributes

- Apoptotic agent that acts independently of cancer cell's p53 genotype.
- Has attractive pharmacokinetic profile (such as serum half-life, tissue penetration, and accumulation in cancer cells) (Figure 1).
- Easy to produce and formulate. No covalent protein conjugation needed.
- Interacts with 4 distinct cellular targets, reducing the possibility of development of resistance
- Drug carrier, medical device as well as a therapeutic.

Clinical Applications

- **To sensitize the responses of cancers to chemotherapeutics.**
 - rHSA-p53 synergizes with methotrexate, 5-fluorouracil (Figure 2), paclitaxel, cisplatin, and doxorubicin in SJSA-1, MCF7, MB-231, and MCF7
- **To co-deliver fatty acid-modified chemotherapeutics for optimal efficacy and minimum toxicity.**
 - rHSA-p53 complexed with fatty acid-modified 5-fluorouracil (FA-5FU, Figure 3) and fatty acid-modified paclitaxel (FA-Paclitaxel, Figure 4) shows much higher cytotoxicity.
- **To synergize with HER2-targeting albumin fusion protein (rHSA-(ZHER2)2) against HER2-positive cells.**
 - rHSA-(ZHER2)2 is an albumin fusion protein inhibiting the proliferation of HER2-positive SKBR3 cells. It shows different mechanism from Herceptin and synergizes with rHSA-p53 (Figure 5).

Stage of Development

Preclinical Studies

Intellectual Property

US Patents No. 8,598,311; 9,309,303; 10,053,498.

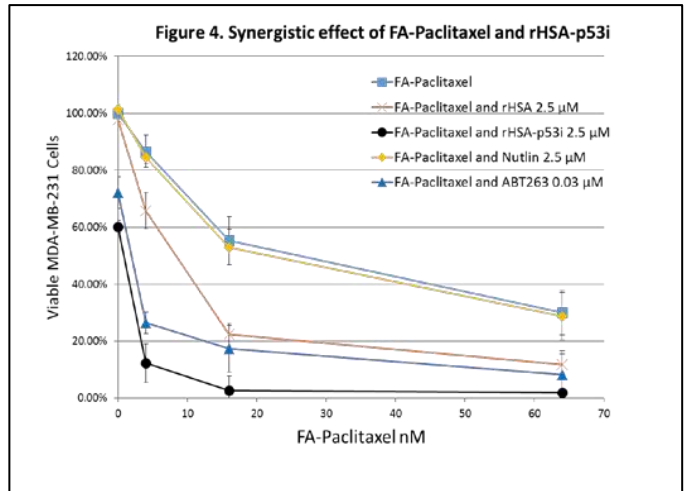
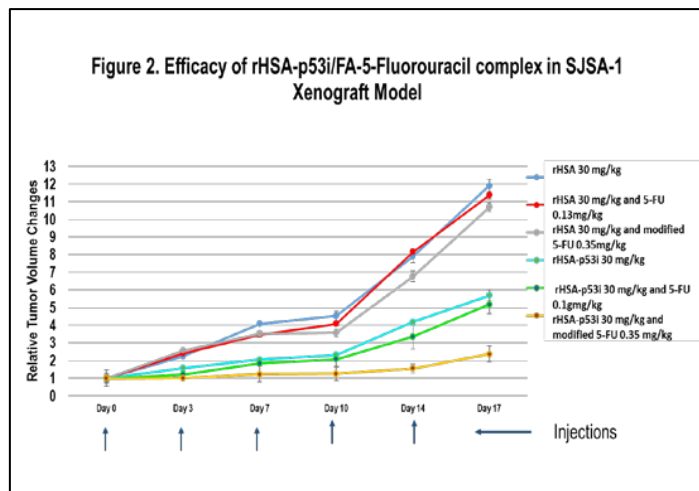
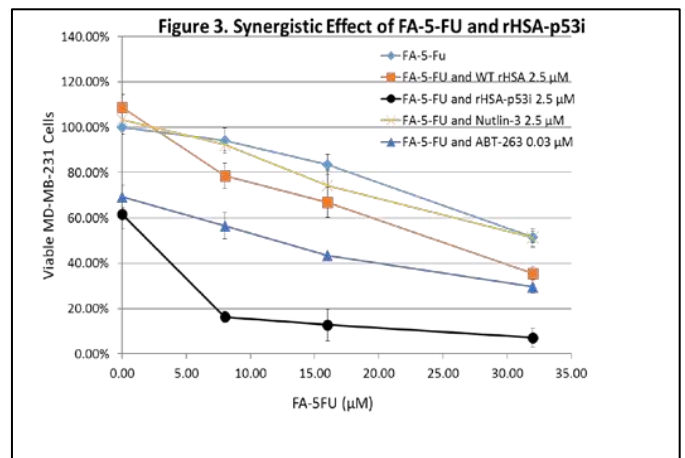
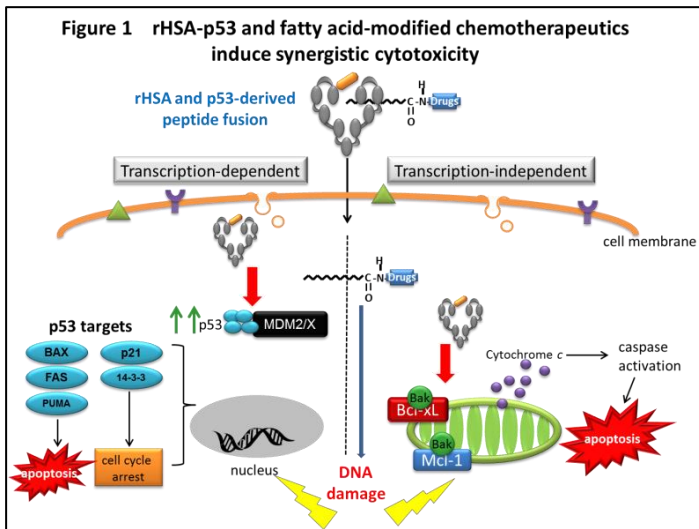
EP3220953A1; EP3220953A4; EP3220953B1; WO2016081897A1.

