



Intersections of Science, Business, and Diversity

2018 NPA
Annual
Conference

April 7, 2018

Lydia Villa-Komaroff, Ph.D.
Intersections SBD Consulting
Science, Business, Diversity



UNIVERSITY of
WASHINGTON



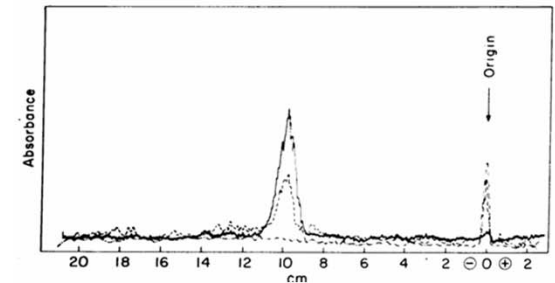
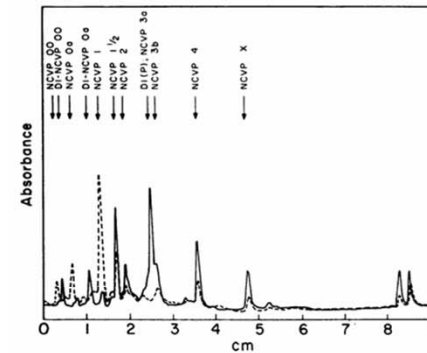
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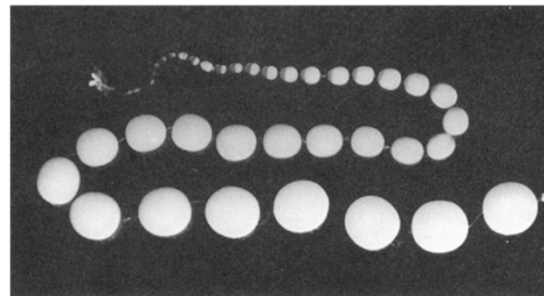


Villa-Komaroff L, Guttman N, Baltimore D, Lodish HF. **Complete translation of poliovirus RNA in a eukaryotic cell free system.** Proc Natl Acad Sci USA 72:4157 4161, 1975.





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Proc. Natl. Acad. Sci. USA
Vol. 75, No. 8, pp. 3727–3731, August 1978
Biochemistry

A bacterial clone synthesizing proinsulin

(rat preproinsulin/cDNA cloning/solid-phase radioimmunoassay/DNA sequence/fused proteins)

LYDIA VILLA-KOMAROFF*, ARGIRIS EFSTRATIADIS*, STEPHANIE BROOME*, PETER LOMEDICO*,
RICHARD TIZARD*, STEPHEN P. NABER†, WILLIAM L. CHICK†, AND WALTER GILBERT*



Useful Proteins from Recombinant Bacteria

Bacteria into which nonbacterial genes have been introduced are able to manufacture nonbacterial proteins. Among the proteins made by recombinant-DNA methods are insulin and interferon

by Walter Gilbert and Lydia Villa-Komaroff



Boston Children's Hospital
Until every child is well



Yankner BA, et al, **Neurotoxicity** of a fragment of the amyloid precursor associated with **Alzheimer's disease**. Science 245:417-420, 1989.

Yankner BA, et al, Transfection of the human **GAP-43** gene in PC12 cells: effects on neurite outgrowth and **regeneration**. Molec Brain Res 7:39-44, 1990

Rosen KM, et al, **Brief visual experience** induces **immediate early gene expression** in the cat visual cortex. Proc Natl Acad Sci USA 89:5437-5431, 1992.

McKelvie PA, et al, **Insulin-like growth factor II** gene expression in human fetal and infant **central nervous system**. J Neuropath Exper Neurol. 51:464-471, 1992.

Lopez MF, et al, Regulation of **hepatic glycogen** in the **insulin-like growth factor-II** deficient mouse, Endocrinology 140:1442-1448, 1999.



WHITEHEAD INSTITUTE



24 Boston Business Journal boston.bizjournal.com

ON THE MOVE 25 | CALENDAR 26 | OUT

| ON THE FLY |

Lydia Villa-Komaroff

A busy year for TKT's chairwoman

L ydia Villa-Komaroff's first stint on a corporate board is turning out to be nothing if not eventful. She joined the board of directors of Transkaryotic Therapies Inc. (Nasdaq: TKT) almost 2 1/2 years ago — the first time she took on such a role at a public company.

