A First in Class Virus-Like Drug Conjugate (VDC) Shows Anti-tumor Activity in Cancers that Commonly Metastasize to the Choroid

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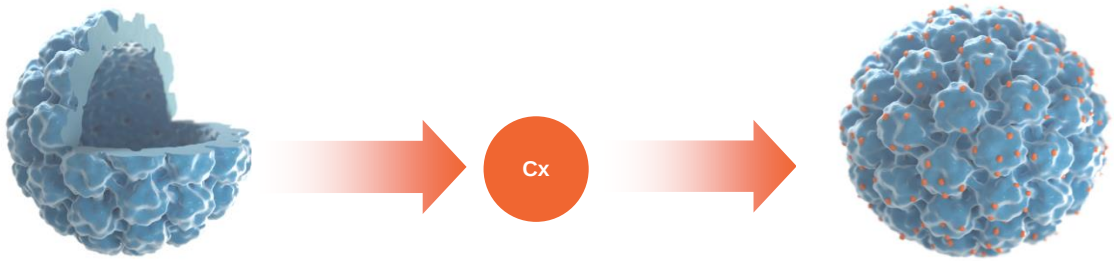
Disclosures

- Anneli Savinainen: Employee at Aura Biosciences
- Rhonda Kines: Employee at Aura Biosciences
- Cadmus Rich: Employee at Aura Biosciences

Targeted Oncology Platform: Virus-Like Drug Conjugates (VDCs)

Virus-Like Particles Covalently Bound to a Cytotoxic Payload to form the VDC

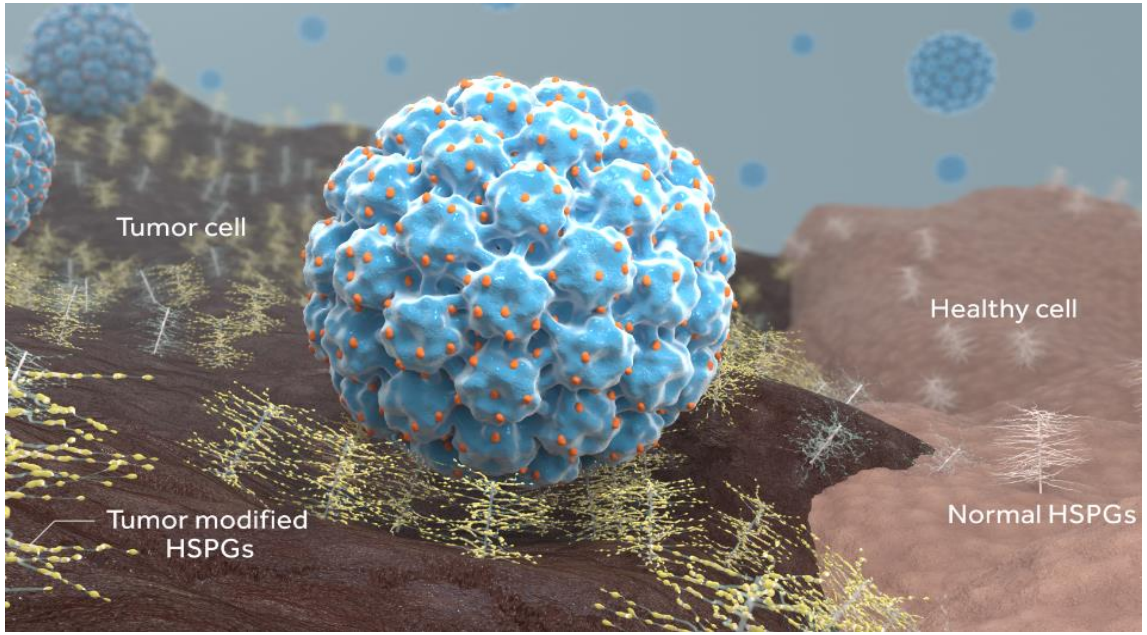


Virus-Like Particle (VLP)

Cytotoxic Drug

Virus-Like Drug Conjugate (VDC)

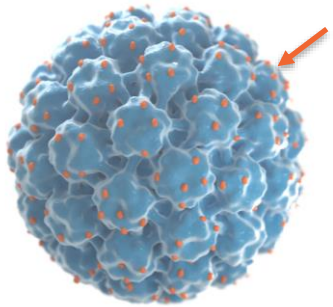
VDCs can Recognize Heparin Sulfate Proteoglycans (HSPGs) Specifically Modified by Tumor Cells



Technology Platform Designed to Target Broad Range of Solid Tumors based on Virus-Like Particles with Multiple Options for Cytotoxic Payloads

