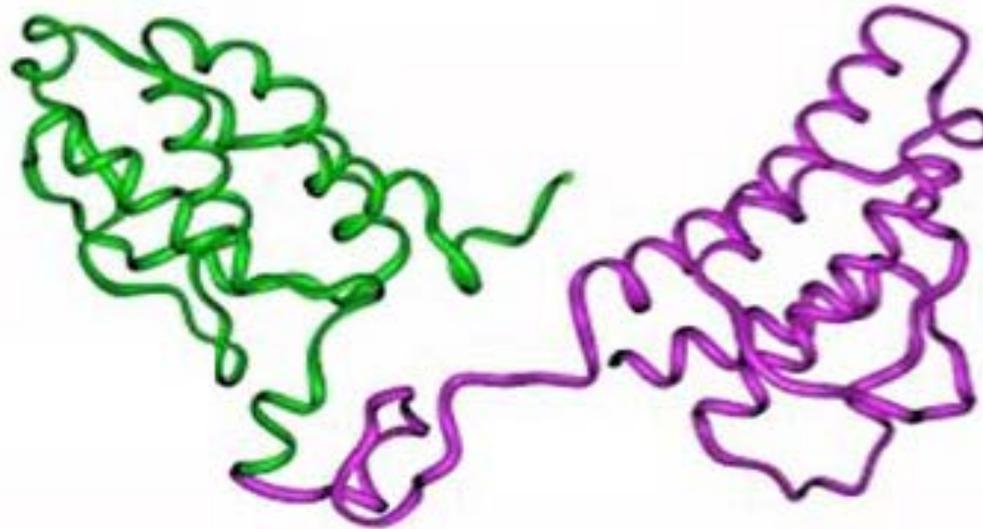


# GIFT4 – A Protein Therapy For Melanoma

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Cliff Michaels, Licensing Associate  
OTT Breakfast Club, May 21<sup>st</sup>, 2013

# Melanoma

## Melanoma – skin cancer of the melanocytes



- 160,000 cases & 64,000 deaths



- 64,000 cases & 9,000 deaths
- **75% of skin cancer deaths**
- **Growing – ↑ 3%**

**Epidemiology** - Disproportionally impacts caucasians, esp. NW European descent & men

**Risk Factors** – UV light exposure, genetic mutations

Melanoma is a significant & growing problem

# Treatment & Survival

	Stage	Treatment	Survival
<b>Early</b>	I	Lesion removal, follow up	90-95%
	II	Lesion removal, follow up	50-80%
<b>Mid</b>	III	Lesion removal, lymph node removal, follow up	24%-50%
<b>Late</b>	IV	Lesion removal, lymph node removal, therapeutics, palliative care	7%-19%

- Average survival time for late stage = 10 months

Treating late stage melanoma remains a challenge

# Current Therapeutics

## Chemotherapies

Product	Drawback
Zelboraf	☹️ Only works on melanoma w mutation ☹️ 40% of cases resistant
Dacarbuzine	☹️ High number of side effect

## Immunotherapies

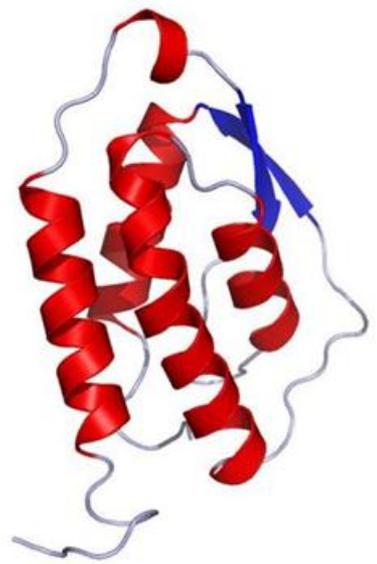
Product	Drawback
Proleukin	☹️ Low response rate ( ~ 15%) ☹️ Highly toxic, must administer in hospital
Yervoy	☹️ Life-threatening side effect (breathing)

