MAEGI MEDICINE

First-in-class immune gene therapy for human health

Our team

Scientific Co-Founders

Management team
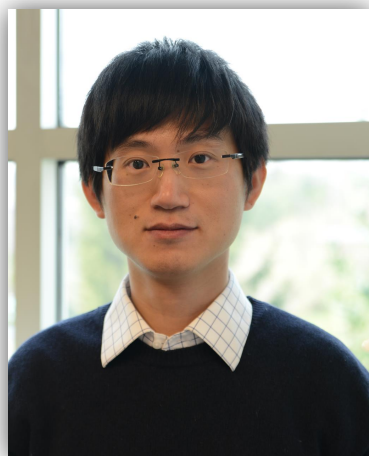
**Sidi Chen
PhD**

*Assistant Professor
of Genetics
Systems Biology Institute
NIH New Innovator
Yale School of Medicine*
sidi.chen@yale.edu

- **NIH Director's New Innovator Award (2018)**
  for T cell engineering & immunotherapy target discovery
- Lead an well-funded research group
  with 20+ scientists at Yale University

- **Blavatnik Innovator Awardee (2019)**
- **MIT Tech Review 35 Innovators (Regional)**
- **Funded by NIH, DoD and 9 other agencies**
- Trained with Phil Sharp (1993 Nobel Laureate)
  and Feng Zhang (Pioneer in Gene Editing)
- High-Profile Publications in **Science, Nature, Cell,
  Nature Methods, Nature Neuroscience**, *etc*
- (Co)Inventor of 14+ IPs in oncology and
 immunooncology

**Charles Fuchs
MD MPH**

*Richard Sackler and Jonathan
Sackler Professor of Medicine,