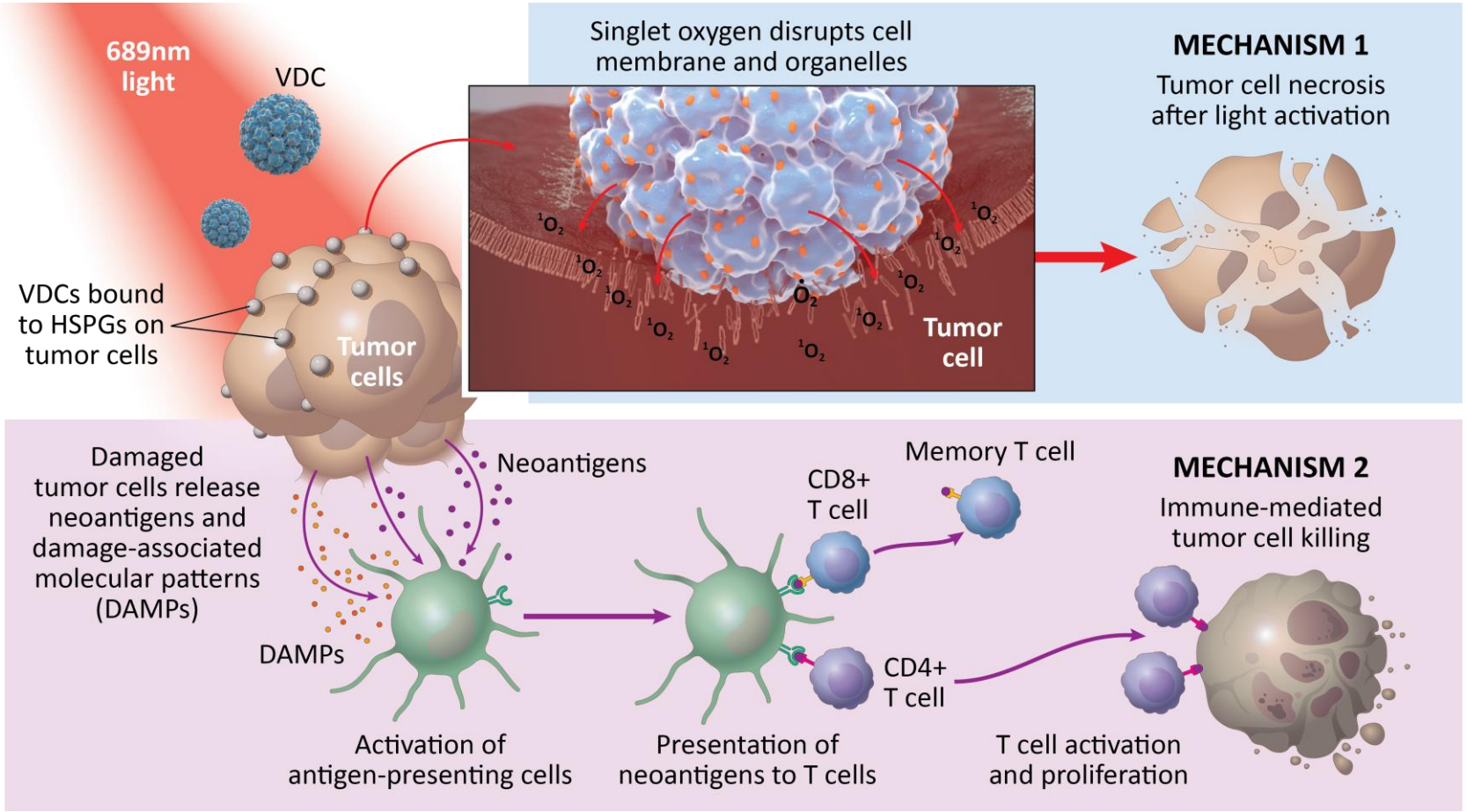
1. Kines et al; *International Journal of Cancer,*138;901–911, February 2016; Kines et al; *Molecular Cancer Therapeutics*, 17(2) February 2018; Kines et al; *Cancer Immunology Research,* May 2021
2. HSPGs: Heparan Sulphate Proteoglycans

AU-011 is a VDC with a Novel Dual Mechanism of Action



AU-011

AU-011 is a novel VDC that consists of an HPV derived VLP conjugated to ~200 molecules of Phthalocyanine dye

