

# The Vice President's Cancer Initiative (the Moonshot)

*Douglas R. Lowy  
Acting Director, National Cancer Institute,  
National Institutes of Health*

# President Obama 2016 State of the Union Address January 12, 2016



- “Last year, Vice President Biden said that with a new **moonshot**, America can cure cancer.
- “Last month, he worked with this Congress to give scientists at the **National Institutes of Health** the strongest resources that they’ve had in over a decade.
- “So tonight, I’m announcing a new national effort to get it done. And... I’m **putting Joe in charge of Mission Control**.
- “For the loved ones we’ve all lost, for the families that we can still save, let’s make America the country that cures cancer once and for all.”

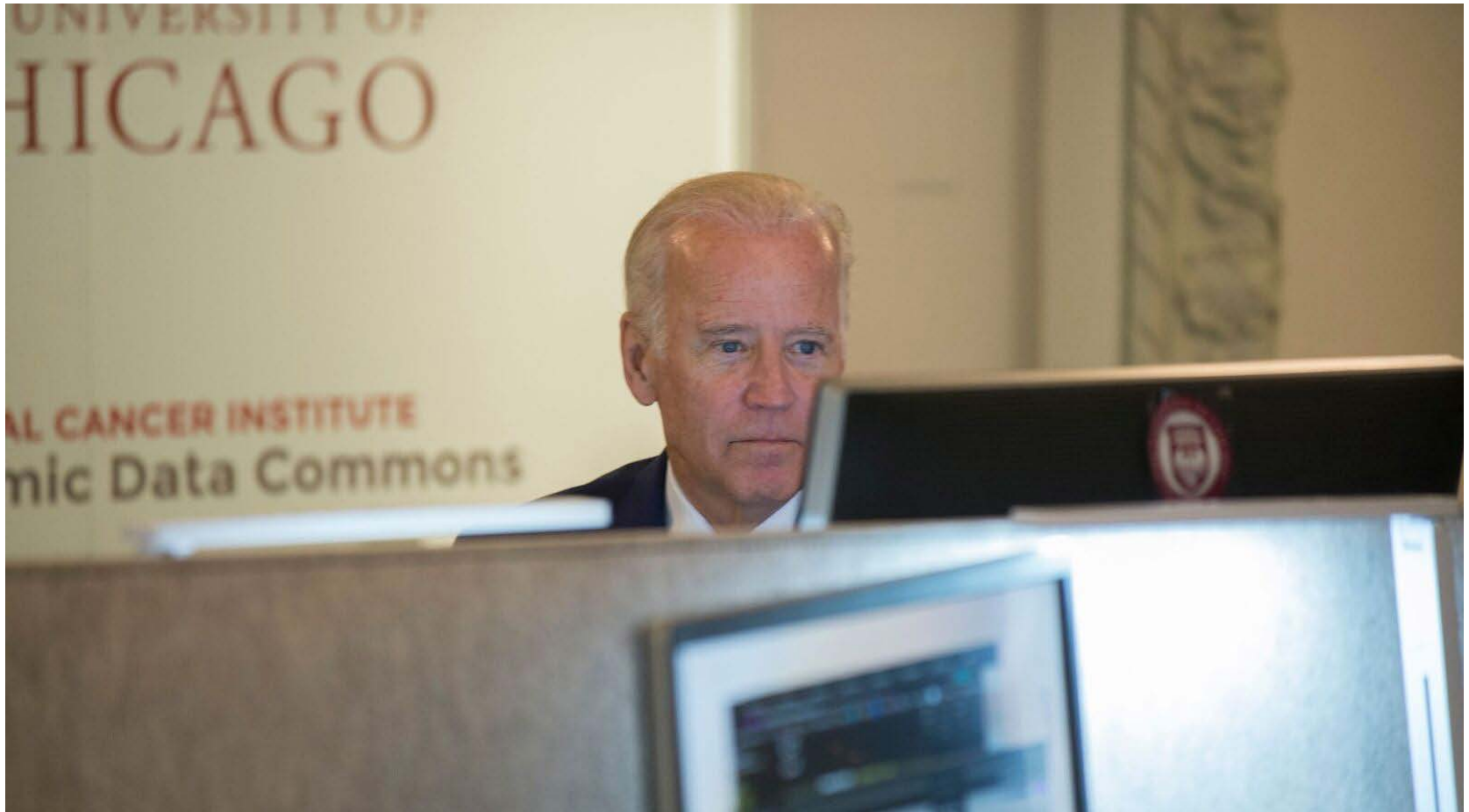
# The Vice President's Cancer Initiative

