



## **ChinaBio Conference**

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Suzhou – April 25 2018

# Immunotherapy has the potential to cure cancer

*Patient example – Yervoy® checkpoint inhibitor trial*



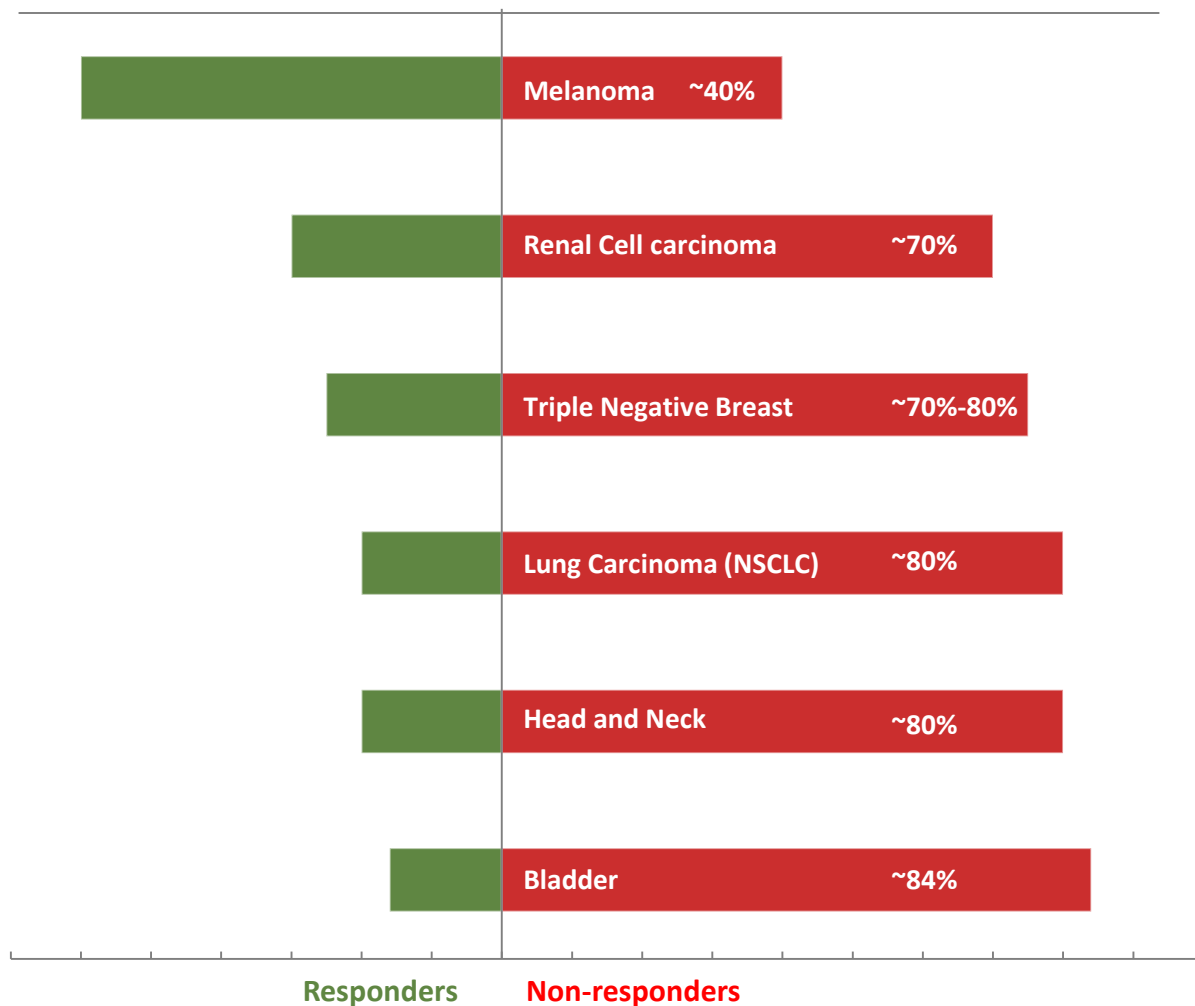
*Prior to Yervoy®*



*1 year after*

# Most patients do not respond to currently available immunotherapies

*Response rate to checkpoint inhibitors (CPIs)*

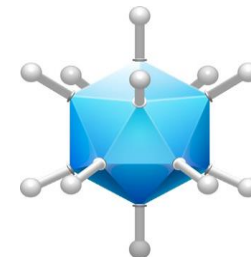


*Boosting T-cells in tumors may make checkpoint inhibitors effective in more patients*

# Targovax has two immuno-oncology programs in clinical development

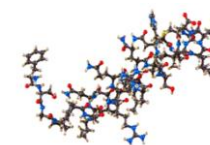
## ONCOS Oncolytic virus

- Genetically **armed adenovirus**
- Makes **cancer antigens** visible to immune system
- **Induces T-cells** specific to patients' tumor



## TG RAS neoantigen vaccine

- Shared neoantigen, **off-the-shelf peptide vaccine**
- Targets oncogenic, mutated **RAS neoepitopes**
- **Induces T-cells** specific to **RAS mutations**



# Agenda

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○ **ONCOS oncolytic virus platform**

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○ TG mutRAS neoantigen vaccine platform