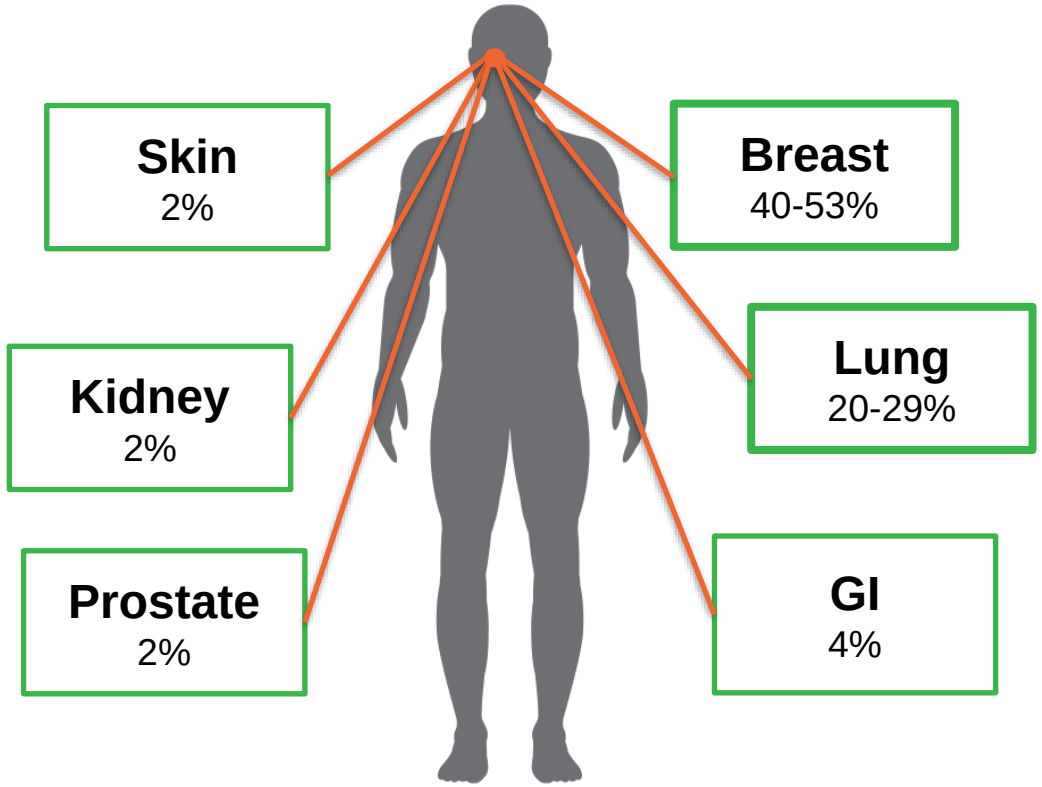


AU-011 Demonstrated Positive Data in Phase 1b/2 Trial in Choroidal Melanoma

Kines et al; *Cancer Immunology Research,* May 2021

Choroidal Metastasis – Background

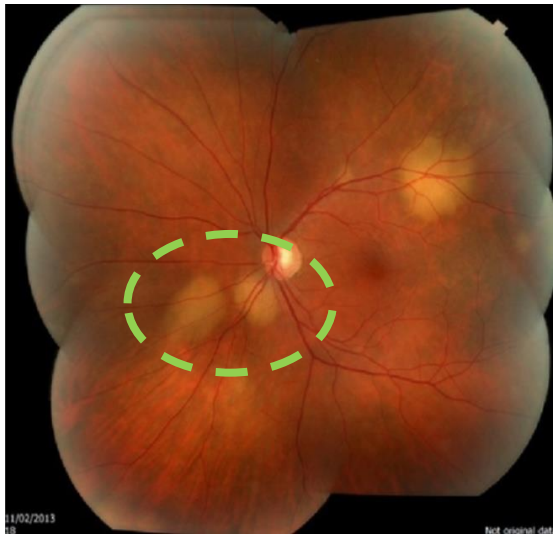
C-Mets Originates from Multiple Primary Cancers[1]



~20K eyes with choroidal metastases in the U.S. annually[2]

Common Features of C-Mets[3]

- Unilateral
- Solitary (72%)
- Choroidal location (88%)



Choroidal Metastasis from non-small cell lung cancer[4]

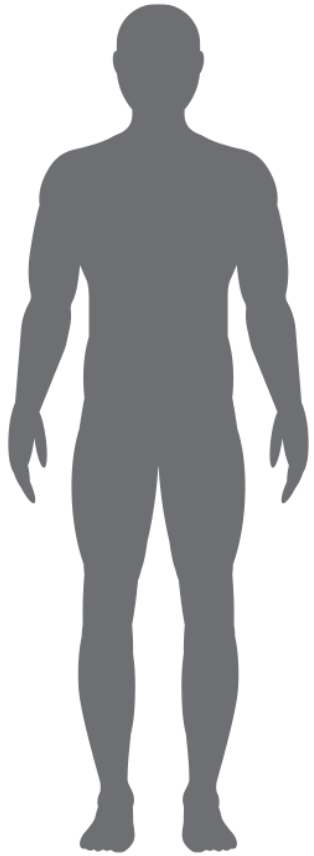
[1]Mathis et al. New concepts…choroidal metastasis, *Progress in retinal and eye research* (2019), [2]Cohen, Ocular metastasis, Eye (2014), [3]Shields et al. Survey of 520 eyes with uveal metastases. *Ophthalmology* (1997), [4]Namad et al. Bilateral choroidal metastasis from non-small lung cancer, Case reports in oncological medicine (2014).