- Accelerate progress in cancer, including prevention & screening
  - From cutting edge basic research to wider uptake of standard of care
- Encourage greater cooperation and breaking down silos
  - Within and between academia, government, and private sector
- Importance of data sharing: Genomic Data Commons, annotated patient level clinical data & -omics

# The NCI Genomic Data Commons opens at the University of Chicago



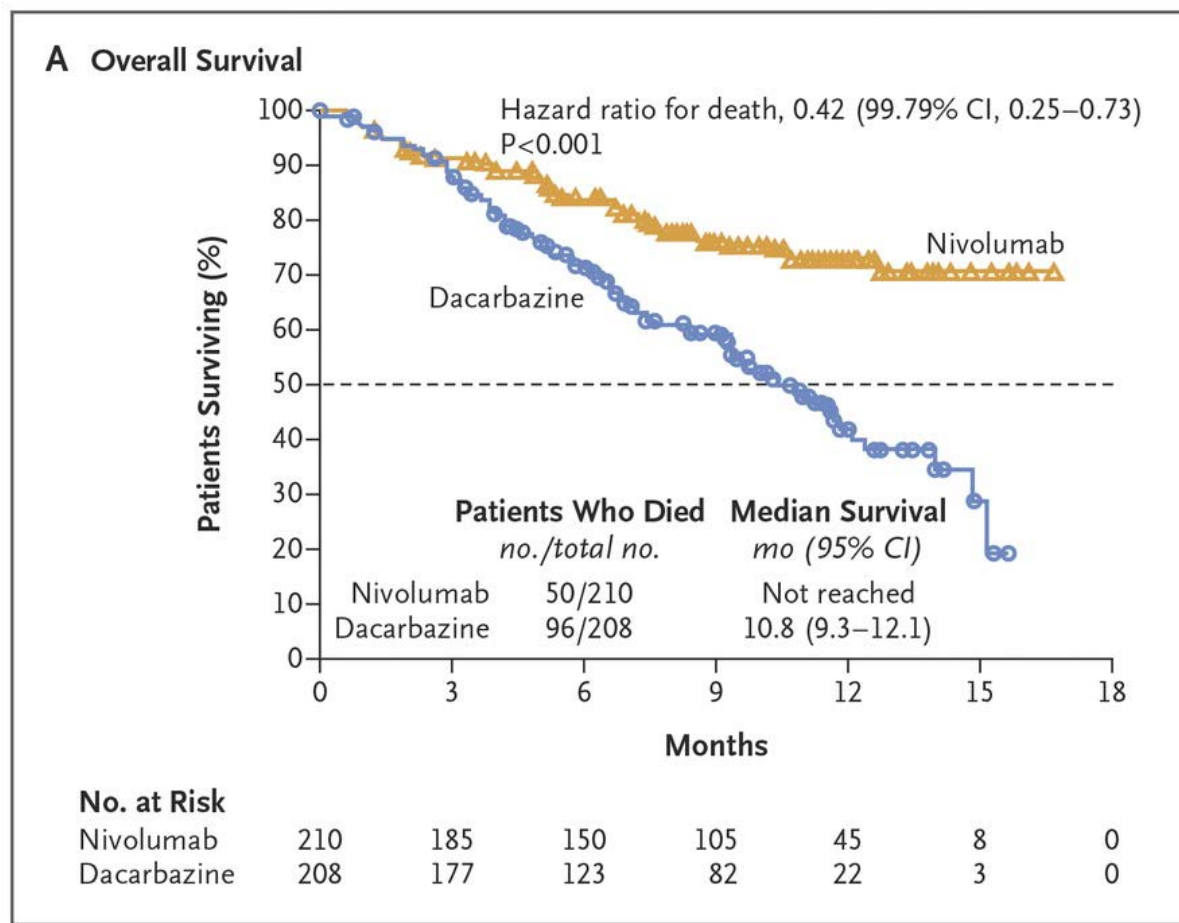
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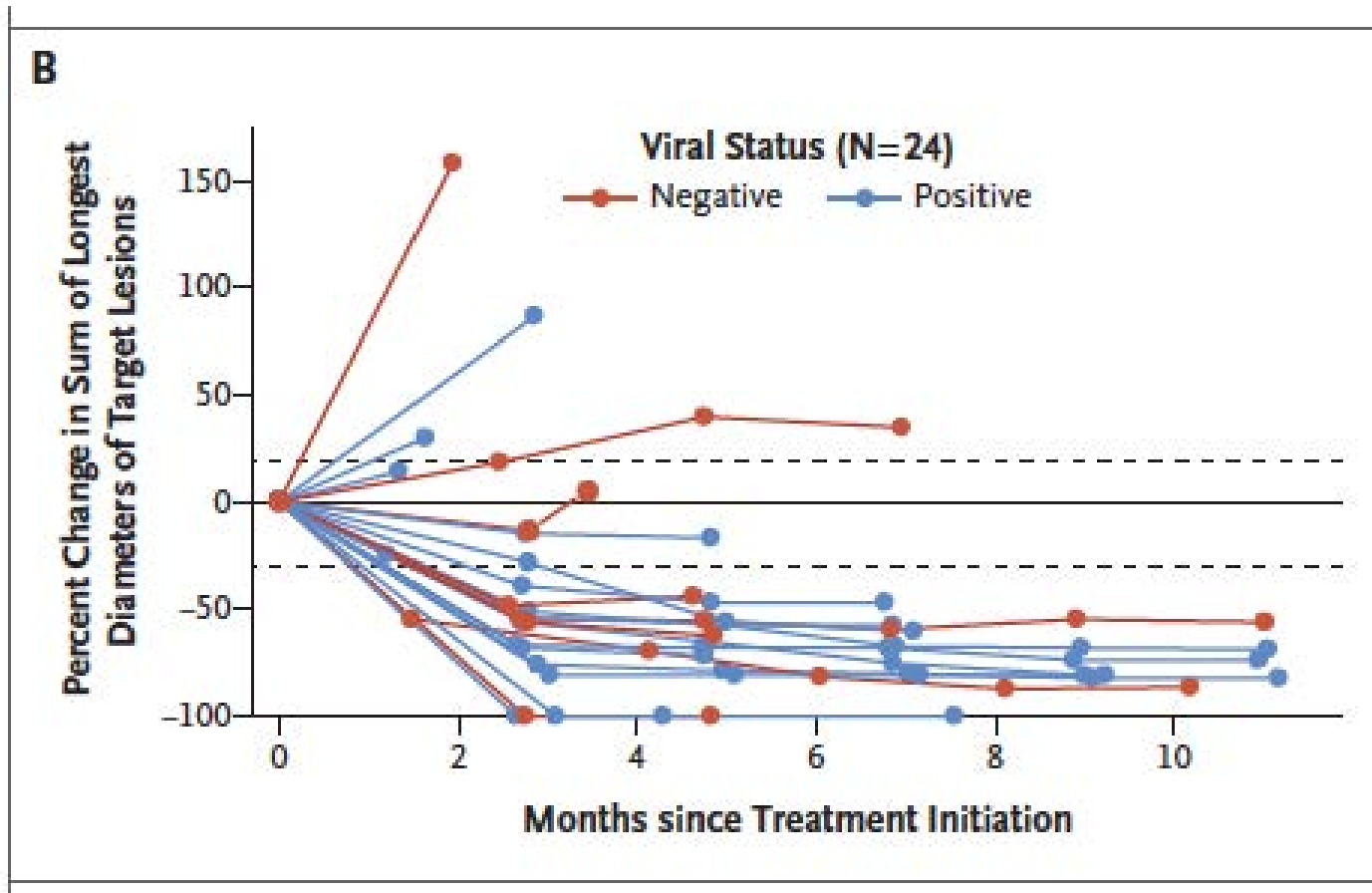
# Proposed for Cancer Treatment: Clinical and pre-clinical