Yale School of Medicine
Director of Yale Cancer Center
Physician-in-Chief,
Smilow Cancer Hospital*
charles.fuchs@yale.edu

- **Oversees a large enterprise of NCI-designated
  Comprehensive Cancer Center**
- Led, ran, and overseen numerous clinical trials
- **Brought 3 drugs approvals by FDA**

- Physician-in-Chief, Smilow Cancer Hospital
- Led, ran, and overseen numerous clinical trials
- Board of directors in Biotech CytomX
- >550 publications in oncology including *NEJM,
  JAMA, Lancet, etc*
- Extensive experience with leadership or
  advisory roles in biotech, venture capital and
  pharma

- **In discussion**
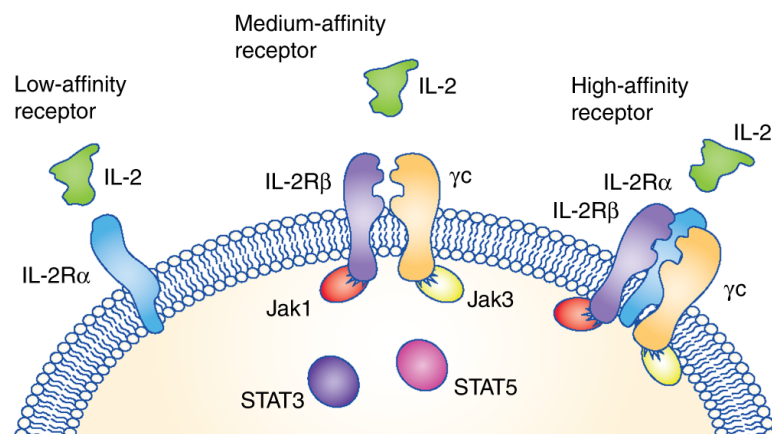- **EIRs and entrepreneurs welcome**
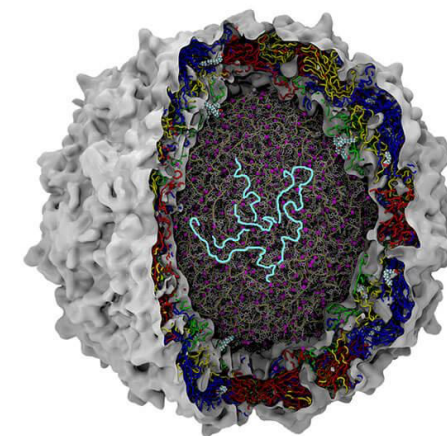
Major classes of cancer immunotherapy
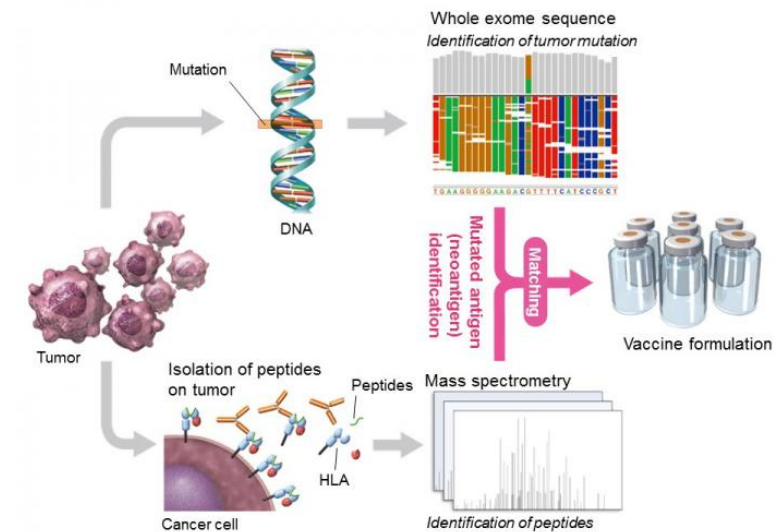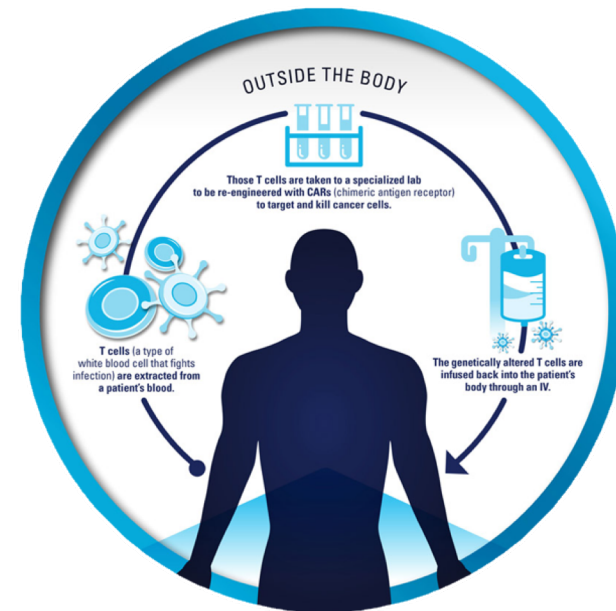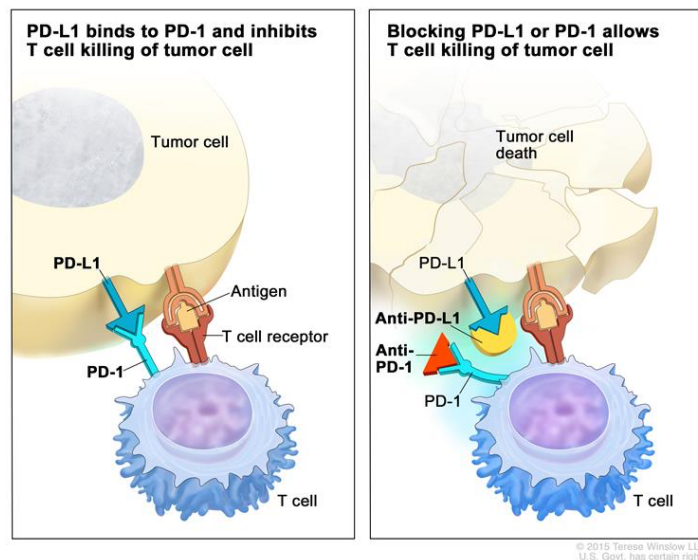
Checkpoint blockade
(e.g. Monoclonal Antibodies)