AU-011 Induced Potent Cytotoxicity in Multiple Human Cancer Cell Lines Commonly Causing Choroidal Metastasis

Skin (2%)
EC_{50} = 5 - 113 pM

Kidney (2%)
EC_{50} = 21 - 82 pM

Prostate (2%)
EC_{50} = 13 - 560 pM



Breast (40-53%)
EC_{50} = 58 - 118 pM

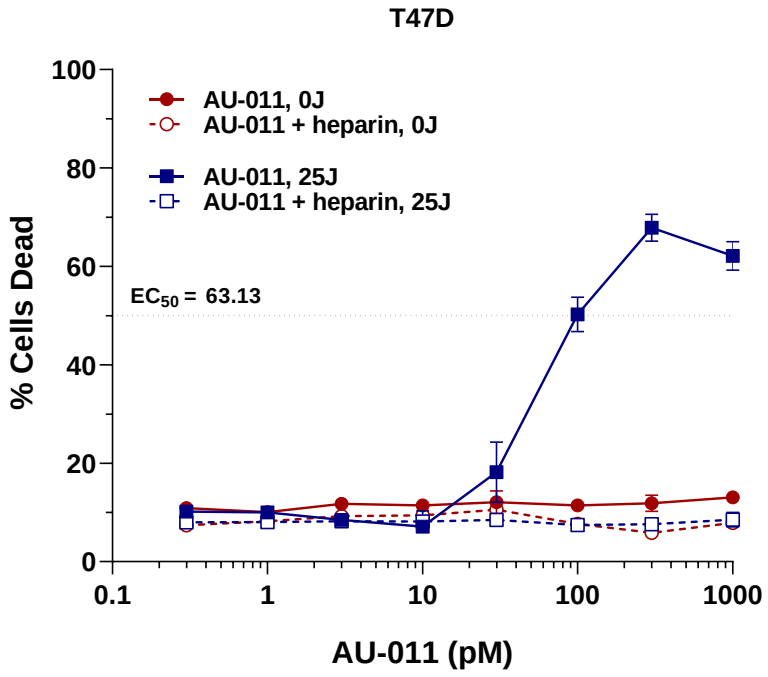
Lung (20-29%)
EC_{50} = 20 - 40 pM

GI (4%)
EC_{50} = 34 - 386 pM

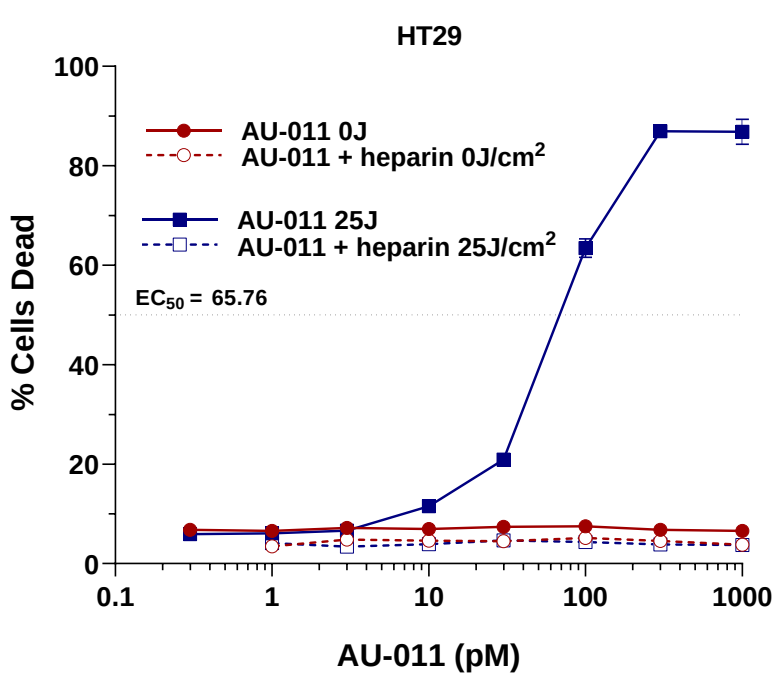
AU-011 binds to cancer cells and induce potent cell killing upon light activation with potencies (EC50's) in the picomolar range

AU-011 Demonstrated Binding and Potent Cytotoxicity in Multiple Human Cancer Cell Lines Commonly Causing Choroidal Metastasis