- Increase immunotherapy trials and combination therapy trials
- Increase patient participation in clinical trials
- Develop new treatments for pediatric cancer
- Develop a drug formulary from many companies at NCI
  - To facilitate the study of combination therapy
- Expand -omic analysis of tumor cells and stromal cells for patients with clinical annotation

# A PD1 immune checkpoint inhibitor Nivolumab is useful in metastatic melanoma without B-RAF mutation



# A PD1 immune checkpoint inhibitor Pembrolizumab is useful in advanced Merkel-cell carcinoma

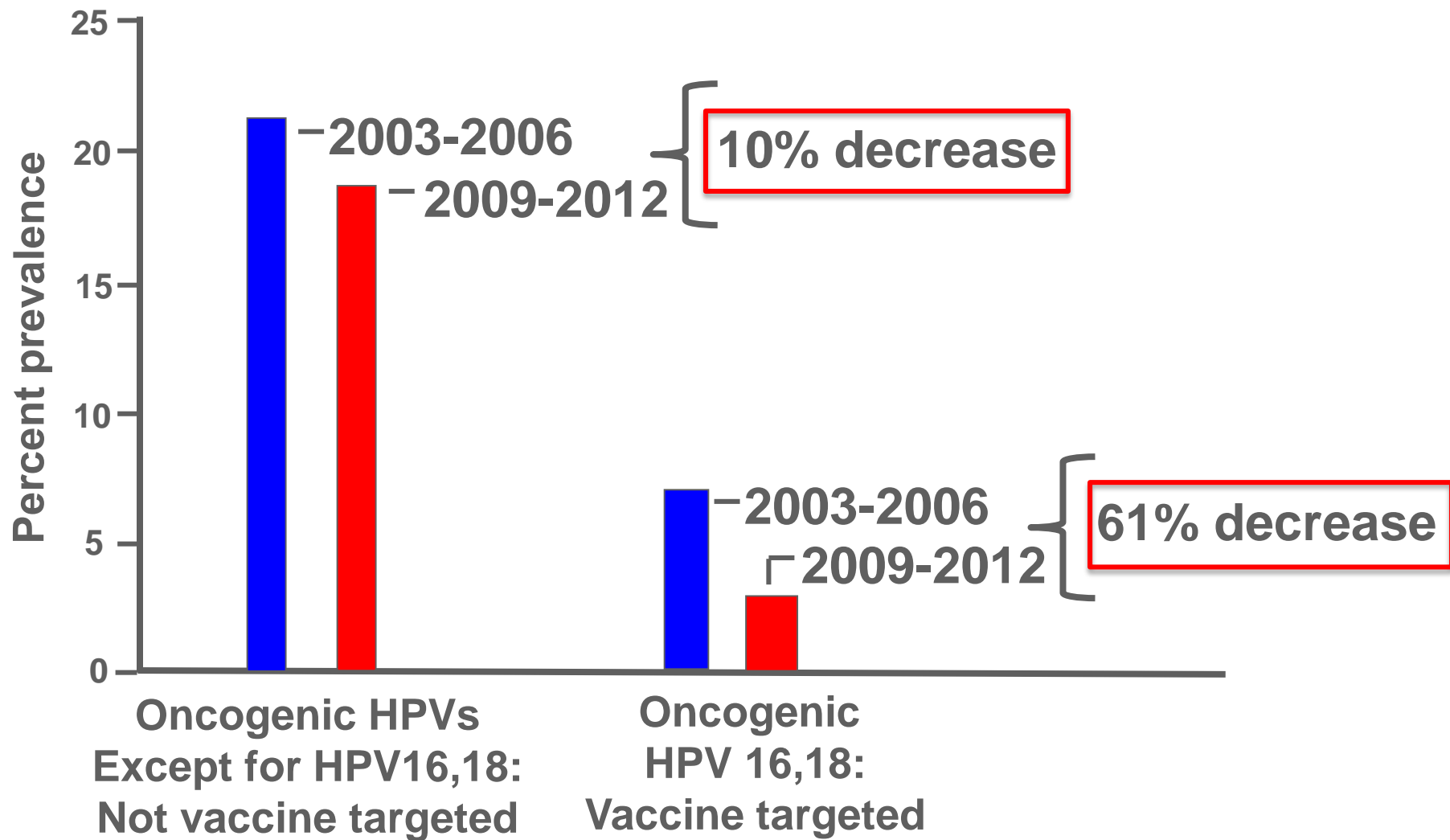




# Proposed for Prevention, Screening, and Implementation

- Develop preventive interventions (e.g., vaccines) against infectious and non-infectious targets
- Develop screening tests with body fluid samples (e.g, blood, urine, saliva)
- Increase uptake of standard of care for prevention, screening, and treatment