Cell therapy
(CAR-T, TIL and other cells)

Cancer vaccine

Non-specific immunotherapy
(Cytokines, BCG)

Oncolytic virus

Pictures dapted from NPG, NCI, CRUK, Penn, NRC etc.

- A New Class of Cancer Immunotherapy?

What is MAEGI

- Multiplexed Activation of Endogenous Genes as Immunotherapy

  - highly scalable with CRISPR activation (CRISPRa) system with viral vectors

  - for pool augmentation of neoantigens

  - for multiplexed induction of immunomodulators

  - for treatment of cancer and various other indications

- MAEGI is the Sixth Major Class of Cancer Immunotherapy

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Precision / Personalized MAEGI design and synthesis

Wang et al. 2019 *Nature Immunology*
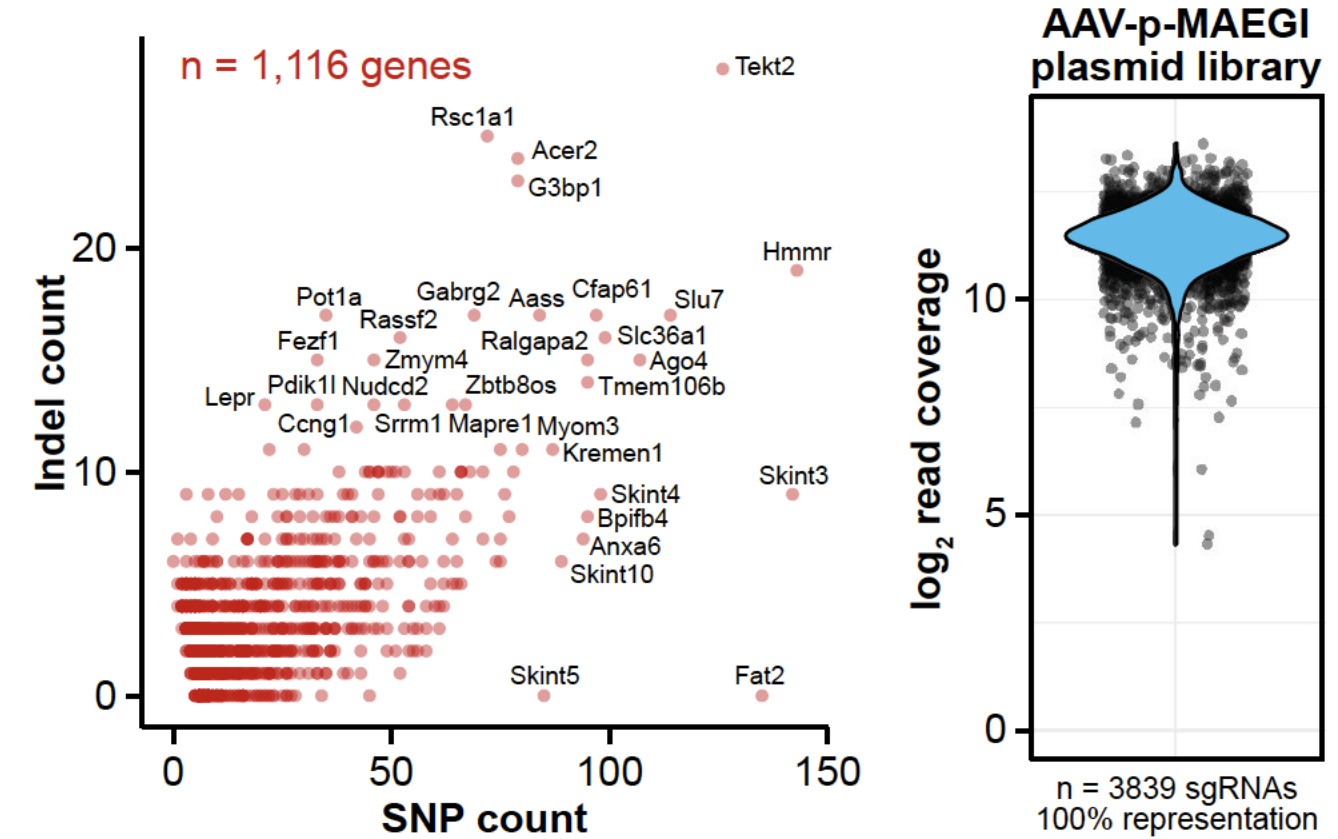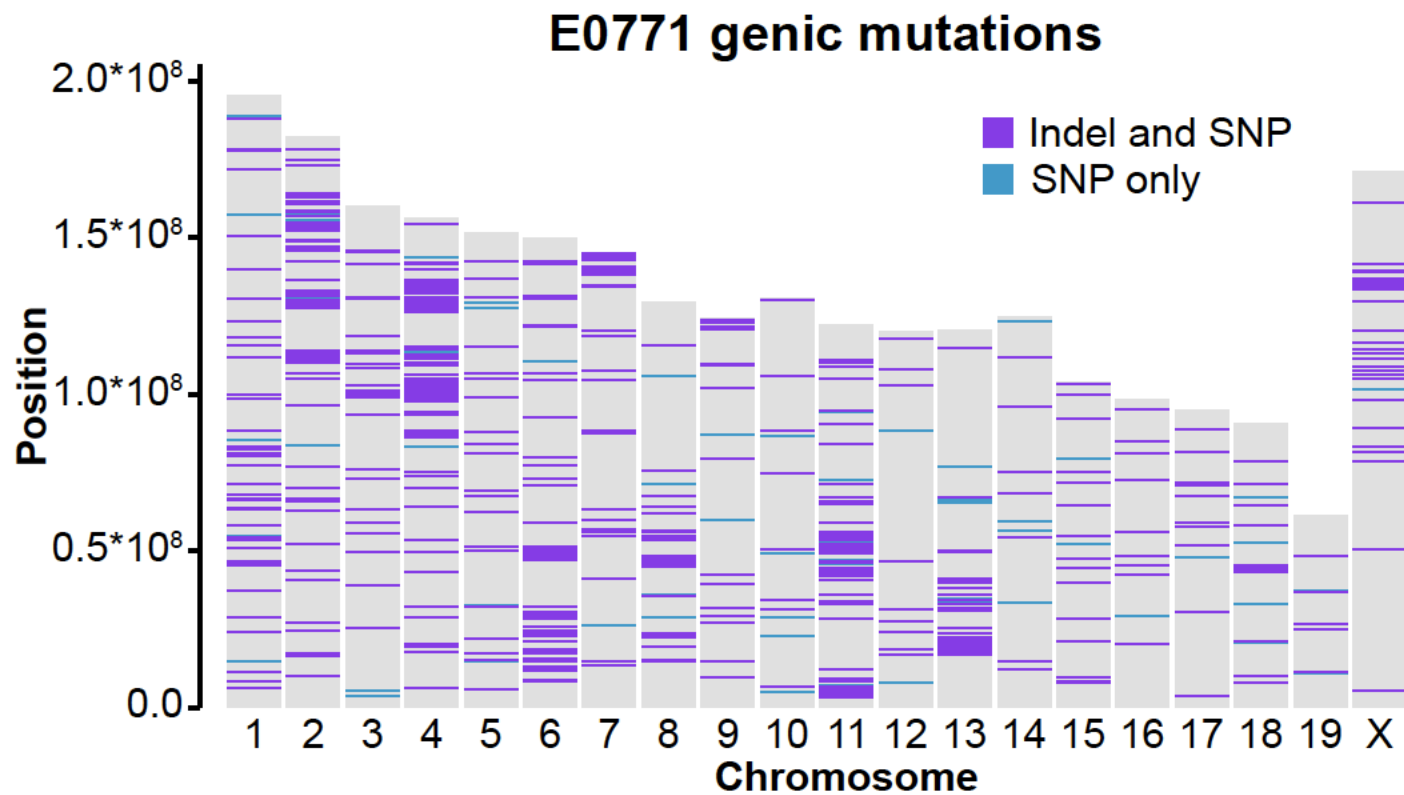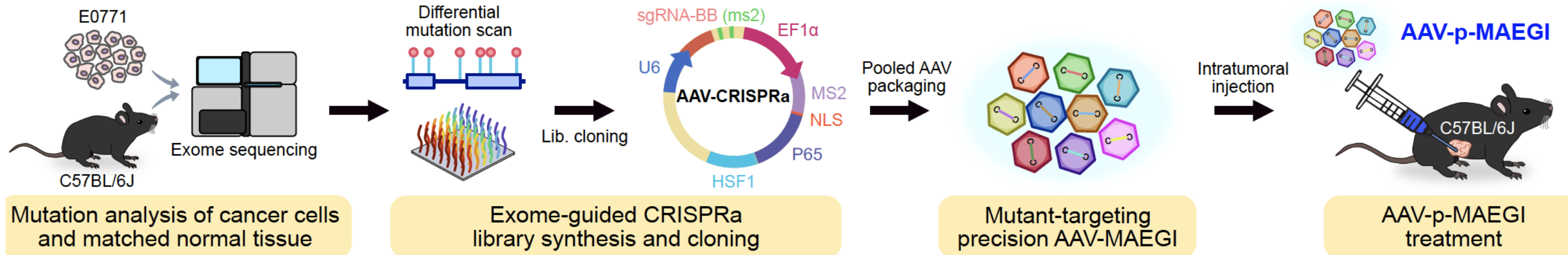
Personalized p-MAEGI showed strong efficacy with systemic immune response with abscopal effect and protection against re-challenge protection
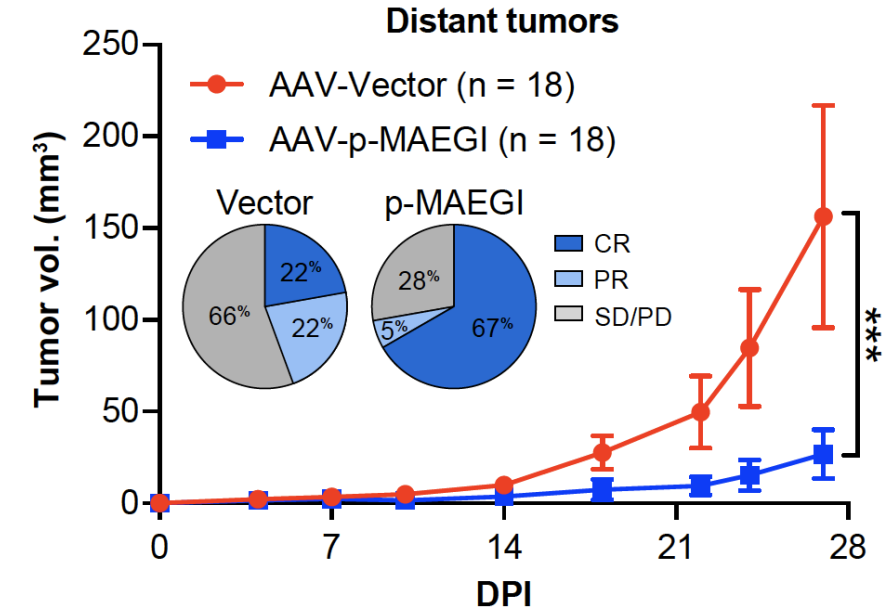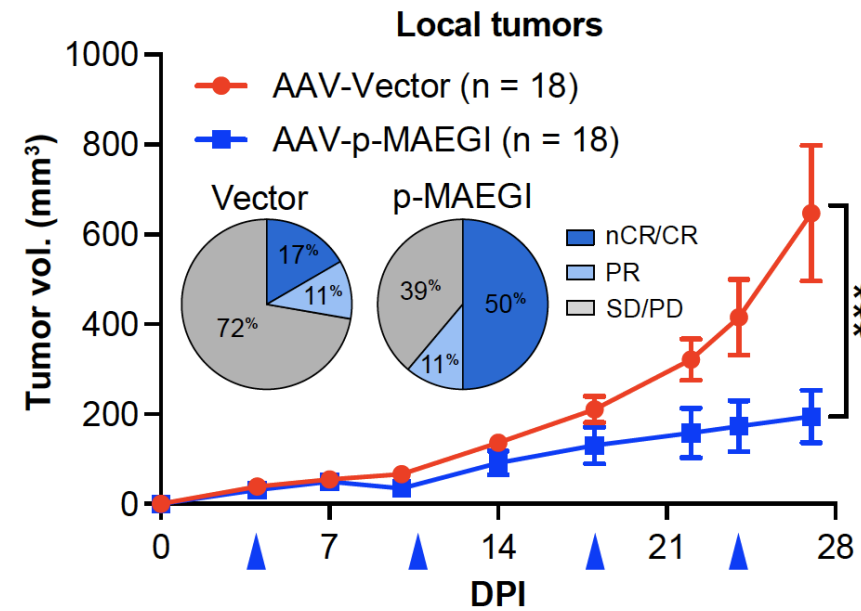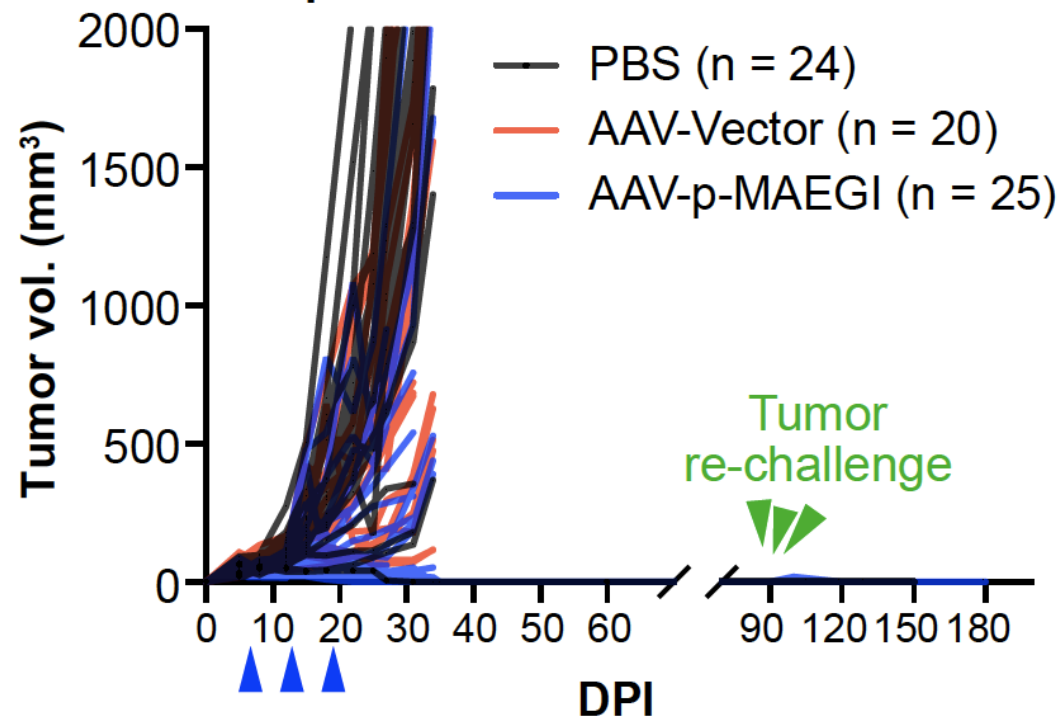
Note: no relapse observed for cured mice (CR or near-CR)