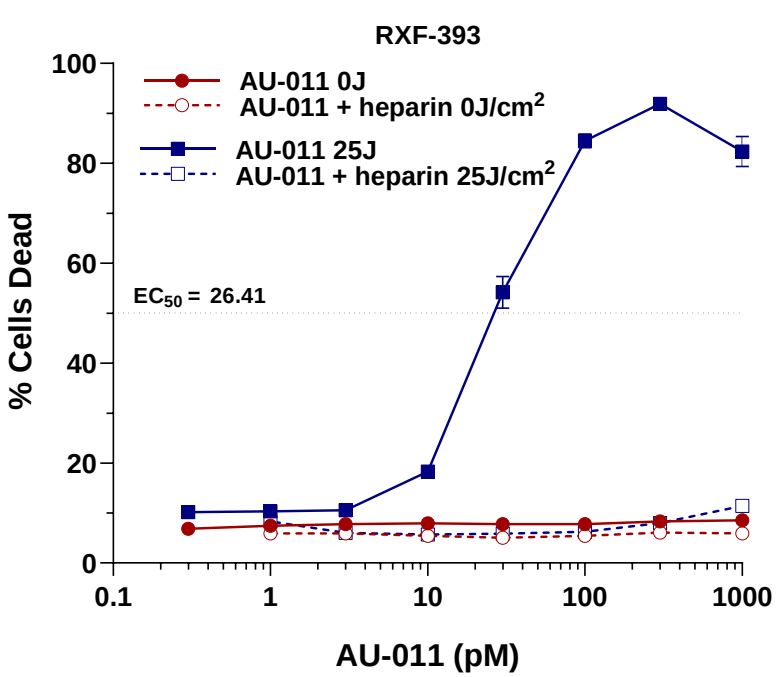
Breast



Colon



Renal

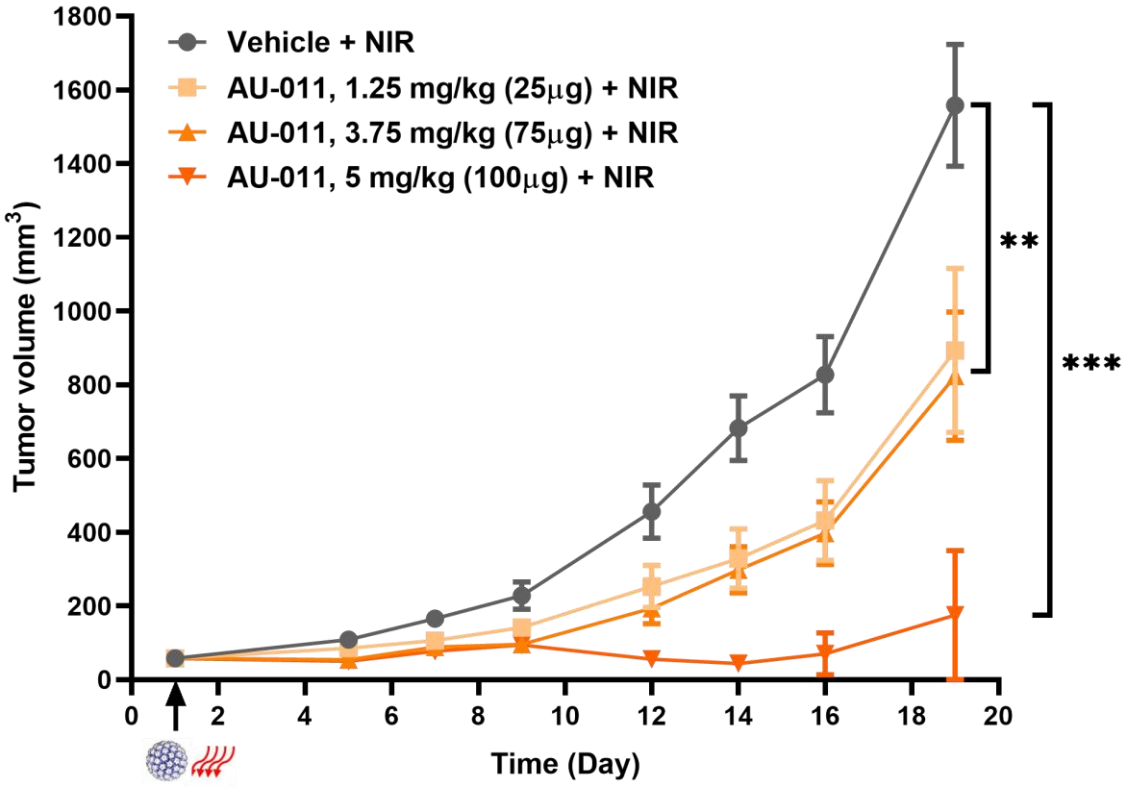


- **AU-011 binds to cancer cells and induces potent cell killing upon light activation**
- **Specificity is demonstrated by inhibition of HSPG's binding by heparin**
- **AU-011 has no cytotoxicity in the absence of light activation**