**Decreased prevalence of HPV16/18 in the US despite limited HPV vaccine uptake: 14-19 year old girls (51% received 1 or more doses)**

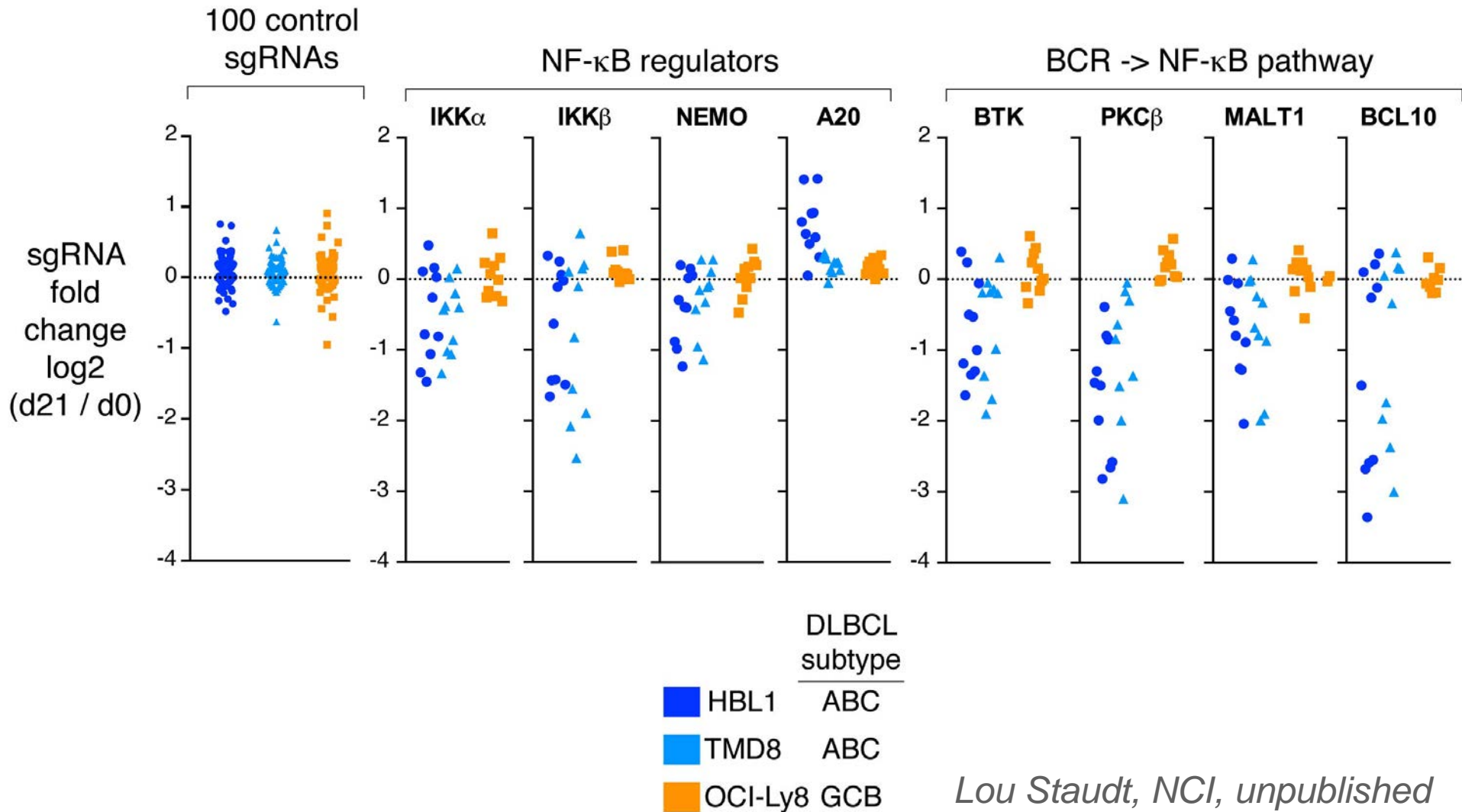


*Adapted from Markowitz et al, Pediatrics 2016*