In January 2005, she became chairwoman and shortly thereafter became embroiled in heady negotiations that led to last month's announcement that TKT would be sold to Shire Pharmaceuticals Group PLC for \$1.6 billion in cash — a move that prompted CEO Michael Astrue — the man who asked Villa-Komaroff to join the board — to resign.

HIGHLIGHTS ON VILLA-KOMAROFF

Joined the TKT board in 2003 and became chairwoman in January 2005.

Serves as vice president for research and chief operating officer for Whitehead Institute for Biomedical Research Inc.

Earned her doctorate in cell biology from the Massachusetts Institute of Technology in 1975.

What's different post-Sarbanes-Oxley as a board member of a public company?

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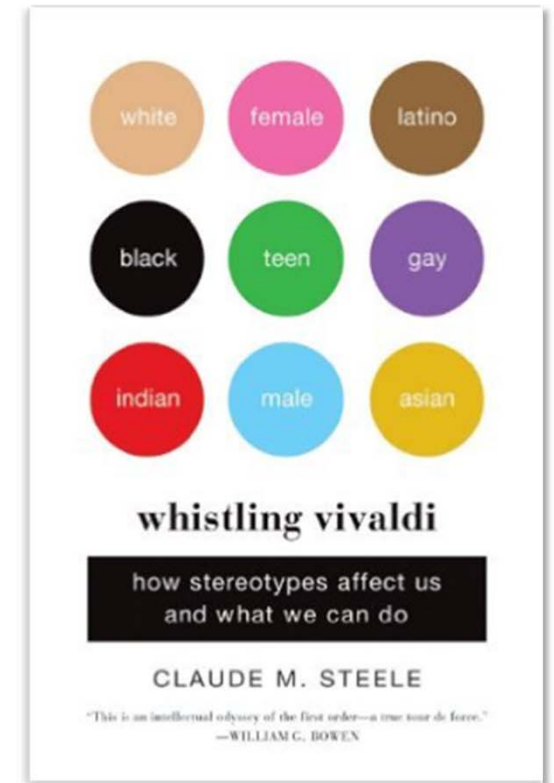
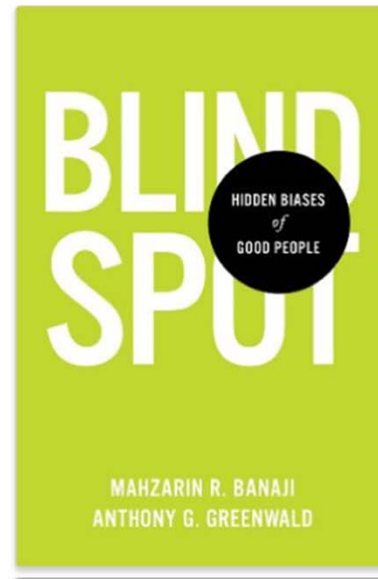
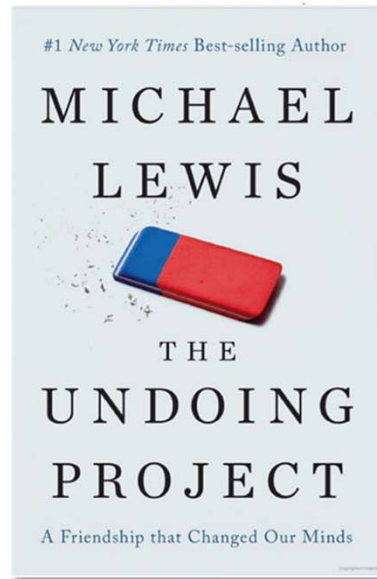
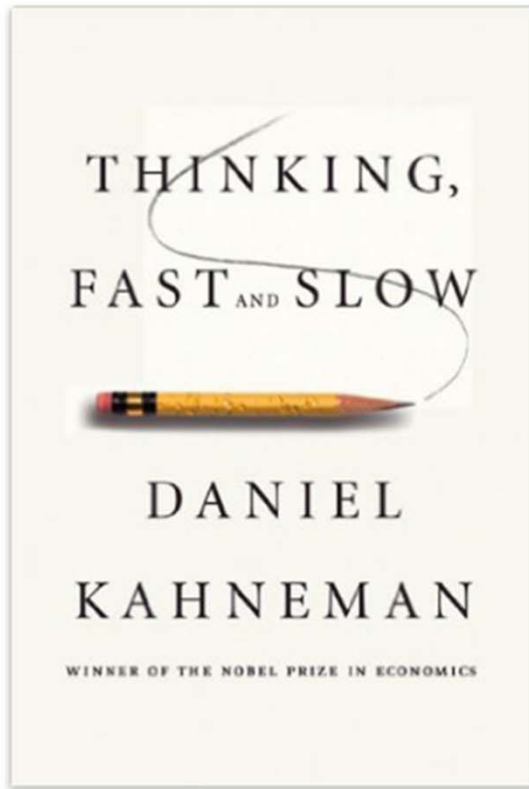