Wang et al. 2019 *Nature Immunology*

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p-MAEGI provided strong response that translates into longer-term survival benefits
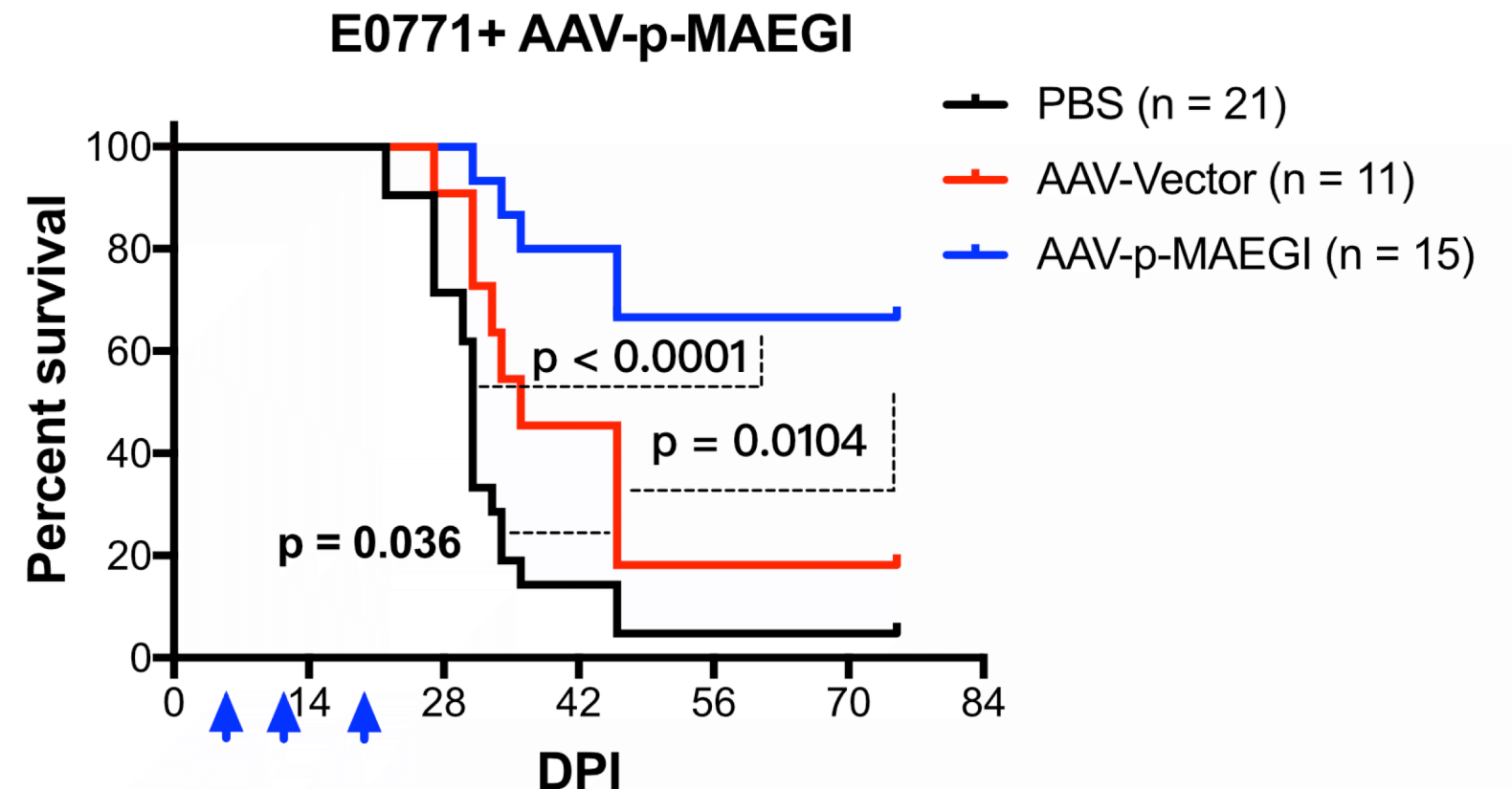