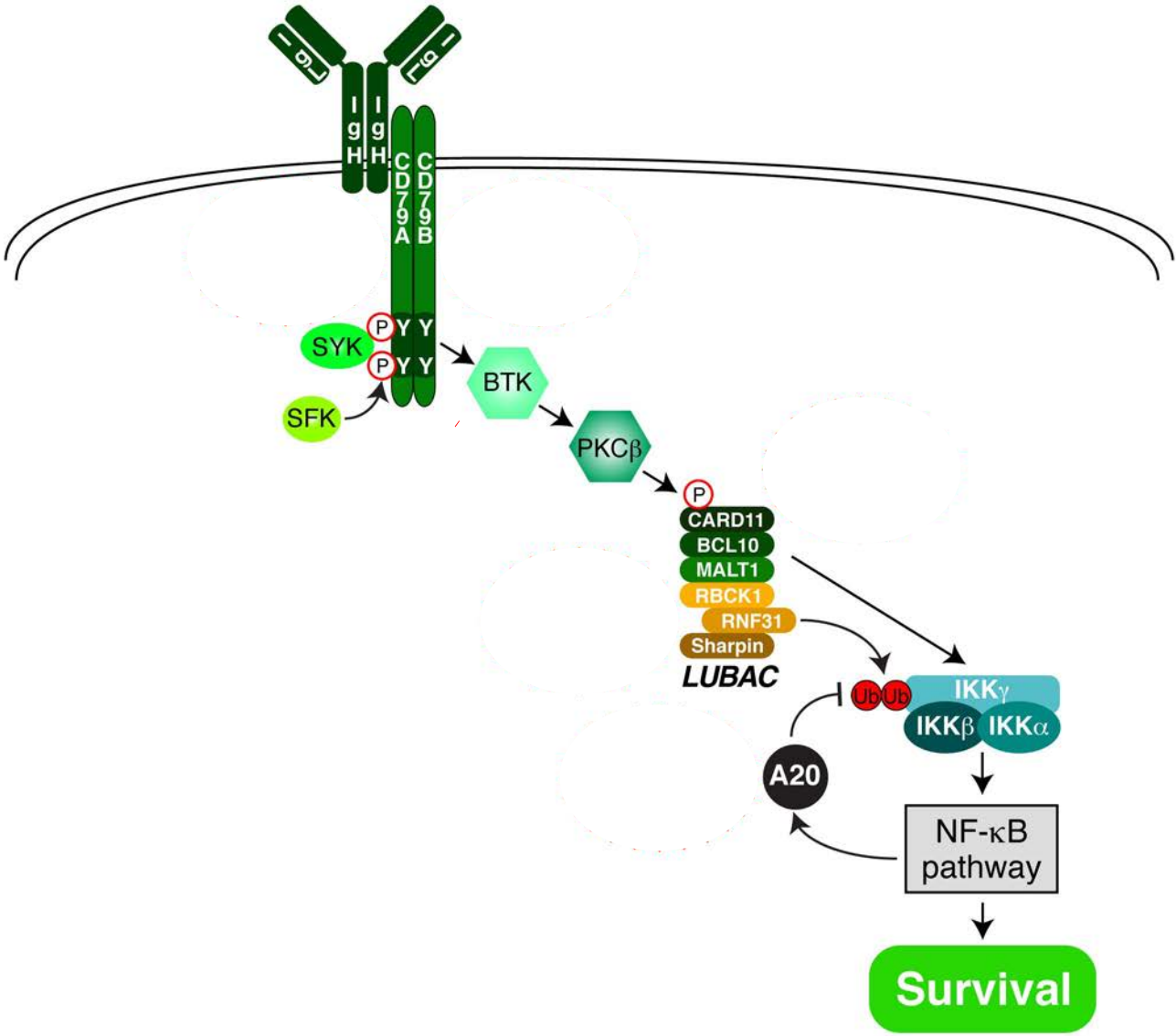
## Other Proposed Research

- Increase preclinical studies of therapeutic cancer vaccines and cancer immunotherapy
- Increase basic research
- Develop an “exceptional opportunities fund”