Hulspas R, et al, Purification of regulatory **T cells** using a fully enclosed **high-speed microfluidic** system. Cytotherapy 16:1384-1389, 2014.





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- Psychologists and other social scientists have long recognized that humans will make systematic errors in judgement
- Data from many sciences are converging
- Human brain has evolved mechanisms to deal with the massive data provided by the senses
- That these mechanisms are the result of evolution does not mean that we cannot change behavior as needed in response to challenges in our world
- Scientists in the “hard” sciences have been particularly resistant to the notion that unconscious mental processes affect decisions they make



The mind does a great deal
Automatically
Unconsciously
Unintentionally

When we encounter information
-words, pictures, CVs-
Related information automatically
comes to mind

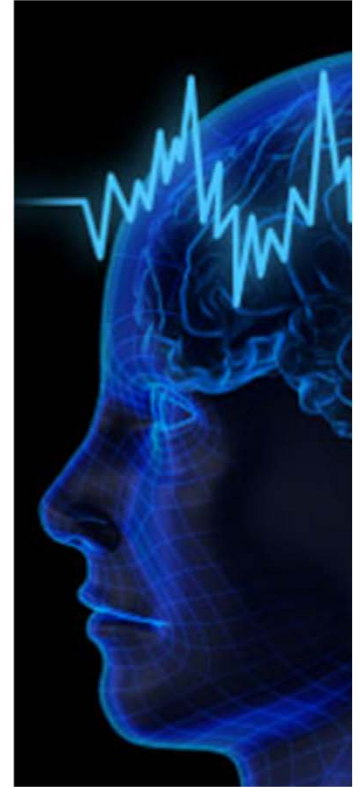
Two systems of thinking

Automatic, Intuitive or System 1

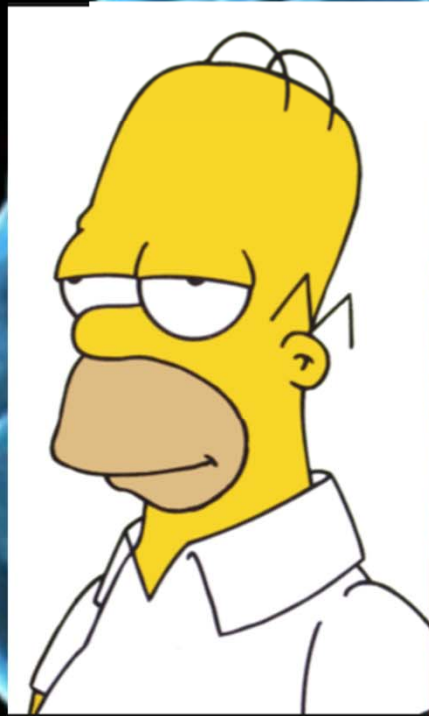
- Operates automatically and quickly
- Requires little or no effort
- No voluntary control, freewheeling
- Runs all the time

Slow, Deliberate, Controlled or System 2

- Allocates attention to effortful mental activities
- Requires energy
- Orderly, deliberative
- Normally operates in comfortable, low effort mode
- Generally Accepts System 1 suggestions