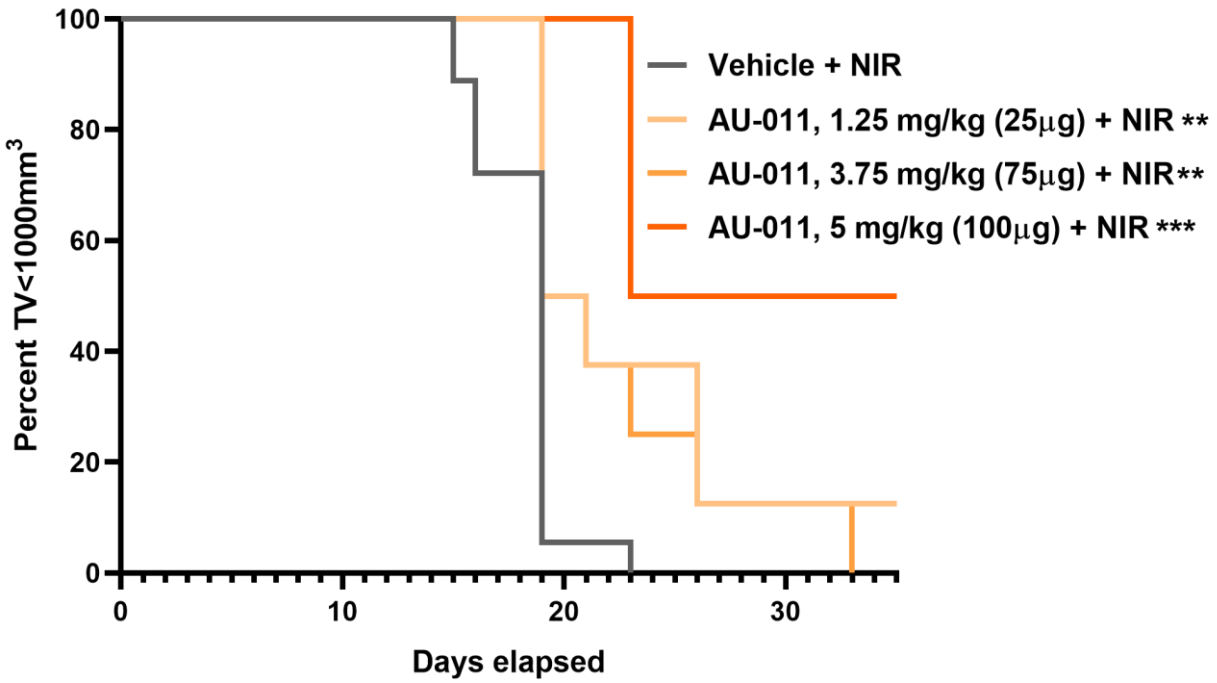
Single Administration of AU-011 Inhibited Tumor Growth and Prolonged Survival in a Dose-Dependent Fashion – **Breast Cancer**

Breast Cancer In-Vivo (Syngeneic Mouse Model, EMT-6)

Reduced Tumor Growth



Prolonged Survival

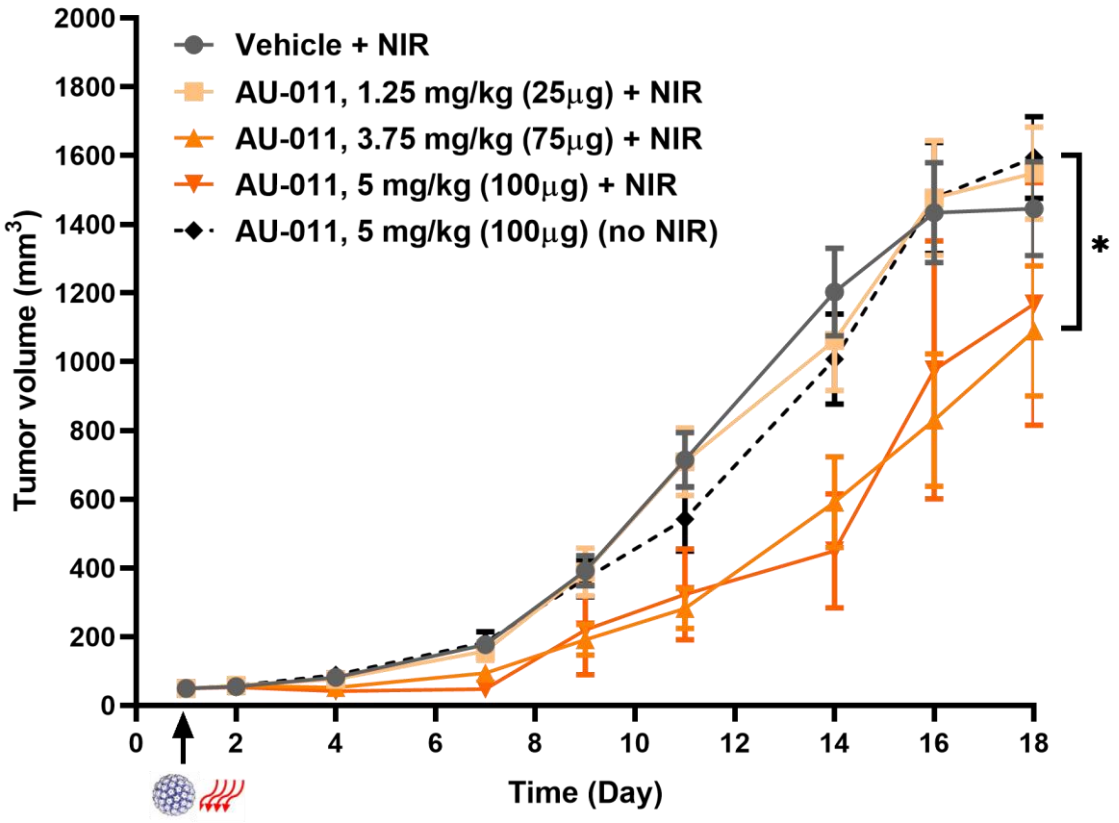


Tumor cells were implanted subcutaneously. AU-011 treatment was initiated when tumors reached approximately 50 mm^3. Treatment consisted of a single intravenous administration of AU-011 followed 12 hours later by light activation (400 mW/cm^2, 58 J/cm^2). Tumor volumes were measured over time (N=8-12)