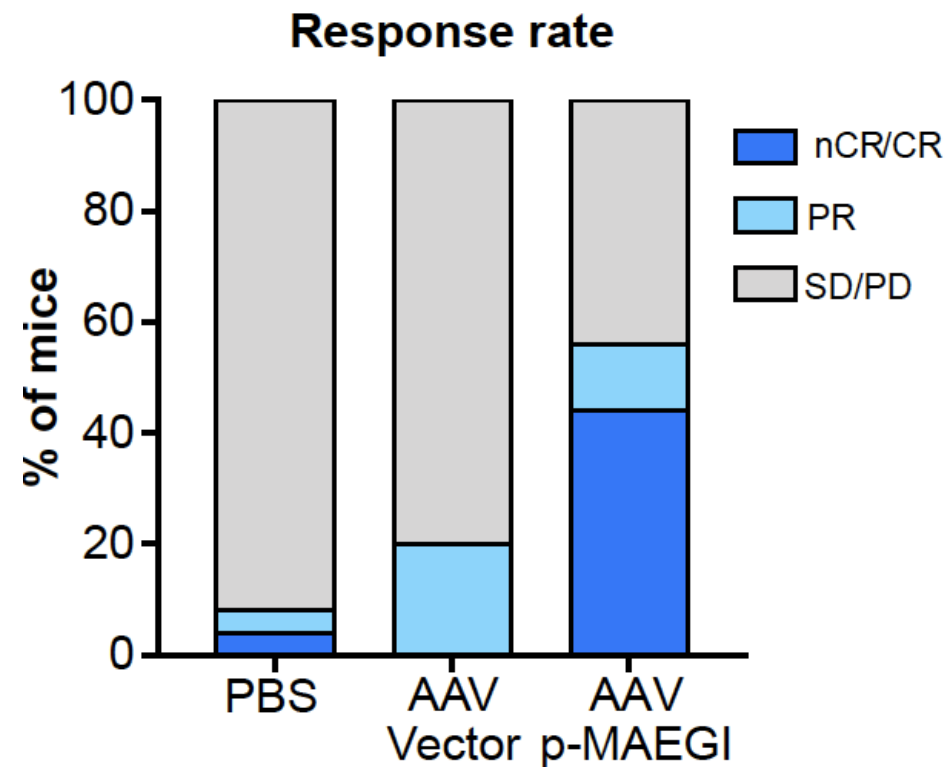
p-MAEGI showed strong efficacy in pancreatic cancer model (new)
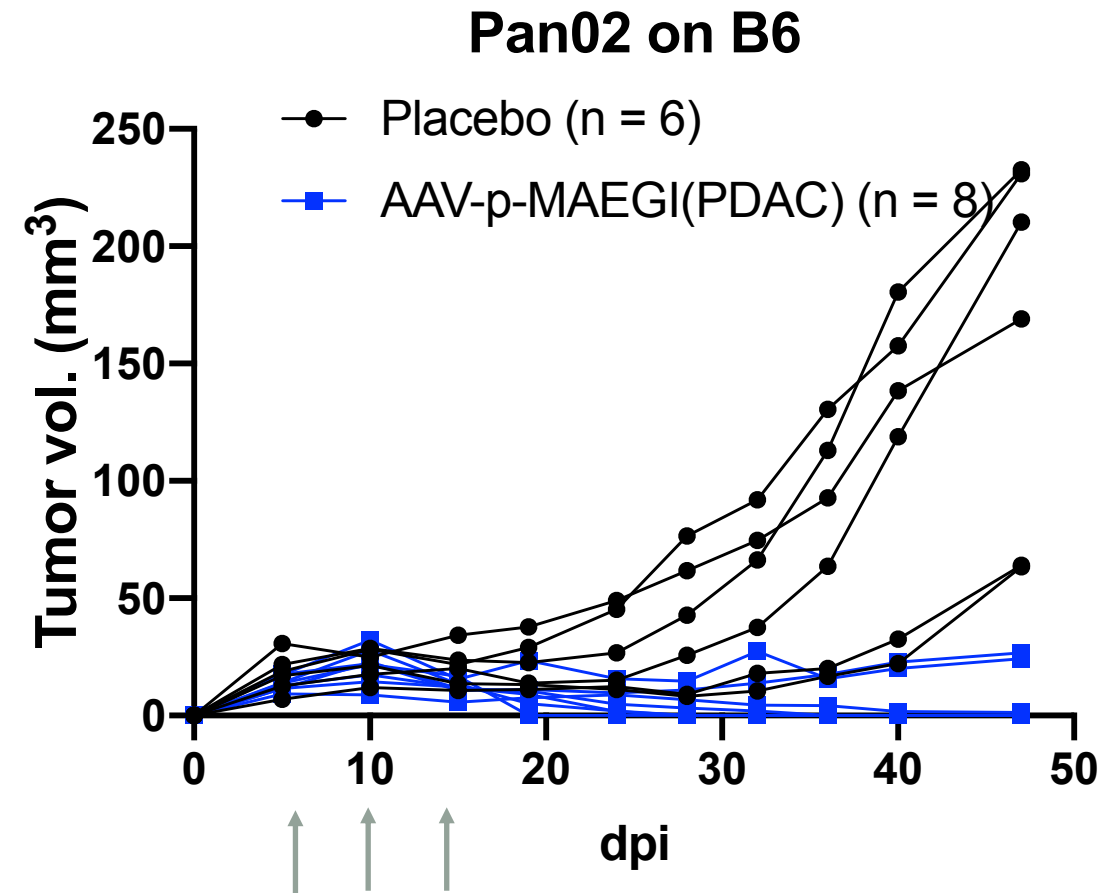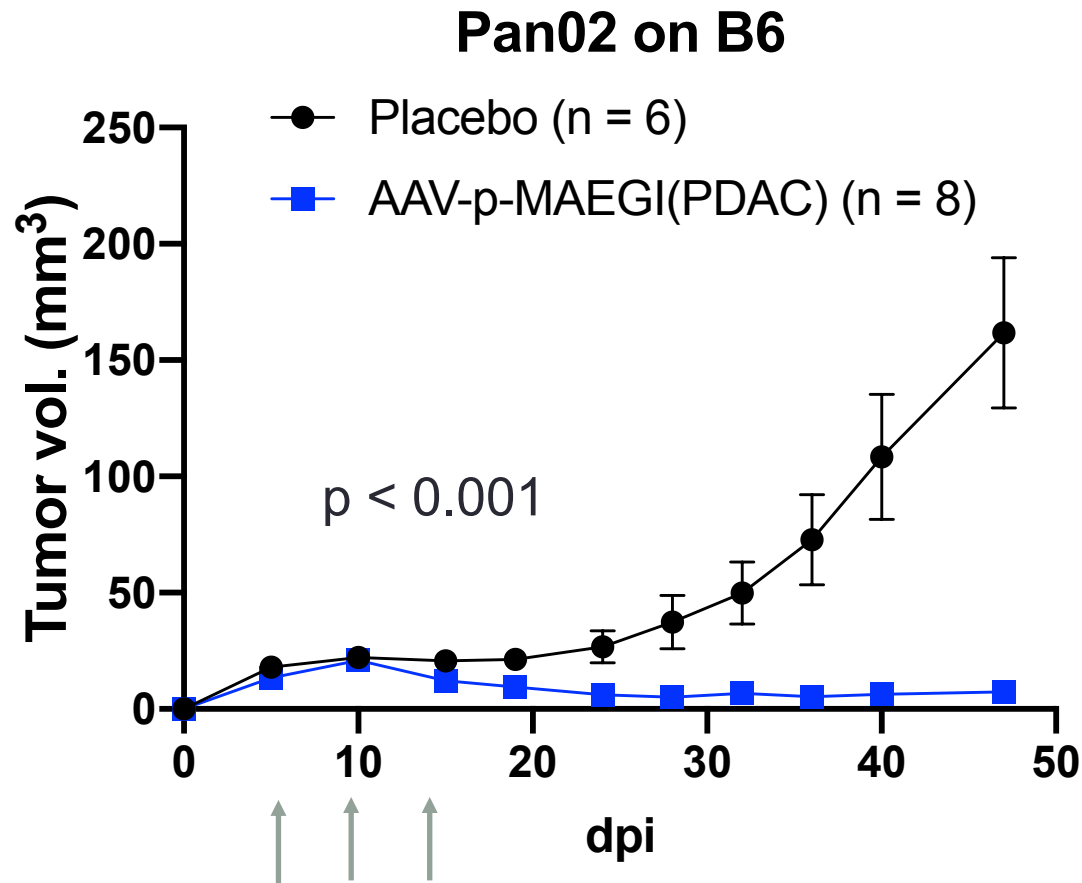
3 treatments were made starting d5