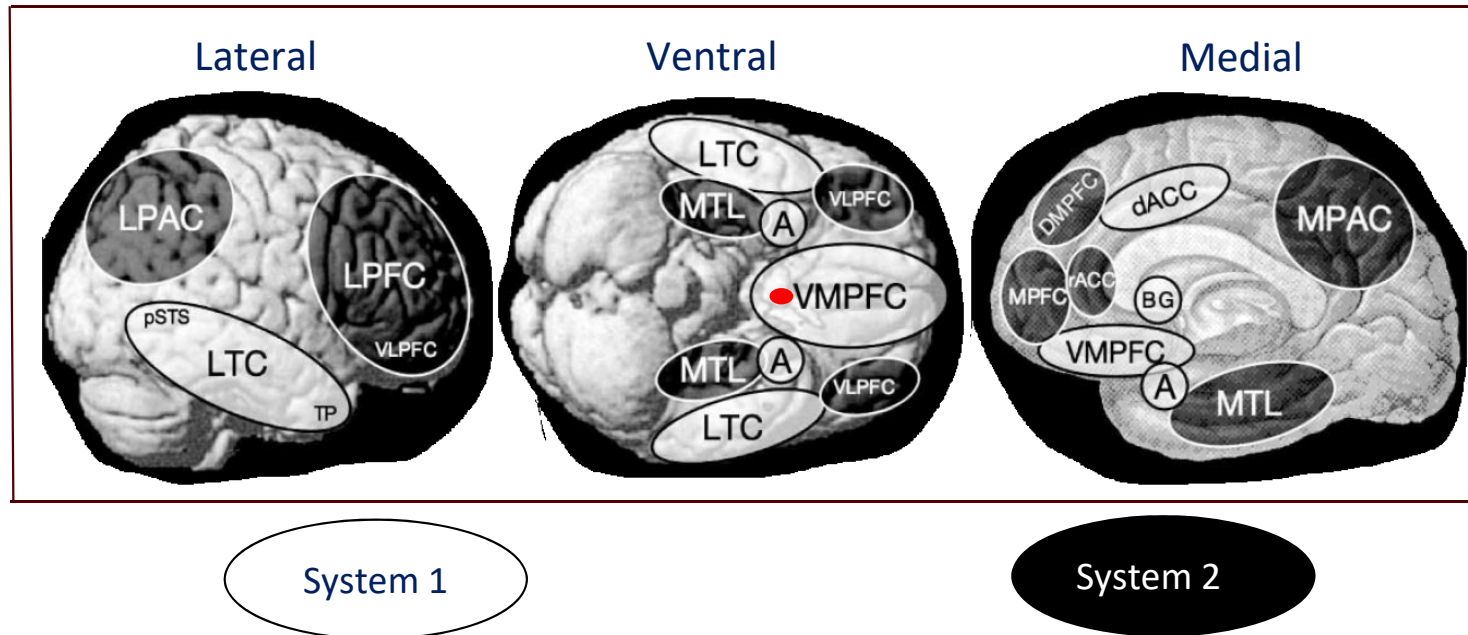
System 1



System 2







Ventromedial PFC (VMPFC)[BA11]

Basal Ganglia (BG)

Amygdala (A)

Lateral Temporal Cortex (LTC)

Posterior Superior Temporal Sulcus (pSTS)

Temporal Pole (TP)

Dorsal Anterior Cingulate (dACC)

Lateral PFC (LPFC)

Ventrolateral PFC (VLPFC)[BA47/45/10]

Medial Temporal Lobe (MTL)

Medial Parietal Cortex (MPAC)

Lateral Parietal Cortex (LPAC)