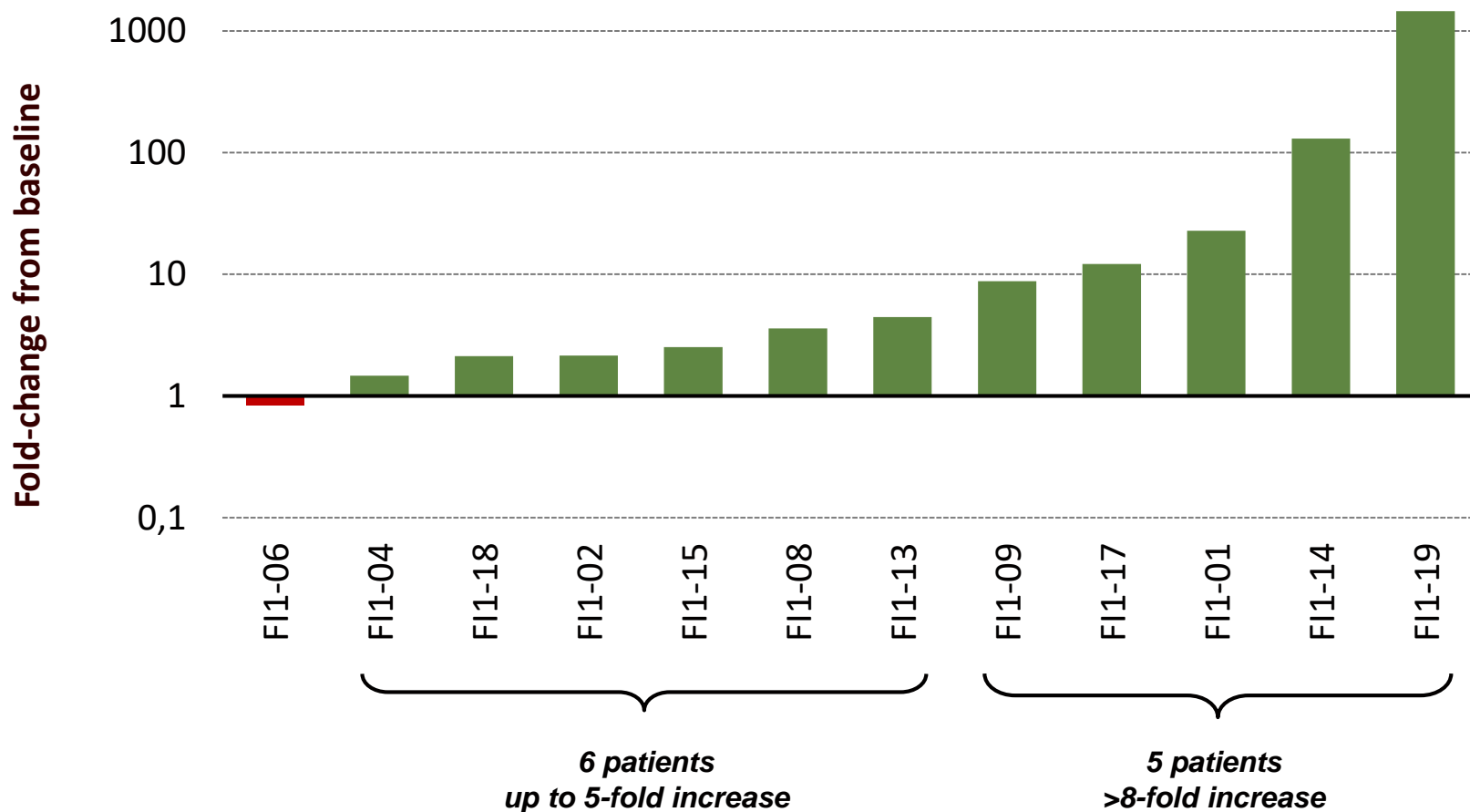
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○ Targovax clinical program overview