Available therapies do not work well &  
 have significant drawbacks

# Technology

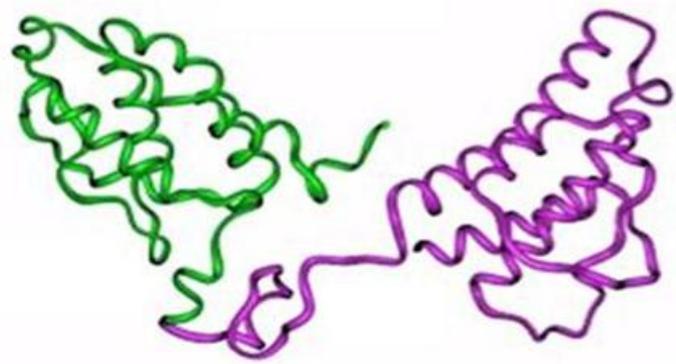
## GM-CSF

↑ granulocyte & monocyte production



## GIFT4

GM-CSF & IL-4 fusion



## IL-4

↑ T cell proliferation

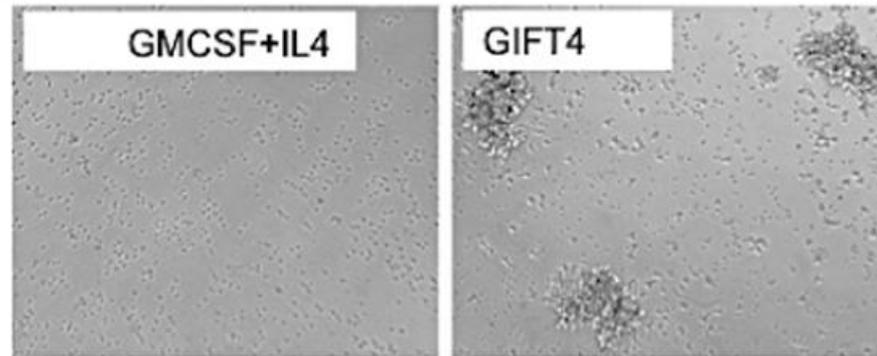


# What does GIFT4 Do?



GIFT4 retains GM-CSF & IL-4 functions

**New function – B-cell proliferation**

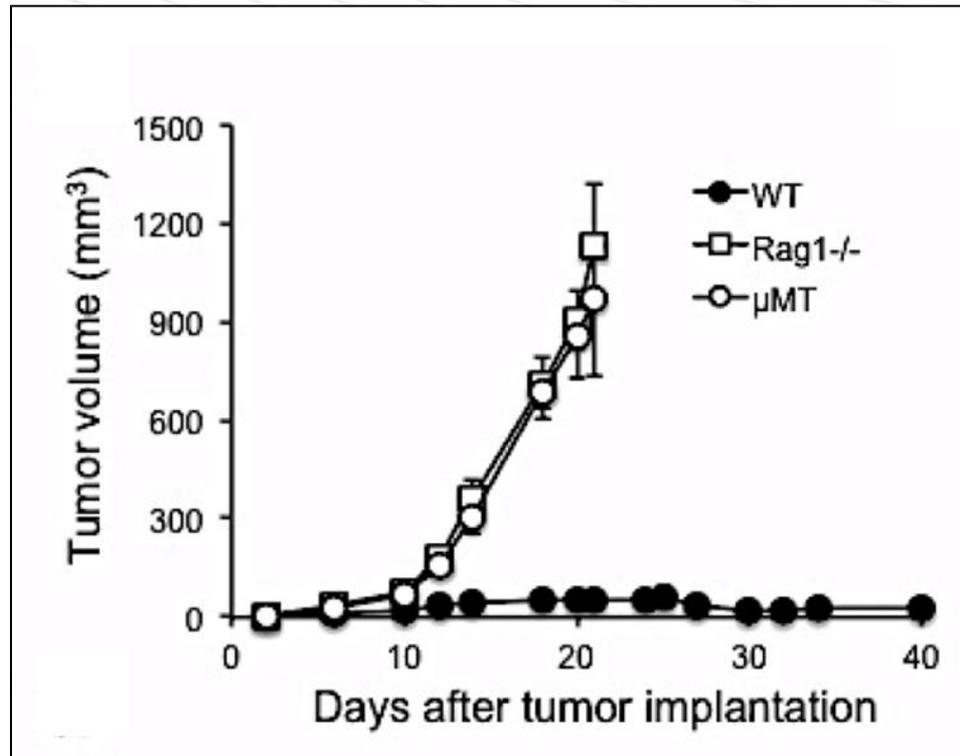


Human B-cells cultured in human GIFT4