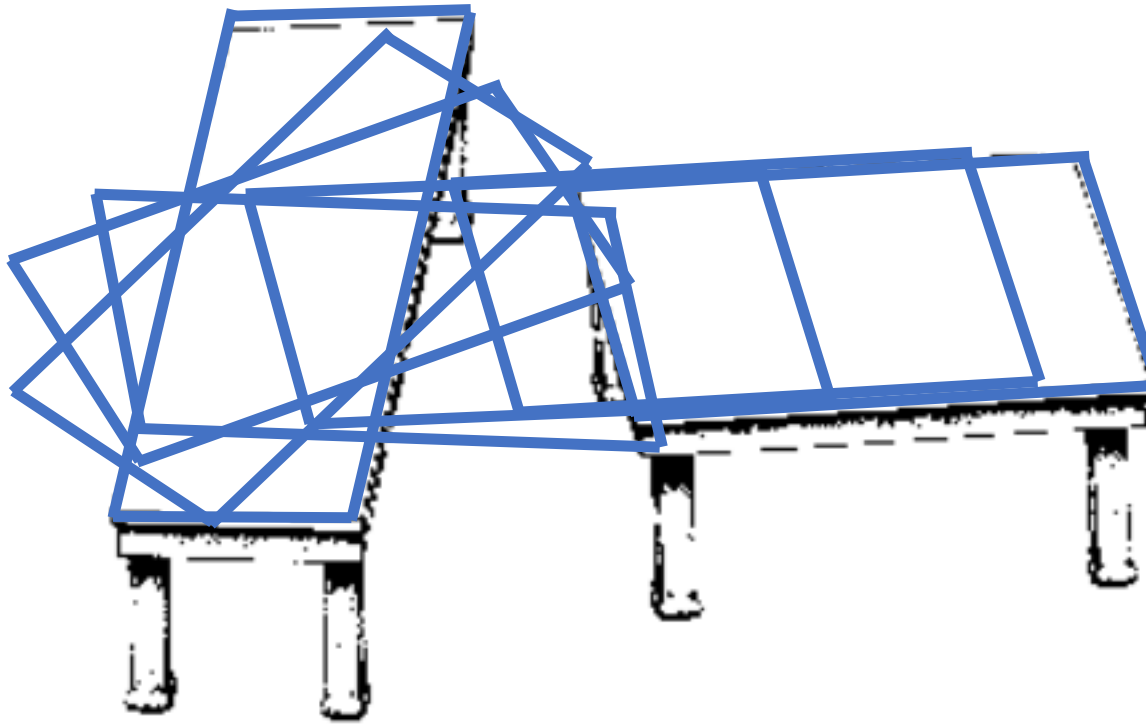
Rostral Anterior Cingulate (rACC)

Medial PFC (MPFC)[BA10]

Dorsomedial PFC (DMPFC)[BA8/9]

Adapted from Lieberman, Ann Rev Psychol. 58:259, 2007

Optical Illusions are Perceptual Errors



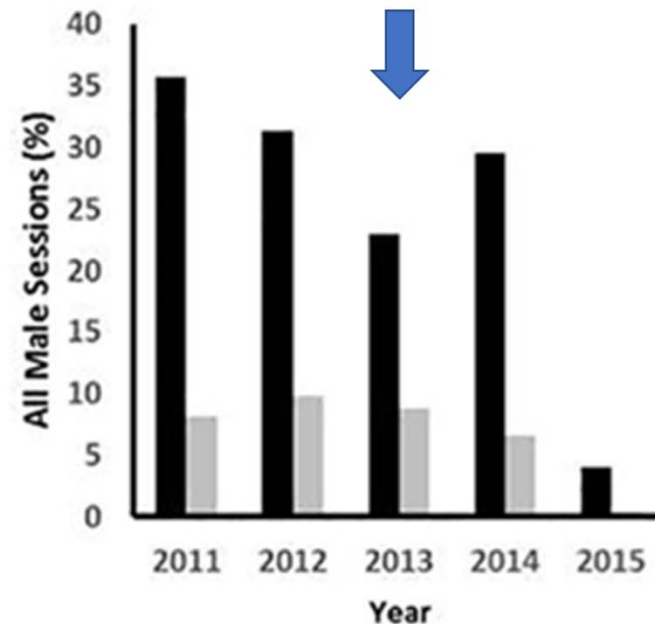
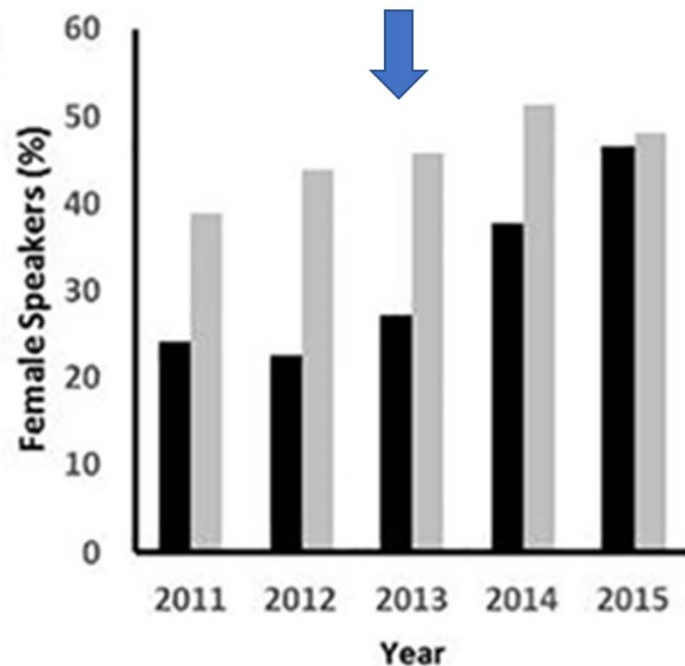
Adapted from Shepard, Mindsights, 1990