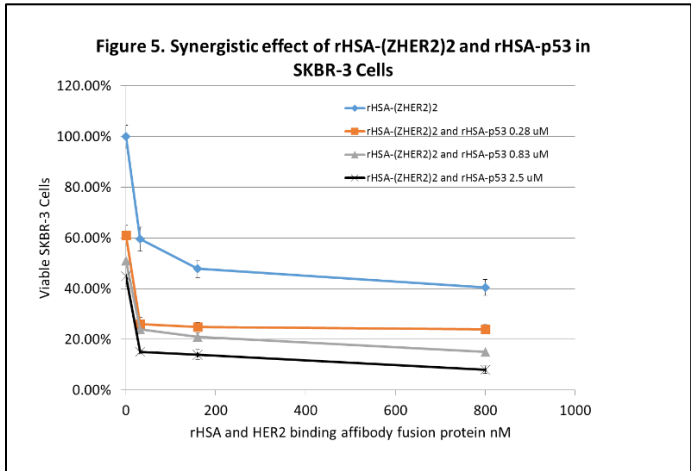
Collaboration or Licensing Opportunity

Actively seeking licensee for commercialization or collaboration to complete preclinical studies.

References

- Daoyuan Dong, Guanjun Xia, Zhijun Li, and Zhiyu Li. (2016) Human serum albumin and HER2-binding affibody fusion proteins for targeted delivery of fatty acid modified molecules and therapy *Mol. Pharmaceutics*, 13 (10): 3370–3380
- Brian Rogers, Daoyuan Dong, Zhijun Li, and Zhiyu Li. (2015) Recombinant Human Serum Albumin Fusion Proteins and Novel Applications in Drug Delivery and Therapy. *Current Curr Pharm Des*, 21(14):1899-907
- Joshi, M., Yao, N., Myers, K.A., and Li, Z., (2013) Human Serum Albumin and p53-Activating Peptide Fusion Protein is Able to Promote Apoptosis and Deliver Fatty Acid-Modified Molecules, *PLoS One*, 8(11), e80926.





Institutional Contact

Jean-Francois "JF" Jasmin PhD
 +1 215.596.8512
 jjasmin@sju.edu

L2C Partners Contact

Merle Gilmore
 +1 610.662.0940
 gilmore@l2cpartners.com