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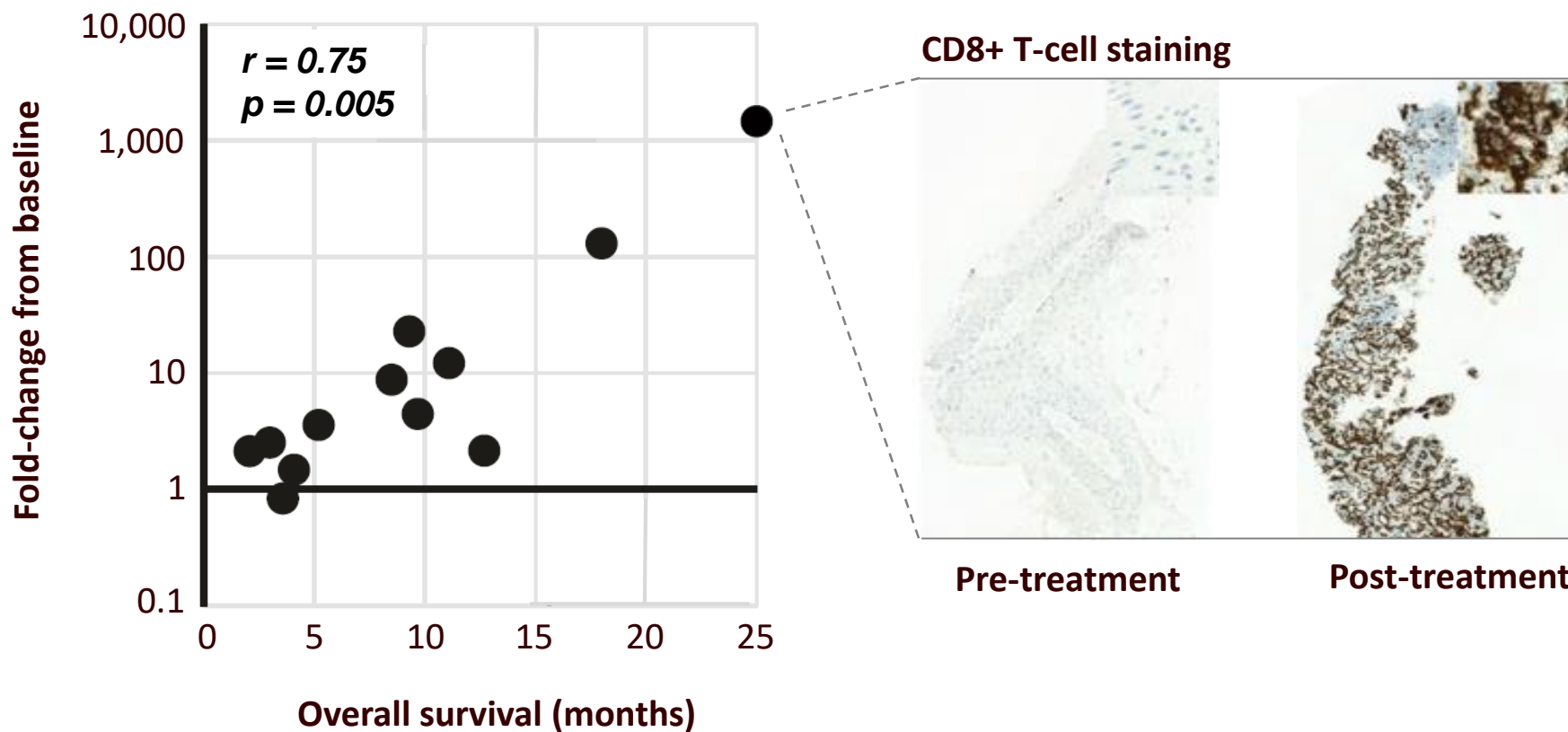
# ONCOS-102 can increase T-cell count in tumors

Phase I trial data: change in CD8+ T-cell count after treatment with ONCOS-102

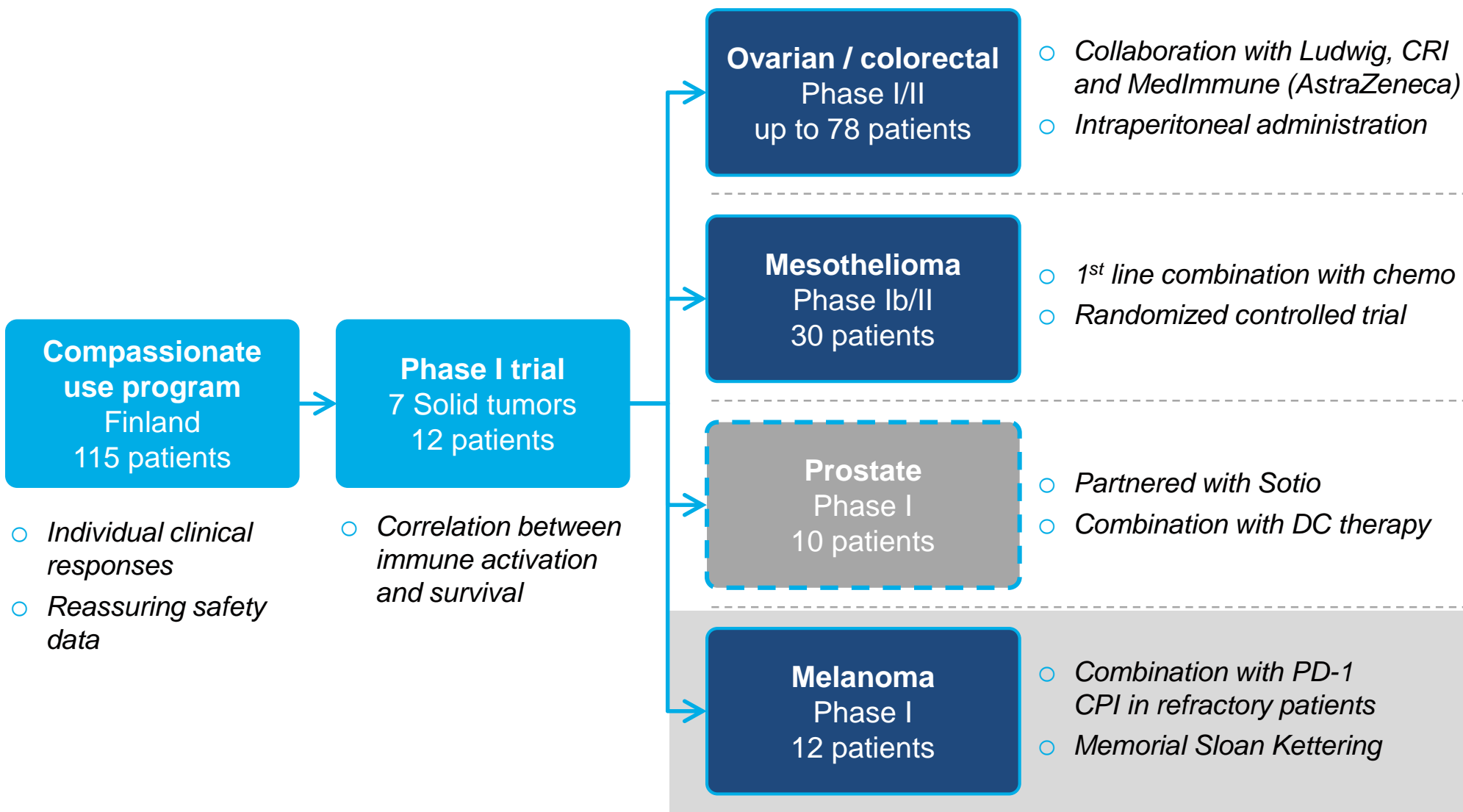
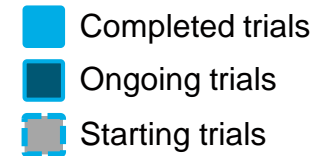