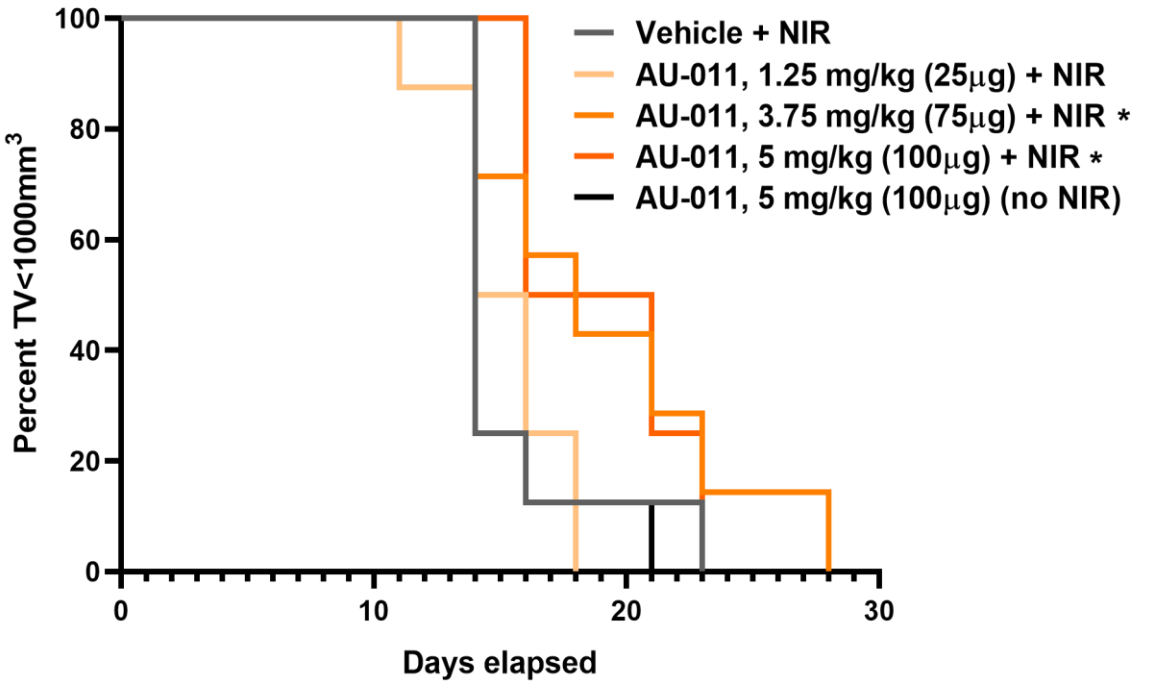
Single Administration of AU-011 Inhibited Tumor Growth and Prolonged Survival in a Dose-Dependent Fashion – **Renal Cancer**

Renal Cancer In-Vivo (Syngeneic Mouse Model, RENCA)