**Displays a gain of function – B-cell expansion**

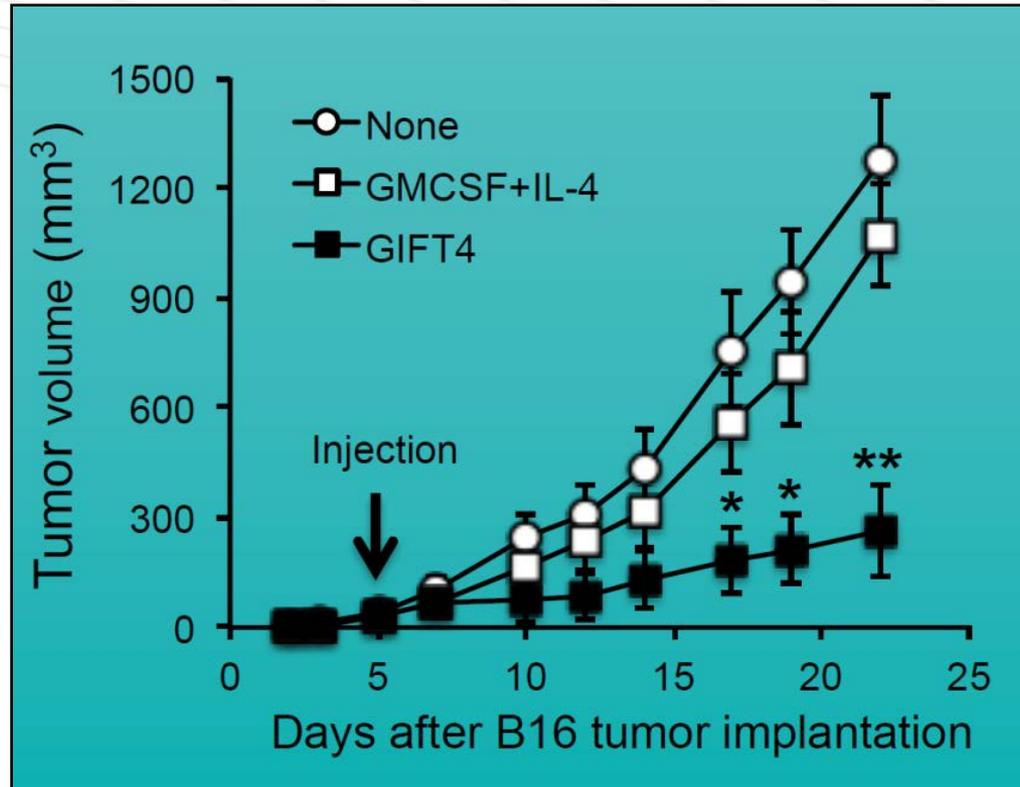
# Why are B-cells important?

- GIFT4 antitumor effect is B-cell dependent



**B-cells are necessary**

# GIFT4 as a therapy



GIFT4 treatment suppress tumor growth

# IP & Development

**IP Status** - US provisional patent filed 10/23/2012

**Current** -

- Protein expressed in sufficient quantities
- Immune function confirmed *in vivo* & *in vitro*
- Melanoma model *in vivo* validation

**Future** – looking for entrepreneur



# Thank you