# This T-cell increase correlates with survival

## Phase I trial data: Fold-change CD8+ T-cell count vs. survival



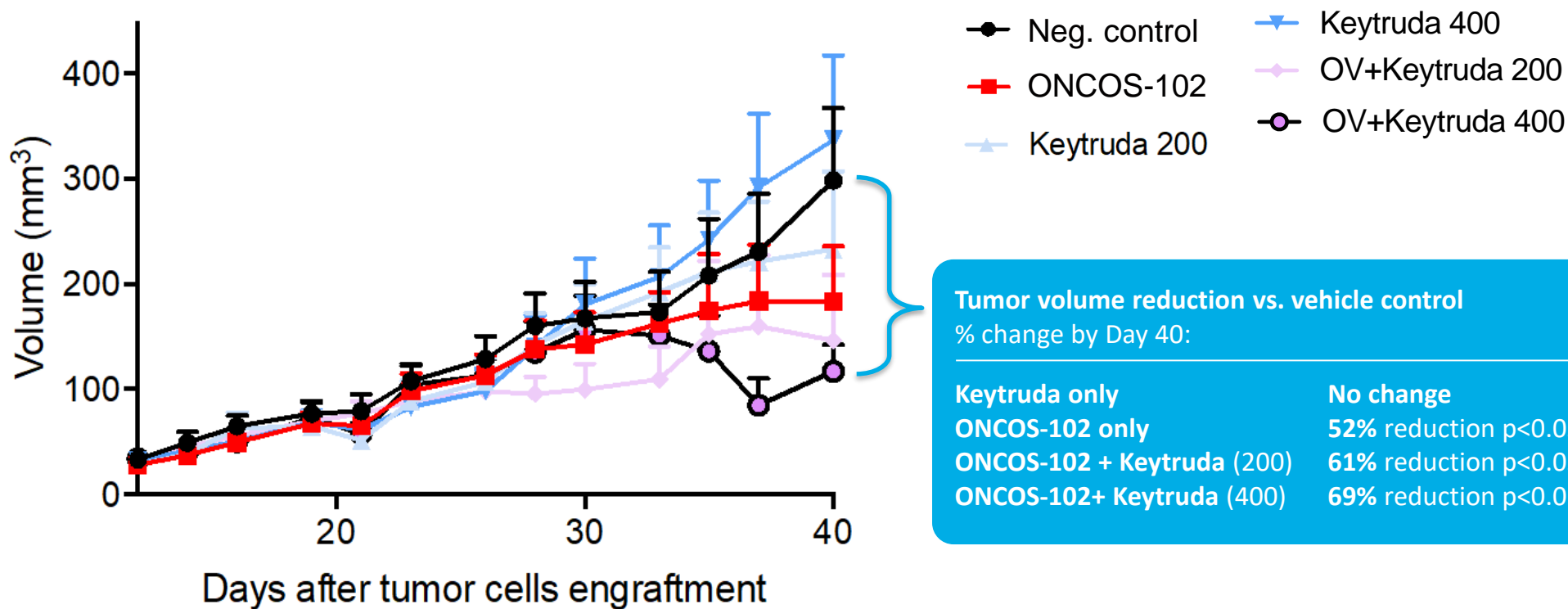
# ONCOS clinical program overview



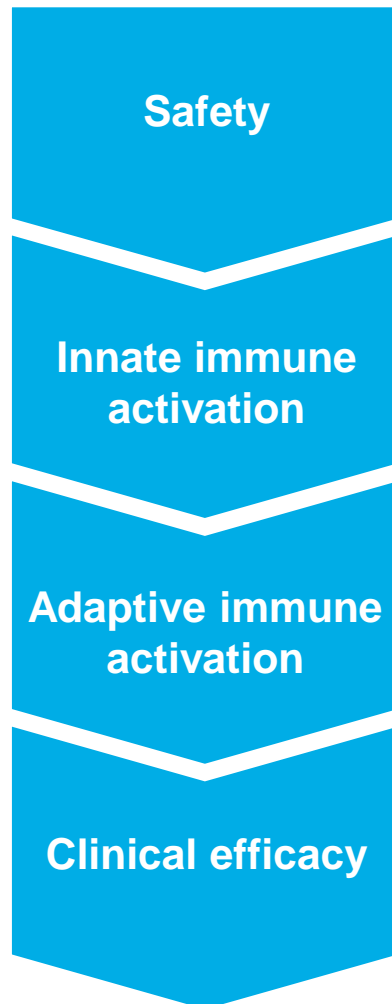


# Melanoma: ONCOS triggers 70% reduction in tumor volume with CPI combination in mouse model

Effect of ONCOS-102 and Keytruda in humanized mouse melanoma model, change in tumor volume