Implicit Bias Stems from Associative Errors

- Reflect associative thinking that results from our cultural milieu
- Mental content of which we are unaware
- Shared by all members of the culture
- Hidden (implicit) biases can guide behavior without our awareness
- Good people well intentioned, strive to align behavior with intentions, but often fail

<https://implicit.harvard.edu/implicit/>

Increase in female speakers and decrease in all male sessions after intervention

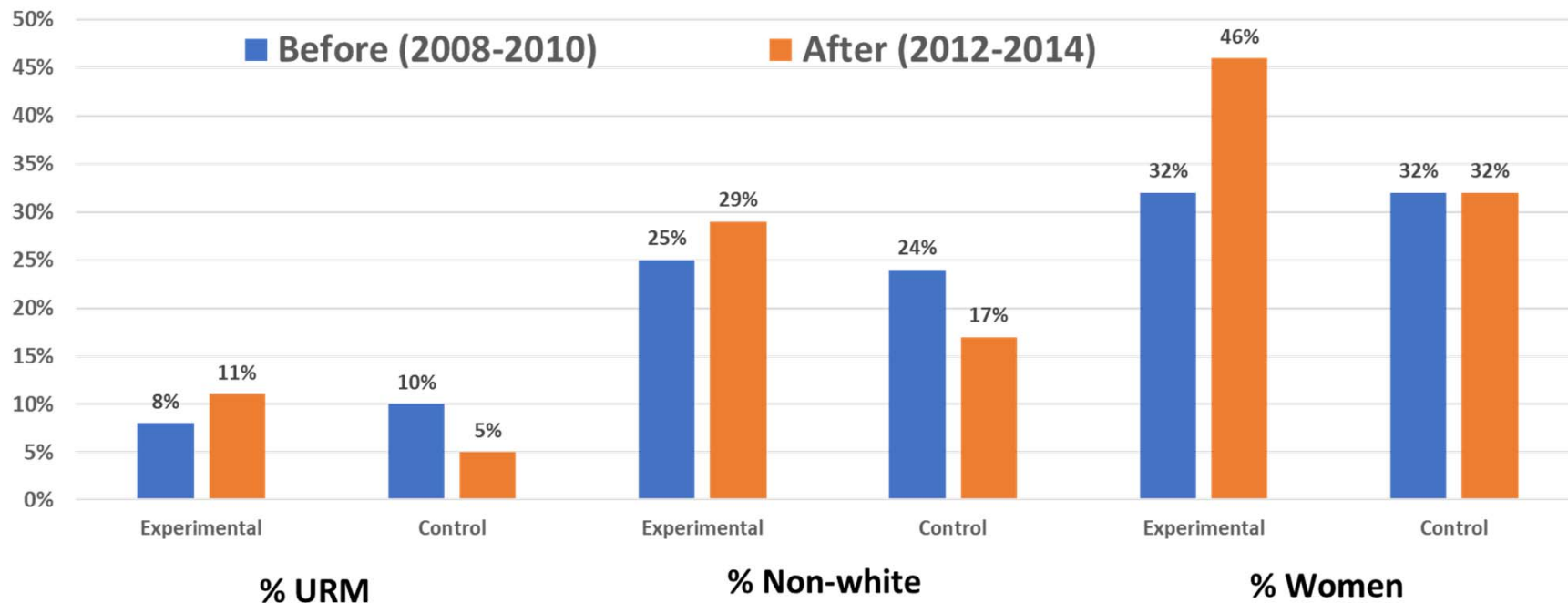


■ All male session planning committee
■ At least one female on session planning committee

Casadevall and Handelsman mBio 2014; doi:10.1128/mBio.00846-13

Casadevall mBio 2015; doi:10.1128/mBio.01146-15

Diversity of New Faculty Hires Before and After Bias Literacy Workshop



Carnes et al, Acad. Med. 90:221, 2015; Devine et al, J Exp Soc Psychol, 73:211, 2017
Carnes, Understanding Interventions Symposium 2016.