Chen lab, unpublished data

Off-the-Shelf MAEGI also showed efficacy (new)

Commercial development:
Feedbacks from VCs: p-MAEGI faces higher challenges in CMC and regulatory paths (although still doable)
Tailored our BP since last year to get a simpler lead entry into commercialization and clinical development

- **Universal (Off-the-shelf) MAEGI, or o-MAEGI**
- - One-size-fit-all manufacture and ready-to-use
- - Fixed composition for simpler CMC / toxicity profile

- - Multiple forms of o-MAEGI designed, generated and IP-filed (unpublished)
- - Significant efficacy in syngeneic models (unpublished)
- - Simpler manufacturing and regulatory paths with FDA

E0771 TNBC on B6

Placebo (n = 6)
AAV-o-MAEGI (n =12)

p = 0.0014

Percent survival

dpi

Chen lab, unpublished data

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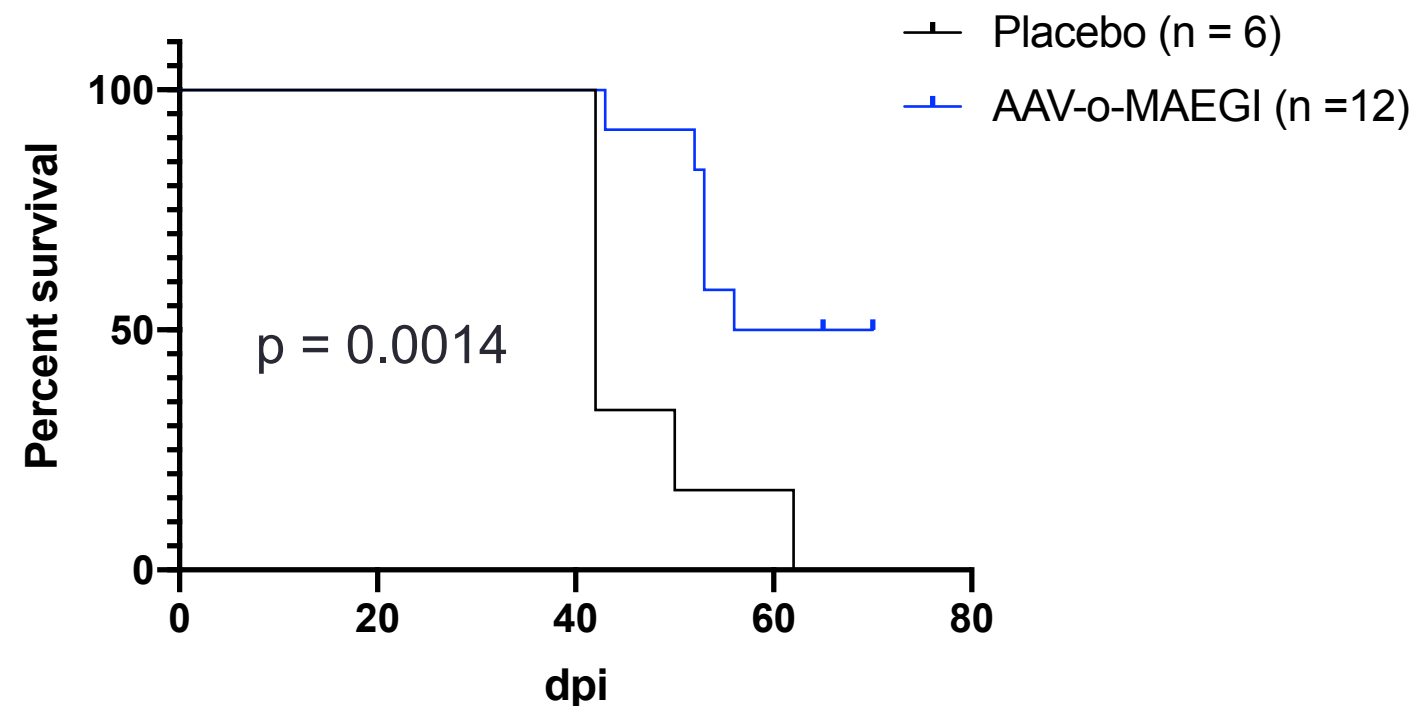
Competitive advantages, IPs, indications and market opportunities

- **Competitiveness:**
- Peptide/mRNA neoantigen vaccine not very effective
- Demonstrated that large pool >> small pool in efficacy, and p-MAEGI > neoantigen-ORFs
- Superior scalability for both p-MAEGI and o-MAEGI

- **IP:**
- Filed 3 patents through Yale/OCR, one converted to PCT
- Unique intellectual property on p-MAEGI, o-MAEGI, c-MAEGI and other products

- **Market:**
- Applicable to multiple oncology indications including TNBC, melanoma, PDAC (unmet needs)
- Potentially applicable to non-oncology field as gene therapy

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Business plan in brief and Blavatnik budget

- **Step 1: Blavatnik funding**

  $100k milestones – GLP manufacturing and testing of AAV-o-MAEGI (best version)

  +$88k for production, +$12k for testing and tittering by qPCR, PAGE

  $300k milestones – Efficacy validation and GLP safety / Tox and initial MoA

  +$150k for CRO efficacy 2 models, safety profiles (path, general tox), +50k for TIL flow of immune profiles

  Delivery: Data package with GLP grade product, independently confirmed efficacy

  basic toxicity, pathology profiles, on/off target, and initial MoAs

Step 2: Venture funding

Raise funding for RnD of MAEGI in various forms and applications

Build management team

RnD: Optimization, CMC, PK/PD/Tox and clinical trials

Pipelines: Various forms of o-MAEGI (lead program) and p-MAEGI

Potential products: Lead form o-MAEGI, and p-MAEGI

Delivery: First-in-class immune-gene therapies in certain oncology indications and potentially other areas

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Talk to us! Email: *sidi.chen@yale.edu* or *charles.fuchs@yale.edu*