# Melanoma: ONCOS-102 induces early immune activation



- ✓ **First safety review completed with no safety concerns**
  - ✓ **ONCOS-102 first time in melanoma treatment**
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- ✓ **Systemic increase of several pro-inflammatory cytokines (4/4 patients)**
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- ✓ **Increase in the relative level of cytotoxic CD8+ T cells (4/4 patients)**
  - ✓ **Increase in PD-1 expression on CD8+ T cells (4/4 patients)**
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- *First ORR data expected in 2H 2018*

# Agenda

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○ ONCOS oncolytic virus platform

○ **TG mutRAS neoantigen vaccine platform**

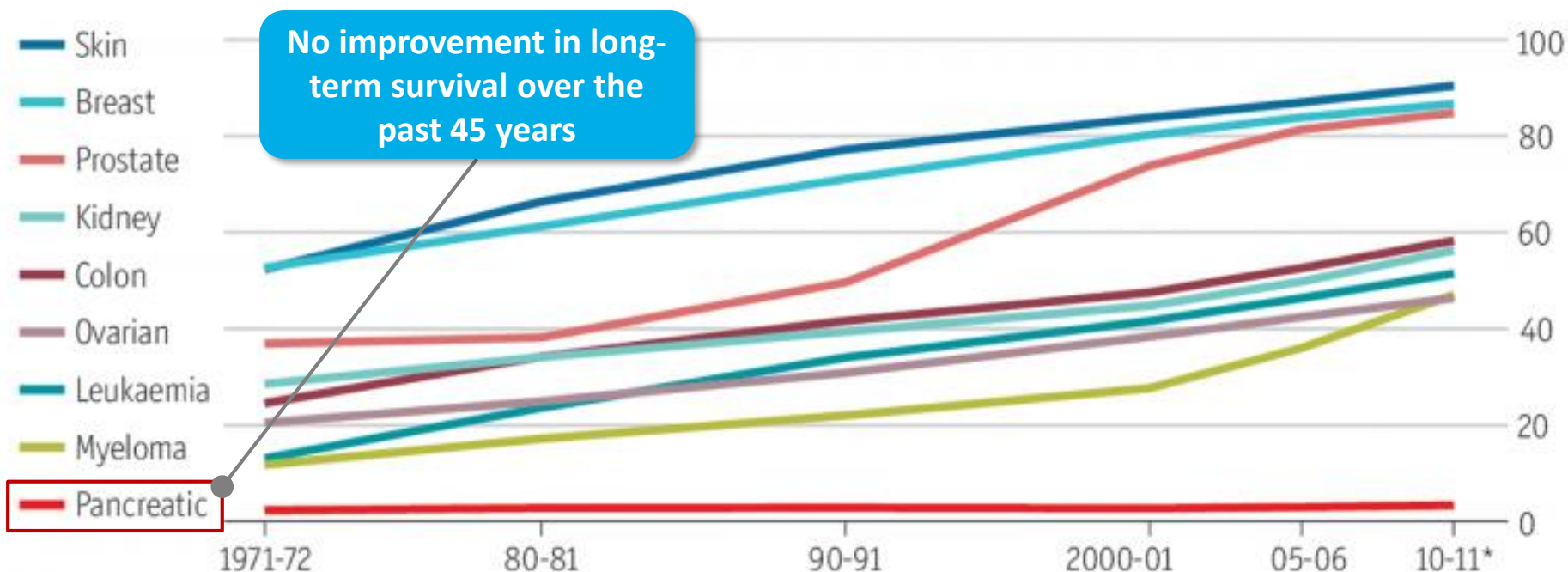
○ Targovax clinical program overview

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# The five year survival rate for pancreatic cancer patients has not improved since the 1970s