# CRISPR Screens Reveal Essential Cancer Pathways With Few Off-target Effects



# CRISPR Reveals Oncogenic B Cell Receptor Signaling In ABC DLBCL



# The Vice President's Cancer Initiative

Vice President's Office



Cancer Moonshot  
Federal Task Force



NCI/NIH



NCAB



"Blue Ribbon Panel"



Working Groups



# Federal Task Force Goals

- Accelerate our understanding of cancer, its prevention, early detection, treatment, and cure
- Support greater access to new research, data, and computational capabilities
- Improve patient access and care
- Identify and address any unnecessary regulatory barriers and consider ways to expedite administrative reforms
- Identify opportunities to develop public-private partnerships and increase coordination of the Federal Government's efforts with the private sector
  - *(Presidential memo, January, 2016)*

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# Blue Ribbon Panel Goals

- Identify major scientific opportunities that are poised to be accelerated by additional emphasis and funding
- Identify major scientific and regulatory hurdles that can be overcome with additional emphasis and funding
- Suggest mechanisms (broadly) to address research gaps in knowledge, develop key technologies, and/or overcome impediments to progress
- *Develop 5-10 recommendations of opportunities that would be pursued through the Vice President's Cancer Initiative*

# Cross-cutting Themes

- Prevention
- Technology and preclinical models
- Data sharing and predictive computational modeling
- Health disparities research
- Tumor heterogeneity
- Biomarkers

## BRP Working Groups

| <b>Working Group</b>                            | <b>Co-Chair</b>                     | <b>NCI Staff</b>  |
|---|-------------------------------------|---|
| <b>Cancer Immunology</b>                        | Liz Jaffee,<br>Jim Allison          | Toby Hecht,<br>Kevin Howcroft                           |
| <b>Precision Prevention and Early Detection</b> | Mary Bekerle,<br>Jennifer Pietenpol | Elisa Woodhouse<br>Tracy Lively                         |
| <b>Tumor Evolution</b>                          | Chi Dang,<br>Levi Garraway          | Joanna Watson, Suresh Mohla,<br>Tony Dickherber         |
| <b>Clinical Trials</b>                          | Charles Sawyers,<br>Mitch Berger    | Jeff Hildesheim<br>Meg Mooney                           |
| <b>Implementation Sciences</b>                  | Elena Martinez,<br>Augusto Ochoa    | Bob Croyle, Wortá McCaskill-<br>Stevens, Jennifer Couch |
| <b>Pediatric Cancer</b>                         | Peter Adamson<br>Jim Downing        | Judy Mietz<br>Malcolm Smith                             |
| <b>Enhanced Data Sharing</b>                    | Angel Pizarro<br>Gaddy Getz         | Juli Klemm<br>Betsy Hsu                                 |

# Blue Ribbon Panel Timeline

- April 2016: Initial meeting, discussion of charge, and organization of Working Groups
- May 2016: Working groups begin their discussions
- June/July 2016: Preliminary Working Group recommendations are discussed by BRP and finalized by Working Groups
- July/August 2016: BRP report is circulated, edited, finalized, and sent to NCAB, which discusses the report and makes recommendations to the NCI
- August/October 2016: NCI prepares FOA concepts for approval and publication
- January-March 2017: Receipt dates for applications responding to FOAs
- June/July 2017: Review of applications & funding of awards

# Scientific Outreach

- Goals:
  - Provide public and experts beyond the Working Groups opportunities to submit ideas;
  - increase public participation in the Moonshot
- Approaches:
  - Online public idea repository
  - one-on-one input
  - professional meetings (AACR, ASCO)

# A Team Effort with Special Thanks to:

- Francis Collins, Larry Tabak, Kathy Hudson, Rebecca Baker, NIH
- Dinah Singer, Jim Doroshow, Warren Kibbe, Anne Lubenow, NCI
- NIH & NCI Communication Offices



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