Reduced Tumor Growth



Prolonged Survival

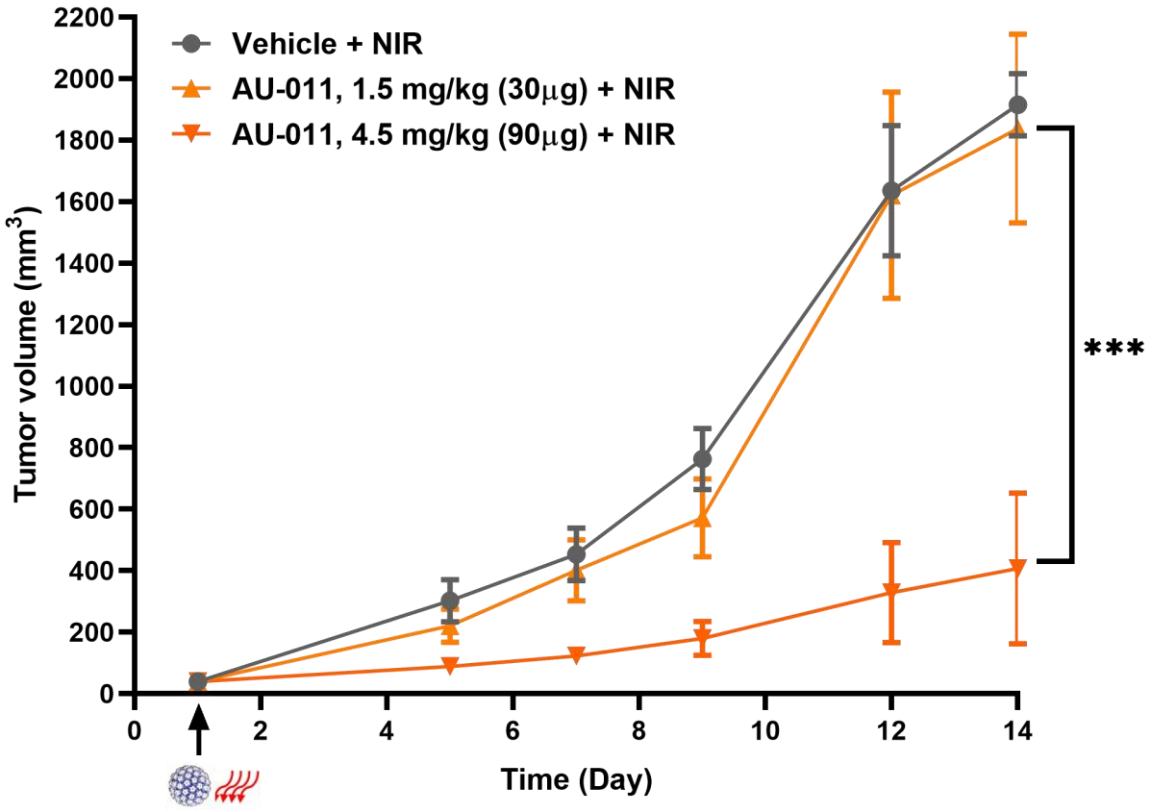


Tumor cells were implanted subcutaneously. AU-011 treatment was initiated when tumors reached approximately 50 mm^3. Treatment consisted of a single intravenous administration of AU-011 followed 12 hours later by light activation (400 mW/cm^2, 58 J/cm^2). Tumor volumes were measured over time (N=8).

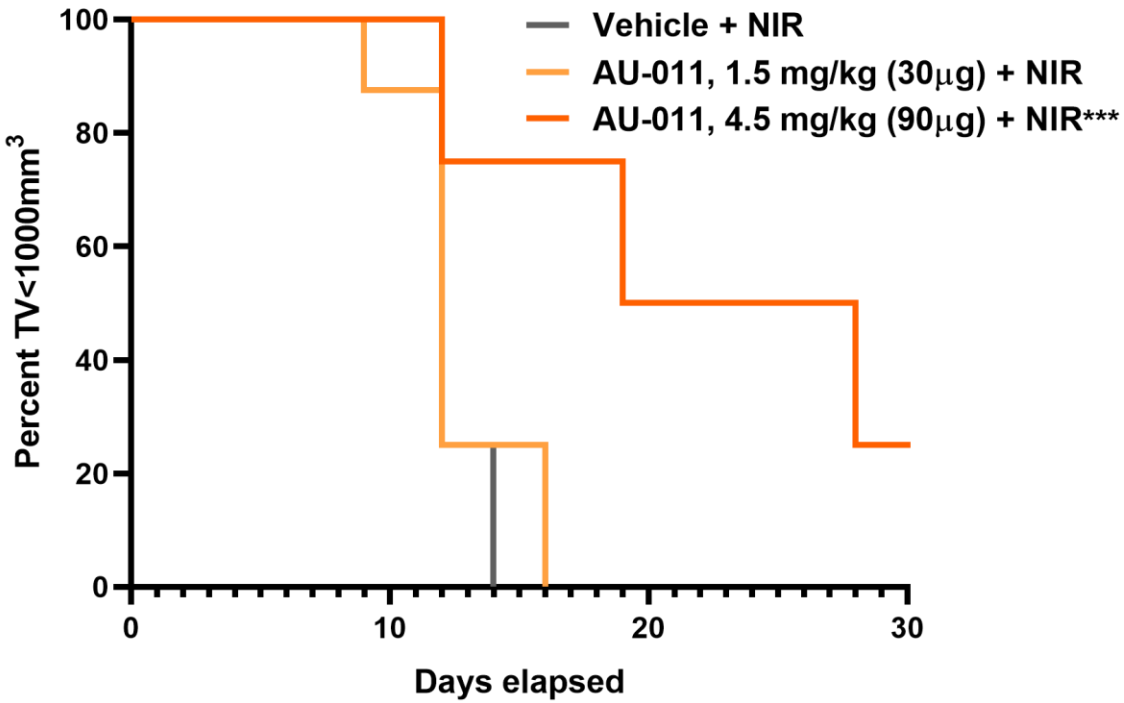
Single Administration of AU-011 Inhibited Tumor Growth and Prolonged Survival in a Dose-Dependent Fashion – **Colon Cancer**

Colon Cancer In-Vivo (Syngeneic Mouse Model, CT26)

Reduced Tumor Growth



Prolonged Survival



Tumor cells were implanted subcutaneously. AU-011 treatment was initiated when tumors reached approximately 50 mm^3. Treatment consisted of a single intravenous administration of AU-011 followed 12 hours later by light activation (400 mW/cm^2, 58 J/cm^2). Tumor volumes were measured over time (N=8).

Conclusion

- AU-011 can bind to, and kill, tumor cells derived from the most common cancer types known to metastasize to the choroid
  - Binds to modified HSPG's on the surface of cancer cells
  - No cytotoxicity in the absence of light activation
- AU-011 showed dose-dependent activity in vivo using syngeneic mouse models for cancer types known to metastasize to the choroid
  - Significantly inhibits tumor growth and prolongs survival
  - Statistically significant results in multiple tumor models

Study results support further evaluation of AU-011 as a potential treatment for choroidal metastasis

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