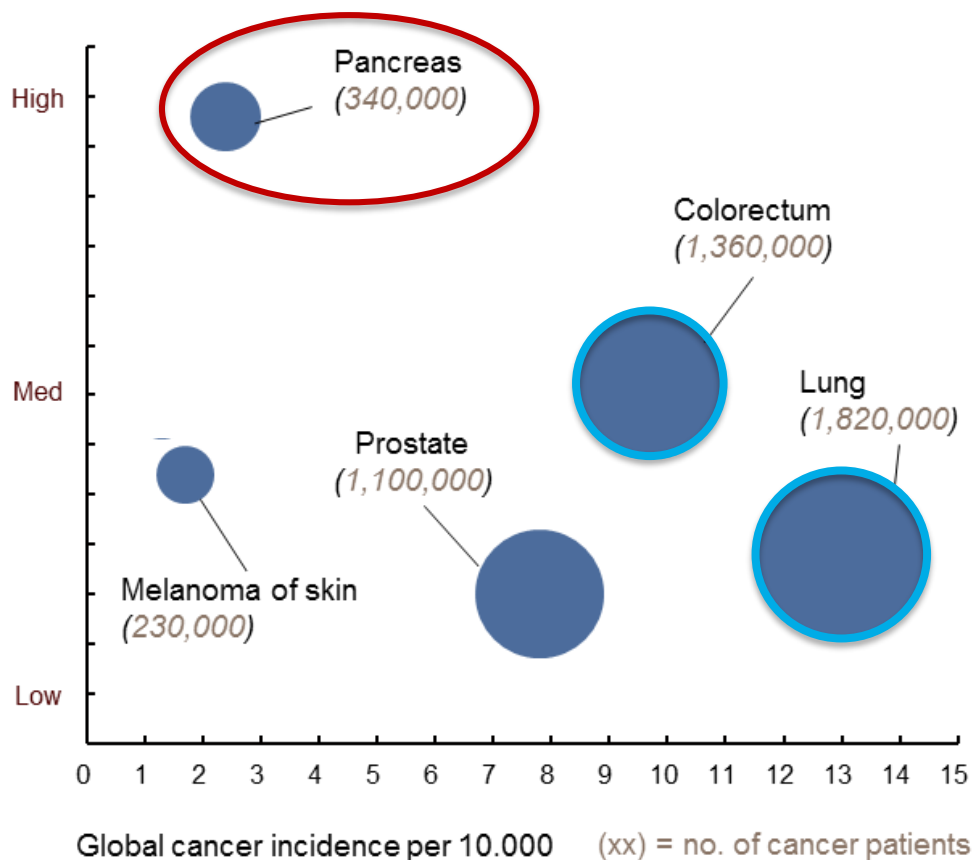
## Living longer

England and Wales, five-year relative survival rate by type of cancer, %



# RAS is mutated in >90% of pancreatic cancer patients, making it an ideal target in this disease

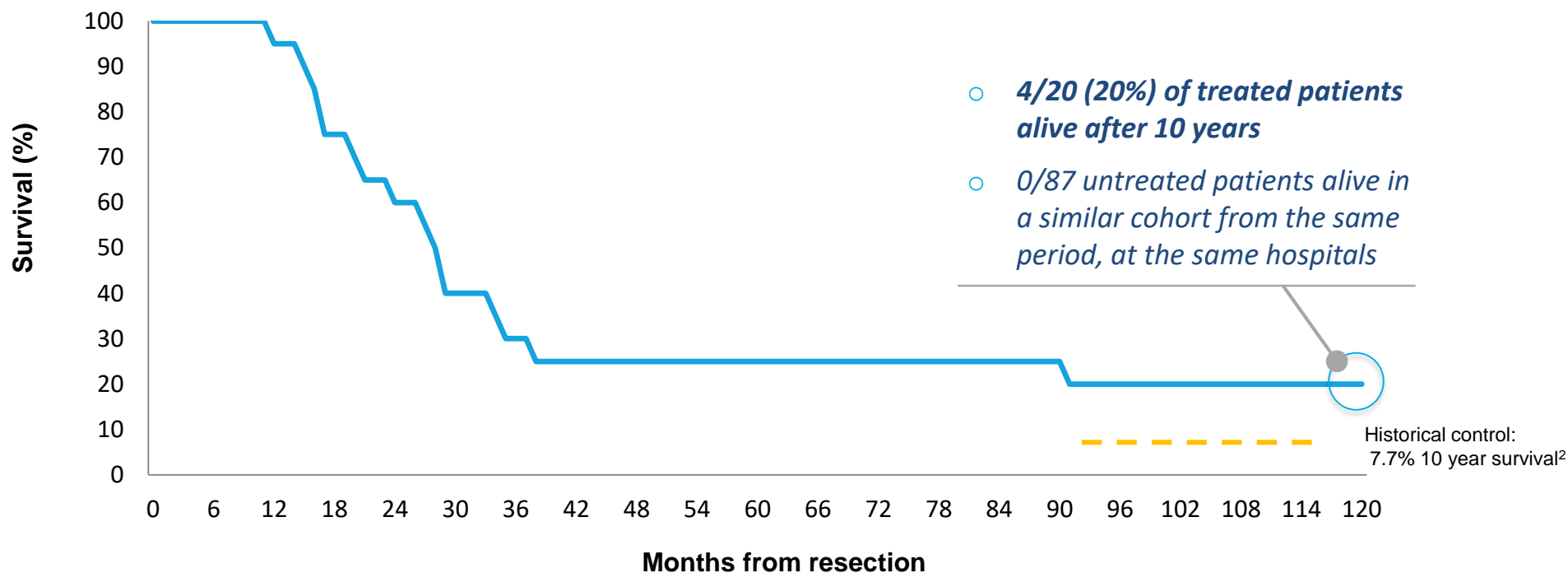
## Frequency of RAS mutations



- RAS mutations result in **uncontrolled cell division**
- **There are no existing therapies** targeting RAS
- Targovax has developed a unique **vaccine against mutant RAS**

# In previous trials in resected pancreatic cancer, TG vaccination has shown 20% 10 year survival

## 10 year survival in historical TG trials in resected pancreatic cancer (n=20, TG monotherapy)



<sup>1</sup> Wedén et al., 2011

<sup>3</sup> Oettle H et al., JAMA 2013, vol 310, no 14

# These promising results are now being validated in a phase I/II trial finalizing in 1H 2018

## 1<sup>st</sup> cohort (19 patients)

- **Median survival 33.1 months vs. 27.6 for historical control**
- **13 of 19 patients (68%) alive 2 years after surgery, vs. 30-53% in historical controls**

## 2<sup>nd</sup> cohort (13 patients)

- **13 of 13 patients (100%) alive 1 year after surgery**

## mutRAS immune response (1 yr)

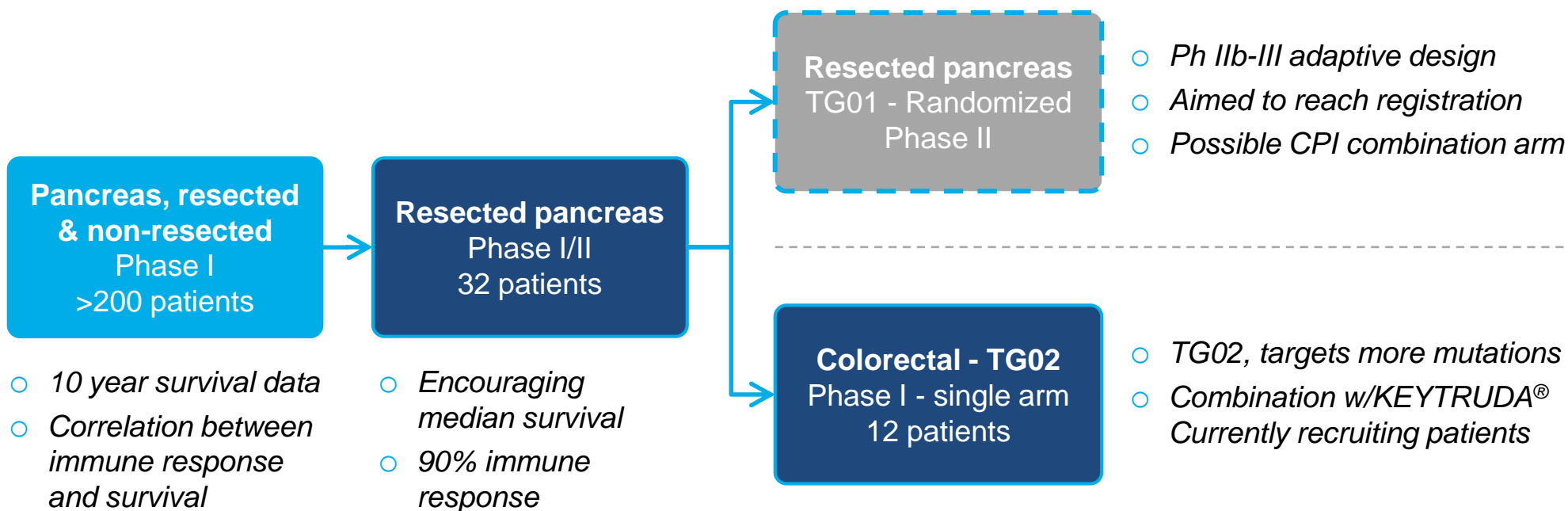
- **90% of patients (29/32) had RAS-specific immune activation**

## Safety

- **TG01 and gemcitabine combination treatment is well-tolerated**
- **Four allergic reactions reported in 1<sup>st</sup> cohort, none in 2<sup>nd</sup> cohort (up to 1 year)**

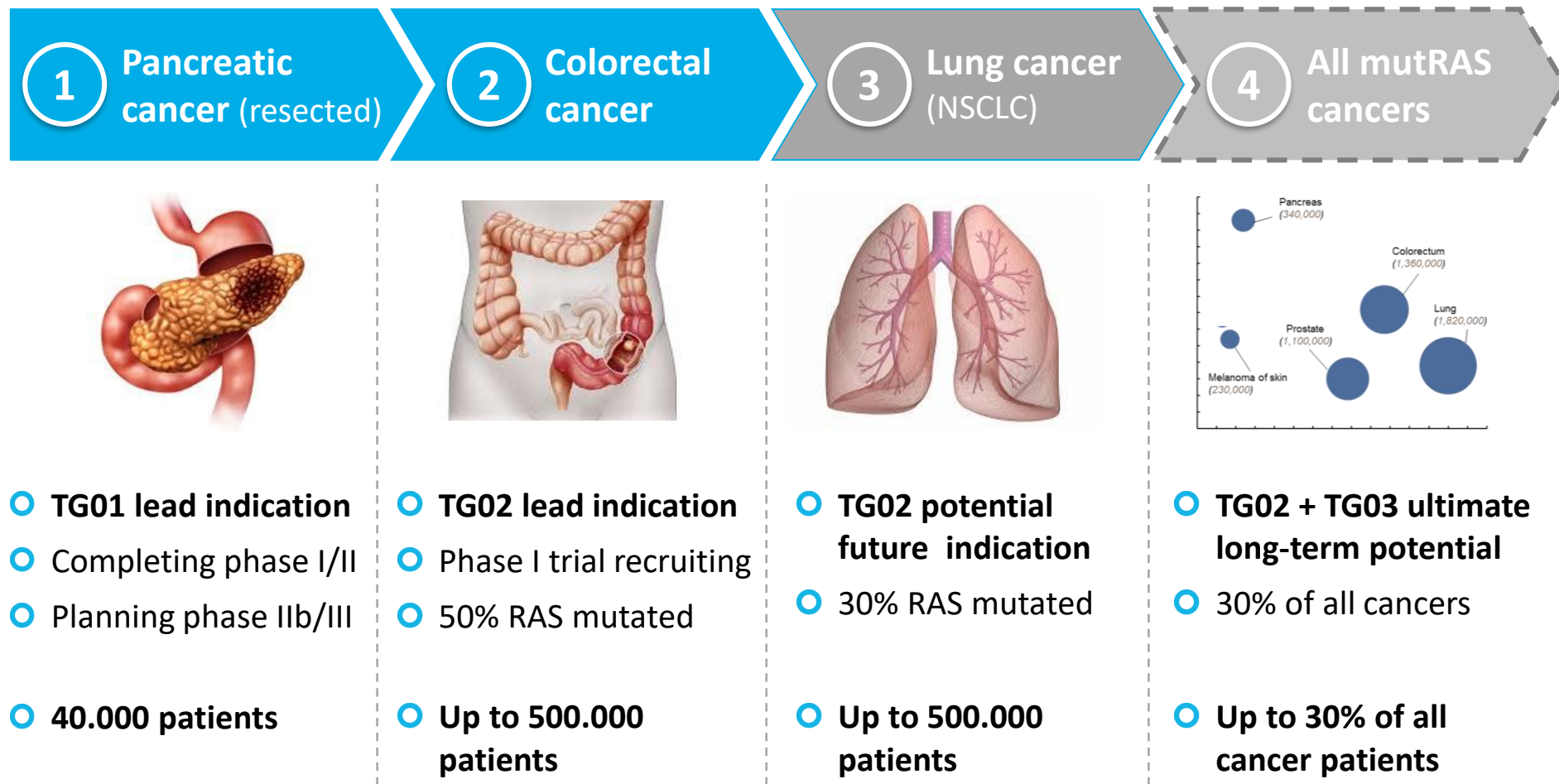
- Completed trials
- Ongoing trials
- Planned trials

# TG clinical program overview





# Resected pancreatic cancer is the lead indication, but all RAS mutated cancers are potential TG targets



# Agenda

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○ ONCOS oncolytic virus platform

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○ TG mutRAS neoantigen vaccine platform

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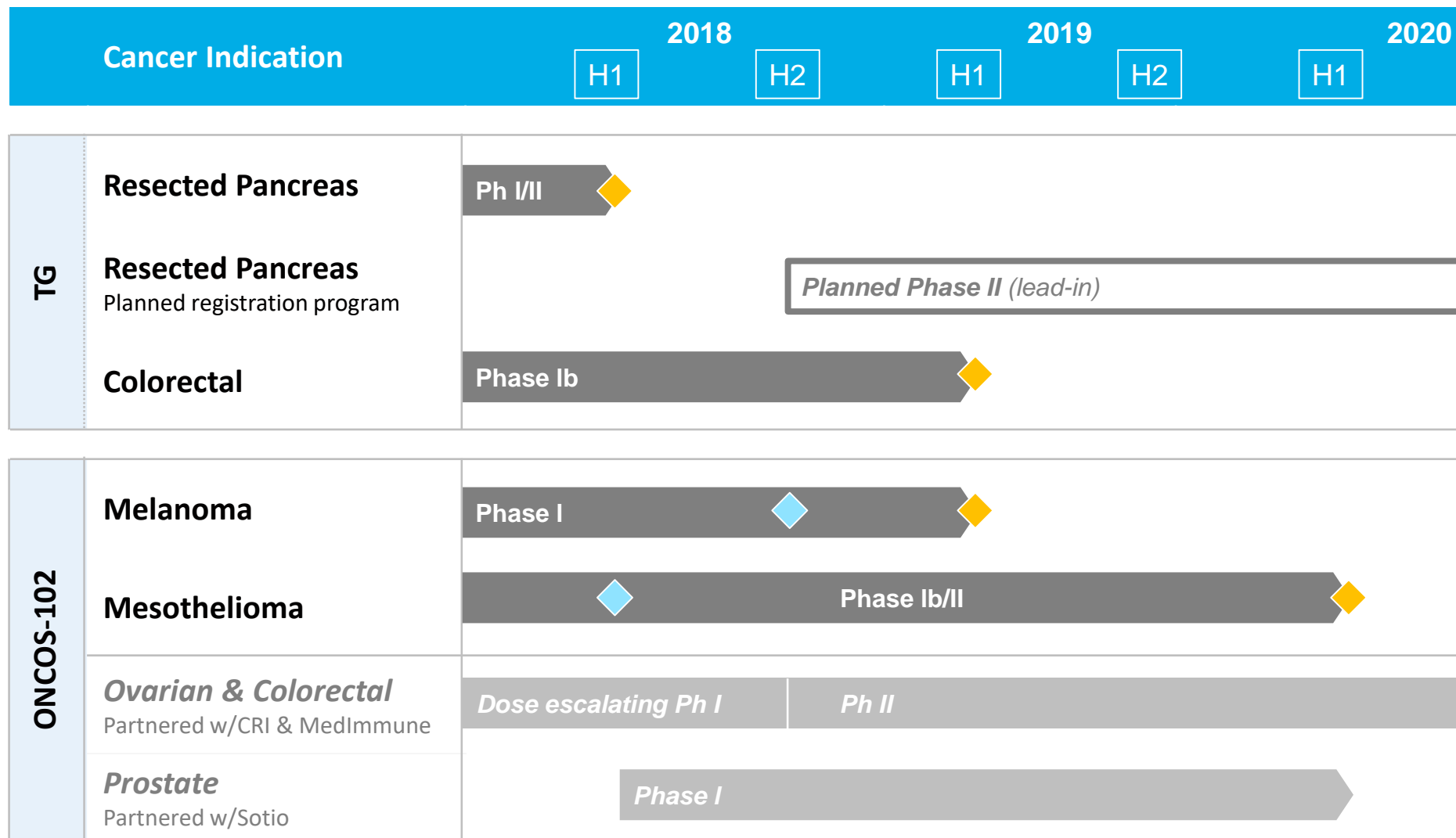
**○ Targovax clinical program overview**

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# Overview of Targovax' full clinical program

◆ Interim data

◆ Clinical, immune and safety data



# Arming the patient's immune system to fight cancer

## Broad clinical program



- ✓ Six shots on goal
- ✓ Several upcoming data points

## ONCOS



- ✓ Demonstrated ability to increase T-cell count
- ✓ Potential to make CPIs effective in more indications

## TG



- ✓ Unique approach for targeting RAS mutations
- ✓ Potential to benefit up to 1/3 of all cancer patients